GALAPAGOS NEWS

Spring-Summer 2019

TORTOISE FOUND on FERNANDINA!

and our $50,000 Challenge Fund
to fund another Fernandina Tortoise Expedition

URBANIZATION in Galapagos

Searching for Shark Nurseries

New Book:
GALAPAGOS *Revealed*:
Finding the Places Most People Miss

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Tortoise Population Census

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2019 Photo Contest is OPEN:
Submissions due 7/22/19!

Galapagos Conservancy
Saving One of the World's Great Treasures

www.galapagos.org

FROM THE

PRESIDENT

Johannah Barry

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Cover Image One of the very first photos taken of the tortoise found on Fernandina Island in February 2019. © GNPD

Reading the articles in this edition of *Galapagos News*, I am struck by the resilience of this extraordinary place. Visited (accidentally) by Tomas de Berlanga, Bishop of Panama in 1535, the islands enjoyed their anonymity until the growth of tourism and the accompanying increase in a resident population starting in the mid-1980s.

This issue of *Galapagos News* explores the impact of a growing human population and some unintended consequences. Author Kiyoko Gotanda examines the changing foraging and dietary habits of the iconic Galapagos finches. Becoming accustomed to eating an array of human food (cookies and French fries being of particular interest), finches are developing beak shapes and sizes to accommodate their new diets. The consequences of dietary changes are being examined by an international team of scientists who will continue to monitor this issue.

Another iconic Galapagos creature, the giant tortoise, is also experiencing unfortunate, and in one case — deadly, interactions with residents. With their regular migratory paths in the Santa Cruz highlands now being impacted by human barriers — fences and highways being the most significant — tortoises are finding themselves on roadways and farms where they are scavenging in garbage dumps and, in one rare incident, being bitten by a dog. Understanding these historic migratory paths and working with the resident population to change or mitigate the impacts of infrastructure on these routes will be immensely helpful to not only the Santa Cruz tortoises, but to tortoise populations on all the inhabited islands.

We read in Lauren Goodman's article that there are still mysteries being solved in Galapagos. Her lively report on blacktip shark nurseries is an exciting discovery and will be a boon to shark populations in the Galapagos Marine Reserve. And we are reminded, in Linda Cayot's touching farewell, that Galapagos, while changing, still has the power to enchant and transform us.

We are honored to share Wacho Tapia's thoughts upon discovering the miracle tortoise gracing the cover of this newsletter, while also reporting on the other recent successes of our Giant Tortoise Restoration Initiative team.

As always, our thanks to the dedicated scientists who work tirelessly to protect and preserve this archipelago and its extraordinary flora and fauna. And our thanks to you, our readers and supporters, for your enduring faith in our efforts.

Galapagos Conservancy
Saving One of the World's Great Treasures

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GALAPAGOS CONSERVANCY MEMBERSHIP

GALAPAGOS CONSERVANCY STANDARD MEMBERSHIP

Thanks to all of our members who make our work possible. We could not preserve, protect, and restore the Galapagos Islands without your generosity and commitment to conservation. Our annual membership levels are as follows:

Friend:	**$25**	**Advocate:**	**$250**
Family:	**$50**	**Protector:**	**$500**
Supporter:	**$100**		

GALAPAGOS AMBASSADOR SOCIETY

With your gift of $1,000 or more (or cumulative annual giving of $1,000), we will welcome you to the Galapagos Ambassador Society. Many of our Galapagos Ambassadors are often willing to become closely and regularly involved in our programs. Ambassadors receive special updates and briefings; invitations to attend special member events; recognition in the GC Annual Report; and a special Ambassador welcome gift.

Española Society:	**$1,000 to $4,999**
Santiago Society:	**$5,000 to $9,999**
Fernandina Society:	**$10,000 to $24,999**
Isabela Society:	**$25,000 and up**

GALAPAGOS GUARDIANS SOCIETY - Monthly giving

Galapagos Guardian Society members give recurring monthly contributions that are charged automatically to a credit card. These members help us reduce our fundraising costs because we do not send them annual membership renewal notices for the duration of their support. This is an easy and secure way to provide GC with ongoing funds that we can use to address the most critical conservation challenges in Galapagos.

To join, please see the mail-in form to the right or join online at **www.galapagos.org/monthly** or call **703-383-0077**.

Does your employer
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made by their employees?

Please check with your employer, as you could double, triple, or even quadruple your impact on Galapagos Conservancy's efforts.

GC's EIN # is 13-3281486.

The tortoises thank you.

$50,000 CHALLENGE FUND for the FERNANDINA TORTOISE EXPEDITION

A great friend and long-time supporter of Galapagos Conservancy has committed $50,000 to fund the expedition to search Fernandina Island for more tortoises (see story on pages 12 and 18!). He has challenged our members to match his commitment by August 31, 2019. We hope you'll help us reach this goal!

❑ **YES!** I want to support the Fernandina Expedition!

Member Name(s): _____

_____

Address: _____

_____

City, State, Zip: _____

_____

Email: _____

❑ My check is enclosed.

Or, please charge my:

❑ Visa ❑ AMEX ❑ Mastercard ❑ Discover

Name on Card:

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Card Number: _____

Expiration Date: _____ CVV #: _____

Signature: _____

Donation Amount: $ _____

❑ I'd like to make this gift a monthly gift and become a member of the Galapagos Guardians Society. By checking this box, I agree to have my credit card charged once a month for the amount indicated above ($10 minimum).

Questions?
Email: member@galapagos.org
Cut out, use centerfold envelope, or mail this form to:

Galapagos Conservancy
2019 $50,000 Fernandina Challenge Fund
11150 Fairfax Blvd. Suite 408
Fairfax, VA 22030 USA

To make your gift online, visit:
www.galapagos.org/challengefund2019

*All gifts will be applied to the Challenge Fund through 8/31/19.

(B19FMATCH)

GALAPAGOS NEWS

LAND IGUANA REINTRODUCTION

Until this year, Galapagos land iguanas have not been seen on Santiago Island since 1838. The species had been classified as "locally extinct" on the island due to the destruction caused by invasive species such as feral pigs and goats, which were eradicated in 2001.

In January 2019, the Galapagos National Park Directorate (GNPD) and Island Conservation reintroduced 1,436 Galapagos land iguanas to the island as part of an effort to restore the island's habitat. The iguanas were sourced from the small island of North Seymour, where there were more than 5,000 individuals. This population had become too large for that island, where food was becoming scarce, so the removal of these individuals should also enable the remaining iguanas to thrive.

With support from Galapagos Conservancy, the GNPD and scientists from Massey University will monitor the transplanted population for two years to ensure that the animals thrive in their new home. Through consistent monitoring, the team will look for the success of establishment of iguanas on the island (adaptability), reproduction (identification of nests), and verification of biomass — which includes the identification of the iguanas' favorite plants to eat, collection of survival data, and other key observations.

Danny Rueda, Director of Ecosystems for the GNPD, explained, "The land iguana is an herbivore that helps ecosystems by dispersing seeds and maintaining open spaces without vegetation." The GNPD will also establish a permanent management program for introduced species, such as ants and rodents, to protect future nesting areas of land iguanas in Santiago.


© Island Conservation

LONESOME GEORGE GENOME REVEALS SECRETS of LONG LIFE


© GNPD

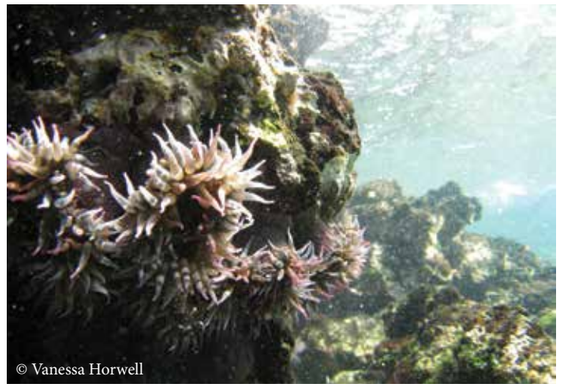
An international team of researchers, including from the Galapagos National Park, have analyzed the genome of Lonesome George, the last Pinta Island giant tortoise, alongside DNA from the Aldabra giant tortoise, which is found in the Seychelles in the Indian Ocean. The study, published in *Nature Ecology and Evolution* in December of 2018, is important for the tortoise conservation team in Galapagos as it may inform decision-making around restoring populations of different Galapagos giant tortoises, especially on islands where they are now extinct, such as Floreana.

The study revealed insights into the genetic variants behind the long lifespans of giant tortoises, including their ability to repair their DNA, control inflammation, and maintain their robust immune systems, which may include cancer resistance. These factors could help explain how some giant tortoises have been known to live for nearly two centuries.


© GNPD

CORAL REEF RESEARCH

Since the 1982-83 El Niño event, coral reefs in Galapagos have been virtually nonexistent with more than 95% lost across the Archipelago. A recent study by Peter Glynn and his colleagues, published in *Marine Pollution Bulletin*, looked at the past, present, and future state of coral reefs in Galapagos. They found that some sites are undergoing recovery, including those reefs found off the coast of Floreana, Marchena, Darwin, and Wolf Islands, with the central and northern island sites recovering most rapidly. It was noted that the greatest potential threats to the recovery of the coral populations include ongoing ocean warming and acidification, erosion of the reefs by animals and other organisms, disease, human population growth, overfishing, invasive species, pollution, and habitat destruction. Due to the diverse nature of these threats, the study concluded that there will be ongoing local and Archipelago-wide mortality and destruction of the coral reef system in Galapagos.


© Vanessa Horwell

NEW HAMMERHEAD SHARK BREEDING AREA FOUND

A new breeding area for scalloped hammerhead sharks (*Sphyrna lewini*) was discovered in the coastal area of Santa Cruz Island during a recent monitoring expedition of juvenile sharks and sea turtles organized by the Galapagos National Park Directorate (GNPD).

Eduardo Espinoza, the park ranger leading the expedition, commented, "Approximately 20 hammerheads, between neonates and juveniles, were counted in this area. Five of them were fitted with internal and external identification devices for follow-up and further studies, with the goal to help this species to recover through management actions and measures to protect these ecosystems."

According to the International Union for Conservation of Nature's Red List of Threatened Species, scalloped hammerhead sharks are *Endangered* due to their slow growth, low reproductive capacity, and mass over-fishing. Their populations have declined by more than 90% worldwide. (See related story on pages 6-7.)

FIREWORKS BAN IN GALAPAGOS

Just before New Year's Eve last year, the local governing council in Galapagos unanimously approved a resolution prohibiting "the importation, sale, distribution, and use of fireworks or pyrotechnics in the Galapagos province." Fireworks that produce light but no noise were excluded from the ban.

The measure was passed with the intention of protecting the Archipelago's wildlife; according to the local council, "ecosystems as sensitive as the Galapagos Islands are affected (by fireworks), principally its unique fauna." Animals have been found to experience elevated heart rates, nervous stress and anxiety from fireworks, which may change their behavior and ultimately impact their survival.

The local council also wants to avoid potential pollution of water sources and deterioration in air quality caused by fireworks by implementing the ban. A campaign to limit the use of fireworks on the Galapagos Islands was first launched in 2017.

RANGERS RELEASE HATCHLINGS FROM NATURAL NESTS

Galapagos National Park rangers helped to release more than 40 tortoise hatchlings, or "galapaguitos," from their natural nests between December of last year and the first half of January 2019.

Rangers have been monitoring 624 nests in the five natural nesting areas of Santa Cruz Island since December, where they dug and released hatchlings that were trapped in the mud caused by recent rains and unable to leave their nest. Rangers also counted any eggs that did not hatch.

These activities are complemented by the protection of natural tortoise nests against invasive species such as ants, felines, and feral pigs.


© GNPD

SEARCHING FOR SHARK NURSERIES

by **Lauren Goodman**, *Graduate Researcher from UNC Chapel Hill*

Picture this. You are out in the field with a birds-eye view of a completely clear lagoon, waters the color of turquoise and white sandy bottoms. Then, all of a sudden, you see it: sharks, and not just any sharks. *Baby sharks.*

While I'd like to say that this is how my first spotting of a juvenile blacktip shark went, that would be a complete lie. In all reality, I didn't notice the first baby shark in any of my drone footage until three, I repeat, three days later. It turns out that when you are so concentrated on capturing a specific area within the drone footage, you forget to actually look for sharks. But the moment I noticed the movement of juvenile blacktip sharks in my footage, it was a day of celebration. I vividly remember jumping up onto the chair I was sitting on and yelling so loudly it startled everyone else on the research vessel.

It was the perfect way to find out my ideas were finally panning out the way I had hoped they would. As it turns out, the drone does a great job of capturing sharks on video. Now, flying the drone has just become routine. The day before a survey, I pull out all the equipment that I plan on taking to the field with me. I fully charge the batteries and remote control, make sure all software is updated, and pack it all up in a waterproof case for the boat ride.

Why is my work important? While Galapagos is well-known for its diverse marine life, the Islands are most famous for the high density of sharks located within their waters. One of the more commonly encountered sharks around the Islands is the blacktip shark. This particular species is known to give birth to babies in nearshore habitats around the Galapagos Marine Reserve (GMR). The babies then use these areas during their first year of life, much like a nursery room for our own newborns. Some of the nearshore habitats have already been studied and these same areas are likely habitats for multiple different juvenile marine species. This research falls under a broader effort to understand multiple shark populations in the GMR.

The potential nursery areas are particularly important because they likely contribute more sharks to the adult shark population than other habitats. This matters because a large and healthy shark population has multiple benefits, such as increased marine tourism and regulation of smaller fish populations. Thus, to understand shark populations, we need to study their densities. A drone may more accurately capture shark densities in these areas. Additionally, the fact that drones have the capability to conduct small-scale surveys of large animals at a much lower price than traditional methods has also caught on in the conservation management field.

> "The babies use these areas during their first year of life, much like a nursery room."

The methodology for our studies is quite simple. At each site we fly a predefined path, filming video with the drone. These flights include areas that we currently believe may be baby shark habitats and areas where we don't expect to find any sharks.

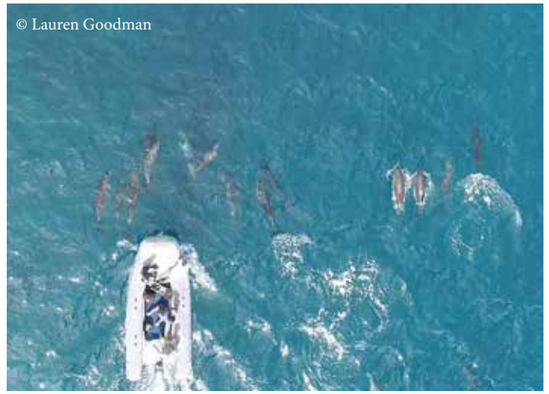
When the drone flight is complete, a large gillnet (a fishing net with buoys on top that move when something is caught) is thrown into the water and the area of interest is blocked off for an hour. During this time if sharks are caught in the net, they are captured, tagged, and health measurements are taken. The number of sharks caught in the net within one hour is then compared to the number captured on video by the drone. This requires multiple people to watch the drone footage and independently count the number of baby blacktip sharks in each site per month. A ranked system measuring shark abundance across sites using both survey methods will allow us to determine which sites have the highest abundance of baby sharks and how each method compares within and across sites.

While simple, this research is incredibly important to better understand where these baby sharks are and what the best way to measure their abundance is. Additionally, drone surveys may prove more efficient and less invasive than the traditional methods used to understand abundance of baby sharks.

Through this research, I hope to influence the expansion and protection of essential fish habitats and shark nurseries around the Archipelago. While previous survey methods have worked, it is my hope that drone applications will become the quicker, safer, and cheaper method to search for shark nurseries.

Although this pilot survey is largely focused on one island, San Cristóbal, there is potential for expansion if we prove that drone surveys are more efficient than traditional methods.

This technology could, ultimately, be used to increase the protection of nursery areas and ensure the blacktip shark population in Galapagos is conserved. Additionally, it will likely extend to multiple species of sharks, such as the scalloped hammerhead. And who knows? Maybe population surveys of different species can be improved upon through the use of drones. ■



Opposite page: A large number of juvenile blacktip sharks in a semi-enclosed area within the survey site at Punta Albemarle, Isabela. How many sharks can you count?

Above: The drone also captured images of other marine fauna such as bottlenose dolphins (left) and Galapagos sharks (right).

Right: The drone used in the surveys.

AUTHOR

A second year graduate student at UNC Chapel Hill, **Lauren Goodman (left)** is interested in drone technology in the marine environment. Originally from the landlocked state of Oklahoma, she never imagined that her science career would take her to the ocean, let alone the Galapagos Archipelago. Now the Islands have become where she lives and works.

DARWIN's FINCHES... and URBANIZATION


©Kiyoko Gotanda

by **Kiyoko Gotanda**, *Behavioral Ecologist at the University of Cambridge*

In Puerto Ayora you can find Darwin's finches everywhere — by the water, at the kiosks (open-air food stalls), and at the dock. If you happen to leave some food out at a restaurant, the finches are quick to notice and swoop in for a quick meal before the plates are cleared.

Urbanization has been increasing globally in recent decades, with more than half the world's population residing in urban areas. For animals, urbanization can change patterns of selection and adaptation, even on remote islands such as the Galapagos Archipelago. On Galapagos, four islands have permanent human populations. The animals found there are already renowned for their naivety, how close you can approach them and, now, they seem to be in search of some tasty tidbits of food you might leave behind. On the mainland and elsewhere, one might normally think pigeons or gulls to be the main scavengers of human food, but on Galapagos, it appears that Darwin's finches are taking advantage of the abundance of human food available in town.

So why is this important? Darwin's finches are an iconic example of adaptive radiation. Today, we have several species of Darwin's finch that have evolved from a common ancestor that came from mainland South America about two million years ago. Each species of Darwin's finch has adapted to consume specific food resources that the other species have a much harder time eating. For example, the cactus finch has a long, thin beak that allows it to reach the centers of cactus flowers to drink nectar. In other words, there is a strong link between the diversity of foods naturally found on the Archipelago and the different shapes and sizes of finch beaks.

Recently, we discovered that the size and shape of the medium ground finch's beak has changed. We think the increase in the size of Puerto Ayora, the largest town on Galapagos, might have something to do with it. With an increase in human population comes an increase in human foods, such as crisps, biscuits, and bread. The selection that once shaped the different beak shapes and sizes may no longer be present when there is such a varied diet available.

> "With an increase in human population comes an increase in human foods, such as crisps, biscuits, and bread."

We set out to put this idea to the test. We wanted to find out what the finches in town are eating compared to finches in nonurban areas, and do finches in urban areas prefer human foods? Earthwatch sent teams of volunteers and supported us financially, both of which proved invaluable.

We selected four different sites that varied in the degree of urbanization and the number of tourists. Two were located at El Garrapatero, located 10km from the nearest town. One area was not frequented by tourists and the second was often frequented by tourists who have picnics. Our third site was Academy Bay which is adjacent to the major town of Puerto Ayora and our last site was Puerto Ayora itself. We undertook observations of what food each finch was consuming, as well as conducted a cafeteria-style choice experiment where finches were presented with seeds from three local plants, and three human foods (crisps, biscuits, and rice).

Our results showed that finches are eating different things depending on where they live. Finches in Puerto Ayora were observed consuming mostly human foods, while finches at the non-tourist part of El Garrapatero were observed consuming mostly local foods. At Academy Bay, finches did feed on the local seeds, but were also observed consuming human foods as well as drinking water from broken pipes. We also found, when given a choice, finches in the urban site and tourist sites would much rather eat human foods than natural foods.

Our results are interesting because they show that human behavior can have consequences beyond what we observe in urban areas. Human food consumption on the beaches has resulted in finches at a beach, kilometers away from an urban center, developing a taste and preference for human foods. Essentially, humans are changing how Darwin's finches interact with different resources, which may be changing the evolution of Darwin's finches. We are continuing our research to further tease apart the direct and indirect consequences of humans and urbanization on Darwin's finches, so stay tuned!

Left and above: Darwin's finches feed on a range of natural foods including seeds, fruits, and insects — even those found on marine iguanas! (All images © Kiyoko Gotanda)

AUTHOR

Kiyoko Gotanda is a Natural Sciences and Engineering Research Council of Canada Banting Postdoctoral Fellow in the Behavioral Ecology Group at the Department of Zoology, University of Cambridge, as well as a Clare Hall Research Fellow in the Sciences. Her research focuses on the intersection of evolution, ecology, and behavior.

This research was carried out by an international team of scientists from the United States (University of Massachusetts, Boston and Amherst), Canada (McGill University), Norway (Nord University), England (University of Cambridge) and Ecuador (Universidad San Francisco de Quito).

Left: The non-tourist site at El Garrapatero, where the only humans who occasionally visit are scientists.

Right: Earthwatch volunteers prepare a trial of the cafeteria experiment. These experiments helped us determine if and where Darwin's finches preferred human foods.

© Luiz Bunger

URBANIZATON *elsewhere* IN GALAPAGOS

by **Clare Simm** *of the Galapagos Conservation Trust*

Increasing urbanization is a well-documented threat to biodiversity globally. Urban areas support fewer species, roads and walls act as barriers to animals, and there is increasing human-wildlife conflict as they come into contact with each other more often.

It might seem surprising that urbanization is having an effect on the wildlife of Galapagos – after all, 97% of the land is designated as Galapagos National Park (GNP) and therefore nobody lives there. With an increasing human population on the Islands, however, it follows that there will be increasing interactions with the unique species found there. The GNP is taking action against detrimental human behaviors. In late 2018, for example, they banned fireworks across the Archipelago as they were causing stress for a wide range of species, including Galapagos sea lions.

Galapagos giant tortoises migrate long distances to ensure that they can use the best foraging and nesting sites. These migration routes on Santa Cruz now regularly cross agricultural lands and roads, bringing them into conflict with both traffic and farmers. Farmers often protect their crops from tortoises by erecting fences, which disrupt their migratory routes. There is also increasing human-wildlife conflict in the towns. Eyewitnesses now regularly see tortoises on the side of the main highway between Puerto Ayora and Baltra, and have reported at least one tortoise being hit and killed by a vehicle. There was an incident where a tortoise was bitten and injured by a dog in El Mirador (part of Puerto Ayora), and tortoises have also been seen scavenging in trash disposal areas. The Galapagos Tortoise Movement Ecology Program is working with farmers and other local residents to solve these issues and to inform future land management plans on the island.

With a growing number of land-based tourists, there are more taxi boats and day trips occurring around the inhabited islands in Galapagos. Around Isabela, which is home to the largest Galapagos green turtle nesting site, there could be an increase in the number of turtles hit by boats, especially pregnant females who tend to swim closer to the surface, increasing their vulnerability to propellers. In a study, led by the GNP, researchers found that of 1,400 female turtles examined, 12% presented injuries that were consistent with boat strikes. This information is being used to inform management measures that will work to minimize this impact.

The most notable road in Galapagos is the highway that crosses Santa Cruz from south to north. The Charles Darwin Foundation (CDF) estimates that the number of automobiles using the highway regularly has increased from around 28 in the 1980s to more than 1,100 today. Roads fragment habitats, act as barriers to migration routes and, as we all know, are the catalyst for many wildlife road deaths. CDF and the GNP are studying the impact of the Santa Cruz highway on birds. During monthly monitoring, they collected more than 268 landbirds that had been killed by collisions with cars. The actual number is probably higher due to removal of road kill by other species such as cats and owls. Efforts are being taken on the island to make people aware of the speed limits on the roads to reduce this mortality.

There is growing awareness among locals in Galapagos, and they are taking steps to prevent the effects of urbanization on their native wildlife. Continued research is needed to ensure that these threats, such as ensuring both boat and vehicle speeds are controlled throughout the Archipelago, are taken into consideration. ■

— Book Review —

GALAPAGOS REVEALED:

Finding the Places That Most People Miss

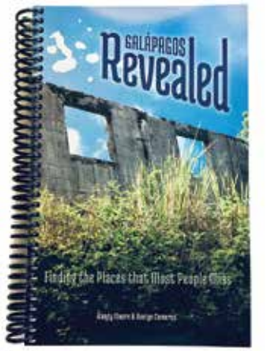
By Randy Moore and Roslyn Cameron

published by Galapagos Conservancy, 2019
ISBN 978-9942-35-566-9

© Randy Moore

Reviewed by Marylee Stephenson, PhD, author of ***The Galapagos and Ecuador: The Essential Handbook*** by Mountaineers Books, Seattle, 3rd edition, 2015.

If you are a true Galapagos fan, and have read dozens of books and articles on the Islands, a quick peek at many of the acknowledgements will come up with the name *Roslyn Cameron*. She came to the Islands in 1991, taught English for several years, then worked for the Charles Darwin Foundation and has been a mainstay of Galapagos Conservancy for the last decade. Her 30-year-knowledge of Galapagos, her key role as a liaison between scientists, tourists, and writers, as well as her connection to the Galapagos Islands communities are indeed widely acknowledged and appreciated.



For the just-published book ***Galapagos Revealed: Finding the Places that Most People Miss*** (Galapagos Conservancy, 2019), Roslyn Cameron has teamed up with renowned Distinguished Professor of Biology from the University of Minnesota, Randy Moore. A frequent visitor to the Islands for some 15 years, Randy has led countless field trips, and conducted his own vast research on evolution. (See his *Understanding Galapagos: What You'll See and What It Means* – McGraw-Hill, 2015.)

With the rich background of the two authors, *Galapagos Revealed* turns out to be a fascinating book. I have been to the Islands 11 times since 1981, yet this book took me to many new places and put into perspective many things only glanced at, like an old statue a bit off the trail I never really paused to see, much less learn about. For those wandering downtown on the "free day" from a cruise who notice something unusual and wonder who created it, why, how — Ros and Randy know the answers. Their engaging anecdotes are supported by carefully researched facts and complementary colorful photos. Each chapter has a "where it is" note with GPS coordinates that puts the whole story of "secret" Galapagos right into the hands of a visitor — whether armchair or right on that spot.

The book has 12 units, including a "How to Use this Book" introduction, and is organized by theme. For example, "Boats of Note" recounts tales from pirates to water taxis. There are "Footprints and Foundations" of buildings and artifacts, family homes, and locations of stories of sheer survival — or disaster. The authors take you to the "Modern Additions" of the main towns — Puerto Ayora and its public market, the disco downtown, and the coffee plantations in the highlands. The authors proclaim "Here Lies History," which describes the bizarre machinations of families that came here to find paradise, or the Wall of Tears built as a savage occupation for prisoners encased in the hell of incarceration on Isabela Island. Of course, there is a focus on Charles Darwin, from angles visitors may not have thought of — not only the places where he is known to have visited, but also the various monuments to him scattered here and there, why they were created, and who made them.

One of the most innovative sections is the final chapter: "Stories Without Places: The Fascinating 'Firsts' of Galapagos" with more than 200 items. Within that truly fascinating chapter are map firsts — the first English map of Galapagos, or the first capital of the Galapagos. And there are "groundbreakers" like the first crew members to leave graffiti at Tagus Cove in 1826; and who wouldn't want to know about the first course for professional taxi-drivers in 2013 (and not a moment too soon.) This chapter alone riveted me for hours.

Randy Moore's 53 color photos further enrich the written content of the book, beautifully illustrating the kitsch, humor, and sorrow of the life of Galapagos and its people and wildlife. The book itself has a very sturdy coil binding and the paper is of high quality. Ros Cameron and Randy Moore also invite readers to add any more secrets and facts to future editions. *Galapagos Revealed* is an essential snapshot of a little-known Galapagos. ■

Galapagos Revealed is available in Galapagos Conservancy's online store at **www.galapagos.org** or on **Amazon.com**.

Apologies — we can only ship to US and Canada.

GC PROJECT UPDATE

The terrain on Fernandina Island is treacherous with 60% of the surface covered in sharp a'a lava, as pictured here with the Animal Planet team. © Wacho Tapia/GTRI

The Most Unexpected Discovery of My Life

by **Wacho Tapia,** *Director of GC's Giant Tortoise Restoration Initiative*

During the 29 years I have dedicated to the conservation of the Galapagos Islands and their giant tortoises, I have had the opportunity to participate in many exciting events, including the identification and subsequent description of a new tortoise species. But the emotional high I experienced as a participant in perhaps the most important find of the century — a live tortoise on Fernandina Island — is indescribable. I know that my expedition colleagues, Galapagos National Park rangers Jeffreys Málaga, Eduardo Vilema, Roberto Ballesteros, and Simón Villamar, and the Animal Planet team led by Forrest Galante, were just as exhilarated.

Prior to this discovery, only one specimen of the Fernandina tortoise *Chelonoidis phantasticus* had ever been found — a male tortoise collected during the California Academy of Sciences expedition in 1905–06. In February 2019, we found a female tortoise that was likely alive when the other tortoise was found, some 112 years ago.

When Animal Planet contacted me in October 2018 regarding a potential trip to Fernandina to shoot an episode of the series *Extinct or Alive*, I was interested. For the last five years, we had been trying to get funding for a mega-expedition to search for giant tortoises all over the island. I indicated my interest in the endeavor, but also made it clear that the possibility of finding a tortoise was near zero.

Scientists measure the tortoise. © Wacho Tapia/GTRI

Animal Planet obtained the necessary permit from the Galapagos National Park Directorate (GNPD), and their team arrived in February 2019 for a five-day expedition to film a search for tortoises on Fernandina. We began at the site where GNPD ranger Jeffreys Málaga and Charles Darwin Foundation researcher Patricia Jaramillo found tortoise scat in 2015.

I must admit that, like most people, I had been convinced that the Fernandina tortoise was extinct until their discovery in 2015. However, when Jeffreys — a very skilled ranger and key member of the Giant Tortoise Restoration Initiative — assured me that what they found was unquestionably tortoise scat, I became convinced that at least one living tortoise remained on the island. That discovery pushed the GTRI team to plan for an exhaustive search across the island as soon as the funding could be secured. This mega-expedition would be one of the most difficult scientific expeditions in Galapagos, as Fernandina is a large, very young island, with more than 60% of its surface covered by recent a'a lava fields that are nearly impossible to cross because of the sharp, chunky, and angular nature of this kind of lava.

Our trip to Fernandina with Forrest and the Animal Planet team would provide more than just filming for a documentary. It gave me the opportunity to make an exploratory visit to better plan for the mega-expedition *in situ*. To temper any false expectations, I explained once again that I was not optimistic; even if a tortoise or more still lived on the island, we would most likely not find one, as the trip was short and the search team small. However, it was an opportunity not to be wasted.

Once we arrived on Fernandina, we set up camp near where Jeffreys had found the tortoise scat four years before. During the first two days of extensive searching, we found traces of a tortoise — probably female — and some dry scat, but no tortoise. On the third day we moved on to several patches of vegetation toward the south, all of which were surrounded by a'a lava flows.

We started early in the morning. In the first three green patches, we only encountered land iguanas, so we decided to cross a huge lava flow to reach a patch of vegetation we could see in the distance. Upon arriving there, we immediately found tortoise scat, and then the "bed" where a tortoise had slept — perhaps as recently as the night before. While Forrest and his team filmed this, we heard Jeffreys cry, "Wacho – Tortuga!" Hope and excitement bubbled up in me. We ran to Jeffreys, where we saw a living female tortoise resting in a small space between rocks and vegetation. The emotion was indescribable — this was the first tortoise found on Fernandina in more than 100 years! And she was alive and well.

With permission from the Galapagos National Park Director, we carefully transported the tortoise to the Tortoise Center on Santa Cruz Island, where we began studying her diet (from the feces we collected on the island and those we obtained in her corral) and her behavior. This adult female is very old and quite small (approximately 55 cm long; less than 2 feet). She likes to eat cactus as well as other plant species, and is healthy and very active each morning.

Wacho Tapia (left) docks the panga boat carrying the female tortoise at Santa Cruz Island. © *GTRI*

Blood samples from this tortoise will be shipped to Yale University, where genetic analysis will confirm whether this old female is a true *Chelonoidis phantasticus*, as soon as we obtain the export permit.

In addition to the immediate surge of emotions at this monumental discovery, I now have hope that more tortoises exist in other parts of the island that have similar conditions to our search area. Galapagos Conservancy is currently fundraising in support of a mega-expedition and I hope to return soon. ■

See page 2 to learn how to help support this expedition.

The tortoise from Fernandina enjoys the pond in her new corral on Santa Cruz. © *GTRI*

KEEP ON LOOKING

The Fernandina giant tortoise specimen collected during the 1906 California Academy expedition.

by **Henry Nicholls,** *Galapagos News* editor

Extinction is forever. In most cases, this mantra holds true. But humans can be wrong and sometimes it turns out that species, once assumed to have vanished from the face of the Earth, are still with us. These stories of rediscovery are always exciting, worth retelling for the sheer thrill they inspire.

The Galapagos Archipelago, with its large areas of protected, underexplored space, is exactly the sort of place in which to rediscover lost species. The most celebrated of these is Lonesome George, a giant tortoise from the island of Pinta, a species assumed extinct for more than 50 years until a snail biologist chanced upon this lone male in 1971. The Santiago rice rat offers a similar story, which until the 1990s was a species known only from specimens collected by the California Academy of Sciences in 1906. More than 90 years later, in 1997, American mammal biologist Robert Dowler was on Santiago and put out some traps to see what was there. The next morning, he was stunned to find 25 rice rats, an endemic species that had somehow managed to survive in spite of the threat from non-native black rats.

Even more surprising is the probable rediscovery of a Fernandina giant tortoise in 2019 (see p.12). During the California Academy expedition in 1906, naturalist Rollo Beck found a single male high up the side of a volcano and had "skinned the tortoise by moonlight." This specimen, given the apt name *Chelonoidis phantasticus*, was the only irrefutable evidence that Fernandina had ever harbored tortoises at all. So it is extraordinary that members of the Giant Tortoise Restoration Initiative (GTRI) should have come across an adult female grazing on the south side of the volcano in February this year, more than 110 years after Rollo Beck's initial discovery.

In addition to being triumphs of human endeavor, rediscoveries like these are important because they challenge lazy assumptions about the natural world. They underscore how much we still have to fathom about our planet and the brilliant diversity of species in it. They also open up new opportunities for conservation and restoration. The giant tortoise from Fernandina has been moved to Santa Cruz island and there is now hope that, with the successful experience of reintroducing tortoises to islands like Española, it may be possible to turn *Chelonoidis phantasticus* from a ghostly entity into a real, thriving species. Above all, stories of discovery celebrate the resolve of conservationists worldwide and their determination to keep on looking. ■

GC PROJECT UPDATE

An Eastern Santa Cruz tortoise in the mud of the Santa Cruz highlands. © GTRI

Tortoise Population Census

by **Wacho Tapia,** *Director of GC's Giant Tortoise Restoration Initiative*

In the five years since I began leading the Giant Tortoise Restoration Initiative (GTRI) in Galapagos, I have organized and led many field expeditions — to Pinzón, San Cristóbal, Española, Santa Fe, and Wolf Volcano, one of the most difficult places in the Archipelago. But each time, I had the great advantage of knowing the area and the difficulties we would encounter.

This time, however, I was organizing and directing a census of the Eastern Santa Cruz Giant Tortoise (*Chelonoidis donfaustoi*), the new species named in 2015. Based on our knowledge to date, the species is considered *Critically Endangered*. But it was essential that we determine the true status and range of the population to develop effective management measures for its long-term conservation. This expedition, however, was one of my greatest challenges.

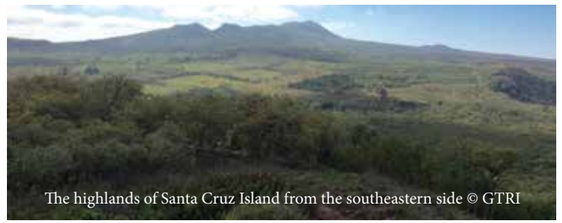
I only knew a small portion of that section of Santa Cruz Island, and like the census we carried out on San Cristóbal in 2016, this would be one of the biggest expeditions in the history of Galapagos conservation. In addition to covering known tortoise areas, we had to cover all areas we considered potential tortoise habitat — a total of 80 km^2 of rugged terrain.

Preparing for the census was stressful. We'd been trying to complete it for a couple of years, but for a variety of reasons, it kept being postponed. To ensure we would get it done this year, I started planning, in collaboration with the Galapagos National Park Directorate, in early 2018. To delineate the search blocks, I relied not only on the knowledge and expertise of park rangers and other experts, I also made several early field trips to open trails.

We established 12 separate camps from the farms in the Agricultural Zone to the eastern coast of Santa Cruz. Each team of three was responsible for a defined search section (approximately 6.5 km^2, to ensure that we covered the total search area of 80 km^2). We'd rise in the dark, eat breakfast, and start out just as the sun rose, working until it set some 12 hours later — at which point our energy was depleted.

With careful planning, the preparation of food, equipment, and water, a detailed field protocol, a long list of etceteras, and the expertise of the more than 50 park rangers, scientists, and porters who participated, we managed to complete the three weeks of intense but gratifying work. After successfully searching each section, we can now say, with complete certainty, that the range of the Eastern Santa Cruz tortoise covers an area not exceeding 40 km^2. Of course, there will always be a few individual tortoises that sporadically dare to explore outside those limits.

During the nearly three weeks of intense work, with 10 days focused on the tortoise area within the Galapagos National Park and the remaining days in the agricultural zone, we encountered 403 tortoises, marking each one with a microchip. Nearly 50% (190) of those encountered were juveniles, an excellent sign of a growing population. The final population estimate — based on our *mark:recapture* data — was 564 individuals. Completing this comprehensive population census only three years after the publication of the species description was made possible by financial support from the People's Trust for Endangered Species and many donors from Galapagos Conservancy, and the enormous effort of park rangers and scientists. ■



The highlands of Santa Cruz Island from the southeastern side © GTRI

Upcoming GTRI Plans for 2019 and 2020

August 2019: Tortoise survey of Española Island, with some tortoises being relocated to Santa Fe Island

August 2019: Tortoise nutrition evaluation with Smithsonian nutrition expert, Mike Maslanka

October 2019: Expedition to Fernandina Island to search for more tortoises, and to Darwin Volcano for the first-ever tortoise survey of this volcano and tortoise species

January 2020: Expedition to Wolf Volcano to search for more Floreana and Pinta hybrid tortoises

© Andy Donnelly

GC STAFF UPDATE

38 Years with Galapagos
Thoughts Upon Retirement

by **Linda Cayot,** *Galapagos Conservancy Science Advisor from 2005 through 2018*

It's hard to believe that I first arrived in Galapagos nearly 38 years ago — in March 1981.

Linda in Galapagos in 1983

The world I encountered was so different from today — a small community of people, dirt roads, mail once a week, no phones — only a couple of ham radio operators, and electricity from 7 am to 11 pm. The population of the Archipelago was around 6,000, with only 2,000 tourists showing up each year. We lived isolated from the world.

Over the decades, I have watched conditions change, more and more rapidly. Today the human population is closer to 30,000, with more than 250,000 visitors arriving each year. Yet while the human-inhabited islands have undergone un-ending development, many uninhabited islands are in better condition than when I first arrived — with many invasive species controlled and some native populations on the upswing (including my favorites — the giant tortoises).

Upon my arrival in Galapagos, I visited the tortoises in the corrals at the Tortoise Center, but it was not until I journeyed into the Santa Cruz highlands and encountered my first tortoise in the wild that I was hooked. Watching this giant reptile amble through the forest, seemingly without a care in the world, transported me into an era long past, before humans walked the Earth. Even at hatching, the tiny tortoises appear to have arisen from some ancient time. Giant tortoises, the focus of my PhD research in the early 1980s, have remained at the core of my involvement.

Some of my favorite memories over the years include:

• Following a tortoise down a river in the highlands of Santa Cruz during El Niño 1982-83. That the tortoise opted for a river run – a mode of migration almost NEVER available in Galapagos – to migrate to the lowlands amazed me. We bumped into rocks as the water carried us onwards. His carapace and my daypack caught on the *Clerodendrum* branches overhead. When the tortoise entered the river late one afternoon to begin his half-hour river run, I, the intrepid scientist, followed. He was, after all, my focal animal for the day.

• Leading the GC cruises on the *Integrity*, in partnership with Richard Polatty (good friend, naturalist guide, and now a GC board member) and INCA Travel (a GC travel partner), from 2009 to 2017. I loved sharing Galapagos with group after group of wonderful people from around the USA and world.

• Spending weeks camped on uninhabited islands following tortoises, land iguanas, and other species — sharing exhausting days of fieldwork, stories, laughter, and deep, long-lasting friendships with park rangers and Ecuadorian students.

• Emerging from my tent one morning on the crater floor of Alcedo Volcano to watch giant tortoises emerge out of the mist as the sun rose above the crater rim.

In 2012, I facilitated the international tortoise workshop in Galapagos that resulted in the Giant Tortoise Restoration Initiative (GTRI) — a collaborative effort of Galapagos Conservancy with the Galapagos National Park and a suite of international scientists. Our aim is to restore Galapagos tortoise populations to their historic distribution and numbers. Over the last several years, we have returned tortoises to Santa Fe Island, begun a breeding program to restore tortoises to Floreana Island, and continued to work on rebuilding populations on Española, Pinzón, and other islands. As coordinator of the Initiative, I worked closely with Wacho Tapia (pictured above), the Galapagos-based GTRI director, and Dr. James Gibbs, our principal scientist. Since Wacho first worked with me as a volunteer at the Charles Darwin Research Station when he was 17 years old, he has grown into an extremely knowledgeable and accomplished professional. I am happy to turn the GTRI over to his capable hands.

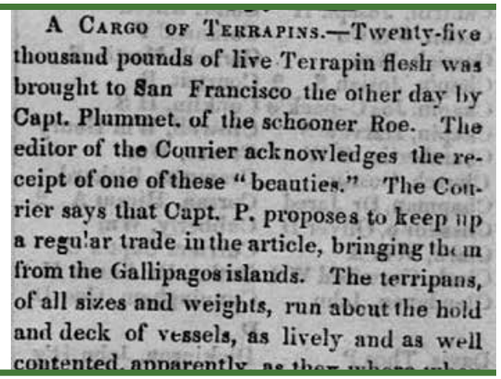
I discovered the Galapagos Islands in my late twenties, and they quickly found their way into my heart. The beauty and wonder I experienced there each day — and the incredible wildlife on land and in the sea — were major factors, but I also fell in love with the people. Over all these years, that list of people has grown into a worldwide community of friends — all tied to Galapagos. And working these last 14 years with the dynamic and dedicated group at Galapagos Conservancy, led by Johannah Barry, has been a privilege and a joy.

While this is my retirement farewell and thank you to all — I will never truly say goodbye to my Galapagos friends and colleagues, and I will continue to support our joint efforts to protect and restore this amazing place into the future. ■

Dr. Linda Cayot served as GC's Science Advisor from 2005 through 2018 and has played an instrumental role in Galapagos conservation efforts for nearly 40 years. She retired at the end of 2018 and will be missed by everyone at Galapagos Conservancy as well as those she worked with in Galapagos and around the world.

From the GC BLOG

Our Galapagos Conservancy blog is full of engaging conservation stories about the projects and initiatives we support. Here, we share with you a few excerpts from recent posts. The full stories can be found online at **www.galapagos.org**



A Cargo of Terrapins.—Twenty-five thousand pounds of live Terrapin flesh was brought to San Francisco the other day by Capt. Plummet, of the schooner Roe. The editor of the Courier acknowledges the receipt of one of these "beauties." The Courier says that Capt. P. proposes to keep up a regular trade in the article, bringing them from the Gallipagos islands. The terripans, of all sizes and weights, run about the hold and deck of vessels, as lively and as well contented, apparently, as they

Newly Discovered Underwater Formations & Elementary Students

posted December 4, 2018

"Since the Education for Sustainability in Galapagos (ESG) project began in 2016, we have had the pleasure to work with many highly committed educators who care about teaching and protecting Galapagos. The ESG program has been providing teachers with the tools and strategies that can allow them to integrate teaching conceptual knowledge with environmental practices. These practices promote learning that is grounded in conservation issues that are particular to Galapagos, while also addressing the type of conceptual and practical knowledge children need to succeed.

For instance, in the most recent set of workshops (which we call Teacher Institutes), Rebeca Changostasig, a school teacher at Liceo Naval on San Cristóbal Island, used approaches she learned through the ESG Program to create a science lesson that covered recently discovered underwater geological formations. In her lesson, Rebeca used the 5 E model (Engage, Explore, Explain, Elaborate, and Evaluate) to engage her students in powerful discussions of science topics using examples relevant to the lives of her students. In this particular lesson, Rebeca shows a video of divers exploring the site as well an interview with the local diver who discovered the caves and now coordinates tours to that area.

Authors: **Diego Román** is an Assistant Professor in Teaching and Learning at Southern Methodist University in Dallas, Texas. He has been involved in the Education for Sustainability in Galapagos project since it started and leads the science education team. **Amy Doherty** provides program coordination and support for the Education for Sustainability project area and supports internal operations for Galapagos Conservancy.

A Tortoise Bone from the California Gold Rush

posted January 23, 2019

"In 2013, the remains of a Galapagos giant tortoise were recovered during the analysis of archaeological materials excavated in downtown San Francisco; the bones were mixed in with refuse deposits dating to the early 1850s, during the California Gold Rush. At the time, I (Cyler) was assigned the task of identifying the animal bones, as part of my work for the Cultural Resource Management firm, Archeo-Tec, in Oakland, CA. The identification of a Galapagos tortoise from a Gold Rush-era archaeological assemblage was a surprise! Why and how did Galapagos tortoise bones end up in downtown San Francisco, in a refuse deposit from the mid 19th century, well over 3,300 miles from its home?"

Authors: **Cyler Conrad** is an archaeologist at Los Alamos National Laboratory, and **Laura Pagès Barceló** is an educator at the Bosque Ecosystem Monitoring Program at the University of New Mexico.

Marine Invasive Species: A Galapagos Conservation Challenge

posted February 12, 2019

"One program component entails examining marine debris and determining its potential as a vector for the introduction of non-native species, which will help us to better control the entry of potentially invasive marine species in the Galapagos Marine Reserve. Participation in this project has fostered my own ecological awareness, compelling me to make changes in my lifestyle — primarily by reducing my use of plastic. The amount of plastic floating in the oceans of the world and showing up in Galapagos is truly alarming.

We also carry out directed searches for marine invasive species around the Archipelago. In April 2018, I joined a team of CDF and collaborating scientists on an expedition to the islands of Darwin & Wolf, one of the areas with the largest biomass of sharks in the world and home to the largest population of coral reefs in the GMR. During the expedition, the team registered the presence of several invasive species ..."

Authors: **Wilson Iñiguez** (Research Assistant) and **Rosita Calderon** (Laboratory Assistant) work for the Marine Invasive Species program at the Charles Darwin Foundation.

The Measure of a Penguin

posted April 16, 2019

"How do we measure a penguin? First, we have to find them, which can be a challenge! Unlike many penguins that breed in dense colonies, Galapagos penguins nest in deep, dark, lava tunnels or crevices that protect their eggs and chicks from the hot equatorial sun. When a penguin is quietly incubating its eggs inside a lava tunnel, it can easily go unnoticed. Even when standing out in the open, their black backs provide camouflage against the dark lava shore, making them hard to see.

During our research trips, we spend hours each day slowly boating along the shores of Isabela, Fernandina, and Bartolomé Islands looking for penguins. We watch for movement and scan the coastline for white splashes of guano that indicate a penguin was standing on shore and may have a nest nearby."

Authors: **Caroline Cappello, Godfrey Merlen, and Dee Boersma** make up the dedicated research team that has traveled to Galapagos penguin breeding areas twice a year since 2010 to check both natural and constructed nests and study the penguins.

Monitoring Terrestrial Invertebrates in a Scalesia Forest in Galapagos

posted May 7, 2019

"Monitoring the terrestrial invertebrates in the Scalesia forest (like spiders, ants, beetles, moths, butterflies, wasps, etc.) gave me the opportunity to do what I had always dreamed of: applied science in support of conservation! Working with invertebrates, providing scientific advice, generating information that can be used to inform management decisions by the GNPD, and providing a service to the community are all goals that I'm now able to realize. As an entomologist, I have always faced the challenge of explaining what my work consists of and why it is important. Luckily, in Galapagos — where science is the basis for management decisions and conservation priorities — it is much easier, so here I go!

To monitor invertebrates, I go into the forest with a volunteer and my local Galapagos field assistant, Marcelo Loyola. Our challenge is to place several traps to collect the invertebrate specimens, while trying to minimize our impact on the site and struggling to make our way through the dense blackberry thickets. Once we emerge from the forest, we head back to the laboratory at the CDRS to classify and identify our samples. This final phase is the most complicated part of the process, but it provides valuable information on the invertebrate diversity of this ecosystem."

Author: **Jacqueline Rodríguez** has been working at the Charles Darwin Research Station as an entomologist since 2014. Currently, her focus is on ecological restoration projects, like monitoring invertebrates in the unique Scalesia forest in the Santa Cruz highlands to evaluate the effects of chemical control of invasive plant species.

Far left page: Aerial view of Puerto Ayora on Santa Cruz Island. The boundaries between designated parkland and the city zone are clear. (© Wilson Cabrera)

Left page, top: The March 1851 newspaper description from the Sacramento Transcript *describing a cargo of Galapagos tortoises arriving in San Francisco.*

Just above: A settlement plate with marine organisms attached (© Christian Frendinger/CDF)

Above, left: Adult penguins in good body condition during Boersma's February 2019 research trip. The penguin on the left just finishing molting its feathers. (© Dee Boersma)

Above, right: The Scalesia forest at Los Gemelos on Santa Cruz Island (© Heinke Jäger)

Galapagos Conservancy
Saving One of the World's Great Treasures

GALAPAGOS NEWS & CONSERVANCY VIEWS

Bill Mims (left) and Jim Millner, surrounded by their ham radio equipment in Galapagos.

MEMBER SPOTLIGHT

From February 28 until March 6, 2019, the **HD8M Amateur Radio Team** (callsign assigned by the Ecuadorian government) operated ham radio from the side of Cerro Crocker, a volcano high above the city of Bellavista on Santa Cruz Island. The HD8M members consisted of **Jim Millner**, a retired psychologist, and **Bill Mims**, a retired airline pilot. The purpose of the operation was to bring attention to the fragile ecosystem of the Galapagos Islands. This was done by making contact, by radio, to other Amateur Radio operators all around the world. As a part of the confirmation process, the team exchanged QSL cards (post cards paid online confirming the contact) from which one dollar or more would be donated to Galapagos Conservancy.

Since the members of the HD8M team were the only operators using Amateur Radio in the Galapagos Islands (which made it a rare entity), their station was in high demand. In just six-days of operation, they were able to talk to more than 8,000 stations around the world, including ham radio operators in 140 countries and all fifty US states. In addition, they added a fundraising component to their outreach and on their website, **www.hd8m.com**, where donations were made directly to Galapagos Conservancy. As a result of HD8M's unique approach to fundraising, they were able to donate $2,285 to Galapagos Conservancy in April 2019. Two years ago in September of 2017, the HD8M team operated from Isabela Island, and amassed $1,200 in donations to the Conservancy.

Jim Millner and his wife first came to Santa Cruz Island in 1981 on their honeymoon, back when most of the island was undeveloped. They stayed at the now-closed Hotel Galapagos, which was located near the Charles Darwin Research Station and was owned by Forest Nelson, also an Amateur Radio Operator. Understandably, the Galapagos Islands hold a very special place in his heart and were an additional motivation for HD8M's mission to help protect and conserve this special archipelago. Galapagos Conservancy is continually amazed by the generosity and creative ways our supporters help us achieve our mission!

Giving Day was May 23 ... but bring on *Giving Summer*!

Dear Friends of Galapagos,

World Turtle Day was May 23, and Galapagos Conservancy celebrated the occasion with our second annual online Giving Day!

This year, we set an ambitious Giving Day goal of raising $50,000 to accelerate the recovery of Galapagos' iconic and endangered giant tortoises. This includes the Fernandina tortoise (see pg. 12), which has long been considered extinct — but since finding a surviving tortoise there earlier this year, we are hoping there may be others.

Thanks to the generosity of our dedicated supporters, we received $20,000 in Giving Day donations — a wonderful demonstration of love and concern for the giant tortoises and the other amazing native wildlife of the Galapagos Islands.

But, that still leaves us $30,000 short of our $50,000 goal. Remember, a generous supporter had stepped forward with a $50,000 Challenge Fund gift in the hopes of inspiring dedicated Friends of Galapagos like you to come together to match it. **He has graciously agreed to allow us to extend Giving Day into Giving Summer, with a deadline of August 31, 2019! Please use the attached envelope to contribute to the Challenge Fund and help us reach our $50,000 goal!**

— Johannah Barry and the GC Staff

See the donation form on page 3 for instructions on how to make a Challenge Fund gift to GC and help us reach our $50,000 goal.

RECENT EVENTS of NOTE

Wine Tasting, Galapagos Conservancy, and Celebrity Cruises

Galapagos Conservancy and our generous travel partner, Celebrity Cruises, jointly hosted two gatherings at Total Wine & More© locations in Northern Virginia on April 3, 2019. Galapagos Conservancy's President, Johannah Barry (below), shared conservation stories from the Islands, and Celebrity's Alan Brooks presented the latest sustainable travel opportunities available in the Galapagos Islands from the experts at Celebrity Cruises. Guests were also treated to a complementary South American wine tasting!

To date, Celebrity Cruises' passengers in Galapagos have donated more than $1,000,000 over the last decade to conservation initiatives aimed at long-term sustainability in Galapagos.

Special thanks to Peter Himmelberger, a travel advisor with Cruise Planners®, for coordinating the successful events.

Presentation at the AERA Annual Meeting

On April 6, 2019, members of the **Education for Sustainability in Galapagos (ESG) team** presented five professional articles related to the ESG Program as part of a Round Table Discussion at the 2019 Annual Meeting of the American Education Research Association (AERA) in Toronto entitled: "Education for Sustainability: A Public-Private Partnership for Transforming Education in the Galapagos." AERA, the biggest and most respected general educational association organization, hosts this international conference annually with nearly 10,000 people attending. More than 12,000 proposals were submitted for this year's conference.

The articles presented were: 1) Development and Implementation of the Education for Sustainability in Galapagos Program, 2) Connecting Education Policy with Environmental and Sustainability Education in Galapagos, 3) Evaluation of the Education for Sustainability in Galapagos Program, 4) The Role of Power and Politics in Education for Sustainability in the Galapagos Islands, and 5) Integrating English Education and Education for Sustainability in the Galapagos. We look forward to continued research and dissemination of our experiences related to our education work in Galapagos.

GIVE & ADOPT!

Symbolic Animal Adoption Kits

Ranging from $30 up to $100, we offer symbolic adoptions for tortoises, blue-footed boobies, sea lions, and marine iguanas. A great gift for a budding conservationist!

Gift Memberships and Honor & Remembrance Gifts

Honor your loved ones by supporting the important conservation efforts in Galapagos! Gift levels start at $25. Recipients will receive a beautiful card informing them of your gift, which you can personalize with a special message.

www.galapagos.org/shop/

amazonsmile
You shop. Amazon gives.

Visit smile.amazon.com and select Galapagos Conservancy as your beneficiary charity!

Carol Piras' Passion Lives on in Galapagos

On May 1, 2019, Galapagos lost a great friend with the passing of Carol Piras of San Ramon and Palm Desert, CA. In 2004, following a decade in leadership positions in several well-known tech companies, Carol launched her own company, the Piras Group, comprised of a team of dedicated leadership development experts. Following her 2011 visit to Galapagos, Carol returned home, bitten by the Galapagos "bug" and determined to share her skills and expertise to advance Galapagos conservation.

In January 2016, Carol designed and facilitated a multi-day planning retreat involving 20 education specialists and representatives of Ecuador's Ministry of Education that resulted in the Education for Sustainability in Galapagos (ESG) Program's work plan. In January 2018, she again invested weeks of her time on a second retreat, reflecting on progress and refining approaches. Carol did all of this work, worth tens of thousands of dollars, entirely pro-bono.

In addition to facilitating program planning, Carol was always a phone call away when GC's ESG staff faced new challenges. As a professional coach, she had an amazing ability to break down seemingly overwhelming problems into manageable pieces with concrete solutions. Carol fielded her last call from GC's Richard Knab, Leader of the ESG Program, just a few days before she passed away. As usual, her advice was spot on, and her legacy will live on in the children of Galapagos who benefit from the successes of the ESG program.

Galapagos Conservancy
Saving One of the World's Great Treasures

11150 Fairfax Boulevard, Suite 408
Fairfax, VA 22030 USA

It's now GIVING SUMMER! We've extended the deadline for our $50,000 Challenge Fund to August 31, 2019! Details inside.

Blue-footed Boobies © GC Member, Bruce Kahn

The annual photo contest is now open! We are welcoming our members to submit up to 3 photos per person, for a chance to win a coveted spot in our 2020 Galpagos calendar. Please visit **www.galapagos.org/travel/travel/photo-contest/** for rules, permissions, and to view last year's winners.