Galapagos news

no. 31 autumn/winter 2010

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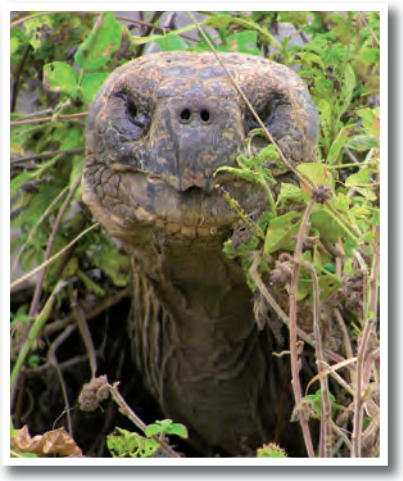
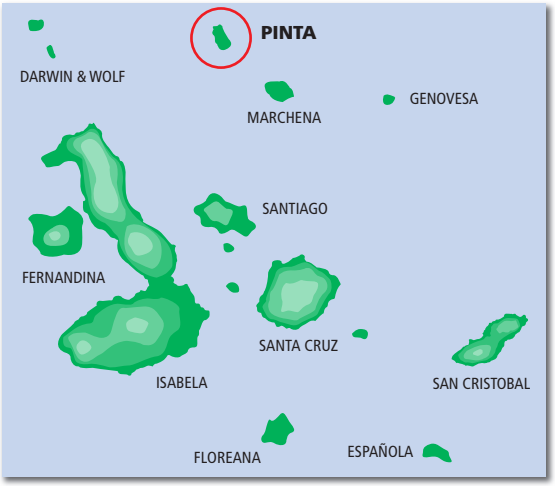


© Joe Flanagan

A Galapagos Giant Tortoise peeks out from the undergrowth on Pinta, one of a group of tortoises that are the first to roam across this remote northerly Island for almost 40 years. In May, Joe Flanagan, director of veterinary services at Houston Zoo in Texas, took part in a historic expedition to release the reptiles (see pp. 8-9). "When tortoises were freed at the release site, they started eating within minutes!"



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Friends of Galapagos
Saving Darwin's treasured islands

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A model island

After years of careful planning, the Galapagos National Park (GNP) has succeeded in introducing tortoises to Pinta Island. As most of you will know, this was home to Lonesome George up until 1972, when wardens shipped him to the safety of the Charles Darwin Research Station on Santa Cruz.

As I carried out research for a book I wrote on George in 2006, I became fascinated by Pinta. Like most of the Islands in the Archipelago, its tortoises were hit hard by whalers with a taste for their meat. But once the population crashed – probably in the late 19th century – the Island was rarely visited, even when tourists began coming to Galapagos in the 1960s. It is this moment – the arrival of tourists – that has been driving Galapagos to the crossroads at which it now rests. But as Puerto Ayora and other towns in Galapagos grew, particularly during the 1990s, Pinta remained as isolated as ever.

It was in that decade – the 1990s – that the GNP began to make progress against the goats that had invaded Pinta's then tortoiseless slopes. The eradication techniques perfected on Pinta eventually won through in the early 2000s, making this the first Island in Galapagos to be cleared of these destructive mammals. The methodical approach became a model for goat eradication across the rest of the Archipelago, even beyond: it was on Pinta that GNP staff and Charles Darwin Foundation (CDF) scientists began what is one of the most important achievements in efforts to restore the ecological integrity of Galapagos.

The return of tortoises to Pinta is likely to be another major milestone in the history of Galapagos conservation and veterinarian Joe Flanagan was there to witness it (pp. 8-9). Although none of the animals is of Pinta descent, it is hoped they will step into the empty ecological niche left by Lonesome George and his long-dead ancestors. The introduction of such replacement or "proxy" species is a science in its infancy, but in a world where we have already lost so much and where more will inevitably disappear, I would not be surprised if this approach becomes increasingly common in conservation. Nor would I be surprised if the data being collected on the movements of Pinta's new tortoises acts as a basis for similar projects across Galapagos and beyond. It is a model Island I would love to visit. But at the same time, I am thrilled that I can't. Pinta is now about as pristine as it's possible to get and the inspirational role of such places should not be underestimated.

Not long after this historic event, UNESCO's World Heritage Committee met in Brazil, where delegates decided it was time for Galapagos to come off its list of World Heritage Sites "in danger". Friends of Galapagos Organisations have expressed concern that this development is premature (see News on p. 4). If you are in any doubt about this, you only need look as far as pp. 6-7, where Christophe Grenier and Emmanuel Cleder of CDF lay out some of the immense obstacles to realising a sustainable Galapagos.

Elsewhere in this issue of *Galapagos News*, we get to hear other people's perspectives: science teacher Lisa Hjelm tells us about a recent trip to Isabela to begin measuring the volcanic activity beneath Sierra Negra (pp. 10-11); celebrated Galapagos-born wildlife photographer Tui De Roy compares Galapagos to the other destinations that have come under her lens (pp. 12-13); and we hear from CDF's Miriam Silva (p. 16). As usual, we also have reviews of a couple of recent books (p. 14) and an update of the activity of Friends of Galapagos Organisations around the world (p. 15).

Henry Nicholls
Editor

NEWS *from Galapagos*

Not out of danger

Conservation organisations 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 favour of a recommendation to remove Galapagos from the list in recognition of the efforts made by the Ecuadorian government over the last few years.

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

Both GCT and GC 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. But Galapagos continues to face extremely difficult challenges of invasive species, rapid growth of the human population, and lack of consensus on the kind of tourism that is best suited to the delicate ecosystems of the archipelago.

"Saving Galapagos is a marathon not a sprint, and there is still a long way to go to overcome the challenges the Islands face," says Darton. "There is a danger that this announcement will divert funds away from the vital conservation and sustainability programmes", she says.

Tortoise movements

There are Giant Tortoises on Pinta after an absence of almost 40 years. After years of preparation, the Galapagos National Park (GNP) has introduced tortoises to Pinta in a bold effort to restore the Island to its former glory.

In May this year, more than 20 park rangers released dozens of hybrid tortoises on Pinta (see image below and pp. 8-9). Also present was Linda Cayot, science advisor to the Galapagos Conservancy and one of very few people to have studied the behaviour and ecology of Galapagos tortoises in the wild. "Watching the tortoises upon arrival was thrilling," she says. "They immediately began moving off through the vegetation, knocking down whatever stood in their path, finding juicy plants to forage, and exploring their new world."

Following on from this success, GNP staff carried out a 10-day survey on Espanola, an Island where tortoise numbers had dropped to just 15. These last animals have been breeding in captivity at the Charles Darwin Research Station since the 1970s and more than 2,000 of their offspring have been returned to Espanola.

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

Renewable ripples

San Cristobal looks set to invest in hydroelectric power to supply its increasing energy demands. The Island's local government has entered into a partnership with Florida-based renewable energy

company Hydro Alternative Energy, Inc. that should see up to three turbines being installed off the Island to generate clean electricity from the ocean's waves and currents. At the same time, the Japan International Cooperation System Company is to invest $10 million to install a solar energy station on Baltra Island. In the meantime, the potential for geothermal energy in Galapagos is also being explored.

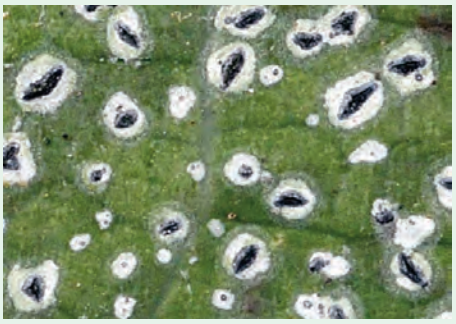

© Jon Witman, Brown University

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 by upwelling currents. But experimental research in Galapagos, a site characterised 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 colonise 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 in the US and lead author of the study.

Lichen growth

A lichen survey has uncovered more than 60 previously unreported species in Galapagos


© CDF

and around 10 species new to science (see one of them above). The discoveries were made by an international scientific team during a lichen workshop held by the Charles Darwin Foundation (CDF) in the middle of June. The 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).

Shark data

Working in collaboration with CDF, GNP staff have identified breeding sites for several shark species, including the first natural breeding sites for the hammerhead shark in Galapagos. They captured young sharks and recorded basic data to get an idea of the makeup of the population. Further studies will help define migration patterns, movements between different zones in the Galapagos Marine Reserve (GMR) and estimates of the reproductive period of each different shark species. These data will inform management strategies and whether the current zoning system in the GMR needs to be revised.


© GNP

Finch translocation

Mangrove Finches from some of the last populations in the Archipelago have been translocated 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 the their new living conditions.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The sustainability challenge

Christoph Grenier & Emmanuel Cleder

Christoph 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 globalised world.

La Cascada ...

... is Puerto Ayora's newest neighbourhood (above), with construction beginning in 1996. There is no census that can put a precise figure on the number of people currently living there, but it's estimated to be about 2,000. The lack of urban planning is striking: many streets are too narrow to allow a fire-engine to pass, there is no water supply to this quarter; 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-fuelled 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, work in progress 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.

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The recycling centre ...

... is located around 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 (below). Organic and recyclable waste goes to the recycling centre and non-recyclable waste either enters landfill or is incinerated on the north of the Island. It is estimated that around a third of all household waste in Santa Cruz ends up at the recycling centre. This is equivalent about 350 tons

© Jacintha Castora

of waste every month or 0.77 kg per person per day. Organic refuse is composted and used to fertilise 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 (GNP) 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 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 around 1,000 new homes to Puerto Ayora, almost doubling the town's geographical footprint. But alarmingly, there has been almost no real urban planning for this new neighbourhood, with little consideration given to the delivery of water, electricity, sewer system or public transport. With appropriate planning El Mirador could be a model of ecological urbanisation, but there is a very real danger that the mistakes made in the construction of La Cascada are about to be repeated.

Conclusion ...

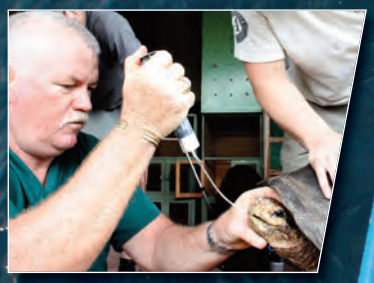
Galapagos is experiencing a rapid and profound social transformation. As improvements in transport continue to enhance the connections between the Archipelago and the rest of the world, so the flow of tourists, migrants, products and invasive species continues to rise. The driving force behind this expansion – both directly and indirectly – is the tourism industry, which has experienced enormous growth since it began in the 1960s and particularly in the last two decades, with annual visitor numbers increasing from around 60,000 in 1998 to 170,000 in 2008. It is therefore important to change the current economic model of Galapagos, which relies too heavily on tourism. The challenge is to end this mono-economy without reducing the income to the resident population – the subject of a future workshop. A significant increase in the GNP entrance fee for short visits is one measure that would help. Not only would it have a direct impact on tourist numbers, 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.

© GNP

Re-tortoising Pinta

Joe Flanagan

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.



© Francisco Laso

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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 of 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. For since the removal of

© Joe Flanagan

Left: Tortoises stowed on board the Sierra Negra. *Above: The ferry to Pinta.*

introduced goats in 2003, the vegetation has been recovering so fast it is threatening to choke out some the Island's native sun-loving plants; our tortoises, it is hoped, will restore the natural mosaic of plant communities on the Island.

The chosen reptiles – 39 of them – were hatched in the 1960s and '70s during the early years of the tortoise-breeding programme run jointly by the GNP and Charles Darwin Foundation (CDF) 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 travelled to Galapagos in November 2009 with a team of veterinary surgeons to sterilise 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 collect blood and faecal 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


© Joe Flanagan

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

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. 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 metres 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.

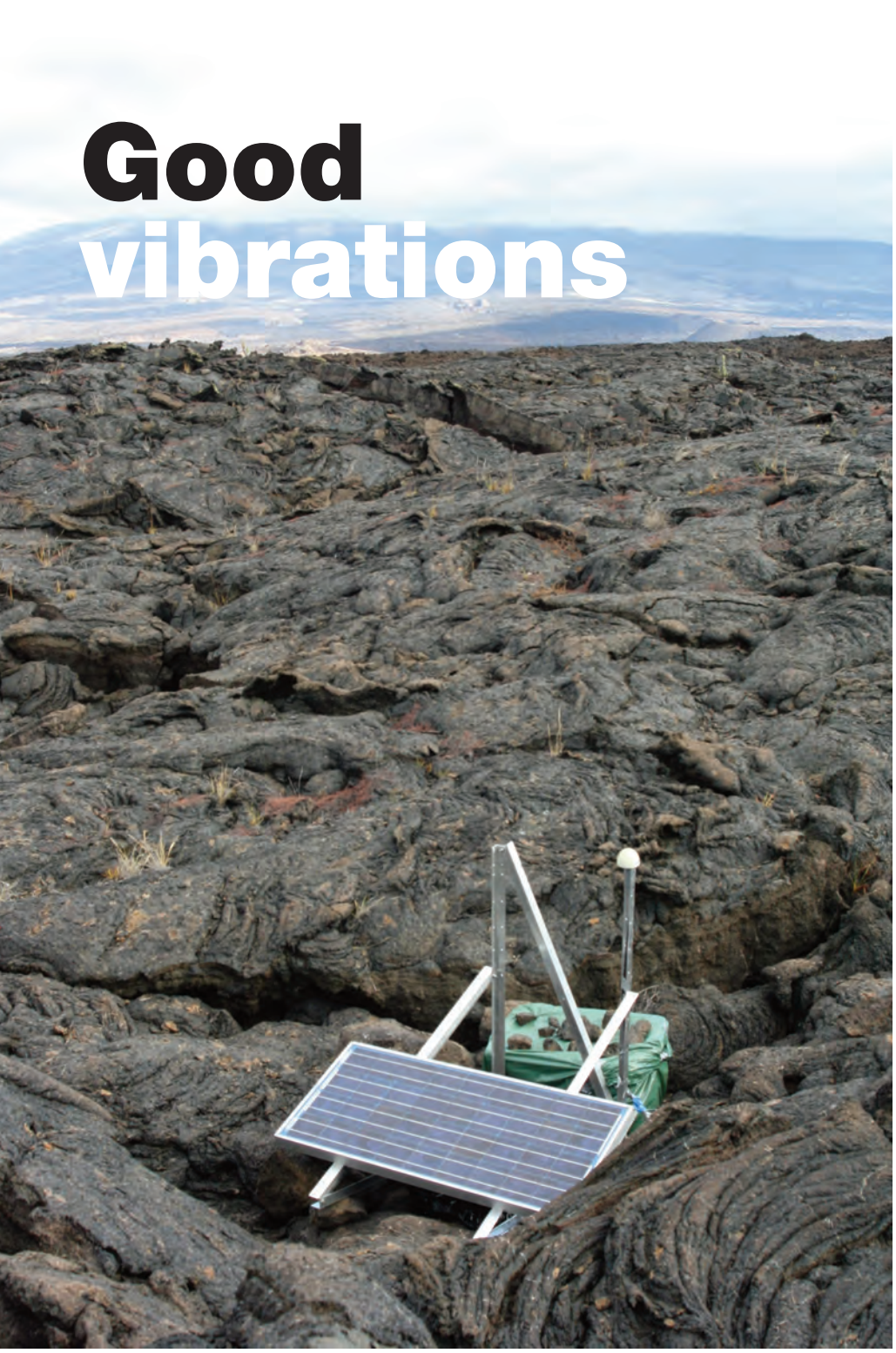
It took three days to complete the job, so we were able to see changes happening right before our eyes. When tortoises were freed at the release site, they started feeding within minutes. We could hear branches breaking as their heavy frames crunched trails through the dense vegetation. In two days, we found that some animals had moved several hundred metres 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!


© Joe Flanagan

The Galapagos National Park wardens gather at the release site.

Good vibrations



A seismograph positioned on bare lava.

Lisa Hjelm

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.

Hissss! A warning rose from the mist, registering over the sounds of rain dripping from trees, bushes, my hat, the tip of my nose. Bending as I wiped my glasses, I met the gaze of a tortoise. One more step and I would have tripped over him. I eyed him respectfully, and we continued our slog along his trails, hauling seismic equipment through the rain. After a week of crunching over smooth swirls of sharp, dark volcanic rock on Isabela, the thick, drenched vegetation was mysterious and challenging.

Just over a year ago, in July 2009, a team of scientists assembled in Galapagos to begin a two-year study of Sierra Negra, one of the most active volcanoes in the world. What is the location and shape of the magma chamber beneath Sierra Negra's crater? How is the magma moving? What is the relationship between magma movement and earthquakes, or which comes first, the magma or the quake? The answers to such questions should enhance 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, orientate 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

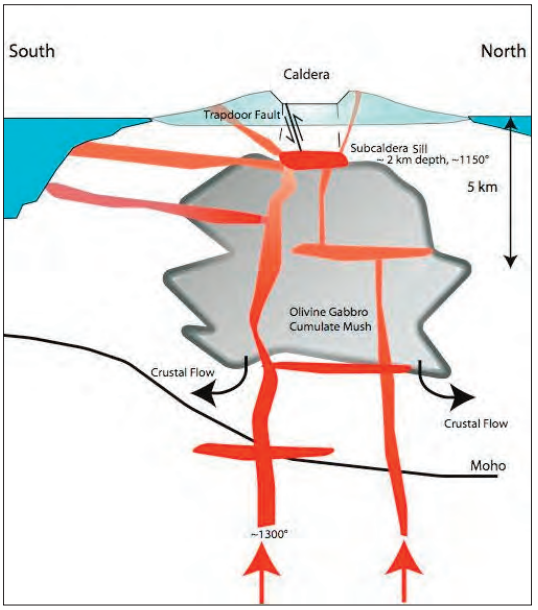
download the precious data from each seismograph. At the latest visit, in June 2010, the team reported that two stations required repairs, two had been irreparably damaged by water and one had been stolen, a clear indication of the unforeseen problems this kind of work throws up. But though we are now down to thirteen continuously recording stations, the data they yield will still allow scientists to infer the location of earthquake epicentres, hence the precise location of the underground magma chambers and the way these change over time. Such data may reveal an important piece of the puzzle in our efforts to understand the mysteries of the subterranean world.

"Clambering over blocky lava chunks in the crater was an exercise in boot shredding"

No seismograph installation proceeds exactly to plan. For those setting out up the volcano, a spare pair of boots was essential as clambering over blocky lava chunks in the crater was an exercise in boot shredding. For 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 breath as the launch surfed through a slim opening in volcanic rocks. Then we relaxed, mesmerised 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.

Gruelling field conditions, active volcanoes, possible earthquakes! These are not the typical locale 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. 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, 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 inspiring the next generation of scientists.



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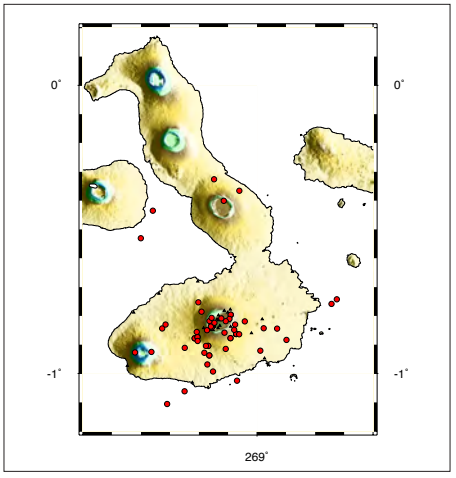
A schematic illustration of what the inside of Sierra Negra might look like. This study should reveal the precise location of magma chambers inside the volcano.

© Falk Amelung, University of Miami

Rough going inside Sierra Negra's caldera.



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Preliminary results, showing the location of seismographs (blue triangles), and epicentres of volcanic activity (red spots).

© Alan McLean

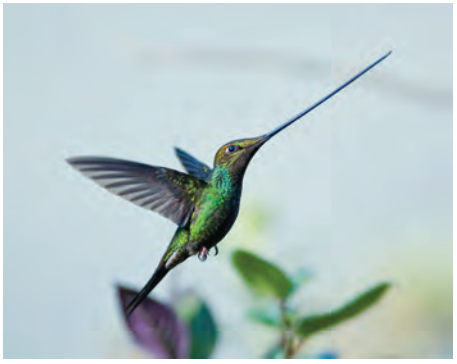
Renowned wildlife photographer Tui De Roy has been to the ends of the earth in search of stunning images of the natural world. Here, she takes us on a tour of her many assignments and reflects on what sets Galapagos apart as a photographic destination.

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 amongst 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. I became passionate about creating books centred around my images and experiences, and in so doing I discovered the true difference between *working* for photos of rare and reclusive animals rather than the simple joy of immersing oneself amongst the accommodating creatures of Galapagos.

From the very first time I started travelling amongst the great Andes of South America I dreamt of producing a book that would capture the truly wild side of this the longest mountain chain on earth, which stretches unbroken through 4,500 miles and 67 degrees of latitude, equivalent to the distance between New York and Moscow. My champion was to be the Andean condor, the largest flying land bird in existence, for where the condor flies true wildness remains. I also spent weeks on end tracking the spoor of incredibly secretive Spectacled Bears, Andean Cats, or Woolly Mountain Tapirs, often without so much as a single sighting. Over the years – 25 in all – I made dozens of individual trips to capture to my satisfaction all the varied habitats of the Andes – from cloud forests to deserts, volcanoes to canyons, salt pans to glaciers – along with a representative collection of amazing plants and animals: graceful vicunas and tiny flamingos living at 4,000 metres, and a myriad hummingbirds, some whose bills are longer than their bodies, are just some examples (*The Andes: As the Condor Flies*).

Meanwhile, it took some 30 trips to Antarctica over five summer seasons to photograph this frozen continent. Here, the multitudinous wildlife was certainly as approachable as in Galapagos, but the



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inherent challenges lay in reaching the prime locations, often guarded by fierce weather and impenetrable ice barriers (*Wild Ice: Antarctic Journeys*).

When New Zealand became my new home 18 years ago, I decided to follow the iconic kiwi through all of the wild environments of its island homeland, from rain-drenched forests to snowy alpine valleys and active volcanoes, photographing many other bizarre species along the way (*New Zealand: A Natural World Revealed*). I soon discovered that if a wildlife photographer ever wanted to design the most difficult subject to pursue, the kiwi would be it: rare and endangered, shy, nocturnal, fast-moving, cryptically coloured, and hiding in the undergrowth of the wettest, densest, darkest, primeval forests on earth!


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By far the hardest book project I have undertaken to date evolved from a passion into an obsession over the course of a decade: to photograph all 22 species of albatross, the largest flying seabirds and one of the most endangered bird families on earth; their haunts are many of the most isolated, storm-lashed islands in the windiest stretches of ocean. Since hardly anyone frequents these tiny specks of


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land, a number of wild and woolly sailing expeditions in our own small sailboat were required to fulfil this ambition (*Albatross: Their World, Their Ways*).

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 moulded 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.

To the best of my ability, I have tried to depict this special gift from nature in complimentary ways through my three all-time favourite 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 over 40 years of Galapagos photography.


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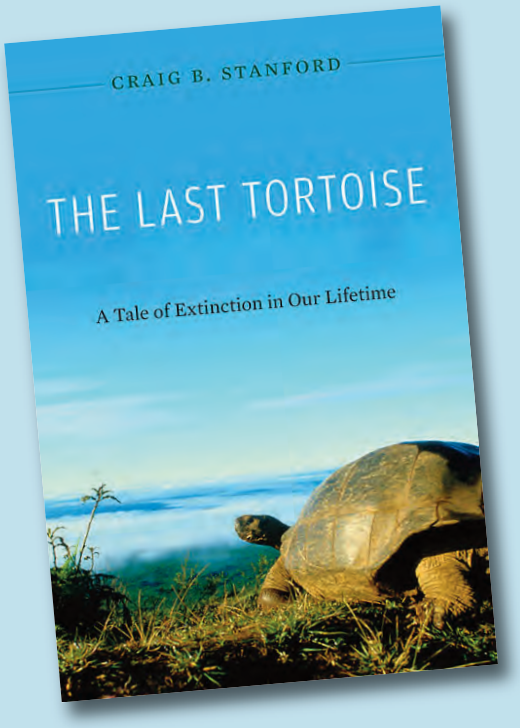
With every one of my books I hope to contribute in a small way to mankind's fascination and respect for these extraordinary islands, as I am convinced human emotions are our best weapon to galvanise the actions required to ensure their lasting protection.

If you would like to order any of Tui De Roy's books, please email books@rovingtortoise.co.nz

Reviews



IN COLD BLOOD

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

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 wholesale and wanton 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's strongest chapter, *No Respect for the Ancient Lands*, discusses habitat destruction and its relation to human population growth, development and poverty. He describes ongoing tragedy for some species and progress for others. Discussing mitigation techniques – including sustainable development – he points out the problems inherent in the solutions.

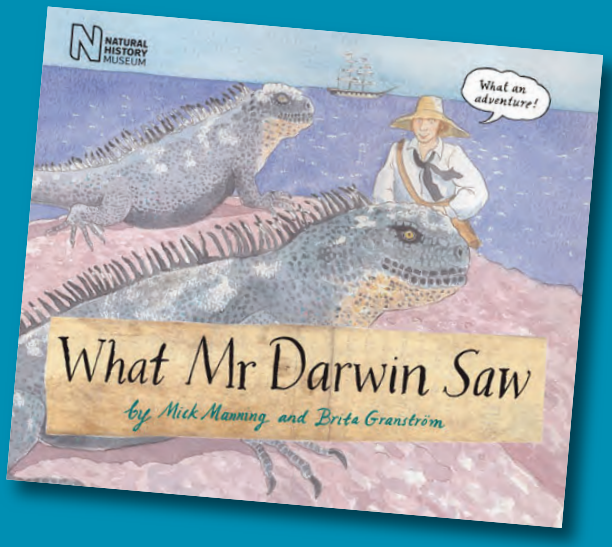
In his final chapters, Stanford describes the need for cultural change and local involvement in and commitment to conservation. Humans provide the only solution – but the prognosis remains dim for many species. Cultural change takes time – and time is running out. "The species that survive into the twenty-second century and those that don't may be decided by which species breed readily in captivity." While this may be true, it doesn't solve the three main problems – habitat loss, the pet trade and food markets – and essentially gives up on maintaining tortoises in their natural habitat. 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.

Reviewed by Linda J Cayot
Science Advisor, Galapagos Conservancy

A LIVELY VOYAGE

What Mr Darwin Saw
by Mick Manning and Brita Granstrom, Frances Lincoln Ltd (2010),
£7.99 (paperback),
ISBN 9781847801074

This Darwin bicentenary book, now out in more affordable paperback, offers children a hugely engaging introduction to the life of Charles Darwin from youth to old age, though most of the book dwells on the voyage of the *Beagle*. *What Mr Darwin Saw* is captured through a mixture of diary-like entries and questions bubbling off the cartoon-like characters. Galapagos iguanas, tortoises and finches all feature in the evolution of Darwin's thought. It's a beautifully produced, essentially accurate history that will introduce any youngsters lucky enough to be heading out to Galapagos to some very important ideas.



Reviewed by Henry Nicholls

FOGOS
Friends of Galapagos Organisations

A FOGO Near You

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 the species in the Galapagos Islands. Support from the **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 www.darwinfoundation.org). This is a big step towards sharing data and ensuring that the strategies devised for safeguarding the Archipelago and its 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 (see pages 6-7).

Most FOGOs have been supporting Project Floreana, the ambitious plan to restore the native ecosystem 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 Zurich Zoo 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 Espanola.

Islanders

Miriam Silva

Where were you born?

In Ambato in central Ecuador, but my parents moved to Galapagos in 1980 when I was one-year-old.

What are your earliest memories?

I can remember being four and being surprised to see trucks on the island. I remember swimming off the dock in Puerto Ayora, where all the boats are now moored. There used to be many crabs and lobsters in the bay. I also liked to go diving at Las Grietas, deep, water-filled ravines just outside town. That was good! We sometimes took salt from the rocks or water from the pools to cook with or collected rainwater to drink. I remember when we moved from cooking on a wood fire to cooking with bottled gas. Some time after, a neighbour who didn't yet have gas thanked us for it. It was funny! We didn't even know she was taking it!

What was it like growing up in the Islands?

Back then, Puerto Ayora had only a few houses and nobody ever locked their doors. There were only five small boats, no water taxis and not many cars; my mother had a donkey and we walked everywhere, barefoot on earthen roads. I have four sisters and three brothers. We looked forward to the arrival of a container boat that would bring supplies once every six months. When we were not at the small schoolhouse in the town, we were always on the beach, making sand castles, playing ball and swimming in the sea.

What do you like and dislike about life in Galapagos?

I like the nature and environment. The Islands have a range of climates: the coast, the highlands and the jungle, all in a small space. I love the climate: sometimes it's hot, sometimes it's cool. I like the peace and fresh air: in spite of the increasing numbers of cars, the pollution here is still nothing like that on the mainland. But life in Galapagos does have its drawbacks. There are now too many people, too many houses and too many cars. My children do not have the freedom I had as a child; they will never swim in the bay, for example; it is prohibited. Security is also a concern; now we have to lock our doors.

© Jacintha Castora

You work for the Charles Darwin Foundation (CDF). How did this come about and what are your responsibilities?

My first proper job was with the Galapagos National Park (GNP)'s reforestation programme and I moved over to CDF three years ago, where I have been involved with the Native Plants Project. This idea is to encourage local residents and businesses to use native Galapagos plants rather than introducing yet more ornamental species to the Islands that could turn invasive. The project receives funding from several donors, some from outside Galapagos like the Friends of Galapagos Organisations and others from inside like private companies, hotels and local government. We also have an "adopt a plant" scheme; for $100 you can actually dig a native plant into the ground in the highlands on Santa Cruz, something that has been a particular hit with Japanese visitors. Another benefit of this project is the way it has helped improve the relationship between the Galapagos community, GNP and CDF.

Do you have a favourite plant?

I love them all. They are so beautiful to me!