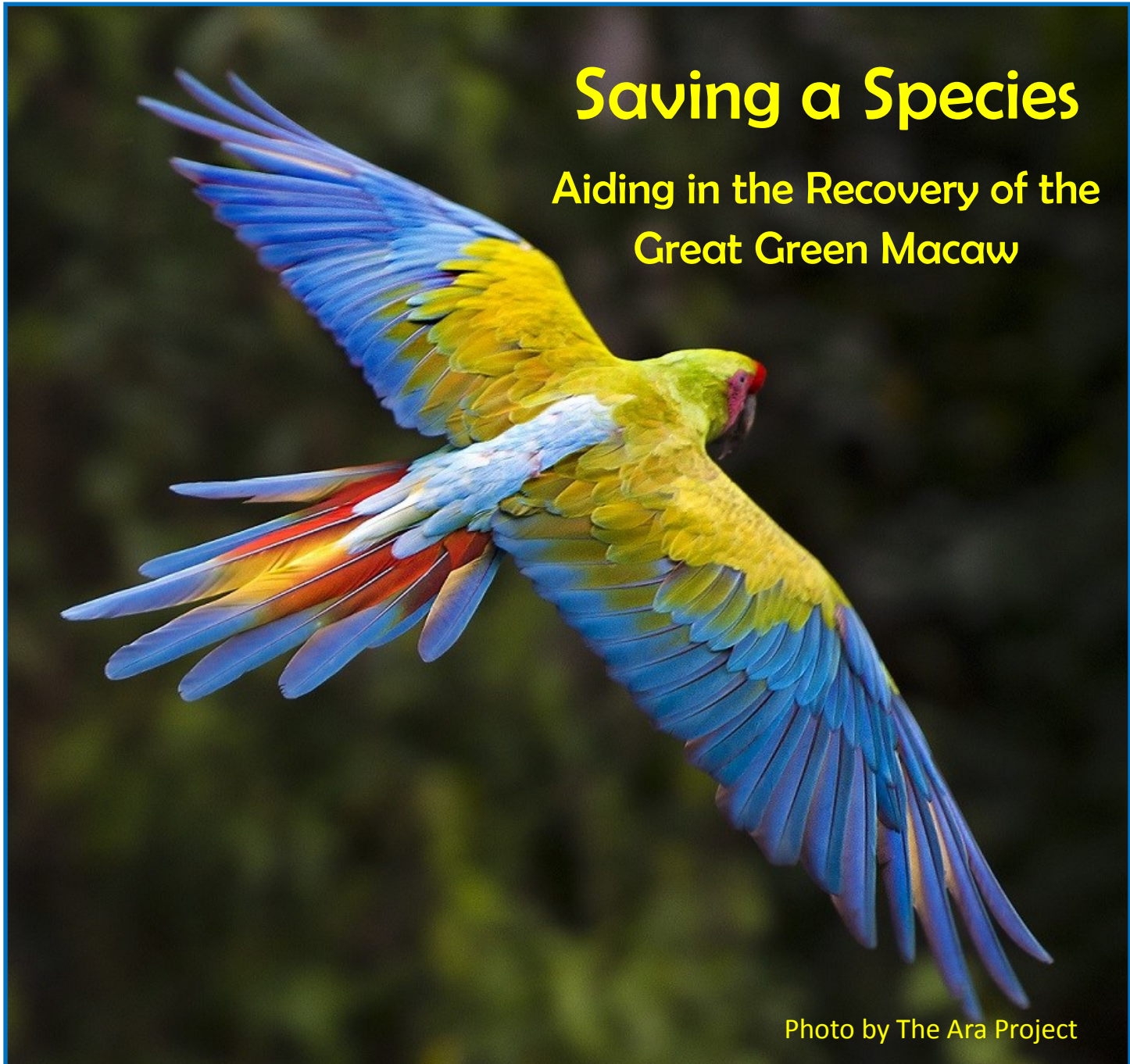


RAPHIA

Newsletter of Caño Palma Biological Station



Saving a Species

Aiding in the Recovery of the
Great Green Macaw

Photo by The Ara Project



Canadian Organization for
Tropical Education & Rainforest
Conservation

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Saving the Great Green Macaw



The great green macaw is endangered. The IUCN estimates a world population of about 3700 individuals including juveniles. Northwest Colombia has the greatest population. The San Juan/La Selva biological corridor of Costa Rica and Nicaragua appears to be trending upward. And very low numbers hang on in Honduras and Ecuador.

It's certainly the case that, over the past 3 or 4 years, Caño Palma has been observing increasing numbers. The question then becomes: Since we're located right in the middle of this re-colonization of the green macaws' historic range, what can we contribute to the efforts being made to return the greens to healthier numbers?

Well, saving a species ain't easy. It takes the coordination of many people and organizations over a long period to make a difference. As Charlotte mentions, we start by monitoring to get an idea of macaw numbers and how they use the local habitat e.g. nesting and food sources. On Page 4, Chris van Roosmalen lays out his story of doing such research. On Page 5 is the story of The Ara Project that takes place in part just down the coast from the station. They have active breeding programs that lead to the reintroduction of greens and scarlets into the wild. While that sounds simple enough, it's not. Just like us, they have to research, recruit people and fundraise. And it all takes time and patience.

One of the most important tasks of both Caño Palma and the Ara Project is getting the local people to buy in. Comparing the situation of our turtle efforts with that of the green macaws, Charlotte emphasizes the need to educate. That's because, firstly, if people see a lot of hawksbills or macaws, they might think that that species can't be endangered. Secondly, by teaching the local kids about the importance of conserving turtles, there have been instances where the kids have influenced their parents to discontinue poaching along Playa Norte. The same applies to macaws since an adult might think the increased amount of greens presents an opportunity to make a quick buck in the pet trade.

Finally, every project needs people. It's hard work. But, as Sarah Bradley writes on Page 8, it's work that is immensely satisfying when you realize that you are contributing to saving a species - and you're doing it in a beautiful setting. It's not something you'll soon forget.

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Notes from the Station by Charlotte Foale

Hearing the calls, tripping over our dog, I ran frantically out of the house yesterday. I knew a massive flock of green macaws was passing.

Three of us counted...a lot! A conservative estimate was 50, but they were definitely greens. They approached from all sides and filled the sky. The noise was deafening, and even after 11 years here my heart was racing at the sight and sound. Just two days prior, one of our surveys counted a group of 75.

As we continue with our second year of full-time monitoring of the greens, hunches about them are confirmed or negated, and our goals shift slightly. We're gradually getting a better idea of how they use the local habitat, and what their future needs might be.

With steady numbers through the breeding season as well as some (unconfirmed) nest reports from locals, we are reasonably sure that the macaws are using the local area for breeding. Even when grocery shopping in the town of Cariari (3 hours from us), it has become the norm to hear and see the occasional macaw pass over, and there are many, many people talking about their increased presence in the rural areas surrounding the town.

While this is all good news, given all those years with few sightings, we want to focus not only on continued monitoring to track changes, but also on what can be done to ensure that Tortuguero National Park and surrounding areas are able to support the population year-round.

A massive part of this effort has got to be education. When a species can be seen in abundance in one spot, it can be easy for people to struggle to understand that the species is at risk. We see this with the turtles, and we know the volume of work that lies ahead with them.

Another major consideration is preserving the abundance of both nesting sites and year-round food sources within the protected areas. While it's great to see and hear the macaws in the surrounding rural areas, there are also many banana and pineapple plantations in the region, and they receive regular aerial dousings of pesticides, which drift into the surrounding land and waterways. Only continued genetic work will indicate the effect this has on the macaws. It's also essential that we maintain an ongoing focus on nesting sites within the protected areas. This is necessary because the capture of young macaws for pets is a major threat. So, in a relatively inaccessible area like ours, we have to step up our efforts to monitor and educate.

In the near future, we'd love to be able to access aerial images of the Park in order to assess the abundance of suitable nesting sites and the tree species that serve as the macaws' food sources. We'll also look to work with MINAE toward planned planting of the green macaw's favored trees, particularly of the wild almond (aka *Dipteryx panamensis* or almendro).

We continue to collect feathers for genetic analysis as the biologist who used them for his Masters project continues to look for funding to continue his work in that area. Our Research Coordinator Anna is currently working on a paper we hope to publish as well as to present to groups within Costa Rica who are working with this fragile population. We want to make others aware of the growing importance of this region for the macaws, and see how best we can work together in order to maximize our impact in the conservation of the great green macaw.



Birdwatching for a Purpose by Chris van Roosmalen

During previous internships, Chris did research on amphibian populations in the Maashorst, a national park in the Netherlands. Currently, he's doing follow-up research there. Looking beyond graduation, Chris plans to revisit the tropics to study other species of parrot. As well, he wants to work towards a Masters in biology. When he joins the working world, he hopes to find a job in one of the Netherlands' great national parks. Chris is a third-year Applied Biology Bachelors student at HAS University in den Bosch. He was an intern at Caño Palma from September to January 2018.

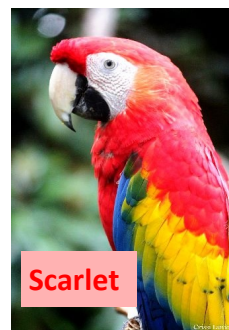
Relocating from the cold, grey, flat Netherlands into the immense tropical rainforest of Costa Rica, I was silenced by the beauty all around me. It sounds cliché, but the landscapes, especially around Tortuguero, are out of this world. Still, even for the first few weeks, I didn't realize just how special this area is. However, as I discovered in my literature review, these swamp forests contain tree species that can be utilized by the endangered great green macaw! Some of those giant trees are taller than 30 metres, and hundreds of years old!

But forested expanses like Tortuguero are becoming scarcer. As they're cut down for crops or pasture, populations of great green macaws have declined in tandem. Besides destroying habitat, their existence is also threatened by poaching. One thing is clear: populations are dwindling - to about 3700 according to the most recent estimate. That's why researching greens at Caño Palma is so important. Not only can we collect the latest population numbers for our area, but we can also study behaviors, nesting habits and other relevant topics, hoping to fill in some of the blanks.

And so my research focused on getting a count of both the great green macaw and the scarlet macaw in the Tortuguero region as well as their usage of trees such as the beach almond (*Terminalia catappa*), the almendro (*Dipteryx panamensis*) and the sangrillo (*Pterocarpus officinalis*). I estimated 21 great green macaws in the Tortuguero area in September, October and November, although the largest flock I observed was 47 great green macaws. (Since we were only counting greens from fixed spots, the flock number would be larger because it would contain individuals from outside our survey area that had migrated in to feed.) In the same area of Tortuguero, we estimated 5 scarlet macaws, with the largest group containing 19 individuals. The previous study by Mathieu Jegu



estimated 61 great green macaws in Tortuguero. The difference between Matthieu's numbers and mine could come down to the time of year – lower numbers would be expected during nesting season. I also noted that the presence of the scarlets didn't influence the number of greens. Similar to Matthieu, I found that the beach almond was their favored tree in our area. However previous research has shown that greens have a diverse diet and feed from at least 36 different tree species. So, their usage of different species could well be observed in Tortuguero in the future. The diet of the great green macaw can be diverse



or opportunistic in certain regions. I think this is an important topic because reforestation efforts to expand suitable habitat for the greens should be done only with a selection of the right tree species in the right region. Although the beach almond seems to be good for boosting green macaw populations, it's not the perfect tree.

For instance, it has not yet been observed as a nesting tree for macaws. Take a look at its stem and it's hard to imagine it will ever provide suitably sized nesting cavities for macaws. Besides, the impact of the introduction of the beach almond on remnant forests is unclear. It might lead to a decrease in diversity of native species of plants.

Studying macaws taught me to see not only how delicate nature can be, but also how rewarding conservation is. And Mathieu was right. You need great patience if you want to study macaws! But, when a large flock does appear, there's no better sight. At such times, it's hard to not appreciate them. In the future, I can only hope that great green macaws become a flagship species for the conservation of nature in Costa Rica – and for ecotourism as well. There's still a lot to be done before we get there, but by combining more research with the involvement of local communities, we can do it.

The Ara Project -- Reintroducing Macaws

The objective of the Ara Project is to establish a self-sustaining population of great green macaws in southern Costa Rica, which could eventually link the wild populations of northern Costa Rica with the wild populations of northern and central Panama. Ara refers to the genus that contains the 8 existing species of macaws.

In 2010, the Ara Project reintroduced great green macaws to the wild, the first time this was attempted anywhere in the world. The releases took place south of Cahuita down near Manzanillo on the Panamanian border, an area that has historically been home to these magnificent birds.

Between 2010 and 2013, 45 young great green macaws were released to fly free in their new habitat. Out of those 45, between 20 and 30 visit the release station daily for water, supplemental feeding and to socialize with the other great green subgroups. Five are confirmed dead. The remainder of the released birds have dispersed in a 50-kilometer radius, and the Manzanillo center frequently receives reports of sightings from their network of community supporters.

All that sounds easy enough. Of course it isn't. You can't just take a few birds and release them, hoping they'll nest and breed. It involves many tasks like habitat restoration, preparing the birds for reintroduction (they have to learn to open the beach almond, a tough nut to crack), research, fundraising, educating locals, recruiting people, and managing the wild population. All this takes time. And finally it takes the cooperation of many dedicated people working for dedicated groups like Amigos de las Aves and Caño Palma Biological Station.

Let's go back to the beginning. Over 30 years ago, Margot and Richard Frisius settled near Alajuela, close by San Jose. There they established a conservation center for parrots, Amigos de las Aves, to help stop the alarming decline of these birds in Costa Rica.

Over time, confiscated macaws were donated to the center by MINAE (Ministry of Environment and Energy), and from private donors with unwanted pet macaws. Many of the birds were in poor condition and heavily imprinted on humans. Although ill-suited for release to the wild, they could be rehabilitated and given the opportunity to reproduce, with the hope that their offspring could return to the wild and fly free.

The project continued for many years and the collection of birds grew. Sadly, Margot passed away in 2008 at age 87, leaving Richard, in his 90s, alone to run the project. He decided it was time for someone else to take over, prompting the start of The Ara Project. The Beruite family and others took over the care of the macaws with the intention of ensuring their lifelong well-being.

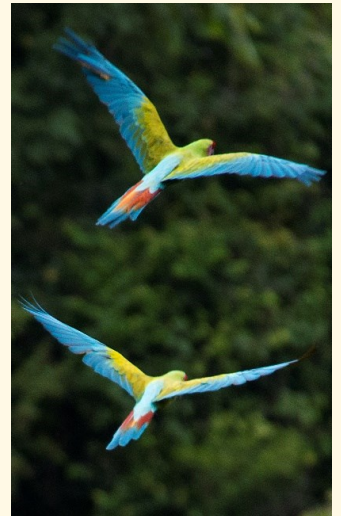


The aim of the newly formed organization remained the same as the original founders' goals – to ensure the future of wild parrots in Costa Rica through restoring macaws to their historic range, contributing to the scientific community, encouraging the protection of tropical forests, and educating the public to assure the benefit and enjoyment of present and future generations of macaws.

The southern Caribbean coastal area of Costa Rica was selected for this project mainly because of the region's extraordinary natural habitat protected by the Gandoca-Manzanillo Wildlife Refuge. With 80% of its territory under different categories of environmental protection, it supplies abundant food for the macaws. The Ara Project team worked to get the decisive support of local property owners, the tourist sector, the public-education system, local MINAE authorities, and other community groups who are committed to overcoming the threats that brought about the near extinction of these emblematic birds. An intense community outreach program constantly reinforces local support. (Cont'd on next page)

Criteria for selecting an area for a species reintroduction program:

1. A wild population lived there at one point, but have disappeared.
2. Enough natural food is available to sustain a wild population.
3. High probability that local communities will support the conservation effort.
4. There are sufficient institutional resources and an interest to protect the specie.



The Ara Project (cont'd)

In 2016, Manzanillo research station initiated an artificial nest program to facilitate the reproduction of the released macaws. The program started with five nests, specifically designed to attract great greens, which were installed in a wide area of rainforest trees. Two years later, 15 nests had been installed, and out of these 23 young greens have fledged and been released into the wild. (Map below shows that of 31 eggs laid in nest boxes in the 2017 breeding season, only 12 reached the chick stage. But 9 of those 12 chicks survived.)

What started as an experimental station has developed through 8 years of hard work into a successful, well-established project, with a local staff of young community leaders well trained in bird husbandry, monitoring, forestry, tree-climbing skills, and community-outreach activities. The initial objective of establishing a self-sustaining population of great green macaws in this region is well on its way to being fulfilled.

You can see how much time, energy, dedication and organization it actually takes to reestablish a species in the wild. And this is just the start. This is where Caño Palma enters the picture. With the reappearance of great green macaws in the station's vicinity, we're in a prime position to contribute research to all these efforts.

Note - When in Costa Rica, you can visit both Ara Project centers: Manzanillo on the Caribbean coast and Punta Islita on the Pacific coast. Just go to this website for directions and more information— <http://thearaproject.org/visit/>



Chris van Roosmalen comments on his visit to Punta Islita: After leaving Caño Palma, I spent some time at the Ara Project's Punta Islita facility, located on the Pacific coast on the Nicoya Peninsula. I was able to discuss macaws with the Ara Project director, Dr. Sam Williams, and station manager, Tom Lewis. I find it hard not to love their vision for future macaw research throughout Costa Rica and further.

At Punta Islita, the Ara Project breeds both scarlet and great green macaws. While there, I witnessed the release of scarlets into secondary forest. Since they use a soft release, the macaws leave their enclosure on their own time. After an hour and 20 minutes, the group of 13 scarlets found their way out and flew away, scattering and landing in several different trees. This was truly an amazing event to experience.

Restoring Macaws to the Wild

The Ara Project releases great green macaws at their Manzanillo facility on the Caribbean. It breeds and releases scarlet macaws at the Punta Islita facility on the Pacific coast where scarlets were extirpated some time ago.

The Ara team employs a 'soft release' method for restoring macaws to the wild. It begins with the macaws being quarantined for 30 days while they undergo health checks and disease testing. They're then moved to a release site and placed in a large aviary (at right) for a minimum of 2 months where they gradually become accustomed to their new surroundings and learn how to identify and consume naturally occurring foods. Once the birds are foraging well, small groups are released over an extended period of time. Supplemental feeding of natural food items near the release site is offered for as long is required.



Reproducing – Artificial-Nest Program

At about 5 to 6 years old, young greens reach breeding age and start looking for a mate that they'll probably spend the rest of their lives with. They prefer making their nests up high in the wild almond tree (*Dipteryx panamensis*). One of the main problems is that their eggs and chicks are a food delicacy for many predators in the forest like toucans, aracarís, monkeys, snakes, weasels and others. To help the reintroduced greens, the Ara Project has developed a nesting program for them (at right). The team is still experimenting with nest-design options to best resolve this challenge.

The nests are placed at least 100 meters from each other to avoid fighting for possession of a nest box. More than 15 have been installed, spread out over a large territory in the rainforest. Most nest boxes are installed higher than 25 meters and tied to the trunk of the tree. Installing nest boxes is a challenging, three-person operation. The macaws usually take possession of the nests within a couple of weeks after installation. Although Project staff want to keep interference with the breeding process to a minimum by leaving the nests undisturbed, every few weeks they climb up the tree and do an inspection of the inside of the nest.

At three months, the young chicks are covered with long, shiny feathers and are ready to fly out into the forest. They have to learn how to fly, establish a new feeding schedule with their parents, and overcome the stormy weather of the rainforest.



Macaws -- The Beauty of Volunteering by Sarah Bradley

In February of 2018, I returned to Caño Palma Biological Station for the first time in six years. In that summer of 2012, I interned through York University as a research assistant during sea-turtle nesting season. During my three months at the station, I never heard or saw a single macaw (green or scarlet) in the Tortuguero area. I knew others had observed them, but I never had the chance to view them myself. After I left the station, macaw sightings began to rise, and surveys to monitor their numbers were recently implemented at the station.

On arrival this year, I was thrilled to be put on the macaw survey team. The station conducts surveys at five different locations (usually once a week at each location) to detect the presence of the great green macaw (*Ara ambiguus*) and scarlet macaw (*Ara macao*). The decline of these species is attributed to habitat destruction as well as capture for the caged-bird trade. The International Union for Conservation of Nature's (IUCN) Red List categorizes the great green macaw as Endangered, with a decreasing population trend and an estimated global population of <2,500 mature individuals (Birdlife International, 2016). The scar-

let macaw is listed as Least Concern (with a decreasing population trend) by the IUCN. However, unlike the green, the scarlet has an extremely large range, and they are more numerous, with an estimated population of

<50,000 individuals (Partners in Flight, 2016). Given that these two species are in decline, the surveys undertaken at Caño Palma provide crucial information about the distribution and abundance of these magnificent birds in a relatively remote area of Costa Rica.

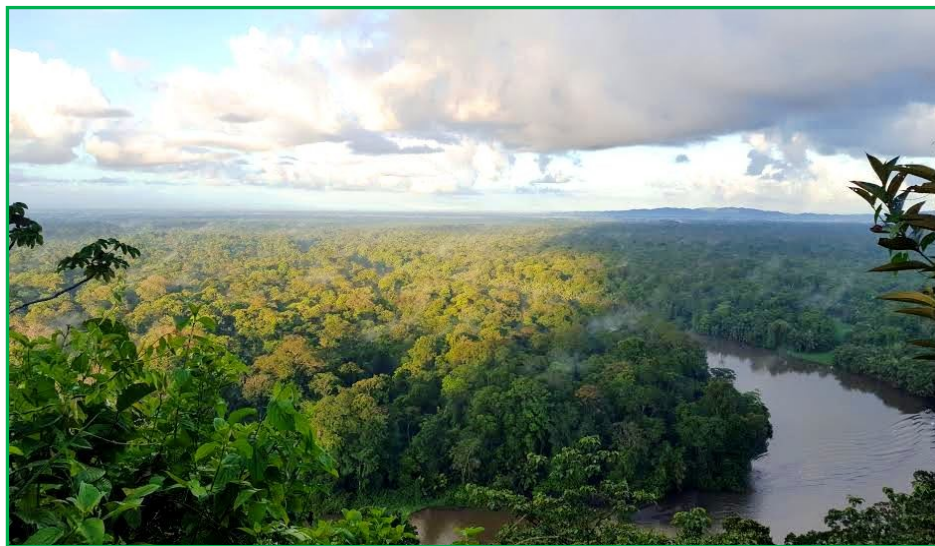
The first time I saw a green was just after sunrise on a

Friday morning in late February. Our team had just hiked up the Cerro Tortuguero under cover of darkness to reach the vantage point for our macaw survey. At 119 m in height, the Cerro is the perfect location to view macaws as they fly over the canal and the rainforest canopy below. Their unique call combined with deafening volume makes macaws very conspicuous so they're not hard to detect during surveys. Shortly after the crew had settled on top of the Cerro, we heard the unmistakable calls of multiple macaws coming from the north. We started scanning the canopy with our binoculars, and were given our first glimpses of two greens. The brilliance of their colourful plumage as they soared over the trees was a sight I'll never forget. I'll also never forget how incredibly loud they were. Why anyone would want to put these birds in their living room is beyond me. After four hours and a few more sightings, we descended the Cerro and returned to the station. Our first survey was a success, and I was officially hooked on watching these birds - which was a good thing because I was scheduled almost exclusively on macaw surveys for the next two weeks. Besides the many macaw

observations, additional highlights during the surveys included spectacular views of a king vulture, and also a (harmless) assault on my head by a territorial laughing falcon.

Overall, I really enjoyed my time assisting with the macaw surveys and I

encourage anyone who is interested to volunteer at Caño Palma Biological Station. The macaw project provides valuable data on the distribution and abundance of these large and long-lived bird species. I would like to thank CPBS for allowing me to assist with this research project. I hope to return to the station for years to come!



Station Happenings

Taken from Research Coordinator Anna Harris's reports

February

Great green macaws – Due to nesting season being in full swing, sightings were down this month to 160. Most sightings - 50 - were at the station.

Snake Survey – A large fer-de-lance was recaptured this month. It measured in at 1.6 m, growth of just 5 cm since it was originally captured and tagged in July 2016.

Clement Lalait – This Masters candidate from France arrived at Caño Palma to do research in the Archie Carr Refuge. He'll be collecting baseline data on forest composition, mammals, and tent-making bats. As well, he'll use the station's data on mammals and plant-phenology to recommend tree species that can influence the presence of mammals when the trees are fruiting. His recommendations will contribute to restoration efforts in the Refuge.

March

Surveys – With improving weather and a base filled with people, just about all surveys were able to be completed this month.

Great green macaws – As in February, numbers were low due to ongoing nesting activity - that means the greens are spending more time attending to their nests and less time foraging.

Helen Pheasey – Helen, a many-time visitor to Caño Palma, is working on her PhD dissertation by conducting interviews in both San Francisco and Tortuguero to learn more about the illegal poaching of turtle eggs.

April

Snake survey – Though Allen's coral snake had the most captures this month, the most impressive finding was another fer-de-lance. This individual measured in at 2 m.

Turtle interns – Saying goodbye to the station were Caylee Van Greison (Missouri) and Neina Chapa (Florida). Caylee is going back home to an internship at a shorebird rehabilitation center while Neina has accepted a position working with salmon in Oregon.

Laura Tilleman – As discussed in the past two issues of *Raphia*, plastics in our oceans are an ever-increasing problem. The recent efforts to collect marine debris along Playa Norte as featured on our Facebook page and in *Raphia* confirm this. Laura, from HAS University in the Netherlands, will be doing research into microplastics as found in sand collected from nest sites during the entire 2017 sea-turtle season. From the sand samples, she will try to determine if the concentration of microplastics in the sand at nest sites influences nesting success.

In otter news (ha ha), three otters were observed in the canals of Tortuguero National Park – typically a place where we find little scat. For reasons as yet unknown, otter detections have increased on this transect in the last two months. Meanwhile, our teams came across 117 scats and 5 anal jellies at 59 sites on our otter transects.

May

Ian Mariott – From the University of Kent in England, Ian is working on a Masters by doing turtle research out there on the beach. He's comparing air temperatures to incubation times in nests.

Great green macaws – After 3 months of low numbers, great green macaws were back with 596 sightings in May. The end of breeding season is likely the reason for the higher numbers. Though Archie Carr Reserve had the most sightings at 149, Tortuguero National Park had 15 sightings per survey for the highest average.



Royal flycatcher (above) and chestnut-backed antbird mist-netted for banding project



June

Precip – A very rainy month, but it didn't deter our team who carried out all but a couple of snake surveys.

Great green macaws — The number of greens exploded this month with 1613 sightings. This number is quite large, perhaps the highest monthly number of sightings we've had. Of course, we have to remember that this isn't the number of individual birds that are inhabiting this region as the same birds could be seen many times. Per survey, Archie Carr Reserve has almost 60 greens while San Francisco came in at 50.

Long-term interns – Three interns from York University arrived: Yu Liung (China) and Kateryna Zagorulko (Canada) who will be mammal interns; and Melina Damian (Venezuela) who will be concentrating on turtles.

Two turtle interns – Nick Kyner (Indiana) and Anna Tomczyk (Massachusetts) – will be at the station for 6-weeks.

Departing were Irune Maguregui Martin (Venezuela) and Kyle Gortens (Netherlands) after 3-month stays. Thomas Hourquet (France) spent 2 months at the station. And turtle interns Lyndsey Stirling (Scotland) and Ian Marriott (UK) ended their 6-week stays.

Lastly, Molly McCargar is back for the summer to collect more samples for her PhD project.

MINAE -- Preparing for Climate Change by Anna Harris

In May, the Costa Rican Ministry of the Environment (MINAE) hosted a meeting in Guapiles to discuss their climate-change plan for Tortuguero National Park (TNP). I represented COTERC alongside several other NGOs **. MINAE had representatives from TNP and from their headquarters.

MINAE started the meeting by introducing their proposed plan and its main objectives. We then worked in groups to prioritize their proposed actions and to provide advice as to how their goals can be achieved. Overall, when it comes to climate change, they prefer an ecosystem approach rather than focusing on single species. A highlight was their assessment of the vulnerability of various species and ecosystems to climate change in order to determine how they will react to the inevitable. Rather than focusing on preventing climate change, their plan focuses more on how we can help species and ecosystems combat the changes that are coming.

The plan includes areas of research that require attention as well as direct actions that need to be taken. Areas requiring more research include examining sedimentation in rivers, determining ecosystem function, evaluating and preventing beach erosion, identifying and protecting fragile habitat zones, assessing fish assemblages, and, as previously mentioned, assessing the vulnerability of specific species to climate change. Once data on these topics are collected, MINAE can create management plans for each field of research. As of now, it's uncertain who will conduct the research, but inviting the NGOs to the meeting not only provides MINAE valuable feedback from the research sector, but also allows us to think about potential future projects we could conduct to assist with their climate-change plans. Some of the direct actions discussed in their plan include controlling boat velocity, decreasing beach erosion, reforesting beaches with native plants, and replacing white lights with red lights on the beaches.

The next step for MINAE is to take the feedback from the meeting and apply it to their climate-change plan. The next step for us at the station is to develop new projects or adapt current projects to aid in MINAE's climate-change plan.

** Other organizations attending:

- The Sea Turtle Conservancy (STC)
- Global Vision International (GVI)
- the Association of Volunteers for Service in Protected Areas (ASVO).

Notes from the Chair by Kym Snarr



Spring – the traditional season of renewal and rejuvenation. And so it was for COTERC. Fresh from our countryside winter retreat, the Board has been working on understanding what we do as a charity as well as how we are managing our work and how we can implement new ideas.

Overall, most Board members are continuing in their roles, using experience gained over the years to help guide where COTERC and Caño Palma

Biological Station are headed. However renewal often means change, and sadly we are losing Megan Joyce, Director of Special Events, who has stepped down as she heads off to Montreal to begin her Masters! She originally came to us in the York International Internship Program and excelled as an intern at the station. She completed her degree at York and worked with a non-profit in Toronto while planning out her next academic move - thank you Megan for all of your hard work with Fiesta Verde and contributions to various areas on the Board! On the other hand, we happily welcome a Board Steve Gillis who will continue to aid in writing grant proposals for us. This helps to strengthen our ability to raise capital for much-needed infrastructure at CPBS.

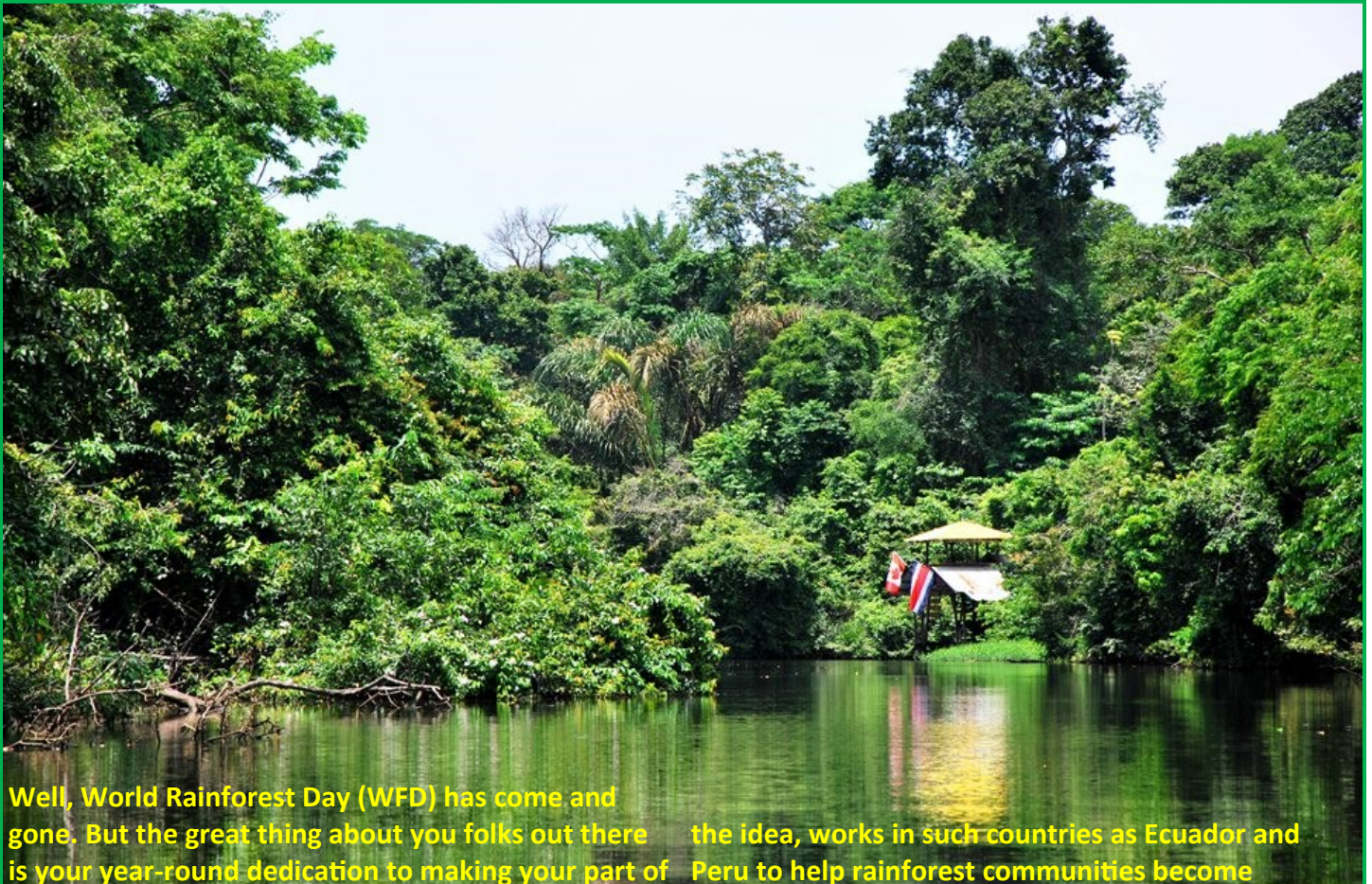
With the decision to use Save-An-Acre funds towards capital projects and Save-The-Acres we already have, we released some of those funds to the station to reconstruct the dock, which is on its last legs. As well, the shower area has undergone a long-overdue renovation.

Operationally, the station has become nearly self-sustainable because of our many long-term interns and volunteers. Though small, the station is a beehive of activity as those interns and volunteers keep busy working on our eleven long-term monitoring programs (see: <http://www.coterc.org/long-term-monitoring.html>) as well as the other shorter-term research projects. Leadership at the station has been stable for some time now, as Charlotte and Manuel have improved conditions so that the station is more accommodating to the various international individuals and organizations that arrive. The Research Coordinator continues to work on delivering reports to the various Costa Rican agencies

Over the past few months, we have been updating our website to highlight listings for our long-term monitoring programs plus the annual turtle reports. In the near future, we hope to have the balance of publications uploaded. By using the website as a repository of all research that goes on at the station, the Board is a working board with various scientists in differing positions who are helping to direct the science programs taking place at the station. (To check out the various publications, go to: <http://www.coterc.org/all-resources---by-year.html> and scroll down to review chronologically by the year of publication.) Expect further updates soon as we upload recent publications on a timelier basis! In aiding us with these updates, we welcome back Jim Taylor, a former long-term Board member.

As COTERC moves forward, renewed in its energy in delivering sound science to local, national and international audiences on the biodiversity in our region, the Board continues to question its role and current work against its original mission and its original name. Currently, we're formulating a way forward with the development of a strategic-plan process as well as a potential renewal of the mission statement, and possibly a new name. In the near future, we may be calling on former board members, station visitors, staff, researchers and volunteers in the Canadian office to help in this process. If you are interested in working with us in this effort, feel free to contact me directly at chair@coterc.org. And if you are interested in being on the Board or want to assist a Board member as a volunteer, please contact me at chair@coterc.org. I wish all of you a safe and productive summer and hope to hear from you personally about what you can do or your views on the way forward for COTERC.

World Rainforest Day -- Afterword



Well, World Rainforest Day (WFD) has come and gone. But the great thing about you folks out there is your year-round dedication to making your part of the world more knowledgeable about the value of rainforests.

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But some people went the extra mile on June 22nd. Over 50,000 Australian students signed a petition that, if passed by the country's legislature, would force companies to transparently label products that contain palm oil, an additive that has devastated rainforest habitats where such endangered species as orangutans live. We can educate people all we want on the problems with buying products that contain palm oil. However it's so cheap and useful that manufacturers will use any name they legally can in order to avoid mentioning "palm oil" in the ingredient list. So good luck to those young Aussies.

World Rainforest Day is only in its second year. Rainforest Partnership, the group that came up with

the idea, works in such countries as Ecuador and Peru to help rainforest communities become

economically self-sufficient without having to resort to deforestation. In North America, they focus on spreading the word about the role of rainforests.

COTERC and Caño Palma are happy to partner with the Rainforest Partnership in creating awareness about rainforests. You can go to <https://rainforestpartnership.org/rainforest-facts/> to learn more.

"Rainforests are vital for the survival of life on Earth. We depend on them for 20% of the oxygen we breathe and the freshwater we drink. They absorb our carbon dioxide, stabilize climate patterns, and are home to half the world's plant and animal species."

Petition Update -- Takin' it to the Streets

Our friends and neighbors took to the streets of San Jose to protest the proposed construction of a road into Tortuguero National Park.

The arguments around this issue have raged for years, and the conservation minded are hoping to raise enough attention to the issue that it can be discarded once and for all.

We're proud of everyone who made it to the capital to protest!



If you haven't signed the petition as yet, you can go to:

<https://www.facebook.com/station.canopalma?ref=ts>

Scroll down to the April 4th posting titled "Tienes 1 minuto..." and click on it.

Nicaragua -- Takin' it to the Streets by Doug Durno

Since mid-April, Nicaragua has been in turmoil. President Daniel Ortega continues to hold onto power, but his grasp may be slipping.

As leader of Nicaragua for 22 of the last 39 years (since 1979), you can judge how well Ortega's original Marxist economic ideas of nationalization, land reform and wealth distribution have succeeded. In that period, Nicaragua has fallen to become the second-poorest country in the Americas, ahead of only Haiti. About 30% of Nicaraguans get by on less than \$2 per day. So, when Ortega's government recently raised the amount that Nicaraguans have to contribute to social security while at the same time reducing pensions for retired workers, the country erupted in protests. While Ortega quickly backtracked and cancelled the changes, rebellion against an increasingly authoritarian government had been set in motion.

To describe the Ortega government's response to the protests, this is how the British newspaper *The Guardian* put it: "It has been brutal. At least 300 people have been killed and hundreds more injured in violence involving police firing live ammunition, backed by "shock groups" of armed paramilitaries. Disappearances, punishment beatings and kidnappings have become a frequent occurrence in Managua. Schools, universities and banks have shut their doors. One report described the country as being in "full cardiac arrest". But still the protests continue, focused on twin demands that Ortega and his wife, the vice-president, Rosario Murillo, step down, and that early elections be held. The government says Sandinista supporters have been targeted by demonstrators, too."

A Civic Alliance of university students, business people, peasants and the general public has been formed and has been negotiating with the government. In addition to early elections (Ortega's present term is supposed to end in 2021), they want political reforms that would move the country away from the increasing authoritarianism.

As a result of the turmoil, the economy has been hurt badly as businesses have to close. Tourism, a large provider of jobs and dollars, has been reduced to almost nothing.

BREAKING - In the days leading up to our issue date, a nationwide strike emptied streets, and 10 more people were killed by police and paramilitary forces. Ironically, some of those killings occurred in Masaya, the town where Ortega's guerrillas launched their final assault on the dictatorship of Anastasio Somoza in 1979.

Background on President Ortega

After placing second in two consecutive elections (1990, 1996), Ortega and his Sandinista party schemed to win back power.

- In 2000, the National Assembly approved a constitutional change that reduced from 45% to 35% the minimum of votes needed to win the presidential election outright without a runoff. This was an agreement between then-president Arnoldo Alemán of the Liberal Constitutional Party (LCP) and Ortega, the Sandinista opposition leader. With Ortega's support in the 35 to 40% range in the elections he lost (including another in 2001), it won him the 2006 election with 38% of the vote. As well, as part of their 2000 agreement, the Sandinistas and the LCP divided up seats on the Supreme Court and the powerful Electoral Commission, which led to their politicization.
- Starting in 2007, Ortega's party, the Sandinistas, eventually received over \$3 billion from Venezuela. Controlled by a private company, this means how the funds are used is hidden from the public. Such lack of transparency can only make one suspect some sort of shenanigans is taking place.
- In the 2008 municipal elections, the Sandinista-controlled Supreme Court disqualified two opposition parties. As well, the Sandinista-controlled Electoral Council wouldn't allow international observers. The election was marred by intimidation, violence, harassment of opposition party members, and fraud, which the Council mainly refused to investigate.
- In 2010, the Sandinista-controlled Supreme Court lifted the ban on consecutive presidential re-election, allowing Ortega to run again in 2011.
- Ortega won the 2011 election handily though there were plenty of charges of electoral fraud.
- In 2014, Congress amended the constitution so that there were no longer term limits, allowing Ortega to run for the presidency indefinitely.
- In 2016, the Sandinista-controlled Supreme Court sacked the opposition leader weeks before the election, leaving Ortega with no opponent with a chance of winning. With his wife Rosario Murillo as his vice-presidential running mate, they won a landslide victory.

One Million Reptiles Killed Every Day By Feral Cats in Oz

Agence France-Presse – June 25, 2018 - Feral cats kill more than one million reptiles every day in Australia, a new study showed Monday, with the staggering slaughter threatening many species.

Cats have wiped out entire populations of some animals in Australia since being introduced by Europeans settlers two centuries ago, with efforts to cull or sterilize them so far failing to slow their march. In total, around 650 million lizards and snakes fall victim to feral and pet cats annually, they found.

"On average each feral cat kills 225 reptiles per year," said lead researcher John Woinarski, from Charles Darwin University, adding that feral cats consume more reptiles in Australia than in the United States or Europe.

"Some cats eat staggering numbers of reptiles. We found many examples of single cats bingeing on lizards, with a record of 40 individual lizards in a single cat stomach."

The study, published in the journal Wildlife Research, showed cats were killing 250 different types of reptile -- including great desert skinks, bearded dragons and geckos. Of these, 11 are threatened species.

Feral cats in Australia number in the millions, and are also considered the main culprit behind the country's high rate of mammal extinction.

Research by the same team last year showed cats were killing more than one million birds in Australia each day, including threatened species like the spotted quail thrush, the squatter pigeon, and the night parrot.

The government has earmarked more than Aus\$30 million (US\$23 million) for projects to reduce the impact of feral cats on wildlife.

The Australian Wildlife Conservancy last month finished a 44-kilometre (27-mile) long electrified fence to create a cat-free zone of almost 9,400 hectares (23,200 acres) in the desert.

The area will be extended to around 100,000 hectares and will allow native animals that have been pushed to the brink of extinction by the predator to be reintroduced.

Still We Keep Burning Down Forests

Oslo, June 27 (Reuters) - Burning of forests to make way for farms from the Amazon to the Congo basin caused a loss of global tree cover amounting to an area almost the size of Italy in 2017, an independent forest monitoring network said on Wednesday.

Tree cover loss, mostly in the tropics, totaled 294,000 square kilometres (113,000 square miles) last year, just short of a record 297,000 sq kms in 2016, according to Global Forest Watch, run by the U.S.-based World Resources Institute (WRI).

"Tropical forests were lost at a rate equivalent to 40 football fields per minute" in 2017, Frances Seymour, of the WRI, said.

Brazil, Democratic Republic of Congo, Indonesia, Madagascar and Malaysia suffered the biggest losses in 2017, it said, based on satellite data. The study omits, however, how far tree plantings or new growth offset the losses. "Vast areas continue to be cleared for soy, beef, palm oil and other globally traded commodities. Much of this clearing is illegal," Seymour said. "We are trying to put out a housefire with a teaspoon," she said of global efforts to protect forests.

Brazil alone lost 45,000 sq km of tree cover, down 16 percent from a record in 2016. Fires raged in the southern Amazon region of Brazil, many of them set to clear land for agriculture, the study said.

Many nations are trying to plant more forests to achieve goals under the 200-nation Paris climate agreement in 2015 to limit a rise in temperatures. Trees soak up carbon dioxide from the atmosphere as they grow.

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<https://www.canadahelps.org/en/donate/>

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Whether the amount is \$5 or whatever, your donation is greatly appreciated - and Canada Helps issues a tax receipt directly to you.



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