



CHARLES DARWIN FOUNDATION FOR THE GALAPAGOS ISLANDS

# Annual Report 2016

2017 Preview







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All our projects are carried out in partnership and thanks to the support of the Galapagos National Park Directorate, the Ecuadorian Ministry of Environment and other collaborators.



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## Acronyms and Abbreviations

<b>ABG</b>	Galapagos Biosecurity Agency
<b>CABI</b>	Centre for Agriculture and Biosciences International
<b>CDF</b>	Charles Darwin Foundation
<b>CDRS</b>	Charles Darwin Research Station
<b>CMAR</b>	The Eastern Tropical Pacific Marine Corridor
<b>CNC</b>	Canadian National Collection of Insects, Arachnids and Nematodes
<b>ESPOCH</b>	Escuela Superior Politécnica de Chimborazo
<b>ESPOL</b>	Escuela Superior Politécnica del Litoral
<b>FAD</b>	Fish Aggregating Device
<b>GIS</b>	Geographic Information System
<b>GMaRE</b>	Galapagos Marine Research and Exploration
<b>GMR</b>	Galapagos Marine Reserve
<b>GNPD</b>	Galapagos National Park Directorate
<b>ICF</b>	International Community Foundation
<b>INOCAR</b>	Instituto Oceanográfico de la Armada del Ecuador
<b>IWC</b>	International Watch Company Schaffhausen
<b>MAGAP</b>	Ministry of Agriculture, Livestock, Aquaculture and Fisheries
<b>MINTUR</b>	Ministry of Tourism
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>WWF</b>	World Wildlife Fund for Nature







## Vision and Mission

The mission of the **Charles Darwin Foundation** and its **Research Station** is to provide knowledge and assistance through scientific research and complementary action to ensure the conservation of the environment and biodiversity in the Galapagos Archipelago.

The vision\* of the **Charles Darwin Foundation** and its **Research Station** is to ensure a sustainable Galapagos by providing breakthrough research which informs conservation actions and inspires humanity to preserve this extraordinary archipelago and our planet as a whole.

*\*Currently under review.*



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## Executive Summary

This annual report gives an overview of all the projects carried out by the Charles Darwin Foundation in 2016 and offers a preview of our activities in 2017. Furthermore, it highlights some of the latest scientific updates so that our friends and followers can be inspired by the work we do in Galapagos. Over the years, we have overcome many challenges and have continued our groundbreaking scientific investigations for the long-term conservation and management of the archipelago.

Within the last year and a half we renewed our agreement with the Government of Ecuador to keep working in Galapagos for another 25 years and recently had it ratified by the National Assembly. We have also recently strengthened local capacities and engaged more vigorously with Ecuadorian academia and technical institutions. We have many reasons to be hopeful about the future, but we still need the ongoing support of our current donors and to expand our funding sources. Literally, without the support of generous individuals, foundations and companies, we would not be able to conduct our work here. In 2016 we placed emphasis on assessing our fundraising capacities and projecting concrete actions for 2017. The Board of Directors has played a proactive and tremendously supportive role in guiding fundraising and following up on the execution of our CDF strategy 2016-2019. We are also grateful for the political support and engagement of all government institutions.

In the following report, you will find a page dedicated to each of the fascinating scientific projects that we work on in collaboration with the Galapagos National Park Directorate and many other national and international organizations and academic institutions. We have tried to be concise, give a general overview of the project, and highlight some of the most interesting developments.



© Alice Choo / CDF

To thank our donors and collaborators, they are listed for each project. All our investigations have recently been organized under three overarching research goals encompassed in national and provincial plans: conservation of ecosystems; restoration of ecosystems; sustainable development and human well-being.

The last two years have truly been extraordinary. Among our many successes, we have conducted the first study of heavy metals in sea birds, mapped 17 of the most dominant plant species on Santa Cruz Island, supported a study to determine the number of introduced species in Galapagos and their pathways of entry, increased the number of critically endangered juvenile mangrove finches by over 50%, improved our lab-based breeding program to study the invasive species, evaluated the use of biological control for the introduced fire ant, registered new deep-sea organisms, described the life history of three long-lived fish species, restored degraded ecosystems with thousands of endemic plants, conducted a study about the marine connectivity of invasive species between Galapagos and Cocos Island, conducted our new 'Shark Ambassadors' outreach program with the local community, opened the brand new Charles Darwin Exhibition Hall, and launched our new online library catalog. We hope you enjoy learning about our work in the following pages and would be very happy to hear back from you.



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A close-up portrait of Dennis Geist, a man with glasses and a yellow cap, smiling. The background is a blurred blue ocean.

**Dennis Geist** has been the President of the Charles Darwin Foundation since 2011. He is a professor of Vulcanology at the University of Idaho and has been conducting field research in the Galapagos since 1982. He is the former chair of his department and serves on the editorial boards of *Geology* and the *Journal of Petrology*.

Dear friends,

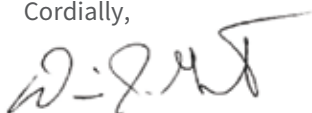
It is inspiring to realize that 2019 will be the Charles Darwin Foundation's 60th anniversary! It is therefore a special time to thank our international network of friends, followers, and donors who make our work possible. As President of such a long-standing and important scientific organization, I am proud of our very committed staff, who work tirelessly in Galapagos to make sure the archipelago is preserved for future generations. Whether you're helping in logistics, working in human resources or conducting bird surveys, every single effort counts and is what makes conservation possible. So, once again, thank you!

I would also like to inform you about recent changes to the Board. Eliécer Cruz has stepped off as the government representative and has been replaced by Silvia Espíndola Arellano, who is Subsecretary for International Cooperation for the Ministry of Foreign Relations and Human Mobility. Additionally, our Treasurer Paula Brock (CFO for San Diego Zoo) has recently stepped off the Board and has been replaced in this post by Darrel Schoeling, Director of Expedition Development for Lindblad Expeditions. We would like to thank Ronnie Stewart, Headmaster of the York Prep School in New York, for bringing his experience in nonprofit management and fundraising. We welcome the newcomers and would like to take this opportunity to thank both Eliécer and Paula for their hard work and commitment.

Finally, we would like to extend our gratitude to the Leona M. and Harry B. Helmsley Charitable Trust for their constant support over the years. One of our most committed donors, they are now moving away from a conservation portfolio. In the coming months we hope to diversify our financial base in order to continue our groundbreaking research for the conservation of the Galapagos Islands. A milestone was reached this past September when the Charles Darwin Foundation's fundraising team had their first fundraising road show in San Francisco. With our Executive Director, Arturo Izurieta, and his dedicated team, I have no doubt we will continue to have a positive effect on the archipelago for the next 25 years at least!

Given the current challenges facing the global environment, I believe that it is increasingly important that the last wildernesses, like that of the Galapagos, be preserved. And science-informed policy is the best route to preservation. In the last year and a half, we have discovered new species from the deep sea, mapped the dominant plant species of Santa Cruz, and ensured the nestling survival of many critically endangered mangrove finches, among many other successes. We even conducted scientific research at the edge of Fernandina Island as the volcano was erupting! Our struggles are great, but there are indeed many reasons to be hopeful and to continue working for the conservation of Galapagos' unique and endemic wildlife. I look forward to the many upcoming achievements from our scientists, as I'm sure we will find ways of tackling many threats, such as climate change, illegal fishing, and invasive species. We remain committed to "Science for Conservation."

Cordially,

A handwritten signature in black ink, appearing to read "D. Geist".

**Dr. Dennis Geist**  
**President**  
**Charles Darwin Foundation**

**Arturo Izurieta Valery** has been the Executive Director of the Charles Darwin Foundation since June 2015. Educated in Ecuador, Costa Rica and Australia, he holds a PhD in the field of Natural and Rural Systems Management and has over 30 years of experience in strategic projects and the facilitation of partnerships for conservation. He is also a permanent resident of Galapagos.



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Dear friends,

It is a privilege to be the Charles Darwin Foundation's Executive Director and to have led the process of renewing our agreement with the Government of Ecuador for another 25 years, which was ratified in 2017 by the National Assembly of Ecuador. One might say that in just the first year of the renewal we have already hit the ground running. In the time I've been here, we've signed new funding agreements and partnerships with academic institutions. I firmly believe we are building a solid financial base for the organization and also ensuring that scientific knowledge is shared with the world's research centers and Ecuadorian academic institutions.

Many of our projects are ongoing, such as the monitoring of penguin and cormorant populations, the ambitious Galapagos Verde 2050 ecological restoration project, or the search for a control method for the introduced parasitic fly *Philornis downsi*. It is precisely because our projects are long term that we will ensure Galapagos' conservation in the future: without gathering adequate amounts of data we cannot make scientific analyses and without them it would be impossible to know what is going on with the biodiversity of the archipelago, let alone know how to ensure its preservation!

Clearly, scientific research helps improve the Galapagos National Park Directorate's management actions. It is a great responsibility that we undertake, but we have demonstrated our successes in the past and will continue to do so, as long as our international network continues to support us. The fate of the archipelago is in our hands and collectively, as a world community, I sincerely believe we can ensure its preservation for future generations.

Sincerely,

**Dr. Arturo Izurieta Valery**  
**Executive Director**  
**Charles Darwin Foundation**



# Research Priorities

Our research priorities are identified in collaboration with the Galapagos National Park Directorate and other partners. Our research follows three lines of investigation:



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## Conservation of Ecosystems

Research in this area is focused on the long-term protection of marine and terrestrial ecosystems and priority conservation species. The highest priorities are habitats or species that face extinction risk from anthropogenic causes (invasive species, habitat loss, fisheries interactions, climate change, etc.). Our investigations are also focused on filling the gaps in our knowledge of Galapagos biodiversity and understanding how Galapagos ecosystems function. This understanding is essential for developing effective management responses that promote ecosystem resilience.



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## Restoration of Ecosystems

These projects have as their goal the recovery of populations of threatened and/or endangered species and ecosystems. Through monitoring, and with input from our collaborators, we identify species that are most in need of intervention. Studies are then carried out to identify what is driving population declines in order to develop management programs that will enable populations to return to healthy levels. Ecosystem integrity is a priority. Our restoration programs aim to develop management techniques that are incorporated into a holistic framework, focusing on the restoration of ecosystems to the point where they can re-establish self-sustaining and functioning systems and support a level of biodiversity close to pre-impacted levels.



© Patricia Jaramillo / CDF

## Sustainable Development and Human Well-being

As the variety and intensity of ways that humans seek to use Galapagos ecosystems increases, there is a greater need to ensure that activities are ecologically sustainable. This area of research is focused on finding ways to minimize human-related impacts in Galapagos, through investigation into the ecosystem services provided by the Galapagos' natural environment, methods of sustainable food production, and methods and best practices for the prevention of invasive species impacts. Complementary to this, CDF is developing citizen science and education programs to encourage residents and tourists alike to help preserve this unique archipelago.

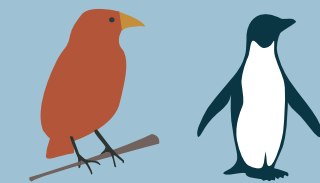
# 2016 - 2017

in numbers



**1,178**

Children committed to shark conservation



**23,209**

Birds counted during censuses



more than  
**6,700**  
Seeds planted

more than

**1,200**



*Philornis Downsi*  
Flies bred for the first time on an artificial diet

**+20**  
Projects

- Conservation of Ecosystems
- Restoration of Ecosystems
- Sustainable Development and Human Well-being



**22**  
Sharks tagged



**-1,000m**

Maximum depth on board a submarine

**30** Possible new deep-water species





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**Renewal of the  
Cooperation Agreement  
with the Government of Ecuador**



## The Charles Darwin Foundation 25 More Years of Science

The Galapagos Islands are the world's best-conserved archipelago and we intend to keep it that way. The Charles Darwin Foundation for the Galapagos Islands (CDF) is an international not-for-profit scientific organization. Since its founding in 1959, the CDF has been working in Galapagos, and in 2016 renewed its agreement with the Government of Ecuador for another 25 years. For almost 60 years, CDF has carried out scientific research to conserve this living laboratory of evolution.

In order to produce world-class scientific knowledge, we have a team of local, national and international individuals who are all working to ensure that we are constantly up to date about what is going on in the archipelago and what we can do to better conserve it. Galapagos was UNESCO's first Natural World Heritage Site and, in a world of constant change and environmental degradation, we would like the enchanted archipelago to remain a true example of what conservation can achieve: a place where unique endemic species, seen nowhere else on Earth, still thrive for generations to come.

**A 25-year cooperation agreement was signed in Quito on July 29, 2016 and a symbolic ceremony took place in Galapagos on August 11 of the same year, between the Ecuadorian Government and the Charles Darwin Foundation. This agreement strengthens crucial scientific research and conservation efforts in the Galapagos Archipelago.**

### Our main goals are to:

1. Perform scientific research and collaborate in activities of basic and applied research in the archipelago.
2. Disseminate the results of our research and relevant research produced by other organizations.
3. Provide advice to the Ecuadorian Government on the conservation of the environment and biodiversity of the Galapagos.
4. Contribute to the process of policy formation with precise and timely technical information.
5. Develop actions that increase the local and national capacity for conservation of the environment and biodiversity.
6. Obtain funds on a national and international basis to finance our operation.
7. Make the necessary efforts to achieve excellence in the functioning of all areas of support for our mission.
8. Promote national and international cooperation in programs and projects with organizations compatible with the mission and objectives of the CDF.

The Galapagos National Park Directorate (GNPD) and our other partners of the Government of Ecuador rely on cutting-edge science to develop and implement the most effective and long-lasting conservation measures.

**We help produce that science. We produce science for conservation.**

# Institutional Milestones

1959



**1959**

The Charles Darwin Foundation for the Galapagos Islands (CDF) is created and the Galapagos National Park (GNP) is established.

**1964**

The Charles Darwin Research Station (CDRS) is inaugurated in Puerto Ayora, Santa Cruz Island.

**1965**

The 'Giant Tortoise Captive Breeding and Repatriation Program' is launched.

**1966**

The first Education for Conservation of the Galapagos Islands program is launched.

**1971**

Together with the GNPD, CDF discovers Lonesome George, the last known surviving Pinta Island giant tortoise.

**1972**

CDF's Scholarship and Volunteer Training Program is founded for Ecuadorean students.

**1976**

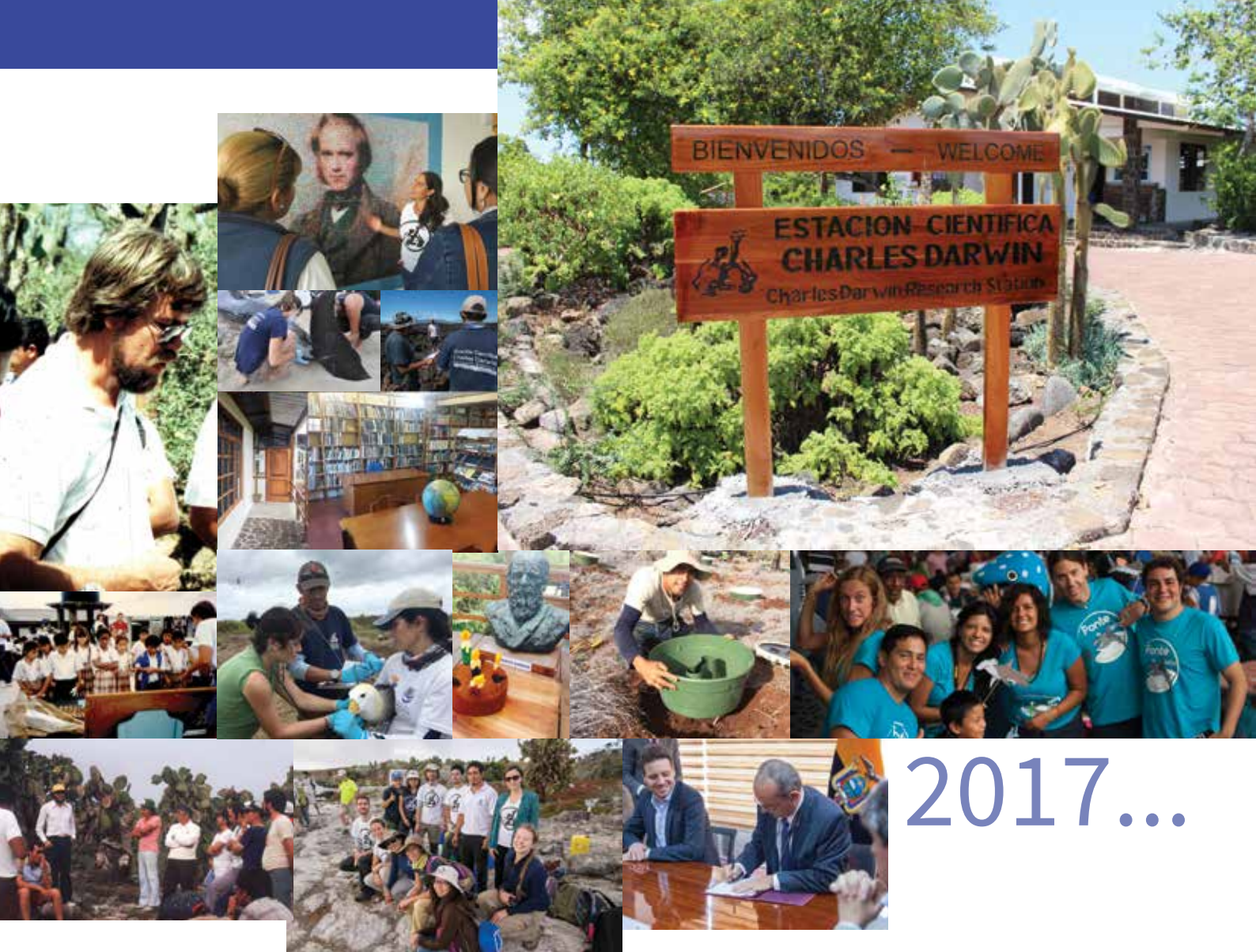
Together with the GNPD, CDF initiates the Land Iguana Breeding and Repatriation Program.

**1995-1997**

The daisy tree (*Scalesia atractyloides*) and the Floreana flax (*Linum cratericola*), thought to be extinct, are rediscovered in collaboration with the GNPD.

**1997**

Project Isabela is launched – the largest eradication and restoration project in the world, focusing on eliminating the goats and pigs of northern Isabela, Santiago and Pinta Islands.



# 2017...

## 1998

The Special Law for Galapagos creates the Galapagos Marine Reserve (GMR). Contributions from CDF are crucial in ensuring that Galapagos' needs for local sustainable development and environmental education are met under this new law.

## 2000

The Terrestrial Invertebrates Database and Collections are established. The Galapagos Inspection and Quarantine Program is initiated to prevent introduced species from reaching the islands.

## 2002

CDF researchers and GNPD staff release the Australian lady bug to control the cottony cushion scale invasive insect after several years of studies.

## 2007

CDF releases "Galapagos at Risk" report, effectively analyzing damaging socio-economic trends in the archipelago.

## 2012

The dataZone web platform is launched. Efforts to control the invasive fly (*Philornis downsi*) are initiated.

## 2014

The first Mangrove Finch is born at the CDRS, as part of a 'Captive Rearing Program'.

## 2016

Scientific research supports the declaration of the Darwin and Wolf Marine Sanctuary. The CDF renews its agreement with the Ecuadorian Government to operate the CDRS in Galapagos for another 25 years.

## 2017

The Ecuadorian National Assembly ratifies the Agreement between CDF and the Government of Ecuador.

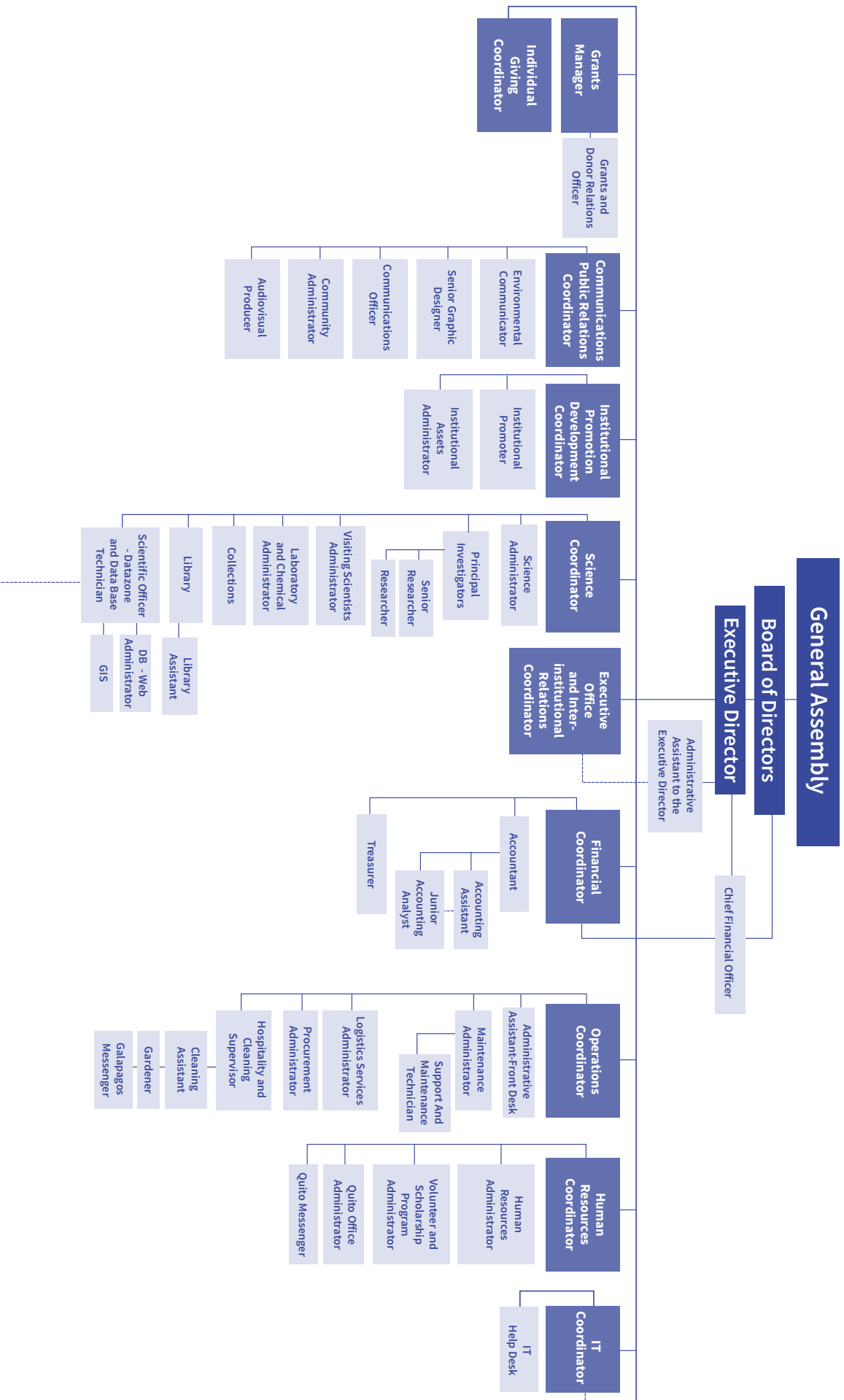
# Charles Darwin in Galapagos

In 1831, a young 22-year-old Charles Darwin left England on board the HMS Beagle as part of an investigative journey that lasted almost five years. When he arrived in the Galapagos Islands in 1835, his five weeks of scientific investigations and his theory evolution transformed our understanding of life on the planet.



**HMS  
BEAGLE**

# Charles Darwin Foundation Organization Chart 2016





fundación  
**Charles Darwin**  
foundation

# Conservation of Ecosystems



An underwater scene featuring a large whale shark in the foreground, swimming towards the left. The shark's body is covered in a pattern of white spots and stripes. In the background, a large school of smaller fish, including several hammerhead sharks, swims in the clear blue water. The overall atmosphere is serene and highlights the diversity of marine life.

## Protection of Marine Ecosystems and Priority Species



© Salomé Buglass/ CDF



© Elvis Celi / CDF

## Our Partners and Donors:

This project is carried out in collaboration with the Galapagos National Park Directorate and Queen's University Belfast. It is only possible thanks to the support of the Leona M. and Harry B. Helmsley Charitable Trust, Queen's University Belfast, and IWC SCHAFFHAUSEN.

## Reducing the Threat of Boat Strikes for Green Turtles

The Galapagos Islands are the second most important nesting site for the Eastern Pacific Green Turtle. However, lately there has been an alarming increase in green turtles impacted by ships inside the Galapagos Marine Reserve (GMR), due to increased marine transportation. **The Charles Darwin Foundation (CDF), in collaboration with Queen's University Belfast, has developed a project to support the GNPD's efforts to reduce the number of turtle injuries and deaths by boat impact and evaluate potential marine transit regulations.** Furthermore, by taking into account the socioeconomic impacts, identifying the critical habitats and behavior of green sea turtles, in addition to working with local authorities and the community, we are using a holistic approach to support the GNPD's management plan.

In 2016-17 we were able to identify approximately 100 nesting beaches throughout the reserve and approximately 50 feeding sites. At least 10 of these beaches are incredibly important for the nesting of these species. Our project is particularly important because most of the nesting and feeding sites for turtles are also areas with high boat traffic, which only increases the probability of boat strikes. According to previous studies, between 12 and 20% of turtles (in nesting and feeding sites respectively) are being impacted by boat strikes. Not only is it important to protect biodiversity, but we must also take into account the high touristic value of protecting marine turtles.



## Population Studies of Sea Birds

The Charles Darwin Foundation conducts long-term ecological monitoring of sea birds to ensure the survival of the Galapagos penguin, flightless cormorant and waved albatross, which are faced with threats like climate change, introduced species and pathogens, human interaction and non-infectious diseases. The Galapagos penguin and flightless cormorant can be found nowhere else on Earth and have very small populations. Furthermore, the critically endangered waved albatross migrates to mainland Ecuador and Northern Peru, but only nests on Española Island.

**The primary objective of monitoring sea bird health and population status is to improve management plans to protect these unique and fragile species.** In 2016 and 2017 we only conducted three monitoring field trips due to lack of funds, even though five trips are needed to holistically study these species. The population data in 2016 showed that the number of penguins has declined and there is reduced nesting of cormorants and albatrosses. These changes were produced by the El Niño event, because as waters became warmer, the quantity and quality of food available for sea birds diminished. We are still lacking data on 2017, but have conducted the first study of heavy metals in Galapagos sea birds and found that lead is present in both penguins and cormorants. On the bright side, we found an albatross that was tagged in the 1960s, meaning that it's the oldest known individual – more than 40 years old!



© Claire Hobbs / CDF

### Our Partners and Donors:

This project is carried out in collaboration with the Galapagos National Park Directorate, Colorado State University, University of Missouri, Universidad San Francisco de Quito, Remote Imaging, National Geographic Society, and the Agence Nationale de Sécurité Sanitaire. This work is made possible due to the support of Galapagos Conservation Trust, Lindblad Expeditions-National Geographic Fund, the Leona M. and Harry B. Helmsley Charitable Trust, Penguin Fund Japan, Mr. Seishi Sakamoto, IWC SCHAFFHAUSEN, Friends of Galapagos Netherlands, Primitive Entertainment, and Blue Planet Film.





© Pelayo Salinas / CDF

## Population Status and Ecology of Sharks

Worldwide, populations of sharks have declined by 90%, mainly due to over-fishing. Over 100 million sharks are fished globally for their fins, but sharks are still prominent in Galapagos because they are protected: Darwin and Wolf Islands in the north of the Galapagos have the largest global shark biomass! **The Charles Darwin Foundation investigates shark ecology to determine to what extent the Galapagos Marine Reserve (GMR) is actually protecting these highly mobile, globally endangered species.** Furthermore, we research the effects of El Niño/La Niña cycles on sharks in the context of climate change and connectivity between different shark populations. Our goal is to improve the management and conservation of shark populations.

### Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate, National Geographic Pristine Seas (US), Escuela Politécnica del Litoral (Ecuador), Massey University (New Zealand) and Curtin University (Australia); and it is possible thanks to the support of the Leona M. and Harry B. Helmsley Charitable Trust, Save Our Seas Foundation, National Geographic Pristine Seas, Lindblad Expeditions-National Geographic Fund, IWC SCHAFFHAUSEN, Miguel Bosé and Ms. Karen Lo.

During 2016-2017 we continued our efforts to quantify the effect of El Niño/La Niña cycles on sharks. Additionally, we tagged 10 scalloped hammerhead sharks and 12 tiger sharks using satellite and acoustic transmitters to understand their migration patterns and the degree of their protection within the GMR. We have also published four scientific papers and two technical reports for the government. Our research was key for the Ecuadorian government's creation of the 40,000 km<sup>2</sup> Darwin and Wolf Marine Sanctuary in 2016. In the future we hope Galapagos will be a global model of sustainable coexistence between humans and sharks.





**Protection of Terrestrial  
Ecosystems and Priority Species**



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## Status and Ecology of Landbirds

In order to determine the correct methods to conserve Galapagos landbird species, we must first understand their population, distribution and status. **The Charles Darwin Foundation researchers and collaborators are currently working on strategies to detect species declines in a timely manner and evaluate the status of landbirds in the archipelago.** We are also carrying out studies on the ecology of little-known species, with the aim of developing plans to protect the most threatened species of birds.



© Liza Díaz Lalova / CDF

### Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate, the University of Vienna, BirdLife Austria, and the Fundación Pro-Bosque Guayaquil. It is possible thanks to the support of the Leona M. and Harry B. Helmsley Charitable Trust, Galapagos Conservancy, Lindblad Expeditions-National Geographic Fund, individual donors via Visionary Wild, and the Friends of Galapagos Organizations in Switzerland and New Zealand.

In 2016-17 the landbird team conducted the first ever baseline surveys of landbirds on many uninhabited islands and volcanoes, including Alcedo, Pinta and Marchena. Ongoing studies on other islands were also continued. These surveys are available to park managers and the public so that in the future we can determine changes in the populations of landbird species. However, long-term monitoring is essential to ensure these species are conserved in the future. In collaboration with the University of Vienna, we have found a method of eliminating the population of *Philornis downsi* in nests of the charismatic Vermillion flycatcher, which had disappeared from San Cristóbal and Floreana in addition to being in severe decline on Santa Cruz. Thanks to this new method and continued monitoring work, we hope its population will recover on Santa Cruz in the coming years. Other species of concern include the large tree finch and the Galapagos dove, so much more work needs to be done.



Citizen science can help with monitoring landbird species such as the Vermillion flycatcher and the Galapagos Martín. If you see a bird somewhere, don't forget to report it! Either write to us ([birds@fcdarwin.org.ec](mailto:birds@fcdarwin.org.ec)) or enter your observation into **iNaturalist** or **eBird**! For more information on Galapagos birds, check out our **BirdsEye Galapagos** app.

## Status and Ecology of *Lecocarpus leptolobus*

Studies conducted on San Cristóbal Island for over 15 years have revealed details of the distribution and abundance of different forms of the *Lecocarpus* genus, which clarifies the origin of the samples collected by Charles Darwin in 1835, and by Alban Stewart, a botanist with the California Academy of Sciences expedition, in 1906.

An analysis of the morphological data gathered over years of fieldwork has been completed, and is set for publication soon.



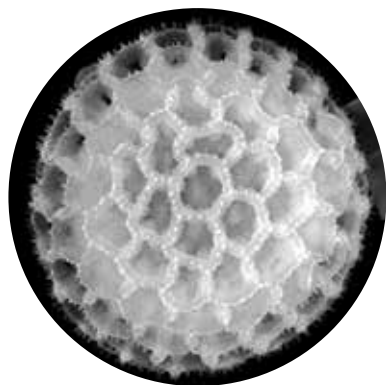
© Patricia Jaramillo / CDF



© Patricia Jaramillo / CDF



© Patricia Jaramillo / CDF



© Archive / CDF

## Our Partners and Donors:

This work is carried out in collaboration with the University of Málaga and it is possible due to the support of the Leona M. and Harry B. Helmsley Charitable Trust, COMON Foundation, and Galapagos Conservancy.

## Pollen and Seed Collection

The Charles Darwin Foundation houses the first and largest collection of pollen and seeds in Ecuador. This is of great importance, since many of the pollen samples are from endemic species, like those of the *Scalesia*, *Lecocarpus*, *Jasminocereus*, and *Darwinothamnus* genera. Furthermore, together with visiting scientists, we study the mutual interactions between birds, lava lizards, and Galapagos plants. Many animals can disperse the seeds which later grow into the plants that the very same animal feeds on. So far, field expeditions have taken place on several islands of the archipelago, thus increasing CDF's seed and pollen collections. We are also working on two books about the pollen and seed collections, to be published in 2018.





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## Our Partners and Donors:

This work is carried out in collaboration with the Max Planck Institute for Ornithology, the Galapagos National Park Directorate (GNPD), SUNY College of Environmental Science and Forestry, the Saint Louis Zoo Institute for Conservation Medicine, Houston Zoo, and the Galapagos Conservation Trust. It is possible due to the support of the United States National Science Foundation, the National Geographic Society, the Woodspring Trust, Friends of Galapagos Switzerland, e-obs GmbH, Genstat, IWC SCHAFFHAUSEN, individual donors via Visionary Wild, Ms. Karen Lo and several private donors.

## Ecology of Giant Tortoises

Giant tortoises (*Chelonoidis spp.*) are the most iconic species of the Galapagos Islands. Widely distributed across the archipelago, the differences in their size and shape stirred the imagination of a young Charles Darwin and helped crystallize his early ideas on the Theory of Evolution by Natural Selection. In Darwin's time, some 15 species of Galapagos tortoises may have existed. Today, due to historic overhunting by sailors, 11 species remain. Despite their cultural and scientific importance, surprisingly little is known about how the conservation status of these species may be influenced by increasing pressure from the impacts of humans. Although they are protected species, migratory Galapagos tortoises and their habitats are exposed to a variety of threats from invasive species and infrastructure development, both inside and outside the national park.

**As part of a multi-institutional collaboration, the Charles Darwin Foundation supports the Galapagos Tortoise Movement Ecology Program, which aims to assist in the effective conservation of giant tortoises by conducting cutting-edge applied science, and developing an inspirational local education program.** Using GPS tracking and veterinary services, we are also discovering how environmental factors are shaping tortoise health, reproduction, and ecology, including interactions between tortoises and private land owners. Furthermore, over 1,000 local young people have been involved in our experiential learning program. The next step in our project is to deepen our understanding of trends in land-use management and tortoise use of private lands to foster better land-use decisions and allow for sustainable coexistence between humans and tortoises.

More details can be found at:  
[www.gianttortoise.org](http://www.gianttortoise.org)



**Understanding  
Biodiversity and  
Ecosystem Processes**





© Hernán Vargas / CDF

## Pathogens and Parasites

Pathogens and parasites have existed for many years in Galapagos flora and fauna. However, new species have recently reached the islands. **The Charles Darwin Foundation and collaborators are investigating the incidence, dispersion, distribution and impact of these species on the archipelago's ecosystems to establish a pathogen and parasite baseline.** One such pathogen, avian pox (*Avipoxvirus*), forms nodules on the skin of birds and causes lesions in their digestive tracts and airways. At the moment, avian pox is having a detrimental effect on nine species of endemic birds on nine Galapagos islands. Furthermore, the *Culex quinquefasciatus* mosquito acts as a vector for the virus, increasing its incidence in birds. Understanding the effects of El Niño and climate change on Galapagos pathogens and parasites is particularly important.

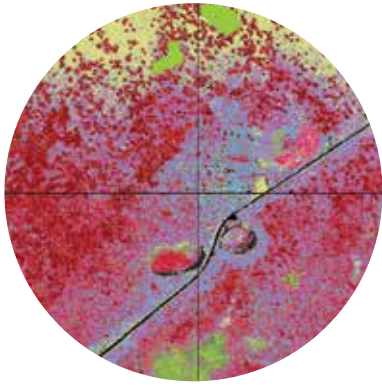
### Our Partners and Donors:

This project is carried out in collaboration with the Galapagos National Park Directorate, Colorado State University, University of Missouri, Universidad San Francisco de Quito, Remote Imaging, National Geographic Society, and the Agence Nationale de Sécurité Sanitaire. It is possible due to the support of Galapagos Conservation Trust, Lindblad Expeditions-National Geographic Fund, the Leona M. and Harry B. Helmsley Charitable Trust, Penguin Fund Japan, Mr. Seishi Sakamoto, IWC SCHAFFHAUSEN, Friends of Galapagos Netherlands, Primitive Entertainment, and Blue Planet Film.

In 2016, to learn more about the health status of Galapagos sea birds, over 300 samples were collected from Galapagos penguins, flightless cormorants and waved albatrosses. The samples are currently being analyzed with various collaborators in USA, France and Ecuador. Long-term research on endoparasites, pathogens and non-infectious diseases continues and has resulted in scientific publications and workshops. Furthermore, our collaborating scientist Dr. Kathryn Huyvaert recently published a paper that shows evidence of avian pox in the Galapagos albatross.



© Marcela Rodas / CDF



© Carolina Carrión / CDF

## Mapping Plant Species

To be able to plan management actions for plant species in the humid zones of the Galapagos Islands, we need to know their distribution and abundance. **The Charles Darwin Foundation uses high-resolution satellite images (World View-2) and drone imagery to map the distribution of dominant plant species, with a focus on those that are invasive.**

This baseline data will help identify native and endemic species that are in decline and the extension of invasive species in the archipelago. This information helps the GNPD to better plan control measures for the invasive species and conservation actions to preserve native and endemic plant and animal species. In addition, the maps will provide a valuable template for quantifying the expansion and/or reduction of both invasive and native species in the future. In 2016-17 we have improved our mapping techniques, developed a methodology that can be used on other islands, and mapped the 17 most dominant endemic, native and introduced plant species on Santa Cruz Island.

### Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate, the DigitalGlobe Foundation, and Brown University. It has been made possible due to the support of the Leona M. and Harry B. Helmsley Charitable Trust.



© Liza Díaz Lalova / CDF



© Claire Hobbs / CDF

## Mapping Mangroves and Beaches

Mangroves and beaches are key habitats for many Galapagos species, such as sharks, the mangrove finch, sea lions, and marine iguanas. They have a high touristic and social value, but until now there had been little knowledge of mangrove coverage and the distribution of beaches. It is important to investigate changes to mangroves and beaches not only because they are vitally important for wildlife, but because they act as natural barriers against tsunamis and provide other ecosystem services. Mangroves, for instance, help with carbon sequestration and prevent flooding and erosion.

**The Charles Darwin Foundation used an innovative and low-cost methodology, based on high-resolution Google Earth images, to obtain data and update existing knowledge about the distribution and coverage of beaches and mangroves.** This data provides the basis for multiple studies. The information is very useful for the Galapagos National Park Directorate to make better management decisions to ensure the conservation of these Galapagos habitats. In 2017, we were able to identify approximately 4,000 beaches and we are now able to track changes to mangrove distribution on the Galapagos Islands.



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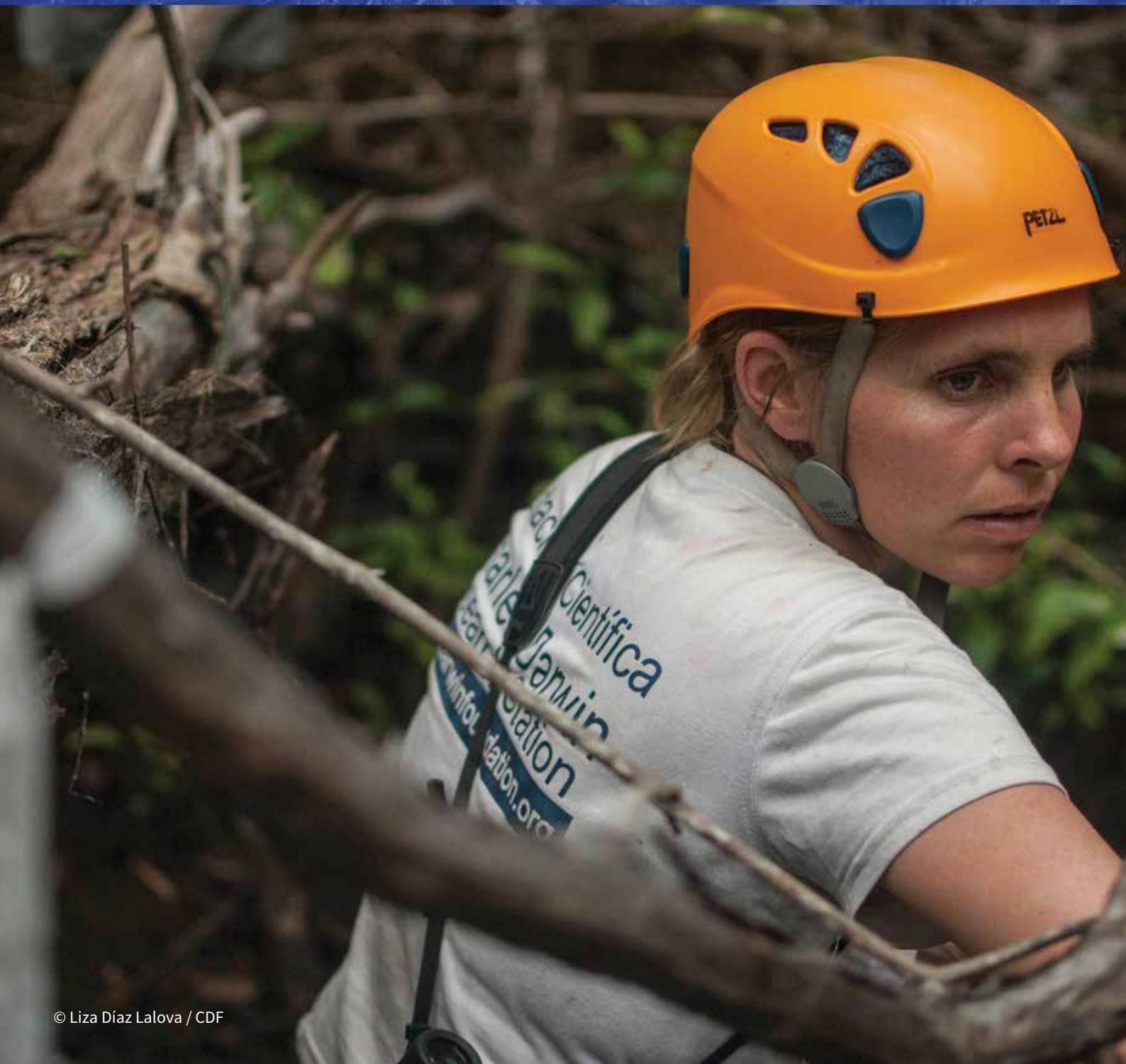
### Our Partners and Donors:

This work is a joint project between CDF and Scripps Institute of Oceanography and is carried out in collaboration with the Galapagos National Park Directorate. It is possible thanks to the support of the Leona M. and Harry B. Helmsley Charitable Trust.



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# Restoration of Ecosystems



# Current Number of Introduced Species

Information on the total number of introduced species in Galapagos had not been updated since 2008. During 2016 and 2017, the Charles Darwin Foundation and collaborators revised and consolidated different existing databases in order to determine the most current numbers of introduced species, which appear in a paper by Verónica Toral-Granda et al. titled 'Alien species pathways to the Galapagos Islands, Ecuador.' This is the updated number of introduced species:

# 1,476

Introduced species currently established in Galapagos



Terrestrial plant species  
(including varieties and cultivars):

## 810



Pathogens

## 63

Other terrestrial invertebrate species

## 70

Vertebrate species

## 27

Marine invertebrate species

## 5

Marine plant species

## 2



Insect species

## 499



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## Our Partners and Donors:

This work is carried out in collaboration with Charles Darwin University (Australia), the Galapagos National Park Directorate, and the Galapagos Biosecurity Agency (ABG). It is possible due to the support of Galapagos Conservancy.

Of the species established in Galapagos, 868 (58.8%) are naturalized with self-sustaining populations and about 549 (37.2%) are human-dependent or restricted to human settlements and with no evidence of dispersal to other areas of the archipelago. Approximately 52% of all the species arrived accidentally as contaminants or stowaways (on ships and planes) and 46% were introduced intentionally.



**Recovery of  
Threatened Species**



© Liza Díaz Lalova / CDF

## Saving the Mangrove Finch

The Mangrove Finch is a critically endangered bird only found in 30 hectares of mangrove forests on Isabela Island and with fewer than 20 breeding pairs left in the world. This is the rarest bird species in Galapagos and it is currently threatened by introduced species, such as the introduced black rat and the parasitic fly *Philornis downsi*, whose larvae feed on the blood of young chicks. To prevent the extinction of this rare bird species, the Charles Darwin Foundation is trying to increase their population while it finds an effective control mechanism for the introduced species.

**Since 2014, the Charles Darwin Foundation and its national and international partners have been captive-rearing mangrove finches and releasing them into the wild to increase their population size and range.** Over four years, 39 fledglings have been released back into the wild and have increased the number of juvenile mangrove finches by over 50%. In 2016-17, we captively reared and released 18 birds and confirmed that two hand-reared birds were nesting with wild partners, forming part of the breeding population. However, the process of rearing and releasing chicks is costly and long-term commitment is essential for a species on the brink of extinction. Hence, we must continue this project while our other scientists at CDF find a way of controlling the *Philornis downsi* fly.



© Jenny Ruales / CDF

### Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate, San Diego Zoo Global, Auckland Zoo and Durrell Wildlife Conservation Trust. The project is supported by Marguerite Griffith-Jones, GESS Charitable Trust, Decoroom Limited, Holbeck Charitable Trust, Fondation Ensemble, Friends of Galapagos Switzerland, the Prince Bernhard Nature Fund, individual donors via the International Community Foundation, the Leona M. and Harry B. Helmsley Charitable Trust, Galapagos Conservation Trust, and the British Embassy in Ecuador.



© Tui de Roy / CDF

## Control of an Invasive Fly

The introduced parasitic fly *Philornis downsi* is believed to be the main cause of the decline of landbird species on the Galapagos Islands. *Philornis downsi* lays its eggs in bird nests and its larvae typically feed on the blood of hatchlings, sometimes causing up to 100% mortality of chicks in a nest. At least 18 endemic landbirds are now threatened by *Philornis downsi*, including 11 species of Darwin's finches.

### Our Partners and Donors:

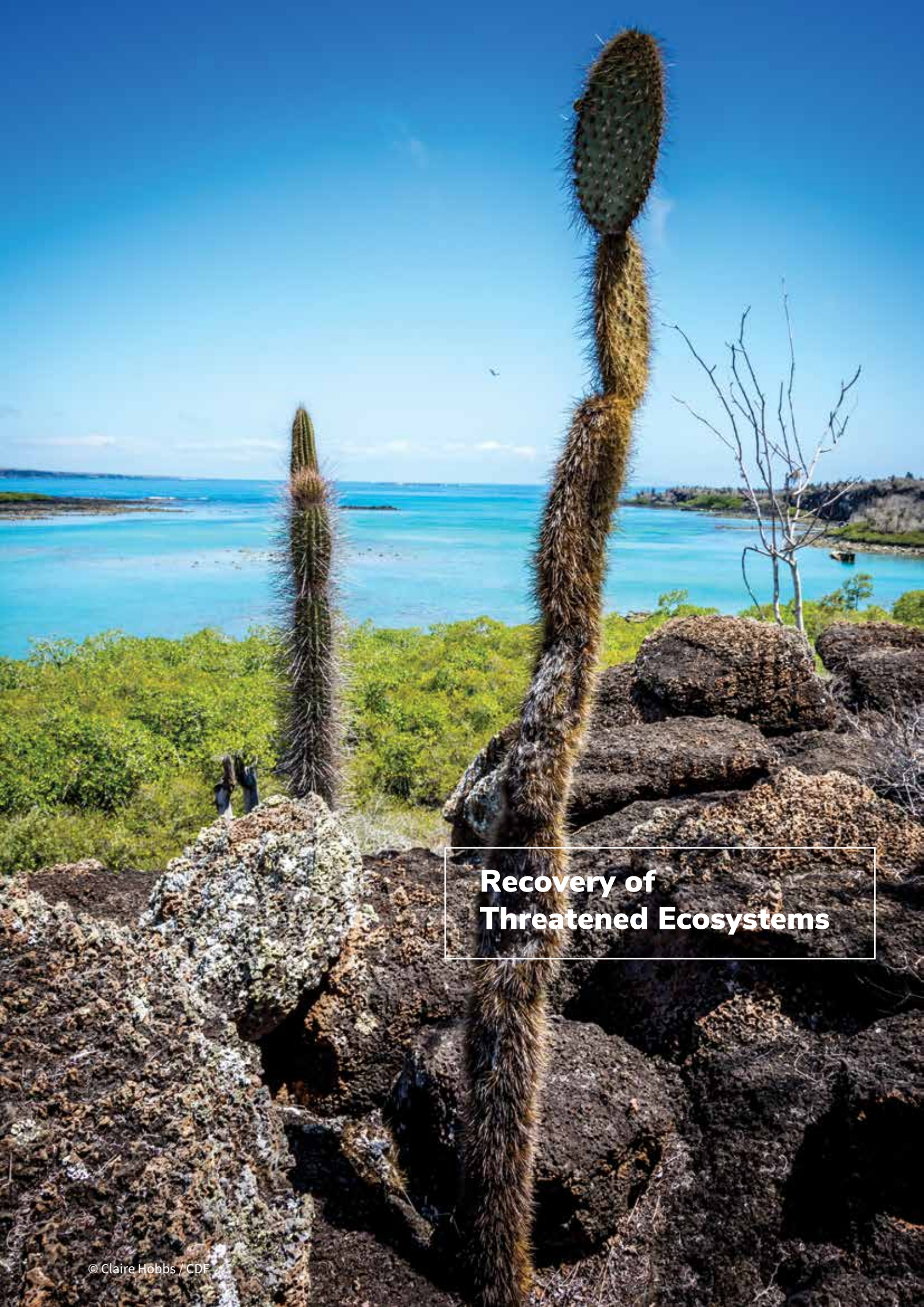
This work is carried out in collaboration with the Canadian National Collection of Insects, Arachnids and Nematodes (CNC) of Agriculture and Agri-Food Canada, Galapagos National Park Directorate, Galapagos Biosecurity Agency (ABG), Flinders University, Galapagos Science Center, Hebrew University of Jerusalem (Israel), Instituto Nacional de Biodiversidad, LECEN - ICIVET LITORAL (Argentina), Macquarie University, St Louis Zoo - Missouri, SUNY-ESF, Syracuse University, Universidad Central del Ecuador, University of Connecticut, University of Guayaquil, University of Massachusetts - Dartmouth, University of Minnesota, University of Utah, University of Vienna, University of West Indies, Victoria University of Wellington, and USDA-ARS/COPEG. It is possible due to the support of Galapagos Conservancy, the Leona M. and Harry B. Helmsley Charitable Trust and Lindblad Expeditions - National Geographic Fund.

**In order to investigate how to lessen or remove the threat of *Philornis downsi*, the Charles Darwin Foundation and the Galapagos National Park Directorate are overseeing a multi-institutional collaborative effort (now up to 21 institutions from nine countries) to understand the biology and ecology of this fly, while simultaneously conducting research to find effective and environmentally friendly control methods.** Recent successes include the development of a method for raising flies in captivity without their hosts, which will help speed up research on this species. We are also getting closer to understanding fly behavior thanks to over 1,000 hours of video filmed outside and inside a Galapagos flycatcher nest. One of the key roles of the CDF research team is to carry out field research for our collaborators. Through this research, potential lures have been identified for trapping flies and significant progress has been made on evaluating the safety of importing a parasitic wasp *Conura annulifera* to use in a biological control program against *Philornis downsi*.



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**Recovery of  
Threatened Ecosystems**

# Restoration of the *Scalesia* Forest



©Sam Rowley / CDF

## Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate and the University of Vienna and is possible due to the support of Galapagos Conservancy, Keidanren Nature Conservation Fund, and Lindblad Expeditions-National Geographic Fund.

The *Scalesia pedunculata* forest, housing the highest number of plant and animal species in the highlands of Santa Cruz, has been drastically reduced by agricultural activities in the past. At ‘Los Gemelos’, there is only less than 1% of its original distribution left (about 100 ha) and this remainder is now heavily invaded by introduced plant species, especially by blackberry (*Rubus niveus*). For many years, the Galapagos National Park Directorate (GNPD) has taken measures to control blackberry, but there is a concern that the management actions are changing the species composition of the forest.

**The Charles Darwin Foundation (CDF) is monitoring the plant, invertebrate and bird communities to detect long-term changes and also to obtain information about residual herbicides in the soil or water.** Since 2014, we have been comparing the vegetation, invertebrate and bird communities to better understand the effects of the control measures and provide the GNPD with valuable information to improve management of invasive blackberry, including a potential agent of biological control. We have determined that native species can barely survive with about 60% of blackberry cover and this is important for management strategies in places where the invasive species is difficult to control. Since 2017, ornithologists from the University of Vienna have determined a much higher breeding success of the green warbler-finch (*Certhidea olivacea*) and small-tree finch (*Camarhynchus parvulus*) than in 2016. Additionally, successful control actions have reduced blackberry cover and this, with the help of abundant rainfall, has increased the cover of the endangered *Scalesia pedunculata*.





©Heinke Jäger / CDF



© Marcela Rodas / CDF

## Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate, CABI UK, and the University of Florida. It is possible due to the support of Galapagos Conservancy, Keidanren Nature Conservation Fund, and Lindblad Expeditions-National Geographic Fund.

## Control of Invasive Plants

More than 800 plant species have been introduced to the Galapagos Islands. Most are not problematic or even beneficial, like agricultural and ornamental plants. However, some have become invasive and negatively affect other plant and animal species. The best known examples are blackberry (*Rubus niveus*), red quinine (*Cinchona pubescens*), guava (*Psidium guajava*), and Cuban cedar (*Cedrela odorata*).

**The Charles Darwin Foundation is studying the impacts of some of these species, working alongside the Galapagos National Park Directorate, to improve the control actions currently carried out to reduce their abundance.** Control of blackberry and quinine is challenging, because both species produce many seeds, reproduce quickly and regenerate when branches are cut. Therefore, research by CDF, in collaboration with the Centre for Agriculture and Biosciences International (CABI) in the UK, is looking into using biological control agents as an alternative to current control techniques. In 2017, with the support of the University of Florida, we started investigating the reasons for the natural quinine die-off that has been observed over the last few years on Santa Cruz Island.



© Henri Herrera / CDF

## Biological Control of the Tropical Fire Ant

Surveys indicate that at least 33 ant species have been introduced to the Galapagos Islands. Of these, the tropical fire ant (*Solenopsis geminata*) is having the most impact and is a serious threat to biodiversity and the livelihood of Galapagos residents. These ants are particularly difficult to control using traditional methods and have spread extensively throughout the archipelago.

**The Charles Darwin Foundation, with the help of collaborators, is currently evaluating the feasibility of introducing natural enemies of the tropical fire ant (*Solenopsis geminata*) from its native range, a technique known as classical biological control.** Currently, several species of phorid flies (ant-decapitating flies) are being evaluated as candidates for biological control. However, before considering their introduction to the archipelago we must first ensure that there is no risk to Galapagos biodiversity.



© Henri Herrera / CDF

### Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate, the USDA-Agricultural Research Service, and the Escuela Superior Politécnica de Chimborazo (ESPOCH). It is possible thanks to the support of Galapagos Conservancy.



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**Charles Darwin**  
*foundation*

# Sustainable Development and Human Well-being





**Provision and Protection  
of Ecosystem Services**



© Alucia (Woods Hole Oceanographic Institute)

## Seamounts and Ecosystem Services

Seamounts are underwater mountains that rise from the seafloor, but never breach the sea surface. The deep-sea ecosystems of seamounts, which are found between 100 and 4,000 meters, are extremely biodiverse due to their physical isolation and harbor high levels of endemic species, many unknown to science. Since they are difficult to access, of the 100,000 estimated seamounts that exist on our planet, less than 1% have been explored. **The Charles Darwin Foundation (CDF) has explored 27 Galapagos seamounts, mapped 70 seamounts with satellite bathymetry, recorded over 40 hours of video transects, and collected more than 300 specimen samples of deep-sea organisms.** This was possible thanks to the help of submarine expeditions by the Nautilus (Ocean Exploration Trust), the Alucia (Woods Hole Oceanographic Institute), and the Argos/Pristine Seas (National Geographic).

The CDF is currently undertaking the first biodiversity baseline study of these ecosystems and their socio-economic value. To date, we have identified 100 species with our collaborator taxonomists. Out of these species, 30 are potentially new species to science, and 50 are new records for the Galapagos Archipelago. Some of them are a new genus, such as a unique kebab-shaped sponge. In 2017, we also conducted the first socio-economic study based on tourists visiting Galapagos, which demonstrated a high willingness to pay for seamount biodiversity. Several educational outreach campaigns and scientific talks were also carried out, including involvement in the International Marine Protected Areas Congress in Chile. We intend to keep exploring these unique deep-sea ecosystems, identifying new species, evaluating their ecosystem services, educating people, and supporting the GNPD's management decisions for the Galapagos Marine Reserve.



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### Our Partners and Donors:

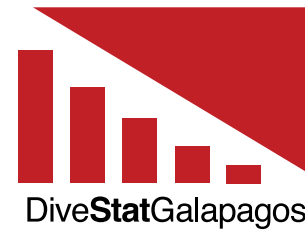
This work is carried out in collaboration with the Galapagos National Park Directorate (GNPD), Woods Hole Oceanographic Institution, Ocean Exploration Trust, National Geographic Pristine Seas, Smithsonian Institution, Louisiana State University, Boise State University, St Mary's College, University of Victoria, Université Libre de Bruxelles, Universidad de los Andes, Smithsonian Natural History Museum, Kumamoto University, University of Bristol, Southampton University, University of Hawaii, Texas A&M University, Universidad Nacional Autónoma de México, and others. This work has been possible thanks to the support of the Leona M. and Harry B. Helmsley Charitable Trust, Ocean Exploration Trust, National Geographic Pristine Seas, Woods Hole Oceanographic Institution, Alucia Productions, and Atlantic Productions.

## The DiveStat Project

Diving is fun, but it's even better when you can do citizen science at the same time! Have you ever wondered how many people go diving, what their backgrounds are, which species can be spotted in specific dive sites, and how satisfied people are by their diving? Before, there were no statistics of this kind, leaving the Galapagos National Park Directorate very little information about the impacts of diving or the changes in biodiversity.

**The Charles Darwin Foundation and the WWF, in collaboration with the Galapagos Tourism Observatory and the Galapagos National Park Directorate, created an innovative tool to monitor touristic diving activities.** The webpage allows us to gain in-depth knowledge which can be used for improving the management of the Galapagos Marine Reserve. To date, over 4,000 citizen science observations have been collected. DiveStat also includes the production of tools to ensure responsible diving in the Galapagos Marine Reserve and the training of guides. In the long term, we would like this data to help the Galapagos National Park Directorate make decisions about the appropriate management of diving activities.

[www.observatoriogalapagos.gob.ec/divestat](http://www.observatoriogalapagos.gob.ec/divestat)



© Salomé Buglass / CDF

### Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate, WWF, and the Observatorio de Turismo de Galápagos (MINTUR). This project was made possible thanks to the support of WWF.



© Salomé Buglass / CDF



A photograph of a man and a woman working in a greenhouse. The man, wearing a yellow t-shirt and grey pants, is kneeling and tending to a row of green leafy vegetables. The woman, wearing a white shirt, is leaning over a large blue barrel. The greenhouse is supported by a wooden frame and has a translucent covering. The plants are arranged in neat rows, and the overall atmosphere is one of active agricultural work.

## Sustainable Food Production



© David Acuña / CDF

## Ecology and Evaluation of Fisheries

This project, which began in 2011, seeks to increase knowledge of the ecology, life history and population dynamics of major fishery target species and the habitats they occupy in the Galapagos Marine Reserve. **The goal of the Charles Darwin Foundation is to provide up-to-date information for the improvement of fisheries management on the islands.** The project is co-managed by scientists at the Charles Darwin Foundation and the Galapagos National Park Directorate (GNPD). We are particularly interested in the early and adult life histories of several important fish species, the impacts of El Niño events on the artisanal fisheries catch, the benefits of no-take zones for lobsters, and the role of mangroves for several commercially important species in the archipelago.

Recently, we developed the first fish age and growth laboratory on the Galapagos Islands, described the life history of three long-lived species, and published several scientific documents describing the marine impacts of artisanal fisheries. With the GNPD, we have also begun evaluating the use of Fish Aggregating Devices (FADs). These devices, which are large anchored buoys, have been used worldwide as management tools because they attract pelagic fast-growing fish species, such as tuna and wahoo, which are appealing to fishers as they have a high market value. Additionally, the CDF is working with fishing cooperatives, GNPD, National Geographic Pristine Seas Initiative and Fair Trade USA, to implement a certification of origin and traceability scheme for fish caught around FADs. This will add value through price premiums, encouraging the use of FADs for fishing and thereby reducing fishing effort on endemic species.



© David Acuña / CDF

### Our Partners and Donors:

Our work is carried out in collaboration with the Galapagos National Park Directorate, University of California at San Diego, University of Ghent, Oregon State University, Escuela Superior Politécnica del Litoral, and National Geographic Pristine Seas, and is possible due to the support of the Leona M. and Harry B. Helmsley Charitable Trust.



© Henri Herrera / CDF

## Invasive Species in the Agricultural Zone

Invasive plant and animal species are problematic for Galapagos biodiversity and also affect food production on the inhabited islands. However, there is currently very little systematized information about introduced plants and animals in the agricultural areas of the archipelago. To improve the management of introduced species, it is vital to understand their distribution and impacts, in addition to the consequences of using agrochemicals (herbicides and insecticides) to control these species.

### Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate and is possible thanks to the support of the Leona M. and Harry B. Helmsley Charitable Trust.

Hence, in 2016, the Charles Darwin Foundation and the Ministry of Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) undertook research on the occurrence and management of invasive plants in the agricultural zone of Santa Cruz. Results show that blackberry (*Rubus niveus*), guava (*Psidium guajava*) and sauco (*Cestrum auriculatum*) are the most problematic plants on farms, together with the tropical fire ant (*Solenopsis geminata*). We obtained information about the agrochemicals used for the control of these species and the concentrations and frequency of application. The next steps will be to help standardize and enhance the producers' knowledge of the management of invasive species.



© Heinke Jäger / CDF

# Galapagos Verde 2050

‘Galápagos Verde 2050’ is a multi-institutional and interdisciplinary project which aims to restore degraded ecosystems and implement agricultural practices to ensure a more sustainable archipelago. Currently, more than 6,700 plants of 71 different species have been planted in 64 study sites in Galapagos by the project team, thanks to water-saving technologies such as Groasis, Cocoon (biodegradable) and rainwater harvesting.



GALÁPAGOS VERDE

This project is a long-term scientific endeavor; therefore, it is divided into three study phases:

1. The first phase started in June 2014 and finished in November 2017; the restoration work was carried out on Baltra, Floreana, Plaza Sur and Santa Cruz, while sustainable agricultural practices were implemented on Floreana and Santa Cruz.
2. The second phase will start in December 2017 and will run until 2027. This phase is a continuation of the work initiated in the first stage, as well as an expansion of the restoration actions on Española and Isabela islands.
3. The third and final phase will also be the most extensive one, starting in 2027 and running until December 2050. During this phase the work will be focused on the ecological restoration of seven islands: Baltra, Española, Floreana, Isabela, Plaza Sur, San Cristóbal and Santa Cruz. We expect to implement restoration actions on all islands requiring intervention due to a high degree of degradation. Regarding the implementation of sustainable agricultural practices, the aim is to cover the entire agricultural zone of the populated islands as a way of promoting local self-sufficiency and agroecological production at a regional level.





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## Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate and is only possible thanks to the support of the COMON Foundation, the Leona M. and Harry B. Helmsley Charitable Trust, and the BESS Forest Club. This project has various strategic partners on several islands, including: Municipality of Santa Cruz, Pikaia Lodge, ABG, ECOGAL, the Ecuadorian Air Force, the Port Authority, the Galapagos National High School, the Ecuadorian Navy, and the Floreana Parish Government.

More specifically, we carried out the following activities:

We restored areas that are home to ecologically important species, including *Opuntia megasperma* var. *orientalis* Howell on the island of Española and *O. echios* var. *echios* Howell on Plaza Sur. Furthermore, urban and rural areas were restored, such as the landfills on Floreana and Baltra in addition to the black gravel mine and the cemetery of Floreana.

Our work also involves close collaboration with community organizations to increase the number and quality of ecologically-friendly gardens on the islands. We have created more than one dozen gardens in Puerto Ayora, Puerto Velasco Ibarra and the Baltra Airport, which are providing ecosystem services such as pollination.

In rural areas, the project also focuses on restoration of areas invaded by introduced plants. We look to control these and replace them with endemic and native plants. For example, on Floreana, we are in the process of developing a small forest of native *Scalesia pedunculata* var. *pedunculata* Hook f. and other native and endemic species.

With regard to our project goal of promoting sustainable and ecologically-responsible agriculture, we are working on farms in Floreana and Santa Cruz, with particular emphasis on the cultivation of banana, papaya, tomato and pepper plants. Improved cultivation can reduce the island population's dependence on imported products and reduce potential entry routes for introduced species, which can enter the islands via shipping.

In order to ensure the well-being of Galapagos' local population as well as an ecologically restored archipelago, it is vital that these long-term initiatives be carried out.



**Prevention of the Impacts  
of Invasive Species**



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## Our Partners and Donors:

This work is carried out in collaboration with the Galapagos National Park Directorate (GNPD), Galapagos Biosecurity Agency (ABG), Armada de Ecuador, and the Instituto Oceanográfico de la Armada (INOCAR). It is possible thanks to the support of Galapagos Conservancy, Lindblad Expeditions-National Geographic Fund, the Leona M. and Harry B. Helmsley Charitable Trust, Dr. Ken Collins, and Ms. Jenny Mallinson.

## Identifying Marine Invasive Species

Invasive non-native species are the number one threat to Galapagos ecosystems. Marine biological invasions have increased significantly in recent years due to global trade, transport and tourism. Invasions occur when species get transported from one region to another and establish themselves in the new habitat. These species compete for space and resources, displacing native species, and changing populations and communities.

**The Charles Darwin Foundation is working with local government authorities on prevention, early detection and rapid response strategies in order to protect the marine biodiversity of the Galapagos Marine Reserve.** In 2017, the marine invasive species team went on the first expedition to Cocos Island National Park to study the marine connectivity between Galapagos and Cocos Island and the presence of non-native marine species with the goal of working with other countries to increase biosecurity within the Eastern Tropical Pacific region. The risk posed by non-native marine species arriving to the Galapagos Marine Reserve (GMR) and to the Eastern Tropical Pacific region should not be underestimated, nor should the amount of crucial research and funding needed to mitigate this risk.



© Raffael Ernst / Senckenberg Museum

## Distribution of the Introduced Tree Frog

Fowler's Snouted Tree frog, *Scinax quinquefasciatus*, was probably introduced to the Galapagos Islands from mainland Ecuador by means of cargo transfer in the years 1997/98 during an exceptionally wet El Niño event, which likely facilitated the establishment of the species. The tree frog is currently present on Isabela, Santa Cruz, and possibly San Cristóbal. There is little information available on its current distribution and dispersal mode.

### Our Partners and Donors:

Our work is carried out in collaboration with the Galapagos National Park Directorate and the Escuela Superior Politécnica del Litoral (ESPOL), the Senckenberg Natural History Collections Dresden, and is possible thanks to the support of Galapagos Conservancy.

**Therefore, in 2017, the Charles Darwin Foundation and partners started a project to study the distribution of the tree frog and assess the invasion potential of the species across the archipelago.** The investigation combines field-based assessments, controlled experiments and lab-based dietary analyses. This integrative approach will allow for sound results that will then be used to formulate proactive management actions to recommend to the Galapagos National Park Directorate.



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**Outreach  
and Education**

## Sharks and the Local Community

In 2016, the Charles Darwin Foundation designed and implemented an educational outreach campaign called ‘Protect the fins and the ocean wins’ to promote Galapagos as an example of sustainable co-existence between sharks and humans within the Galapagos Marine Reserve. The CDF developed workshops, field trips, contests and open events to communicate specific messages about the physiology, ecological role, population status, and socio-economic value of sharks and the importance of scientific research in obtaining this information. Our campaign reached 1,178 children from 9-12 years old across the four inhabited islands, totaling approximately 82% of Galapagos children in these age groups.

The CDF created the “Sharks Ambassadors Program” in 2017, which involves local youth between the ages of 14 and 16. This program teaches them research techniques and includes fieldwork activities that will allow them to create their own shark outreach projects for the community. We also celebrate important environmental days with activities for the community, such as Oceans Day and Shark Week.



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### Our Donors:

Our work is possible thanks to the support of Save our Seas Foundation, the Lindblad Expeditions-National Geographic Fund, and Ms. Karen Lo.



© Liza Díaz Lalova / CDF



© Pelayo Salinas / CDF

## Galapagos Marine Research and Exploration (GMaRE)

**The Charles Darwin Foundation (CDF) and the Escuela Superior Politécnica del Litoral (ESPOL), a public higher education institution in Ecuador, have established a program for the next ten years aimed at working together to understand the Galapagos marine ecosystems and support their conservation.** One of the central aims of the program is to conduct cutting-edge science that will help conserve this unique archipelago, especially taking into account the threats related to climate change.

Additionally, the program will train young scientists and professionals to ensure the future conservation of the archipelago. ESPOL has appointed a lead investigator to develop this new program along with CDF's scientists, as well as provide logistical support and laboratory material. Furthermore, proposals involving the University of Ghent (Belgium) have been put forward and there is already a doctoral student who will focus on the early life stages of the Galapagos grouper. The team also hopes to study the impact of tourism on coastal marine ecosystems and ocean acidification.



© Salomé Buglass / CDF

### Our Partners:

This work is carried out in collaboration with the Galapagos National Park Directorate, Ghent University, the Galapagos Government Council, and the Instituto Oceanográfico de la Armada del Ecuador (INOCAR).

# Knowledge Management





© Sam Rowley / CDF

## Collections

**The Charles Darwin Research Station (CDRS) has Ecuador's largest natural history collection of Galapagos specimens.** For years we have preserved this unique material and under our renewed agreement with the Government of Ecuador we plan to do so for at least another 25 years! Our collections are well organized and classified, including extensive taxonomic, ecological and geographical information. Every year our collections increase, so we have an action plan to ensure all specimens are curated, conserved and preserved adequately. Also, we have recently incorporated the bones of Lonesome George into our collections, thanks to the Galapagos National Park Directorate and Galapagos Conservancy.

Unfortunately, upkeep is costly because in order for samples to be preserved, temperature and humidity must be regulated on a daily basis. In order to ensure the preservation of our specimens, the collections are not accessible to visitors, but we welcome you to glimpse our collections room at the Exhibition Hall. The largest vertebrate of our collections, the complete skeleton of a Bryde's whale, is also an impressive sight at the entrance of our Exhibition Hall. Alternatively, the easiest way to access this wealth of knowledge is through our dataZone web platform.

### The collections are divided into four sections:



© Heinke Jäger / CDF

**Herbarium**  
(44,497 specimens)



© Harriet Garnider / CDF

**Terrestrial Invertebrates**  
(35,058 specimens)



© Salomé Buglass / CDF

**Marine Organisms**  
(7,258 specimens)



© Sam Rowley / CDF

**Vertebrates**  
(2,674 specimens)

\* Information from October 4, 2017.

## dataZone

The dataZone houses CDF's information about Galapagos biodiversity, collected for almost 60 years. It contains data pertaining to nearly 120,000 biological samples obtained with the participation of 1,691 scientists who work for 38 institutions around the world. This information is complemented by the geographic information for the species, meteorological data (since 1964), and a multimedia resources database. This tool allows us to extract information about the state of ecosystem biodiversity for the management and conservation of Galapagos.

If you're interested in learning about the latest discoveries in Galapagos biodiversity, please see our species checklists:

<http://www.darwinfoundation.org/datazone/checklists/>



© Liza Díaz Lalova / CDF

### Our Donors:

This work is made possible thanks to the support of the Leona M. and Harry B. Helmsley Charitable Trust.



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## Library

The Corley Smith Library at the Charles Darwin Research Station (CDRS) was opened in 1979 and contains a collection of long-term Galapagos scientific research. The protection, management and accessibility of our unique collection are central goals of the library. All visitors and researchers are invited to come and browse the shelves.

As a preservation measure this year, we replaced miscellaneous storage units with 425 linear feet of new shelving in the Fischer building to improve how these documents are housed and organized. We are in the process of making Galapagos research results more widely available, both locally and internationally, through outreach and digitization. In 2017 our new online catalog was launched, thanks to the support of Yachay E.P. and Galapagos Conservancy. As our digitization project continues, more of the open source materials will be available to download from the catalog.

You are welcome to search the new catalog at:  
[darwinfoundation.org](http://darwinfoundation.org) > datazone > library



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**Our scientific journal  
*Galapagos Research*  
is available for download.**

### Our Donors:

Our work is possible thanks to the support of Galapagos Conservancy, the Leona M. and Harry B. Helmsley Charitable Trust, and the COMON Foundation.





## Inspiring Stories

**The communications team at the Charles Darwin Foundation tell compelling stories about the scientific research conducted in Galapagos.**

We strive for new and creative ways to highlight inspiring field trips and groundbreaking research conducted by scientists for the conservation of the archipelago. With limited resources we manage to produce videos, publish blog articles, send e-bulletins, organize outreach events and post regularly on social media channels.

We have also published and been featured in national and international media outlets including *National Geographic*, *New York Times*, *The Washington Post*, *El Comercio*, *El Universo*, *La Hora*, *El Telégrafo*, and *Vistazo*.

Our small but passionate communications team are also involved in conducting special tours to the Research Station (booked in advance, restrictions may apply), designing materials for conferences and outreach campaigns, and constantly shadowing scientists in the field or interviewing them at our Research Station so that the rest of the world may feel inspired to conserve this unique UNESCO World Heritage Site.

**Our mandate from our 2015-2018 Communications Strategy is to:**

**“Strengthen, expand, increase and improve information and communication flows and channels with target groups and the general public, to keep them duly informed about our science work in Galapagos.”**



## Some Statistics from Social Media 2016-2017:



\*Information from October 15, 2017

**Followers on Facebook:**

**127,540**

**Youtube Views:**

**28,550**

**Followers on Twitter:**

**2,980**

**Videos produced:**

**80**

**Followers on Instagram:**

**7,960**

**Webpage Visits:**

**226,804**





**Youtube Subscribers:**

**270**

**LinkedIn Followers:**

**674**

## FOLLOW US

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-  /charles-darwin-foundation



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## TO FOLLOW OUR STORIES, SUBSCRIBE TO OUR NEWSLETTER

Email us at: [cdrs@fcdarwin.org.ec](mailto:cdrs@fcdarwin.org.ec)  
or visit our website:  
[www.darwinfoundation.org](http://www.darwinfoundation.org)



© Marcela Rodas / CDF



© Andrés Cruz / CDF

## Charles Darwin Exhibition Hall

**Our Exhibition Hall opened in mid-2016 and features nearly 60 years of the Charles Darwin Foundation's work in the archipelago.** The Hall includes detailed information about the work we do, a rotating local photography exhibit, a room showcasing part of our natural history collections, a small presentations room, and a donations point. Local, national and international visitors stop by and learn about our scientific work and the history of the Galapagos Islands, while also sharing the space with a giant, very impressive skeleton of a Bryde's whale!

**We invite you to visit us.**

**Opening hours:  
Monday through Sunday**

**8:00 to 12:30 and 14:30 to 17:30**

# 52,660

People have visited the Exhibition Hall from January to July 2017.

## Support Our Work

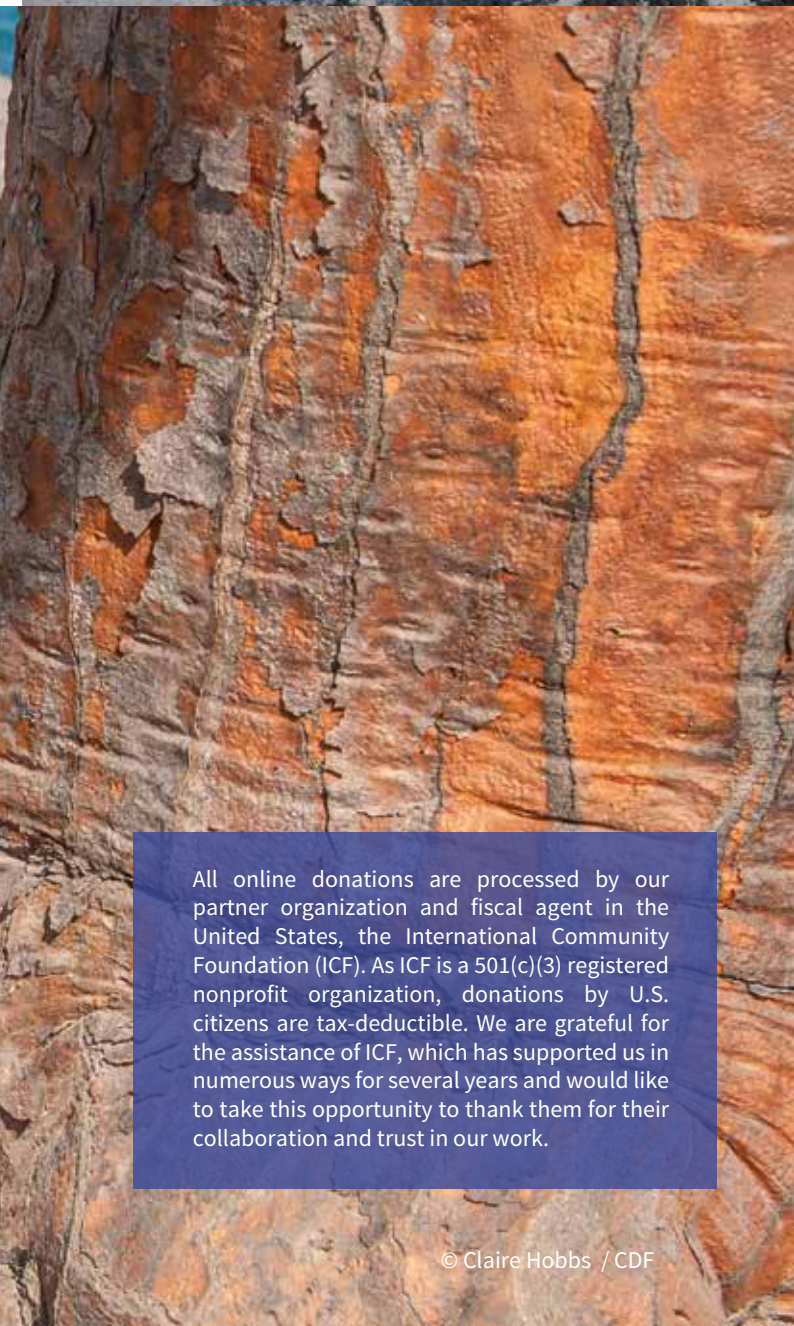
The Charles Darwin Foundation depends entirely on the generosity of individuals and institutions to carry out its essential conservation work. Running an independent scientific research station in such a remote location as the Galapagos Islands is expensive and costs upward of **\$4 million annually**. By supporting our work you are investing in the long-term protection and preservation of one of the most extraordinary and unique places on Earth.



© Claire Hobbs / CDF

## PLEASE DONATE !

You can donate by visiting our webpage:  
[www.darwinfoundation.org](http://www.darwinfoundation.org)



All online donations are processed by our partner organization and fiscal agent in the United States, the International Community Foundation (ICF). As ICF is a 501(c)(3) registered nonprofit organization, donations by U.S. citizens are tax-deductible. We are grateful for the assistance of ICF, which has supported us in numerous ways for several years and would like to take this opportunity to thank them for their collaboration and trust in our work.

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## Other Ways to Give

The Foundation also accepts donations by check, direct transfer, planned gifts and stock gifts. If you would like to donate using these methods, please contact our Fundraising Department at [cdrs@fcdarwin.org.ec](mailto:cdrs@fcdarwin.org.ec)

© Salomé Buglass / CDF



© David Anchundia / CDF

## Amazon

Additionally, if you visit [Amazon](#) from our website, the Charles Darwin Foundation will receive a part of the value of your purchase at no extra cost to you.

***Our vital endeavors have a significant impact on the conservation of the Galapagos Islands.***

***We need your support to continue to finance our work.***


# Financial Report



Conserving the Galapagos Islands is expensive.  
Have a look at some of the ways our donations are spent:


# CONSERVATION COSTS IN GALAPAGOS

**\$1,000**



Digitalization of 10 books in the CDF Library collection. There are now 14,000 articles cataloged in the Library collection.

**\$5,700**



Ensuring the survival of nests for a mangrove finch. Total cost to care for 19 chicks = \$ 108,000



**\$10,000**

1 "Shark Ambassadors" marine education campaign.



**\$2,000**

1 day of boat rental for marine science research.

**\$5,000**



1 year of support for a Galapagos student studying for a conservation-related degree.



**\$2,500**

100 boxes of Groasis technology. In total, 6,756 seedlings have been planted using Groasis.

## EXAMPLES OF ANNUAL OPERATIONAL COSTS



**\$69,000**

Cleaning Maintenance



**\$98,000**

Electricity Internet Phone



**\$300,000**

Conservation of the Collections

BIENVENIDOS - WELCOME



ESTACION CIENTÍFICA  
CHARLES DARWIN  
Charles Darwin Research Station



© Sam Rowley / CDF



© Julio Rodríguez / CDF

## Financial Report



© Sam Rowley / CDF

We are proud of all that we have achieved to date and we have ambitious plans for the future. However, given our nonprofit status, we must constantly strive to ensure adequate funding is in place to create a stable environment for our conservation work. The steadfast support of generous donors such as the Leona M. and Harry B. Helmsley Charitable Trust, the COMON Foundation, IWC SCHAFFHAUSEN, Galapagos Conservancy, and the Lindblad Expeditions-National Geographic Fund, has been invaluable and we are extremely grateful.

Donations from individuals have also been instrumental in ensuring continuity of key projects. We extend our heartfelt thanks to all our individual donors with a special thanks to Ms. Karen Lo, Amy Blackwell and Walter Scott Jr. Additionally, we receive in-kind support from several local companies to which we extend our sincere thanks as well.

For more information about our income and expenditures, please have a look at the following information:

### Our Donors 2016

#### Corporations

<b>\$250,000 - \$500,000</b>	IWC SCHAFFHAUSEN
<b>\$10,000 - \$50,000</b>	Bess Forest Club Keidanren Nature Conservation Fund Tropical Aquaculture Products, Inc.
<b>&lt; \$1,000</b>	SA Interval

## Foundations / Non-Governmental Organizations

<b>Above \$1,000,000</b>	The Leona M. and Harry B. Helmsley Charitable Trust
<b>Above \$500,000</b>	COmON Foundation
<b>\$250,000 - \$500,000</b>	Galapagos Conservancy
<b>\$50,000 - \$250,000</b>	Galapagos Conservation Trust
<b>\$10,000 - \$50,000</b>	Jeannie Tseng and Colin Rust Charitable Fund Friends of Galapagos Switzerland Marguerite Griffith-Jones, GESS Charitable Trust, and Decoroom Limited National Geographic Society Prince Bernhard Nature Fund Queens University of Belfast WWF
<b>\$1,000 - \$10,000</b>	Cameron Foundation Fondation Ensemble Marin Community Foundation Sedgwick Family Trust The Benevity Community Impact Fund The Russell Family Foundation William Bennett Trust Japan Association for Galapagos
<b>&lt; \$1,000</b>	Audubon Society Goodrich Foundation Harold and Joan Feinbloom Family Foundation Illinois Tool Works Foundation Penguin Fund of Japan

## Government, Bilateral and Multilateral Agencies

<b>\$10,000 - \$50,000</b>	Belgian Science Policy Office British Embassy in Ecuador
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## Travel Partners

<b>\$50,000 - \$250,000</b>	Lindblad Expeditions-National Geographic Fund
<b>&lt; \$1,000</b>	Trendsetters Travel Wilderness Travel



# Individuals

<b>Monthly</b>	Roy & Laurie Averill-Murray Luong Banh Robert Clack Eduardo Diez Michael Dorris Matthew Gautrey Mathew Holland Michael Paduano Denise Simone Andy Walvin		
<b>Above \$500,000</b>	Karen Lo		
<b>\$5,000 - \$75,000</b>	Ken and Jenny Collins Mrs. Julie Roda Seishi Sakamoto		
<b>\$1,000 - \$5,000</b>	Margaret A. Baack Donald Clark Jr. James Cuthbertson Dennis Geist Eva Huston Arturo Izurieta Mr. and Mrs. Mark Prak Catherine Putont Ellen Ramsay		
<b>&lt; \$1,000</b>	Carla Alani Paul Anderson Jos Baardemans Paul Baker Luong Banh Alan Barry Abigail Beckel Patricia Bentley Kirby Beranger Jayne Hinds Bidaut Sylvia Blazina Kate Blumberg David and Janna Buesch Dianne Busch A. Charles Catina Freda Chapman Bear Cole Julia Cole Peter Cooke Richard Coulter John Crabbe	Margaret Crouch Rebecca Davis Sonia Deetz Gene Dykes Jennifer Egan Jennifer Ensign Brett Falk Edouard Ferragu Mona Freedman Lisa Fritz Geraldine García Derek Gardiner Jeffrey Gershen Jeffrey Griffith Cheryl Grimaldi Richard Grimes Lynn Winter Gross Sydney Hackett Florian Hagn Jean Hamburg John Hong Jonathan Hoo	Collin Hopkins Len Hunt Tamaki Ido Hayao Izuhara Hyun Ji Jo Colin Kelly Brian Kirkpatrick Peter Klaver Suzanne Krafft Diane Kramer Sun Wook Kwon Randy Lynch Ann Margerison Dora Martínez Joshua Mask Peter Mayer Donna Mayo Claudio Mazzaferri Kathryn McGonigle Olgard Meier James Morrison Bill Morgan

< \$1,000

Joyce Nettleton  
Will O’Laughlin  
Julie Overy  
Michael Paduano  
Francois Pattyn  
Christian Petersen  
Elizabeth Poehler  
Velma Pomrenke  
Jerome Posner  
Bruce Ramsay  
Peter Rasmussen  
Heather & Norman Rath

Lawrence Rubin  
Wolfgang Scheuring  
David Shapiro  
Deb Shay  
John M. Skakun  
Julia Souza  
Hubert Staudigel  
Holly Straub  
Marjolein Terpstra  
Glenda Thorton  
Robert Vanderbeck  
Rick Venegas

Johnny Very-Hodge  
David Wang  
Barbara West  
William Wilcox  
Randall Williams  
Hannah Wing  
Scheuring Wolfgang  
Warren Wolfswinkel  
Nancy Zamierowski  
Andrea Zarpentin

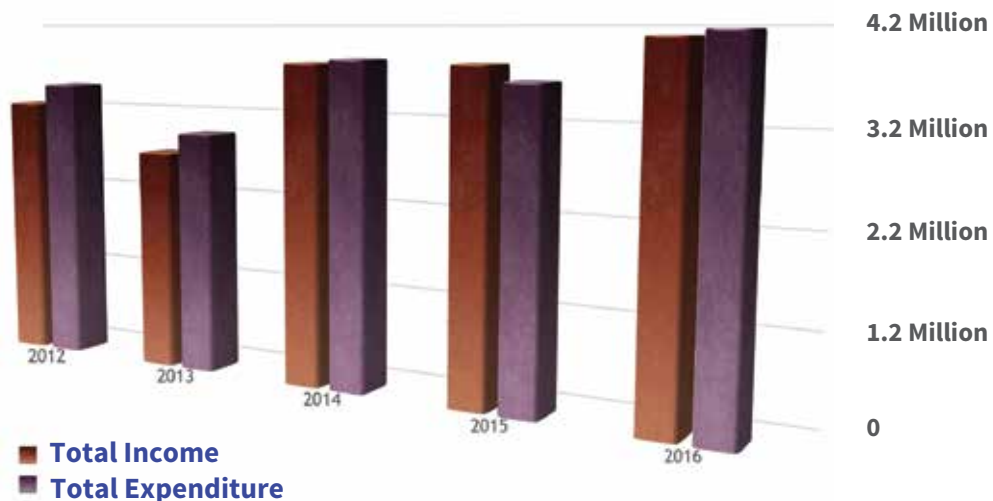


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# Income and Expenditure 2012 -2016

(Numbers rounded off to the nearest thousand)

Breakdown	2012	2013	2014	2015	2016
Total Income (\$)	3,191,000	2,641,000	3,773,000	3,790,000	4,103,000
Total Expenditure (\$)	3,446,000	2,895,000	3,821,000	3,610,000	4,174,000
Net Result (\$)	-255,000	-254,000	-48,000	180,000	-71,000
Percentage	-8.0%	-9.6%	-1.3%	4.7%	-1.7%

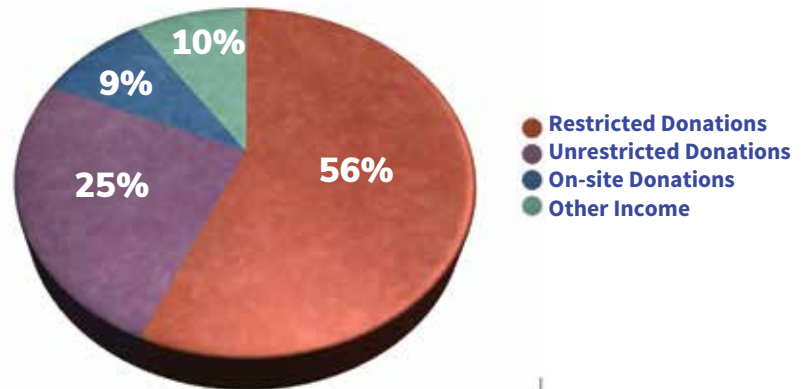


## Income

Year	2016
Restricted Donations (\$)	2,314,000
Unrestricted Donations (\$)	1,024,000
On-site Donations (\$)	376,000
Other Income (\$)	389,000

Total Income (\$)

**4,103,000**

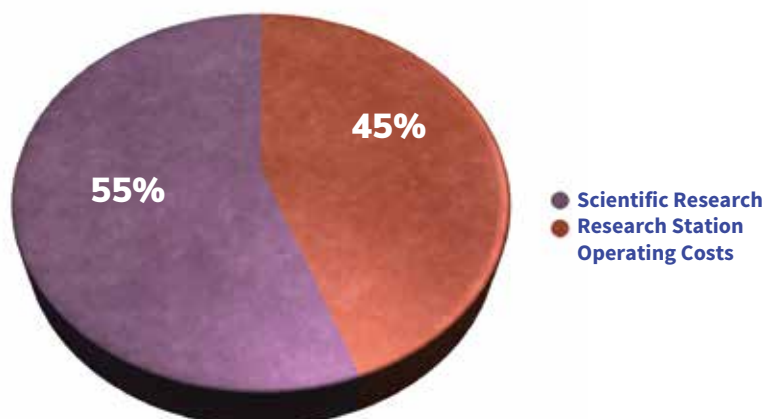


## Expenditure

Year	2016
Scientific Research(\$)	2,314,000
Research Station Operating Costs (\$)	1,860,000

Total Expenditure (\$)

**4,174,000**



# Agreements

In 2016, the Charles Darwin Foundation made an incredible effort to continue establishing agreements with national and international institutions.

Agreement Type	Cooperating Institution	Signing Date (DD/MM/YY)	Duration (years)
Memorandum of Understanding	WWF	19/12/16	1
Interinstitutional Cooperation	Escuela Politécnica del Litoral	28/11/16	10
Interinstitutional Cooperation	Fundación Oswaldo Cruz	18/10/16	5
Interinstitutional Cooperation	Universidad Yachay Tech	15/09/16	5
Memorandum of Understanding	Charles Darwin University	24/06/16	5
Memorandum of Understanding	Leibniz Center for Tropical Marine Ecology	23/06/16	5
Framework Agreement	Fundación Malpelo y otros Ecosistemas Marinos	21/06/16	2
Memorandum of Understanding	Queen's University of Belfast	14/06/16	3
Interinstitutional Cooperation	Pontificia Universidad Católica del Ecuador	07/06/16	5
Engagement Letter	Universidad Técnica de Ambato	16/05/16	2
Interinstitutional Cooperation	Escuela Politécnica del Litoral, Universidad de las Fuerzas Armadas, Consejo de Gobierno de Régimen Especial de Galápagos	24/02/16	5
Interinstitutional Cooperation	Empresa Pública Yachay	01/02/16	5
Interinstitutional Cooperation	Instituto Nacional de Pesca	29/01/16	5
Interinstitutional Cooperation	Instituto Nacional de Meteorología en Hidrología	02/01/16	8
Memorandum of Understanding	Coast to Coast Education	30/12/15	2
Interinstitutional Cooperation	Universidad de Málaga	9/12/15	5
Cooperation Agreement	Universidad San Francisco de Quito	20/11/15	3
Interinstitutional Cooperation	Universidad Central del Ecuador	30/09/15	5
Interinstitutional Cooperation	Instituto Nacional de Energía Renovable	29/09/15	2
Memorandum of Understanding	The Manta Trust	07/09/15	3 (renewable)
Interinstitutional Cooperation	Escuela Politécnica del Litoral	10/12/14	2
Interinstitutional Cooperation	Universidad de Cuenca	18/01/14	2
Cooperation Agreement	Instituto Oceanográfico de la Armada	01/08/09	5 (to be renewed)

## Publications and Scientific Talks

Scientific knowledge is our core. In addition to many technical reports for local institutions, here you can browse some of our most recent discoveries on the Enchanted Islands.

### Peer Reviewed

**\*Names in bold are either CDF staff or scientific collaborators.**

2016

**Ballari D, Orellana D**, Acosta E, Espinoza A, Morocho V. 2016. UAV monitoring for environmental management in Galapagos Islands. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences XLI-B1: 1105-1111. doi: 10.5194/isprsarchives-XLI-B1-1105-2016.

**Bungartz F**. 2016. Lichen diversity: unexpected interactions among overlooked blotches and splotches. In: De Roy T, ed. Galápagos: preserving Darwin's legacy 52-59. David Bateman, Auckland, New Zealand.

**Bungartz F**, Giralt M, Sheard J, Elix J. 2016. The lichen genus *Rinodina* (*Physciaceae*, *Teloschistales*) in the Galapagos Islands, Ecuador. The Bryologist 119(1): 60-93. doi: 10.1639/0007-2745-119.1.060.

**Cha D, Mieles A, Lahuatte P, Cahuana A, Lincango M, Causton C, Tebbich S, Cimadom A, Teale S**. 2016. Identification and optimization of microbial attractants for *Philornis downsi*, an invasive fly parasitic on Galapagos birds. Journal of Chemical Ecology doi: 10.1007/s10886-016-0780-1.

**Cimadom A, Causton C, Cha D**, Damiens D, **Fessl B**, Hood-Nowotny R, **Lincango P, Mieles A, Nemeth E**, Semler E, **Teale S, Tebbich S**. 2016. Darwin's finches treat their feathers with a natural repellent. Scientific Reports 6(34559): 1-9. doi: 10.1038/srep34559.

Dal-Forno M, **Lücking R, Bungartz F, Yáñez A**, Marcelli M, **Spielmann A**, Coca L, Chaves J, Aptroot A, Sipman H, Sikaroodi M, Gillevet P, Lawrey J. 2016. From one to six: unrecognized species diversity in the genus *Acantholichen* (lichenized *Basidiomycota: Hygrophoraceae*). Mycologia 108(1): 38-55. doi: 10.3852/15-060.

**Jaramillo M**, Donaghy M, **Vargas H, Parker P**. 2016. The diet of the Galapagos hawk (*Buteo galapagoensis*) before and after goat eradication. Journal of Raptor Research 50(1): 33-44. doi: 10.3356/rapt-50-01-33-44.1.

**Jiménez-Uzcátegui G**, Harris M, Sevilla C, **Huyvaert K**. 2016. Longevity records for the waved albatross *Phoebastria irrorata*. Marine Ornithology 44: 133-134.

**Keith I, Dawson T, Collins K**, Campbell M. 2016. Marine invasive species: establishing pathways, their presence and potential threats in the Galapagos Marine Reserve. Pacific Conservation Biology 22: 377-385. doi: 10.1071/PC15020.

**Kleindorfer S, Sulloway F**. 2016. Naris deformation in Darwin's finches: experimental and historical evidence for a post-1960s arrival of the parasite *Philornis downsi*. Global Ecology and Conservación 7: 122-131. doi: 10.1016/j.gecco.2016.05.006.

**Lahuatte P, Lincango M, Heimpel G, Causton C**. 2016. Rearing larvae of the avian nest parasite, *Philornis downsi* (Diptera: *Muscidae*), on chicken blood-based diets. Journal of Insect Science 16(1):1-7. doi: 10.1093/jisesa/iiew064.

**Lawson L, Fessl B, Vargas F**, Farrington H, **Cunninghame F**, Mueller J, **Nemeth E**, Sevilla C, Petren K. 2016. Slow motion extinction: inbreeding, introgression, and loss in the critically endangered mangrove finch (*Camarhynchus heliobates*). Conservation Genetics 18: 159. doi: 10.1007/s10592-016-0890-x.

Levin I, Colborn R, Kim D, Perlut N, Renfrew R, **Parker P**. 2016. Local parasite lineage sharing in temperate grassland birds provides clues about potential origins of Galapagos avian *Plasmodium*. Ecology and Evolution 6(3): 716-726. doi: 10.1002/ece3.1894.

Rueda D, Campbell K, Fisher P, **Cunninghame F**, Ponder J. 2016. Biologically significant residual persistence of brodifacoum in reptiles following invasive rodent eradication, Galapagos Islands, Ecuador. Conservation Evidence 13: 38.

**Salinas de León P, Acuña-Marrero D, Rastoin E, Friedlander A**, Donovan M, Sala E. 2016. Largest global shark biomass found in the northern Galapagos Islands of Darwin and Wolf. PeerJ 1-25. doi: 10.7717/peerj.1911.

### Peer Reviewed

**2016** Traveset A, Nogales M, Vargas P, Rumeu B, Olesen J, Jaramillo P, Heleno R. 2016. Galápagos land iguana (*Conolophus subcristatus*) as a seed disperser. *Integrative Zoology* 11: 207-213. doi: 10.1111/1749-4877.12187.

Usseglio P, Friedlander A, Schuhbauer A, Zimmerhackel J, Heel L, Salinas-de-León P. 2016. So long and thanks for all the fish: overexploitation of the regionally endemic Galápagos grouper *Mycteroperca olfax*. *PloS One*. doi: 10.1371/journal.pone.0165167.

Wauters N, Dekoninck W, Hendrickx F, Herrera H, Fournier D. 2016. Habitat association and coexistence of endemic, native and introduced ant species in Galápagos Islands. *Ecological Entomology* 41(1): 40-50. doi: 10.1111/een.12256.

Willows-Munro S, Dowler R, Jarcho M, Phillips R, Snell H, Wilbert T, Edwards C. 2016. Cryptic diversity in Black rats *Rattus rattus* of the Galápagos Islands, Ecuador. *Ecology and Evolution* 6(11): 3721– 3733. doi: 10.1002/ece3.2033.

Zander K, Saeteros A, Orellana D, Toral-Granda V, Wegner A, Izurieta A, Garnett S. 2016. Determinants of tourist satisfaction with national park guides and facilities in the Galapagos, *International Journal of Tourism Sciences*, 16(1-2): 60-82. doi: 10.1080/15980634.2016.1212596.

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**2017** Ben-Yosef M, Zaada D, Dudaniec R, Pasternak Z, Jurkevitch E, Smith R, Causton C, Lincango M, Tobe S, Mitchell J, Kleindorfer S, Yuval B. 2017. Host-specific associations affect the microbiome of *Philornis downsi*, an introduced parasite to the Galapagos Islands. *Molecular Ecology* 26: 4644-4656. doi: 10.1111/mec.14219.

Boulton R, Heimpel G. 2017. Potential for biological control of a parasite of Darwin's finches. In: Van Driesche R, Reardon R, eds. *Suppressing over-abundant invasive plants and insects in natural areas by use of their specialized natural enemies* 23-28. FHTET, USDA Forest Service, Morgantown, WV, USA.

Bulgarella M, Palma R. 2017. Coextinction dilemma in the Galapagos Islands: Can Darwin's finches and their native ectoparasites survive the control of the introduced fly *Philornis downsi*? *Insect Conservation and Diversity*. doi: 10.1111/icad.12219.

Bulgarella M, Quiroga M, Boulton R, Ramírez I, Moon R, Causton C, Heimpel G. 2017. Life cycle and host specificity of the parasitoid *Conura annulifera* (Hymenoptera: Chalcididae), a potential biological control agent of *Philornis downsi* (Diptera: Muscidae) in the Galapagos Islands. *Annals of the Entomological Society of America* 110(3): 317-328. doi: 10.1093/aesa/saw102.

Causton C, Calderón Alvaréz C, Hoddle C, Hoddle M, Lincango M, Poulson T, Van Driesche R. 2017. Improving health of native Galápagos plants by introducing a specialized predator of the invasive cottony cushion scale. In: Van Driesche R, Reardon R, eds. *Suppressing over-abundant invasive plants and insects in natural areas by use of their specialized natural enemies* 16-22. FHTET, USDA Forest Service, Morgantown, WV, USA.

Delvare G, Heimpel G, Baur H, Chadee D, Martinez R, Knutie S. 2017. Description of *Brachymeria philornisae* sp n. (Hymenoptera: Chalcididae), a parasitoid of the bird parasite *Philornis trinitensis* (Diptera: Muscidae) in Tobago, with a review of the sibling species. *Zootaxa* 4242(1):34-60. doi: 10.11646/zootaxa.4242.1.2.

Dvorak M, Nemeth E, Wendelin B, Herrera P, Mosquera D, Anchundia D, Sevilla C, Tebbich S, Fessl B. 2017. Conservation status of landbirds on Floreana: the smallest inhabited Galapagos Island. *Journal of Field Ornithology* 88: 132-145. doi: 10.1111/jfo.12197.

French S, Neuman-Leea L, Terletzky P, Kiriazisc N, Taylord E, DeNardoe D. 2017. Too much of a good thing? Human disturbance linked to ecotourism has a “dose-dependent” impact on innate immunity and oxidative stress in marine iguanas, *Amblyrhynchus cristatus*. *Biological Conservation* 210: 37-47. doi: 10.1016/j.biocon.2017.04.006.

# Publications

## Classification

## Citation

### Peer Reviewed

**Heimpel G, Hillstrom A, Freund D, Knutie S, Clayton D.** 2017. Invasive parasites and the fate of Darwin's finches in the Galápagos Islands: the case of the Vegetarian Finch (*Platyspiza conirostris*). *Wilson Journal of Ornithology*. 129: 345-349. doi: 10.1676/16-050.1.

**Jiménez-Uzcátegui G, Vinuesa RL,** Urbina A, Egas D, García C, Cotín J, Sevilla C. 2017. Lead and cadmium levels in Galápagos penguin *Spheniscus mendiculus*, flightless cormorant *Phalacrocorax harrisi* and waved albatross *Phoebastria irrorata*. *Marine Ornithology* 45: 159-163.

Pazmiño D, Maes G, Simpfendorfer C, **Salinas-de-León P,** vanHerwerden L. 2017. Genome-wide SNPs reveal small scale conservation units in the highly vagile Galápagos shark (*Carcharhinus galapagensis*). *Conservation Genetics* 18: 1151. doi: 10.1007/s10592-017-0967-1.

Seebens H, Blackburn T, Dyer E, Genovesi P, Hulme P, Jeschke J, Pagad S, Pysek P, Winter M, Arianoutsou M, Bacher S, Blasius B, Brundu G, Capinha C, Celesti-Grapow L, Dawson W, Dullinger S, Fuentes N, **Jäger H,** Kartesz J, Kenis M, Kreft H, Kuehn I, Lenzner B, Liebhold A, Mosena A, Moser D, Nishino M, Pearman D, Pergl J, Rabitsch W, Rojas-Sandoval J, Roques A, Rorke S, Rossinelli S, Roy H, Scalera R, Schindler S, Stajero K, Tokarska-Guzik B, van Kleunen M, Walker K, Weigelt P, Yamanaka T, Essl F. 2017. No saturation in the accumulation of alien species worldwide. *Nature Communications* 8(14435): 1-9. doi: 10.1038/ncomms14435.

Thys T, **Hearn A,** Weng K, Ryan J, Peñaherrera-Palma C. 2017. Satellite tracking and site fidelity of short ocean sunfish, *Mola ramsayi*, in the Galápagos Islands. *Journal of Marine Biology* 1-10. doi: 10.1155/2017/7097965.

**Witman J, Smith F,** Novak M. 2017. Experimental demonstration of a trophic cascade in the Galápagos rocky subtidal: effects of consumer identity and behavior. *PLoS ONE* 12(4): 1-23. doi: 10.1371/journal.pone.0175705.

### Thesis

**2016**

**Herrera H.** 2016. Faunistic, taxonomic and ecological research of ants from the Galápagos Islands with emphasis on invasive species. Ph.D. thesis, Ghent University, Belgium.

**Keith I.** 2016. Marine invasive species in the Galápagos Marine Reserve. Ph.D. thesis, University of Dundee, Scotland.

**2017**

**Creemers, M.** 2017. First insights into deep-sea sponge diversity patterns: a baseline study for the protection and sustainable management of seamount ecosystems in the Galápagos Marine Reserve, Ecuador. European MSc in Marine Environment and Resources, University of the Basque Country, Lejona, Spain.

**Ison, T.** 2017. Socio-cultural and Economic Valuation of Seamount Biodiversity in the Galápagos Marine Reserve. MSc in Marine Systems and Policies, University of Edinburgh, Scotland.

**Walentowitz, A.** 2017. Recruitment in the *Scalesia pedunculata* forest at Los Gemelos on the Island of Santa Cruz, Galápagos, after control of the invasive blackberry *Rubus niveus*. Bachelor thesis at Ernst-Moritz-Arndt University, Greifswald, Germany.

## Furthermore, our scientists are constantly giving talks locally, nationally and internationally, including:

- Weekly presentations aboard the Lindblad Expeditions-National Geographic cruise ships.
- Various talks to local institutions in Galapagos (ABG, GNPD, MAGAP, universities, and others).
- Presentations for the new guides' introductory training program (in total, 48 were given on Isabela, San Cristóbal and Santa Cruz islands).
- Four monthly talks on Isabela about each of our projects.

### International

2016

**Causton C.** Improving health of native Galapagos plants by introducing a specialized predator of the invasive Cottony Cushion Scale. Invited seminar. University Minnesota, Saint Paul, USA. July 2016.

**Causton C.** Improving health of native Galapagos plants by introducing a specialized predator of the invasive Cottony Cushion Scale. Invited seminar. North American Society for Conservation Biology, Madison, Wisconsin, USA. July 2016.

**Cha D, Miele A, Causton C, Lahuatte P, Cahuana A, Lincango P, Teale S.** Identification and field evaluation of yeast volatiles attractive to *Philornis downsi*, a hematophagous invasive parasite of Darwin's finches in the Galapagos. International Congress of Entomology, Orlando, Florida, USA. 25-30 September, 2016.

**Cimadom A, Schmidt Yáñez P, Schulze C, Jäger H, Tebbich S.** Living at the edge: The impact of an introduced parasite and habitat change on the breeding success of Darwin's finches. 53rd Annual Meeting of the Association for Tropical Biology and Conservation (ATBC), Montpellier, France. 19-23 June, 2016.

**Cimadom A, Schmidt Yáñez P, Schulze C, Jäger H, Tebbich S.** Leben am Limit: Der Einfluss eines invasiven Parasiten und Habitat-Management auf den Bruterfolg von Darwinfinken. 149. DO-G Jahresversammlung, Stralsund, Germany. 28 September-3 October, 2016.

**Cimadom A, Wappl C, Filek N, Tebbich S.** The importance of male age on the breeding success of small tree finches. 8th European Conference of Behavioural Biology (ECBB). Vienna, Austria. 12-15 July, 2016.

**Fessl B, Anchundia D, Carrion J, Sevilla C, Causton C.** Landbird conservation in Galapagos. Presentation in the general meeting of the FOGO Switzerland, Zürich, April 2016.

**Jäger H, Carrion A, Rodríguez J, Barrera D, Tebbich S, Cimadom A, Sevilla C, Causton C.** Restoration of a blackberry-invaded unique forest in Galapagos: impacts on the vegetation, birds and invertebrates. Neobiota, 9th International Conference on Biological Invasions, Vianden, Luxembourg, September, 2016.

**Keith I.** Grupo de Ciencias CMAR y Especies Invasoras Marinas. Intercambio de experiencias entre Corredor Marino del Pacífico Este tropical – CMAR y la Iniciativa del Triángulo de Coral para Arrecifes de Coral Pesquerías y Seguridad Alimentaria (CTI-CFF). Parque Nacional Tayrona, Santa Marta, Colombia. 2-7 October, 2016.

**Moity N, Delgado B, Salinas-de-León P.** Inexpensive method to assess Galapagos' mangrove forests through the use of Google Earth and Open Source GIS, IUCN World Conservation Congress (poster presentation), Honolulu, Hawaii, USA. 1-10 September 2016.

**Mosquera D, Tebbich S, Fessl B.** The Vermilion flycatcher project. University of Vienna, Austria. June 2016.

**Schmidt Yáñez P, Cimadom A, Tebbich S, Jäger H, Baert L, Herrera H, Waltert M, Schulze C.** Effect of Rubus control on arthropod abundance and diversity of Scalesia forest sites on Santa Cruz, Galapagos. 53rd Annual Meeting of the Association for Tropical Biology and Conservation (ATBC), Montpellier, France. 19-23 June, 2016.

**Smith R, Jäger H, Warne M.** Volcanic islands and tropical conditions: the fate of herbicides in the Galapagos Islands. 5th International Conference on Emerging Contaminants (EmCon2016) and Micropollutants (WiOW2016), Sydney, Australia. 20-23 September, 2016.

**Tebbich S, Cimadom A, Schmidt Yáñez P, Schulze C, Jäger H.** The impact of invasive species on Darwin's finches. Congress of the International Society for Behavioral Ecology. Exeter, England. 28 July-3 August, 2016.



# National and International Scientific Talks

## Presentations

## Citation

### National

2016

**Anchundia D, Fessl B, Carrión J, Sevilla C, Causton C.** Conservación de pájaros terrestres en Galápagos. Presentación a la V Reunion Ecuatoriano de Ornitología, Zamora. August 2016.

**Buglass S, Reyes H.** Evaluación de las zonas de no-pesca en las poblaciones de langosta roja en la Reserva Marina de Galápagos. XL Jornadas Nacionales de Biología, Guayaquil, Ecuador. November 2016.

**Crespo, C, Abad, F, Couenberg, P, Llerena, A, Jäger H.** Manejo de plantas y hormigas invasoras en la zona agropecuaria de la isla Santa Cruz. XL Jornadas Nacionales de Biología. Guayaquil, Ecuador. 16-18 November 2016.

**Marín-Jarrín J.** Charles Darwin Foundation, 60 years of science for the conservation of the Galapagos Islands. XL Jornadas Nacionales de Biología. Guayaquil, Ecuador. November 2016.

**Marín-Jarrín J, Salinas-de-León P, Jiménez-Uzcátegui G, Keith I, Parra M, Izurieta A.** Corrientes del Cambio: Retos para la investigación y conservación de la Reserva marina de Galápagos. Simposio internacional de biodiversidad, manejo y gestión ambiental. Universidad Espíritu Santo, Guayaquil, Ecuador. 12 December, 2016.

**Jäger H, Causton C, Rodríguez R, Barrera D, Cimadom A, Tebbich S, Carrión, A, Sevilla C.** Evaluación de los impactos del control de plantas invasoras sobre un ecosistema amenazado en las Islas Galápagos. Primer Congreso Ecuatoriano de Restauración del Paisaje. Loja, Ecuador. 5-9 April 2016.

**Salinas de León P.** Montañas submarinas de la Reserva Marina de Galápagos: El mundo que Darwin nunca vio. XL Jornadas Nacionales de Biología, Guayaquil, Ecuador. November 2016.

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### International

2017

**Boulton R, Bulgarella M, Ramirez I, Causton C, Heimpel G.** Management of the invasive avian parasitic fly, *Philornis downsi*, in the Galapagos Islands: is biological control a viable option? Conference on Island Invasives, Dundee, Scotland. 10-14 July, 2017.

**Boulton R, Causton C, Heimpel G.** Potential for Biological Control of *Philornis downsi*. III International Workshop. Searching for solutions for the control of the avian parasite, *Philornis downsi*, and the conservation of Galapagos landbirds. Puerto Ayora, 30-31 January 2017.

Collins K, **Keith I.** Countering the threat of invasive species to the Galapagos marine reserve. Marine Protected Areas: Science Policy and Management, Poole, England, UK. May 2017.

**Keith I, Carlton J, Ruiz G.** A new look at Galapagos fouling communities. Island Invasive Conference, Dundee, Scotland, UK. July 2017.

**Keith I, Carlton J, Ruiz G.** Galapagos Marine Invasive species - a new look at Galapagos fouling communities, AAAS Pacific Division Annual Meeting, Big Island, Hawaii, USA. June 2017.

**Lahuatte P, Causton C.** Avances en entender a la mosca parasítica, *Philornis downsi*. III International Workshop. Searching for solutions for the control of the avian parasite, *Philornis downsi*, and the conservation of Galapagos landbirds. Puerto Ayora, 30-31 January 2017.

**Marín-Jarrín J.** From Hatfield to the Charles Darwin Foundation: the importance of student research experiences. Hatfield Marine Science Day, Newport, Oregon, USA. Keynote speaker. April 2017.

# National and International Scientific Talks

## Presentations

## Citation

### International

2017

**Marín-Jarrín J, Salinas-de-León P, Marti-Puig P, Jiménez-Uzcátegui G, Keith I, Parra M, Izurieta A.** The underwater Galapagos: the world that Darwin never witnessed. Hatfield Marine Science Center, Newport, Oregon, USA. Research Seminar. April 2017.

**Pike C.** Behaviors and Interactions of *Philornis downsi* and the Galapagos Flycatcher. III International Workshop. Searching for solutions for the control of the avian parasite, *Philornis downsi*, and the conservation of Galapagos landbirds. Puerto Ayora, 30-31 January 2017.

**Rojas L, Anchundia D.** Estatus del pájaro brujo en Santa Cruz e Isabela. III International Workshop. Searching for solutions for the control of the avian parasite, *Philornis downsi*, and the conservation of Galapagos landbirds. Puerto Ayora, 30-31 January 2017.

### National

2017

**Jäger H.** Las especies introducidas de Galápagos: retos y soluciones. 2do Simposio internacional de Investigación e Innovación UISEK. Quito, 18-19 May 2017.

**Moretta, MdM, Pontón, J, Jäger, H, Bermúdez, R.** Insights from trophic relationships and possible impacts of the introduced frog *Scinax quinefasciatus* in Santa Cruz, Galapagos. XI Congreso Latinoamericano de Herpetología. Quito, Ecuador. 24-28 July 2017.





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## General Assembly

The General Assembly is the governing body of Charles Darwin Foundation and is involved in the election of the Board of Directors, establishment of policy, issuance of regulations, and the final approval of the Foundation's operational plan and budget.

### Individual Governing Members

- Rodrigo Bustamante
- Susana Cárdenas Díaz
- Alfredo Carrasco V.
- Desiree Cruz Reyna
- Tjitte de Vries
- Judy Diamond
- Lynn Fowler
- Oscar Gordillo
- Paquita Hoeck
- Matthew James
- Michael Jackson
- Andrew Laurie
- Ivan Kruger Loor
- John Loudon
- Luis Maldonado Robles
- Cynthia Manning
- Conley McMullen
- Godfrey Merlen
- Marc Patry
- Paula Tagle
- Robert Tindle
- Ma. Verónica Toral Granda
- Alan Tye
- Barbara West

## Individual Active Members

---

- David Anderson
- Carlos Andrés Baca
- Laura Arcos
- Alfredo Arévalo Tello
- Leon Baert
- Oswaldo Báez
- Ma. Eulalia Arízaga del Balfour
- David Balfour
- Bernardo Beate
- Robert Bensted-Smith
- Luis Calvopiña
- Mónica Calvopiña
- Linda Cayot
- Keith Christian
- Segundo Coello
- Guy Coppois
- Eliécer Cruz
- Felipe Cruz
- Eugenia del Pino
- Sarah Darwin
- Tui de Roy
- Samuel DuBois
- Fernando Espinoza
- Joséph P. Flanagan
- Emma Flor de Tejada
- Herbert Frei
- Tom Fritts
- Dolores Gangotena de Diez
- James Gibbs
- Jack Stein Grove
- Elena Gualancañay Pacheco
- Patricia Guerra
- Gaston Guex
- Minard Hall
- Ole Haman
- Sylvia Harcourt-Carrasco
- Burr Heneman
- Freddy Herrera
- Juan Holguin
- Marinus S. Hoogmoed
- Macarena Iturralde
- Pablo Iturralde
- Lukas Keller
- Friedemann Köster
- Bernard Landry
- Octavio Latorre
- María López
- Katsumi Matsuoka
- Patricia Parker
- Duncan Porter
- Günther Reck
- Rodolfo Rendon
- Mark A. Richards
- Raymond F. Rifenburg
- José Rodríguez Rojas
- Juan Schiess
- Heidi Snell
- Howard Snell
- Jennifer Stone
- Luis Suárez
- Fritz Trillmich
- Edmund Truell
- Carlos Valle
- Hernán Vargas
- Sigrid Váscenez
- José L. Villa
- Pádraig Whelan
- Martin Wikelski
- Soledad Luna Zárata

## Institutional Active Members

---

- Susana Arciniegas
  - Augusto Barrera
  - Otilia Cordero
  - Oliver Dangles
  - Sergio Flores
  - Jorge Glas
  - Humberto Gómez
  - Diego Inclán
  - Scott Miller
  - Arturo Mora
  - Enrique Ponce de León
  - Enrique Santos
  - Christof Schenck
  - Roque Sevilla
  - Lauren Spurrier
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## Institutional Governing Members

---

- Johanna Barry
- Walter Bustos
- Jorge Ellis
- María Fernanda Espinoza
- Tarsicio Granizo
- Sharon Johnson
- Presidente Lenin Moreno

## Honorary Members

---

- Rodrigo Borja Cevallos
  - Irenaeus Eibl-Eibesfeldt
  - Peter Grant
  - Rosemary Grant
  - Hendrik Hoeck
  - Henri, The Grand Duke of Luxembourg
  - Cleveland Hickman Jr.
  - Syuzo Itow
  - Randal Keynes
  - Peter Kramer
  - Oswaldo Hurtado Larrea
  - Katherine Coolidge Lastavica
  - Sven-Olof Lindblad
  - Craig MacFarland
  - Ans Thurkow-Hartmans
- 

## Previous Members (2016)

- Fernando Alvarado
  - Rafael Correa
  - Walter García
  - Guillaume Long
  - Javier Ponce
  - René Ramírez
- 

## BOARD MEMBERS 2016

**Dennis Geist**  
President

**Hans van Poelvoorde**  
Vice-president

**Paula Brock**  
Treasurer

**Paul Baker**  
Member

**Eliécer Cruz Bedón**  
Member  
(Representative of the Government of Ecuador)

## BOARD MEMBERS 2017

**Dennis Geist**  
President

**Hans van Poelvoorde**  
Vice-president

**Darrel Schoeling**  
Treasurer

**Silvia Espíndola Arellano**  
Member  
(Representative of the Government of Ecuador)

**Paul Baker**  
Member

**William Sutherland**  
Member

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Member



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## Our Staff

Permanent Residents of Galapagos:

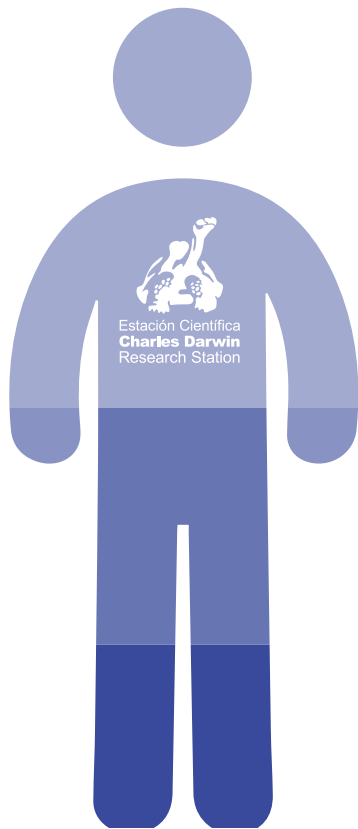
**54%**

Temporary Residents of Galapagos:

**22%**

International:

**24%**



The Charles Darwin Foundation team is composed of 82 individuals, most of whom are based at our operative branch in Galapagos, the Charles Darwin Research Station. Because we believe in the human development of the islands, 76% of our staff is Ecuadorian and two-thirds are permanent residents of Galapagos. In addition to our scientific staff, our work is possible thanks to the hard work of administration, accounting, maintenance and other teams who do a lot of the ‘behind the scenes’ work. We share a strong passion for the conservation of the archipelago and work diligently to ensure a well-managed and sustainable Galapagos in the future.

**CDF Staff: 82**

Permanent Residents of Galapagos: **44**

Temporary Residents of Galapagos: **18**

International: **20**

**List of Staff in 2016 and 2017**

<b>Name</b>	<b>Nationality</b>
Dolma Alonso	Italian
David Anchundia	Ecuadorian
Juan Barreno	Ecuadorian
Lenyn Betancourt	Ecuadorian
Kelsey Bradley	Canadian
Salomé Buglass	British/Trinidad & Tobago
Freddy Cabrera	Ecuadorian
Javier Cabrera	Ecuadorian
Aide Cadena	Ecuadorian
Andrea Cahuana	Ecuadorian
Carolina Carrión	Ecuadorian/German
Johanna Carrión	Ecuadorian
Wilson Carrión	Ecuadorian
Israel Castro	Ecuadorian
Charlotte Causton	British
Ángel Celi	Ecuadorian
Luis Cruz	Ecuadorian
Lilia Cunalata	Ecuadorian
Francesca Cunninghame	New Zealander
Byron Delgado	Ecuadorian
Julio Delgado	Ecuadorian
Liza Díaz Lalova	Ecuadorian
Paola Díaz Freire	Ecuadorian/Australian
Pilar Díaz	Ecuadorian
Luis Fernández	Ecuadorian
Birgit Fessl	Austrian
Diana Flores	Ecuadorian
Julio Gallegos	Ecuadorian
José Haro	Ecuadorian
Jorge Herrera	Ecuadorian
Paola Herrera	Ecuadorian
Claire Hobbs	British
Arturo Izurieta	Ecuadorian/Australian
Heinke Jäger	German
Patricia Jaramillo	Ecuadorian
Gustavo Jiménez	Ecuadorian
Inti Keith	Ecuadorian
Paola Lahuatte	Ecuadorian
Patricia Lehar	American
Erika Loor	Ecuadorian
Stefan Loosveld	Belgian
Johanna Macías	Ecuadorian
José Marín Jarrín	Ecuadorian
Paúl Mayorga	Ecuadorian
Javier Merino	Ecuadorian/American
Nicolás Moity	Spanish
Gustavo Morejón	Ecuadorian
Ainoa Nieto	Spanish
Mariela Padilla	Ecuadorian
Macarena Parra	Chilean
Mercedes Pincay	Ecuadorian
Erika Ramírez	Ecuadorian
Solanda Rea	Ecuadorian
Bolivia Rentería	Ecuadorian
Jacqueline Rodríguez	Ecuadorian
Marta Romoleroux	Ecuadorian/American
Ángel Sagubay	Ecuadorian
Pelayo Salinas	Spanish
Mónica Tigse	Ecuadorian
Jandry Vásquez	Ecuadorian
Gabriela Verdesoto	Ecuadorian
Daniela Vilema	Ecuadorian

**List of New Staff in 2017**

<b>Name</b>	<b>Nationality</b>
Joel Álava	Ecuadorian
Solange Andrade	Ecuadorian
Daniel Barreno	Ecuadorian
Rosita Calderón	Ecuadorian
Angie Carrión	Ecuadorian
Florencia Cerutti	Italian/Mexican
Sarah Enright	Irish
Renato Freire	Ecuadorian
Louis Graham	South African
Jorge Jiménez	Ecuadorian
Lady Loor	Ecuadorian
Patricia Martí-Puig	Spanish
Diego Nuñez	Ecuadorian
Julio Rodríguez	Ecuadorian/Spanish/ American
Lorena Romero	Ecuadorian/British
Mauricio Santos	Ecuadorian
Gaby Serrano	Ecuadorian
Michael Tanner	Ecuadorian
Daniel Unda García	Ecuadorian
Edward Williams	American

**List of Previous Staff Present in 2016**

<b>Name</b>	<b>Nationality</b>
Mick Allen	Australian
Andrea Angulo	Ecuadorian
Milton Ávalos	Ecuadorian
Lorena Balón	Ecuadorian
Denisse Barrera	Ecuadorian
Ixora Berdónces	Ecuadorian
Nicolai Boelling	Norwegian
Juan Carlos Calva	Ecuadorian
Ana Carrión	Ecuadorian
Narciza Cedeño	Ecuadorian
Freda Chapman	British
Sonia Cisneros	Ecuadorian
Claudio Crespo	Ecuadorian
Noemie d'Ozouville	French
Geovany Gaona	Ecuadorian
Noemi Guerra	Ecuadorian
Henri Herrera	Ecuadorian
Martina Hetzel	German
Jesús Jiménez	Spanish
Leonardo León	Ecuadorian
Alexandra Luna	Ecuadorian
Fabián Masaquiza	Ecuadorian
Paúl Medranda	Ecuadorian
Godfrey Merlen	British
Soledad Morán	Ecuadorian
Jono More	New Zealander
Jessica Ojeda	Ecuadorian
Courtney Pike	American
Etienne Rastoin	French
Betsy Sánchez	Ecuadorian
Angélica Viveros	Ecuadorian



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## Collaborating and Visiting Scientists

Science for conservation is a collaborative effort and wouldn't be possible without the many collaborating, associate and visiting scientists that visit us every year.



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**Over the last year and a half we have had:**

**224**  
**Collaborating**  
**Scientists**

**49**  
**Visiting**  
**Scientists**



# Collaborating Scientists

Scientists who carry out projects linked to any of CDF's projects and are part of CDF's Science Operational Plan.

Name	University/Institution
Octavio Aburto	University of California, San Diego – Scripps Institution of Oceanography
David Acuña	Massey University
Juan José Alava	Simon Fraser University
Angela Amarillo	Pontificia Universidad Javeriana
Marti Anderson	Massey University
Juan Armando Sánchez	University of the Andes
Josue Arteaga	Universidad Católica del Ecuador
Dolores Astudillo	Ecuadorian field assistant
Rachel Atkinson	Inter-American Development Bank
Daniela Ballari	University of Cuenca
Paul Barber	University of California, Los Angeles
Renato Bebop	University of Delaware
James Bell	Victoria University
Fiona Beltram	Brown University
José Benedicto	University of Valencia
Rafael Bermudez	Escuela Superior Politecnica del Litoral
Stephen Blake	Max Planck Institute, Germany
Marco Boeri	Queen's University of Belfast
Luke Bonifacio	Monash University
Rebecca Boulton	Cambridge University
Edison Bosque	Ecuadorian field assistant
Deena Breener	San Diego Zoo
Mareike Breuer	Technische Universitaet Berlin
Gabriel Brito	University of Minnesota
Sascha Buchholz	Technische Universitaet Berlin
Maríana Bulgarella	University of Minnesota
Dale Calder	Royal Ontario Museum
Yesenia Campaña	Ecuadorian field assistant
Karl Campbell	Island Conservation
Lynn Carlson	Brown University
Deborah Carlton	Williams College
Jim Carlton	Williams College
Paola Carrión	Galapagos Science Center
Paula Castaño	Island Conservation
Dong Cha	State University of New York – College of Environmental Science and Forestry
Dave Chaddee	University of the West Indies
Arno Cimadom	University of Vienna
Diego Cisneros	Universidad San Francisco - Quito
Dale Clayton	University of Utah
Daniel Cleary	University of Aveiro
Ken Collins	Southampton University
Sophia Cooke	Cambridge University
José Cota	University of California, San Diego – Scripps Institution of Oceanography
Rubén Darío Jarrín	Universidad Católica del Ecuador
Terry Dawson	University of Dundee
Stella de la Torre	Universidad San Francisco - Quito
Nicole de Voogd	Naturalis Biodiversity Center
Tjitte de Vries	Universidad Católica del Ecuador
Sharon Deem	St. Louis Zoo
Wouter Dekoninck	Royal Belgian Institute of Natural Sciences
Tibauth Delsine	Royal Belgian Institute of Natural Sciences
Megan Elizabeth Dimmick	Southampton University

**Name****University/Institution**

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Paul Doherty	Colorado State University
Christian Domínguez	Politécnica Nacional
Rachel Dudaniec	Macquarie University
Michael Dvorak	BirdLife Austria
Paola Echeverría	Escuela Politécnica Nacional
Tyler Eddy	Dalhousie University
Christine Edwards	Missouri Botanical Garden
Carol Ellison	Centre for Agriculture and Biosciences International
Edison Encalada	Central University of Ecuador
Isabel Ender	Manta Trust
Raffael Ernst	Senckenberg Museum
Harold Evans	Centre for Agriculture and Biosciences International
Guillermo Fadul	Comision Panama – Estados Unidos para la Erradicacion y Prevencion del Gusano Barrenador del Ganado
Fernando Fernández	Universidad Nacional de Colombia
Daniel Fernando	Manta Trust
Nikolaus Filek	University of Vienna
Luis Flores	Escuela Superior Politecnica del Litoral
Luke Flory	University of Florida
Joel Fodrie	University of California, San Diego – Scripps Institution of Oceanography
Dan Fornari	Woods Hole Oceanographic Institute
Catherine Francescon	Auckland Zoo
Deborah Freund	University of Wisconsin
Alan Friedlander	University of Hawaii
Jonathan Geller	Moss Landing Marine Laboratory
James Gibbs	State University of New York – College of Environmental Science and Forestry
Jacob González Solis	University of Barcelona
Ole Hamann	University of Copenhagen
Blake Hamilton	Brown University
Neil Hammerschlag	Miami University
Angela Hansen	University of Utah
Isabel Haro	University of Queensland
Chris Harrod	University of Antofagasta
Ingeborg Haug	University of Tübingen
George Heimpel	University of Minnesota
Lucy Sophia Henshell	Southampton University
John Heraty	University of California
Henri Herrera	Escuela Politecnica de Chimborazo
Paolo Herrera	Universidad Tecnica Particular de Loja
Euan Harvey	Curtin University
Eileen Heyer	University of Vienna
Elizabeth Emily Hibberd	Southampton University
Graham John Hibberd	Southampton University
Sophie Hock	Bielefeld University
Mark Hoddle	United State Department of Agriculture
Jane Hosegood	Bangor University
Jonathan Houghton	Queen’s University of Belfast
Katheryn Huyvaert	Colorado State University
Alejandro Ibáñez	University of Bielefeld
Wilson Iñiguez	Ecuadorian field assistant
Antony Jensen	Southampton University
Edouard Jurkevitch	University of Hebra
Stephanie Kalberer	Bielefeld University
Paul Kaiser	Independent Contractor
Gwen Keller	United States Department of Agriculture – Foreign Agricultural Service
Jim Kellner	Brown University
Kaysara Khatun	Instituto de Altos Estudios Nacionales
Kealohanuiopuna Kinney	Brown University
Sarah Knutie	University of South Florida
Kuraji Koichiro	University of Tokyo

**Name****University/Institution**

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Jen Koop	University of Massachusetts
Marcus Krüger	University of Bielefeld
Oliver Krüger	Bielefeld University
Hansjoerg Kunc	Queen's University of Belfast
Nicole LaGreco	San Diego Zoo
Robert Lamb	Brown University
Gretchen Lambert	University of Washington
Pete Landolt	United States Department of Agriculture
Kristen Larson	Southampton University
Lucinda Lawson	University of Cincinnati
Piedad Lincango	University of Cuenca
Camila Lupi	Brown University
Peter Madison	Landcare Research
Jennifer Mallison	Southampton University
José Marín Jarrín	Escuela Superior Politecnica del Litoral
Lady Márquez	Ecuadorian field assistant
Leigh Marsh	Southampton University
Priscilla Martínez	Nazca Institute for Marine Research
Ismael Mascareñas	University of California, San Diego – Scripps Institution of Oceanography
Linda McCann	Smithsonian Environmental Research Center
Patricia McGill	Dallas Zoo
Sabrina McNew	University of Utah
Alejandro Mieles	State University of New York – College of Environmental Science and Forestry
Alexander Mikheyev	Okinawa Institute of Science and Technology
Jessica Miller	Oregon State University
Sergio Miquel	Consejo Nacional de Investigaciones Científicas y Técnicas
Oscar Molla	Independent Consultant
Roger Moon	University of Minnesota
Eliza Moore	Brown University
Denis Mosquera	University of Vienna
Jakob Müller	Max Planck Institute for Ornithology
Ingrid Rabitsch Musso	University of Vienna
Jack Mustard	Brown University
Erwin Nemeth	BirdLife Austria
Daniel Orellana	University of Cuenca
Patricia Parker	University of St. Louis
Nicolás Pascal	Perpignan University
Alejandro Pérez Matus	Pontificia Universidad Católica de Chile
Katharina Peters	Flinders University
Brennan Phillips	University of Rhode Island
Serge Planes	Perpignan University
Sanford Porter	United States Department of Agriculture – Agricultural Research Services
Astrid Potiek	Bielefeld University
Christian Poveda	Universidad Católica del Ecuador
Mireya Pozo	Escuela Superior Politecnica del Litoral
Martín Quiroga	Universidad Nacional del Litoral
Ingrid Rabitsch	University of Vienna
Ismael Ramírez	Independent Consultant
Kathleen Reardon	Williams College
Neild Reid	Queen's University of Belfast
James Reimer	University of the Ryukus
Bruce Rideout	San Diego Zoo
Marc Rius	Southampton University
Fernando Rivera	Nazca Institute for Marine Research
Luiz Rocha	California Academy of Sciences
Richard Rodríguez	Universidad Central de Ecuador
Fernando Romero	Escuela Superior Politecnica de Chimborazo
Greg Ruíz	Smithsonian Environmental Research Center
Roxanne Sage	University of Quebec
Francoi Sarano	Longitud 181 Nature

**Name****University/Institution**

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Carlos Sarmiento	Universidad Nacional de Colombia
Carmen Schloeder	Smithsonian Tropical Research Institute
Paul Schmidt-Yanez	University of Vienna
Stefanie Schreyer	University of Landau
Christian Schulze	University of Vienna
Bradley Sinclair	Canadian National Collection of Insects
Wojtek Sitarz	Laboratoire de Geologie
Alice Louise Skehel	Southampton University
Adam Smith	Massey University
Franz Smith	Actrix
Rachael Smith	Queensland Government
Ben Somers	University of Leuven
Adam Soule	Woods Hole Oceanographic Institute
Ashley Soulsberry	University of Utah
Sebastian Steinfartz	University of Bielefeld
Antje Steinfurth	University of Cape Town
Guy Stevens	Manta Trust
William John King Steward	Southampton University
Josh Stewart	University of California, San Diego – Scripps Institution of Oceanography
Juan Pablo Suarez	Universidad Técnica Particular de Loja
Frank Sulloway	University of California - Berkeley
Richard Switzer	World Parrot Trust
Washington Tapia	Galapagos Conservancy
Stephen Teale	State University of New York – College of Environmental Science and Forestry
Sabine Tebbich	University of Vienna
Sebastián Tobar	Universidad Católica del Ecuador
Mark Torchin	Smithsonian Tropical Research Institute
María de Lourdes Torre	Universidad San Francisco - Quito
María del Mar Trigo	University of Malaga
Hugo Valdebenito	Universidad San Francisco - Quito
Roy Vandriesche	United States Department of Agriculture
Carl Vangestel	Royal Belgian Institute of National Sciences
Hernan Vargas	Peregrine Fund
Santiago Villamarin	Biodiversity Institute
Lenin Vinueza	Universidad San Francisco - Quito
Luis Vinueza	Universidad San Francisco - Quito
Sophie Violette	UPMC-Sorbonne
Margaret Voss	Syracuse University
Anna Walentowitz	University of Greifswald
Christian Wappl	University of Vienna
Les Watling	University of Hawaii
Beate Wendelin	BirdLife Austria
Ellen Louise White	Southampton University
Evie Wieters	Brown University
Marin Wikelski	Max Planck Institute for Ornithology
Franziska Willems	Philipps University
Jonathan Witman	Brown University
Anaide Wrublewski	SISBIOTA
Charles Yackulic	United States Geological Survey
Glyn Young	Durrell Conservation Trust
Boaz Yuval	University of Hebra
Julia Zarfl	University of Vienna
Franz Zehetner	University of Natural Resources and Life Sciences, Vienna, Austria

# Visiting Scientists

Scientists who are carrying out research without formal scientific links and or arrangements with CDF running projects. They come under a scientific permit and are not included in the CDF's Science Operational Plan.

Name	University/Institution
Arkhat Abzhanov	Imperial College of London
David Anderson	Wake Forest University
Marco Beausoleil	University of Massachusetts
Hannah Bercovici	Colgate University
Benjamín Bernard	Instituto Geofísico-Quito
Sarah Joy Bittick	University of California-LA
Viktor Brandtneris	University of Virgin Islands
Sofía Carvajal	McGill University (Canada)
Zachary Cleary	Colgate University
Julia Cole	University of Arizona
Aaron Collins	Florida Institute of Technology
Marco Cordova	Ecuadorian field assistant
Jonathan Dachenhaus	Wake Forest University
Mireya Dobрева	Imperial College of London
Rachael Dudaniec	Macquarie University
Ian Enochs	U. S. National Oceanographic and Atmospheric Administration
Peggy Fong	U. S. National Science Foundation
Jefferson García	Ecuadorian field assistant
Dennis Geist	University of Idaho
Sally Gibson	Cambridge University
Matthew Gleeson	Cambridge University
Kiyoko Gotanda	University of Cambridge
Eva Gruber	Wake Forest University
Karen Harpp	Colgate University
Stephan Hlohowskyi	University of Arizona
Jennifer Howard	Wake Forest University
Sonia Howlett	Princeton University
Sonia Kleindorfer	Flinders University
Andrea Lema	Ecuadorian field assistant
Wesley Loo	Harvard University
Jake Mahr	Colgate University
Derek Manzanella	U. S. National Oceanographic and Atmospheric Administration
Ricardo Orue	Wake Forest University
Ana Palacio	Rosenstiel School of Marine & Atmospheric Sciences
Paolo Piedrahita	Escuela Superior Politecnica del Litoral
Regina Pimentel	Colgate University
Jeffrey Podos	University of Massachusetts
Antonio Proaño	Escuela Politécnica Nacional
David Reyes	Ecuadorian field assistant
Gorki Ruiz	Pennsylvania State University
Tyler Smith	University of Virgin Islands
Michael Stock	Cambridge University
Jill Tangeres	Wake Forest University
Diane Thompson	University of Arizona
Msayoshi Tokita	University of Tuskuba
Gabriela Toscano	Universidad Católica del Ecuador
Sandy Tudhope	Edinburgh University
Hermann Wagner	Aachen University
Meriwether Wilson	Edinburgh University



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## Volunteers and Scholarship Grantees

Galapagos truly is a place where worlds meet and people from all over the world unite with one common goal: conservation. We are continually in debt to the countless individuals who pass through our organization and leave their mark for the protection of the Galapagos Islands.

### Thank you for your support!

Permanent Residents of Galapagos: **23%**

Temporary Residents of Galapagos: **26%**

International: **51%**



From January 2016 to July 2017 we have had 151 volunteers from all over the world, of which half were Ecuadorian and 23% were from Galapagos.

2016-2017

**CDF Volunteers: 151**

Permanent Residents of Galapagos: **34**

Temporary Residents of Galapagos: **40**

International: **77**

# Volunteers

Name	Nationality	Name	Nationality
Robertson Adams	American	Christian Freudinger	German
Luisa Alarcón	Ecuadorian	Deborah Freund	American
Mick Allen	Australian	María Fuertes	Spanish
Silvana Alvarado	Ecuadorian	Vicky Garzón	Ecuadorian
Solange Andrade	Ecuadorian	Todd Gavin	American
Camila Arnés	Ecuadorian	Valerie Gehn	American
María Astudillo	Ecuadorian	María Guerrero	Spanish
Jonathan Atiencia	Ecuadorian	George Gutiérrez	Ecuadorian
Kathryn Ayres	British	Tomas Hannam	British
Jean Bailón	Ecuadorian	Akiko Hansaki	Japanese
Anaceth Barrera	Ecuadorian	María Harder	Chilean
Salomé Barrera	Ecuadorian	Lucy Haskell	British
Cora Bayley	British	Patricio Herrera	Ecuadorian
Areli Benito	Peruvian	Jessica Howard	British
Alfred Benjamin	South African	Heather Hughes	American
William Bensted	British	Wilson Iñiguez	Ecuadorian
Alizé Bouriat	French	Theo Ison	Canadian
Carys Braidwood	American	Carlyn Iverson	American
Mareike Breuer	German	Pamela Kaval	American
Francesca Bucheli	Ecuadorian /American	Frida Lara	Mexican
Sascha Buchholz	German	Patricia Lehar	American
Javier Cajamarca	Ecuadorian	Amalia Lehmann	Colombian
Ximena Calderón	Ecuadorian	Charles Lehnen	American
Yajaira Camacho	Ecuadorian	Saywa Lemas	Ecuadorian
Iván Campaña	Ecuadorian	Jonas Letschert	German
Carolina Carrión	Ecuadorian	Celina Leuba	Swiss
Jorge Carrión	Ecuadorian	Lady Loor	Ecuadorian
Nikol Casignia	Ecuadorian	Geovanny Macas	Ecuadorian
André Castillo	Ecuadorian	Cristophe Maendly	Swiss
Andrés Castillo	Ecuadorian	Pamela Mallitasig	Ecuadorian
Mayra Cedillo	Ecuadorian	Danielle Mares	American
Jorge Cevallos	Ecuadorian	Beatriz Mariño	Spanish
Luis Cevallos	Ecuadorian	Alejandro Martínez	Spanish
Rosa Chango	Ecuadorian	Agustina Masaquiza	Ecuadorian
Amy Coghlan	Australian	Freddy Masaquiza	Ecuadorian
Andrea Coloma	Ecuadorian	Margarita Masaquiza	Ecuadorian
Sophia Cooke	British	Alejandra Mejía	Colombian
Marie Creemers	Belgian	Angela Mendoza	Ecuadorian
Erika Criollo	Ecuadorian	Andrea Merchán	Ecuadorian
Andrés Cruz	Ecuadorian	Vicky Mieles	Ecuadorian
Luis Cruz	Ecuadorian	Cassandra Mitchell	Canadian
Jonathan Cueva	Ecuadorian	Emy Moina	Ecuadorian
Bede Davies	British	Naiti Morales	Chilean
Isaac Deonarine	American	Andreinna Morán	Ecuadorian
Marta Díaz	Spanish	María Moretta	Ecuadorian
Sara Doolittle	Spanish	Magdalena Mossbrucker	German
Kenza Ben Driss	Spanish	Ana Victoria Moya	Ecuadorian
Fernando Echeveria	Ecuadorian	Yemina Moya	Ecuadorian
Rafael Ernst	German	Jilla Nadimi	American
Jairo Erraez	Ecuadorian	Tamaki Okuno	Japanese
Luis Estrada	Colombian	Cinthya Panata	Ecuadorian
Paula Estrada	Ecuadorian	María Pastuzo	Ecuadorian
Lilian Fierro	Ecuadorian	Emile Patry	Ecuadorian/Canadian
Samuel Fischer	American	Elena Pérez	American
Tamara Fisher	German	María Pérez	Ecuadorian
Mackenzie Flynn	American	Thomas Peschak	German
Flavio Freire	Ecuadorian	Brett Peters	British
Renato Freire	Ecuadorian	Antonio Picornell	Spanish
Silvia Freire	Ecuadorian	Cristina Pulido	Spanish

# Volunteers

Name	Nationality
Karem Ramírez	Ecuadorian
Paola Ricaurte	American
Samantha Renda	South African
Marcela Rodas	Ecuadorian
María Rojas	Ecuadorian
Jenny Ruales	Ecuadorian
Pablo Sánchez	Spanish
Jodie Savage	British/Australian
Katharina Schott	German
Michelle Schuiteman	American
Patricia Silva	Spanish
Jim Smith	American
Jonnathan Tapia	Ecuadorian
Destin Tenemaza	Ecuadorian
Bélgica Tutivén	Ecuadorian
Evy Vandebosch	Belgian
Jake Vásconez	Ecuadorian
Liseth Vega	Ecuadorian
Lorena Venegas	Chilean
Paola Villagomez	Ecuadorian
Teresa Villavicencio	Ecuadorian
Michel Vorasane	American
Anna Walentowitz	German
Joséfine Weise	German
Thomas Whitehead	South African
Thomas Wilding	New Zealander
Edward Williams	American
Belén Yánez	Ecuadorian
Vanessa Zambrano	Ecuadorian
Sergio Zamora	Ecuadorian
Joel Zavala	Ecuadorian
Jorge Zavala	Ecuadorian
Halina Zeisler	German

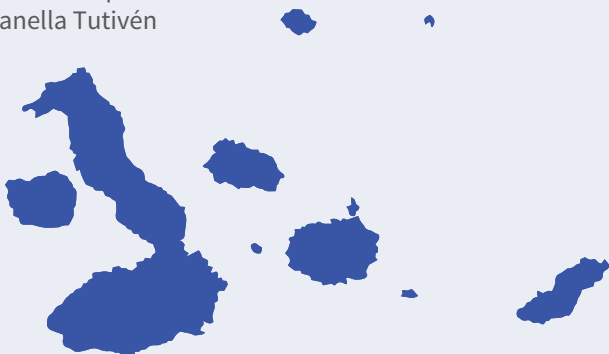
## Isabela Office

**Liaison Coordinator:** Ernesto Bustamante

## Scholarships Grantees

**We also gave five university scholarships to young, talented locals from Galapagos!**


Priscilla Espín  
Diana Carolina Loyola  
Gabriela Santos Farias  
Patricia Tapia Jaramillo  
Yanella Tutivén







**Thank you!**  
**Your donations make**  
**our work possible.**



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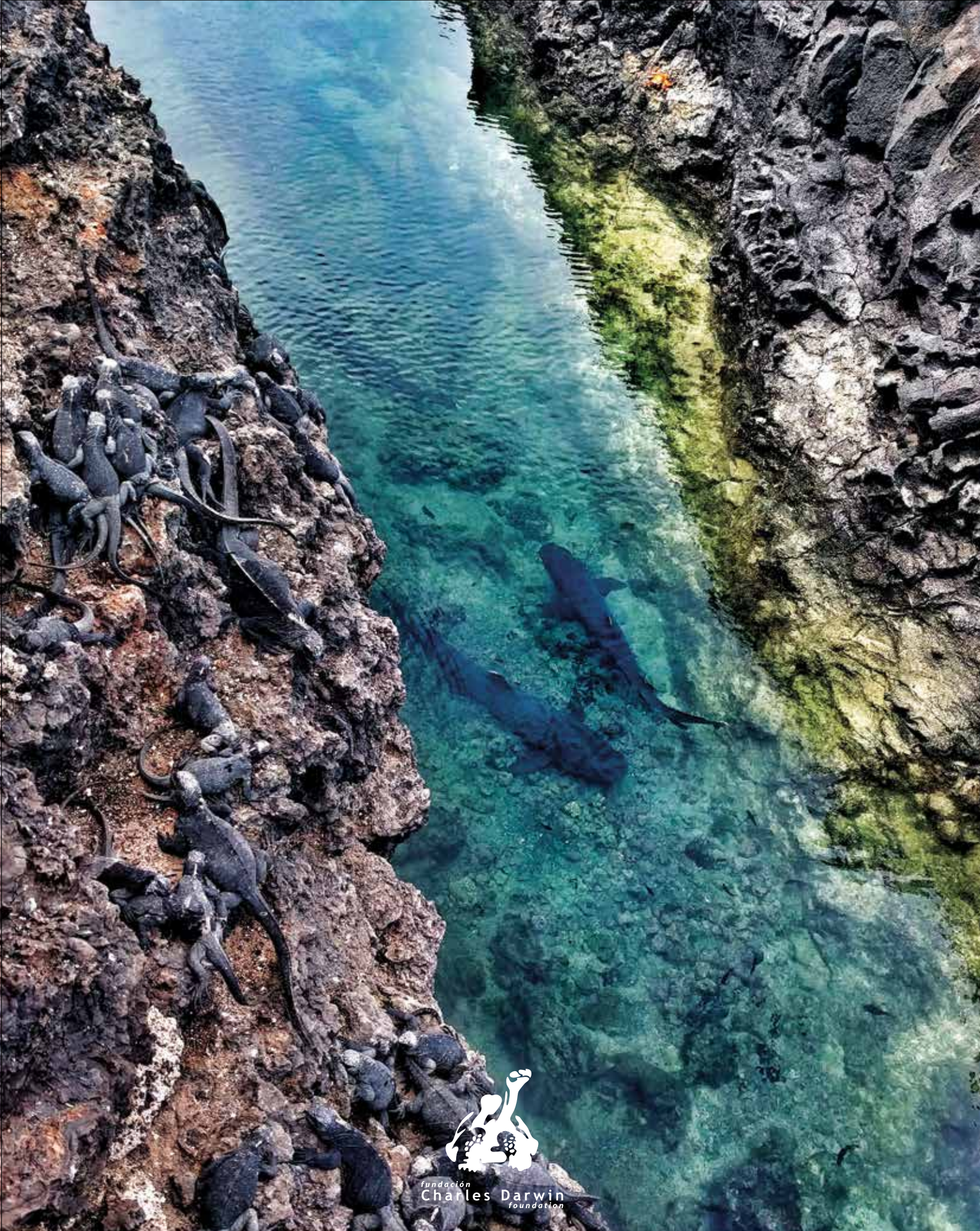
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## CHARLES DARWIN FOUNDATION FOR THE GALAPAGOS ISLANDS

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