GALAPAGOS news

FALL/WINTER 2008

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

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GALAPAGOS CONSERVANCY
Saving one of the world's great treasures

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President's Report

A Never-Ending Battle with Invasive Species

A central topic in this issue of *Galapagos News* is the present and increasing threat posed by invasive species in the Galapagos Islands. There are now nearly 1,500 recognized invasive species in Galapagos—plants, animals, insects, and now diseases that humans have brought to the islands, deliberately or not, since the islands were discovered more than 500 years ago. As the resident population rises and requires more and more goods and services from the mainland, increasing numbers of planes and cargo ships arrive with the occasional unwanted visitor. And as we see the numbers of tourist ships and planes arriving multiple times a day, every day of the week, we know that some of the passengers will remain long after the tourists have returned home.

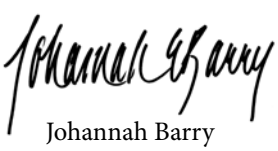
The introduction of diseases in Galapagos is particularly worrisome. As Graham Watkins, CDF's Executive Director has said, "These invasions will outstrip our (Park and Station) capacities to manage them." Diseases like avian pox, dengue fever, and West Nile virus now join insects, such as the parasitic fly *Philornis downsi* and mosquito *Aedes egypti*, to form a formidable challenge to conservation. Something the eye can barely see is further clouding the future for mangrove finches and mockingbirds—the latest Galapagos endangered species.

Galapagos Conservancy members have long understood this issue, and were pioneers in the private funding of Project Isabela, the pre-eminent island restoration effort conceived in 1996, carried out from 2001-2006 and officially completed in 2007. Understanding that the root cause of invasion is the ability to gain a foothold, private funding from the US instigated what is now the Quarantine and Control System in Galapagos. Individual supporters joined forces with the government of Ecuador, resident scientists, and conservation managers at the Galapagos National Park to create the first line of defense against these costly and ultimately deadly invaders.

Rachel Atkinson's work on native Galapagos flora presents an important opportunity for Galapagos residents to protect and cherish the sometimes underappreciated native plants and to keep harmful invasives out of gardens and public areas. She and her team have been providing beautiful native plant alternatives to gardeners and supporting burgeoning small businesses for gardeners, garden designers, and plant experts. This work has been supported by funding from Friends of Galapagos organizations around the world.

In the latest updates from Galapagos, there is exciting news from Lonesome George's corral. Could it be that after eighty plus years of confirmed bachelorhood, George will soon become a father? Fourteen eggs are currently in the incubators managed by the expert staff at the Galapagos National Park and we all await with great anticipation the news of impending fatherhood.

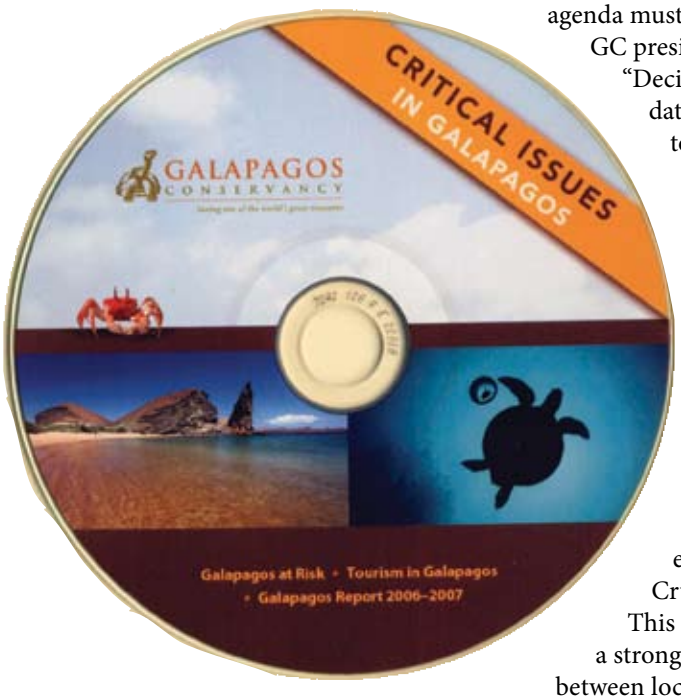
Our thanks as always to the international network of friends and supporters who join together to protect this magical place.



Johannah Barry
President of Galapagos Conservancy

FOGOS:
Friends of Galapagos Organizations

Significant advances in the conservation of Galapagos' threatened plants have been possible thanks to the support of Galapagos Conservancy (GC) with funding from the J.Q. Worthington Foundation. By focusing on a handful of the rarest species in the archipelago, Charles Darwin Foundation (CDF) staff have been able to design, recommend, and execute critical conservation measures. In addition, the eradication of goats from the islands of Floreana and Santiago has been a huge boost for many rare plants.



GC Critical Issues CD © Galapagos Conservancy

Earlier this year, CDF's new lichen specialist explored all the vegetation zones on eight different islands to update the lichen surveys last undertaken during the 1980s. As a result, a staggering 300 new species' records are now housed at the Charles Darwin Research Station (CDRS) herbarium among more than 4,000 specimens collected during the survey. Thanks to private support, the scientific world now knows more about these small inconspicuous plant-like organism, which often show us the earliest warning signs of a looming ecological crisis.

GC has also released a CD compilation of documents with an important impact on policy and conservation management in Galapagos. "We remain committed to supporting biological research in Galapagos, but it is clear that the research agenda must be broadened," says GC president Johannah Barry. "Decision makers require the data and context in which to make the decisions that are critical to address the growing human presence in Galapagos." *Critical Issues in Galapagos* is available online at www.galapagos.org or on CD by request.

With the help of the Galapagos Conservation Trust (GCT) in the UK, CDF has been able to start piloting an environmental education project on Santa Cruz and San Cristobal. This aims to foster a stronger relationship between local people and the environment, a crucial step for the long-term conservation of the islands (www.savegalapagos.org). Funding from GC, GCT, and other Friends around the world is also helping return giant tortoises to Pinta. In March, 120 Española tortoises—Pinta's closest relatives—will be moved to Pinta from the captive breeding program on Santa Cruz.

A membership appeal by the Friends of Galapagos New Zealand (FOGNZ) has enabled CDF to deploy an ant expert to help monitor and control the fire ants that represent one of the most serious threats to Galapagos biodiversity. The project focuses on the islets of Champion and Gardner near Floreana. Fire ants were discovered on Champion in 2006, threatening one of the last two remaining populations of the Floreana mockingbird. CDF is working to eradicate the ants from the island, while carefully monitoring the situation on Gardner so that any invasion can be caught and controlled at a very early stage. FOGNZ has also sent its first professional volunteer to Galapagos. Peter Hiemstra is a database expert at the Department of Conservation in Wellington and is helping to enhance databases in CDF's Department of Marine Conservation and Research. Follow his reports by visiting www.galapagos.org.nz/news.

Finally, funding from the Swiss Friends of Galapagos and GCT's Shark Campaign is helping to continue shark research in 2008. The shark movement monitoring data is now available online at www.migramar.com.

The lichen Ramalina darwiniana, *found only in Galapagos.*

LONESOME GEORGE: *Lonesome no longer?*

For more than 35 years, the last known Pinta tortoise left on earth, Lonesome George, has lived in captivity at the Charles Darwin Research Station (CDRS) on Santa Cruz. Now, in an unexpected turn of events, he could become a father for the first time.

In late July, wardens from the Galapagos National Park (GNP) discovered that one of two females from Isabela (close relatives that have shared George's enclosure for almost 20 years) had produced a clutch of nine eggs. The rangers recovered three of these intact and two with hairline fractures and placed them in an artificial incubator. The other four were completely broken and may be sent to geneticists at Yale University to be tested for signs of embryonic material.

In spite of the inevitable excitement, most experts remained cautious about this finding. Tortoises can lay eggs without any intervention from a male, warned Felipe Cruz, director of technical assistance at the Charles Darwin Foundation (CDF). "We don't know if the eggs are fertile. We will have to wait to see what happens," he said. Linda Cayot, former head of protection at the CDRS and now science advisor to Galapagos Conservancy, was also cautious about the news. "I will wait for confirmation about whether the eggs are fertile and whether the father is George before getting too surprised," she said.

Photo by GC member, Joy Joseph..

© GNP

GNP staff Fausto Llerena and Washington Tapia extract eggs from a nest in Lonesome George's enclosure.

Just two weeks later, stunned wardens discovered a nest containing eight undamaged eggs laid by the second female. Then, in early September, the first female laid another clutch of three eggs. All of these have been added to those already being incubated. This has increased optimism that George could become a father after all these years, transmitting some of his unique genetic makeup to the next generation. Even Cayot is warming to the idea. "Maybe George really has got some life in him yet," she says.

For giant tortoises, as for many other reptiles, the sex of offspring is determined by the temperature at which the eggs are incubated. Ten of the eggs are being held at a temperature that would guarantee females and six at a temperature that would result in males. If fertile, they are due to hatch in mid-November.

The introduction of young Espanola tortoises to Pinta to complete the island's ecological makeup will take place later this year as planned. "There's an even greater incentive now to go ahead with the repopulation and bring the island back to a tortoise-friendly state if George has managed to breed," says Johannah Barry, President of Galapagos Conservancy.

Photo by GC Member Barbara S. Kirschner.

Lonesome George with one of his female companions and mother of some of the soon-to-emerge hatchlings.

Pinta Restoration:
The Efforts Go On

Project Pinta is a dynamic, multi-institutional conservation project aimed at returning Pinta Island to its original state as a haven for giant tortoises—reversing the unbalanced recovery of vegetation that has taken place since the loss of its native tortoise population and the removal of invasive goats in 1999. This groundbreaking island restoration program is set to begin in early 2009.

Photo by Alizon Llerena (CDF).

Lonesome George standing tall in his corral.

The most notable aspect of the project is the decision to release young Española tortoises on Pinta Island. With headlines heralding Lonesome George's impending fatherhood and the possibility that the Pinta dynasty could be restored once again, many people have asked why the decision has been made to move forward with this non-native tortoise release on Pinta Island.

The answer is that Pinta Island needs tortoises today. Tortoises haven't inhabited Pinta since Lonesome George was taken off the island and placed in captivity for his own protection in 1972. For thousands of years, giant tortoises were the only large herbivore species living on Pinta. They likely existed in the tens of thousands and certainly played a major role in the spread and growth of vegetation through seed dispersal and the thinning and trimming of low growth plants.

In the years since goats were eradicated on Pinta, the island has been without a large herbivore to keep the plant populations in check. Native plant species that thrive in open spaces are being crowded out by overgrowth. The final step in returning this island to its original state is to bring back tortoises, beginning with the first group of four-year-old Española tortoises in March of 2009.

Española tortoises are the best candidates for Project Pinta because they are the closest related species to Pinta tortoises. Those bound for Pinta are the offspring of a small group of adults found on Española that have been bred at the Tortoise Center on Santa Cruz. Final preparations are taking place now—fine-tuning the satellite-based tagging and tracking system that will help scientists monitor the tortoises' movements and performing screening tests on 120 young tortoises to ensure they are completely healthy.

Given the exciting news about Lonesome George's fatherhood, the possibility exists in the distant future to release Pinta tortoises (or hybrids of Pintas) back on Pinta. In an exciting discovery, a hybrid Pinta tortoise was recently discovered on Wolf Volcano on Isabela Island. Scientists have discovered that over the last several hundred years, tortoises were uprooted and moved from island to island, either by accident or by design. In December of 2008, a research team will undertake an expedition to Wolf Volcano to search for tortoises that may be genetically linked to Lonesome George.

By taking blood and DNA samples from tortoises on Isabela, geneticists will be able to determine if any pure-blood Pinta tortoises or more hybrids of the Pinta and Wolf Volcano species remain. These tortoises will be prime candidates for a captive breeding program that includes Lonesome George and any of his offspring. Over time, this breeding program could help establish a tortoise population on Pinta that is closely related to the island's endemic species or even bring back the Pinta tortoise population from extinction—thereby ensuring Lonesome George's legacy is preserved.

With the Pinta restoration program set to begin and with the news surrounding Lonesome George, please visit www.galapagos.org often for the latest developments.

Photo by Linda Cayot (GC).

This clearing at the base of a small mountain on Pinta Island is the location where the young tortoises will be released in March of 2009.

News From Galapagos

Provided by the Charles Darwin Foundation

Going Native

Ancient seeds recovered from sediments on Santa Cruz have led to a reclassification of four Galapagos plants. Previously, these species were assumed to be recent arrivals and therefore non-native invasive species, but the discovery of fossilized seeds buried in undisturbed bogs in the highlands they were present in Galapagos more than 500 years before humans first reached the archipelago. "With the use of the fossil record we are able to understand what the ecosystem looked like prior to human impact and are therefore able to classify several 'doubtful native' species," says Emily Coffey, an ecologist at the University of Oxford's Long-Term Ecology Laboratory.

New Directors

In August, Edgar Muñoz (pictured) took over as Director of the Galapagos National Park. A Galapagos resident and biologist, Muñoz is former chief of the tourism program at the GNP. While in office, he aims to reduce the risk of introduction of exotic species to the islands and to continue working towards a more sustainable tourism industry.

At the Charles Darwin Foundation, executive director Graham Watkins will step down after four years in the post. Under his leadership, CDF has undergone profound reorganization. "The CDF in 2008 is leaner, more efficient, and more focused than the CDF of 2004," he says.

Edgar Muñoz, New Director of the Galapagos National Park.

It was announced in September that Gabriel López, PhD, will become the new Executive Director and will assume leadership of the organization on January 1, 2009.

López is an anthropologist with 25 years of experience in sustainable development, conservation, education, and poverty alleviation. He will continue with the reorganization process started by Watkins, in which CDF restructured its scientific research area, strengthened bonds with the community and local institutions in Galapagos, and consolidated its role as advisor to the Ecuadorian government, which is responsible for conservation of Galapagos. López worked as Director of Global Strategies for IUCN (International Union for the Conservation of Nature), in Gland, Switzerland. CDF warmly welcomes López and looks forward to supporting his efforts to lead the organization.

Photo by GC Member Sabine van der Meulen of Boulder, CO.

Parasites that may cause malaria have been found in Galapagos Penguins.

Parasitic Penguins

Scientists have detected a blood-borne parasite in Galapagos penguins that could cause avian malaria. The GNP and CDF were quick to coordinate a follow-up research expedition to confirm the species of *Plasmodium* present, identify the mosquito responsible for its transmission, and evaluate the possibility that the parasite has infected other bird species. "This kind of immediate response gives me great confidence in the Park's commitment to the war against disease threats to Galapagos wildlife," says Patricia Parker of the University of Missouri, St Louis, who is studying the genetic makeup of the parasite.

Shark Attack

The GNP and Ecuadorian Navy intercepted a fishing vessel off San Cristobal in May and found the remains of 160 sharks on board, illegally taken from the Galapagos Marine Reserve. They took the *Doña Blanca I*, several smaller associated boats, and 35 crew into custody at Puerto Baquerizo Moreno, the archipelago's administrative capital on San Cristobal.

Economic Truths

Economists taking a look at Galapagos have exposed some stark figures about the impact of ecotourism on the islands. Between 1999 and 2005, the archipelago's gross domestic product (generated largely by tourism) increased by a staggering 78%, making it one of the fastest growing economies in the world. But, warns Edward Taylor of the University of California at Davis, this growth has made the islands a far more attractive place to live. Over this period, the Galapagos population grew by approximately one individual for every additional $3000 earned by the islands, he and his colleagues report in *Environment and Development Economics*.

Cerro Azul Volcano on Isabela.

Eruption on Isabela

The southernmost of Isabela's six volcanoes—Cerro Azul—erupted in May for the first time in a decade. Several rivers of lava consumed some vegetation, but the eruption posed little threat to other wildlife or to the island's human population.

Invasive Ants Discovered

On May 15th, Henri Herrea, curator of the Charles Darwin Foundation's Terrestrial Invertebrates Collection, discovered a nest of ants beneath a house in Puerto Ayora. He recognized it immediately as the non-native *Pheidole megacephala*, one of the 100 most damaging invasive species in the world. This individual (pictured right), subsequently flown from Galapagos to San Francisco in California, wound up subjected to the macrophotographic skills of April Nobile, image specialist at the California Academy of Sciences.

"The final image is a composite of 15 to 25 individual shots taken as I focused through the specimen," she says. "Then I used computer software to make a single image with everything in focus."

Leica Z16 microscope with camera attached. 1/125 sec.

Going GREENER at Galapagos Conservancy. You can help.

Galapagos Conservancy makes every effort to leave as little a footprint as possible as we go about our conservation work. We use recycled paper and environmentally friendly inks whenever possible and are committed to taking whatever steps we can to conserve and preserve. One such step is communicating electronically with our members, saving stamps, paper, and trees! Would you join us?

We are asking you, our friends and supporters, to consider receiving this newsletter by email instead of by regular mail. We'll send you an email with a link to view a color PDF of *Galapagos News*, twice a year.

If this is of interest, please email **johannahbarry@galapagos.org**. Mention that you'd like to receive *Galapagos News* by email in the future, and include your full name, 6 or 7-digit member ID (if readily available), and your address (so that we can be sure to track down your record in our system). In addition to *Galapagos News*, we'll also send you our bimonthly e-news updates.

Over the next few years, we will be making more efforts to print and mail less paper to our members. We hope you will support our efforts at "going greener."

Invasive species watch

Almost one in every five species in Galapagos shouldn't be there. With large mammals being successfully eradicated from all corners of the archipelago, efforts are now being made to control or eradicate some lesser well-known, but equally destructive, invasive species. *By Henry Nicholls*

Santiago — Raspberries and Blackberries


© USDA.

Over the last 40 years, there have been five species of raspberry and blackberry introduced to Galapagos, plants that compete aggressively with native species for light, water, and nutrients. By far the most rampant is the hill raspberry *Rubus niveus* from the Himalayas, which has taken over open vegetation, shrubland and forest alike, often forming dense thickets up to four metres high. Most major islands are badly affected and efforts to control this species are currently under way on Santiago and Floreana.

San Cristobal — Tilapia Fish


© Bob Walker.

In February 2006, researchers identified the presence of a non-native fish in El Junco, a large freshwater lake on San Cristobal. It turned out to be the Nile tilapia, *Oreochromis niloticus*, a species known to cause severe ecological problems outside its natural setting. The GNP has recently used a naturally occurring chemical to remove thousands from the lake.

North Seymour — Rats


© Reg McKenna.

The GNP continues to wage war on the archipelago's invasive rats, most recently on North Seymour. In June, wardens laid 100 traps, baited with peanut butter, but caught no rats over the course of three days. This suggests that poison set down on the island in October last year has had the desired effect. Traps will be set again this October to confirm the eradication effort has been successful.

Isabela — Frogs


© Brian Cook, CDF.

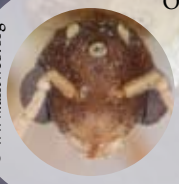
An amphibian from mainland Ecuador — the frog *Scinax quinquefasciata* — has now been recorded on Santa Cruz, San Cristobal and Isabela. It could have an impact on Galapagos life by eating insects, competing with insect eaters or by transmitting parasites to water birds. Its sensitivity to saline conditions, however, means its distribution will probably be restricted to only the most freshwater havens. As yet, no work is planned to control this species.

Santa Cruz — Dengue Mosquitos


© CDC/James Gathany.

In July 2002, Galapagos scientists detected the presence of the dengue mosquito *Aedes aegypti* in Puerto Ayora on Santa Cruz and subsequently on San Cristobal. Since then, this species has been responsible for several cases of dengue fever in the human population. It is also a known vector of avian malaria and other diseases that could devastate wildlife should they reach the islands. Efforts are being made to control the mosquito on Santa Cruz.

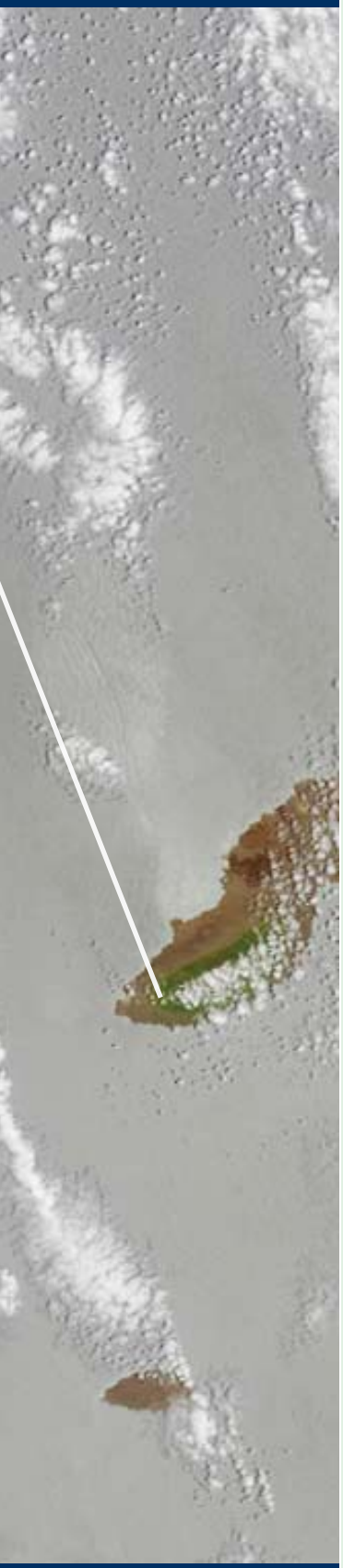
Champion — Little Red Fire Ants


© www.antweb.org

One of the biggest invasive threats to Galapagos comes in the form of the little red fire ant, *Wasmannia auropunctata,* which can destroy native invertebrates and affect the breeding success of birds, iguanas, and even tortoises. Last year, the Galapagos National Park (GNP) announced the eradication of these ants from Marchena using a highly specific insecticide. Currently, efforts are under way to do the same for Champion Island off Floreana, one of the last strongholds of the critically endangered Floreana mockingbird.

Satellite Map: NASA/GSFC/LaRC/JPL, MISR Team

Gardening for Galapagos



Mention "Galapagos" and most people will think of tortoises, iguanas, and finches. RACHEL ATKINSON, coordinator of ecological restoration projects for the Charles Darwin Foundation, isn't one of them. Here, she speaks up for the beauty of Galapagos plants.

Galapagos is a paradise, but far from a Garden of Eden. The early human settlers struggled to survive, only managing by introducing many species, including animals, crops for food, trees for fruit and wood, and medicinal plants for herbal remedies. The effects of goats and pigs are well documented. The impact of non-native plants, by contrast, is less well publicized. Gardening is responsible for a surprising proportion of these introductions, accounting for some 60% of more than 700 alien plant species currently in Galapagos.

It is easy to see why. People moving to foreign locations want friendly faces in a hostile landscape, so they take ornamental plants with them. Although many are contained within the walls of Galapagos gardens, they could still pose a considerable problem for native ecosystems. For example, both Indian rubberwood (*Cryptostegia grandiflora*) from Madagascar and the thorn mimosa (*Acacia nilotica*) from mainland Africa are striking plants, but both species have spread with ease across semi-arid regions of Australia and threaten to do the same in Galapagos.

One solution would be to prevent use of introduced ornamentals in Galapagos gardens. However, providing environmentally sound alternatives as solutions to conservation problems is often more socially acceptable than prohibiting action through legislation. If people want plants in their gardens, they will have them. If we wish those same people to help in the fight against future invasions, we need to provide easily available and beautiful alternatives to the time bombs in their backyards.

While it is true that there are few majestic trees and showy flowers native to Galapagos, there are still many striking species that can be used effectively to produce interesting and appealing displays.

The tree daisy *Scalesias* and the prickly pear *Opuntias* will be familiar to most, but there are also many less well-known but no less beautiful natives: soguilla (*Ipomoea habeliana*), an endemic morning glory with thin, grey-green, red-veined leaves and huge, ghostly trumpets for flowers that last just one night; a majestic native sedge

© CDF

Rachel Atkinson

(*Cyperus ligularis*) whose russet red flowers dry on the plant; the amargo (*Castela galapageia*), with its brilliant red fruit and thick green leaves; the flame tree (*Erythrina velutiana*); and the endemic lantana (*L. peduncularis*), more ephemeral than its introduced relative but which is covered in stunning white flowers during the rainy season.

The idea of promoting native plants for gardens is not new, but when CDF received a two-year grant via the Nordic Friends of Galapagos we were able to start in earnest. We now have a gardening team in Santa Cruz consisting of two full-time gardeners and several volunteers who manage two nurseries—one in the highlands and one on the coast, to produce more than 60 Galapagos ornamentals. These plants are available to everyone who would like them, and the team is on hand to give advice, and work with schools, private gardeners, community groups, the local university, hotel and restaurant owners, and institutions such as the municipality and the coastguard. The project has recently received further funding via the Japanese Association for Galapagos (JAGA) to extend the work to the other islands.

But the real beauty of gardening for Galapagos is that it is not simply about plants. It is about people, too. Not only are we encouraging people to make a difference through their actions, but our ultimate aim is to provide inspiration for and support to a key set of Galapagos residents interested in setting up their own small businesses as gardeners, garden designers, and plant experts. We hope that this positive and proactive project will help in the search for a sustainable conservation solution for the Garden of Evolution.

QUALITY CONTROL

By Charlotte Causton

Charlotte Causton led invertebrate research at the CDF for 10 years and helped design the monitoring program.

ON A FARM ON SAN CRISTOBAL, Jose Loayza sifts through insects he has trapped from an orange tree. Suddenly, his attention is drawn towards a blue-eyed fly drowned in the protein mix used to snare fruit pests. He removes it from the trap and seals it in a labeled bag to be sent to the Charles Darwin Research Station on Santa Cruz and then forwarded to Allen Norrbom, an expert entomologist at the United States Agricultural Research Service in Washington, D.C. By the next day, word comes back. Just as Loayza suspected, the blue-eyed insect turned out to be the Mediterranean fruit fly (*Ceratitis capitata*), a serious pest of fruits and now a threat to the precious native flora and crops of Galapagos.

© CDF.

Jose Loayza (left) and Ronal Azuero check a trap on San Cristobal for the Mediterranean fruit fly.

Loayza is one of five Galapaguenos trained by the Charles Darwin Foundation (CDF) to intercept new introductions to the archipelago. "I have learned about this hidden world of animals and I have learned to distinguish between insects that cause damage and insects that are beneficial to us," he says. He and his colleagues make regular checks of port areas, farms, and incoming planes for disease-carrying mosquitoes, invasive ants, coffee-bean-boring beetles, and other key species that pose a threat to the ecological balance of life on the islands. They are well on the way to becoming the first generation of Galapagos entomologists.

It is hard to overstate the many benefits of this monitoring and early detection program. First, the main goal of the monitoring program, which CDF started back in 2003, is to detect those high-priority invasive invertebrates that reach the archipelago in spite of the quarantine procedures in place on the mainland. This gives CDF and Galapagos institutions an early warning, allowing them to respond in a timely manner. Following Loayza's discovery, for example, CDF immediately sought advice from Cathy Smallridge, a fruit fly expert at the South Australian Research and Development Institute, to develop a plan of action. This involves raising the quarantine standards for particular imports, treating trees with an environmentally friendly bait, and removing infested fruits. The success of this plan will depend on the coordinated efforts of Galapagos institutions and the collaboration of the Galapagos community.

Second, it provides a degree of quality control for the quarantine system and can have a strong influence on policy. The large number of live insects detected on planes, for instance, has tightened regulations for Galapagos-bound planes. International carriers are no longer able to fly direct to the archipelago but must first touch down in mainland Ecuador to be fumigated — a measure that should dramatically reduce the risk of invasive outsiders reaching Galapagos.

Third, the monitoring technicians also act as important links between institutions like CDF and the wider community. They spend considerable time with homeowners, shopkeepers, and farmers, advising them about invasive species, helping them solve pest problems, and building an awareness of the threat posed by such species. With only a few technicians trained to do this work, it is all the more important to have strong relationships with the wider community, says Ronal Azuero, who's affectionately known as "the bug man." These relationships increase the number of eyes on the lookout for new bio-invasions, he says. "Becoming friends of the farmers and housewives, and most of all, working together is the best way to fulfill our mission of detecting new invertebrate species," he says.

Photograph by Scott Bauer, USDA.

A Mediterranean fruit fly.

Finally, early detection and prompt eradication are likely to save millions of dollars, the kind of money required to tackle invasive species once they become established. Indeed, the benefits of this monitoring program are so vast in comparison to its relatively low cost that CDF is busy raising funds to strengthen the existing scheme and take it out to other islands.

For now, CDF is coordinating the program, funding both Loayza and Azuero. In due course, it's expected that this responsibility will transfer from CDF to the Galapagos branch of the Ecuadorian Agricultural Health Service (known as SESA-SICGAL), the institution in charge of overseeing biosecurity in the islands. But even when this happens, CDF will maintain a close connection with this invaluable program, providing training, an identification service, periodic evaluations, and an ongoing commitment to improving monitoring techniques.

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Lenyn Betancourt, whose thesis project was to improve community involvement in the monitoring program, meets up with a shopkeeper in Puerto Ayora.

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Felipe Cruz

Meet Felipe Cruz

Felipe Cruz is the director of technical assistance for the Charles Darwin Foundation. Born and raised on Floreana, it's hard to imagine a more passionate spokesman for Galapagos.

What is your first memory?

A spider's web. I must have been about three years old and I remember my dad telling me how much time a spider puts into building its web to catch food to survive. It was a surprise to me. He told me not to destroy webs but to walk around them, and after that, I used to spend hours just watching and waiting until a spider trapped some insect. My fascination with invertebrates earned me a nickname: "insect boy."

What was it like growing up on Floreana?

Sometimes it was hard. My siblings and I had nothing kids have today, like radio or television. We had to make our own distractions, but we had the island as our backyard. Our mother was extremely strict about playing inside the house so we always did things outside, walking inland and exploring the coast. It was wild, and it inspired my love for the natural wonders of Galapagos.

What about schooling?

Although we went to school, it was our father who had the greatest impact on our education. I was amazed how he could remember things he'd been taught when he was a boy. He'd say that if you learn something once you learn it for life. It's funny to think he was known in our village as a lazy person because he spent so much time reading. He loved books and I inherited that obsession.

When did you first leave Galapagos?

When I was 12, my parents sent me to Quito for high school. It had never occurred to me I would leave Galapagos, and I didn't know what I'd done wrong. Of course, I realized later the sacrifice my parents were making. Although they would have loved for us to stay with them, they tried to prepare us for life beyond Floreana. It was in Quito that I really appreciated my love for Galapagos. It was knowing that I would return that kept me going.

What about a day you'll never forget?

Life goes in cycles. Three years ago, my son Rashid left Galapagos to go to school in London, and I'll never forget our last day together. We sat watching a promo of the BBC's Galapagos natural history film and were mesmerized by the sheer beauty of the islands. When it finished, we were both in tears and Rashid told me to put it on again. It became a very special moment because we knew that we would be apart, but we also knew we would always be together because of Galapagos.

In your career, what are you most proud of?

In the 1980s, Galapagos petrels were facing extinction and I helped protect the largest surviving colony by controlling predation. So whenever I see petrels flying around the islands today, I feel a surge of pride. The eradication of goats from Isabela was also a high point. I am proud to have succeeded in something many thought impossible and even more proud of the impact the project had on the people involved. Not only did they get the satisfaction of being part of a large project, but their whole lives improved dramatically and forever. Now they are up there amongst the best wildlife technicians in the world.

Some people are uncomfortable with large-scale eradication efforts. Can you explain why this work is so important?

We also don't like the fact that we have to eradicate. But the species we target exist in vast numbers elsewhere while Galapagos tortoises, flightless cormorants, and Darwin's finches exist only in Galapagos. There is no other Galapagos and that's something we have to focus on.

How do you feel about the future for the archipelago?

The government of Ecuador has now acknowledged that Galapagos has problems. That has never happened before. There is now collaboration between the private sector, conservationists, and the international community like we've never seen. The next few years are going to be crucial for Galapagos, but I believe we will have a better future.

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Proceeds from the sale of this calendar support Galapagos Conservation.

On sale now at ***www.galapagos.org***.

Our talented members have outdone themselves and have helped create another picture-perfect calendar that truly exemplifies the beauty and biodiversity of Galapagos. From a pool of more than 1,100 photo submissions, the staff of Galapagos Conservancy chose 13 stunning photos to grace the pages and cover of the 2009 Galapagos Conservancy Calendar, along with nearly 40 detail photos to fill in the gaps.

We offer special congratulations to **Richard Renn of Albuquerque, New Mexico** for winning the coveted calendar cover shot for his photograph of a blue-footed booby tucking her beak beneath her wing.

Visit our online Wildlife Gallery to see the rest of the winning calendar photos, and visit our online store to place your calendar order. In years past, calendars have sold out before the holidays, so place your order now.

We have also added a few new items to our inventory this year. You'll find Galapagos Conservancy enviro-totebags, and organically grown Galapagos coffee, to name just a few!

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