GALAPAGOS MATTERS

SPRING | SUMMER 2015

GCT at 20

Animals from space

Isolation or integration

Galapagos Conservation Trust

galapagosconservation.org.uk

GALAPAGOSMATTERS
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Cover
Satellites have proved to be a valuable tool for studying the movements and behaviour of animals around the world. Galapagos is no exception (p. 21). Artwork by Lisa Brown.

CONTRIBUTORS

Stephen Blake worked in Central Africa for over 15 years on a variety of conservation issues before moving to Galapagos in 2008. He established the Giant Tortoise Movement Ecology Programme to conduct research on the movement of Galapagos tortoises.

Julian Fitter is an environmental consultant, conservationist, naturalist and writer with a special interest in island ecosystems. He ran the first yacht charter business in Galapagos and was a driving force behind the formation of the Galapagos Conservation Trust in 1995.

Ian Swingland is Emeritus Professor of Conservation Biology and the founder of The Durrell Institute of Conservation and Ecology at the University of Kent. During the 1970s, he lived and worked on Aldabra, studying its giant tortoises, and has visited Galapagos many times.

FROM THE
PRESIDENT

by **Monty Halls**

© MONTY HALLS

I was recently asked in a press interview to "define exploration", a daunting question if there ever was one. After a moment's hesitation, I answered that "you'll know it when you see it, or indeed feel it." Exploration is, after all, a deeply personal thing. No-one can tell me that my three-year-old daughter's first tentative steps into the sea are any less of an expedition for her than the greatest explorers' epic voyages were for them.

Much the same can be said about Galapagos. Ask anyone who visits the Islands for the first time what their overwhelming impression is, and you'll receive 100 different answers. The Islands are at once a source of collective global pride, a rare jewel in the world's ecological crown, whilst simultaneously being an intensely personal experience for all those who visit. Such is the power of this experience that it is frequently life-altering, tilting the axis of personal perceptions about the natural world and changing the course of a visitor's life.

Such was the case for one young marine biologist in 2003 on his first visit to the Islands. I have a particularly strong memory of arriving at my lodgings in Puerto Ayora and finding a marine iguana draped across the front of my door like some sort of novelty draft excluder. Coming from Europe, where of course animals tend to be seen in zoos and nature reserves, I found it remarkable that the entire Archipelago was very much still the habitat of both wildlife and man, living cheek by jowl and going about their day-to-day lives. Stepping gingerly over that iguana, it dawned on me that Galapagos was not famous *for* its nature reserves, the whole Archipelago *is* one vast reserve. This, in turn, means that the balance between the natural environment and the inevitable human pressure is particularly sensitive, and needs constant assessment and attention.

I have had the good fortune to return to the Islands on another filming project, and travelled slightly further afield. This gave me a glimpse of the wider system, seeing parts of the Archipelago that have changed little since the Islands' formation. At this juncture I struggle to find the words to describe my experiences in this most raw, elemental landscape. Suffice to say that I have never been anywhere like it before or since, and the sights, sounds and experiences are burned on my memory, scorched into my conscience to remain there until my dying day.

I am delighted and honoured to be asked to be the President of the Galapagos Conservation Trust. The work that it – and by extension you, the membership – does to support the Islands is invaluable. All too often, crucial conservation and community projects fail through lack of funds. But with your contributions, enthusiasm and support, we can protect and support such projects in Galapagos. In so doing, you are giving future generations the chance to have their own unique experience of this most enchanted of Archipelagos.

Monty Halls
President

Galapagos Conservation Trust

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WILD GALAPAGOS

Jonathan Green, a professional photographer and founder of the Galapagos Whale Shark Project, spotted this lava lizard lying in wait on the back of a sea lion at Punta Espinoza on Fernandina, the youngest of the Galapagos Islands. Lava lizards, of which there are at least seven species in Galapagos, can often be seen on or around resting sea lions where they feed on passing insects.

GALAPAGOS NEWS

REGREENING SANTA CRUZ

© GNP

The Galapagos National Park (GNP) took more than 50 staff into the field in February for a day of intensive reforestation. The work took place near Los Gemelos in the highlands of Santa Cruz and involved planting some 1600 specimens of endemic and native species over an area of approximately two acres.

CDF UPDATE

The Charles Darwin Foundation (CDF) is fighting to remain operational in Galapagos. In 2014, a series of financial difficulties threatened to close the oldest and largest scientific operation in Galapagos for good. "We are witnessing the demise of the flagship institution dedicated to preservation of the iconic Archipelago," CDF's president Dennis Geist wrote to the CDF General Assembly in November. "Saving the institution will require the dedicated efforts of everyone who cares." CDF's current mandate to operate in Galapagos comes to an end in 2016 and discussions between CDF and the Ecuadorian government over the future of the Charles Darwin Research Station are scheduled.

© JAMES GIBBS

PINZON HATCHLINGS

Ten giant tortoise hatchlings have been spotted on Pinzon, a clear indication the 2012 campaign to eradicate rats from the island has been successful. It's thought that rats, introduced to the Archipelago in the 19th century, have prevented Pinzon's tortoises from breeding in the wild for more than 150 years. But a survey of the island carried out by the Galapagos National Park in December found no signs of rats and at least ten very young tortoises. "I have had a time comprehending that every rat was killed," says James Gibbs, a biologist at the State University of New York, who accompanied the expedition. "But they seem to have done it." By the end of the trip, the survey team had encountered over 300 tortoises, resulting in an overall population estimate of 500, around three times as many as were recorded during the first tortoise survey some 50 years ago.

MIGRATING SPECIES

In November, delegates from over 170 countries attended a conference in Quito to discuss proposals made to increase the protection of certain migrating animals. The governments of Ecuador and Costa Rica were successful in their proposal to list two species of hammerhead shark under Appendix II of the United Nations Convention for Migratory Species (CMS). This measure affords these iconic marine predators greater protection when outside of protected national waters. An additional 19 species of sharks and rays were proposed for listing, all of which were accepted under the Convention.

© SIMON PIERCE

© LIZA DIAZ LALOVA, CDF

© AMNH/D. FINNIN

GOOGLE GALAPAGOS

In collaboration with the GNP, CDF and the University of Cuenca, Google is building on a pilot project conducted in 2013 that brought Galapagos to a new, online audience. The Trekker, a backpack with a 15-lens camera system that captures 360-degree images as the wearer walks, is being used to resample some of the sites that have already been mapped so as to visualise changes over time and also to collect images at several new locations. Once processed at Google Headquarters, these new images are expected to appear on Google Maps by the middle of this year.

DISPLAYING GEORGE

The remains of Lonesome George, the last giant tortoise from the island of Pinta, will return to Ecuador this year. When he died unexpectedly in 2012 at the Charles Darwin Research Station on Santa Cruz, the GNP sent his body to the United States to be transformed into a museum specimen. In September last year, the taxidermy was revealed to the public in a special exhibition at the American Museum of Natural History in New York. The GNP is planning a special climate-controlled building to house the taxidermy. It will be named after Fausto Llerena, the warden who looked after George during his 40 years in captivity and is expected to cost $2.2 million.

FREIGHTER STRANDED

Another cargo vessel has run aground off San Cristobal, just months after a similar incident in the same spot last year. Following the grounding of the *Floreana* in Wreck Bay at the end of January, Ecuador declared a state of emergency, mobilising resources to help unload and refloat the vessel. It's thought the freighter was carrying some 50,000 litres of fuel and 1,400 tons of cargo, much of it food and gas cylinders. Last year, the *Galapaface I* was stranded in the same bay for more than a month before being towed beyond the boundaries of the Galapagos Marine Reserve and scuttled. The impact of the latest stranding remains to be seen.

MOCKINGBIRD SURVEY

The latest survey of the critically endangered Floreana mockingbird reveals an increase in the population. In January, the GNP announced that there are currently around 300 mockingbirds, almost double the number recorded in 2012. The species disappeared from the main island of Floreana in the 19th century, but survives on two nearby islets. Whilst the latest survey appears to be good news, poor weather conditions can lead to a dramatic crash in the population. In 2006, these islets were home to fewer than 50 individuals.

CELEBRATING 20 YEARS

20 ANNIVERSARY

THE FIRST TWO DECADES

by **Julian Fitter**

When we set up the Galapagos Conservation Trust back in 1995, we had high hopes that the organisation would benefit the natural biodiversity of Galapagos.

Our initial target was to recruit 1000 members, enough to give us a regular income. Based on my earlier experience helping to found the charity Falklands Conservation, this was an ambitious target. But, as Charles Darwin noted, Galapagos is "a little world within itself" and within five years we were setting new goals.

A lot has changed over the course of GCT's first two decades, not just on the ground but in the way the world approaches conservation. In the 1990s, it was still common to encounter the view that the conservation community should have nothing to do with sustainable development. Yet it was precisely this kind of mind-set that paved the way for a period of unrest in Galapagos in the 1990s, most obviously over the issue of fishing. Although the tensions between fishermen and conservationists were not as extreme as some local politicians were making out, the conflict did open people's eyes to the importance of involving the wider community in the strategic planning and operation of the Galapagos National Park (GNP). All conservation organisations in Galapagos now realise that this inclusive approach is vital for success, bringing benefits to both biodiversity and people alike.

The way in which the friction over fishing was resolved offers a clear example of the benefits of this kind of approach. As part of the management plan for the Galapagos Marine Reserve, the GNP established an artisanal fishing "industry" that aimed to ensure that local fishermen benefited, and that the catch was largely consumed by the local population. Working with the fishermen and establishing an appropriate structure has meant that the very people who once fought the GNP are now supportive of the organisation, as the arrangement helps to ensure their livelihoods. The benefits of an inclusive approach to conservation are also evident in the school system, with young people learning that biodiversity underpins the economic value of the Islands and, hence, their own futures, helping to instil a culture of sustainable development in the wider community.

The conservation gains made in ridding Santiago of pigs and goats, removing donkeys and goats from Isabela, re-establishing tortoises on Espanola, and removing rats from Pinzon are all wonderful news, but a largely unsung gain over the last 20 years has been the increasing focus on the community and the need for conservationists to work together with the people of Galapagos. It is only with this mind-set that future generations will have a chance to marvel at the intricate web of life that makes Galapagos such a very special place.

Over the last two decades, GCT has gone from strength to strength and its work today makes a real impact in the Islands. Whilst Galapagos is clearly the immediate responsibility of Ecuador and its people, it is also our responsibility. The challenge for GCT over the next 20 years is to become still more effective, working with all its many partners and with the Galapagos community, in its widest sense, to build upon the many successes to date.

HIGHLIGHTS

Here are some of our highlights and successes of the last 20 years, made possible thanks to the generosity and support of our members.

INAUGURAL EVENT

The Galapagos Conservation Trust was officially launched on 5 April 1995 at the Royal Society. Some 250 people attended, including Sir David Attenborough and David Bellamy, the Ecuadorian Ambassador, four former directors of the Charles Darwin Research Station, several MPs and no fewer than 10 descendants of Charles Darwin himself.

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SPECIAL LAW FOR GALAPAGOS

We supported the development and implementation of the Special Law for Galapagos. This provides a legal framework for certain aspects of island life including immigration control and fisheries management.

FIRST NEWSLETTER

Originally named the *Galapagos Newsletter*, our member publication has undergone several facelifts and a couple of name changes over the years. This issue of *Galapagos Matters* marks the 40th edition.

1995

PROJECT ISABELA

Introduced goats have caused significant changes to habitats on some of the Galapagos Islands. We supported the Charles Darwin Foundation and Galapagos National Park in the world's largest ecosystem restoration project in a protected area, which led to the eventual eradication of feral goats from the islands of Pinta, Santiago and Northern Isabela.

FIVE-YEAR PLAN

FIGHTING *PHILORNIS*

The invasive parasitic fly, *Philornis downsi*, is currently the single biggest threat to Galapagos land birds. We supported the refurbishment of the insect laboratory at the Charles Darwin Research Station and helped to fund an international workshop on control methods for *Philornis* which resulted in the development of a five-year management plan.

Saving Galapagos is a top priority. These 'enchanted' islands are of colossal importance in terms of their own natural and scientific interest. But the fight to save them has also come to be seen as a symbol of the much wider battle to save the world's biodiversity. The Galapagos Conservation Trust, with which I am proud to be associated, is already playing a crucial role and I hope it will be able to keep up the good work for as long as it is needed.

Stanley Johnson

RECYCLING

We collaborated with WWF to facilitate recycling initiatives on two of Galapagos' inhabited islands, including a waste oil recycling programme to prevent contamination of waterways.

The continuing conservation of Galapagos is a vital endeavour. The Islands must be protected – they are a living history, a miraculous source of knowledge and wonder that it has been a huge privilege to witness. Please help to keep this legacy of nature safe well into the future.

Emma Thompson

ZAPPERS ON BOATS

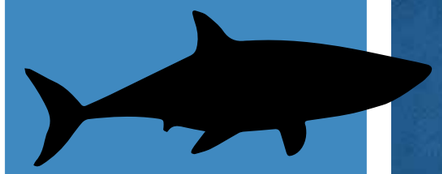
Controlling the spread of invasive species is a high priority in Galapagos. We funded a project pioneered by our Ambassador Godfrey Merlen to install UV insect zappers on boats to prevent the spread of insects between islands.

2014

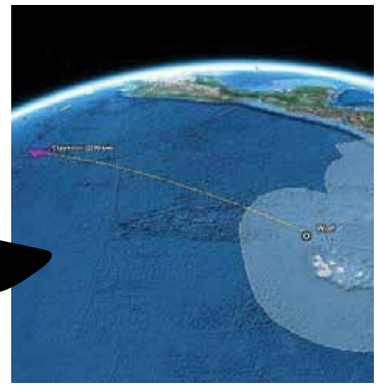
CONSERVATION EDUCATION

Last year, in collaboration with the Royal Geographical Society (with IBG), we launched our curriculum-linked educational programme both in the UK and in Galapagos. Using genuine case studies from the Islands, Discovering Galapagos will help to catalyse interest and stewardship among the next generation of conservation ambassadors.

SHARK TAGGING



In 2010, a female silky shark was tagged by scientists from the Charles Darwin Foundation and tracked from Galapagos to Clipperton Island 2200 kilometres away. This is the longest recorded shark migration in the Pacific Ocean. We helped to fund the expedition that tagged her.



COASTAL CLEAN-UP

We have supported a number of coastal clean-ups over the years. In 2012, 185 kilograms of debris was removed from coastal areas of Santa Cruz.

185

RAT ERADICATION

First introduced by pirates and whalers in the 18th century, rats are one of the most serious threats to biodiversity. We have supported eradication projects which have seen the return of native species such as the Rabida gecko.

SUSTAINABLE TOURISM

In 2011, we hosted a successful sustainable tourism workshop for UK tour operators who send clients to Ecuador and the Galapagos Islands.

2011

FLOREANA'S FUTURE

Floreana has a human population of around 100 people. Working with a variety of organisations including the GNP and CDF, we have supported a variety of projects to ensure the sustainable future of this island. These include protecting the critically endangered Floreana mockingbird, planting a native garden to discourage the use of introduced species, and supporting waste and water management initiatives in the local community.

SUSTAINABLE DEVELOPMENT

Last year we assisted in sending two professional engineers to work with CDF and the Prince's Foundation for Building Community to refurbish the Research Station's library and advise on building best-practice housing.

DARWIN STATUE

We funded an Ecuadorian sculptor to create a new statue of Charles Darwin, which is now on display at the Charles Darwin Research Station. We are also supporting the rejuvenation of visitor interpretation materials at the site.

What Darwin found on the Islands must be preserved for future generations to give them first-hand knowledge and understanding of what pristine nature can teach us. What they witness on the Islands, even today, will help them to understand the data on which Darwin was able to form his theory of evolution.

Angela Darwin

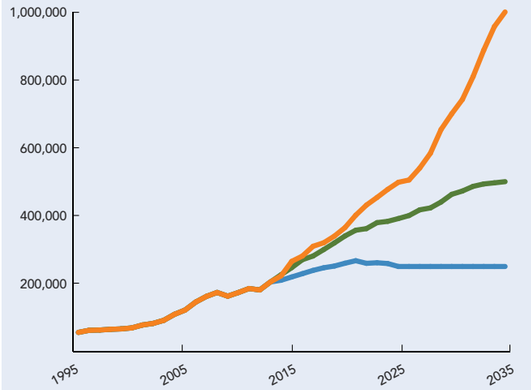
TWENTY YEARS FORWARD

by **Ian Dunn**

The Galapagos Islands of 20 years ago looked very different to how we see them today. In 1995, the Islands had a resident population of around 12,500 and an annual visitor count of less than 60,000; goats were decimating Isabela and rats ruled Pinzon, though the true impact of invasive species had yet to be felt. Today, the population has more than doubled and visitor numbers have increased to over 200,000 a year; some invasive species, like goats, have been contained and rats have been eliminated from some islands; but the threat posed by others, like blackberry, fire ants and the parasitic fly *Philornis downsi*, is on the increase.

How will Galapagos look in 20 years' time? One way to address this question is to apply what's known as "scenario thinking", imagining a range of plausible ways in which the present may unfold. This approach can be particularly informative in systems where there is considerable unpredictability, helping an organisation to accommodate a range of possible futures. In the case of Galapagos, which is likely to see significant change over the next two decades, considering a range of scenarios for 2035 is certainly a worthwhile exercise.

In 2013, there were over 200,000 visitors to Galapagos, roughly one-third from Ecuador and two-thirds from the rest of the world. How will this statistic change in the years to come?



© PLANET SOLAR

The MS Tûranor PlanetSolar is the world's largest solar-powered boat. Powered only by its 512m² of solar panels, PlanetSolar completed a circumnavigation of the globe in 2012. For more information, visit **planetsolar.org**.

SCENARIO 1

In spite of all the efforts to eradicate invasive species over the last 40 years, goats and rats have returned to many of the islands, *Philornis downsi* is thought to have contributed to the extinction of three of Darwin's finches and West Nile Virus and avian flu have severely reduced the populations of several other iconic bird species. The most obvious impact of the extraordinary El Niño in 2029/2030 was the mass die-off of marine iguanas, whose numbers still remain perilously low. An encounter with Galapagos wildlife is always going to be extraordinary, just because the creatures are often so strange and show so little fear. The problem is that there is no longer any guarantee of seeing many of the Islands' most charismatic species. It's possible, for instance, to spend two weeks in the Archipelago and come away without seeing a waved albatross, land iguana, Galapagos penguin or flightless cormorant.

There will always be disagreement over when Galapagos became set on what now seems to be an inevitable course towards degradation. But for me, the opening of the new airport on Espanola in 2022 was a tipping point. When visitors started flying rather than sailing between the six inhabited islands, I realised I would not be going back. This year, I am going to Hawaii.

> We must support, react, shape and if necessary help defend Galapagos.
>
> Ian Dunn

SCENARIO 2

We are off to Galapagos next week. As my wife and I are recently married we thought "why not". We will be staying at the Isabela Ecologica, situated on what looks like a delightful white, sandy beach with calm, clear waters. Most of the hotel's energy needs are provided by thermal vents that emerge from the slopes of Sierra Negra and the vegetables needed in the kitchens are grown under glass houses on the outskirts of the complex rather than being imported. There is plenty of wildlife in the vicinity. At one end of the beach, there is a "mess" of marine iguanas. At the other, there is a bird reserve. From here, a plastic boardwalk (made from rubbish collected on the beaches) runs through a mangrove swamp, one of the largest surviving examples of this threatened habitat anywhere in the world. It's possible to snorkel and scuba dive off the headland and the hotel also offers a range of watersports, including windsurfing, kayaking, dinghy sailing, surfing and water-skiing.

Given how famous Galapagos is, and its long history, we feel very privileged to be amongst the 500,000 visitors that now go every year. The local population, I understand, is less than 70,000 souls and there are strict restrictions on people taking up residency. As a keen ornithologist, I am particularly excited that I will get to see the rarest bird in the world, the mangrove finch. Although it is no longer thought to survive in the wild, there is a healthy captive population at the Galapagos National Park's breeding centre in nearby Puerto Villamil, with plans to attempt a small-scale reintroduction next year. It's going to be the trip of a lifetime.

SCENARIO 3

Once again, we've failed in the Galapagos Experience lottery, the scheme by which the Ecuadorian Government grants foreign nationals tourist visas to visit the Islands. I guess it's not that surprising. This year, Ecuador set the total number of tickets at 250,000, but Galapagos is such a sought-after destination that the demand is huge. Apparently, more than 5 million people worldwide were prepared to fork out the US$300 (~£200) for a ticket, so the chances of winning were just one in twenty. To date, we have entered and lost five times, which is frustrating. But you have to admire a scheme that raises £1 billion for the Ecuadorian economy every year, simultaneously strengthening the Galapagos brand and keeping the number of visitors under control.

The early success of the lottery model made it possible for Ecuador to move local people off both Isabela and Floreana, so the population of the entire Archipelago – strictly controlled at under 25,000 – is now distributed between just two islands. Land-based tourism, a feature of the early 2000s, was scaled back and all lottery winners now visit on a fleet of 30 solar-powered vessels that combine both comfort and minimal impact on the environment. I can think of nowhere else that my parents visited 20 years ago where you can still interface with nature in the same way. Imagine! Swimming with sealions, squatting down next to a marine iguana, observing a giant tortoise munching in the wild. And, to see sharks, wild, apex predators in their own environment! Galapagos really is a shining example of how to protect the natural world, even if only a small, isolated part of it. This is why we will continue to buy a ticket in the annual lottery and, one day, hope to get to see the Islands.

The future is unlikely to resemble any of these scenarios. Rather, it will probably be a mixture of all three, and more. Whatever the future might hold, thinking about such different scenarios is a good way for GCT to prepare for the immense challenges of the next 20 years and beyond. Given that far and away the greatest impact on the ecosystems of Galapagos is likely to come from humans, both residents and visitors, these people-centred scenarios can help explore what some of the future conservation challenges might be. Life in Galapagos has always changed and, over the next two decades, may do so at a faster pace than ever before. GCT and all of those involved in the conservation of this wonderful Archipelago must do so too. Using all the human and technological resources at our disposal we must be able to support, react, shape and if necessary help defend Galapagos. Launching our Galapagos Future Fund later this year is part of preparing GCT to that end (see p. 27).

THE STING
THAT COULD SAVE DARWIN'S FINCHES

by **Henry Nicholls**

In a patch of tropical dry forest on the outskirts of Guayaquil, George Heimpel peers into the nest of a yellow-rumped cacique. He is not looking for a bird, but searching for a wasp, one that could save Darwin's finches from extinction.

In the harsh, highly variable conditions that are typical of Galapagos, survival is never easy. But over the last few decades, the world-famous finches have had to contend with a new and menacing threat, a parasitic fly that goes by the scientific name *Philornis downsi*. First discovered back in the 1990s in the nest of a woodpecker finch on Santa Cruz, this invasive insect is now well established on most of the Galapagos Islands, affecting at least 18 species of land birds, including 10 of Darwin's finches. It lays its eggs in their nests, the larvae hatching out to gorge themselves on the chicks. The consequences are usually lethal for the feathered host, which may account for the rapid decline in several bird species in recent years.

In 2012, the Galapagos National Park (GNP) and the Charles Darwin Foundation (CDF) held a workshop in Galapagos to come up with an action plan to combat the threat posed by *Philornis*. This has seen researchers pursuing several different lines of attack, including setting traps for the fly, fumigating nests and biological control. This last approach is where Heimpel comes in, an entomologist at the University of Minnesota who studies parasitoid wasps. These are insects with a modified sting, which they use to inject eggs into the body cavity of another species. This results in the host being devoured from within. "If a specialist parasitoid of *Philornis downsi* were to arrive in Galapagos, either on its own or as part of a biological control program, it could dramatically reduce the burden these flies are placing on the finches," he says.

There are already several species of parasitoid wasp established in Galapagos. "So far, we have found seven species that are capable of parasitizing *Philornis*," says Charlotte Causton, a senior research scientist at CDF. "But all appear to have wide host ranges, attacking other flies and probably other insect groups." Moreover, the rate at which these parasitoid wasps attack *Philornis* is far too low to be of any use as a biological control, she says. "We continue to collect *Philornis* pupae from different parts of the Archipelago to try to understand the natural enemy complex associated with this fly."

> The threat that *Philornis* poses to land birds in Galapagos could hardly be more urgent.

Heimpel, meanwhile, has taken the search for a more effective parasitoid to mainland Ecuador. Although it seems reasonable to assume that *Philornis* probably reached Galapagos from Guayaquil, hitching a lift on board one of the many ships and planes that travel to and from the Archipelago, the fly had never been seen in Ecuador until Heimpel began to look. But last year, working in two pockets of forest on the outskirts of Guayaquil, he and his colleagues came across the fly in the nests of several bird species.

Crucially, there was also evidence of parasitoid wasps. "We've seen many holes in *Philornis* pupae showing that wasps emerged rather than a fly." This year, Heimpel is back in Guayaquil, collecting *Philornis* pupae from birds' nests and rearing them out in captivity to identify the wasps that emerge. Back in Minnesota, in a special quarantine lab, these wasps will be studied in detail in the hope of identifying a species with suitable egg-laying habits.

A candidate for biological control would need to tick several boxes, says Heimpel. For a start, *Philornis* pupae exude a frothy glue that causes them to clump together along with twigs, feathers and dust into a big sticky ball. This poses a problem for a would-be parasitoid and may help account for the low frequency at which wasps parasitise *Philornis* in Galapagos.

"A wasp could get to the pupae on the outside, but the ones on the inside are going to be very difficult to attack," says Heimpel. "It would either need to sting the larvae before the pupae form or it would need to have a really long ovipositor."

If, after careful study, Heimpel's team were able to identify a wasp that was sufficiently specific to act on *Philornis* without affecting native Galapagos flies, it would then be up to the GNP to decide whether to introduce it to the Islands. Although biological control has been effective in Galapagos in the past (see Box), such a decision will never be taken lightly. But the threat that *Philornis* poses to land birds in Galapagos could hardly be more urgent.

"This is just one of several promising approaches we are pursuing," says Causton. "We now have a group of experts from eight countries and 14 institutions working together to find techniques to control the fly," she says. "We are hopeful that between us we will come up with a solution in the not too distant future."

Far left: Arno Cimadom, a researcher at the University of Vienna in Austria, inspects a finch nest on Santa Cruz. © Christian Wappl.

Finch in peril. Over the last 15 years, the warbler finch population on Santa Cruz has declined by more than 50%. © John Colas.

George Heimpel and colleagues inspect nests on mainland Ecuador for a parasitoid wasp that might help control *Philornis* in Galapagos. © George Heimpel.

Above: *Brachymeria podagrica*, one of the seven parasitoid wasps that will occasionally parasitise *Philornis downsi* larvae. © Piedad Lincango.

THE SCALE INSECT AND THE LADYBIRD

Cottony cushion scale insect was first spotted in Galapagos some 30 years ago, and by 2000 it had spread to most of the major islands in the Archipelago. It's a problem because it sinks its mouthparts into the woody stems of plants, tapping into the sap of a range of species from the white mangrove to Scalesia. So in 2002, the Galapagos National Park agreed to the introduction of another insect, a non-native ladybird, to control it. More than a decade on, the ladybird has become established and appears to be containing the scale insect's impact on native plants without itself causing any obvious untoward damage.

PROJECT UPDATES

MANGROVE FINCH PROJECT: SEASON 2

Thanks to your support, the Mangrove Finch Project has entered its second year of this ground-breaking programme with a strong team dedicated to bringing a critically endangered population back from the brink. It is a great example of a successful multi-institutional project, carried out by the Charles Darwin Foundation (CDF) and Galapagos National Park (GNP) in collaboration with San Diego Zoo Global and the Durrell Wildlife Conservation Trust.

As is normal for those studying Darwin's finches in Galapagos, a new year begins with great anticipation as the project teams wait for the unpredictable rains that herald the onset of the breeding season. This year was no different for the Mangrove Finch Project team, which spent this time undertaking some great outreach work with the local community in Puerto Villamil, Isabela. When the wait was over and the rains arrived, the team was back into the field hoping to repeat the successes of last year, which saw 15 hand-reared fledglings released back into the wild.

The project is based on so-called 'head-starting', collecting eggs from wild nests early in the season when the probability of chick survival is very low. These are then incubated and the chicks hand-reared in captivity at the Charles Darwin Research Station on Santa Cruz. Once independent, they begin their journey back to Isabela and spend four to six weeks in pre-release aviaries within the mangrove forest, where they are able to adapt to their natural surroundings before being released. The fledglings are then radio tracked for a further month to record their initial movements and survival. In 2014, the monitoring did not detect any mortality following release.

At the time of writing, the project team are back in the field where they hope to collect more eggs to captive rear this season.

The Mangrove Finch Project is a bi-institutional project carried out by CDF and GNP in collaboration with San Diego Zoo Global and Durrell Wildlife Conservation Trust. The project is supported by the Galapagos Conservation Trust, The Mohamed bin Zayed Species Conservation Fund, the Durrell Wildlife Conservation Trust, The Leona M and Harry B Helmsley Charitable Trust, Galapagos Conservancy, and The British Embassy in Ecuador.

PENGUINS & CORMORANTS SURVEY

Galapagos penguins and flightless cormorants are two of the most iconic species in Galapagos and monitoring the populations of these flightless birds has been a focus of our support for over five years. In 2014, we helped to fund three research expeditions lead by CDF, resulting in scientists tagging a total of 279 penguins and 105 flightless cormorants. Collecting data from these two species is critical to understanding the health of populations and allows GNP to make management decisions based on the most recent scientific information.

In addition to the continuation of survey trips, we were able to support a collaboration between the monitoring team and experts from the University of Colorado, who gave advice on the best course of action for future research on these species. Outcomes include analysing the heavy metals found in tissues like feathers to ascertain the level of pollution that birds have been exposed to in different environments, and improving our understanding of species' genetics and evolutionary history.

The project team will also continue to investigate whether the spot pattern on a penguin's chest can be used to identify individuals. If this is possible, it could help future research, as photos taken by tourists could be used to identify and monitor colonies for a fraction of the cost.

DISCOVERING GALAPAGOS

GOING INTERNATIONAL

Since its launch in September 2014, Discovering Galapagos, our bilingual educational resource developed in partnership with the Royal Geographical Society (with IBG), has been accessed from over 100 countries. From Albania to Mexico and Nepal to Zimbabwe, people have been logging on to discover more about these unique islands and the conservation projects going on right now in Galapagos.

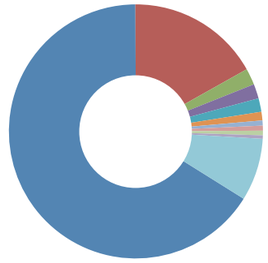
Thanks to the internet, access to free educational resources has never been easier. Discovering Galapagos is one of a multitude, but it stands apart because it uses genuine case studies from Galapagos to teach about globally relevant subjects spanning a range of academic disciplines. The resource is first and foremost a fantastic hub of information on the Galapagos Islands, but it is more than that. Lessons learnt from Galapagos have wide-ranging relevance and can help students and teachers learn about subjects much closer to home.

For example, a geography teacher in Hawaii might use Discovering Galapagos to teach students about how the Hawaiian Islands were formed as both are the result of volcanic hotspots. A biology student in Africa studying Madagascar's lemurs could look to Discovering Galapagos to learn about adaptive radiation on islands. A pupil in Australia researching how little blue penguins can live in the mild climes of Melbourne could visit Discovering Galapagos to find out how penguins can survive at the Equator. And a schoolchild learning about the history of pirates could use Discovering Galapagos for information on piracy in the Pacific.

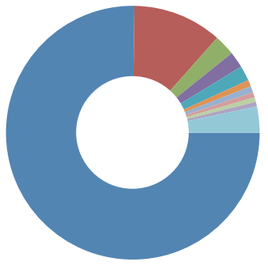
Through the lens of Galapagos, we can learn about the geographical processes that formed our world, the biology of intricate ecosystems and the importance of conservation. Discovering Galapagos may focus on a single archipelago, but its relevance is most certainly global.

What will you discover? ¿Qué descubrirás tu?

WHO'S BEEN DISCOVERING GALAPAGOS?



discoveringgalapagos.org.uk



descubriendogalapagos.ec

THE LOST YEARS

by **Stephen Blake, Fredy Cabrera and Freddy Villamar**

If we hadn't been there that day, we would never have met Moz. Wielding a machete with great skill, the ranger from the Galapagos National Park gently loosened the crusted surface of the nest, easing away the earth to reveal the remnants of six golf-ball-sized eggs and six little reptilian faces.

One of the heaviest hatchlings, a baby tortoise we nicknamed Moz, weighed just 97 grams, less than half a pack of butter. But compared to most of his siblings he was a heavyweight, singling him out for the attachment of a miniature radio tag. Moz became the first wild Galapagos giant tortoise hatchling to be tracked using radio-telemetry, an individual tortoise that is helping to fill in a vital gap in our understanding of tortoise biology.

At present we know almost nothing about the first decade of a wild giant tortoise's life. Yet the outcome of these "lost years" – whether a tortoise survives them or not – will have a profound effect upon the population. Understanding how, when, where and why young tortoises live and die is therefore essential to conserving the species and to predicting future population trends.

Moz's mother most likely began to migrate some four or five months earlier, striking out from her dry-season retreat in the humid highlands of Santa Cruz towards the nesting grounds near the coast more than 5 kilometres away. Once there, she selected a patch of suitable soil and began to dig, using her back feet to excavate a small basin in the earth about 25 centimetres deep. After some two or three hours, she laid her eggs, burying the clutch in sand slaked with urine and faeces, a mixture that creates the perfect conditions for incubation. Her last act of motherly love was to release more urine over the filled in nest, leaving a hard, protective cover over her precious brood. Without further ceremony, she turned and set out for the highlands once more. It was the last involvement she would ever knowingly have with Moz or any of his siblings.

In the months that followed, amazing things happened inside the eggs, each runny yolk transforming into a fully formed giant in miniature. Then, based on some critical cue known only to a nascent tortoise,

Left: Moz with the radio tag attached to his shell. © Sam Rowley, CDF

Above: Fredy Cabrera, research scientist with the Giant Tortoise Movement Ecology Programme, leads the team to the study site. © Sam Rowley, CDF.

CONTINUED ON PAGE 20 ▶

> The ranger loosened the crusted surface of the nest to reveal the remnants of six golf-ball-sized eggs and six little reptilian faces.

Moz and his siblings decided it was time to break out from their shells and dig for the surface. It was our good fortune to be there as they emerged, the ever-helpful ranger Wilman Valla gently scooping them from the ground and handing them to our research scientist Fredy Cabrera to be weighed, measured and marked.

We kept hold of Moz and two of his siblings for a little longer than the others, using nail glue from a beauty salon to fix radio tags to their shells. As soon as Moz's feet touched the ground he was scuttling off, lost to sight amidst the thick bush.

Were it not for the tag, it's unlikely we'd have seen him again. But a week later, we returned to the nest site and picked up Moz's signal. We cut and forced our way through the undergrowth, the bulky receiver (about the size of a television aerial) snagging on the brush. Eventually, some 35 metres from the empty nest, the signal indicated that we were standing directly on top of him. Suddenly and simultaneously, everyone in our party realised that Moz had to be beneath one of the rocks at our feet. It is no wonder that hatchlings are so rarely seen.

We knelt down and began to search. After a couple of bad choices, we eased over a large, flattish rock, and there he was, suddenly exposed and vulnerable in his little refuge. Wasting no time, we weighed and measured him, then set him back where we'd found him and replaced the rock.

Over the coming weeks, Moz would astound us with his wanderings; a month into his life he was 150 metres from the nest and by two months he was 400 metres away, having visited the beach and scurried over who knows what convoluted path. This might not sound very impressive, but to Moz, who was less than 10 centimetres long, he had navigated an incredible terrain of vast rocky pinnacles and deep fissures through the lava substrate. Not only that, he was growing quickly, his weight increasing by 50% in just three months.

Then, abruptly, Moz seemed to have reached his destination, settling into a little patch from which he has not yet strayed. Over the coming weeks, we came to know his preferred refuges; if he was not under the big rock to the north, he was either under the round one to the southeast or the little fissure in the middle.

What had we witnessed? Was Moz's voyage from his nest part of a plan to avoid predators that might be attracted to the nest site? Was it the onset of the dry season that caused him to halt his travels? Would he stay in his home patch for the next year, five years, or even ten? Or would he start moving again as suddenly as he'd stopped? Only time will tell.

With luck, we will still be following Moz in twenty years, by which time he will have grown into a thunderous giant, though still far from his full adult stature. But another very real possibility is that he will succumb to one of the many threats that he faces: tumbling into a deep and inescapable crevice or getting stuck upside down between rocks. Unlike his distant ancestors, Moz also faces the challenge of evading invasive species, like fire ants, rats or hungry feral pigs.

We will do all we can to follow Moz and other young tortoises every step of the way. This, we hope, will unearth the secrets of their early lives and provide the Galapagos National Park with robust scientific information with which to improve the management and conservation of these wonderful animals.

Above: Female giant tortoises take several hours to excavate a nest. © Sam Rowley, CDF.

© SAM ROWLEY, CDF.

THE GIANT TORTOISE MOVEMENT ECOLOGY PROGRAMME

The Lost Years project is the latest part of the Giant Tortoise Movement Ecology Programme (**gianttortoise.org**), a tri-partite initiative coordinated by Stephen Blake, involving the Max Planck Institute for Ornithology, the Galapagos National Park and the Charles Darwin Foundation. If you would like to support the Lost Years Project, visit: **galapagosconservation.org.uk/lost-years-appeal**.

TRACKING GALAPAGOS

Above: Sea lion © Oli Burbage-Hall. Petrel © Daniel Allen. Waved albatross © Vanessa Green.

Over the years, zoologists have been quick to embrace new technologies, using the very latest gadgets and gizmos to access the secret lives of animals. Their discoveries are always interesting and often have important implications for conservation. In addition to giant tortoises, researchers in Galapagos have used electronic add-ons to study everything from waved albatrosses to whale sharks.

WAVED ALBATROSS

During the waved albatross breeding season, from late-April to December, this Galapagos favourite can be seen on nesting sites on Espanola. But when the birds launch themselves off the island on a foraging trip, GPS-enabled tracking devices reveal that they commonly head for the Peruvian coast, often travelling thousands of kilometres at a time.

GREEN TURTLE

Satellite transmitters have been used to monitor where female turtles go when they've finished nesting on the shores of Galapagos. It would appear that some head for South America, ending up anywhere between Nicaragua and Colombia; some hang around in Galapagos, visiting other islands; and others swim south and west into the open Pacific.

SWALLOW-TAILED GULL

Using data loggers and water sensors, researchers were able to reveal hidden patterns of behaviour in the nocturnal swallow-tailed gull. These birds, it seems, are influenced by the lunar cycle, concentrating their foraging efforts to coincide with the new moon when the abundance of prey species at the surface is at its greatest.

DARK-RUMPED PETREL

The foraging behaviour of the critically endangered Galapagos petrel is largely unknown, but ongoing research – using satellite transponders – is starting to reveal some of this missing information.

HAMMERHEAD AND GALAPAGOS SHARK

For almost ten years, a network of scientists has been using satellite and acoustic tags to track scalloped hammerheads and Galapagos sharks in the Eastern Pacific. Clear evidence of the migration routes of these top predators is crucial for informing conservation policy and practice.

BLUE-FOOTED BOOBY

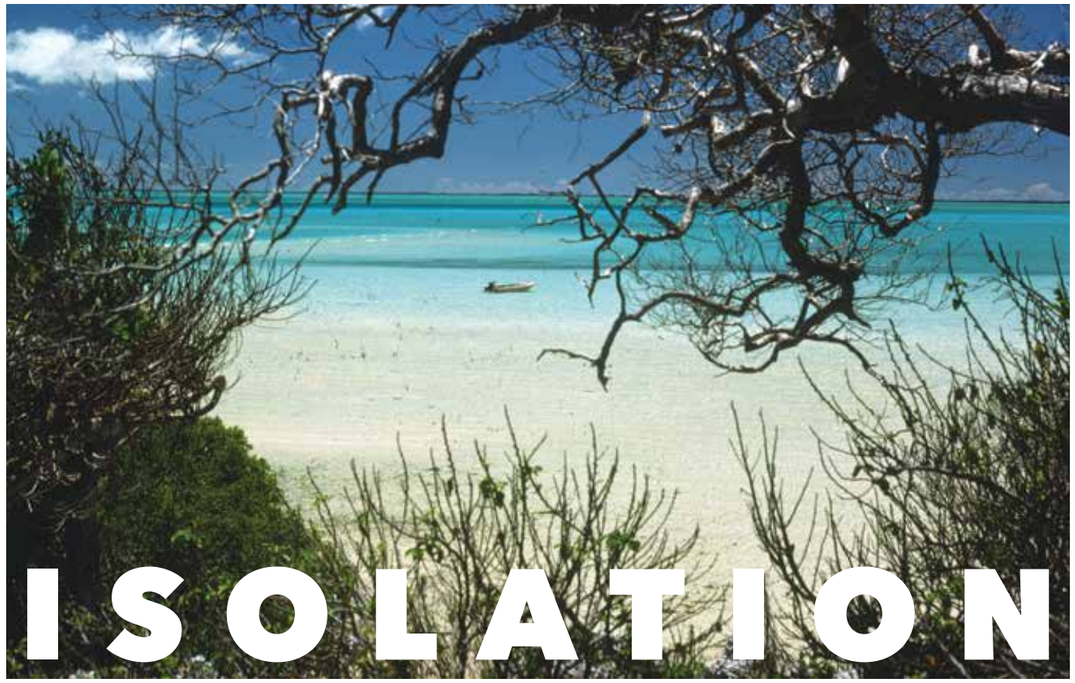
Researchers have used data loggers to study the underwater movements of blue-footed boobies in extraordinary detail. Typically, boobies spend around 3% of a foraging trip under water. In an average dive, a bird will descend to around 4 metres below the surface, but one particularly adventurous individual was submerged for an impressive 39 seconds and reached a depth of 22 metres.

FUR SEAL AND SEA LION

GPS-tracking devices and time-depth recorders have been used to compare the foraging patterns of Galapagos sea lions and Galapagos fur seals. This shows a complex pattern of movements that means these similar species rarely came into conflict over food.

WHALE SHARK

The Galapagos Whale Shark Project is one of the most ambitious tagging projects ever attempted for this species. One of the aims of this initiative is to account for the aggregations of female whale sharks in the vicinity of Darwin island in the northeast of the Archipelago. As more data come in, it is looking increasingly likely that the Galapagos Marine Reserve may play an important role in a much larger scale migration undertaken by pregnant females of the species.



ALDABRA LAGOON. © IAN SWINGLAND.

ISOLATION OR INTEGRATION

by **Professor Ian Swingland**

Galapagos and the Seychelles might lie in different oceans on opposite sides of the planet but they have much in common: both places are made up of over 100 islands or rocky outcrops; both have been completely isolated from the nearest continental land mass for millions of years; as a consequence, both sites have experienced the origin of thousands of new species; and, of course, both Galapagos and the Seychelles still have giant tortoises.

In addition, humans discovered the existence of Galapagos and the Seychelles at roughly the same time, in the first half of the 16th century. Although the consequences of colonization have played out differently, there are still many similarities between Galapagos and the Seychelles in their efforts to conserve the biodiversity of these remote clusters of islands.

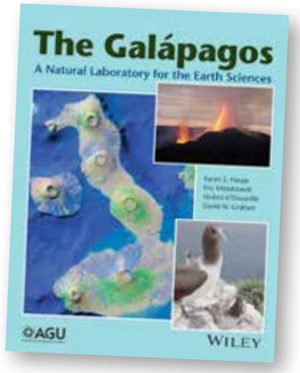
Since 1959, some 97% of Galapagos has benefitted from national park status, effectively containing the human population (now at around 30,000) within just 3% of the land mass. In the Seychelles, the extent of national park is not as great (42% of a much smaller total area), but the human population, though larger at around 90,000, is similarly concentrated, with 90% of people living on the largest island of Mahé.

The similarities are perhaps greatest between the uninhabited islands of Galapagos and Aldabra, a very remote, environmentally hostile atoll of razor-sharp coral to the southwest of Mahé and the main granitic Seychelles, and the second largest atoll in the world. There is no freshwater, sharks cruise the lagoon and it is uninhabited except for a small research station built in 1970. As in Galapagos, feral goats introduced to Aldabra once had a profound effect on the atoll's fragile vegetation, affecting tortoise movement and behaviour. Since the successful eradication of goats in 2012, however, the vegetation has been recovering and tortoise numbers reveal the benefits of this intervention: Aldabra is reckoned to be home to around 100,000 giant tortoises, more than twice the number in the entire Galapagos Archipelago.

In an increasingly populated world, places like Aldabra are becoming increasingly rare. Rarity, however, tends to increase the human perception of value and the temptation to exploit. So, ironically, complete isolation may bring about a loss of biodiversity more rapidly than an alternative path of strong protection combined with carefully controlled, sustainable development.

The governments of the Seychelles and Ecuador are attempting to strike this balance by maintaining the isolation of some islands and permitting development on others. Both governments have the capacity and ability to conserve much of what makes these places so valuable without excluding humans completely. In the case of the Seychelles, the administration must plan visitor and resident behaviour to conserve the main protected sites near Mahé whilst resisting pressures to exploit Aldabra. In Galapagos, Ecuador must do still more to contain the impact of humans, controlling the numbers and behaviour of both residents and visitors alike. This is far from easy and will require strong, enlightened political will. ■

REVIEWS



EXPLOSIVE ORIGINS
THE GALÁPAGOS: A NATURAL LABORATORY FOR THE EARTH SCIENCES

Edited by Karen S. Harpp, Eric Mittelstaedt, Noémi d'Ozouville, David W. Graham, American Geophysical Union, 2014, £100, ISBN 9781118852415

So dominant have been the biological repercussions of the publication of *On the Origin of Species* that few people appreciate Charles Darwin's important contributions to the young science of geology. So it is fitting that a serious, edited volume focused entirely upon the geology of Galapagos has now been published. For the non-geologist, this will be a dense and challenging book. It deals extensively with the physically dynamic nature of the Archipelago, which owes its existence to a 'hot-spot' (mantle plume) that rises beneath the tectonic plate that forms the seafloor in this area of the equatorial eastern Pacific. The motion of the tectonic plate, the physical and chemical interactions between the plate and the underlying plume, led to the generation of the volcanism that created these Islands on a conveyor-belt-like system. We can identify former islands (now submerged sea-mounts) and can chart the erosional characteristics of the present islands in the Archipelago. It is also possible to describe the ever-changing island geography linked to the processes of emergence, subsidence, erosion and sea-level change; these factors affect the distribution of island organisms and give populations opportunities to speciate (the clue that led Darwin toward a solution to that "mystery of mysteries", the origin of new species). This book is a valuable, challenging, read, and so it should be: the Archipelago deserves no less.

Reviewed by David Norman, Christ's College, Cambridge

TORTOISE TALE
THE LONESOME GEORGE STORY: WHERE DO WE GO FROM HERE?

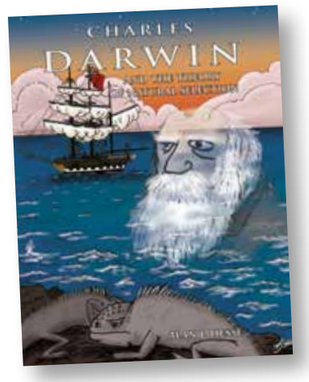
by Linda J. Cayot, Galapagos Conservancy, 2015, $15

The discovery of a lone male giant tortoise on Pinta Island in 1971 sparked a worldwide discussion about the future of conservation and how critically endangered species should be protected. This is the story of Lonesome George told from the unique perspective of Dr Linda J. Cayot, a herpetologist who worked for the Charles Darwin Foundation for a decade before joining the Galapagos Conservancy.

In this bite-sized book, Cayot tells of the surprise discovery of Lonesome George and his subsequent 40 years spent at the Charles Darwin Research Station on Santa Cruz. She recounts the unsuccessful measures taken to help George reproduce and reflects on how he became an emblem for conservation and an incredibly popular presence on the Islands. She also describes the tangible grief that shook the world when George died unexpectedly, albeit naturally, in 2012.

But George's story doesn't end there. Cayot continues with the lessons conservationists are still learning simply due to his existence, and shares what she hopes the future will hold for tortoises in Galapagos. The familial, insider perspective from which this book is written makes this a fascinating insight into George's life, and is a good reminder of how important this tortoise still is as an icon for conservation, not just in Galapagos, but throughout the world.

Reviewed by Leah Jones



COMIC DARWIN
CHARLES DARWIN AND THE THEORY OF NATURAL SELECTION

by Alan Hesse, Millgate House Education Ltd, 2014

Charles Darwin's voyage on board the HMS *Beagle* is one of the most famous expeditions of the 19th century. In 1839, he published his *Journal of Researches*, which gives a detailed account of his observations and findings during this five-year journey. But whilst this classic is an exciting and enjoyable read, it can be something of an undertaking. Alan Hesse's fantastically illustrated comic focuses on the five weeks that Darwin spent in Galapagos and the subsequent development of the theory of evolution. Hesse has done a brilliant job in taking this story and turning it into a comic that is both enjoyable and accessible to a wide range of ages. Now available for the first time in English, this historically and scientifically accurate book makes for a great educational resource.

Reviewed by Pete Haskell

MEMBERSHIP

by **Leah Jones**

The successes you will read about in this issue of *Galapagos Matters* have only been made possible through the support of GCT Members, and as we look to the future of Galapagos, we would like to take this opportunity to thank you all, and reflect on some of your wonderful achievements.

Chris Livemore on his Channel swim. © Chris Livemore

Ever since our very first supporters joined in 1995, our members have achieved some incredible feats. Each year has brought exciting challenges for conservation, so no matter when you joined you will have witnessed scientific discoveries and taken part in events of global importance.

In 1995, in the very first edition of what would become *Galapagos Matters*, our members were already helping the cause by gathering up press cuttings about Galapagos & GCT and sending them in to start our press cutting collection. Since this very early project, we have relied on our members to raise funds and awareness about this special archipelago. Over the years, GCT Members have run marathons, swum the channel, given lectures and talks, taken photos at events, and even donated redundant currency once the Euro was introduced – all in the name of Galapagos conservation.

Some members have also given us their time by volunteering in the office, helping with translation projects, creating teaching resources and assisting with the ever-demanding office admin! Processes in the GCT office have changed over the years: in 2006 we thanked volunteers for their help with our slide library; today all photos are digital and are being categorised, once again, by a volunteer.

As a charity, one of the most important aspects of our work is to raise funds for vital projects in Galapagos, and this is where you, our members, are really something special. We cannot thank you enough for the generosity you continue to demonstrate, and we never cease to be humbled by the incredible response to our project appeals.

We are incredibly lucky to work with such an engaged and motivated membership base, and we hope that you enjoy being a part of this remarkable Galapagos conservation community. We are always listening to your feedback, and our magazine content, events programme and membership scheme are all based on the comments you have made. Once again, thank you all for your continued and generous support. You make our projects possible.

AKEMI YOKOYAMA
GCT MEMBER SINCE 1995

20 years ago, when I returned from my first trip to the Archipelago, I joined the newly launched GCT straight away in hope that I could do something to help. I am proud to be the longest serving volunteer, as I am forever indebted to Galapagos for waking me up to the wonders of nature.

JANE PROCTOR
GCT MEMBER SINCE 2013

In 2013, I visited Galapagos and had the most extraordinary and inspirational trip. I was amazed by the landscapes and species - everything is other-worldly!

On my return I gave talks to local groups, mainly those linked to my employer the Derbyshire Wildlife Trust, and passed on donations to the Galapagos Conservation Trust to aid their excellent work.

THE GALAPAGOS
CONSERVATION COMMUNITY

As a member of GCT you are already an integral part of the Galapagos conservation community. However, if like Akemi and Jane, you are interested in becoming even more involved with GCT please do get in touch. We would love to hear why you support Galapagos: does it hold special memories for you? Has it made you think more about global conservation? What was your reason for visiting in the first place?

We can also help you raise awareness for Galapagos at your local schools and clubs – for more information, contact Leah Jones by emailing leah@gct.org or calling 020 7399 7440.

2016 CRUISES

SUPPORTER CRUISE

25 APR – 02 MAY 2016

© SIMON PIERCE

GALAPAGOS WITH MONTY HALLS

Join Monty Halls, our new President, and GCT Chairman Dr Mark Collins on an incredible adventure around the Galapagos Islands in April 2016. This unique opportunity begins in the Ecuadorian capital of Quito and includes an eight-day cruise around the Archipelago's western islands, where you will be able to witness first-hand the amazing wildlife and landscapes of Galapagos.

Monty is no stranger to expeditions, having been a Royal Marine before starting his career as a television presenter and travelling to some of the most remote locations in the world. His love of exploration is rivalled only by his passion for the natural world, and as a qualified marine biologist his enthusiasm and knowledge of Galapagos wildlife will make this the trip of a lifetime.

Your cruise will take place on board the stunning *Majestic* yacht, which will transport you from island to island. Daily excursions include snorkelling with penguins near Isabela, hiking to the summit of Bartolome's volcano, swimming with sea lions around Lobos Island, and admiring the pristine landscape of Fernandina.

For more information contact the GCT office on 020 7399 7440 or email gct@gct.org.

© SIMON PIERCE

DIVE CRUISE

28 AUG – 05 SEP 2016

EXPERIENCE THE DIVE OF A LIFETIME

In association with Dive Worldwide we are offering you the opportunity to join expedition leader and whale shark expert Jonathan Green on a bespoke Galapagos dive cruise. The trip coincides with prime whale shark season, giving you the very best chance of seeing the world's largest fish.

Your adventure takes place on board the *Humboldt Explorer*, a custom 16-guest liveaboard dive vessel designed for speed, stability and comfort. The trip itinerary includes six days diving in some of the world's best dive sites, including Wolf island, Darwin's Arch and Cousin's Rock. In addition to whale sharks, regular sightings include hammerhead, silky and Galapagos sharks, eagle rays, sea lions, turtles and huge schools of barracuda, jack and snapper.

Under Jonathan's expert guidance and diving up to four times a day, you will not only have the best opportunity to dive with whale sharks but also to learn about them. Jonathan will give presentations about the work of the Galapagos Whale Shark Project, which he founded in 2011, and will be on hand to answer your questions throughout the week.

For more information contact Dive Worldwide on 01962 302 087 or email reservations@diveworldwide.com

EVENTS

For more information about events and to book your tickets, simply visit galapagosconservation.org.uk/events or call us on 020 7399 7440

GALAPAGOS GARDEN PARTY

18 JUNE 2015 – 14 CLEVELAND ROW, WESTMINSTER

We are delighted to invite you to celebrate the 20th anniversary of the Galapagos Conservation Trust at our Galapagos Garden Party this summer. Hosted at one of London's most stunning private residences, Bridgewater House, we will be celebrating 20 years of Galapagos conservation with our members new and old over a glass of champagne and canapés. Proceeds from this event will go towards our Galapagos Future Fund, which will support projects working towards a sustainable future for these Islands for the next 20 years and beyond.

Tickets are priced at **£60** each and include drinks and canapés.

© MARK MOXON

Feeding frenzy of tuna and sharks
© Jonathan Green

GALAPAGOS DAY

01 OCTOBER 2015 – 1 KENSINGTON GORE, LONDON

Join us this October for our annual Galapagos Day at the Royal Geographical Society (with IBG). Last year's re-launch of this popular event was a great success, with hundreds of supporters coming together to celebrate these amazing Islands and listen to Galapagos experts talk about their work.

This year we will focus on the incredible diversity of Galapagos' marine life. Keynote speaker for the evening will be our new President, Monty Halls. As a qualified marine biologist and technical diver, Monty has some impressive stories from his adventures diving in Galapagos and around the world.

Tickets are priced at **£30** and include a refreshment. More speakers will be announced at a later date via our website.

© JERRY CHINN

2015 GALAPAGOS PHOTOGRAPHY COMPETITION

DEADLINE FOR ENTRIES: 31 JULY

It's that time of year again when we give you the opportunity to enter your best images from Galapagos into our annual competition. If you have a striking portrait of a Galapagos penguin, a unique shot of a giant tortoise or a photo that shows off the incredible volcanic landscape of the Islands, we want to see them!

Entering your images has never been easier: simply visit competition pages on our website, fill out the entry form and upload your photos. Five categories make up the competition and the overall winning photograph will appear in our 2016 Galapagos calendar.

GALAPAGOS GIFTS

Floreana Mockingbird Pin Badge

£3

Mockingbirds played a fundamental role in the development of Charles Darwin's theory of evolution. Of the four species of mockingbird found in Galapagos, the Floreana mockingbird is the most critically endangered. This beautiful limited edition enamel pin badge will make a great addition to any collection.

Sponsor a Hatchling

£25

Sponsor your very own hatchling giant tortoise! By sponsoring a hatchling you will be supporting the Lost Years Project to investigate the early years of giant tortoises. Your digital sponsorship pack includes a personalised e-certificate and a giant tortoise fact file. You will also receive quarterly project updates from lead scientist, Dr Stephen Blake, for the next year. Available for a limited time only.

Galapagos Cards by Robert E. Fuller

£11.99 (pack of 10)

A selection of cards featuring a series of beautiful paintings by British artist Robert E. Fuller. Two of each of five designs (waved albatross, giant tortoise, frigatebirds, penguin and blue-footed boobies) and 10 envelopes are included in a pack. Cards measure 14 cm².

GALAPAGOS FUTURE FUND

Imagine Galapagos 20 years in the future if all conservation efforts ceased…

Without good quality science and a focus on world-class research, how would conservation management plans be produced and successfully delivered?

Without engaging and inspiring the next generation through educational programmes, who will be stewarding the environment?

Without recognising the local culture and social challenges of Galapagos, how can the resource use by the resident population ever be sustainable?

We are at a tipping point globally – we have to take action now to make a real step change in conservation to ensure a sustainable future for our planet – particularly in the most vulnerable and fragile areas such as Galapagos.

Throughout 2015 we will be calling on our members to help us continue our work towards our vision of a well-conserved and sustainable Galapagos. With you, we can continue our support for projects to protect endemic species like the critically endangered mangrove finch, which is on the brink of extinction due to the effects of an introduced fly. With you, we can continue developing our conservation education programme and increasing its reach to the people who can benefit from it the most. With you, we can help to ensure that future development is kept in balance with sustainability and conservation values.

You can make a difference to the future of Galapagos. Please give today via the attached form to help conserve the incredible wildlife and habitats of Galapagos. **Thank you.**

Dive in...

Galapagos Conservation Trust

The bountiful seas of Galapagos are host to a wide variety of marine life, from the bizarre red-lipped batfish to impressive schools of hammerhead sharks. Join our new President, Monty Halls, and other guest speakers at the Royal Geographical Society on 1 October to discover more about the incredible diversity of life beneath the waves. More information inside and on our website.

galapagosconservation.org.uk/events