



GALAPAGOS *news*

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Connecting people across the globe with conservation in Galapagos



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The Blue-footed Booby courtship display is one of the most elaborate dances of any marine bird in the Galapagos Islands. In this photograph, the male (smaller on the left) was high-stepping and sky-pointing and had successfully attracted the female to his proposed nesting site on the cliffs of North Seymour Island.

© Jonathan Green



The Tourism Conundrum

In this issue of *Galapagos News*, Henry Nichols shares with us recent changes in tourism management by the Galapagos National Park and his own thoughts for next steps, posing questions that address land management schemes, political will, and economic purpose.

Henry's thoughts join a body of work on tourism management resulting from decades of discussion and debate, not only in Galapagos but in all World Heritage Sites, and even closer to home in our local forests, parks, and wildlife refuges. What is the proper balance between wilderness and those who seek to participate in it?

Tourism dollars are a significant economic driver in Galapagos and in mainland Ecuador. Over the last decade there has been a concerted effort to understand both the financial and ecological impacts of tourism, as well as the future trajectory of those impacts. In addition to direct impacts, tourism is also the vehicle through which visitors become engaged in and sensitive to the many complex issues surrounding conservation in Galapagos. Through tourism, we discover our best allies and advocates for Galapagos conservation.

Current efforts seek to balance the social, economic, and aesthetic aspects of nature tourism. But in the end, it is that intangible, transformative experience felt by the individual traveler that will determine the shape and nature of Galapagos tourism into the future.

In an excellent white paper by Graham Watkins and Felipe Cruz ("Galapagos at Risk," Charles Darwin Foundation, 2007), the authors describe the character of the typical Galapagos visitor. He/she "...visited the Galapagos to learn about Darwin and see the amazing species that helped him to develop his theory of evolution by natural selection. For many, visiting the archipelago was the realization of a life-long

dream. This type of tourist provides the foundation for the comparative advantage of Galapagos; for these visitors, other destinations cannot compete." Watkins and Cruz cite recent literature chronicling the collapse of several "ecotourism" markets, ones that sought to broaden the touristic experience but included expensive infrastructure. They conclude that while unrestrained growth in new tourism modalities may appeal in the short term, it would be fundamentally at odds with the ideal Galapagos experience.

I agree with this viewpoint and contend that "new" tourism in Galapagos will not falter because of numbers, but due to declining quality of the visitor's experience with the natural world of Galapagos. Those who visit Galapagos are touched by the vibrant core of nature, not by the size of their boat or the quality of their meal. Tourism that detracts from or interferes with the direct engagement of the visitor with these landscapes will not prevail. While the conservation community continues to be concerned with the impact of new and unregulated tourism in Galapagos, and appropriately so, the Galapagos National Park continues to improve its tourism management. I believe it is also possible that the market will correct itself, sooner rather than later. The Galapagos community, its residents, its leadership, and its tourists must seek ways to mitigate human impact at all times. Henry Nichol's article on page 6 entitled "The Tourism Question" describes recent efforts to do just that.

The Galapagos experience places great value on intimate contact with an extraordinary place and its animal inhabitants. The successful and durable tourism of tomorrow will be defined by how it fosters and celebrates the natural enchantment of this small, isolated world.


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Now through the end of 2011, Recoup pledges to match all voluntary donations up to \$25,000. 'Tis the season to give!

NOT ANOTHER BOOBY. . .

The Galapagos Carpenter Bee (*Xylocopa darwini*) is the only bee in Galapagos and one of the Archipelago's most important pollinators. As its name suggests (and like Carpenter Bees elsewhere in the world), the females bore holes in dead wood into which they deposit eggs. Unusual for bees, this species is solitary, with the females feeding larvae with nectar until they pupate. In this photo, a female (black and more common than the yellow-brown males) is foraging on Darwin's Cotton Flower (*Gossypium darwinii*), a species encountered by Charles Darwin on San Cristóbal and Santiago in 1835. In the 1990s, genetic studies confirmed the close relationship between this species and the more widely distributed South American Cotton (*G. barbadense*). Although of no commercial value, the seeds of Darwin's Cotton Flower produce a white lint, which is often used as nesting material by native birds.

© Kathryn Williams



Travel with GALAPAGOS CONSERVANCY



July 18 – 29, 2012

Let the Experts Lead the Way

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

International Nature and Cultural Adventures (INCA at inca1.com) will flawlessly handle the planning and management of our tour aboard the *Integrity* (inca1.com/Integrity/index.html)

GC's 2012 adventure will focus on the western Galapagos Islands. These islands are younger, more rugged, and in many ways, more dramatic than the rest of the archipelago. Isabela and Fernandina Islands lie nearest the hot spot — with active volcanoes that erupt every few years. Cold ocean currents from the west create a rich sea world that supports flightless cormorants, Galapagos penguins, large numbers of sea birds, fur seals, sea lions, sea turtles, dolphins, and whales. Other highlights include the pirate caves and flamingo lagoon of Floreana, the incredible biodiversity of North Seymour, and the amazing geologic features of Santiago. Our days on Santa Cruz will include giant tortoises and other visits to natural areas, as well as looking at the important role that humans play in protecting these extraordinary islands for generations to come.

More details and a downloadable brochure can be found on our website at www.galapagos.org Call our office at 703-383-0077 or email

rfuhrken@galapagos.org with questions. A \$1500/person non-refundable deposit is required to reserve your spot. Passengers must be 10 years or older.



GC's Linda Cayot (left) talks tortoises at the Charles Darwin Research Station. Photo by traveler, Joachim Frank.

NEWS

GALAPAGOS



ILLEGAL FINNING

The Galapagos National Park (GNP) seized seven fishing vessels operating illegally within the Galapagos Marine Reserve (GMR), disrupting what appears to be a carefully organized criminal operation.

In mid-July, the GNP's powerboat *Sea Ranger 02* intercepted the *Mary I* and six smaller vessels in rough seas just south of Genovesa Island. All the vessels were equipped for long-line fishing and there were clear signs that they had been engaged in fishing for sharks. Both activities are strictly prohibited within the GMR.

Back in Puerto Baquerizo Moreno on San Cristóbal, authorities conducted a thorough search of their storage compartments and recovered the remains of 379 sharks. The dorsal fins had been almost completely severed, suggesting these fish had been caught to feed the demand for shark-fin soup in Asia. As required by Ecuadorian law, all the illegally caught sharks were returned to the sea.

When, in early July, the *Mary I* left Manta on the coast of mainland Ecuador, there were nine individuals on board. Yet when it was captured, it contained 30 individuals, including minors. The arrested fishermen face criminal charges.

FINCH WORK

The presence of humans appears to be affecting the evolution of one of Darwin's Finches, according to research published in the scientific journal *Evolution*. An international team of researchers compared populations of the Medium Ground Finch (*Geospiza fortis*) at two sites on Santa Cruz, one with little human disturbance and the other in the vicinity of Academy Bay near Puerto Ayora. In wild finch populations, there is a well-established association between diet, beak shape, and beak performance. This association is not obvious in Academy Bay, report the authors. This may have reduced the fitness of this population, they suggest.

Other research on the Medium Ground Finch, published in *PLoS One*, helps to quantify the impact of the invasive nest parasite *Philornis downsi* on this species. Comparing the success of nylon-lined nests (which reduce parasite load) against unlined nests, it was clear that *P. downsi* has a strong negative influence on the survival and fitness of nestlings.

MOCKINGBIRD SUCCESS

Researchers have made further progress in their work on the elusive Floreana Mockingbird, the emblematic and critically endangered species confined to two populations on two small islets — Champion and Gardner-by-Floreana. Over several months, the Charles Darwin Foundation's (CDF) Floreana Mockingbird Project, which has received funding from Galapagos Conservancy, has tracked the fate of more than 30 nests in an effort to improve our understanding of the factors affecting nesting success. Observations of juvenile behavior will also inform how young birds establish new territories and breeding groups. These insights will underpin efforts to reintroduce the species back to Floreana.



Floreana Mockingbirds ©Luis Ortiz-Catedral
Philornis downsi © PLoS ONE



NEW DIRECTION AT CDF

Gabriel Lopez has stepped down as executive director of the Charles Darwin Foundation (CDF) after two-and-a-half years in the role. Former trustee from Galapagos Conservation Trust in the UK, Swen Lorenz, with his background in finance and management, has taken over as interim executive director until a suitable replacement can be found. Lorenz's involvement with Galapagos began in 2006, when he co-founded a vocational school in Puerto Ayora. Since then, he has worked with several institutions on many different projects and was elected to the CDF board in 2010. "I am deeply committed to the cause of Galapagos, where the Charles Darwin Foundation continues to play a crucial role in providing scientific advice to a large number of stakeholders," says Lorenz. "The Foundation will increase its efforts to collaborate with other organizations locally, nationally, and internationally."



TORTOISE CORRAL CLOSURE

The Galapagos National Park was forced to exclude visitors from two Giant Tortoise corrals in August, following an increase in littering and reports of naturalist guides and tour groups flouting park rules on how to behave in the vicinity of the animals. For the immediate future, these enclosures will remain closed to the public.

INVASIVE MONITORING

In May, Galapagos National Park (GNP) wardens began work to determine the spread of the Big-headed Ant (*Pheidole megacephala*) across urban sites on San Cristóbal Island. This insect, native to southern Africa, was first detected in Galapagos in 2008 and is known to displace many species of native and endemic invertebrates.

At their latest visit to El Junco, the unique freshwater lake on San Cristóbal, GNP rangers found no sign of the invasive fish Tilapia (*Oreochromis niloticus*). This strongly suggests that extensive efforts to eradicate it from the lake in 2009 have been successful.

The GNP also investigated reports that a species of African snail may have reached San Cristóbal. After a thorough search of the area where the mollusk was thought to have been, no trace could be found. The owners of nearby properties were informed and are under instructions to report any further sightings directly to the GNP.

Meanwhile, the Fund for the Control of Invasive Species in Galapagos has approved an annual operating plan. The interest from the \$15.7 million fund will be invested in projects to prevent the spread of alien species that are already in Galapagos, strengthen regional capacity to do so, and educate the public about the threat they pose to the Islands' long-term future.



LOW LIGHT FOR INVASIVE INSECTS

Godfrey Merlen is one of the most recognized figures in Galapagos, having arrived from England in 1970. He has witnessed many changes during this time and has worked tirelessly to safeguard the Islands' future. The diversity of projects he has been involved with during his 40-years' residency includes everything from combating illegal fishing and modernizing the Galapagos National Park's patrol boats to researching the Islands' unique wildlife, including the study of sperm whales and fur seals. He is also an accomplished wildlife artist.

More recently Merlen has focused on tackling the aliens of the Islands. Invasive species have caused incredible damage to island ecosystems throughout the world and are one of the greatest risks to island biodiversity. It is therefore vital to stop the introduction of new invasive species of insects both to Galapagos and between islands, since once established they can be particularly difficult to remove. The major routes for insects coming into contact with the Islands are by boat and airplane. Merlen was instrumental in the introduction of fumigation and quarantine for all incoming aircraft and has campaigned successfully for new regulations regarding lighting on vessels. Having established that strong ultraviolet lighting on cargo and cruise ships attracts flying insects, new legislation now demands that all boats within the Galapagos Marine Reserve be fitted with low ultraviolet lighting. Merlen will oversee the implementation of this resolution by making sure boat owners are installing the correct lighting, installing 150 insect zappers on the boats to reduce this further and educating crew members and passengers about the need for these measures. This project will also raise awareness among travellers to Galapagos and encourage their active participation in the control of introduced insects.





© Jon d'Alessio

THE TOURISM QUESTION by Henry Nicholls

How many visitors is too many? Ever since tourists began to venture to Galapagos in the late 1960s, it's a question that has recurred time and time again. So what's the answer?

In 1974, when the Galapagos National Park (GNP) issued its first management plan for the Islands, it recommended that there should be no more than 12,000 visitors in a given year. But rather than being a recommendation of what the Islands could reasonably sustain, this figure was simply a reflection of the number of available beds.

Since then, the apparently insatiable appetite of the world's population for Galapagos has fueled immigration to the Islands and expansion of the tourism industry beyond all recognition. Which is why, in 2010, the visitor tally had reached 173,296.

Ignoring a minor blip caused by the global economic downturn in 2009, the growth of visitor numbers year-by-year has been close to exponential, growing at an ever increasing rate. It doesn't take a genius to work out that this kind of trajectory cannot be sustained. Indeed, it was the threat posed by "unbridled tourism" (along with invasive species and over-fishing) that landed Galapagos on

the list of World Heritage Sites "In Danger" in 2007.

The Ecuadorian government responded promptly, calling for a "new model" for tourism to the Islands, one based on ecotourism principles with a clear commitment to sustainability. The GNP's new "visitor management system" is a major step towards this goal, with one of its key aims to spread the impact of tourism more evenly across the Archipelago.

Up until now, most cruise-style tours have offered clients the chance to see the most popular Galapagos spots in the space of a week or less. But this has resulted in a situation where only 20 of 70 possible land sites are routinely visited, says Magaly Oviedo, GNP's head of tourism. Not only does this risk damaging these popular sites, it also detracts from the overall visitor experience, she says.



© Nicholas Mall

The solution is a new system that will require tourist vessels to switch from one- to two-week itineraries; this will halve the number of boats at any one site at any one time and give visitors the chance to experience many of the stunning but less well-known sites. "We need to showcase

Galapagos as a whole rather than as twenty iconic sites," says Oviedo.

The new itineraries, which will come into force in January 2012, will have no effect upon the total number of visitors to Galapagos. But they will be a much more effective way of managing where those visitors go.

For more information on the GNP's "visitor management system" and the new itineraries, please visit:
www.galapagospark.org

Alongside these improvements to the conventional cruise-eyed view of Galapagos, the GNP is also dealing with the extraordinarily rapid expansion in land-based tourism in recent years. In 2010, for example, almost half of the 170,000-odd visitors stayed in hotels rather than on boats.

The advantage of land-based over cruise-based tourism, says Oviedo, is that more tourist money reaches more people. But it is much harder to satisfy and manage these visitors. Although the GNP has no direct control over what goes on in the towns, it has been investing heavily in improving the access and infrastructure of visitor sites around the towns, has elevated the standards of day trips, created a cycle path on Santa Cruz Island from Puerto Ayora to Bellavista in the highlands, and developed activities like artisanal

fishing expeditions that will appeal to this land-based slice of the market.

There are also plans to increase the entrance fee to the Galapagos National Park, which has remained fixed at \$100 for more than 10 years. If the price per day decreases the longer a visitor stays in Galapagos, there will be a strong financial incentive to spend weeks in the Archipelago rather than days. It is also hoped that the new pricing structure will generate sufficient income to make the GNP the first genuinely self-sufficient national park in the world.

"We need to showcase Galapagos as a whole rather than as twenty iconic sites."

Magaly Oviedo, Head of Tourism, Galapagos National Park

It is due to bold changes like these that the World Heritage Center agreed, in 2009, to take Galapagos off the list of sites "In Danger". But even with these improvements to management, Oviedo is prepared to acknowledge that the number of visitors cannot increase indefinitely. She refuses to be drawn on a precise figure — this is a matter for all sectors, including government and the people — but "there will have to be a cap some time soon," she says.

This will not be easy. It will take a President, elected for a four-year term, to forego the short-term rewards of growing tourism so as to secure the Archipelago and the wealth it can generate long after he or she has passed from office. It would also be unpopular, not least in Galapagos where so many people depend on tourism for their livelihoods. "Such a step would not be possible without guaranteeing the livelihoods of Galapagos residents," says Oviedo.

"But when you see what is happening in the towns, with demands for more water, more energy, more hotels, and more space, the case for putting a cap on visitor numbers is clear," she says. "It will happen. Maybe not in the next one, two, five years, but it will happen."

Henry Nicholls is a freelance science journalist, the author of *Lonesome George*, and the editor of this issue of *Galapagos News*.

THE NEW ITINERARIES will increase visitor numbers to some of the less well-known sites. But, as these examples show, they still have a lot to offer ...

Urbina Bay, Isabela Island

In 1954, a fishing boat noticed a white stretch along Isabela's shoreline that had not been there before. Upon closer scrutiny, they found an eerie landscape strewn with decomposing creatures and an unbearable stench. A volcanic event had caused the ocean floor to rise by around five meters, exposing some 6 km of reef and stranding sea creatures in the process. Today, it's possible to see the eerie remains of this underwater world and an abundance of striking wildlife, including Giant Tortoises, Lava Lizards, Galapagos Snakes, and Flightless Cormorants.



© Metropolitan Touring

Buccaneer Cove, Santiago Island

A popular haunt of pirates, whalers and Charles Darwin, Buccaneer Cove on Santiago has a fascinating human history. It boasts an array of volcanic features from a tuff cone on the southern rim to lava, cinder, and scoriae to the north. There are plenty of ledges, convenient roosting spots for a plethora of Galapagos birds, including Blue-footed and Nazca Boobies, Brown Pelicans, Noddy Terns, and Swallow-tailed gulls. But as it's a marine site, the snorkeling is not to be missed, with rays, sea lions, and fur seals frequent visitors to the Cove.



© lowjumpingfrog@Flickr

Punta Pitt, San Cristóbal Island

Punta Pitt lies at the easternmost tip of San Cristóbal, with nothing but the Pacific between it and the Ecuadorian mainland. The landing site is a sandy cove, from which the trail skirts a small volcanic cone before revealing a colorful lava plateau, adorned with carpet weeds and Boobies. This is the only place in Galapagos where all three Booby species congregate to breed. It is also a good place to see both Magnificent and Great Frigatebirds.



© Bert Forbes



© Torrey Trust

TAKING A DIVE? by David Anderson, Ph.D.

Padding back and forth on their outlandish feet, plummeting into schools of fish at terminal velocity, Blue-footed Boobies are one of the highlights of any observer's experience in Galapagos. I recall the 1980s and '90s on Española Island, where most of my research occurs, when a large Blue-foot breeding colony of 1,000 birds or so could be found most of the time. Then, in the late '90s, it disappeared. Today, we rarely see even individual birds on the eastern end of Española, with a handful of nests at most.

Maybe they are nesting elsewhere in the Archipelago? Could be. Regrettably, we have very few data from other sites where Blue-foots might be breeding. But the impression of several long-term Galapagos hands is that the large breeding colonies on Fernandina, Isabela, Floreana, and Daphne are smaller and gather less frequently than they did in the 1970s and 1980s.

With support from Galapagos Conservancy, Swiss Friends of Galapagos and Galapagos Conservation Trust, we have now started a formal study of Blue-foot population size, adult survival, and other variables relevant to their conservation. In June of 2011, my Ecuadorian graduate student David Anchundia and I surveyed most of the Galapagos coastline to detect breeding colonies and to count birds. We were happy to find several

thousand individuals, a significant fraction of the population size estimated in the 1970s. But we also found several former breeding sites that appear to have been abandoned and were unable to detect any new colonies.

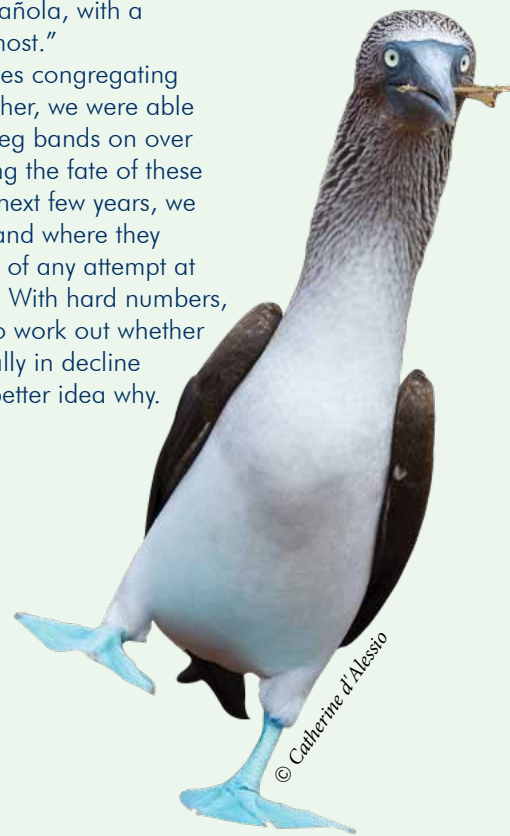


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"Today, we rarely see even individual birds on eastern Española, with a handful of nests at most."

With many Boobies congregating to dance for each other, we were able to place numbered leg bands on over 600 birds. By tracking the fate of these individuals over the next few years, we hope to work out if and where they nest and the success of any attempt at breeding they make. With hard numbers, we should be able to work out whether the population is really in decline and, if it is, have a better idea why.

David Anderson is a professor of biology at Wake Forest University. Since 1984, he has been involved in major field research in many areas of Galapagos conservation.



© Catherine d'Alessio



© Andy Teucher

DID YOU KNOW?

Blue-footed Boobies can be found feeding almost anywhere in Galapagos coastal waters, and are the most easily seen species of booby in the Galapagos Islands. However, they are the least numerous of the three booby species with about 20,000 breeding pairs. Both Nazca Boobies (50,000 pairs) and Red-footed Boobies (250,000 pairs) significantly outnumber the Blue-foots in Galapagos.

Above left: The Blue-footed Booby feeds almost exclusively on fish, targeting schools of small species like sardines, anchovies, and mackerel. They attack, sometimes in cooperative groups of more than a dozen birds, by plunging into the ocean at speeds of up to 300 km per hour and swimming after their prey.

Below left: During courtship, the male Blue-footed booby points his head and tail to the sky, unfurls his wings and whistles, all the while stamping upon the ground to draw attention to his impressive feet. These may be an honest indicator of male quality, with females tending to prefer the males that boast the bluest feet.

Below: Blue-footed Boobies usually lay two and sometimes three eggs. In a good season, when there is plenty of food, the parents can rear more than one chick. But if times are lean, the first chick to hatch will command most of the food, resulting in the starvation of its younger, smaller siblings.



© Mark Wilson

FLOREANA MAGIC

by Alex
Wyndham Baker

After an acutely Dickensian winter in a draughty Dorset cottage, the opportunity to spend seven months on a tiny island in the Pacific was too good to miss. My partner Katharine and I knew very little about Galapagos and even less about our destination, Floreana.

Currently the focus of an ambitious multi-year initiative aimed at eliminating invasive species and establishing a sustainable ecological and economical framework for its human residents, our brief was to encourage sustainable practice among the 120-strong community and teach English to anyone eager to learn.

Half expecting tropical cliché paradise, it was something of a surprise to see Floreana's scrubmantled volcanoes hove into view. The smallest (and first) inhabited island, Floreana's infamous, film-script history is well documented, with tales of buccaneers, failed penal colonies, cannibalism, mutinies, murders and disappearances aplenty and, walking back along the beach from class one day, I wasn't particularly surprised to find an ancient human tooth on the dark sand.

Although ostensibly pristine, environmentally she's had a few knocks: some bright spark torched it in the 19th century, the indigenous tortoises are long gone, the mockingbirds cling to a couple of tiny islets, and the seas have been hammered, reducing local income and the tourism draw of once world-class diving. Aggressive invasive plants like blackberry threaten to run riot, and there are an estimated 5,000 feral cats ploughing through native birds ill-equipped for feline guile.

Warmly welcomed by the small community despite our rusty Spanish, we quickly fell into an easy-going routine that, cut off from worldly cares and concerns beyond the horizon, must characterize island life the world over. Ours was semi-ascetic in simplicity; early rising with the sun, a stroll along the shore to a Sea Lion colony, household chores, English classes and meetings with the villagers, and early to bed after candle-lit dinners under the stars. On weekends, long walks up into the hills for jaw-dropping views encompassing the entire Archipelago. Our twice-daily highlight, however, was snorkeling. We'd timed it perfectly to match the sea turtle breeding season — their arrival, their strenuous month of mating, laborious laying in front of our veranda, and the dash-to-sea gauntlet of the tiny, vulnerable young.

The natural rhythm of the tides and the moon, melodious waves lulling you to sleep, the unavoidably healthy lifestyle and the riotous dawn chorus of the warblers, finches, and flycatchers made for a regenerative, invigorating stay that took time to wear off, an indication of how far we've drifted from the earth's natural pace in the frenetic modern world.

This is, perhaps, key to Floreana's sustainability and future prosperity; high-brow (rather than high-end), long-stay community tourism where people come to escape the noise, the bedlam, and the cars and pressure of people and time and getting-things-done. Certainly it would be an improvement on the current 60 or so tourists who arrive daily, visit the tortoise corral and the pirate caves, spend little more than ten bucks and leave.

By providing something special, unique and different, the community could compete with the bigger players from bigger islands. And, at dusk, with blink-and-miss-it greenflash, Turtles gaping for air, Sea Lions sliding off to work, Boobies stalking the shallows, and no sound but a calmly slapping sea, that's just what Floreana is: special, unique, and different.

Alex is an itinerant writer and his first novel *Cursive*, completed during his stay on Floreana, is currently available at www.lulu.com

Floreana: A Model for Tourism

Part of the move towards ecotourism in Galapagos (see pg. 6-7) is to generate greater benefits for local communities and to increase their awareness of the importance of natural resource conservation.

As part of our continued support for Project Floreana — the first restoration of an inhabited island in Galapagos — GC is delighted to be working to help turn Floreana into a model destination for the ecotourism sector. Surveys



© Trevor Platt

show that Floreana residents are eager for tourism to develop in a way that is appropriate for their island home. Conservation managers will be working with experts in the tourism industry and the local community to turn Floreana into a model of sustainable tourism. A crucial part of this vision will be to grow tourism numbers in a sustainable manner, ensuring the revenue this generates provides real and lasting benefits to both the local population and the island's biodiversity.

Galapagos Islander

Nallely Villacis . . .

... was born on Floreana and, though just eleven years old, is passionate about the future of her island.

What is life like on Floreana?

I live with my parents and three-year-old brother in Puerto Velasco Ibarra, the main town on Floreana. Our house is pretty typical for the Island. It is large and welcoming, with big windows that let in a breeze during the hot season.

Tell us about your school.

I have just finished my final year at the local state primary school "Amazonas." Although there are just four classrooms and only about 20 children, we have lots of good facilities, including computers. I wish I could stay on at school on Floreana for at least another three years but there is no secondary education here. So I am hoping to continue my studies in Puerto Ayora on Santa Cruz. It is close enough for me to be able to come home on the weekend to visit my parents.

How do you feel about the work of the Charles Darwin Foundation?

I love Project Floreana. CDF has taken us on excursions to see different sights on the island, helped teach us to conserve nature, to recycle as much as possible, and to use native and endemic plants in our gardens. With the support of the CDF, parents, and the whole community, we built a "living fence" around our school made from native and endemic plants. I would like my island to be preserved

in as natural a state as possible and it's really important that children and the Floreana population get involved in this kind of work.

How do you see Galapagos in 20 years from now?

In my dreams, I would like there to be better basic services, like medical care and transportation, especially in an emergency as we are very isolated. But such changes would have to be done without harming the Islands.

Apart from Floreana, where else have you been in Galapagos?

I have travelled to Isabela, Santa Cruz, San Cristóbal and also to uninhabited islands like Bartolome with its stunning landscape. But Floreana is definitely my favorite place in Galapagos. Apart from the fact it is so peaceful, it is as if everyone here belongs to one big family.



© Veronica Mora

Member Support in Action

SEA LION CRISIS: *Mass Mortality of Sea Lion Pups on San Cristóbal Island*

In late October 2011, scientists from the Charles Darwin Research Station alerted Galapagos Conservancy to a very serious disease outbreak in certain populations of Galapagos sea lions near Puerto Baquerizo Moreno on San Cristóbal Island. Specifically, this outbreak causes stillbirths and affects newborn pups.

Mortality rates for the 2011 breeding season for these populations have reached an unprecedented 60%—for comparison, a normal year's mortality rate measures in the 6-10% range.

Despite research and in-depth studies conducted by the Galapagos National Park and their partner institutions (including the performance of dozens of necropsies), the main cause of death remains unknown at this time. However, clinical signs observed in live animals and post-mortem observations indicate the disease could be caused by one of a variety of viruses or bacteria, such as Leptospirosis, Brucellosis, Toxoplasmosis, Herpesvirus, or Morbillivirus. Of utmost concern is the real potential for these diseases to be transmitted to other mammals and possibly to humans.

The Galapagos National Park and the Charles Darwin Foundation have requested urgent financial support from Galapagos Conservancy to fund: 1) determination of the disease agent, 2) the design and coordination of further plans to contain the disease and prevent it from spreading to the rest of the islands, 3) protection of public health, and 4) long-term conservation of the sea lion population. GC has already begun funding this crucial initiative, and plans to see this crisis through to its resolution when sea lion populations are healthy once again.



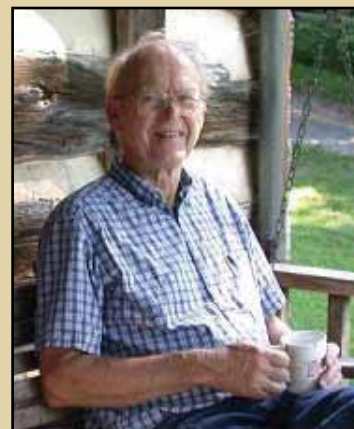
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The Cleve Hickman Fund supports emergency research on sea lion mortality

Galapagos Conservancy's response to the distressing news from the Charles Darwin Research Station and Galapagos National Park with regards to a dramatic rise in sea lion pup mortality in San Cristóbal was strengthened by the first disbursement from The Cleve Hickman Galapagos Research and Conservation Fund, which was established by Washington and Lee alumni and friends of Dr. Hickman to honor his dedication to students and his scientific accomplishments that have contributed to a greater understanding of marine life in Galapagos. The Hickman Fund is administered by Galapagos Conservancy and will provide ongoing support for marine research and conservation in Galapagos.

to Galapagos science efforts for many years, and one of Galapagos Conservancy's most loyal donors for more than 20 years.

Cleve and Rae still live in Lexington, Virginia where he is Professor Emeritus at Washington and Lee University. He continues his research in his office lab on campus and has recently completed *A Field Guide to Corals and other Radiates of Galapagos*. Cleve can also be found woodworking in his shop on House Mountain and playing flute in local chamber music ensembles.



DONOR SPOTLIGHT *Dr. Cleve Hickman*

Cleveland (Cleve) first visited Galapagos in 1974 on a family trip with his wife, Rae, and his mother and father. During this trip he decided that Galapagos afforded special learning opportunities for his students.

Over the next 20 years Cleve led more than 140 Washington and Lee biology students on 12 expeditions to Galapagos. These students carried out the first intertidal surveys of Galapagos invertebrate fauna. Since little had been documented about marine invertebrates in Galapagos, he led the development and publication of the first field guides on sea stars, marine molluscs, sea cucumbers, and corals found in Galapagos. These publications continue to be important tools for scientists working in Galapagos today. In addition to his remarkable scientific contributions, Cleve has been a generous contributor

RETORTOISING PINTA

BY ELIZABETH HUNTER AND JAMES GIBBS OF SUNY-ESF

Pinta Island seems always filled with the sounds of life. Sea lions bark on its shores. Mockingbird chicks squawk after their parents. Large grasshoppers explode from underfoot. And Galapagos doves swoop noisily through the sky. Now another sound has finally returned to the scene ... the steady creaking and cracking of branches being broken, occasionally accompanied by the deep, hollow thump of a tortoise's shell upon lava.



Elizabeth Hunter in Summer 2011 with Wilman, one of 39 tortoises that repopulated Pinta in 2010.

The historic return of tortoises to Pinta in May 2010 was a fulfillment of the hard work of many people over many decades. The Galapagos National Park had the vision and resources to undertake the introduction, and Galapagos Conservancy provided further support for us to study what happened to the tortoises and their effects in Pinta's ecosystem.

In our trip to Pinta this year, we found the tortoises had dispersed to nearly every vegetated corner of the island, from coast to peak. All of the tortoises have gained weight since they were released, with an average of 10 kilograms gained! This above average weight gain is a good sign that the tortoises are finding more than enough to eat on Pinta, and that the habitat could likely support many more tortoises.

Through study of the tortoises' movement and behavior, we have discovered that they are essentially cactus- and shade-seekers. During the mornings and late afternoons the tortoises commute from cactus to cactus for hours at a time, searching for fallen pads on the ground. Often a saddle-backed tortoise will take advantage of its shell to reach its long neck high into the air to grab bites of low hanging pads and fruits. During the heat of the day tortoises seek out dense clumps of shrubs and trees to rest in their heavy shade.

In their wanderings among cacti, the tortoises are starting to re-engineer the habitat on Pinta. They break trails through the heavy brush, and as multiple tortoises use the same trails over and over, the trails become permanently open. This creates the kind of mosaic habitat that Pinta has not had since the island was last filled with tortoises, many decades ago.

The noisy bleating of goats is a distant memory on Pinta, thanks to the Galapagos National Park's efforts to rid the island of them in the past few decades. Now the more subtle sounds of tortoises moving through the brush herald a new and hopeful phase in the eventual recovery of the island's ecosystem.

AFTER THE TSUNAMI

AN UPDATE FROM THE CHARLES DARWIN FOUNDATION

On Friday, March 11, 2011, the coasts and populated port areas of Galapagos were subjected to the largest tsunami in their recorded history — resulting from the 8.9 magnitude earthquake originating off the coast of Japan. While the human population was safely evacuated, the waves, arriving at high tide, resulted in unprecedented levels of flooding and widespread damage in some coastal areas across the islands.



(Above)The lower level of the marine laboratory on the morning after the tsunami. Displaced lab items were found 50 meters up the road. (Below) The destroyed pumphouse that supplied seawater to the marine labs. Photos by CDF scientist, Volker Koch.



There remains a need to complete impact assessments on many coastal ecosystems and nesting endemic species, such as marine iguanas, Galapagos penguins, flightless cormorants, and green sea turtles. Additionally, the tsunami caused extensive damage to the Charles Darwin Foundation's marine laboratory, which is where most of the research and assessment work following the tsunami was to be carried out.

Galapagos Conservancy provided \$125,000 in donor funding to carry out rapid assessments and analysis of coastal and submarine ecosystem damage, as well as to reconstruct the CDF's marine laboratory and replace key marine sampling and dive equipment that were destroyed by the flooding. All recovery work is expected to be complete by the end of 2011.

We extend a sincere thank-you to all of our Galapagos Conservancy members who generously responded to our urgent telephone, mail, and email appeals for funding earlier this year. The CDF would not have been able to recover and rebuild so quickly after this tragedy without your support.

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The Plastic Pacific

by David Shukman

David Shukman is the BBC's environment and science correspondent. In 2008, his striking reports from the remote Midway Islands in the Pacific brought home the global impact of a careless attitude to waste.

It was one of our first shocks when we arrived on the tiny island of Midway Atoll, a speck of coral lying, as its name suggests, smack in the middle of the Pacific Ocean.

A cute Brown Albatross chick, one of a vast colony of these magnificent seabirds, was struggling to eat, suffering the appalling misfortune of having a large plastic hook jammed in its beak. The hook must have been wedged in place for some time because one edge of the beak was distorted around it.

Run by the United States Fish & Wildlife Service, Midway is a protected nature reserve and

one of its experts, John Klavitter, moved in to help the bird. He asked me to hold it while he gripped the hook and gently pulled. It came out easily and with it a thin plastic net about four or five inches long.

The Midway albatrosses – up to two million of them – survived the Japanese bombardment of World War II and then a huge US Navy presence in the Cold War. But since the 1960s, tons of plastic objects have been washing up on the beaches every day, a new and serious menace to the birds' survival.

Such waste is thought to stretch over hundreds of miles of the Pacific – “the great garbage patch” – surging in from rivers, dumped by the megacities of Asia, or tossed overboard from ships. Being remote is no defense. Ocean currents have carried our plastic to all seven continents. It's been found on the icy shorelines of Antarctica. It sullies tourist resorts, marine sanctuaries and ecologically precious islands like Galapagos.

Midway's misfortune is that it lies in the path of a current called the North Pacific Gyre, which circulates past California, across to Japan and China, up to Alaska and then round again. The result is that all over the island we found the decomposed carcasses of birds whose bellies contained toothbrushes, cigarette lighters and other fragments of plastic. The Fish & Wildlife Service, which has researched the threat, reckons that every single albatross has ingested some quantity of plastic.

So, back to our chick. How exactly did the hook end up in its beak? John explained the likeliest scenario: that the chick's parents,

foraging up to 800 miles from Midway, would have spotted the object drifting just below the ocean surface, ingested it and then fed it to the chick believing it to be food.

If a chick's belly is filled with plastic, there's no room for nourishment and it will soon fade and die. Extracting the hook gave this bird another chance, but it was an exception. In many parts of the world, turtles and seals have been spotted entangled in old fishing nets, dolphins in the plastic holders for sets of beer cans and seabirds in torn plastic sheeting.

Our broadcasts for the BBC triggered an avalanche of concern – offers to help clean up Midway, inventions for ridding the oceans of plastic, outrage at humankind's wanton destruction of nature.

I asked John and his colleagues for their advice. The best thing you can tell your viewers, they said, is to look at their own streets, beaches and neighbourhoods and keep them clear of plastic. In other words, the problem starts at home. We talk of “throwing things away” but “away” isn't some abstract idea – it's a real place, like an island in the Pacific.



Galapagos Sea Lion with a plastic ring lodged on its neck. © Ken Schulte

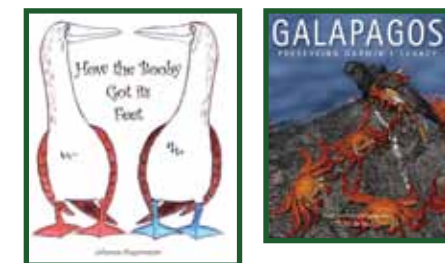
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Congratulations to Bill Gozansky, winner of the 2012 Galapagos Conservancy Photo Contest! His photo of a Sally Lightfoot Crab graces the cover of our 2012 GC Calendar, on sale now in our online store at www.galapagos.org. Other photos by GC Members: Laurie Werner, Greg Kanies, and Daniel Boyce.