# GALAPAGOS news

SPRING/SUMMER 2009

*a biannual English-language publication for members of the international network of Friends of Galapagos organizations*



## IN THIS ISSUE



The Floreana mockingbird (left) is critically endangered, with just a few hundred individuals left on earth. It was more numerous when the *HMS Beagle* passed through Galapagos in 1835. Back then, there were enough around that Charles Darwin managed to observe them and collect a single specimen, which resulted in this splendid drawing by John Gould, the Zoological Society of London's ornithologist and artist extraordinaire. As Gould noted in the *Zoology of the Voyage of the Beagle*, the Floreana mockingbird has white tips to its wing covets, "forming three transverse bands," a characteristic that sets it apart from the other Galapagos mockingbirds and gives the species its scientific name *Mimus trifasciatus*, literally three-banded mockingbird (see page 7 for more).

Reproduced with permission from John van Wyhe ed., The Complete Work of Charles Darwin Online

(http://darwin-online.org.uk/).

GALAPAGOS CONSERVANCY
*Saving one of the world's great treasures*

*Galapagos News* is a copyright twice-yearly English language publication produced for members of the international network of Friends of Galapagos organizations. These non-profit organizations, which are listed below, all support the Charles Darwin Foundation for the Galapagos Islands.

The information in this issue was obtained from the Charles Darwin Foundation, the Galapagos National Park, and other sources, but they are not responsible for the accuracy of the content or the opinions expressed herein.

ISSN 1468-8514

**Galapagos Conservancy**
USA
Tel: +1 703.383.0077
Email: comments@galapagos.org
Web: www.galapagos.org

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

**Freunde der Galapagos Inseln**
Switzerland
Tel: +41 (0)1 254 26 70
Email: galapagos@zoo.ch
Web: www.galapagos-ch.org

**Friends Of Galapagos New Zealand**
New Zealand
Email: info@galapagos.org.nz
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: 03-5766-4060
Email: info@j-galapagos.org
Web: www.j-galapagos.org

**Nordic Friends of Galapagos**
Finland
Tel: +3358-50-5644279
Email: k.kumenius@kolumbus.fi
Web: www.galapagosnordic.org

**Stichting Vrienden van de Galapagos Eilanden**
The Netherlands
Tel: +31 313 421 940
Email: fin.galapagos@planet.nl
Web: www.galapagos.nl

**Zoologische Gesellschaft, Frankfurt**
Germany
Tel: +49 (0) 69-943446-0
Fax: +49 (0) 69-439348
Web: www.zgf.de

Editor: Henry Nicholls

Designer: Lori Ulrich

*Galapagos News* is printed on recycled paper.

---

Error Correction: On page 6 of the Fall 2008 *Galapagos News*, we made an error in a photo credit. We would like to apologize to Sabine van der Meulen of Boulder, CO for mistakenly crediting another photographer for her beautiful photo of Galapagos Penguins.

# 200 Years of Darwin

## *President's Report*

Much has been said, and will continue to be said in this Darwin anniversary year, about the impact that Charles Darwin's work has had on the fabric of scientific thought and the fundamental way we understand the natural world. This year, we celebrate the 150th anniversary of the publication of Darwin's *On the Origin of Species by Means of Natural Selection*. We also celebrate the 200th anniversary of Mr. Darwin's birth. And of particular, immediate interest to us is the 50th anniversary of our most important conservation partners, the Charles Darwin Foundation and the Galapagos National Park Service.

We recall that Charles Darwin was in Galápagos for five weeks during the *HMS Beagle's* year-long voyage and visited only 4 islands. His first reaction was not enthusiastic

"Nothing could be less inviting than the first appearance…the country was compared to what we might imagine the cultivated parts of the Infernal regions to be…" From his descriptions of marine iguanas ("disgusting, clumsy Lizards") to his fascination with tortoises ("…old fashioned, antediluvian animals or rather inhabitants of another planet"), Darwin was intrigued by the geology, plant life, and fearless behavior of the island's wild inhabitants—as are visitors to the islands today.

I was recently asked what I thought Darwin would think today about the state of Galapagos almost 175 years after his visit. My answer was that he would be pleased. Conservation efforts on the uninhabited islands have brought species back from the brink and have re-established native landscapes and ecosystems. The flora and fauna on many of the islands are, in fact, richer than they were at the turn of last century. There are legal measures in place to protect marine and terrestrial systems. The Galapagos waters, a world Darwin never explored, still teem with life, and new species of corals and deep ocean fauna are being discovered today.

The report we would make to Mr. Darwin on the inhabited islands is not as glowing. We see evidence of overpopulation, introduction of alien species in the municipalities and into the Park, we see overuse of scarce and protected resources, and a growing economic footprint at odds with this isolated archipelago. We see a resident population often in conflict with the goal of biodiversity sustainability, and we see economic activity which detracts from and damages the charismatic resources upon which it is based. In this anniversary year, we realize how much good has been done in Galapagos. We also are acutely aware of the enormous pressures which threaten to compromise the work that has been done by the Government of Ecuador and the international conservation community to protect this extraordinary place.

We acknowledge and celebrate the important work of the Galapagos National Park and the Charles Darwin Foundation in keeping this covenant with nature. And we thank all the organizations and individuals around the world who have been such a critical part of their success. We wish Charles Darwin the happiest of birthdays and congratulations on his modest little text.

Johannah E. Barry
President of Galapagos Conservancy

Find us on Facebook

# Dr. J. Gabriel Lopez

*…is the new executive director of the Charles Darwin Foundation. He comes to Galapagos with 25 years of experience in conservation, philanthropy, public policy, environmental management, and community development.*

### *Tell us about your early years.*

I was born in Cuba but grew up in New York. As a child, I had a wide range of interests in academic pursuits, sports, and the arts, but I also had a great love of the outdoors and beautiful natural settings. I so looked forward to major hiking, canoeing, and sailing trips during holidays. They offered a refuge away from the concrete canyons of the city. It's distressing that many children today are not as drawn to the outdoors. This has potentially major ramifications for those of us who advocate on behalf of conservation and the environment.

### *When did you first visit Galapagos?*

In the 1990s, before tourism really took off. The number of visitors back then was around 40,000 a year and the islands had a resident population of some 12,000 people. Today the annual number of visitors is 173,000 and climbing and the resident population is well into the 30,000s. Puerto Ayora in the 1990s was a small town where most people either walked or rode bicycles. Today, the number of cars, trucks, and taxis is approaching 400 and they can cause traffic tie-ups at times. Remarkable and very worrisome.

### *What is your enduring memory from that trip?*

The magnificence, the beauty, and diversity of the islands. I remember diving with penguins and sea lions. Penguins at the equator! But beyond these magical moments I also observed the great fragility of Galapagos and even then I was concerned that unplanned and poorly managed growth could potentially endanger this global treasure.

### *Can you highlight a couple of achievements from your career to date?*

I have worked on scores of major conservation and sustainable development initiatives in nearly 50 countries on five different continents, so this is a very difficult question to answer. But I am particularly proud to have been a part of efforts to build several research and training centers for sustainable development in Mexico, southern Africa, and Brazil and also in various parts of Asia. I am also very proud to have helped forge strong social movements for conservation and sustainable development in Mexico, Central America, and the Amazon. These have led to major advances in community-based management of forests and other natural resources that can serve as a model for sustainability in other settings.

### *What is your vision for Galapagos?*

Sustainability by 2020. This is an enormous challenge, as current trends of growth and development threaten to overtake our efforts to conserve and restore this magnificent ecosystem. But I remain optimistic that we can set in motion a process for creating a Galapagos where economic, urban, and tourism development are very carefully managed under the highest of socio-environmental standards and guided by the realities of life on a small archipelago in the middle of the Pacific Ocean. This must start with education. Attaining a sustainable Galapagos will require a complete change in how people view their relationship with this very fragile ecosystem.

### *What else do you hope to achieve?*

I would like to see CDF become a globally recognized center of excellence, providing highly rigorous empirical knowledge and information for informing and shaping sound decision-making at multiple scales. CDF needs to have its greatest impact in helping agencies of the Government of Ecuador and other key partners sustainably manage, conserve, and restore this vital ecosystem. But CDF is more than that. As a major institution working on the frontline of conservation and sustainability, CDF is well positioned to play a lead role in shaping the vision, policies, practices, partnerships, and institutional frameworks needed to advance local and global sustainability.

# Focus on Friends of Galapagos Organizations

Following successful eradication projects on northern Isabela, Santiago, and Floreana, the focus is now on the inhabited islands of Galapagos where livestock are still present and the consequences of an increased human population are intensifying. In January the **Frankfurt Zoological Society** signed an agreement with the **Charles Darwin Foundation (CDF)**, confirming $150,000 support this year.

On February 12th, the UK's **Galapagos Conservation Trust (GCT)** held a prestigious fundraising dinner with Christ's College Cambridge to launch a lasting research link between Cambridge University and Galapagos. CDF was represented by their Patron HRH the Duke of Edinburgh, new executive director Gabriel Lopez, and director of technical assistance Felipe Cruz. Special guests at the event included Sir David Attenborough, Sarah Darwin, Randal Keynes, and the Vice Chancellor of Cambridge. Following a successful pilot study, GCT is also funding a program to integrate environmental education into the local school curriculum in Galapagos.

The **Friends of Galapagos in the Netherlands** have provided support for the expansion of solar power capabilities at CDF's Galapagos-based research station. The use of solar rather than diesel-generated power would reduce energy costs by 30% or around $500 each month, demonstrating to the local community and visitors how solar energy can be used.

CDF's social science team is now up and running thanks to support from **Galapagos Conservancy (GC)**. Their investment will strengthen CDF capacities to address key underlying issues in Galapagos relating to the social and cultural sciences. Tied in with this is GC's support for the publication of the *2007–2008 Galapagos Report*. This publication has had an important impact on decision-making and public perceptions of the issues in Galapagos. It will also help to ensure a more integrated approach to research.

# News from Galapagos

Provided by the Charles Darwin Foundation & The Galapagos National Park Service

## New Color for Land Iguanas

Geneticists have discovered that a group of mysterious pink iguanas belongs to an entirely new species.

The pink reptiles—nicknamed *rosada*—are found only near the summit of Isabela's Wolf volcano, the highest in the archipelago. Staff from the Charles Darwin Foundation (CDF) and Galapagos National Park (GNP) stumbled across them during an expedition back in 1986, but their existence has remained something of a secret until now.

DNA collected from 36 individuals is clearly distinct from other populations of land iguana in Galapagos—enough to warrant designating a new species, according to an article in Proceedings of the National Academy of Sciences. "These iguanas are all that remain of a lineage that originated between 5 and 6 million years ago," says Gabriele Gentile of Tor Vergata University in Rome, Italy and lead author of the study.

While not much is known about this new species, there are concerns about the viability of the population. It's estimated there may be fewer than 250 individuals surviving, with two males for every female. More alarmingly, nobody has ever seen a juvenile, says Gentile. "We really need to collect data to help the conservation of this form," he says.

Geneticists studying populations of land iguanas elsewhere in the islands are also adding definition to our understanding of this group of reptiles. What are currently recognized as two distinct species could, in fact, be more, they report in Molecular Ecology. In addition to *rosada*, two of the other populations—those on Plaza Sur and Santa Fe—have particularly low genetic diversity so face an increased risk of extinction.

"Our molecular results provide objective data for improving continuing *in situ* species survival plans and population management for this spectacular and emblematic reptile," says Michel Milinkovitch, professor of molecular genetics at the University of Geneva in Switzerland.

*A Pink Iguana on Wolf Volcano on Isabela. © Gabriele Gentile*

## Rights of Nature

In September, Ecuador became the first country in the world to grant legal rights to nature, further indication of President Rafael Correa's commitment towards the conservation of the country's ecological assets.

Ecuador's new constitution, approved by some 70% of the population, stipulates that nature "has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions, and its processes in evolution."

In the US, there are several municipalities that already recognize the rights of nature. Until recently, however, none of them had asserted the right of nature to evolve, says Mari Margil, Associate Director of the Legal Defense Fund, a Pennsylvania-based organization that helped Ecuador draft this part of the constitution. The Ecuadorians came up with the idea of adding in a reference to evolution, she says. "Communities in the US are now taking Ecuador's language and using it to make their own laws."

The idea of giving forests, rivers, and volcanoes rights is extremely new. When it comes to the law, natural ecosystems like these are typically treated as property, so are open to exploitation by whoever happens to own the land. "With this vote, the people of Ecuador are leading the way for countries around the world to fundamentally change how we protect nature," says Margil.

Although it remains to be seen whether and how such revolutionary powers will be implemented, this is further evidence that President Correa was serious about his announcements that Galapagos is "at risk" and its conservation "a national priority." "There is now far greater protection for Galapagos and other ecosystems in Ecuador than there was there before," says Margil. "That's very important."

## Going, Going Goats...

It cost GNP $6.1 million to remove goats from Santiago, according to a recent article in the *Journal of Wildlife Management*. But, the researchers argue, this was money well spent and should act as a model for even more ambitious eradication efforts.

Between 2001 and 2005, GNP staff removed almost 80,000 feral goats from the 585 km$^2$ island, the third largest in the archipelago. This was achieved using a suite of eradication techniques, including packs of tracking dogs, aerial hunting by helicopter, and radio-collared "Judas" goats to help home in on remnant herds. This combination of approaches "likely decreased the length and cost of the eradication campaign," they report.

The last 1,000 goats were the hardest to remove, sapping almost a third of all the money spent, a lesson to other countries attempting a similarly ambitious eradication program.

## No Show for George

All the eggs laid by the female tortoises in Lonesome George's enclosure have been declared infertile.

Last year, the two females that have shared a coral with George for almost 20 years constructed three nests between them and produced a total of 20 eggs. GNP staff were able to recover most of these and incubate them artificially. After several months, however, with no sign of hatching, geneticists confirmed that there was no evidence of embryos in any of the eggs.

## Combing Wolf Volcano

An ambitious expedition to Isabela promises to reveal the hidden secrets of the tortoises on Wolf volcano.

Unlike other areas of Galapagos, this volcano is home to several different kinds of tortoises, many of them hybrids between the Wolf tortoise and those from other islands. It's thought that the movement of tortoises by pirates and whalers may explain this strange mix.

In December, GNP staff and scientists from Yale University spent 11 days on Wolf volcano and succeeded in collecting blood samples from 1,663 giant tortoises. Genetic analyses are currently being carried out, and it is hoped that they may turn up a female with Pinta-like genes that could be a more suitable mate for Lonesome George.



## Tour Boat Disaster

GNP officials are investigating the cause of a fire that led to the sinking of a tourist vessel just off the popular island of Bartolome.

The fire broke out on board the *Parranda* in the early hours of January 14. All of the 15 passengers and 11 crew members were rescued unscathed. As it went down, the 125-ft-long vessel released small quantities of diesel fuel, but it is unlikely to cause significant environmental damage, according to GNP. The boat will be removed by the *Parranda*'s touring company.

*The* Parranda *sinks near Bartolome. © GNP*

## Native Plants

CDF botanist Rachel Atkinson has won the Merit Prize for Ecological Conservation for her innovative project to encourage greater use of native plants in Galapagos gardens. This recognition should increase the pressure on El Mirador, a new development to be constructed on Santa Cruz, to seed its gardens with native species.

## Galapagos Flamingo Census

Under the direction of the GNP, staff and volunteers conducted a general census of the flamingo population in Galapagos in order to determine the status of the species.

The census took place at all 27 lagoons simultaneously—guards and volunteers made their way to each of the lagoons at the same time. At a specified time, they began to count and register the birds at each site.

Every guard was armed with a GPS, a ruler to measure the water depth at each lagoon, and a special form to record the data.

"After many years, it has been determined that the best time to do the census is at 10:00 a.m. because that is the busiest feeding time for flamingos and allows for better collection of data," said Tobias Robalino, a GNP guard who participated in the census event.

435 flamingos were counted in the entire archipelago, including both adults and juveniles; 360 birds were found on Isabela Island; 48 were found on Santiago; 17 on Floreana; and 10 on Santa Cruz. Additionally, 38 old nests and 20 abandoned nests were counted.

## Rat Extermination on Isla Lobos

Rangers from the Island Ecosystems Conservation and Restoration Team (CYREI) of the San Cristobal Technical Office of the Galapagos National Park are exterminating rats at the Isla Lobos visitor site.

Since the beginning of the year, CYREI has set traps to control rodents on Isla Lobos. These traps consist of toxic bait placed inside PVC tubes, which prevent other species from consuming it. Each week, the tubes are checked and new bait is added to the traps where the bait has been eaten.

According to the reports presented by the rangers, the consumption of rat poison is decreasing rapidly, which indicates a decline of the rodent population in the area. In order to increase effectiveness and safety of the operation, the extermination methods will be adjusted in the coming months.

Islas Lobos is a small islet located 6.5 km from Puerto Baquerizo Moreno on San Cristóbal Island. It is a very popular visitor site in the National Park because it is a nesting area for blue-footed boobies and frigatebirds, as well as home to marine iguanas, lava lizards, finches, warblers, and sea lions. The elimination of rats will help protect all of the species which make Isla Lobos such an attractive site.

## Reducing Bird Deaths by Cars

The Technical Office of the GNP in San Cristóbal and the Environmental Protection and Traffic Units of the National Police are carrying out a campaign to reduce the deaths of endemic and native birds along the road from Puerto Baquerizo Moreno to Puerto Chino.

This initiative seeks to limit deaths caused by vehicles through education and communication activities and improved monitoring and signage. The GNP is training members of the National Police to use GPS and other tools in the monitoring of birds and the recording of data. The program has been promoted through the local media.

The highway between Puerto Baquerizo Moreno and Puerto Chino, like many other roads in the archipelago, is defined under the GNP Management Plan as a public use area within the borders of protected natural areas.

Many different bird species can be found along the Puerto Baquerizo Moreno–Puerto Chino highway. Those most affected by irresponsible driving include finches, mockingbirds, and flycatchers.

Birds are one of the primary attractions of the Galapagos archipelago. The English scientist Charles Darwin was inspired to write his theory of evolution of the species based on his observations of the mockingbirds he saw during his travels in the islands.

*Galapagos Flamingos. © GNP*

## Fire on Isabela Island


After receiving report of a fire during the afternoon hours of March 21st, personnel from the Galapagos National Park Service, National Police, Puerto Villamil harbor authorities, Provincial Government, and Isabela Firemen's Corp sped to the scene to try to control the conflagration.

The fire was centered in the agricultural zone in the Cerro Verde area of Santo Tomás, in the highlands above Puerto Villamil, in southeastern Isabela.

The contingent deployed to fight the blaze included eight park rangers, six police, six members of the Navy, two members of Firemen's Corp, and a member of Civil Defense, in addition to two backhoes and a tanker truck.

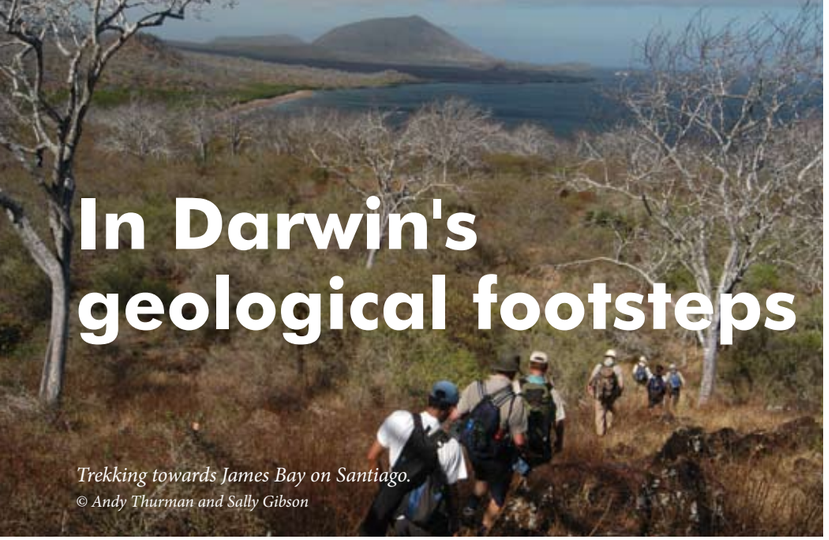
Among the team's first actions was the construction of an eight-meter fire-break to halt the spread of the blaze.

The Galapagos National Park Service, in coordination with the Ministries of Government, Environment, and Defense, brought in additional heavy machinery to extinguish the fire.

The fire did not represent any danger for Galapagos animal species. The Cazuela area, some seven kilometers from the location of the blaze, was the nearest site to the fire with a population of giant tortoises.

## Species Lists

The first ever comprehensive list of Galapagos species—marine and terrestrial—has gone online, thanks to the CDF (see **http://darwinfoundation.org/en/checklists/**).



# In Darwin's geological footsteps

*Trekking towards James Bay on Santiago.*
*© Andy Thurman and Sally Gibson*

***Sally A. Gibson** is a geologist at the University of Cambridge. The 2007 and 2008 expeditions to Galapagos were funded by the Geological Society of London, Mineralogical Society of Great Britain and Ireland, University of Cambridge, and the National Science Foundation.*

Charles Darwin's musings on giant tortoises and mockingbirds are so well known that it is easy to forget he was, first and foremost, a geologist. During the five years Darwin spent on board *HMS Beagle*, more than three quarters of all the notes he took were about geological matters, and geology was a major concern in the five weeks that he spent in Galapagos in late 1835.

Darwin had been fascinated by volcanic islands and was eager to know how they formed. Indeed, even prior to arriving in Galapagos, he had described how eager he was to reach the islands and witness an active volcano. On August 12, 1835 he wrote:

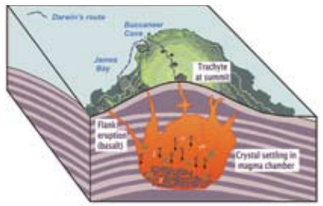
*"In a few days time the* Beagle *will sail for the Galapagos Islands—I look forward with joy and interest to this, both as being somewhat nearer to England and for the sake of having a good look at an active Volcano."*

As it turned out, there were no eruptions at the time of Darwin's visit to Galapagos, but this did not stop him from making some important geological observations. Many of these assumed a prominent place in his 1844 book on *Volcanic Islands* and remain fundamental to our present-day understanding of volcanoes.

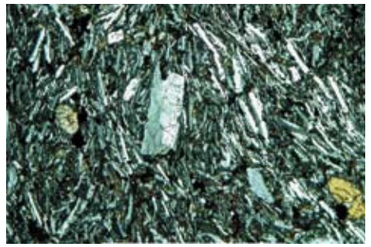
Some of Darwin's greatest insights came from observations he made during ten days on Santiago (formerly known as James Island). On September 16, 1835, he and a few trusted assistants landed and set up camp at Buccaneer Cove in the northwest of the island. It was here that Darwin collected most of his geological samples, but he also made several excursions with Spanish-speaking tortoise hunters. One excursion took him to James Bay, where Darwin visited the salt mines and collected samples from a prominent, sparsely vegetated black-grey lava flow. He also went on two separate treks inland, each lasting two days. These were up the slopes of the prominent inactive volcano that dominates the northwest of the island.

In addition to dozens of plant, bird, and animal specimens that Darwin took on these forays inland, he also collected several rock samples that proved fundamental to his theory of how volcanic islands form. He noticed that the lava near the green summit of the volcano was different from those that he had studied on its lower slopes at Buccaneer Cove and James Bay. As he described in Volcanic Islands, the base of Santiago's volcano seemed to be comprised of black rock or basalt. At the summit, by contrast, he had found a less dense, grey-green rock known as trachyte.

This led Darwin to propose that there might be subtle but important differences in the composition of magmas inside a volcano. He speculated that if these formed in a large chamber, the densest crystals would sink to the greatest depths and lightest crystals would rise towards the top. These differences would then be manifested in the lavas erupted from a single volcano, with the densest basaltic magma emerging at its base and the least dense trachyte at its greatest heights. This was a radical departure from the then widely held view that the composition of volcanic rocks changed over geological time and it's one that has influenced subsequent thinking on volcanoes.




*Darwin imagined a magma chamber beneath Santiago. © Andy Thurman and Sally Gibson.*



*A microscopic view of Darwin's trachyte.*
*© Andy Thurman and Sally Gibson.*

The particular specimens that led to this insight are held at the University of Cambridge's Sedgwick Museum. They are small, typically measuring less than 5 cm across and are covered in lichen and unsuitable for detailed study. Together with an international team of scientists, I set out, in 2007, to collect similar samples. An additional goal of our expedition was to use these geological samples to pinpoint the exact route that Darwin took as he scoured the island for ornithological, zoological, and botanical specimens.

Starting our journey in Buccaneer Cove, just as Darwin had done more than 170 years ago, we hiked to James Bay and

***(continued on page 10)***



***Henry Nicholls** is a freelance science journalist and the author of* Lonesome George *(Macmillan, 2006). He is also the editor of* Endeavour*, a history magazine, and the editor-in-chief of this publication,* Galapagos News.

# Life in the old bird

*Floreana Mockingbird today.*
*© Paquita Hoeck*

This is a story of a mockingbird that once lived on the Galapagos island of Floreana. It starts in late September 1835 when Charles Darwin loaded his rifle, took aim, and fired. The influence of this single specimen on Darwin and its importance for us today is hard to overestimate.

*HMS Beagle's* first Galapagos stop was San Cristóbal (then known as Chatham Island), where Darwin bagged a single mockingbird. This was interesting enough—it might turn out to be a species unknown to science and one he could claim credit for finding. It was, however, on Floreana (then Charles Island), when he collected his second Galapagos mockingbird, that he noticed something crucial. "I fortunately happened to observe that the specimens which I collected in the two first islands we visited differed from each other, and this made me pay particular attention to their collection," he wrote of his mockingbirds.

So when Darwin subsequently stepped ashore on Isabela and then on Santiago, he made a special point of collecting a mockingbird from each. In total, Darwin sailed away from Galapagos with four birds, one from each of the islands he had visited, but he also had a chance to study other mockingbird specimens collected by Captain FitzRoy and others on board. En route to Tahiti, he noted a remarkable possibility. Each of his four birds might turn out to be "distinct species."

He was right. When John Gould, the Zoological Society of London's expert ornithologist, taxidermist, and artist, formally described the Galapagos mockingbirds in 1837, he decided there were three different species, one found only on Floreana, one exclusive to Isabela, and one inhabiting both San Cristóbal and Santiago. Gould made beautiful life-like drawings to illustrate Darwin's *Zoology of the Voyage of the Beagle* that came out a few years later in 1839, and it's his incarnation of the specimen that Darwin collected on Floreana that graces the cover of this issue.

While Darwin was on Floreana, the vice-governor of the islands—Mr. Lawson—told him that each island in the archipelago had its own particular type of tortoise and boasted he could tell them apart from their shells. Though Darwin did not collect enough tortoises to confirm Lawson's hunch, he was able to demonstrate that the same was true for the mockingbirds, with different islands inhabited by subtly different forms. Such facts, he felt, would "undermine the stability of Species," offering a glimpse into "that mystery of mysteries—the first appearance of new beings on this earth."


*Darwin's mockingbirds advertising the Natural History Museum's Darwin exhibition.*
*© Natural History Museum, London*

So suggestive of evolution were Darwin's Galapagos mockingbirds that, in *On the Origin of Species,* he painted a picture of how a few birds from mainland South America might have reached the archipelago, their descendents gradually populating other islands and adapting to the slightly different conditions found on each. From there he broadened out his argument: "We see this on every mountain, in every lake and marsh," he announced with a characteristic flourish.

For most of the 20th century, however, it was the Galapagos finches, not the mockingbirds, that were credited with turning Darwin into an evolutionist, even though he left them out of the *Origin* entirely. This is largely due to the pioneering work of British ornithologist David Lack, whose influential 1961 book *Darwin's Finches* nested this phrase securely in the public imagination. Since then, a long-term study by Peter and Rosemary Grant, where they have been able to witness evolution taking place, has kept the focus on the finches.

Now though, in 2009, with fresh attention focused on Darwin's intellectual journey, his mockingbirds are staging a comeback. The Natural History Museum in London has been looking after these birds ever since they landed in its care more than 150 years ago. The museum used the first mockingbird Darwin

***(continued on page 10)***

# Looking Back, Looking Forward...

**To mark the 50th anniversary of the Charles Darwin Foundation, Galapagos News asked eight former directors to recall something from their time in charge and to reflect upon the islands' future.**

*Lévêque arrived to find "nothing, simply nothing." © GC.*

## Raymond Lévêque
## CDF director from 1960–1962

When I arrived in Galapagos, there was nothing, simply nothing. We had to improvise from the beginning, bringing in supplies to build the Van Straelen building that would form the heart of the Charles Darwin Research Station on Santa Cruz. We also put up an outbuilding to house a generator and a water tank so we could have light and fresh water. When I left there were just these two buildings standing.

The future of Galapagos lies in education. So long as there are people who think Galapagos is just like anywhere else on earth, there is not much we can hope to achieve. For example, the residents simply cannot bring plants with them from the mainland just because they want nice flowers. Not only are these invasive species themselves, but insects also reach the islands through this route. This doesn't sound like something that is particularly difficult to stop, but even this apparently simple task presents a huge challenge.

*With sleeves rolled up, Perry prepares for action. © CDF.*

## Roger Perry (1964–1970)

The most urgent task in 1964 was to protect the surviving populations of giant tortoises. So far as we knew there were only the remnants of colonies on Santa Cruz and the northern volcanoes of Isabela. Two other races, those of Pinzón and Española, were critically endangered. I proposed that we should begin a captive-breeding program. This was to become one of our most encouraging ventures, eventually being taken over by the newly formed GNP. By the end of 1970, the first batch of young Pinzón tortoises had been repatriated to their home island, and the first Española hatchlings were being raised at the new tortoise-rearing center.

As one who long ago came under the spell of these islands, I was saddened to learn that the archipelago has been relegated to a World Heritage Site "in danger." I hope the Ecuadorian government can yet restore the status of the islands and resolve the underlying problems of spiralling human population growth and development.

## Peter Kramer (1970–1973)

I am proud to have played a part in educating and training people, most of them Ecuadorians, about the precious nature of Galapagos. It is these people that are now leading, making decisions, managing, and educating others about the importance of science and conservation in Galapagos, Ecuador and beyond. Without this capacity, none of the very significant advances in, for example, removing invasive mammals would have been possible.

*Sitting at the wheel of CDF's jeep, Kramer drives HRH Prince Philip around Puerto Ayora in the early 1970s. © Peter Kramer.*

It is my hope that awareness of Galapagos will be raised to such a degree that it will be possible to contain the immigration of alien species to the islands, even reducing the arrival of new species to something like the levels that occurred before humans reached the archipelago in 1535.

## Hendrik Hoeck (1978–1980)

*Hoeck and his young daughter Paquita at work on Santa Cruz in the late 1970s. © Hans Kruuk.*

Before coming to Galapagos, I had been working on the hyrax in Africa's Serengeti. So I was immediately interested in the impact that mammals were having in Galapagos. Shortly after taking up office, I remember seeing feral dogs wandering along the shoreline in southern Isabela. In 1979, renowned zoologist Hans Kruuk (who had worked on spotted hyenas alongside me in Africa) came to Galapagos and assisted by two keen local biologists—Hernan Vargas and Felipe Cruz—advised on an eradication plan. Within just two years, feral dogs were gone from Isabela.

This kind of cooperation is very important for successful conservation. I hope national parks around the world follow this model, making greater efforts to share their knowledge and experiences. This can be done by encouraging frequent visits from scientists, students, wardens, and administrative personnel and the greater involvement of young local people.

## Friedemann Köster (1981–1983)

I have many unforgettable memories of Galapagos: my first recce [reconnaissance] of the islands on board the brand new *Beagle IV*; my days among the vampire finches of Wolf Island, which even came to taste my blood; and those awesome scuba-dives amidst enormous shoals of hammerheads, all but gone today. But also unforgettable are my many sorrows and long sleepless nights, when the money promised to keep the research station going didn't arrive, when letters took ages to reach their destination, and answers even longer to return.



*Köster with a juvenile swallow-tailed gull he and his family saved and reared to independence. © Friedemann Köster.*

Although we stubbornly refuse to see ourselves as an invasive species in Galapagos, the damage we're causing is now more obvious than ever; we are, in fact, the worst offender. Our growing numbers and detrimental activities should thus be curbed immediately, and our comfort in these islands not be enhanced anymore—this frenzy has to stop. These wonderful if not enchanted islands, worth protecting for their own sake, were never meant to be a paradise for man!

## Gunther Reck (1984–1988)

*Reck welcomed computers to Galapagos for the first time. © CDF.*

When I arrived in Galapagos in 1984, there were no computers on the islands. CDF's decision to buy some was surprisingly controversial. The concern among scientists and students was that it would set a trend, with the wider community following suit, resulting in rapid and undesirable development. To a degree this turned out to be the case, although computers simultaneously revolutionized reporting, accounting, budgeting, and planning of conservation efforts in the islands.

Since then, my views towards the islands have changed a lot. I no longer imagine that the human population can be reduced. Instead, my main hope at the moment is that a younger generation of "Galapagueños" will be able to raise local, regional, national, and international acceptance that ongoing development must be accompanied by very serious rules and controls to prevent further introductions of invasive species.

## Robert Bensted-Smith (1996–2001)

*Bensted-Smith oversaw the implementation of the Special Law for Galapagos, the establishment of the Galapagos Marine Reserve, and the eradication of pigs from Santiago. © CDF.*

The decision to introduce a non-native ladybird to the islands to control cottony cushion scale, a pest threatening scores of native plants, was momentous: the first use of biological control in Galapagos. It illustrates the value of science in informing conservation decisions and of collaboration across the scientific and conservation communities. Just before leaving the Islands in 2002, my wife and I accompanied Galapagos National Park staff on an expedition to release the ladybirds on the summit of Fernandina, the most pristine island in the archipelago. The occasion and the spectacular setting brought a strong sense of shared responsibility, mixed with satisfaction, even elation.

Looking forward, I would like to see Ecuador implement radical measures to reduce the influx and spread of alien species at least 100-fold. This will require strict limits on the volume of transport of people and cargo and a massive upgrading of quarantine controls on transport to and within the islands. With investment of a small fraction of the Galapagos economic product, plus leadership with a long-term vision, both nationally and in the islands, it could be done.

## Graham Watkins (2005–2008)

*Watkins prepares to talk to members of the Galapagos Conservation Trust on Galapagos Day, 2006. © Peter Tulley.*

I was delighted to discover that the 1840 portrait of Charles Darwin—a picture I have used in hundreds of presentations—was painted by George Richmond, the great uncle of my grandfather. It shows what a small world we live in and how, in some senses, families have interacted with Galapagos for hundreds of years—some famous and some less famous. For me, this distils the importance of appreciating the interconnectivity of Galapagos with the rest of the world.

What Galapagos really needs is a charismatic and effective leader from the islands with a strong conservation bent. Galapagos does not lack financial and human resources, and yet seems to consistently move in the direction of growth and unsustainable development. Excellent laws, plans, and ideas are developed but very few are implemented. So ultimately, it would appear that what Galapagos lacks is the leadership to bring together disparate interests and move toward a single shared vision that incorporates conservation and sustainable development.

### CDF Obituary

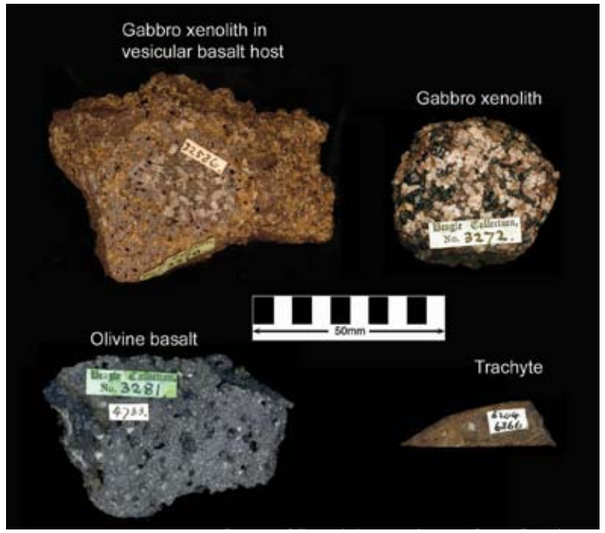
**David William Snow**, director of the Charles Darwin Research Station from 1963 to 1964, died on February 4, 2009 after a short illness, aged 85. He was one of Europe's foremost ornithologists, especially in the field of the ecology of South American forest birds. He arrived in Galapagos after working in Trinidad and at Oxford. As well as steering the Station through a difficult period under logistical and living conditions that few now can envisage, the Snows, as David and Barbara (who died in 2007) were universally known, made a major contribution to the study of the archipelago's seabirds. The Snows were among the most approachable and erudite of scientists. In 1965, the year after they left, I inherited their seabird studies on South Plaza and they could not have been more supportive. The world has lost two outstanding naturalists, and Galapagos has lost two longstanding supporters.

*Mike Harris, Center for Ecology and Hydrology, UK*

*Continued from Page 6, In Darwin's Footsteps.*

also to Santiago's summit. It was there that we located a small outcrop of grey-green trachyte, the rock type so crucial to Darwin's theory of how volcanic islands form. In spite of our best efforts, we could not find trachyte anywhere else on the island, strongly suggesting that Darwin had indeed reached Santiago's summit on at least one of his treks inland from Buccaneer Cove.

With hindsight, it is fortunate that it was in northwest Santiago where Darwin and his assistants had the opportunity to explore, for this part of the island boasts a diverse range of volcanic rock types in close proximity to the sources of freshwater on which they so depended. Each of Santiago's different rock types is present in Darwin's modest haul from the island. His exceptionally keen collecting "eye" enabled him to find the rare trachyte, a specimen so vital to one of his most significant contributions to the geological sciences. Just as Santiago's rocks proved an inspiration for Darwin, we hope the samples collected in 2007 and on a subsequent trip in 2008 will hold secrets that will reveal more about the causes of widespread volcanic activity in this extraordinary archipelago.




*Some of the rocks Darwin collected from Santiago.*
*© Andy Thurman and Sally Gibson.*

*Continued from Page 7, Life in the Old Bird.*

collected on San Cristóbal and the all-important second from Floreana in a striking poster to advertise their big exhibition on Darwin (page 7).

What's more, visitors to the exhibition have been able to see and appreciate the importance of these exact same birds, with carefully labeled tags hanging from their feet. "These two specimens have unique value in showing how a careful scientist can develop a single field observation into a deep insight—in this case, one that has helped toward a grasp of one of the essential factors in natural life," says Randal Keynes, a historian and great-great-grandson of the famous naturalist.

Darwin's Floreana mockingbird is also feeding into a bold project to restore Floreana to something of its former glory. Not long after Darwin's brief visit, this species disappeared from the main island completely. Though it did not go extinct, for two small populations still survive on the islets of Champion and Gardener-by-Floreana just offshore. The Charles Darwin Foundation and Galapagos National Park are now working to reintroduce surplus birds back to the main island in an effort to sure-up the long-term future of this species.

Incredibly, Darwin's Floreana specimen, though long-dead, is contributing to this conservation effort. DNA extracted from it and from a second Floreana mockingbird collected by FitzRoy has enabled researchers to get a feel for the genetic makeup of the Floreana population as it was in Darwin's day. "The two old specimens from Floreana show a genetic makeup that is intermediate to those of birds still on Champion and Gardner, telling us that we can use individuals from both satellite islands for reintroduction onto Floreana," says Paquita Hoeck, a geneticist at the Zoological Museum of the University of Zurich.

When Darwin scooped up the limp, warm body of this bird back in 1835, smoothed its feathers and admired its simple beauty, he could hardly have imagined the immense influence it was to have on him and, through his ideas on evolution, on all of us today.


*DNA samples from Floreana mockingbirds collected by Darwin (left) and Fitzroy (right).* © Paquita Hoeck

*Floreana as it appears in the Admiralty map of Galapagos produced following the* Beagle *voyage.* © John Woram.




GALAPAGOS CONSERVANCY

# MEMBERS' CORNER

*Saving one of the world's great treasures*

## LEAVE A LEGACY IN GALAPAGOS

As a member of Galapagos Conservancy, you have been a part of successful efforts to protect the unique biodiversity and landscapes of Galapagos. You can ensure that these efforts continue by becoming a member of the **Galapagos Legacy Society**—a special group of supporters who have demonstrated their commitment to preserving the archipelago for future generations by making a planned gift.

Member of the Galapagos Legacy Society maximize their philanthropic giving in ways that meet their personal financial strategies. Please consider:

- Remembering Galapagos Conservancy in your will or living trust
- Naming Galapagos Conservancy as beneficiary of a charitable remainder trust that costs you nothing during your lifetime
- Naming Galapagos Conservancy as beneficiary of a charitable lead trust which can preserve your estate for your family and deliver years of support for Galapagos conservation
- Naming Galapagos Conservancy as owner and beneficiary of a life insurance policy or all or part of a retirement plan

As a member of the Galapagos Legacy Society, you will receive a Galapagos tortoise pin, designed by renowned Galapagos artist, Jacqueline de Roy, as well as other benefits.

If you have not informed Galapagos Conservancy about your intention to make a planned gift, or to learn more, please contact Richard Knab at (703) 383-0077 or rknab@galapagos.org.

## FOUR STAR RATING!

Galapagos Conservancy has achieved the coveted Charity Navigator **4-star rating** for sound fiscal management. This is our second consecutive 4-star rating from America's premier charity evaluator. We hope our members will feel confident that their support is being used wisely and efficiently. Visit **www.charitynavigator.org** to see our profile.

## Going Greener at GC
### Two ways you can help. . .

- Help us help the environment by requesting to receive *this newsletter* by email instead of by mail. It's simple: email **member@galapagos.org**. Put "Going Green" in the subject line, and include your full name and address in the body. You'll receive a link to a PDF file twice a year, as well as our bimonthly email updates.
- Become a Galapagos Conservancy monthly supporter. This method of contributing is "green" because Monthly Supporters do not receive renewal notices or appeals in the mail—saving trees, money, and room in *your* mail box. You choose the amount and frequency of your gift, and you can change your preferences by contacting us at any time. Get more details and sign up at **www.galapagos.org**.

## Galapagos Fund Builds Local Capacity

Travelers aboard **Celebrity Xpedition** can point to real impact on the ground, as contributions they have made to the Galapagos Fund at the end of their trips have been put to work. The Galapagos Fund is a small grant program managed jointly by Celebrity Xpedition and Galapagos Conservancy. It is designed to strengthen local capacity and foster sustainable living in the islands.

Since its inception in 2006, a total of 24 grants have been made for an approximate amount of US $350,000. Here are a few examples:

- **Construction of 6,000 m² of greenhouses** on Santa Cruz, Isabela, and San Cristóbal islands. Greenhouse technology allows farmers to make efficient use of the islands' scarce water resources and minimize the use of chemicals, as they substitute imported produce (a major source of invasive species) with locally- and sustainably-grown vegetables.
- **Training in organic agriculture.** The Foundation for Alternative Responsible Development in Galapagos (FUNDAR Galapagos), a local NGO, has provided training to children (ages 6-10) and adult farmers on a range of topics related to organic agriculture. The project also involved technical assistance and pilot projects related to post-harvest storage and irrigation, and research on organic methods of pest control for Galapagos. Native plants nurseries were established for use by three local schools.
- **Strengthened local capacity to sterilize domestic cats and dogs.** Funding trained Ecuadorian veterinarians in spay and neuter techniques, equipped animal clinics, and educated local residents about responsible pet ownership. Through the collaborative efforts of Animal Balance, a US-based NGO, the Inter-institutional Committee for the Management and Control of Introduced Species (CIMEI), and the local community, 96% of the current pet population in Galapagos has been sterilized.
- **Community action to combat invasive species.** Funding has enabled a team of residents of Floreana Island to undertake a systematic effort to eradicate invasive species from their island. The team is 1) surveying the agricultural area and National Park lands of Floreana in order to map the distribution of the most aggressive weed species, 2) eradicating these plants and monitoring for reestablishment, and 3) working with farmers on the island to develop strategies for future control of these invasive species.

Galapagos Conservancy, Celebrity Xpedition, and the project beneficiaries thank those who have contributed to the Galapagos Fund, and welcome others to support these important projects.

**Spotlight Donor** **Koa Halpern of Denver, Colorado** recently celebrated his 11th "Bird-day." Instead of gifts, Koa asked his party guests to make contributions to Galapagos Conservancy to help save the critically endangered Mangrove Finch of Galapagos. Many thanks to Koa and his guests, who raised more than $300 for Galapagos conservation!

# Galapagos Conservancy 2010 Photo Contest

Galapagos Conservancy invites you to submit your favorite Galapagos photographs for our 2010 Galapagos Conservancy fundraising calendar.

Staff and supporters of Galapagos Conservancy will choose 14 winning photographs sent in by GC members: thirteen to be included in the 2010 calendar and one for the cover of our 2009 Annual Report. One photo will be chosen as the overall "winner" and will be featured on the cover of the 2010 calendar and in many of our web and marketing materials. We will also select 25–35 additional photos to appear in the empty spaces of the monthly grids.

Visit **www.galapagos.org** and click on the **Wildlife Gallery** for submission guidlines, details, and to view last year's winning photos.

Submissions are due by midnight on **July 31, 2009**. Email digital photos to photo@galapagos.org. Limit submissions to 5 photos per person.

*Photos by GC Members (from top): Jo Anne Rosen, Bob Hoffman, Caroline Craven*

*11150 Fairfax Boulevard, Suite 408*
*Fairfax, VA 22030*

*Saving one of the world's great treasures*

GALAPAGOS CONSERVANCY