GALAPAGOS NEWS

Fall-Winter 2014

LONESOME GEORGE UNVEILED

Discovering Galapagos
An Education Tool

PROJECT UPDATES:
Mangrove Finches
Animal Balance
CDF Science

BOOK EXCERPT:
Lonesome George Story

Galapagos Gift Ideas

GC PHOTO CONTEST WINNERS

GALAPAGOS CONSERVANCY

Saving one of the world's great treasures

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Johannah Barry (third from left), President of Galapagos Conservancy, poses with Dr. Julio Lasso, Ecuador's Permanent Representative to the United Nations, Lorena Tapia, Ecuador's Minister of the Environment, and Dr. Arturo Izurieta, Director of the Galapagos National Park. © JargaPix Photography

FROM THE

PRESIDENT

Johannah Barry

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Cover Image
Lonesome George on the first night he was displayed to the public at the American Museum of Natural History. *Photo Credit: JargaPix Photography*

We proudly feature the very familiar and iconic Lonesome George in this issue of *Galapagos News* in honor of the launch of the Lonesome George Exhibit at the American Museum of Natural History in New York. Expertly rendered by taxidermist George Dante, Lonesome George is not only a cautionary tale about what we can thoughtlessly destroy, but what the best of humankind can do to protect and preserve fragile ecosystems and species throughout the world.

This last extinction on Pinta Island was preceded by tortoise extinctions more than 150 years ago on both Floreana and Santa Fe Islands. Decades of genetic research have yielded some extraordinary and very hopeful results. Laboratory work, combined with old-fashioned field work, has allowed researchers to identify tortoises on Wolf Volcano on the island of Isabela, some with partial Pinta ancestry and some with partial Floreana ancestry. Recovering these hybrids and initiating a breeding program for the Pinta and Floreana tortoise species will produce young tortoises that will be used to restore the populations on both islands. Out of an environmental tragedy comes real hope for tortoise populations and their native habitats.

We also report extremely positive news on the plight of the endangered mangrove finch. Scientist Francesca Cunninghame and her colleagues have reared mangrove finch chicks in captivity and released them into the wild. While building up the population is important, equally important is ensuring a stable and safe environment for the finches to thrive. Work on captive breeding is dovetailed with cutting-edge work to combat the invasive bot fly which is threatening many avian populations in the islands.

The theme of this issue, spurred by Lonesome George's new life in New York, is hope. Where we have seen extinctions, we now see real potential to restore populations. This is due to the excellent work of our scientists and managers in Galapagos as well as the international scientific community which works so closely with the Charles Darwin Foundation and the Galapagos National Park Directorate. But thanks, of course, ultimately goes to our network of donors and supporters who understand the importance of the work in Galapagos and who so generously make it possible.

GALAPAGOS CONSERVANCY
Saving one of the world's great treasures

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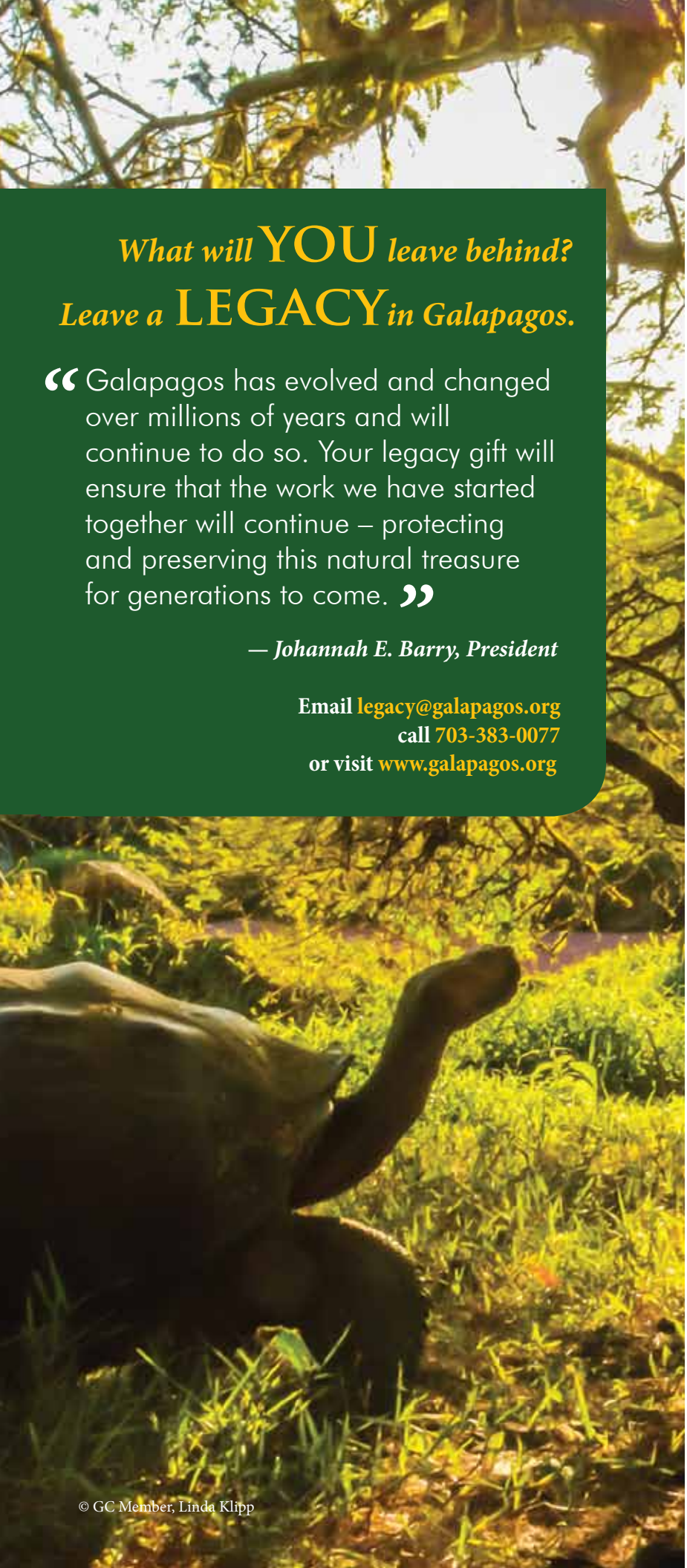

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— Johannah E. Barry, President

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GALAPAGOS NEWS

SALVAGE OPERATION

In May, a cargo vessel ran aground in Galapagos, causing Ecuador to declare a state of emergency in the Islands.

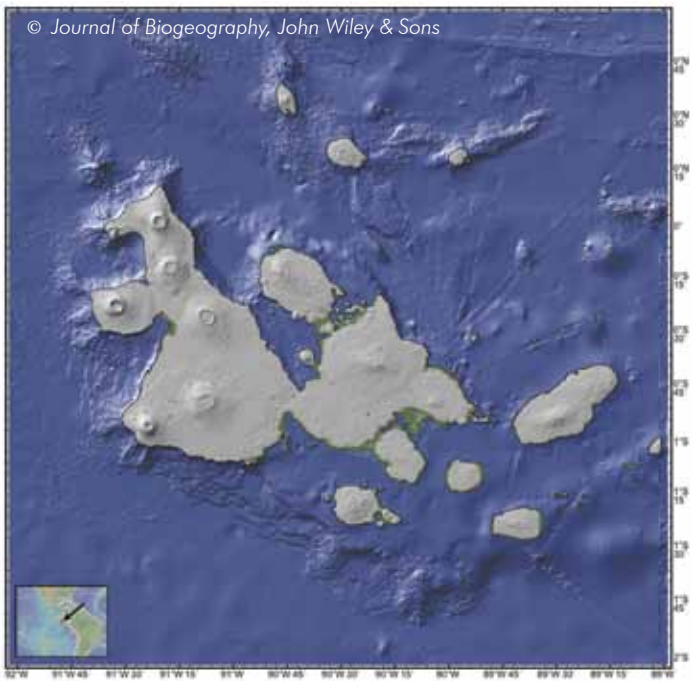
***Galapaface I* hit rocks in Wreck Bay** on May 9th just after leaving the town of Puerto Baquerizo Moreno on San Cristóbal. The Ecuadorian-registered vessel contained nearly 10 tons of cargo and an estimated 19,000 gallons of diesel fuel, raising fears of a repeat of the oil spill that followed the grounding of the *Jessica* in almost exactly the same spot in 2001.

Salvage teams were quick to evacuate the diesel from the 266-ft vessel's tanks, but the situation remained sufficiently critical for the Ecuadorian government to declare a state of emergency in the Islands. San Cristóbal authorities responded by closing two popular tourist sites, and divers from the Environment Ministry, the Galapagos National Park, and the Charles Darwin Foundation carried out surveys around the vessel to permit an accurate assessment of the extent of any damage to the underwater environment.

It took more than two months and a carefully coordinated operation involving many different institutions to free the *Galapaface I*. In July, it was towed beyond the Galapagos Marine Reserve and sunk to a depth of 2,500 meters.

"Thanks to the efforts of our rangers, the Environment Ministry in general, and the contribution of all the different institutions involved, it has been possible to safeguard the ecosystems of Galapagos," said Arturo Izurieta, Director of the Galapagos National Park.

Galapaface I ran aground near San Cristóbal in May earlier this year, where it remained stuck for more than two months. © Galapagos National Park



SEA CHANGE

Recent shifts in sea level may have had a major influence on evolution in Galapagos, according to new research.

Over the course of the past 700,000 years, the sea level has undergone a significant drop every 100,000 years or so, falling to between 90 and 130 m below the present level and staying that way for several thousand years. These events are likely to have had a major influence on the evolution of the creatures of Galapagos.

Considering several factors known to affect sea level, researchers Jason Ali and Jonathan Aitchison estimate that at the most recent low-point (around 20,000 years ago), the sea would have been 144 m below its current level, enough to expose much of the sea floor and connect several islands in the core of the Archipelago. "This cyclical coalescence and isolation of islands is likely to have complicated the evolutionary history of several iconic Galapagos species, notably the land iguanas, lava lizards, leaf-toed geckos, and racer snakes," write the authors in the *Journal of Biogeography*.

LACED COTTON

Pesticide-treated nest material may help protect Galapagos songbirds against the devastation being caused by *Philornis downsi*, according to a pilot study. This parasitic fly, which was introduced to the Islands several decades ago, lays its eggs in the nests of at least 12 species of Galapagos land bird, and the insect larvae subsequently feed on the chicks, often resulting in the complete loss of a clutch. By making pesticide-treated cotton available to nesting birds, researchers have found that several species will happily build this into their nests, resulting in fewer parasites and more fledglings. "Self-fumigation may thus be a viable approach for combating *P. downsi* in the nests of Darwin's finches," write Sarah Knutie and her colleagues in *Current Biology*.

LONESOME GEORGE CELEBRATED at AMNH in NYC

Lonesome George's artfully preserved body officially went on display to the public on September 18, 2014 at the American Museum of Natural History (AMNH) in New York City. After his death in June of 2012, the decision was made to preserve George's body utilizing the expertise of George Dante of Wildlife Preservations, Inc. in New Jersey. Dante is well known for his amazing taxidermy work, much of which was commissioned by AMNH over the years. A sold-out panel presentation was held to provide context and background on Lonesome George's life and why his death saddened people around the globe. Lonesome George will be on display in the Museum's 4th floor Astor Turret until January 2015. He will then be returned to Ecuador, where he will continue to act as a global symbol for conservation and carry on the message of the importance of protecting nature and the environment. *(See next page for more information.)*

Galapagos Conservancy's Richard Knab, Linda Cayot, Johannah Barry, and Dana Kaasik pose with Lonesome George on September 18, 2014 at the American Museum of Natural History. © JargaPix Photography

© Sarah Knutie, University of Utah

LOST WETLANDS

The discovery of fossilized dung-loving fungi in the highlands of Santa Cruz suggests that a large herbivore — most likely the giant tortoise — once lived at these extreme altitudes, hundreds of meters above their current range. The wallowing presence of these "ecosystem engineers" played a crucial role in maintaining stands of fresh water in this zone, suggest Cynthia Froyd and colleagues in *Ecological Letters*. The disappearance of these reptiles from such altitudes, most likely following the removal of tortoises by buccaneers and whalers from the 16th century onwards, probably resulted in the loss of this habitat at higher altitudes and the extinction of several rare plant species.

EL NIÑO UNLIKELY

The chances that Galapagos will experience an El Niño during the forthcoming warm season are not nearly as high as orginally predicted by climatologists. These weather events, which typically hit towards the end of the year, tend to raise ocean temperatures and rainfall dramatically. Such changes can have massive negative consequences for marine organisms and any larger creatures — like seabirds, sea lions, and marine iguanas — that depend on them for survival.

Five Fast Facts: El Niño

1. El Niño is a natural phenomenon, occurring at irregular intervals of between 3-8 years.
2. El Niño is defined by a prolonged warming of at least 0.5 °C of the Pacific Ocean sea surface temperature.
3. In South America, an El Niño event is associated with warm and very wet conditions.
4. During an El Niño event, the cold and nutrient-rich waters of the Humboldt Current, which travel up the west coast of South America, are pushed southwards.
5. The counterpart to El Niño is called La Niña and results in cooler-than-average sea surface temperatures in the eastern Pacific.

UNVEILING LONESOME GEORGE: A NIGHT AT THE MUSEUM

Written by **Johannah Barry,** *President of Galapagos Conservancy* Photos by **JargaPix** *Photography*

This fall proved full of opportunities to meet with donors and friends in honor of Lonesome George, whose death in 2012 signaled the loss of the last known Pinta Island tortoise.

On September 18, Galapagos Conservancy joined the American Museum of Natural History in New York to launch the Lonesome George exhibit. The exhibit will be open to the public until January 2015, when the preserved body of Lonesome George will be returned to Ecuador. The specimen, expertly rendered by George Dante from Wildlife Preservations in New Jersey, is a potent reminder of the inadvertent damage that humans can cause to wildlife and wilderness. The Lonesome George exhibit carries the message that we are also capable of preserving and restoring fragile species — the hopeful message that Lonesome George inspires.

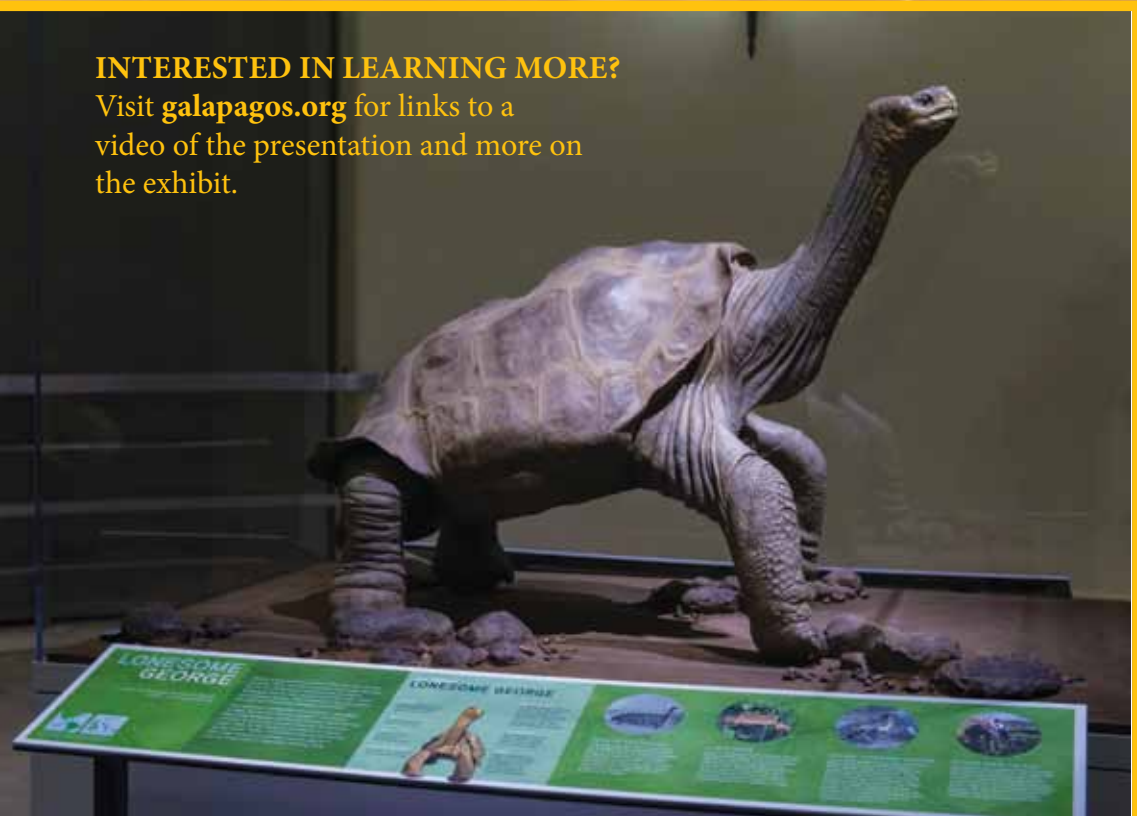
The Museum's Center for Biological Conservation (CBC) hosted a panel discussion, led by the CBC's Chief Conservation Scientist, Dr. Eleanor Sterling, and which featured Dr. Linda Cayot, Galapagos Conservancy's Science Advisor, Dr. James Gibbs, Professor at the SUNY–Syracuse School of Environmental Science and Forestry, Johannah Barry, President of Galapagos Conservancy, and Dr. Arturo Izurieta, Director of the Galapagos National Park. Sra. Lorena Tapia, Ecuador's Minister of the Environment, addressed the audience, and other dignitaries at the event included Dr. Julio Lasso, Ecuador's Permanent Representative to the United Nations. A cocktail reception preceded the sellout crowd of 300 at the panel discussion.

Bookending the New York events were public presentations in New Haven, Connecticut and Princeton, New Jersey, where Galapagos Conservancy staff joined Dr. James Gibbs and Dr. Gisella Caccone from Yale University to discuss exciting news in tortoise genetics which signal the possible "re-tortoising" of Pinta and Floreana Islands, where two Galapagos tortoise species are now extinct in the wild. Additionally, over the next twelve months, tortoises closely related to the extinct Santa Fe Island species will be released onto Santa Fe to begin the critical ecosystem "engineering" that tortoises provide to these islands. ■

From L to R: George Dante proudly poses with Lonesome George; a posterior view of George; GC's Johannah Barry welcomes the crowd.

The Panel (from left): Dr. Linda Cayot, Dr. Arturo Izurieta, Johannah Barry, Dr. James Gibbs, and Dr. Eleanor Sterling

INTERESTED IN LEARNING MORE?
Visit **galapagos.org** for links to a video of the presentation and more on the exhibit.



DISCOVERING GALAPAGOS.ORG.UK

The regular curriculum in Ecuador does not cover Galapagos or evolution. This tool helps fill the gap.

Tomás de Berlanga classroom in Galapagos. © Jennifer Davidson

by **Jen Jones,** *Project Manager at Galapagos Conservation Trust*

A trip to Galapagos is a voyage of discovery. When you catch your first glimpse of Galapagos, probably from the air on board one of several daily flights that now operate between mainland Ecuador and these islands, you cannot fail to be struck by their isolation. As with the plants, animals, and first explorers who chanced upon Galapagos, you will be approaching from the east and the first island you will see from your nearest window will be either Española to the left or San Cristóbal to the right. By the time you do, you will already be flying over the spectacular waters of the Galapagos Marine Reserve. You should be excited: you are about to have what will be one of the most memorable experiences of your life.

Charles Darwin's inspiring observations during his visit in 1835 have meant that Galapagos has changed the way we see the world today. But the inspirational role that this Archipelago can play should not be limited to those fortunate enough to visit the Islands in person. After 20 months of planning and production, Galapagos Conservancy's partner organization in the UK, Galapagos Conservation Trust (GCT), proudly announces the launch of Discovering Galapagos, an ambitious online educational experience that will bring the Islands to the world as never before.

Discovering Galapagos: Why Now?

A fascinating consensus exists among educators: a child's earliest years in primary education are crucial for instilling a lifelong interest in science and the natural world. With the transition into secondary education (at around the age of 12), it becomes much harder to engage and enthuse. The UK's National Trust summed this up well in a 2012 report outlining what they called 'Nature Deficit Disorder', a commentary on how a modern, sedentary, indoor lifestyle is posing a real threat to children's future engagement with nature and apathy towards its conservation. This is a burgeoning challenge for the conservation community. How do we connect with the next generation of our planet's stewards if the majority is unaware of the issues that we are facing, or even worse, doesn't care?

This is not just a problem for urban society. Indeed, a lack of engagement with nature is also evident in areas as wildlife-rich as Galapagos. Very rarely do local children get the opportunity to see the Islands as tourists do. Few youngsters will get beyond their home village or town, venturing into the protected Galapagos National Park. How can these children grow to love their own environment and fully appreciate the global significance of their surroundings if they are never exposed to the wonders on their doorstep, ones that are unrivaled worldwide?

It is no secret that funding and resources in the field of conservation and sustainable development are low. Return on investment is, therefore, a key consideration when deciding where and how to expend resources. One approach that is often overlooked is education and outreach — both within the local community and internationally.

Discover Galapagos for yourself!
discoveringgalapagos.org.uk
descubriendogalapagos.ec

The Power of Education

The human population in Galapagos is increasing at an average rate of 6.4% a year — three times the growth rate of mainland Ecuador — and is projected to reach 40,000 by the end of 2015. This level of population increase, along with growth in tourism, inevitably causes tensions. In addition, rapid immigration over the last few decades has radically altered the age structure of Galapagos society, with a higher proportion of those in their 20s than in mainland Ecuador. As a consequence of these demographic realities, the importance of environmental education has never been greater.

There are five inhabited islands in Galapagos — Santa Cruz, San Cristóbal, Isabela, Baltra and Floreana — with a total of 25 public and private schools catering to just over 5,000 children. There is a teaching staff of 200 and, as with much else in this isolated Archipelago, teaching and training resources are scarce. By collating and displaying existing materials and building on the past efforts in environmental education from the Charles Darwin Foundation, Galapagos National Park, and from Galapagos Conservancy and the Scalesia Foundation, Discovering Galapagos aims to promote a uniform, multi-institutional approach to education on the Islands and internationally.

So, how do we engage the local and international audiences? Discovering Galapagos is a new and vital resource, an initiative that combines digital-age technology with practical, outdoor learning in a way that will appeal to a new generation. There is much to offer, from more traditional teaching tools like teaching plans and worksheets to a series of fun animations. In partnership with students from the London Metropolitan University, we also have built a video game in which users act as a ranger, deciding how to handle threats to Galapagos giant tortoises during their migration. Closer to home, children and families are shown how to carry out natural history surveys in their gardens, building a valuable database of population trends and encouraging a crucial early awareness of the natural world. Discovering Galapagos makes it easy to bring the Islands to life in the classroom.

Finally and importantly, Discovering Galapagos will be a forum through which different communities can interact and engage at a local and global scale, stimulating the kind of inclusive, people-oriented 'conservation conversations' that are desperately needed. As a first step, Discovering Galapagos will facilitate interactions between school children in Ecuador with the rest of the world, an initiative that we hope will provide an example for other similar efforts that are likely to appear in years to come. After all, no single organization is going to solve the world's sustainability and conservation problems alone. ■

Children make Darwin finch beaks. © The Book Bus

© Jennifer Davidson

The Power of Listening

by GC's Richard Knab

Galapagos is the best preserved tropical archipelago in the world, but its long-term protection requires that local residents become champions for conservation with the knowledge, skills, and desire to pursue lifestyles and livelihoods that are consistent with conserving the fragile Galapagos environment. In July, Galapagos Conservancy, the Galapagos-based Scalesia Foundation, and the Ecuadorian Ministry of Education worked together to identify ways to strengthen education in order to ensure that Galapagos youth are engaged in — and grow to lead — improved stewardship of the environment.

With funding from several generous Galapagos Conservancy donors, we set out to organize an international workshop focused on education. Galapagos Conservancy had previously used such workshops as effective tools to help local stakeholders identify priorities and draft work plans in areas such as Floreana mockingbird recovery, rat eradication, giant tortoise restoration, *Philornis downsi* management, and knowledge management.

In the course of our planning, the term "*Fase Escucha*" (Listening Phase) replaced "*workshop*" among those involved. This name underscored our collective belief that successful educational change requires buy-in at the school level, and that school directors, teachers, and other local stakeholders must be directly involved in the early phases of project development and planning. In essence, the role of the external education specialists would be to observe, listen, and help translate the ideas and understanding of local realities of Galapagos stakeholders into effective strategies.

The Listening Phase took place from July 13-19, 2014 with the accompaniment of the Ministry's Director of International Cooperation. The "Listening Team" was comprised of educators with extensive experience in priority areas identified by the Ministry, including environmental education, natural science, literacy, English language, and design of effective teacher training programs. Team members came from Ecuador, Mexico, and the United States.

The Listening Team met with 18 school directors on the islands of San Cristóbal and Santa Cruz and conducted classroom observations at 15 schools and a dozen focus groups with teachers, parents, and students. The Team experienced first-hand the challenges teachers face in terms of communication (e.g., very limited internet access) and inter-island travel (e.g., rough waters; delays due to a broken-down ferry). Overall, the specialists were impressed by the level of dedication they observed among Galapagos educators and the degree of alignment that exists among teachers, directors, parents, and students regarding the challenges and opportunities that lie ahead.

Initial findings point to a multi-year mentoring program for teachers and school directors and technical assistance to link formative extracurricular activities carried out by local NGOs with the learning objectives of the national curriculum. We will share the final report and work plan with our members as soon as it is available, and look forward to working closely with individuals and organizations interested in helping to fund the implementation phase of this work.

GALAPAGOS CONSERVANCY

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PROJECT UPDATES

GC MEMBERS FUND **THE CHARLES DARWIN FOUNDATION**

With the support of our generous members, Galapagos Conservancy proudly funded the critical work of scientists at the Charles Darwin Research Station during 2014 in six main project areas. These grants to CDF totaled $650,000, and we summarize the recent progress and results of these projects below:

BATTLE WITH BREEDING PARASITIC FLIES

In order to battle the bird-killing invasive parasitic fly, *Philornis downsi*, in the wild, scientists need to be able to breed the fly in large quantities in the lab to allow future research to advance quickly. Since we last reported, significant progress has been made in developing a rearing method for *Philornis downsi* in the lab. After months of testing different diets and rearing conditions, 50 flies have been reared from eggs using a unique protein mixture. **This is a major achievement: it is the first successful attempt in rearing a *Philornis* species in artificial conditions and in the absence of its bird host!** The procedure for rearing larvae is time consuming and requires intensive care. The next stage will be to develop methods for rearing larger numbers of flies and to focus on recent findings in setting the right conditions to get the flies to mate in the lab.

© CDF

FIGHTING INVASIVE PLANTS ... WITH OTHER INVASIVE PLANTS?

© CDF

Preliminary results from extensive plant monitoring of the invasive plant communities on Santa Cruz Island show a clear interaction between different invasive plants at the site of Los Gemelos in the highlands. For example, in areas where the invasive Sauco (*Cestrum auriculatum*) and Wandering Jew (*Tradescantia fluminensis*) are present, the abundance of the highly invasive Blackberry (*Rubus niveus*) is significantly reduced, suggesting that interactions between different invasive species are important for the management of Blackberry. As a result of these recent findings, it is now recommended that Sauco not be removed (as is currently done at Los Gemelos) since it suppresses germination of Blackberry and, therefore, reduces its density. Blackberry also outcompetes many other native Galapagos plants.

FIGHTING FIRE ANTS ... WITH FLIES?

Significant progress has been made in researching potential biocontrol agents for use against the tropical fire ant, *Solenopsis geminata*. Scientists have found an ant-decapitating fly, *Pseudacteon bifidus*, that successfully attacked tropical fire ants in a lab in Texas. More than 3,000 of these flies were then transported to the USDA-ARS laboratories in Gainesville, Florida where a colony was successfully established. Since then, three generations have been produced and tests initiated to see if the flies might attack other species of ants and/or pose a risk to native ants in Galapagos. So far, the fly does not appear to be interested in other species of ants. Tests will continue in 2014-15 to determine if it could be used in a biological control program in Galapagos. Work also continues to evaluate the status of other invasive ant species in Galapagos.

© GNP

© Dan Serebrakian

THE LAND BIRD PLAN TAKES FLIGHT

Significant advances have been made over the last six months and awareness raised about the need to research the smaller land bird species found in the Galapagos Islands. Several field trips organized by CDF teams and visiting scientists have focused on bird identification and learning about their different habitats in Galapagos. From January to March 2014, scientists also researched the breeding success of the warbler finch and the small tree finch in relation to habitat restoration in the Santa Cruz highlands and the impact of *Philornis downsi*. At the same time, they marked the location of all Vermilion flycatcher sightings. Moving forward, single species projects will focus on the Vermilion flycatcher on Santa Cruz and Isabela Islands. The CDF team has selected eBird as the best data bank to log and analyze Galapagos land bird data.

NEW FOCUS ON MARINE INVASIVES

In May, Galapagos Conservancy granted $150,000 to CDF to begin a large-scale effort to identify and combat non-native species causing harm to the native plants and animals in the Galapagos Marine Reserve (GMR). The overarching goals of the first year of the project are:

- To identify existing marine invasive species within the GMR and in mainland Ecuador ports
- To establish a list of potential threat species from global, regional, and national origins and implement an early detection system to identify them in the GMR
- To initiate an El Niño Watch in order to ensure high-alert monitoring takes effect if the onset of a strong El Niño is confirmed in the future
- To establish a partnership with the Galapagos National Park Directorate (GNPD) and the Biosecurity Agency for Galapagos (ABG) through joint agreements on research tactics and decision-making
- To generate public awareness of marine invasive species and to ensure Galapagos is represented and considered among global networks on marine invasives

Scientists confirm that there are six well-established invasive species in the GMR today, including two species of algae, a crab, a starfish, and two species of plant-like animals that resemble ferns and mosses. To date, 115 sites have been monitored in the GMR, and 28 were found to have one or several marine invasive species already well-established.

© John Belchamber

GEOSPATIAL DATA AND NEW ZONING

Starting in early June, CDF began working with the GNPD in their revision of the zoning system for the protected areas of Galapagos. CDF staff helped define the various ecosystems and zones that are being proposed for the re-zoning. One important change was the recognition of the high elevation arid zone on the summit of numerous volcanoes, and two trans-zonal ecosystems: aquatic ecosystems and pioneering vegetation ecosystems. Currently, CDF is working to outline the natural functions provided by and the importance of each of these ecosystems and environmental units.

© Daniel Lara

With technical expertise and training obtained from the Instituto Geográfico Militar, CDF has undertaken the initiative to build a Geospatial Data Management system for Galapagos. This system could utilize maps to examine development patterns to conduct future scenarios for growth management and changes in natural areas such as coastlines, volcanoes, and highland tree zones.

MANGROVE FINCHES

Head-starting Project Enters Second Year

The second year of the pioneering mangrove finch head-starting project has begun. Thanks to the support of our members, there is now the very real possibility of bringing this species back to healthy population levels.

During the previous season, the project team (which included researchers from the Charles Darwin Foundation, Galapagos National Park, and San Diego Zoo) worked tirelessly to ensure the success of the first-ever attempt to breed this critically-endangered species in captivity. If there had been no intervention, only five chicks would have been recruited to the wild population in the 2014 breeding season. Thanks to the efforts of the research team, a further 15 chicks were reintroduced to the wild, having been hand-reared at the Charles Darwin Research Station and quadrupling the number of new finches to the population — a fantastic result!

What do the scientists say?

We caught up with Francesca Cunninghame from the Charles Darwin Foundation, lead scientist of the Mangrove Finch Project.

"With the population estimated at just 80 birds, currently all found in two tiny patches of mangrove forest, they really are on the brink. Mangrove finches are one of the most habitat-specific species of Darwin´s finch and are a living representation of evolutionary theory. To date, no bird species has become extinct from the Galapagos Islands since before Darwin's visit and it is essential that we do not let this change. The collection of eggs from the wild, captive rearing of chicks, and their subsequent release has met with great success. The return of 15 captive-reared fledglings back into their natural habitat is extremely encouraging and gives us confidence that by working together we are able to ensure the conservation of the species."

What does the future hold?

Another round of head-starting this season with learned methodology will help to give the population another significant boost. Along with improvements in invasive species management (notably controlling rats and continuing the fight against the invasive fly *Philornis downsi*), this will enable the team to have a much better chance of reintroducing some finches to other patches of mangrove forest, thereby helping their population expand throughout their historical range.

Animal Balance in GALAPAGOS
Solutions without Suffering

© Buffy Redsecker/iLCP

Over the last ten years, Galapagos Conservancy has proudly supported the important work of Animal Balance in Galapagos. Cats and dogs, both feral and domestic, can pose serious problems for the native wildlife of Galapagos, such as young marine iguanas, penguins, and small land birds, to name a few of the species affected by allowing pets to roam freely. Animal Balance works closely with local pet owners to help them properly care for their pet dogs and cats. They do this through pet sterilization campaigns and through involving and empowering the community to take responsibility for their pets themselves.

Through partnerships with the Galapagos National Park (GNP) and the Galapagos Biosecurity Agency (ABG), Animal Balance teaches Ecuadorian veterinarians to spay and neuter cats and dogs so they can provide the service in a sustainable fashion moving forward. This, in conjunction with a comprehensive community education program, gives the local population the tools they need to act responsibly with regards to their pets and preserving the special environment in which they live. By humanely controlling the cat and dog populations in Galapagos, the delicate native and endemic species will, in turn, remain healthy and protected.

Animal Balance and their partners have sterilized more than 4,500 animals in the last ten years in Galapagos. As of 2007, they estimated that they had sterilized 96% of all the dogs in Galapagos.

Animal Balance was able to return to the Islands in June 2014 with funding from Galapagos Conservancy. Their veterinarians trained the ABG vets in a "fast spay" technique that uses a smaller incision site and is, therefore, less invasive, uses less medicine and sutures, and reduces the chance of infection. Male sterilizations performed using Zeuterin injections were also demonstrated. These procedures, also known as "Zeuters," are less invasive than castration, use less medicine, equipment, staff, and have a faster recovery time for the animals.

> ***I was in an ABG pick-up driving into Puerto Ayora, the main town on Santa Cruz Island. I was catching up with the driver, Pedro, who worked for ABG. As we pulled in I asked him what had happened to all the dogs. Normally when you come into the outskirts of town there are packs on the streets. There were none. As we pulled into the hotel area, still no dogs and no barking close by, or in the distance. We drove down Charles Darwin Avenue (Galapagos' Main Street) and there were 3 people walking their dogs on leashes. Pedro was laughing at me and simply said with a big smile, "It worked!"***
>
> — Emma Clifford, Animal Balance Founder, on returning to Galapagos 10 years after the first of several Animal Balance spay and neuter campaigns took place

A full animal hospital was also set up at the ABG headquarters on Santa Cruz Island; 125 dogs and cats were treated and sterilized in 4 days. A second animal hospital was then set up at ABG's quarantine building on Isabela Island, where 104 cats and dogs were sterilized. Galapagos Conservancy funds were used to purchase $10,000 of the medicines required. Seven Ecuadorian veterinarians were trained in spays, neuters, and demonstrated Zeuters.

As a result of the work in June, Animal Balance and ABG signed a formal agreement to work together to continue to stop reproduction of cats and dogs, to provide training to the ABG staff and veterinarians, and to further implement the humane animal management program with the community in order to protect the Galapagos biosphere for generations to come. ■

Dr. Marilyn M. Harlin

Dr. Marilyn M. Harlin's first trip to Galapagos in June of 1999 was the culmination of a 40-year yearning to experience the diverse islands that inspired Darwin's theory of evolution. As a Biology major at Stanford University, she had the honor of taking classes and field trips with Professor Ira R. Wiggins, an esteemed botanist, who described the many threats to the native fauna in Galapagos from introduced goats. The need for conservation became even clearer when she witnessed the threats the growing human population posed to the delicate ecosystems during her visit. It was while on Santa Cruz Island, where she learned of the tortoise breeding programs and other scientific and educational efforts to preserve the Islands, that she first heard of Galapagos Conservancy.

Marilyn made her first gift to Galapagos Conservancy in July of 1999 and has continued to generously support GC annually ever since, as well as join GC's Legacy Society with a planned gift. Her dedication and support to conservation in Galapagos stem from the ongoing threat of the Islands being "over-loved" by visitors and residents, which threatens the delicate island habitats. In her words, "Education to the local community about the fragile status of the Islands must be widespread. There is no place like the Galapagos anywhere in the world — that is why I shall continue to give."

Growing up in the woods near Olympia, Washington cultivated Marilyn's love of nature that eventually led her to join the faculty at the University of Rhode Island as its only female botany professor. Although she retired in 2000, as a scientist, friends still ask her for explanations or interpretations. She has traveled worldwide, especially in her research on marine algae, and published her memoir *Making Waves* (Friesen Press) in February 2014 of her life and passion for nature. Marilyn's interest in the natural world goes beyond Galapagos, including topics like the impact of global warming on terrestrial and marine ecosystems. Her environmental stewardship is a gift to the conservation world, and we are grateful to have her as a dedicated partner in protecting the ecosystems and wildlife of Galapagos. ■

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 GUARDIAN SOCIETY

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 page 3 for a mail-in form or join online at **www.galapagos.org** or call **703-383-0077**.

Nearly 250 current and new GC members helped make our first Membership Challenge a major success: we surpassed our $15,000 online goal by almost double!

The Membership Challenge took place online during the last two weeks of September, and we are absolutely thrilled with the enthusiastic response from so many of our dedicated members — as well as the new supporters who joined Galapagos Conservancy for the first time. Gifts from the Challenge will be used to support important conservation projects like our historic Giant Tortoise Restoration Initiative.

From everyone at Galapagos Conservancy, and on behalf of all of Galapagos' spectacular wildlife, thank you for your support!

BOOK [EXCERPT]

The Lonesome George Story

Where Do We Go From Here?

By Linda J. Cayot

Available now for pre-order only at www.galapagos.org/shop ◆ **Shipping in mid-December!**

When Lonesome George died on June 24, 2012, the world lost the last of a species. Many who knew George well lost a friend. While species often disappear without a whisper, gone before anyone knows extinction is imminent, the plight of Lonesome George and the inevitable extinction of the Pinta Island tortoise was discussed, debated, and lamented around the world for 40 years before his death.

I first met Lonesome George in March 1981, when I arrived in Galapagos to study the ecology of giant tortoises for my PhD. Seven years later, I returned to work for the Charles Darwin Research Station as Head of the Herpetology Department and supervised both the giant tortoise and land iguana breeding and rearing centers for the next nine years. Throughout those years, Lonesome George was a daily reminder of why we needed to work so hard to conserve Galapagos. Extinction is forever and so we strove to avert it.

Up until the moment that Lonesome George was discovered in 1971, scientists believed the Pinta Island tortoise had gone extinct, as had its sister species from Santa Fe, Floreana, and Fernandina Islands. Except for occasional unconfirmed reports from fishermen, no tortoise had been seen on Pinta for decades. The adventurous men of the California Academy of Sciences Expedition had collected the last three documented tortoises (all male) and an old shell in 1906. After the specimens were preserved in arsenic, they were added to the Academy's prominent and expanding collection. No one could have predicted that the killing and preservation of those last living Pinta tortoises, acts that would be unthinkable today, would enable modern molecular genetics to uncover tortoises to repopulate Pinta Island more than a century later.

After the California Academy of Sciences Expedition's collections, Pinta remained without tortoises. Or so we thought. Then one day in 1971, a Hungarian biologist from Harvard University named Dr. Joseph Vagvolgyi traveled to Pinta with his wife Maria to study land snails. Not particularly knowledgeable about tortoises, Joseph thought nothing of it when he saw one roaming the island. It was not until he returned to Santa Cruz Island and casually mentioned his observation to other biologists over dinner one night that the excitement began to grow. A tortoise had been seen on Pinta … the species was not extinct!

Written by Galapagos Conservancy's Science Advisor, Dr. Linda Cayot, who spent years working with Lonesome George and knew him and his many friends well.

Pre-order your copy today:
http://www.galapagos.org/shop/

GALAPAGOS GIFTS

Proceeds from all gifts purchased in the Galapagos Gift Shop benefit Galapagos conservation.

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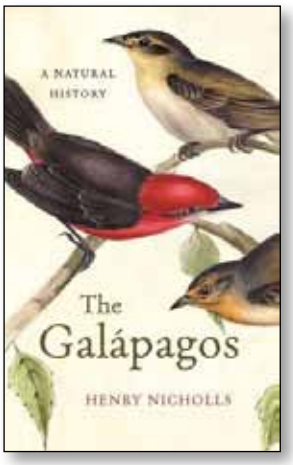
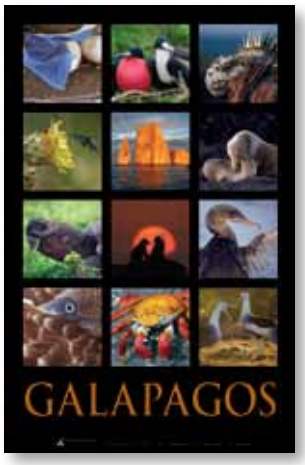


THE GALAPAGOS: A Natural History
Author: Henry Nicholls
Signed Copy! $25



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8.5 x 11 in, 40+ stunning photos showcase the best of Galapagos! $15

Galapagos Tortoise Puzzle
6 x 4 inches
Packaged in a nifty "postcard" format, it can be mailed with a handwritten message on the back. $7

Lonesome George *or* **Blue-footed Booby** *pewter ornaments, packaged in a velvet bag with information card and ribbon.* $20 each
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Galapagos Conservancy and Free World United are partners in conservation!

If you shop during the 10 days from **November 22 to December 1**, Free World United will donate $10 from every t-shirt purchased to Galapagos Conservancy.

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PHOTO CONTEST WINNER 2015

Congratulations to **John Rollins of Kansas City, MO** for his photo of a wonderfully dishevelled Yellow-crowned Night Heron!

To view all of the winners, visit **www.galapagos.org/gallery/**

Galapagos Giant Tortoises © Arlo Midgett
Frigatebirds © Bob Miller
Galapagos Land Iguana © Patricia Berry