



GALAPAGOS

FALL/WINTER
2010

news

Connecting people across the globe with conservation in Galapagos



IN THIS ISSUE

Tortoises Back on Pinta

The Sustainability Challenge

Good Vibrations

**Tui De Roy:
Photographing
Galapagos**

**Galapagos
Conservancy's
Action Plan**

**Photo Contest 2011
Results**

A Galapagos Giant Tortoise peeks out from the undergrowth on Pinta. It is one from a group of tortoises that are the first to roam across this remote northerly island in nearly 40 years. In May, Dr. Linda Cayot, Galapagos Conservancy's Science Advisor, took part in a historic expedition to release the reptiles. "The moment they hit the ground, they were ready for action!"



You can visit www.galapagos.org to learn more about Project Pinta through blogs, satellite tracking maps, and additional photos and videos.

Galapagos Conservancy, USA
Tel: 703.383.0077 Fax: 703.383.1177
Email: comments@galapagos.org
Web: www.galapagos.org



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Charles Darwin Foundation of Canada
Canada
Tel: +1 416.964.4400 Email: sshell@lomltd.com

Freunde der Galapagos Inseln
Switzerland
Tel: +41 44 254 28 29 Email: galapagos@zoo.ch
Web: www.galapagos.ch.org

Friends Of Galapagos New Zealand
New Zealand
Tel: +64 7 575 8809 Email: info@galapagos.org.nz
Web: www.galapagos.org.nz

Galapagos Conservation Trust
United Kingdom
Tel: +44 (0)20 7629 5049 Email: gct@gct.org
Web: www.savegalapagos.org

The Japanese Association for Galapagos
Japan
Tel/Fax: +81 3 6751 0321 Email: info@j-galapagos.org
Web: www.j-galapagos.org

Nordic Friends of Galapagos
Finland
Tel: +13 58 50 5644279
Email: k.kumenius@kolumbus.fi
Web: www.galapagosnordic.org

Stichting Vrienden van de Galapagos Eilanden
The Netherlands
Tel: +31 06 2246 2591
Email: info@galapagos.nl
Web: www.galapagos.nl

Zoologische Gesellschaft, Frankfurt
Germany
Tel: +49 (0) 69-943446-0 Fax: +49 (0) 69-439348
Email: info@zgfd.de Web: www.zgfd.de

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TORTOISE FEVER

Success for Project Pinta

Fall/Winter 2010

This issue of *Galapagos News* unabashedly highlights tortoises! As the iconic, signature species in Galapagos, and an important part of balanced island ecosystems, tortoise health, safety, and general welfare has guided much of the conservation decisions about Galapagos. At the same time, the complex issues surrounding biodiversity conservation in wilderness areas throughout the world cannot simply rely on a single charismatic species. We are drawn by the plight of a single animal, but we must be aware of the complex web (political, economic, social, biological) that surrounds all wild places.

The Pinta repopulation project has been long in the planning. Botanists, herpetologists, and conservation managers have debated the merits of returning tortoises to Pinta for well over 20 years. When it became apparent that Lonesome George would not father a new generation of Pinta tortoises, the question arose regarding the fate of Pinta. The plant life on Pinta, long without its primary herbivore, was out of balance, and as the evidence mounted against the likelihood of pure Pinta tortoises being found anywhere in the world, the pragmatic approach won out. Pinta needed tortoises.

Together with the Galapagos National Park Service (GNPS), we asked GC's Dr. Linda Cayot and the Houston Zoo's Dr. Joe Flanagan to lead a team of veterinarians to prepare a group of hybrid tortoises held in captivity in Galapagos to take the first steps on Pinta after the Island endured 40 years without tortoise activity. Joe and Linda describe their excitement in being part of the very dedicated team of vets who readied the tortoises for their new adventure last November. They then accompanied the tortoises to Pinta in May, thanks to the very generous support of our members, the Panaphil Foundation, and Continental Airlines.

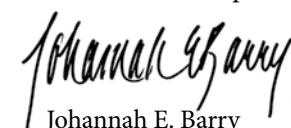
Galapagos Conservancy's investments were complemented by the State University of New York in

funding the Pinta repopulation work and the admirable work of Elizabeth Hunter and her team who observed and recorded the tortoises movements on Pinta for two months (Visit their blog: retortoise.pinta.blogspot.com). Under the leadership of Dr. James Gibbs from SUNY-Syracuse, this endeavor was a stunning success. Phase Two will bring a reproductive population on to Pinta, and we will see the island once again populated with tortoises doing what they do best — eating, sleeping, trampling, and breeding.

This issue of *Galapagos News* also features the important work of social science in Galapagos. Galapagos Conservancy supported the introduction of social science data work in Galapagos, and we are grateful to our donors and supporters who took this leap with us. This is a relatively new discipline in conservation management which has yielded very important results. Galapagos is no longer the group of isolated islands it was 50 years ago. The "continentalization" of Galapagos has changed the landscape of the inhabited areas in Galapagos in ways we are still struggling to understand.

We are honored to have the perspective of photographer, Tui de Roy. Galapagos has been in her blood and expressed in her photos for decades. While she has worked around the world, her heart is always in Galapagos. We are grateful for her tireless advocacy and engagement.




Johannah E. Barry

President of Galapagos Conservancy

Our thanks and endless gratitude for our extended family of friends who support our work and, more importantly, advocate for this special place.

Friends of Galapagos Organizations

For more than 50 years, the Charles Darwin Foundation (CDF) has been an international leader in biodiversity research in Galapagos, establishing a vital baseline to understand this unique ecosystem and the impacts of climate change on biodiversity. On International Biodiversity Day in May, they launched the Galapagos Species Checklist, the first phase of an initiative to complete an inventory of all species in the Galapagos Islands.

Support from **Galapagos Conservancy**, the **Galapagos Conservation Trust (GCT)**, the **Frankfurt Zoological Society** and the **Swiss Friends of Galapagos** has enabled CDF to create an internet portal that gives access to the cornerstone of CDF's new knowledge management initiative (see the Datazone at darwinfoundation.org). This is a big step towards sharing data and ensuring that the strategies devised for safeguarding the islands and their unique biodiversity have a sound technical basis.

With support from GCT, CDF held the first of a series of international workshops on pivotal sustainability issues such as tourism, water and waste management, transportation and related conservation and development issues in order to inform decision-making and better facilitate ecosystem management.

Most "Friends of Galapagos" organizations have been supporting Project Floreana, the ambitious plan to restore the native ecosystem of Floreana in harmony with farming and the local population's other activities.

The **Swiss Friends of Galapagos** meanwhile have been busy with a project to develop an inspirational outreach exhibit at Zoo Zurich that will allow visitors to experience the movements of two satellite tracked tortoises currently roaming the highlands of Santa Cruz.

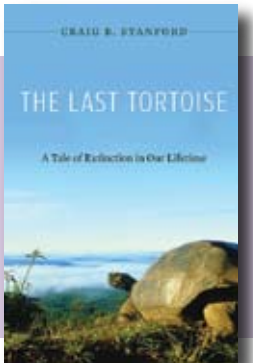
Not Another Booby. . .

The Large Painted Locust (*Schistocerca melanocera*) can reach up to 8cm in length. With its yellow markings on its head and thorax and a reddish tinge to its wings and legs, it is one of the most striking grasshoppers in Galapagos and more easily observed than the cryptic Small Painted Locust (*Schistocerca literosa*). It's easiest to see after heavy rains, when it becomes particularly abundant and can be found on all islands except Española.

BOOK REVIEW

**The Last Tortoise:
A Tale of Extinction in Our Lifetime**
by Craig B. Stanford, The Belknap Press
of Harvard University Press (2010),
\$23.95, ISBN 978-0674049925

Review by Linda J. Cayot
Science Advisor, Galapagos Conservancy



The extinction of tortoises could come in our lifetime. After millions of years on earth, their future is bleak. Humans are destroying their habitat, buying them as pets, and eating them. No species is safe, except perhaps the giant tortoises of Galapagos and Aldabra.

In *The Last Tortoise*, biologist Craig Stanford convincingly describes the destruction of the tortoises of the world, with mass extinctions likely if we do not act. While collecting animals for the pet trade can devastate critically rare species, collection for food markets is shamefully abundant with more than 10 million turtles and tortoises traded each year. But even if the pet trade and collection for food stop, habitat destruction could spell the end for many species.

Stanford describes the need for cultural change and local involvement in and commitment to conservation. Humans provide the only solution — but the prognosis remains dim for many species. Cultural change takes time — and time is running out. "The species that survive into the twenty-second century and those that don't may be decided by which species breed readily in captivity."

It is a wake-up call for all who love tortoises and the natural world. Solutions will require thinking outside the box and we'd better hurry up about it.

For sale at www.galapagos.org



NEWS FROM GALAPAGOS

PROVIDED BY THE CHARLES DARWIN FOUNDATION & THE GALAPAGOS NATIONAL PARK SERVICE

© GNP



Tortoise Movements

There are giant tortoises on Pinta after an absence of almost 40 years. After years of preparation, the Galapagos National Park Service (GNPS) has introduced tortoises to Pinta in a bold effort to restore the island to its former glory. "I can't stop smiling and want to shout it to the world," wrote Galapagos Conservancy's Linda Cayot, who is one of very few people to have studied the behavior and ecology of Galapagos tortoises in the wild and took part in the expedition to Pinta in May of this year.

In 1972, the last Pinta tortoise—Lonesome George—was shipped to the safety of the Charles Darwin Research Station on Santa Cruz. In 2003, after decades of dedicated effort, the GNPS succeeded in eradicating goats, paving the way for the return of tortoises to Pinta to complete the Island's ecosystem.

More than 20 park rangers carried the 39 adult hybrid tortoises through the arid zone a distance of several kilometers before setting them free in suitable habitat (see pg. 6). As the animals settle into their new surroundings, researchers at the State University of New York will study their movements by way of transmitters fitted to their shells in an effort to understand the impact tortoises have on the ecosystem.

"Watching the tortoises upon arrival was thrilling," says Cayot. "The moment they hit the ground, they were ready for action. They immediately began moving off through the vegetation, knocking down whatever stood in their path, finding juicy plants to forage on, and exploring their new world."

Following on from this success, GNPS staff carried out a 10-day survey on Española, an island where tortoise numbers had once dropped to just 15. These last animals have

been breeding in captivity at the Charles Darwin Research Station since the 1970s and more than 2000 of their offspring have been returned to Española.

"During the expedition, we found nests, recently hatched tortoises, and adults born on Española, which indicates that the tortoise population is doing well," says Washington Tapia, Technical Coordinator for the GNPS and leader of the Española survey. "We will now need to determine if further captive breeding of the Española tortoise is necessary."

Not Out of Danger

Conservation organizations have voiced concern over UNESCO's decision to remove Galapagos from its list of World Heritage Sites "in danger".

In 2007, Galapagos was placed on this list, bringing a much-needed sense of urgency to the situation in the Islands. But during the 34th session of the World Heritage Committee (WHC) held in Brazil in July, members voted 15 to 4 in favor of removing Galapagos from the list in recognition of efforts made by the Ecuadorian government in the last few years.

"It would be a mistake to interpret the decision of the WHC as a signal that all is well in the islands," says Johannah Barry, president of the US-based Galapagos Conservancy (GC). This view is echoed by Toni Darton, chief executive of the Galapagos Conservation Trust (GCT) in the UK, "I am concerned that this announcement is premature and may give the impression that the natural wonders of Galapagos are no longer threatened."

Both GC and GCT acknowledge that progress has been made in recent years, citing the tightening of immigration and

quarantine measures, the creation of a \$15 million Invasive Species Fund, and the strengthening of governance in the Islands.

"Galapagos continues to face extremely difficult challenges of invasive species, rapid human population growth, and lack of consensus on the kind of tourism which is best suited to the delicate ecosystems of the islands," says Barry. There is a danger that this announcement will divert funds away from vital conservation and sustainability programs, she says.

Renewable Ripples

San Cristóbal plans to invest in hydroelectric power to supply its increasing energy demands. The Island's local government has entered into a partnership with a Florida-based renewable energy company, Hydro Alternative Energy, Inc., to study the possibility of installing as many as three turbines off the island that will generate clean electricity from the ocean's waves and currents. At the same time, the Japan International Cooperation System Company will invest \$10 million for the installation of a solar energy station on Baltra Island.

Barnacles in the Fast Lane

It's been widely assumed that barnacle larvae, attempting to find a spot to lodge, are unable to settle on coastlines dominated



© Jon Witman, Brown University

by upwelling currents. But research in Galapagos, a site characterized by strong upwelling, is challenging this conventional wisdom. An international team of researchers installed plates at dozens of underwater sites along the Galapagos coastline. The swifter the vertical current the more likely barnacles were to colonize the rocky surface, they report in *Ecological Monographs*. This suggests that vertical upwelling zones are "much more dynamic ecosystems in terms of marine organisms than previously believed," says Jon Witman, a marine ecologist at Brown University and lead author of the study.

Lichen Growth

A lichen survey has uncovered more than 60 previously unreported species in Galapagos and nearly 10 species new to science (see image). The discoveries were made by an international scientific team during a lichen workshop at the Charles

Darwin Foundation (CDF) in the middle of June. A one-day field excursion resulted in 400 samples collected on Santa Cruz from diverse habitats in various vegetation zones and on an array of substrates. "It gives us a rather good idea of how little we know and further inspires us to deepen our understanding of Galapagos biodiversity," says Frank Bungartz, CDF's Head of Natural History Collections and Theme Leader in Biodiversity Assessment. CDF's lichen collection now contains 12,000 specimens of more than 600 Galapagos species (see www.darwinfoundation.org/datazone).

© CDF



© GNP



Finch Translocation

Mangrove finches from some of the last populations in the Islands have been moved across Isabela to a site where they should face fewer pressures on their survival. An international team has moved nine specimens of *Camarhynchus heliobates* from two sites on the east coast threatened by habitat destruction and the introduction of invasive species to a more pristine site on the west coast. By tagging the released birds with radiotransmitters, it will be possible to monitor how they respond to their new living conditions.

For more Galapagos news, visit the [NEWSROOM at www.galapagos.org](http://www.galapagos.org).

GALAPAGOS ANIMAL ADOPTION GIFTS
www.galapagos.org



Photographing Galapagos

Tui De Roy



© Alan McLean

Renowned wildlife photographer Tui De Roy has been to the ends of the earth in search of stunning images of the natural world. Here, she reflects on what sets Galapagos apart as a photographic destination.

It is well known that the Galapagos Islands have served as the birthplace of many ideas and discoveries, so poignant is their unique and thriving ecological treasure. For me, a lifelong career in wildlife photography was honed there from an early age, thanks to my parents' unorthodox decision to leave Europe in search of a pioneering lifestyle among Darwin's finches and marine iguanas 55 years ago — four years before the establishment of the Galapagos National Park. Intimate encounters with the giant tortoises of Alcedo Volcano on Isabela enabled me to publish my first magazine article when I was just 17, a cover story at the age of 19, and my first coffee table book a few years later (*Galapagos: Islands Lost in Time*).

Ironically perhaps, these youthful experiences only made me hunger for other places and animals that, in my mind at least, might be even wilder and more elusive than the trusting island species I knew so well. A long list of captivating projects ensued, taking me to seven continents and often to the most remote and pristine corners of the globe.

But ultimately, it is always to Galapagos that I gravitate for yet another photo session, and yet another book, with seven volumes published so far. Only in these magical islands, which molded not only my profession but also my entire view of life, can I completely lose myself, camera in hand, in a world where time and space matters not. My very existence seems to become transparent, seemingly unseen as a vibrant community of wild creatures go about their busy lives in peaceful balance with their age-old environment. Here, a good photo cannot be measured by how close to the subject you can get (because this is so easy) but rather by how carefully you can line up various elements into one

pleasing composition, often including several species, interesting landscapes, and carefully chosen light angles to boot. It is here that I have learned what I consider the greatest reward of my profession: to show the world through the eyes of the animals themselves, to capture life from their perspective. Only time and true intimacy could ever make this possible.



© Tui De Roy

To the best of my ability, I have tried to depict this special gift from nature in complimentary ways through my three all-time favorite books. In *Galapagos: Islands Born of Fire*, I aimed to capture all facets of Galapagos via my personal adventures and discoveries, from iguanas and finches on erupting volcanoes to whales and sharks in the ocean depths. *Galapagos: Wild Portraits* is a tender family album of all the special animals in the islands. And *Galapagos: Preserving Darwin's Legacy* is an ode to 50 years of intense scientific research and conservation work since the inception of the Charles Darwin Foundation and Galapagos National Park. I am currently working on my ultimate contribution, *Galapagos: A Vision of Eternity*, for which I plan to select my best, most evocative images from more than 40 years of Galapagos photography.

With every one of my books I hope to contribute in a small way to mankind's fascination and respect for these extraordinary islands, as I am convinced human emotions are our best weapon to galvanize the actions required to ensure their lasting protection.

To order Tui De Roy's books, email: books@rovingtortoise.co.nz



© Francisco Laso

As the *Sierra Negra* dropped anchor, the crew made preparations to ferry a large contingent of park wardens, scientists, and journalists to one of two small sandy beaches that stood out against Pinta's dark, rough, southerly coastline. Also on board, awaiting to disembark, were dozens of giant tortoises that were about to make conservation history.

No tortoise had walked on Pinta soil since 1972, when the Galapagos National Park (GNP) removed Lonesome George—the last of his kind—into captivity on Santa Cruz. Pinta's tortoises, like those on many other islands in the archipelago, had suffered over the course of several centuries at the hands of hungry whalers. In an age before refrigeration, with protein sources essentially limited to dried meat and fish, the giant tortoise was a great prize; these long-lived reptiles could be kept alive on board for as much as a year without need for food or water until needed for the pot.

The tortoises on board the *Sierra Negra*, carefully corralled on deck and in a hold in the bow, were facing a much brighter future. They were about to be released into the wild, to bring much-needed balance to Pinta's ecosystem. Since the removal of introduced goats in 2003, the vegetation has been recovering so fast it is threatening to choke out some of the Island's native sun-loving plants; our tortoises, it is hoped, will restore the natural mosaic of plant communities on the Island.

Re-tortoising Pinta



Dr. Joe Flanagan is the Director of Veterinary Services at Houston Zoo in Texas and has had a long-term involvement with Galapagos. In May, he was part of the historic project to release giant tortoises onto Pinta, an island that has been without this dominant herbivore ever since Lonesome George was taken into captivity almost 40 years ago.



© Joe Flanagan

The chosen reptiles—39 of them—were hatched in the 1960s and '70s during the early years of the tortoise-breeding program run jointly by the GNP and Charles Darwin Foundation on Santa Cruz. Since these are of mixed ancestry, it is impossible to be certain of the impact they will have on Pinta, so I traveled to Galapagos in November 2009 with a team of veterinary surgeons to sterilize each animal. It is a sensible precaution; this way, they will not be able to interbreed with genetically pure animals that may be introduced to Pinta in the future. In the week before they boarded the *Sierra Negra*, I returned to Galapagos to examine the animals and to collect blood and fecal samples to determine their health status. I also treated them for intestinal worms to prevent the introduction of unwanted parasites to their new home.

Each tortoise was also fitted with a radio or satellite transmitter. Although the GNP has returned thousands of juvenile tortoises to several islands over the last three decades, these animals were the first adults to be released. The transmitters will allow GNP staff and researchers at the State University of New York to track the animals as they adapt to their new freedom and, importantly, to assess the difference they make to Pinta's ecosystem.

Like tourists going ashore for a "wet landing" tortoises were transferred from the *Sierra Negra* to a panga two at a time.

(Continued on page 9.)

Left: Tortoises on board the Sierra Negra on their way to Pinta Island.

Below: Galapagos National Park wardens gather at the release site.

Christophe Grenier & Emmanuel Cleder

Christophe Grenier is Director of Social Sciences at the Charles Darwin Foundation (CDF). Here, in the light of an international workshop on island sustainability run by CDF in March, he and his colleague Emmanuel Cleder take us on a tour of Puerto Ayora to experience the challenges facing Galapagos in a globalized world.



© Jacintha Castiara

The Sustainability Challenge

La Cascada...

...is Puerto Ayora's newest neighborhood, with construction beginning in 1996. Census data cannot put a precise figure on the number of people currently living there, but it's estimated to be about 2000. The lack of urban planning is striking: many streets are too narrow for a fire-engine to pass, there is no water supply, and no sewer system. Without these basic services, those living in La Cascada face many problems, particularly poor hygiene and the threat of infectious disease.

Water...

...is a precious commodity. There are three main natural reservoirs that supply water to the residents of Puerto Ayora (and to Bellavista in the Santa Cruz highlands) with a brackish mixture of rainwater run-off and saltwater from the sea. This is extracted using electric pumps and then distributed across the town either via a network of pipes or in trucks. Two of the main wells are in Puerto Ayora itself, which means that pollution is a serious problem. One, for example, lies close to Puerto Ayora's gas station and the diesel-fueled power plant that generates electricity for the town. In addition to the fuel that inevitably leaks into it, poor sanitation means that the water supply is also contaminated with human waste.

Although few residents will drink this water, a study at CDF indicates that in a typical six-month period, nearly half of the Santa Cruz population will suffer from a water-borne infection of the gut, urinary tract, or skin.

The Recycling Center...

...is located 4 km outside Puerto Ayora on the road to Bellavista in the highlands. Residents, businesses, hotels, and tourist ships separate waste into organic, recyclable, and non-recyclable containers, which are collected by the municipality. Organic and recyclable waste go to the recycling center and non-recyclable waste either enters the landfill or is incinerated on the north of the island. It is estimated that one third of all household waste in Santa Cruz ends up at the recycling center. This is equivalent to about 350 tons of waste every month or 0.77

kg per person per day. Organic refuse is composted and used to fertilize gardens across the island. Glass is crushed on site and used to manufacture ceramic slabs and tiles. The rest of the recyclable waste must be transported to the mainland, where the infrastructure exists to deal with it.

El Mirador...

...is an area of former Galapagos National Park land to the north of Puerto Ayora that is earmarked for development. Confronting the reality of human population growth in Galapagos, the GNP agreed to cede this land to the municipality in 2007 in exchange for a

(Continued on page 10.)



Above: Puerto Ayora's newest neighborhood, La Cascada. Right: A satellite view showing the site of the future neighborhood of El Mirador.

© GNP

GOOD Vibrations



A seismograph on bare lava.

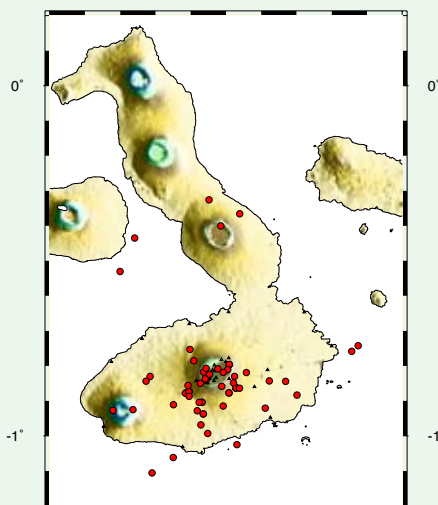


Lisa Hjelm is a teacher at the Girls' Middle School in Silicon Valley, California. With a background as a geologist, she was part of an expedition to Galapagos last year to begin recording the rumblings beneath Isabela's Sierra Negra, one of the most active volcanoes in the world.

our understanding of how magma rises through the oceanic crust, something that could help predict and plan for earthquakes and volcanic eruptions.

Recording seismic activity requires a piece of heavy, awkward-to-carry, and extremely delicate equipment known as a seismograph. These had to be transported to Galapagos by plane, truck, boat, smaller boat, sometimes horse, and scientist. Each device contains two key components: a ground-motion sensor known as a seismometer and a recording system powered by a combination of solar panel and car battery. During three weeks of field work, we installed sixteen of these devices on and around the volcano.

This was the hard part, requiring several people, lots of wires, small tools and problem-solving skills to site, level, situate, and connect each seismograph to its recording system. Whenever possible the equipment is buried, but the soil on Isabela is often wet or nonexistent so some of our stations are discretely sited on bare lava. With the equipment up and running, it is now a question of returning every six months to download the precious data from each seismograph. At the latest visit, in June 2010, the team reported that two stations required repairs, two had been irreparably damaged by water, and one had been stolen, a clear indication of the unforeseen problems this kind of work throws up. But though we are now down to thirteen continuously recording stations, the data they yield will still allow scientists to infer the location of earthquake epicenters, and hence, the precise location of the underground magma chambers and the way they change over time. Such data may reveal an important piece of the puzzle in our efforts to understand the mysteries of the



subterranean world.

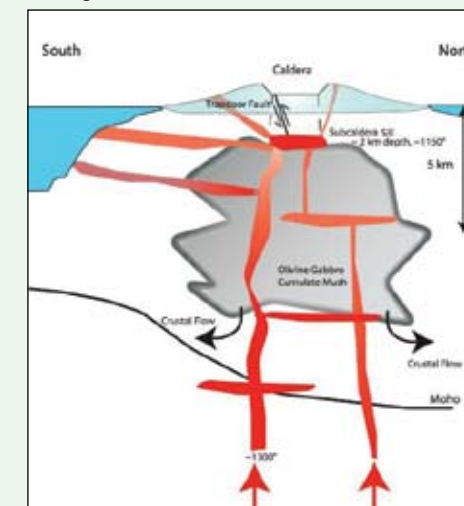
No seismograph installation proceeds exactly to plan. For those setting up on the volcano, a spare pair of boots was essential as clambering over blocky lava chunks in the crater was an exercise in boot shredding. The other team, installing seismographs around the coast, the work was smooth sailing, punctuated by intense activity. Quick, efficient loading of fragile equipment into a bobbing rubber boat was the only constant. At one site not far from Puerto Villamil and at the southernmost point of Isabela, we held our breaths as the launch surfed through a slim opening in volcanic rocks. Then we relaxed, mesmerized by swimming sea turtles in a sheltered cove. On black sand, we passed equipment, then hoisted heavy packs and fanned out into a green jungle to scout for setup locations. At another site, where Sierra Negra meets the sea to the north, we jumped onto smooth lava; its glassy swirls and bubbles tinkled as they broke into crinkly, iguana-crest spikes beneath our boots. Here, we finished at sunset and faced the prospect of navigating a rugged lava field with headlamps. In near darkness, our launch floated past rocks littered with penguins, flightless cormorants, sea lions, iguanas, and crabs, all settling down together for the night.

Grueling field conditions, active volcanoes, possible earthquakes! These are not the typical locales to find a teacher, but they are just right for a geologist who became a teacher. In the middle-school science vocabulary, volcano, earthquake, evolution, endemic species, and Galapagos are common terms and the National Science Foundation has supported my role as a scientist-cum-teacher on this project.



Rough going inside Sierra Negra's caldera. © Falk Amelung, University of Miami

It is crucial that such scientific expeditions communicate their important work more widely, and my task has been to develop communication bridges: between present and future scientists; and between students of the Girls' Middle School, in Silicon Valley, CA and those in Galapagos. In the longer term, these data will be used to create a four-dimensional picture of the inside of Sierra Negra. Such striking imagery will be invaluable for making this work accessible for a wider audience, allowing students to ask and answer their own questions and hopefully to inspire the next generation of scientists.



Above: A schematic illustration of what the inside of Sierra Negra might look like. This study should reveal the precise location of magma chambers inside the volcano.

© Cynthia Ebinger

Left, below: Preliminary results, showing the location of seismographs (tiny blue triangles), and epicenters of volcanic activity (red spots). © Cynthia Ebinger

Continued from pg. 6 -- TORTOISES.

On shore, each tortoise was secured to a wooden pole to allow it to be transported up the side of the volcano to the release site within the Pinta tortoise's historical range. The journey was split into 11 stages, with pairs of wardens sharing the burden of tortoises weighing up to 100 kg over a distance of some 400 meters before handing their precious cargo onto the next pair. This was necessary to get them beyond the arid zone and into prime tortoise habitat around 4 km inland and about a third of the way to the summit.



Each tortoise is fitted with a radio or satellite transmitter to allow its movements to be tracked. © Joe Flanagan

It took three days to complete the job, so we were able to see changes happening right before our eyes. When tortoises were freed at the release site, they started feeding within minutes. We could hear branches breaking as their heavy frames crunched trails through the dense vegetation. In two days, we found that some animals had moved several hundred meters and it was not long before there was no other way to locate them than by picking up signals from the transmitters fitted to their shells.

I have had many wonderful experiences in Galapagos over the years, but none has come close to giving me the sensation of joy and excitement I felt when the last tortoise arrived at the release site. Everyone involved gathered together to share this historic moment. There were smiles, photos, and a strong sense of camaraderie over a job well done. There are tortoises on Pinta!

large area of farmland in the highlands that is now part of the national park. As pressures on park land continue to grow, this kind of “land-swap” may become increasingly common in Galapagos. The 70-hectare site is set to add 1000 new homes to Puerto Ayora, almost doubling the town’s geographical footprint. But alarmingly, there has been almost no urban planning for this new neighborhood, with little consideration given to the delivery of water, electricity supply, sewer system, or public transport. With appropriate planning, El Mirador could be a model of ecological urbanization, but there is a very real danger that the mistakes made in the construction of La Cascada are about to be repeated.

Conclusion

Galapagos is experiencing a rapid and profound social transformation. As improvements in transport continue to enhance the connections between the islands and the rest of the world, so the flow of tourists, migrants, products, and invasive species continues to rise. The driving force behind this expansion is the tourism industry, which has experienced enormous growth since it began in the 1960s and particularly in the last decade, with annual visitor numbers increasing from around 60,000 in 1998 to 170,000 in 2008. It is therefore important to change the current model of Galapagos tourism to slow and ultimately to reduce its impact on the Islands. The challenge is to do this without reducing the income to the resident population. A significant increase in the GNP entrance fee for short visits would achieve this. Not only would it have a direct impact on tourist numbers, but it would also encourage those that do visit to stay for longer. This would select for a kind of tourist that appreciates the uniqueness of Galapagos, it would reduce the pressure on tourist vessels to rush from one site to the next, and it would give each visitor more opportunity to spend more of their money in these remarkable but threatened islands.

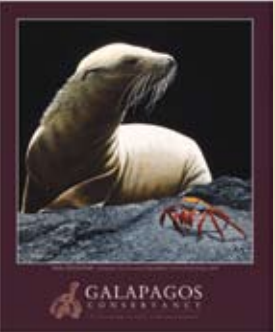
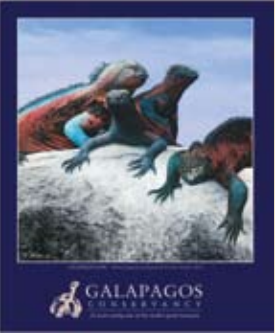
Spotlight Donor

Paul Schulz
of Winter Haven, FL



As a nature artist, Paul found it easy to love the Galapagos Islands. He’s been fortunate to visit the islands twice, once before the age of ecotourism. One of the greatest experiences of his childhood was traveling to Galapagos in 1972 with his dad and a “who’s who” of eminent naturalists. It was not an easy or well known destination at the time, but what an adventure for an eleven-year-old! In 2008, he returned to Galapagos again—this time with his eleven-year-old son. On both trips, Paul was inspired by the extraordinary rocky volcanic shorelines that are alive with marine iguanas, sally-lightfoot crabs, and sea lions. His paintings celebrate these amazing creatures that are so uniquely Galapagos. To help celebrate the 25th anniversary of Galapagos Conservancy, Paul Schulz, has generously donated two original oil paintings of popular Galapagos subjects. “Galapagos Gang” features the brightly colored marine iguanas of Espanola Island. “Tidal Encounter” captures a moment shared by a Galapagos sea lion and a brilliant sally-lightfoot crab. Posters and signed fine art prints of these artworks, all donated by Paul, are on sale at www.galapagos.org. 100% of the sales price directly benefits the important work of the Galapagos Conservancy.

Thank you,
Paul, for
sharing
your artistic
talents and
boundless
generosity
with GC!



Cruise with
Galapagos
Conservancy

Let the Experts Lead the Way

July 14 – 24, 2011

July 12 – 22, 2012

Join GC’s own Science Advisor, Linda Cayot, and naturalist extraordinaire, Richard Polatty, as we set sail aboard the *Integrity*, a 16-passenger, 141 ft. luxury yacht. Special guests and behind-the-scenes tours of the Charles Darwin Research Station set our trip apart from the rest.



GC’s 2009 passengers gaze at a group of sea lions on Española Island. Photo by Zorica Kovacevic.

Itineraries differ between 2011 and 2012. Details and a downloadable brochure for each trip can be found in the travel section on our website at www.galapagos.org Or, you can call our office at 703-383-0077 or email rfuhrken@galapagos.org with questions.

A \$1500/person non-refundable deposit is required to reserve your spot. Our cruises are open to anyone 8 years and older.

FIVE-YEAR ACTION PLAN

Over the next 3-5 years, GALAPAGOS CONSERVANCY will focus on the following 4 program areas.

Unlocking information for conservation

The challenge. Although Galapagos is one of the most studied places in the world, access to basic information is surprisingly difficult. Information is held in disperse archives and databases in Galapagos and around the world. **Our approach.** Through the Knowledge Management/Data Exchange initiative, we will build on the growing awareness in Galapagos of the need to develop new ways to collect, store, share, and utilize information resources. The goal is to develop a unifying, accessible portal that will serve both as a destination for diverse information resources and as an easily accessible source of existing information. Partners in this project will include the Charles Darwin Foundation (CDF), the Galapagos National Park Service (GNPS), the Governing Council in Galapagos, local municipalities, ministries of the Ecuadorian government, Ecuadorian and international universities, individual researchers, etc. **Current needs.** We view this as a multi-year, large-scale initiative. At present we seek start-up funding to immediately bring together key actors in Galapagos to create a shared work plan for the next several years.



The Knowledge Management initiative will increase the value and impact of a wide range of information that already exists, as well as future data collection.



Recent investments in sustainable agriculture have helped replace imported vegetables, a major source of invasive species, while creating employment for local residents.

Developing a sustainable society

The challenge. Long-term protection of Galapagos requires an economic system that is compatible with biodiversity conservation, an educational system that prepares citizens to be stewards of the archipelago, and a strong civil society dedicated to and engaged in Galapagos conservation. **Our approach.** GC’s priorities over the coming years include: educational reform (with a focus on establishing examples of best practices and transforming the skills of Galapagos teachers), micro-lending to build local capacity (current projects focus on sustainable agriculture and environmental management capacity of municipal governments), supporting public fora to air concerns and seek solutions to the way Galapagos society relates to key conservation issues. Partners in this work will include local non-profit organizations, businesses, community leaders, municipal governments and cooperatives. **Current needs.** 1) funding to expose local leaders to innovative educational practices being implemented elsewhere in Latin America and to formulate strategies to implement such approaches in Galapagos, and 2) matching funds to increase the size of gifts to our capacity-building small grants program.

Restoring degraded ecosystems

The challenge. Ecological damage caused long ago by whalers, pirates and early settlers and exacerbated by more recent human activity and the presence of aggressive introduced species has disrupted natural biological processes in Galapagos. If left unchecked, the islands will suffer irreversible losses of native and endemic wildlife. **Our approach.** GC’s ecosystem restoration efforts seek to rebuild healthy, balanced plant and animal communities and establish management strategies to ensure the sustainability of these communities in perpetuity. In the next five years, our focus will be on working with our partners to complete Project Pinta (re-establishment of a reproductive population of tortoises), improve monitoring of long-term, island-wide restoration efforts (Pinta, Española, Pinzón, Rábida, Isabela, Floreana, Santiago), breed and rear tortoises with Floreana ancestry for the eventual repopulation of Floreana, and initiate thinking about the potential return of land iguanas to Santiago. We will also explore critical issues surrounding the impact of climate change on marine and terrestrial ecosystems and support efforts related to highland restoration. Partners in this work will include the CDF, the GNPS, local NGOs, Ecuadorian agencies responsible for agriculture and the quarantine system, and various US universities. **Current needs.** 1) funding to complete the monitoring of the tortoises released onto Pinta in May 2010, and 2) matching funds to encourage larger gifts from our donors interested in island restoration and species conservation.

Identifying and responding to emerging issues

The challenge. Conditions in Galapagos change rapidly. While scientists, planners, and managers are focused on an array of urgent challenges, it is often difficult to identify, evaluate, and respond to new or potential problem areas before their impact becomes extensive and/or irreversible. **Our approach.** Emerging Issues workshops will bring together experts from Galapagos and around the world to identify new and emerging issues within or directly affecting the islands which, if not addressed, may have negative long term effects on a sustainable and diverse Galapagos. These events will generate white papers, technical journal articles, project proposals, and work plans. The CDF, GNPS and the Governing Council of Galapagos will be key partners in organizing these events. **Current needs.** GC currently seeks funding for the first workshop, which will be held in 2013.

2011 Galapagos Calendars



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And the winner is. . .

Congratulations to **Alice Bartlett of Fyansford, Victoria, Australia** for her winning photo of Spotted Eagle Rays in the 2011 Galapagos Conservancy Calendar Photo Contest. Her photo graces the cover of the 2011 Galapagos Calendar. Twelve other winners' photos mark each of the months and back cover while showcasing Galapagos' amazing biodiversity and rich landscapes. Visit **www.galapagos.org** and click on the **GALLERY** to view this year's other winning photos.

If you're eager to submit your photos for the 2012 Galapagos Conservancy Calendar Photo Contest, we are now accepting submissions. Visit www.galapagos.org to read submission guidelines and rules. Deadline for submissions is: July 30, 2011

11150 Fairfax Boulevard, Suite 408
Fairfax, VA 22030

