

Dear Supporters of the Giant Armadillo Conservation Project,

It has been a little over two months since my last update and as usual we have lots of news to share. We ran two expeditions in the Pantanal and ran numerous short expeditions in the Cerrado. Our Pantanal expeditions have been surprisingly frustrating! The advances made in the Cerrado study on the other hand have been extraordinary. We have also made lots of exciting advances in the office, including a partnership with the education board of the municipality of Campo Grande and WWF-Pantanal Cerrado.

The August expedition consisted of the whole team (myself, Gabriel, Camila, Bruna) except our veterinarian Danilo Kluyber. Danilo is working on finishing his Masters degree in Sao Paulo and has had to skip several expeditions this year. Bruna Oliveira the biologist we were testing during the July expedition passed with flying colors. Although Bruna will be working mostly in the Cerrado she is being trained in the Pantanal first. Bruna is enthusiastic, hardworking and experience with GIS and the modeling programs we will be using to model giant armadillo distributions in the Cerrado. Please join me in welcoming Bruna to the team!

For the first few days of the expedition we were joined by cameraman Justin Purefoy from MaraMedia. Seeing the Pantanal through the lens of his camera was fascinating, details and colors of our beautiful surrounding were magnified and somehow made me fall in love with my surroundings all over again. It was such a privilege to catch Isabelle again to fit her with a GPS tag while Justin was there. I have such a soft spot for Isabelle that I am so glad we were able to film her. The battery of her transmitter has almost run out and I was very conscious this could be the last time I actually see her.

We fitted Isabelle with a GPS Tag and followed her for a few days intensively as is procedure. To our surprise while searching for her we stumbled upon an active burrow! This had to be a male giant armadillo. The burrow was in the middle of Isabelle's territory! Although there is some overlap between giant armadillos on the border of their territory we have never documented overlap in core areas. It was a shallow burrow we describe as resting burrows which animals only use for one night. This was the typical pattern for a visiting male.... Now who could it be? Ben a large juvenile we caught 2 years ago which I believe to be Isabelle's son? Don/Hannibal who was responsible for killing her first young almost three years ago? We caught Don last July and we know that he makes brief incursions in her territory. Zezinho? A male we caught over 3 years ago and was the father of the first baby (which was killed by Don/Hannibal). What if it was Robert or Wally??? Their territories are very far away but these animals always surprise us.... AND what if this was a female! That would change everything we thought we knew. Who could this be?

We set our trap. Since this was a shallow burrow the animal noticed and started digging deeper. This enabled us to see that it was a male! We also got nice pictures. Once the trap was set, we spent the whole evening reviewing everything we knew about giant armadillos and the relationships we have established. Our conversations that evening would have made a gossip columnist proud. Even the life of celebrities pales in comparison to the gossip and relationships we came up with! We got pretty close to suggesting a long lost twin brother separated at birth... giant armadillo soap operas at their best.

Around 11 pm the piercing sound of the transmitter indicated that the trap had closed. Gabriel and I raced to the trap in the pitch dark. There he was! Beautiful and calm just waiting for us... We were ecstatic! We fit all the animals we capture with a tiny micro-chip. The same you use on your pet. While the animal was in the trap, our veterinarian Camila managed to run the small reader over its stomach. To our mounting excitement it beeped! We had a number! It was a known animal! But WHO ??? Don, Ben, Zezinho, Robert or Wally????

We quickly placed the animal in night box as we always do for the animal to settle down before being anesthetized at the crack of dawn. We do this so can proceed with sample collections and putting the transmitter on it in day light which facilitates everything. At night insects can get insane and we have loads of equipment and tools and need to be able to proceed quickly and safely. After the scare of being captured, the animal has a chance to settle down which we believe is best for the anesthesia.

You can imagine the mood of the team was at its highest. Camila Luba is a veterinarian who has been collaborating with the project for over a year. She is focusing on studying male reproductive characteristics. Since she has started we have had terrible luck with males. Houdini's transmitter stopped working and in December when we found him again we were unable to catch him as he refused to come out of his burrow. Don/Hannibal's transmitter never worked so when his GPS fell off we lost him. As you know Alex had never reached sexual maturity before he was predated. Wally has been the only male she has been able to study. This male was therefore a blessing and we could not have felt happier.

That night when we arrived at the ranch we checked our files and discovered the identity of this male. It was Zezinho! Zezinho is one of Isabelle's old flames. We had not seen him since June 2012! That was when he mated with Isabelle and was never seen again. How cool was that! We had caught Zezinho in January 2012, but at the time we were experimenting with other transmitters and got very little data from him. What a great opportunity to study him. It was almost too good to be true... yes, good to be true. Zezinho broke out of the holding box!

Our wooden box has been reinforced in every possible way since Houdini and then Dolores broke out of it. I was 100% sure it was unbreakable. Check out the pictures... it obviously was not. You can imagine we were all gutted. We could not believe it. I will never leave a giant armadillo in a box on its own again.... from now on we will remain until daylight with the animal. So much work, effort and patience.... almost two months later I still feel angry!

The other crazy thing that occurred during the August expedition was that our three females appeared to be exhibiting nesting behavior. This means huge burrows with large sand mounds and re-using the same burrow for many days. Once again all our excitement was crushed as they eventually changed burrows... how frustrating. We never got to the point of seeing a female leave a burrow and closing it, which is a sure sign that a baby was born. All in all the August expedition was an emotional rollercoaster and turned out to be exhausting and very disappointing! However if there is one thing we have learned throughout the years is perseverance. You can never give up.

This attitude is certainly going to be important for the giant anteater project. Although all the animals monitored in August are doing fine upon my return in September I found out that the collars are not working properly. The GPS data is failing and I spoke with Telonics who have recognized the problem and are replacing all the collars at no cost. I suppose the good news is we will be trying out a new model of collars that we planned to use in the future. However, as you can imagine this is a huge set back and blow to our giant anteater work. We now have to capture the animals and change the harness. This is very disappointing. As I said we have to look ahead of us and think about solutions and our long term goals, never look back on setbacks but focus on the job ahead of us. As these new collars take a while to make I will only be able to replace 3 of them during the October expedition. Very frustrating.

The September expedition consisted only of Veterinarians. Danilo Klyuber led the expedition with Camila Luba and veterinary trainee Carolina Vanin. I really thought that Mariana could be nesting and the first thing the team did when they went to the field was search for her. She is not. They located all the other armadillos, for a few days they believed that Isabelle could be nesting. She is not. Other disappointing news included not being able to locate Tracy's GPS transmitter which has fallen off, but could not be located. There should have been enough battery and they searched her small home range, but were not able to locate it. That data is now lost. Once again this was quite a setback especially when you think of the time and costs involved. Thankfully Tracy herself was found and she is doing well. Jessica was fitted with a new GPS tag and was found to be in great health. I really hope she will have a baby soon! The team also spent several days finding fresh foraging holes and even burrows in what is probably Dolores's home range. They came very frustratingly close to finding her.... So close and yet so far. No Dolores. The team also caught and tagged 2 male six-banded armadillos so that Camila can monitor their reproductive health. It is a good case study and easier to plan and work with six banded armadillos than giant armadillos and this will allow her to test various hypothesis.

Overall we have had quite a few setbacks in our work in the Pantanal. It has been frustrating. Even though we work as much and as hard as we can, not everything goes as predicted.... and that is exactly what field work is!. The trick is to keep going. Always! I must also report that the old red field truck has been retired. I will not go into all the details of the numerous new headaches it managed to give us. Suffice to say it was time to say goodbye. This truck served us well for so long. As frustrating as field work can be, taking a step back from it all we recognize that we are achieving and learning a lot. We are currently monitoring five adult giant armadillos, just think back a few years ago when we had none!

Now for some great news regarding the Cerrado expansion. I am really pleased to say that things are going very well and progressing as planned. We were able to run our first model on giant armadillo distribution thanks to the work of Helen Maranhao a student we funded to collect all existing locations of giant armadillos in government data bases, biodiversity surveys and interviews with organizations and researchers. Over 30 locations were obtained. As predicted the map is incomplete however it is a great starting point. Through a collaboration with the local Federal University and modeling expert Jose Ocha we have selected 20 watersheds to run a preliminary test on methodologies. Selected areas to be surveyed are based on % of native vegetation cover. We categorized these areas in ascending order so that we survey areas with very little native vegetation to areas with almost 50% native vegetation. At the moment we have surveyed 8 areas and plan to visit 30 before the end of the year. I am relieved to report that we are finding evidence of giant armadillos in some of these areas. However, finding individuals does not mean viable populations. We have a lot of work to do to fully assess the situation. The good news is we have had very positive responses from the local communities and we are creating a lot of interest in the species. This work is very much community based and we need to work in close partnership with all stakeholders. Recognizing the importance of this, we are launching a Citizen Science exercise to help us in our work and to promote the species.

Through the help of local media we are calling upon everyone in the State of Mato Grosso do Sul to help us find giant armadillos. We have prepared a poster and pamphlets that describe how to recognize evidence of giant armadillos (attached to this e-mail). Posters will be distributed in key places throughout the state during our visits and the pamphlets distributed to selected partners. Both these documents are being communicated through social networks and press. We did our first press interviews last week and hope to be doing television next week. I have no idea what the results of this work will be. I do not know if we will gain any valuable data. We will have to check in the field, first hand all information provided. However, and most importantly, this work is aimed giving people the feeling they can participate in giant armadillo conservation and celebrate this unique species. We now want people not only to know that the species exists we want people to feel proud that we still have giant armadillos in Mato Grosso do Sul. We want them to feel a part of this project. I realize this will take time, but I think we have to use as many creative methods as we can to make this happen. I really look forward to reporting on the progress made.

Giant armadillo conservation does not only happen in the field and we also have to work hard when we are out of the field. Gabriel Massocato gave an intensive course to students on field techniques, always aiming to get the younger generation to let go of their cell phones and tablets! Capacity building is a big part of our work and we need to get biologists interested in field work and conservation (harder done than said). We are pleased that after several meetings I have been having since June, the Pantanal Cerrado of WWF Brasil will be using giant armadillos as a priority species for the creation of protected areas and will be using our results and our work. We will be working closer together and exchanging information. This will certainly increase our efficiency. Also, a few weeks ago I presented our project and all the educational materials to the education board of the municipality of Campo Grande. I am hoping that in 2016 we can launch an outreach campaign in the 100 schools in and around Campo Grande on armadillos. If that is successful I will extend this work to the whole State! These partnerships and initiatives involve a lot of meetings and discussions but we are making solid progress.

Last but not least, last week I had the honor of being invited by the organizers of the 8th Conference of Brazilian Mammalogy where they organized a special symposium for Xenarthra. I gave a presentation on armadillo conservation where we are now and what we want to achieve. The idea was to try to get researchers working on armadillos to work closer together.

As always these updates become a little longer than initially intended, but I always want to give you a good understanding of our progress and the work being conducted. None of this work would be possible without your long term support and we are very grateful. Thank you so much for supporting our work and for reading this whole update. Gabriel and Bruna are off to check cameras at the Cisalpina reserve tomorrow, I leave in ten days for the Pantanal.

All the best from Brazil,

Arnaud and the Giant Armadillo Conservation Project team.



