LONESOME GEORGE BACK IN GALAPAGOS

Radiance of Sunfish

Self-medicating Finches

PROJECT UPDATES:
GTRI Updates, Combating Invasives

Marine Iguanas vs. Racers

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A
fter a long, almost four-year journey filled with fascinating twists and turns — as all good journeys should be — Lonesome George is back home in Galapagos. At the Lonesome George Hall of Hope, visitors have an opportunity to learn more about George’s story, his fascinating life, and regrettable death. But they also learn his message of hope. The Giant Tortoise Restoration Initiative is our effort to ensure that we lose no other tortoise species in Galapagos and that we, along with our partners in conservation, academia, and research, seek to rebuild tortoise populations throughout these islands.

This issue of Galapagos News also holds some exciting observations about finch behavior only recently discovered by Birgit Fessl, a GC collaborator and leader of the Charles Darwin Foundation’s Landbird Conservation Project team. In what she calls “self-medication,” finches are learning that Galapagos guava forms a natural pesticide, driving annoying mosquitoes away. Might this discovery lead to a natural defense to protect vulnerable bird populations against the invasive and extremely harmful bot fly, Philornis downsi? More research may yield an answer.

With support from a variety of Galapagos Conservancy donors, Shark Count: Galapagos, a new smart phone app, was launched in May 2017. This app will allow divers in Galapagos to record observations on species they see, their location, and abundance. Users will be able to log data from their sightings, which will be transferred to the Galapagos National Park Directorate for use in monitoring, population evaluation, and management strategies to protect vulnerable and endangered species.

As visitors to our Facebook page will have already noticed, our work with the Galapagos Biosecurity Agency continues to grow (see pg. 17). With support from GC donors, the “Canine Brigade” was launched — four well-trained (and we think, quite charismatic) sniffer dogs are undertaking important business in the islands. Neville, Darwin, Vino, and Rex are charged with sniffing out banned products (seeds, fruits, even insects and other invertebrates such as the invasive Giant African Land Snail) which can have potentially devastating effects on native flora and fauna.

From sunfish to tortoises, from snakes to finches, the Galapagos world continues to fascinate us. And we are grateful to all of you whose support, guidance, and shared enthusiasm for this archipelago and its inhabitants makes our work possible.
When you join the Galapagos Guardians Monthly Giving Program, you provide GC with reliable support that allows us to establish long-term conservation plans. Plus, it’s easier on your wallet (spreading your giving out over time), and it’s easier on the environment and lowers our fundraising costs because we will no longer mail you paper renewals.

You choose the amount and frequency of your gift and can change your preferences by contacting us at any time. Donations are automatically and securely charged to your credit card on the 15th of the month. You will continue to receive Galapagos News, Galapagos E-News, our bimonthly email newsletter, and invitations to lectures and other educational events in your area.

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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.
WHALE SHARK PROJECT UPDATE

It has been another successful year for whale shark research. In 2016, along with the traditional satellite tags, miniature pop-up tags were deployed on eight animals in Galapagos. These devices will record depth, temperature, and average daily positions for several months before detaching to be recovered at the water’s surface. With this information, much will be learned about the vertical behavior of whale sharks, especially during the time they spend away from Darwin Island when they may be giving birth. In 2017, aerial surveys and tagging of whale sharks along mainland Ecuador and in southern Galapagos will take place. These efforts should help scientists to complete the map of the sharks’ migratory loop. Scientists will return to Darwin Island in the summer, hoping to establish, once and for all, whether the females there are pregnant.

PETREL RECOVERY

The critically endangered Galapagos petrel is nesting again at Los Gemelos on Santa Cruz after decades of absence from this site. In September last year, rangers from the Galapagos National Park surveyed established colonies in the Santa Cruz highlands and found chicks in at least 70% of nests. They placed more than 1,000 rodent bait stations in the area to mitigate the impact that these invasive species have on petrel reproduction. This and the control of blackberry and guava have helped to restore much of this species’ habitat. It’s estimated there could be as many as 8,500 pairs across the Archipelago.

FORESTS GROWN FROM PASSION & COMMITMENT FROM MS XPEDITION

A great way to offset climate change, reduce carbon footprints, and help preserve Galapagos’ unique forests is to plant more endemic trees. The Galapagos National Park Directorate is Celebrity Cruises’ partner for the Scalesia Reforestation Project; the first collaboration of its kind. Each week guests aboard the Celebrity MS Xpedition can participate in a reforestation effort aimed at recovering several hectares of damaged landscape that have been invaded by weeds, such as the highly invasive blackberry.

Guided by the MS Xpedition’s naturalists, guests have helped to plant thousands of seedlings of the endemic Scalesia tree. MS Xpedition guests, staff, crew, and their families also participated in a plant-a-thon held across Ecuador to raise awareness about the need to protect our forests. On that day, more than four hundred Scalesia seedlings were planted in the highlands of Santa Cruz Island. Four generations MS Xpedition Cruise Director Bitinia Espinosa’s family joined the planting. She reflected, “Our staff’s commitment to excellence includes protecting the environment. These projects give me hope for a bright future for my grandchildren.”
SEED-SPREADING IGUANAS

After giant tortoises, land iguanas are the second largest land-dwelling vertebrates in Galapagos and, like their cousins, they too are responsible for spreading seeds far and wide. By combing through iguana scats, researchers found thousands of seeds from more than 30 different plant species, many of which were able to germinate, apparently undamaged by their journey through the gut. While most seeds came from native plants, some were from introduced species, raising the possibility that land iguanas could facilitate the movement of alien plants around relatively pristine islands like Fernandina.

FLOREANA MOCKINGBIRD PROJECT UPDATE

From November 2016 to January 2017, staff from the Galapagos National Park and researchers from Massey University, conducted the annual population estimates for the Floreana mockingbird and Floreana racer (see pg. 10). Both species coexist only on the islets of Champion and Gardner-by-Floreana and share the same habitat, Opuntia scrub. The team also collected data on the density of lava lizards, a common prey item for Floreana racers. Similarly, they measured the food availability (Opuntia flowers) for Floreana mockingbirds. With this information, the team will model the minimum habitat requirements and food availability needed in the lowlands of Floreana Island to establish new populations of mockingbirds and racers in the upcoming years.

Every year, the field team mentors a young Ecuadorian volunteer. This time the team was fortunate to have Enzo Reyes, a recent biology graduate from the University of Guayaquil with ample experience in bird monitoring. He enjoyed the fieldwork so much that he is considering enrolling in a Master of Science program investigating Floreana mockingbird social structure and habitat use. Another highlight of the most recent trip included the sighting of a group of seven males and one female Floreana racer mating — the first record of this behavior for this species. In addition, the team confirmed the age of the two oldest Floreana mockingbirds currently on Champion islet, both ten years old.

MANGROVE FINCH PROJECT UPDATE

Despite a late breeding season, 2016 was the most successful year to date for head-starting mangrove finch chicks, with 15 fledglings being reared in captivity and then released back into the wild. This brings the total of released fledglings during the three-year project to 36, a huge boost to a population that consisted of fewer than 80 individuals before this intervention.

Even more exciting is the fact that the first breeding behavior in a head-started bird was seen last year. In September 2016, a captive-reared male that had been released in 2014 was observed singing — a key milestone for the bird, and for the project. This observation shows that not only are the captive-reared birds able to survive in their natural habitat, but that they are likely to form part of the mangrove finch breeding population, which is the ultimate goal of the head-starting program. This show of breeding behavior is a positive sign for the species’ recovery, and with several birds now at breeding age, the team hopes to witness the birds in established territories during the 2017 breeding season. Even if the individuals do not nest, this would be a massive step forward in the battle to save this extremely rare bird.

The Mangrove Finch Project is a bi-institutional effort carried out by the Charles Darwin Foundation and Galapagos National Park, in collaboration with San Diego Zoo Global and Durrell Wildlife Conservation Trust.
While some of the team cradle the animal in the water, I work from the inflatable boat to attach tags and take tissue samples that will yield DNA for genetic analysis and allow us to check for plastic contamination, which is a growing problem in the open ocean.

In a few minutes, we are finished and the animal swims off, finning strongly into the murky depths. We look on anxiously as it takes several expensive instruments with it, but hope that over the next few months we will receive data on the movements of this individual and insights into the biology of a species that, frankly, we know next-to-nothing about.

In just a few days, we fit nine southern sunfish with a variety of real-time satellite tags, archival satellite tags and acoustic tags. We also deploy acoustic receivers onto the sea floor, devices that will listen for coded ultrasound signals now being emitted by the tagged sunfish, registering their passing like cars at a motorway toll. From these data we should be able to get a feel for how the sunfish move around Isabela, the wider Galapagos Archipelago and beyond. As I write this, our animals are still at large, sending back packets of data whenever they spend more than a few seconds at the

Three. Two. One. Go. Go. Go!

The divers plunge into the chilly green waters to the west of Isabela. Moments later they surface along with a southern sunfish, its huge circular body gleaming in mottled blotches of copper and silver.

The southern sunfish Mola ramsayi might not be as well known as the ocean sunfish M. mola. However it is just as, if not more, spectacular — its disc-shaped body reaching up to an incredible three meters in diameter and propelled along by the combined action of two towering fins, one above and one below. There is no tail to speak of, only a fleshy, flexible ridge that extends from one fin to the other. Its skin is thick and tough, embedded with sharp, sandpapery scales. It is wise to wear gloves when working with this species. I pull mine on and the work begins.

One week earlier, the expedition had started with a rather different goal. I had come to Galapagos, along with colleagues from the Georgia Aquarium, the marine research and conservation network MigraMar, the Marine Megafauna Foundation and the Galapagos National Park, to work on whale sharks. We had hoped to confirm that the huge females frequenting Darwin’s Arch in the very north of the Archipelago between June and November were pregnant. The whale sharks were not cooperating so we cut short our efforts around Darwin and turned towards Isabela and Plan B: to study sunfish.

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by Alistair Dove, Marine Biologist at the Georgia Aquarium in Atlanta
surface. The early results suggest that southern sunfish may not roam as widely as we had imagined. After four months, our most reliable communicator is still hanging around northwestern Isabela, occasionally sweeping along the northern edge before heading right back to where we tagged it last October. Once Alex Hearn from the Universidad San Francisco de Quito and Jules Paredes from the Galapagos National Park recover the acoustic receivers later this year, we will have more data still, giving us a chance to map the way these peculiar fish are using these waters.

The Galapagos National Park will be able to use this information to provide better protection for the sunfish. Knowing that they don’t roam far, for example, would allow Park staff to focus research and enforcement efforts on key locations. The southern sunfish may also illuminate the impact that climate change is having in these waters.

As a bonus, there is something profoundly symbolic about this creature. It is truly remarkable that in 2017 we know so little about a species as large and charismatic as the southern sunfish. How much more do we still have to discover?

Left: A researcher approaches a sunfish with gloves on to avoid being harmed by its sharp, sandpaper-like scales.

Above: The researchers work together to attach tags and take tissue samples from a southern sunfish.

CALLING ALL GALAPAGOS DIVERS!

**SHARK COUNT GALAPAGOS is counting on YOU.**

Galapagos Scientists and Park Rangers need your help to monitor populations of marine species in the Galapagos Marine Reserve (GMR).

Using the new app, **Shark Count Galapagos**, you can make important contributions to our understanding of Galapagos marine ecosystems by recording the number of sharks, sea turtles, rays, and ocean sunfish you encounter during your dives. All data collected through **Shark Count** is shared with the Galapagos National Park Directorate. As more and more data is collected, **Shark Count** will help decision makers better manage the GMR, and dive tourists will know when and where they are likely to observe different species.

**Shark Count Galapagos** was developed by the Aquatic Biotelemetry Lab at the Universidad San Francisco de Quito (USFQ), the State University of New York College of Environmental Science and Forestry (SUNY-ESF), Galapagos Conservancy (GC), and Upstream PBC, with support from the Galapagos National Park Directorate and funding from the Samuel Freeman Charitable Trust and other GC donors.

For more information, visit sharkcount.org.
In the days that followed, I kept my eyes peeled. And yes, a few days later I had the luck to observe a small tree finch ripping off a Guayabillo leaf, chewing it and then applying the mashed plant matter to its feathers.

In the months and years that followed my colleagues and I observed something similar going on in several other species. We witnessed both small and medium ground finches doing likewise. Interestingly, all the birds seemed to be very particular for Guayabillo leaves, even though this tree only occurs at low densities in the highlands of Santa Cruz where we were working. This looked like highly deliberate behavior. What could be going on?

Elsewhere in the world, birds will occasionally go in for “active anting,” rubbing their feathers with ants and other invertebrates in an effort to combat parasites or quell infections. There are only a few reports of birds using plants to serve the same purpose, but it was an intriguing possibility. Darwin’s finches are famous for their ingenuity, but this behavior
represents the first known observation outside the foraging context. Perhaps they had found a way to protect themselves against the fly *Philornis downsi*, an invasive nest parasite that can easily eliminate a whole clutch of chicks. In some years chick mortality due to *Philornis* parasitism can be up to 95% and thus is currently considered one of the greatest threats to Galapagos land birds. We decided to investigate.

The first step was to find out if Guayabillo had any insect-repelling properties. It seemed like a good idea to use ourselves as guinea pigs. Just like the finches, I picked some leaves, crushed them in my hands and rubbed them on one leg and one arm. Then I gave mosquitoes in the field the chance to bite me. They almost exclusively went for the untreated limbs, a finding that we replicated in a further 16 volunteers and in further experiments in the lab back in Austria. Mosquitoes, at least, seem to avoid anything coated in Guayabillo extract.

So far, so good. But can Guayabillo also be used as protection against *Philornis*? Together with our colleagues from the *Philornis* lab at the Charles Darwin Research Station, we collected larvae from infested nests and fed them with chicken blood in the lab. We found that those who had to suck the blood through a gauze treated with Guayabillo grew far more slowly than control larvae exposed to the juice of another plant or water only. Adult flies avoided Guayabillo too, when they were given the choice between treated and untreated bait.

These first results suggest that Darwin’s finches of several species may have hit upon a means of self-medication. When and how this behavior emerged is unknown, but as it was discovered only recently it is possible that preening with Guayabillo is an evolved response to new introduced parasites like *Philornis*.

It is a discovery that is both remarkable and significant. Owing to the unique, fragile nature of Galapagos, the use of strong insecticides to control an invasive insect like *Philornis* can be very problematic. However here is a native plant species with insect repellent properties that the birds appear to have discovered themselves. If we can identify the active compounds in the Guayabillo leaves, we might be able to develop a natural repellent that could be used to counter the very real threat these parasites pose to the iconic group of Darwin’s finches.

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**Dr. Birgit Fessl**, a scientist with the Charles Darwin Foundation (CDF), has been working in Galapagos for the last 20 years. Since 2014, she has been coordinator of the Landbird Conservation Project, one of three CDF science projects funded by Galapagos Conservancy.

Birgit has extensive experience in host-parasite interactions, specializing in Galapagos landbirds and the invasive avian parasitic fly, *Philornis downsi*. In 1998, when collecting a woodpecker finch nest as part of a study to determine whether their tool use is learned or innate, she discovered *Philornis*. This was the first time it was identified in Galapagos (though later reviews of insect collections found it as far back as the 1960s). Evidence of the significant harm caused by this parasite grew, eventually resulting in the Landbird Conservation Project. **GC is proud to fund Birgit’s critical work to save the many threatened landbirds of Galapagos.**
Why are Galapagos racers called racers? In 2015 and 2016, I spent six weeks on Fernandina’s pristine shoreline, filming a sequence that would answer this question. The sight of racer snakes speeding en masse after marine iguana hatchlings turned out to be one of the most memorable sequences in the BBC’s ground-breaking Planet Earth II series.

After baby marine iguanas hatch they normally lie just beneath the surface of the sand to absorb as much heat as they can before they reveal themselves to the world. It is assumed they do this to power their muscles to outrun predators. On Fernandina, this is particularly important, for on this island Galapagos racer snakes have evolved to exploit the bonanza of hatchling marine iguanas. The snakes congregate at iguana nesting grounds in extraordinary numbers waiting for the young iguanas to appear.

These hatchlings have skittish instincts and rightly so. As soon as they poke their heads above ground, they are alert and nervous. They cautiously make their way towards the black coastline, seeking safety in numbers amongst the adult iguanas basking close to the sea and the algae on which they feed. However if the waiting snakes spot them, a frantic dash ensues. The racers move at lightning speed, as many as ten all slithering towards the fleeing iguana.

This animal behavior — one of the most startling and thrilling that I’ve had the privilege to witness — was extremely challenging to film. Often the iguanas would explode into a sprint pursued by a mass of snakes, only to disappear behind a boulder or other feature and we would lose the action. The iguana hatchlings are only about 12 cm long and keeping the small, very fast and erratic iguanas in focus was nerve-wracking especially when we had only a few chances every day to film a hunt. It took around 400 hours of field time, across 36 days in two different years to film the sequence, which included shooting footage of lava lizards, sally lightfoot crabs, underwater shots of iguanas feeding, and scenic elements needed to complete the central story. The edited footage lasts less than nine minutes in total.

Following the broadcast of the first episode of Planet Earth II in which this appeared, the extraordinary number of online comments certainly illustrate how fascinated and terrified people are by a number of snakes hunting in the same location. A single snake hunting its prey is enough to transfix us by engaging our instinctive mammalian fear of snakes. A mass of them hunting is the stuff of nightmares. People were chilled to the bone but the hunt was made all the more poignant because their victims were so cute and innocent. So when one iguana miraculously escapes from the stranglehold of writhing snakes, the relief is tangible. All credit is due to the masterful skill of Elizabeth White, the producer, and Matt Meach, the editor, in teasing the tension throughout the sequence and allowing the darkest nightmare to dissolve into a fairytale ending. This remarkable escape was a glorious and uplifting moment, resonating with the audience and transforming the sequence into a sensation.

If an iguana hatchling survives the group of hungry snakes, it will hide among the adults and the small fissures in the lava that lie close to the sea, scuttling out at low tide to feed on the exposed algae. It will face other threats during these first few
weeks of life, an easy picking for a frigatebird, a Galapagos hawk or a great blue heron. However it does not take too long for these hatchlings to grow large enough to avoid such predators. By this time, the racer snakes have long gone, disappearing inland in search of other prey.

Interestingly, mass snake hunting has not been observed on other islands in Galapagos, only on Fernandina. This may have something to do with the fact that, unlike most other islands in the Archipelago, Fernandina has not been tainted by introduced species. There are no rats, cats, pigs or dogs. Perhaps, on other islands, these mammals have had such an impact on the densities of both racers and iguanas that this behavior can no longer occur. It is a reminder of how important it is that there are still places like Fernandina, an island whose stark, raw, pristine state is otherworldly and humbling to a degree.

The racers move at lightening speed, as many as ten all slithering towards the fleeing iguana.

Dr. Luis Ortiz-Catedral is a Lecturer in Environmental Science/Ecology at Massey University in New Zealand. Since 2010, he has been conducting research aimed at improving conservation management in Galapagos. Historically, scientists have based their understanding of Galapagos snakes (taxonomy, diversity, etc.) primarily on museum specimens; however, preservation tends to dramatically change their skin color, one of the important characteristics for identification. Luis is challenging the prevailing view on the number of Galapagos snake species by conducting the most ambitious field study to date, documenting color variation in the field, and collecting genetic material to be analyzed by leaders in herpetological genetic diversity. Galapagos Conservancy will fund Luis’ field trip in 2017, as he continues to explore more islands and collect additional samples. In 2015, Luis captured the longest snake registered in Galapagos since 1835 — a gargantuan female *Pseudalsophis biserialis biserialis*, measuring 1.3 m.
A sure method to locate giant tortoises is to look for fresh droppings. The naturalist and collector Rollo Beck knew this only too well. When he came across a few fresh lumps of tortoise excrement on Fernandina (containing, he noticed, undigested cactus and cactus spines), he knew he was on the right track.

Beck was the internal dynamo of the schooner Academy expedition to Galapagos, a year-long trip funded by the California Academy of Sciences in 1905 and 1906 to capture the Archipelago’s diversity in a way that had never been done before. Beck and seven other scientists returned to San Francisco in late November 1906 with some 78,000 specimens of birds, reptiles, plants, insects, molluscs, fossils and mammals. To some extent they brought Galapagos back to San Francisco. The specimens have been used time and again to vindicate Charles Darwin. Today’s conservation thinking would not permit such a large collection, but more than 100 years ago there was no other option than to be “preserved” in a museum, rather than preserved in the living environment.

Further towards the summit of Fernandina, and even more revealing than the droppings, Beck found a rounded rock covered in semen. It was roughly the size and shape of a small female tortoise, a surrogate mating partner that “had been used for the same purpose that rocks...have served ever since the whalers carried off all the female tortoises.”

Alone at the summit of Fernandina, the largest pristine island in the world and one on which no human had ever lived, Beck was rewarded with a sweeping vista of an open, grassy plateau punctuated by tall cacti leading to the steep precipice into the volcanic caldera. He had collected in Galapagos three times before and knew that nobody had ever found a tortoise on this island. He was determined to succeed where others had failed.

When Beck finally found the large, old and apparently frustrated male, the sun was setting. It was April 4, 1906. It had been another long, hot day in the field and he sat down to eat his dinner of hardtack, canned salmon and canned sardines. The tortoise ate too, taking big, purposeful and unhurried bites of brown Galapagos grass, unaware that it was to be his last meal. Beck took out his field knife and “skinned the tortoise by moonlight.” He worked steadily for five hours, beginning the process of transforming the old male from a living, breathing example of evolution into a one-of-a-kind museum specimen.

Today, this tortoise — the one and only specimen ever found on Fernandina — stands sentinel-like in the herpetology department of the California Academy of Sciences, the oldest museum west of the Rocky Mountains. Affixed to one leg with a length of wire is a small metal tag, perhaps half an inch by two inches, on which is embossed the museum number 8101, Beck’s name, and the island the specimen came from, in this case “Narborough,” the older
name for Fernandina. The tortoise’s current Latin name of Chelonoidis phantastica seems an appropriate name for a species whose existence is based on a single fantastic and phantasmagoric specimen.

Along with the tortoise taxidermy, the California Academy of Sciences is home to a box of 8101’s bones. Some hundred years after Beck collected this tortoise, Gisella Caccone, a geneticist at Yale University in Connecticut, opened this box and succeeded in extracting genetic material from a sample. The result was a surprise. The mitochondrial DNA was most similar to that of the tortoises from Santa Cruz in the center of the Archipelago rather than to those of nearby Isabela. Yet it was unique, a genetic signature that has not been recorded on any other island to date. Fearing a mistake, Caccone cut a sliver of skin and bone from the specimen itself and redid the analysis. The result was the same.

It remains possible this tortoise somehow made its way to Fernandina with human assistance. However the collection of 8101, as tragic as it might seem from our perspective, raises the more intriguing possibility that this young island — thought to be only around 50,000 years old — may once have had its own species of tortoise. If it did, when and how the reptile reached its shores remains an unsolved mystery.

More broadly, this single specimen embodies the work of the California Academy of Sciences expedition, a trip that set out to collect evolution in the form of specimens, especially tortoises before it was “too late.” These physical records and others vindicated Darwin’s thoughts on evolution and natural selection, ideas that have become central to the identity of Galapagos in the 21st century.

Could there still be tortoises on Fernandina Island?

Rollo Beck clearly knew he was collecting the very first tortoise from Fernandina Island (pictured above), but he may not have collected the last. Over the past 50 years, there have been several reliable sightings of what appear to be tortoise droppings on the island. Any remaining tortoises could have died out naturally or been killed by a lava flow emanating from the still-active caldera. However, given how little we know about this island, there is also the possibility that there are still tortoises out there on these remote, hostile slopes, just waiting to be discovered.

Want more from Matt James? Check out his latest book!

COLLECTING EVOLUTION: THE GALAPAGOS EXPEDITION THAT VINDICATED DARWIN
Oxford University Press, 2017
ISBN 9780199354597

An expedition like no other, geologist and historian Matthew James tells the tale of the California Academy of Sciences’ 17-month journey to and around Galapagos in 1904. It was not plain sailing for the 11-man crew employed to collect specimens of all the invertebrates, reptiles, mammals, and insects they could find. Following in the footsteps of Mark Twain just eight years before and Charles Darwin in 1835, the expedition lead by Rollo Beck involved encounters with beasts of previously undocumented sizes and with natives with a penchant for whisky. “The Galapagos might have been a collector’s paradise, but they were also witness to a complex human drama,” writes James.

James flits between the natural history of the Islands, previous expeditions to Galapagos, and the ship’s log. An excellent read on the last collection voyage to Galapagos, providing a view of the Archipelago’s wildlife from the alternative perspective of young scientist sailors with the mission to explore and collect the Islands’ riches. (Reviewed by Jenny Vidler)
The Galapagos Conservancy blog is full of amazing conservation stories from many contributors in and outside the Islands. Here, we share with you a few excerpts from recent posts about the return of Lonesome George to Galapagos. Full stories can be found online at: http://www.galapagos.org/blog-listing/

Lonesome George Returns Home posted February 17, 2017

“As many of you know, Lonesome George — the last known Pinta Island tortoise — died on June 24, 2012. What many may not know is the story of his adventures after death, and the many people and institutions who came together to ensure that Lonesome George would be respectfully and gratefully remembered. His death cautioned us on the fragility of our relationship with the natural world and how quickly, and finally, that world can suffer at our hands. However, Lonesome George's story should not simply be a moral tale; the work that his death inspired — the Giant Tortoise Restoration Initiative — has laid the foundation for recovery of all Galapagos tortoise populations impacted by humans to numbers unseen for nearly two hundred years. This gives us cause for optimism and faith in the power of cooperation and collaboration.”

Author: Johannah Barry is the President and Founder of Galapagos Conservancy. She played a critical leadership and coordinating role in Lonesome George's preservation and return to Galapagos.

Lonesome George and a Unique Opportunity posted March 27, 2017

"Lonesome George's remains arrived at my preparation room at the main campus of the SUNY College of Environmental Science and Forestry in Syracuse on October 13, 2016 — as a frozen block. The remains did not include the carapace, plastron, head, or skin — as those parts had been incorporated into the mounted specimen.

This was the rarest specimen I have ever worked on in my 40 years doing vertebrate preparation and the significance of the task filled my mind. I separated out the bones and attached waterproof labels to each one. After three days of soaking, the bones were ready to be boiled in order to effectively clean them. I worked slowly and carefully over the next few weeks. I did not want to use chemicals, as I often do with other animals, because this was Lonesome George. At the end of five weeks, I placed the cleaned and labeled bones into a museum box, ready for shipment.”

Author: Ronald Giegerich is the Collection Manager and does Scientific Vertebrate Preparation for the Roosevelt Wildlife Station at the State University of New York College of Environmental Science & Forestry in Syracuse, NY.


"On June 24, 2012, I was the second person to see him, after Don Fausto Llerena (Lonesome George's friend and caretaker) found him dead in his corral. His death took us both by surprise. I'd seen him two days earlier and he'd seemed fine — but just as with humans, death can arrive without warning.

Author: Washington Tapia is Galapagos Conservancy’s Director of the Giant Tortoise Restoration Initiative. He is a Galapagos native and reptile expert with decades of experience, including 15 years spent working for the Galapagos National Park Directorate.
Home Again: The Long Journey of Lonesome George
posted March 29, 2017

"The very exhibit housing Lonesome George is a physical manifestation of this idea of 'a legend, a future, and a hope.' When one views Lonesome George in his glass vitrine, one can also look past him, out into a tortoise breeding corral, and see endangered tortoises that form the nucleus for repopulating an island where tortoises went extinct some 150 years ago. At times these tortoises gather right outside the glass of Lonesome George's vitrine, where they feed, drink water, and, on occasion, mate.

Lonesome George is now on exhibit for everyone forever to witness, remember, and wonder. Hundreds of people from town and from around the world have begun visiting and paying homage to this tortoise; thousands more will come. Lonesome George will continue to remind us of the constant need to work together to prevent future extinctions of all species."

Author: Dr. James Gibbs is Professor of Vertebrate Conservation Biology and Associate Chair of the Department of Environmental and Forest Biology at the State University of New York (SUNY-ESF). He has collaborated with Galapagos Conservancy for many years, not only on the Giant Tortoise Restoration Initiative but also in other science areas. James is a frequent contributor to the GC blog.

Three Months in Galapagos: A Journey of Hope
posted May 12, 2017

"I discovered how Galapagos is facing its biggest challenge yet — protecting its extraordinary wildlife and ecosystems while facing a significant increase in its human population, along with associated pressures from ever-increasing tourism. Our attraction for the uniqueness of Galapagos may threaten the Islands. However, the grand opening of the Hall of Hope, the Lonesome George exhibit, in February, gave me hope for their future. I was lucky to be GC’s photographer for the event. Past human exploitation and impact on the Islands drove several tortoise species to extinction, including Lonesome George’s species — the Pinta Island tortoise. By telling the story of Lonesome George, this exhibit will educate people on conservation problems and their solutions."

Author: An evolutionary biologist, Dr. Maud Quinzín is now turning into the conservation biologist she always wanted to be. She is a postdoc researcher at Yale University under the supervision of Dr. Gisella Caccone, who has conducted genetic studies on Galapagos giant tortoises for more than 20 years.

San Cristóbal Tortoise Census

In November 2016, the resources were finally in place to carry out a census of the tortoise population on San Cristóbal Island — covering a large range and even some areas where we did not necessarily expect to find them. This population was estimated at 500 – 700 individuals in the early 1970s; during two weeks, the 14 field teams encountered a total of 1,938 tortoises (44% adult) and...
estimated, using a mark:recapture methodology, a population of some 6,700 tortoises, with about 3,000 of those reproductive adults. These results demonstrate the great success of past work of the Galapagos National Park Directorate (GNPD), as well as the residents of San Cristóbal, who removed feral dogs from that island in the 1970s. The recovery of this population demonstrates the long-term, tortoise-pace results of effective conservation. We have a long way to go to reach historical numbers of about 24,000, but, don’t forget, the tortoise did win the race.

**Santa Fe Tortoise Release**

In April 2017, a group of GTRI staff, GNPD park rangers, and volunteers released another 190 juvenile Española tortoises on Santa Fe Island. These tortoises join the 206 released in 2015 – 2016. The field team re-encountered many of the original release group, all in very good condition. A one-week monitoring trip is planned for June 2017, to check on the tortoises and to complete the annual monitoring of the various exclosures (fenced areas — some of which keep out tortoises, some that exclude both tortoises and land iguanas), as well as the same-sized plots open to both tortoises and iguanas.

**Eastern Santa Cruz Tortoise Census**

Although originally planned for 2016, the complete census of the Eastern Santa Cruz Tortoise is now planned for later in 2017. While the population is thought to be somewhere between 200 – 300 tortoises, the area is not well known. The census will use a strategy similar to that used on San Cristóbal, including exploration of potential tortoise habitat not previously visited. Anecdotal sightings by local goat hunters suggest that there may be additional nesting zones and that the range of this population is much larger than currently thought.

**Giant Tortoise Breeding Centers on Santa Cruz and Isabela**

We continue to improve and expand (in the case of the Santa Cruz center) the tortoise centers. In 2017, we will overhaul the incubation systems and install new systems recently developed for Galapagos by Dr. James Gibbs and colleagues in New York. We plan to install four of these new incubation systems in each center. Although we will be leaving a “heating-by-hair-dryer” system behind, the new system will also consist of easily replaceable parts, an important condition for all technology in Galapagos.

**XI Latin American Congress of Herpetology**

The Latin American Congress of Herpetology, which occurs every three years, will be held in Quito, Ecuador this July. The GTRI group has organized a two-day symposium on the Giant Tortoises of Galapagos at the Congress. This will provide researchers and conservationists an opportunity to share their work and discuss ongoing research and management strategies.

**Updating the IUCN Red List**

The IUCN Red List provides the definitive list of threatened and endangered species throughout the world. To best serve conservationists and natural resource managers, this list must be periodically updated. The GTRI group has been working with the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group to update all of the Galapagos tortoise entries. These updates are based on the advances in knowledge and conservation since the previous update in 1996, and we expect them to be posted this year.
T he Agency for the Regulation and Control of Biosecurity and Quarantine for Galapagos (ABG – its Spanish acronym) was established by the Ecuadorian government in 2012. The core mission of the ABG is to control, regulate, prevent, and reduce the risk of introduction, movement, and dispersal of exotic organisms in Galapagos. Their work involves inspection and control at all ports and airports, surveillance, monitoring, control of pests and diseases in Galapagos, and rapid response to food safety emergencies.

Introduced species are arguably the biggest threat to Galapagos’ native creatures. Since 2014, Galapagos Conservancy has provided support to the ABG to fund a variety of activities related to the detection and control of introduced species in the Islands. Below we outline a few of the recent efforts our members’ support has made possible:

Detection Dogs for the Giant African Land Snail
This project involved deploying a canine unit of two dogs, in collaboration with the US-based organization Dogs for Conservation, that were specially trained to detect the invasive Giant African land snails on Santa Cruz Island. These destructive snails outcompete native snails and consume more than 500 kinds of plants. Since the canine unit was implemented, Labrador retrievers Darwin and Neville have contributed substantially to the number of snails eliminated from the island.

Humane Pet Management in Galapagos
Galapagos Conservancy helped to fund veterinarians from Animal Balance to train ABG vets in less invasive spay and neuter procedures that require fewer medicines and less recovery time than traditional methods, and included a comprehensive program to educate the local community about responsible pet ownership. As a result of this work, Animal Balance and ABG signed a formal agreement to work together to continue to control the population of cats and dogs in Galapagos in a humane manner.

Sterilization and Diagnostic Clinic for Pets
On a related note, Galapagos Conservancy also provided funding for the remodeling of an ABG-owned building into a permanent sterilization and diagnostic center for pets in Galapagos to help with the ongoing management of the cat and dog population, and to provide a facility for proper veterinary care. The clinic was inaugurated in June of 2016 and is now well-utilized by the community.

Control and Monitoring of Invasive Ants
Introduced ants can displace endemic ants and contribute to a decline in populations of endemic reptiles and birds. Two new invasive ant species have been detected in transport bound for the Islands — the big-headed ant (Pheidole megacephala) and the Argentine ant (Linepithema humile) — both of which are listed among the 100 worst invasive organisms worldwide, according to the International Union for the Conservation of Nature (IUCN).

The ABG, funded in part by Galapagos Conservancy, will develop efficient control methods to combat invasive ant species in order to reduce the possibility of their successful establishment in Galapagos, lessening their potential impact on the endemic flora and fauna of Galapagos. This project expands on work conducted by the Charles Darwin Foundation in the past several years to control and eradicate invasive ant species.
Enthusiastic nature conservationists and avid divers, Murray and Jeanie Kilgour have made three trips to the Galapagos Islands since the early 2000s. Murray marvels at the large fish like whale sharks and hammerheads, having once experienced a cloud, in the form of a 45-foot whale shark, float overhead near Darwin’s Arch. Jeanie is most inspired by the diversity of the topography, as well as the unique creatures — especially the “shocking pink” flamingoes and amusing boobies.

The Kilgours first exposure to Galapagos Conservancy was through a brochure they picked up on their very first dive trip. They have been loyally supporting our conservation efforts annually since 2007. In 2016, they made a generous donation to help fund the creation of Shark Count Galapagos, a new smartphone app that allows divers to become citizen scientists by contributing vital information about marine life observed in Galapagos. (See pg. 7 or sharkcount.org for more information.)

“Protection of the creatures, especially the abundance of sharks, is vital in my view,” adds Jeanie. And like many of us, the Kilgours are also concerned about how climate change will impact the Islands. Murray believes, “If we can slow the process down a bit, the animals may have time to adapt.”

The Kilgours value Galapagos Conservancy’s hands-on approach to preserving the Islands and their creature inhabitants, as well as the in-depth updates GC provides on the progress of conservation. We value members like the Kilgours, who clearly understand that “the Islands are a treasure, both above and below the water. To lose that would be a large loss for society as a whole.” Without forward-thinking friends like the Kilgours, the work we do would not be possible.

The Charles Darwin Research Station library lost a great friend and champion in January 2017 with the untimely passing of Elizabeth Knight. Inspired by her time as the on-site volunteer archivist and librarian in the Galapagos Islands, she continued to lead the renovation of the Institution’s archives and founded the Library Advisory Board, which she chaired until her death. We learned from Elizabeth’s husband, Dan Knight, that she called her work with the Charles Darwin Research Station “her most satisfying professional accomplishment.”

Galapagos Conservancy has been a long-term supporter of the library, and we are indebted to Elizabeth’s passion and vision for this world-class field library. We know that her efforts have made an abiding difference in protecting and preserving information which, in turn, is critical to the future of conservation in the Islands.

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We are saddened to report the loss of noted television journalist Cecilia Alvear in April 2017 at age 77. Cecilia had a particular affection for and connection with Galapagos, having been born on San Cristóbal, where her father was governor. Although her family moved to mainland Ecuador when she was young, Cecilia maintained a close connection to the Islands, often returning to San Cristóbal to provide computers and other materials to the primary school named after her father.

After her retirement from NBC news, Cecilia and her partner of many years, George Lewis, an equally renowned and respected journalist, turned their attention to conservation reporting. They created Galapagos Digital, an electronic newsletter and website that took a varied and penetrating look at Galapagos conservation, the political climate in Ecuador, opinion pieces on policies and regulation, and some typically charming and lively stories on the unique flora and fauna of the Islands. She and George also travelled to Galapagos in 2010 to film a segment on the historic release of Galapagos tortoises on Pinta Island, a story featured on NBC’s Today Show.

Galapagos has lost a great friend and strong advocate, and the world of journalism is diminished by the passing of this pioneering woman.

Elizabeth Knight, Librarian
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.

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!

Military-Style Caps, $15
Embroidered, cotton, and offered in khaki and olive.

Books
Ranging from $15 up to $50, we offer a limited selection of Galapagos books for all ages, while supplies last.

Support Galapagos Conservancy.
When you shop at smile.amazon.com, Amazon donates.

We’ve made the process easier for you. Below are a few of the ways you can make a planned gift to Galapagos Conservancy. We also encourage you to visit our website at plannedgiving.galapagos.org for all the details.

A Gift in your Will or Trust
A gift in your will or trust and a beneficiary designation are the simplest types of estate gift and the most common. If your goal(s) are to defer your ultimate gift to GC until after your passing or maintain control of your assets during your lifetime, this could be an ideal way to accomplish that. The benefits include: maintaining your current lifestyle while making a meaningful gift to support GC, enjoying the flexibility to change your plans as life changes, and passing your retirement plan assets to GC, tax-free.

Gifts of Assets
Typical gifts of assets include stock or other securities, real estate, and personal property. If your goal is to make a gift and receive benefits now (usually the impact of the gift and tax benefits), gifts of assets are great options. They can provide benefits, such as immediate income tax relief, avoiding capital gains taxes on assets that have increased in value, and transferring the expense of insuring or maintaining assets you no longer need. Also, Galapagos Conservancy gets to use the assets sooner, rather than later.

Of course, there are many other ways to make a planned or estate gift to Galapagos Conservancy. If you have already included us in your plans, THANK YOU! Please let us know, so we can add your name to our Galapagos Conservancy Legacy Society and recognize the faith you have placed in us to continue to assist Galapagos for generations to come.

For more information, please visit our website at: plannedgiving.galapagos.org
Or, contact Meredith Bolado at 703.383.0077 or via email at mbolado@galapagos.org.
GC PHOTO CONTEST for 2018 GALAPAGOS CALENDAR
ENTER BY 7.24.2017

Please email no more than 5 photos, one per email, to photo@galapagos.org. Include your name, subject of the photo, and location (if known) in the email subject line. Include your full contact information in the body of the email, with any other descriptive details about the photo. Visit www.galapagos.org/travel/travel/photo-contest/ for rules, permissions, and to view last year’s winners.