



Charles Darwin Foundation

1959 - 2009



50 Years of Science for Galapagos

Annual Report / Special Edition

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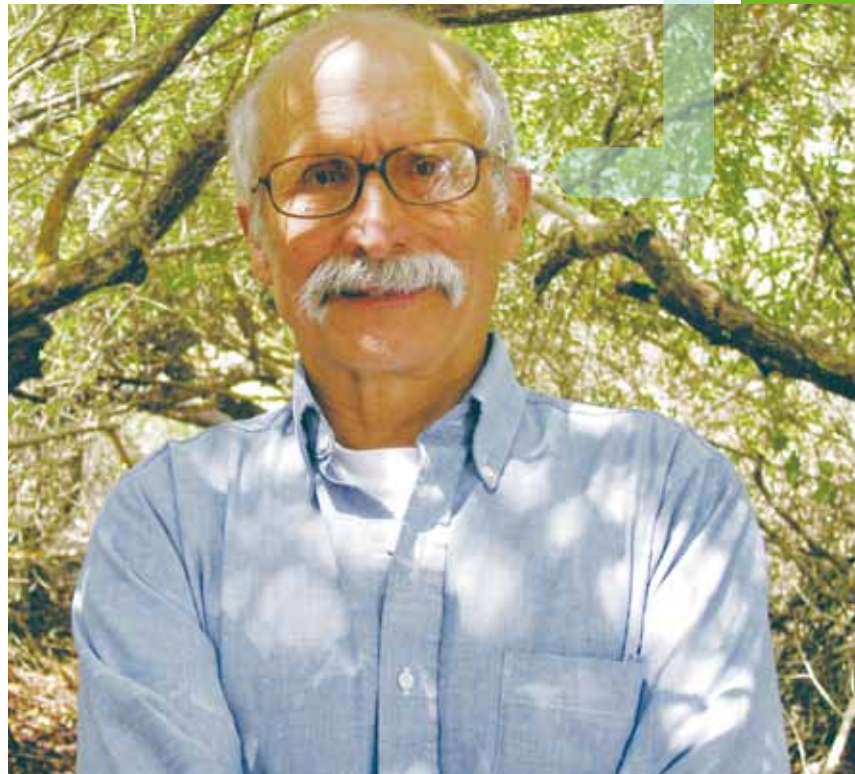
Acronyms and Abbreviations

CDF	Charles Darwin Foundation
DPEG	Galapagos Provincial Board of Education
ENSO	El Niño Southern Oscillation
EMAAPQ	Metropolitan Water Company of Quito
FZS	Frankfurt Zoological Society
GEF	Global Environment Facility
INFA	National Institute for the Child and the Family
INGALA	Galapagos National Institute
IUCN	International Union for the Conservation of Nature
LEPG	Laboratory for Epidemiology, Pathology, and Genetics
NGO	Non-Governmental Organization
GNP	Galapagos National Park
UNDP	United Nations Development Program
GMR	Galapagos Marine Reserve
REIG	Integral Education Reform for Galapagos
SENPLADES	National Office of Planning and Development
SICGAL	Galapagos Inspection and Quarantine Service
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USAID	United States Agency for International Development
WWF	World Wide Fund for Nature (World Wildlife Fund)

Letter from the President of the Board of Directors

The visionary pioneers who established the Charles Darwin Foundation 50 years ago had witnessed massive destruction of wildlife on all the world's oceanic islands and archipelagos. They understood that Galapagos offered a last chance to save a major archipelago in near-pristine condition and they successfully brought together people, ideas, and resources from many countries to realize what they had conceived: a field research station providing the knowledge to conserve Galapagos and to facilitate scientific investigation into what makes Galapagos unique. The three critical elements that made it happen were the farsighted initiative of the Government of Ecuador, the significant support of leading scientific and conservation institutions such as the IUCN, and major funding by UNESCO. Special recognition is due on this anniversary to the Government of Ecuador for having pushed in a very forward looking way the creation of the Charles Darwin Foundation and, at the same time, for having laid the legal framework for the Galapagos National Park.

Cooperation and partnerships with institutions and with people around the world continue to be the critical ingredients for the success of the Charles Darwin Foundation throughout these five decades. In the early years, scientific organizations were most significant, for example the Smithsonian Institution, the British Royal Society, the Max Planck Institute and the Royal Belgium Academy of Science. Many private foundations, businesses, as well as governmental and multilateral aid organizations followed and, most importantly, it was, again and again, individuals who recognized the significance of our mission and supported us in many different ways. I am thinking for example of the many expert volunteers who provided crucial services to our Foundation and I'm thinking again of the Government of Ecuador, and the GEF and UNDP, who entrusted us with major funding. I am also thinking of the anonymous donor who, once identified and invited to come and see



Galapagos, responded as having no intention of visiting, but just wanting to know the archipelago continued to exist. And I am thinking of the hundreds of volunteers and staff, most of whom Ecuadorian, who worked to make our organization more locally effective and internationally respected. On our 50th anniversary, we would like to thank all our partners and supporters. Without you, the Charles Darwin Foundation would not exist!

However, we all know that, while progress has been made in some areas, major challenges remain unresolved. Due to the loss of its protective isolation, Galapagos is in peril and good science, technical assistance, and training, as well as sustained economic support, are needed more than ever. We look forward to tackling these challenges as part of a team working for sustainable development and sustained conservation on Galapagos.

Peter Kramer, PhD
President
Charles Darwin Foundation

Letter from the CDF Executive Director



It is an honor to present the 50th anniversary edition of our annual report. Much has changed in the world and in Galapagos since the Charles Darwin Foundation was established in 1959, but our ability to adapt and respond in a dynamic environment ensures our continuing success. As we commemorate our jubilee, we also launch exciting new initiatives designed to tackle today's formidable challenges and further our mission to forge a sustainable Galapagos.

Amidst our program innovations, 2009 has been a year of celebration marking the bicentennial of Charles Darwin's birth and the 150th anniversary of his masterwork, *The Origin of Species*, as well as the fiftieth anniversary of our close partner, the Galapagos National Park. Among the many highlights, CDF hosted visits by President of Ecuador Rafael Correa, by Their Royal Highnesses, Charles, Prince of Wales, and Camilla, Duchess of Cornwall, and convened our highly successful Galapagos Science Symposium with the participation of over 100 scientists from six continents.

Indeed, the Charles Darwin Foundation has much to celebrate. We have grown from a remote research outpost to a center of excellence for Galapagos conservation science, research, and discovery. And we continue to play a major role in training young science professionals from Ecuador and around

the world, and in advising the Government of Ecuador on a range of conservation and sustainable development issues.

Our work now enters its most challenging and important phase ever.

The period covered in this annual report is marked by major economic crisis with uncertainty as to its depth and duration. The shortsighted economic logic and market speculation that precipitated the current crisis are also bankrupting our natural resources on a global scale.

Galapagos is not immune to these influences and trends.

Over the past decade, the archipelago experienced exponential economic and population growth triggered by a sharp jump in tourism activity with a concomitant increase in waste production and growing demand for energy and water. There were also sharp rises in the number of motor vehicles and cargo ships, and the rapid expansion of a consumer lifestyle fundamentally at odds with the ecological realities of this fragile island ecosystem.

The geographic barriers Darwin cited to help explain the evolution of Galapagos biota have been ruptured by the enhanced flow of ships, airplanes, people, and goods to and from

the world and among the islands. The results are clear: a growing number of invasive species, new threats to endemic flora and fauna, severe strains on basic services, the arrival of pandemic viruses, and the emergence of social problems common to rapidly-changing societies throughout the world.

There is a simple lesson to be learned from this turmoil: Galapagos is not a paradise set apart from the rest of the world. Rather, it is a constellation of delicately-balanced ecosystems that now requires extra care and attention to ensure that forces of globalization do not overwhelm its resilience. As we embark upon our second half century of science and technical assistance for Galapagos conservation, CDF is focused on our pivotal role in providing decision-makers with evidence-based knowledge and counsel on the difficult challenges facing both the natural resources and the human communities of Galapagos.

Galapagos stands at a crossroads.

If the current pattern of growth is not altered, we face the loss of the natural treasures that make Galapagos unique. The Charles Darwin Foundation believes that Galapagos conservation can succeed if the underlying causes of ecosystem degradation are redressed and unsustainable development trends reversed. The current economic crisis and growing ecological challenges provide an excellent opportunity to redefine sustainable development and conservation for Galapagos.

The new CDF program of work highlighted in this report builds on our achievements in conservation science while addressing a broader set of sustainability issues related to climate change, human impact, and development planning. It is in these areas of research and technical assistance that the future of Galapagos will be determined.

To effectively tackle these complex issues, CDF continues to strengthen institutional capacities through strategic new partnerships with national and international centers of excellence in the natural and social sciences. CDF alliances focus cutting-edge expertise on the fundamental problems facing Galapagos and her people.

To inaugurate this new era, CDF launches three flagship initiatives:

- The Galapagos Geographic Index: Measuring Human Impact
- The Galapagos Climate Change Initiative
- Project Floreana



These initiatives (detailed in the sections below) address the pivotal challenges of human impact, climate change, and the first-ever comprehensive restoration of an inhabited island.

Working in close partnership with an array of agencies of the Government of Ecuador, local officials, the private sector, and other stakeholders whose mandate is the conservation and sustainable management of Galapagos, our new initiatives will provide vital inputs to shape an enduring and ever-vibrant Galapagos.

None of this is possible without you, our CDF partners around the world, and I am pleased to take the occasion of our 50th anniversary to thank each of you for your continuing involvement and support.

Together we will conserve the wonders of Galapagos for present and future generations.

Yours sincerely,

J. Gabriel López, PhD
Executive Director
Charles Darwin Foundation

Celebrating

50 Years of Achievement



1959

Under the sponsorship of the International Union for the Conservation of Nature (IUCN) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and with the support of conservationists worldwide, the Charles Darwin Foundation (CDF) is founded to carry out scientific research and advise the Government of Ecuador on conservation management in Galapagos. The Galapagos National Park (GNP) is also created.

1964

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

The CDRS herbarium – now internationally recognized as the largest collection of Galapagos flora in the world – is created.

1965

The Giant Tortoise Repatriation Program begins.

1966

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

1968

The Galapagos National Park initiates operations.

1971

Lonesome George – the last surviving Pinta Island giant tortoise – is discovered.

1972

The CDF Scholarship and Volunteer Program for local and continental Ecuadorian students is officially set in motion.

1976

The Land Iguana Repatriation Program is launched.

1978

UNESCO designates the Galapagos Islands as the first World Heritage Site.

1984

UNESCO designates the Galapagos National Park as a Biosphere Reserve.

1995

The daisy tree (*Scalesia atractyloides*) – previously thought to be extinct – is rediscovered on Santiago Island.

1997

The Floreana flax plant (*Linum cratericola*) – previously thought to be extinct – is rediscovered.

1998

The Special Law for Galapagos goes into effect and the Galapagos Marine Reserve (GMR) is created. CDF's contributions are crucial to ensuring that the islands' need for sustainable local development and environmental education is met, in accordance with the new law.

GNP and CDF implement the Isabela Project – the largest eradication and restoration project in the world – to restore northern Isabela and the islands of Santiago and Pinta.

CDF and Lindblad Expedition's Galapagos Conservation Fund launch the Local Conservation Action Fund to provide seed capital for 95 community conservation and sustainable business projects.

CDF establishes Environmental Education Centers on Santa Cruz, San Cristobal, and Isabela islands to provide learning resources for people of all ages.

1999

UNESCO awards CDF the Environmental Preservation Prize.



2000

The Terrestrial Invertebrates Database and Collection is created.

The Galapagos Inspection and Quarantine System – strongly supported by CDF input – is launched to help prevent introduced species from reaching the islands.

2001

UNESCO World Heritage Site status is extended to the GMR.

CDF is awarded the J. Paul Getty Wildlife Conservation Prize in recognition of its contributions to conservation.

IUCN includes all endemic flora of Galapagos on its Red List of Threatened Species and establishes the Galapagos Plant Specialist Group.

CDF responds rapidly and provides staff and ecosystem monitoring assistance after the *Jessica* oil spill.

2002

CDF wins the Society for Conservation Biology Award for Distinguished Achievement for its special service to the field of biological conservation.

CDF receives Japan's International Cosmos Prize.

2003

The *Galapagos Marine Reserve Baseline Study* is published.

The *Galapagos Plant Research Baseline Study* is published.

The Government of Ecuador enacts the Law for Total Control of Introduced Species in Galapagos, an initiative based on studies in which CDF played an active role.

2004

CDF wins the Biodiversity Conservation Award given by the BBVA Foundation of Spain.

The Government of Ecuador awards CDF the distinction of Grand Commander of the Order of Honorato Vázquez for its contributions to science and environmental education in Galapagos.

CDF receives the Punto Azul Award from Colegio Nacional Galapagos.

2005

The International Maritime Organization designates the Galapagos Marine Reserve as a Particularly Sensitive Sea Area

2007

Galapagos is declared "at risk" by President Rafael Correa of Ecuador, who emphasizes that the archipelago's conservation is a critical national priority.

The Galapagos Islands are placed on the UNESCO List of World Heritage Sites in Danger.

CDF publishes its *Galapagos at Risk* report.

2009

CDF celebrates its golden jubilee.

CDF inaugurates its Darwin Awards Program.

CDF publishes *Siémbreme en tu jardín*.

CDF hosts its Galapagos Science Symposium at which it presents CDF founder Prof. Irenäus Eibl-Eibesfeldt with a certificate of appreciation.

CDF launches its new interactive webpage featuring new scientific data bases.

GNP bestows its Golden Ranger Award on CDF.

People

Leadership in Action





Thirty-seven years of effort have gone into developing local capacities. Since 1972, CDF has made its infrastructure, resources, and staff available to prepare young people in Galapagos and continental Ecuador to become leaders in Galapagos management and conservation.

This aspect of CDF's endeavors is little known, although the Scholarship and Volunteer Program, established under the direction of Peter Kramer, is one of the most important undertakings in the institution's 50 years of existence.

More than 1,200 young people have received training as Charles Darwin Foundation volunteers and scholarship recipients at various stages of their careers. They have taken an active part in collecting and processing information crucial to decision-making for archipelago management. Many have gone on to receive their master's degrees and doctorates and to hold important positions in Ecuador and abroad.

The program was implemented with the collaboration of the Catholic University in Quito and Dr. Eugenia del Pino, who played a pioneering role in facilitating the arrival of university students from all over the country to work in various areas of Galapagos biology and geology.

The program was supported from its inception by the Frankfurt Zoological Society, WWF, and Metropolitan Touring. Over the years, donations have come from additional sources, such as Galapagos Travel and Lindblad Expedition's Galapagos Conservation Fund.

In 2009, CDF created the Fernando Ortiz Crespo Scholarship as part of its yearlong 50th anniversary commemoration. The scholarship, which will

CDF created the Fernando Ortiz Crespo Scholarship as part of its yearlong 50th anniversary celebration.

be awarded each year to one Ecuadorian student to support his or her thesis work, is named after a distinguished Ecuadorian scientist who was the first national volunteer involved in CDF research activities.

Besides these scholarships, which are exclusively for work in Galapagos, CDF also grants higher education scholarships to Galapagos students who wish to study at Ecuadorian universities on the continent.

"One of our aims is to remove financial hindrances that prevent people with potential from receiving training in the natural and social sciences. Providing this opportunity to Galapagos islanders is, undoubtedly, our priority," says Program Coordinator Luis Molina.



Testimonials

Soledad Luna

"My time at CDF as a volunteer and afterwards as a scholarship recipient was an opportunity to learn, study, and live in one of the world's unique settings. Being immersed in such a natural environment allowed me to apply my theoretical knowledge and gather information that contributed directly and effectively to island management. This experience with the Foundation was a crucial stage in my life, owing to the kind of work I was able to do and the availability and accessibility of top-level scientists. In my current position as Executive Director of the Nazca Marine Research Institute in Ecuador, I promote communication and cooperation between scientists working in Galapagos and those in continental Ecuador. This heightens the impact of the conservation actions put into effect and broadens their scale."



CDF scholars hold posts in Austria, Panama, and Costa Rica, and at Ecuadorian universities, Galapagos National Park, the Museum of Natural Sciences, the Ministry of the Environment, EMAAPQ, SENPLADES, the National Fishery Institute, the Geophysical Institute, and the Charles Darwin Foundation.

Camilo Martínez

“CDF taught me many important lessons. One of the greatest is that, from the scientific perspective, all basic or applied research, to be meaningful, should contribute to decision-making. Another lesson I learned? That science, to make its way into the political sphere, where actions are taken, must be rendered into language that is readily intelligible so that decision-makers can make use of the information. As current Advisor on Environmental Policy for the National Office of Planning and Development (SENPLADES), I bring this to bear every day. We are now working on reforming the Special Law of Galapagos with these guidelines in mind.”

Edgar Masaquiza

“I am currently doing my volunteer work in the Vertebrates area, but I have assisted in other areas before. As a permanent Galapagos resident, I have observed and been a part of CDF’s achievements, such as establishing effective community outreach to promote environmental education and actions oriented toward sustainable resource use. Every time I’ve worked with the Foundation, I’ve grown to love Galapagos more. I’m highly aware that this place where we live is very fragile and needs our care.”

CDF is forming a scholars and volunteers association.



People

Education is the Way Forward



We know that conservation efforts cannot succeed without community participation. We are also aware that if the people of Galapagos assimilate the concepts of sustainable development and conservation into our lifestyle, the archipelago can become a model of sustainability for the world. This goal can only be achieved through education.

In the mid 1960s, when CDF was just getting settled into Puerto Ayora and the local population was still very small, Foundation members understood that the survival of Galapagos ecosystems and species depended on raising the awareness of the islanders.

Thus, the first environmental education activities began in 1966, in collaboration with schools and community organizations, and continue today through both formal and informal educational processes.

Coming Together for Education Reform

CDF and the Ministry of Education have been working together on Integral Education Reform for Galapagos (REIG) since June 2008. Our common purpose is to develop an educational program for sustainable development in Galapagos. The Galapagos Provincial Board of Education (DPEG) is the agency in charge of coordinating and implementing this process.

CDF offers technical assistance for integrating environmental education into primary and secondary school curricula in a contextualized fashion, in keeping with the need to strengthen awareness, attitudes, and behavior that contribute to the sustainable development of the islands.

The REIG process is an opportunity to strengthen and develop this culture of sustainability in the future leaders

of local society. The work that we carry out alongside the Ministry is focused on achieving an educational system in Galapagos that forms environmentally conscious citizens who understand the privilege and responsibility involved in living in these islands. This entails mainstreaming the concept of sustainable development into Galapagos education reform.

To accomplish this, we have worked on identifying the principles, content, and programs of “Education for Sustainability” that suit the archipelago’s needs and values. Training in sustainability-based education for teachers and DPEG representatives is crucial, and we have made that our task the last few years.

The key subject matter we are working on is:

The Natural Environment, which covers island biodiversity, water, energy, and waste management; and,

The Social Setting, which covers the human population of the islands, its past, present, and the vision for the future.

The Storytellers

On any given day, the people on the islands may run into a puppet theater in their neighborhood park, at school, or the municipal community center... and almost without realizing it, they learn about important issues in Galapagos from a troop of sponge puppets, who hold the attention of young and old in the manner of the best storytellers.

The CDF Sustainable Education Team has been conducting the Puppet Workshop for about two years. Local community members who attend workshops learn much more than simply how to make sponge puppets and write show scripts. First and foremost, it is about involving residents in the overall conservation strategy, getting the workshop participants to form groups, or bolster existing ones, with a solid grasp of what sustainable development is.



During the 2009 Charles Darwin Bicentennial, the workshop focused completely on the English scientist's work, his Theory of Evolution, and his connection with the Galapagos Islands. In fact, this year's workshop attendees on Santa Cruz and Isabela are doing five shows in different venues to stage original works on the subject of Darwin and Galapagos.

The aim of the informal education activities is to reach multiple sectors of the community, outside the sphere of the classroom, through communication, awareness, and information programs on various social and environmental issues. Through workshops, participants are provided with tools – whether puppeteering, photography, or community campaign skills – so that they can communicate to the local population the concept and importance of sustainable development using entertaining and participatory techniques.

Through technical assistance in Education for Sustainable Development to municipalities, the Program supports the islands' civic organizations and assists the dissemination efforts of CDF research teams.



CDF and INFA launched a joint education initiative as a fundamental part of sustainable development in Galapagos.

The latest event, entitled, *Cleta, la Bicicleta*, in collaboration with INFA and the Change For Life campaign, promoted a traffic safety initiative to encourage bicycles as a sustainable transportation alternative.



Biodiversity

Science for Galapagos



• 1

The Galapagos Islands are unique. They are famous for their most iconic species: giant tortoises, marine iguanas, Darwin's finches, and much more. Visitors come from all over the world to observe its wildlife, animals and plants found nowhere else on earth! A common misconception, however, is the impression that the islands are particularly species-rich. This is not correct. Though abundant with unique species, overall biodiversity is low. Compared to the South American mainland, species diversity in Galapagos is relatively poor. There is a good reason why this island biodiversity is comprised of few, mostly unique species: their immense geographic isolation. Galapagos lies more than 1,000 km from mainland Ecuador and consists of a loose chain of scattered volcanic islands that emerged pristine from the ocean floor; they were never connected to the continent. Though they are geologically young, the islands were always isolated. All native animals and plants that inhabit Galapagos today arrived on their own initiative.

They crossed the immense distance from the South American continent, endured a passage across a vast ocean, and relied on trade winds and sea currents. Few species survived this voyage and in Galapagos were faced with a diverse environmental setting. In isolation the species were able to evolve, change, adapt; they explored the unusual variety of ecological niches, a diversity of climate and habitat that is also unique. Although located on the equator, the weather in Galapagos is not as one would expect. Regular daily downpours are characteristic for tropical rainforests, but in Galapagos they are rare. Instead, the cold Humboldt Current reaches here from Peru, Chile, and ultimately the Antarctic. It pushes characteristic tropical rainfalls further north. For much of the year the archipelago therefore remains dry and comparatively cool. Only during rare El Niño events does the climate become truly tropical: hot and humid, with torrential rains. This diversity is repeated in the landscape. Not all islands are flat and barren.

- 1 A giant tortoise from Pinzón Island; the islands received their name from these characteristic animals yet this image also shows a much overlooked group of species; the white patches on the tortoise's carapace are the lichen *Lecanora sulfurescens*.
- 2 A Darwin's finch pecks a parasite on the tail of a marine iguana. These species are found only in Galapagos.
- 3 Well known are these iconic Galapagos species: The brown pelican and blue-footed booby are common on many tropical islands, but nowhere near as tame as in Galapagos.
- 4 This bright red bracket fungus (*Pycnosporus sanguineus*) is common on dead wood in the forests of the humid Galapagos highlands.
- 5 A still unknown species of Earth Star Fungi in the genus *Geastrum*, from the dry Galapagos lowlands.
- 6 The small, pale fruiting bodies of *Coprinellus disseminatus* are ubiquitous in the cloud forests of Galapagos where they recycle plant litter.
- 7, 8, 9 With more than 400,000 individual specimens, the CDF invertebrate collection represents an essential resource for biodiversity studies in this poorly known group; more than a third of this collection are specimens still to be identified.



The larger ones reach considerable heights, some more than 1000 m in altitude. Traveling up from dry, sparsely vegetated coastal lowlands through transitional forest, the vegetation changes to tropical cloud forest, scrubland, ferns and sedges, and even sphagnum bogs. While the thorn scrub of the lowlands receives little rain, the highlands are shrouded in clouds, their forests laden with liverworts and lichens. Finally, a few volcanoes even reach beyond the clouds. Here, at the highest peaks we find dry forests and sparse cacti again. This habitat diversity on land is easily matched in the sea. The Galapagos Marine Reserve is an incredibly complex marine ecosystem. Cold upwellings supply abundant nutrients and mix with warm tropical currents. Marine species of varying origins, adapted to very different climates, occur together: Penguins dive among corals, fur seals swim with hammer head sharks...



•4



•5



•6

Scientists suggest that the Galapagos are not only unique for their biodiversity; they are also among the last places on earth where the majority of this original biodiversity remains. Today there is virtually no place left on earth that is still isolated. All tropical island ecosystems suffered the same fate. When they were discovered, man built his livelihood and introduced species alien to the island ecosystem. Regular transport from the mainland establishes a connection that tears down natural barriers. Galapagos is no exception. Organisms which by themselves would never have reached this archipelago are today firmly established. The Charles Darwin Foundation has documented

that today more alien, introduced species of vascular plants are present in the archipelago than the number of both native and endemic species combined. Many of these newcomers are invading and transforming the natural landscape. Nevertheless, Galapagos remains among the few places that have seen relatively few extinctions. Unlike most tropical archipelagos, Galapagos is unique because approximately 95% of its known biodiversity is still present. There is an irony in this number: although it can be argued that the large majority of known species are not yet extinct, it can also be said that many Galapagos species still remain unknown. How can this be?

Two hundred years after the birth of the archipelago's most famous visitor, Charles Darwin, one hundred and fifty years after the publication of his *Origin of Species*, fifty years after the foundation of a permanent research station in the Galapagos – one would think that by now all the incredible marine and terrestrial life forms must have been documented. This is true for the iconic species, for groups like vertebrates and plants. However, many less conspicuous organisms today remain unknown. It was a sensation, when two years ago a new species of land iguana was discovered on Wolf Volcano, eagerly publicized by the press. During the past few years, however, several less iconic species were also newly described: a new ant species, several new species of lichens, a new species of sea sponge. While the large and conspicuous ones receive attention, the small and least known remain hidden. Today, more than ninety percent of Galapagos fungi are unknown despite the fact that these organisms play an essential role in nutrient supply for all Galapagos plants. Large groups of invertebrates, both terrestrial and marine, remain to be discovered. How can we claim that 95% of Galapagos biodiversity is still present and only very few species have gone extinct? How can we claim that this archipelago remains among the best preserved tropical island ecosystems in the world?

In 2009, for the first time in its history, the Charles Darwin Foundation began assembling a “tree of life” of the Galapagos – a large database with all species known from the archipelago. For fifty years scientists published their new discoveries and continue to explore wildlife in Galapagos. Compiling this information in a single database requires work: digging through scientific literature and searching for overlooked species in the field. Of course this database only includes species that have already been reported: literature reports, specimens in natural history collections, field observations. Based on comparative studies, CDF scientists extrapolate that as many as 60 - 80% of Galapagos species are yet to be discovered. This presents an exciting opportunity. Although the islands have many unique species, the overall number of species is relatively low, orders of magnitude less than on the continent. Thus, with less effort we can get to know the full richness of Galapagos biodiversity and begin to understand how it all ties together: what role fungi play in the cloud forests, which invertebrate species are a key factor in restoration, how can marine resources be harvested without affecting a cascade of other species? Working to establish this baseline is possible. It is vital if we want to understand this unique ecosystem and make Galapagos a model for world-wide island conservation.





Marine Ecosystem

The Challenge to Protect Galapagos Corals



Among the world's most diverse and productive ecosystems, fringes of coral reef sheltering and sustaining great numbers of species are often referred to as the rainforests of the sea. Sadly, the world's oceans are slowly changing under localized pollution, global warming, and acidification. Marine groups such as corals are among those that run the greatest risk of extinction. Since such stress weakens their natural defenses, coral disease has become an increasing worldwide concern. Alongside widespread bleaching, worrying reports of disease and disease-like syndromes in reef-building corals have increased substantially since first reported in 1973.

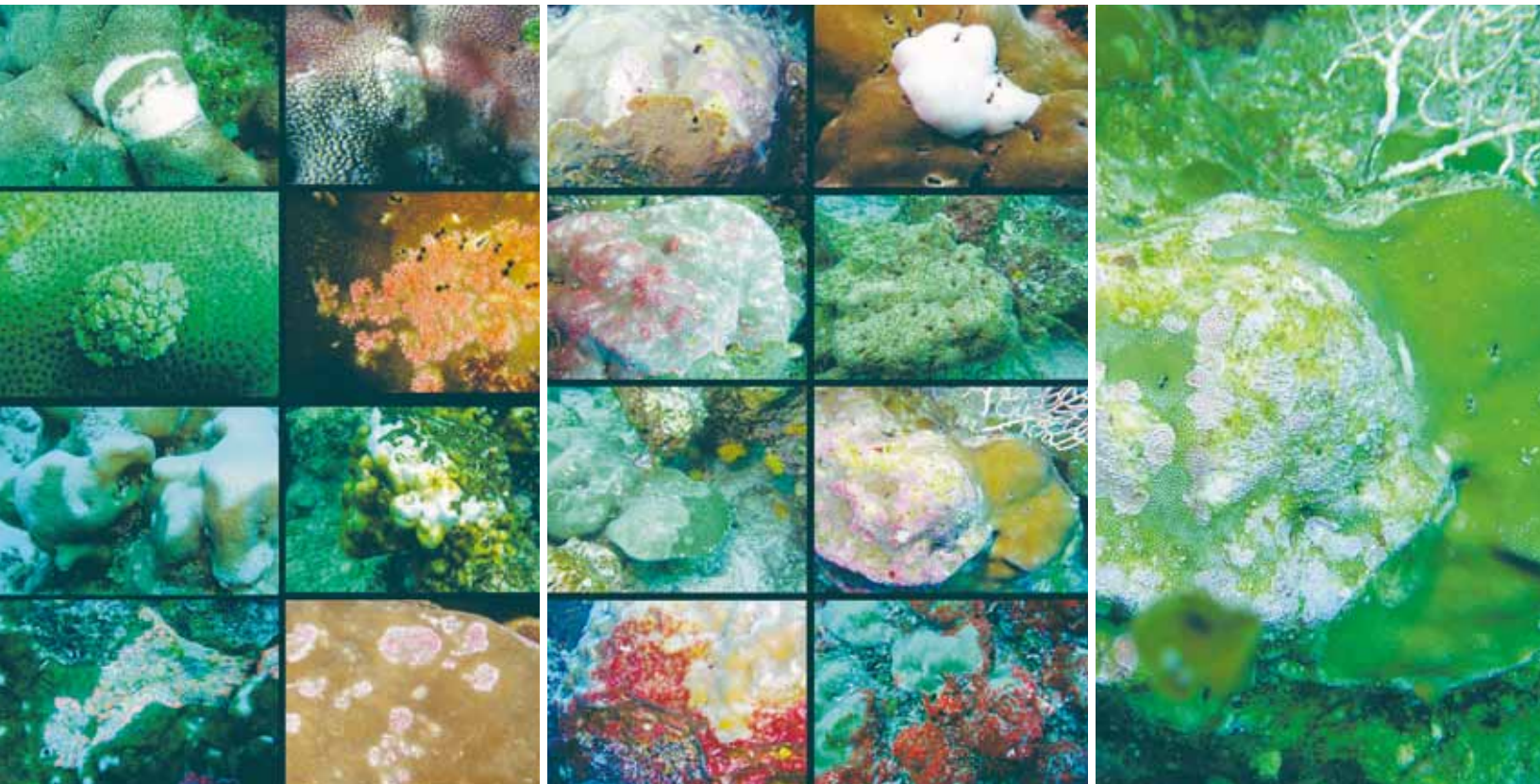
The Galapagos Marine Reserve in comparison to other marine regions is often cited as being in a near-pristine natural condition. Nonetheless, coral communities in Galapagos constitute a key sensitive habitat subject to impact from not only natural disease, but also a complex interplay between climate change and anthropogenic activity. Corals have persisted in Galapagos despite extreme archipelago-wide mortalities during El Niño Southern Oscillation (ENSO) warm events. In the 1982-1983 event, coral mortality was higher in the Galapagos compared to other affected eastern Pacific study sites. By 1988, coral researchers had estimated a 95–99 % mortality of branching and massive coral

species - the coral mortality in the 1997-1998 event took a further 26.2 % of those remaining corals. Despite being of similar magnitude and duration, the coral responses during the two disturbance events were distinct, having different spatial patterns of elevated sea temperature stress.

Recently, however, patterns of climatic stress under natural phenomena such as El Niño are thought to have been exacerbated by resource overexploitation, indirect impacts of illegal fishing, and the anchor damage that comes with increased marine traffic and dive tourism. Although local observations are sparse and largely anecdotal before 1982, it is strongly suspected that the combination of such factors with ENSO changes the recovery capacity of coral habitat-forming species in Galapagos resulting in greatly altered marine ecosystem function in recent decades. Irrespective of the cause, the remaining fragmented and reduced populations (having less variability) are more likely to be susceptible to disease.

Disease in corals can cause significant changes in reproduction rates, growth rates, community structure, species diversity, and abundance of reef-associated organisms. It has been found that coral disease is correlated with warm temperature anomalies, being highly affected because they live close to their thermal tolerance limits and many are greatly stressed by even slight increases in ambient water temperature. In the Caribbean and Mediterranean Seas for example, virulence of known coral pathogens and the normal coral flora changed during high-temperature periods.

The Darwin Initiative Project
in cooperation with
the University of Edinburgh
supported this research.



Coral reefs support the largest concentrations of Galapagos marine biodiversity. CDF identifies corals as a major indicator of climate change and aims to evaluate the state of these ecosystems through permanent monitoring of coral reef formations.

Ongoing research suggests that climate warming is an important factor driving coral disease and its mortality. The effects are multiple and often complex. When coral reefs die, fish populations decrease or disappear; beaches and shorelines are damaged – the fragile land areas unprotected by breakwaters become vulnerable to erosion, saltwater intrusion and destruction from waves. Protected bays are exposed and habitats shift. New species often establish a foothold and the character of the ecosystem can change as a result.

The prevalence and significance of coral disease in Galapagos is an important indicator of their potential resilience to types of stress. This has local management implications for coral reefs and protecting the biodiversity of associated subtidal communities. Recent CDF marine surveys taken since 2004 give a reference point against which to measure future stress, health, and conditioning of Galapagos coral species - furthermore it should also be possible to compare Galapagos observations with other global and Eastern Tropical Pacific regional studies. In order to encourage robust comparable data we designate a pair of dedicated coral health inspectors during field campaigns. We also follow a consistent methodology between field trips, using standard templates for recording information and a shipside data coordinator for accurate and reliable entry of information immediately after dive work.

Interesting conservation questions emerge. As a region under extreme temperature stress and greatly increased anthropogenic activity in the coastal zone since the 1980s, the last remaining Galapagos zooxanthellate corals can be considered as being at the limits of their natural tolerance. They have obviously persisted despite similar strong ENSO events over thousands of years. The survivorship of certain corals conditioned and/or facilitated by the constantly changing warm and cold Galapagos currents can afford important insights into their resilience and future coral conservation measures. The question remains as to their resistance to compounding effects. How do corals recover from strong climatic regional events such as El Niño, alongside anchor damage, local pollution, accidental diver damage, and global climate change over larger scales? What should we do to mitigate those risks?

Estimating coral health and incidence of disease is important for assessing stress responses and providing answers. Given the recent tendency towards more frequent warm-water and cold-shock bleaching events and consequent greater susceptibility to pathogens and parasites, the emphasis turns towards how best to protect and manage the remaining Galapagos coral resources.

Recent CDF marine surveys taken since 2004 give a reference point against which to measure future stress, health, and conditioning of Galapagos coral species.



50 Years of Science





for Galapagos



The Future

For much of our 50 years of existence, the Charles Darwin Foundation has been a center of excellence for Galapagos conservation science and related sustainability issues. More recently, in view of the ever-growing threat to the environmental health of Galapagos, the CDF Program has begun to address broader threats from economic and tourism growth and global change processes that are negatively affecting the archipelago.

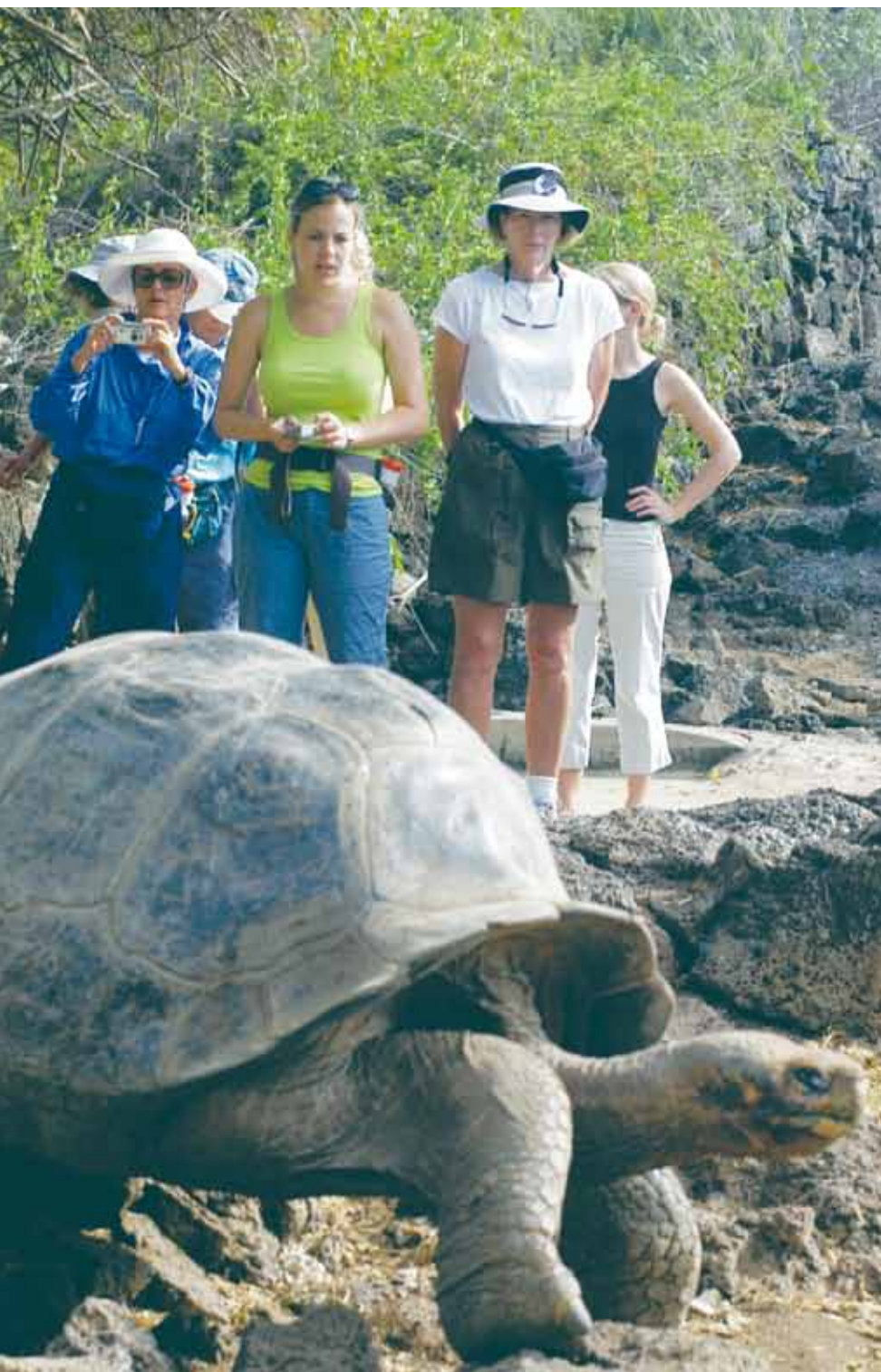
While better addressing threats to the ecosystem, the CDF Program builds on our heartland achievements in conservation science and integrates a related set of sustainability issues on climate change, human impact, and development planning. It is in these areas of research and technical assistance that the future of Galapagos will be determined.

We have developed three interlinked flagship initiatives:

- Galapagos Geographic Index
- Project Floreana
- Galapagos Climate Change Initiative

If we can achieve sustainability
in Galapagos,
then we can do so elsewhere...

Galapagos Geographic Index



Measuring human impacts

Working closely with INGALA, GNP, and other agencies of the Government of Ecuador, measurement of the “human footprint” will provide planners and decision-makers with the first comprehensive management tools to assess and respond to the socioeconomic trends that threaten Galapagos biodiversity.

The Galapagos Geographic Index (GGI) will measure the impacts produced by those who live in and benefit from Galapagos. It will employ a geographical-based methodology that utilizes integrated indicators of economic, social, cultural, and biological data. The database developed through this project will allow scientists and planners to better understand dynamics within the Galapagos system.

The GGI will integrate data from other flagship projects. Once standards are in place, scientists will use the methodology to collect baseline data to monitor future changes. The monitoring system will measure the human footprint in the archipelago every three to four years to observe long-term changes.

As statistical trends become apparent, scenario testing will analyze the effects and trajectory of these trends.

The data will aid in the formulation of policies to promote conservation and sustainability and will be integrated into policy and planning decisions of Galapagos and Ecuadorian management authorities. Once functioning, the Geographical Index can be applied in other island settings to make useful comparisons with Galapagos.



Project Floreana

Linking ecosystem restoration
with the lives and aspirations
of local residents



Floreana was the first island in Galapagos to be inhabited, and the presence of humans has resulted in habitat destruction, species loss, and introduction of invasive species. Today Floreana would be unrecognizable to Darwin if he were to return.

Project Floreana links biological research with social science, integrates environmental education into traditional curricula, and links ecosystem restoration with sustainable livelihoods.

Through survey work, CDF scientists and GNP staff will develop a better understanding of the biodiversity of Floreana in order to prioritize sites for conservation. We will also develop new tools to increase management efficiency, both on land and in coastal waters. Working with the community, staff will develop effective ways to decrease the risk of invasive species, through quarantine, native garden programs and better health care for livestock. Key invasive species will be controlled or eradicated in order to allow the reintroduction of keystone species to Floreana that have become locally extinct. These include the symbolic Floreana mockingbird, the Galapagos racer, and the giant tortoise.

Community inclusion is critical to the success of the project, and project staff will work closely with the community to understand and help develop their vision for the island. Through training and diverse educational tools, we will work with the community to develop a sustainable future for Floreana.

This project will be a collaboration between the CDF, Galapagos National Park, Durrell Wildlife Conservation Trust, the Zoological Museum, University of Zurich, the Center for Avian Health in Galapagos (University of Missouri, St. Louis), the WildCare Institute, St. Louis Zoo, and Island Conservation (USA).

Four key objectives :

- Understand and address social issues and aspirations
- Optimize conservation management
- Enhance management of invasive and threatened species
- Reduce risk of new invasive species



Galapagos Climate Change Initiative

Can Galapagos survive the impact of global climate change?

The unique climate of Galapagos is intrinsically linked to its exceptional biodiversity. The threat of global climate change combined with pressure from human activities could severely impact ecosystem function and the natural recuperation of living communities in the terrestrial and marine ecosystems.

The Galapagos Climate Change Initiative represents an important step in understanding the ties between climate, biodiversity, and human impact. The project uses existing and historical data to increase understanding of these relationships.

CDF scientists will analyze the adaptability of Galapagos to climate change and predict the ecosystem response to changes in the frequency and strength of El Niño events, rainfall patterns, rises in sea temperature, sea level change, and acidification of the world's oceans.





Research will confirm the priority vulnerable species and prepare management plans to reduce human-caused threats from fishing, tourism, and other activities of the human population in Galapagos. Scientists suspect that Galapagos penguins, marine iguanas, and mangrove stands are particularly susceptible to climate change. Land-based reptiles, adapted to arid conditions, and whose reproductive patterns (gender development) depend on the ambient nest temperature, will also be studied.

Global climate change could also cause shifts in global resources, markets, and economies that will influence the livelihoods of Galapagos inhabitants. Studies will seek to anticipate such impacts on the Galapagos economy in order to help the local population to adapt.

The project will incorporate scientific research, community outreach, and advice to management authorities to create a long-term monitoring system for Galapagos which will enable better planning and decision-making.

We seek answers to these critical questions:

- How will the Galapagos ecosystem respond to climate change?
- Which endemic species or communities are most vulnerable and which require the most protection?
- How will invasive species, one of the most significant threats to Galapagos, respond to climate change, affect ecosystem resilience, and alter conservation priorities?

Financial Report

The financial statements are expressed in accordance with International Financial Reporting Standards (IFRS) and have been audited by the firm of BDO Stern in keeping with the requirements of the Government of Belgium.

Revenue

Revenue for 2008 amounted to US\$3,671,440, 13% less than in 2007 because of the downturn in international markets and the global economic plunge into a severe recession, which affected CDF's expected contribution flow.

The international community continues to be the mainstay of our programs and the primary support for the fulfillment of our goals.

Revenue from Government Organizations fell by 65% as the result of the conclusion of several undertakings, among them the Incofish and UNDP projects, but this gap was filled by funds received from Private Enterprise and Nongovernmental Organizations, which were 18% and 44% higher than in 2007, respectively.

Expenditures

Revenue received in 2008 served to fund 62% of the Research, Technical Assistance, and Information programs for the advancement of the CDF mission.

Expenses were targeted to supporting research, monitoring, and species-control activities in the archipelago; to establishing an ambitious strategy in the area of education for sustainability; and to providing continuing advice and support to partner institutions. A very important part was investment in the Scholarship and Volunteer Program, which gave priority to the local community, with an emphasis on capacity building for conservation of the environment.

Administrative expenses in 2008 amounted to 26% of total expenditures. Emphasis was placed on maintenance and improvement of facilities and buildings, physical safety, and electrical maintenance, which was a major expense.

Charles Darwin Foundation for the Galapagos Islands (AISBL) Balance Sheets (in US dollars)

December 31,		2008	2007
Assets			
Fixed assets			
Fixed assets	(Note A)	453,646	600,234
Other assets		24,859	25,751
Prepaid expenses		386	-
Total fixed assets		478,891	625,985
Current assets			
Stocks	(Note B)	107,599	148,283
Accounts receivable	(Note C)	433,934	388,187
Temporary investments	(Note D)	84,429	351,590
Cash	(Note E)	212,689	771,053
Total current assets		838,651	1,659,113
Total assets		1,317,542	2,285,098
Net worth and liabilities			
Capital fund	(Note F)	479,595	479,595
Restricted assets	(Note G)	588,303	588,303
Capital reserve	(Note H)	-1,059,838	-1,059,838
Accumulated surplus	(Note I)	682,678	1,561,399
Foundation's total net worth		690,738	1,569,459
Long-term liabilities			
Employer retirement, severance pay, labor suits and contingencies	(Note J)	297,620	212,505
Short-term liabilities			
Deferred income	(Note K)	-	232,905
Liabilities to workers	(Note L)	90,275	52,375
Accumulated expenses payable		22,239	13,968
Accounts payable	(Note M)	216,670	203,886
Total short-term liabilities		329,184	503,134
Total liabilities		626,804	715,639
Total net worth and liabilities		1,317,542	2,285,098

Charles Darwin Foundation for the Galapagos Islands (AISBL)
Cash Flow Statements (in US dollars)

Years ending on December 31	2008	2007
Cash flows from operating activities:		
Cash received from donors and for services rendered	3,595,081	4,173,378
Cash paid out to suppliers, projects and employees	-4,376,551	-4,245,774
Interest received	-	23,078
Other income, net of expenses	18,724	97,295
Net cash provided (utilized) in operating expenses	-762,746	47,977
Cash flows from investment activities:		
Decrease (increase) in temporary investments	267,161	-140,311
Cash received from sale of fixed assets	13,438	-
Payment for fixed asset purchases	-36,755	-17,098
Net cash provided (utilized) for investment activities	243,844	-157,409
Cash flows from financing activities:		
Payment of employer retirement, severance pay, labor suits and quotas	-39,462	-9,215
Net cash utilized in financing activities	-39,462	-9,215
Decrease net of cash	-558,364	-118,647
Cash at the start of the year	771,053	889,700
Cash at the end of the year	212,689	771,053

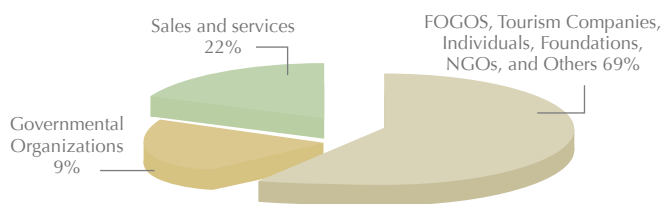
Charles Darwin Foundation for the Galapagos Islands (AISBL)
Statement of Changes in Net Worth (in US dollars)

Years ending on December 31	2008	2007
Capital fund		
Starting balance	479,595	99,725
Transfer of prizes	-	37,925
Transfer of fixed assets	-	50,000
Transfer of capital reserve	-	291,945
Closing balance	479,595	479,595
Restricted assets		
Starting and closing balance	588,303	588,303
Capital reserve		
Starting balance	-1,059,838	-767,893
Transfer to capital fund	-	-291,945
Closing balance	-1,059,838	-1,059,838
Accumulated surplus		
Starting balance	1,561,399	1,048,159
Adjustment revenue previous years	226,795	923,317
Adjustment fixed assets previous years	-58,664	-
Adjustment effect employer retirement and severance pay previous years	-68,015	-
Adjustment expenses previous years	-46,928	-
Net deficit	-931,909	-410,077
Closing balance	682,678	1,561,399
Foundation's total net worth	690,738	1,569,459

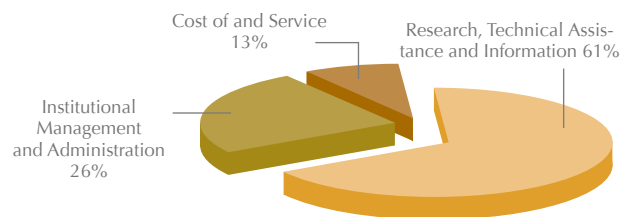
REVENUES	2007	2008
FOGOS, Travel Partners, Individuals, Foundations, NGOs and others	2.476.930	2.537.544
Government Organizations	921.023	324.929
Sales and Services	841.643	808.966
Total Revenue	4.239.596	3.671.440

EXPENDITURES	2007	2008
Research, Technical Assistance and Information	3.010.055	2.775.046
Institutional Management and Administration	1.096.069	1.146.695
Cost of Sales and Services	412.224	564.238
Total Expenditures	4.518.349	4.485.980
Depreciation	131.324	117.370

REVENUES 2007



EXPENDITURES 2008



Donors 2008 -2009

As we celebrate the many scientific advances made by our distinguished colleagues over the years, we are not only inspired by their example to seek ever deeper insights into this magnificent ecosystem in all its grandeur and complexity, but also acknowledge that our success depends on the generosity of individuals and organizations from around the world. As we have evolved over the past half century, CDF has provided knowledge and assistance to ensure Galapagos conservation, and it is the trust and ongoing commitment of our supporters that enables our legacy to endure. In appreciation of all those who contributed to the CDF mission, we wish to say: "Thank you."

Business

- BESS Forest Club ^E
- International Watch Company Schaffhausen
- Keidanren Nature Conservation Foundation
- Lindblad Expeditions ^B
- OMAS (Officina Meccanica Armando Simoni)

Foundations

- Basler Stiftung fur Biologische Forschung ^D
- Bay and Paul Foundations ^B
- Bedell World Citizenship Fund ^B
- Boston Environmental Research ^B
- Cameron Foundation ^B
- Erwin Warth Stiftung ^C
- Galapagos Conservation Fund Japan
- Leona M. and Harry B. Helmsley Charitable Trust
- Peaceboat
- Stanley Smith Horticultural Trust (UK) ^A
- The Oak Foundation
- Planet Action
- Toyota Environmental Activities Grants Program
- Turner Foundation, Inc. ^B
- Wildlife Conservation Society
- Young Presidents Organization

Government, Bilateral and Multilaterals

- Aerolíneas Galápagos AEROGAL
- Araucaria (Spain)
- Belgian Science Policy
- British Embassy
- Darwin Initiative (UK)
- Delegación de la Comisión Europea
- Galapagos National Park Service (Ecuador)
- Government of the Netherlands
- INAMI (Ecuador)
- Max Planck Institute (Germany)
- NASA (US)
- NOAA (US)
- St. Louis Zoological Park (US)
- TAME-Linea Aerea del Ecuador
- UNESCO
- USAID
- US Embassy

Non-Governmental Organizations

- BBC Wildlife Fund ^A
- Conservation International Ecuador
- Conservation International USA
- ECWF (Emergency Communication Without Frontiers)
- IUCN
- Penguin Fund of Japan
- WWF
- WWF Galapagos

Travel Partners

- Discovery Initiatives
- Galapagos Travel ^B
- Galapagos Aggressor I & II
- International Galapagos Tour Operators Association-IGTOA ^B
- Intrepid Foundation
- Lindblad/National Geographic Fund
- Metropolitan Touring
- Ocean Fund of Royal Caribbean ^B
- South American Tours
- Steppes Discovery

Individuals

- Edward P. Bass ^B
- Gustav Bergman
- Seth Chwast
- Joseph and Marie Field
- Rabbe Groenblom
- Ahti Heinla
- Cleveland Hickman ^B
- Luc Hoffman
- Michael Klett
- Newell Knight
- Ken Krushel ^B
- Sven Lorenz
- Millikin University Biology Class 2009
- Kenneth and Diane Saladin ^B
- Timothy Silcott
- Stanford University Alumni Travel/Study Program
- Jann Wenner
- Mark Wyner

Some of CDF's support is received through partnerships with Friends of Galapagos Organizations (FOGOs) A) Galapagos Conservation Trust B) Galapagos Conservancy C) Frankfurt Zoological Society D) Swiss Friends of Galapagos E) Japan Association for Galapagos

Friends of Galapagos Organizations FOGOs



CDF is privileged to count on the commitment of independent non-profit organizations throughout the world known as Friends of Galapagos Organizations (FOGOs). FOGOs raise funds and awareness in support of conservation in Galapagos within their respective countries by developing long term relationships with donors and administering specific grants included in the CDF donor list. We extend our appreciation to these loyal partners.

- Charles Darwin Foundation of Canada
- Frankfurt Zoological Society
- Friends of Galapagos Netherlands
- Friends of Galapagos New Zealand
- Galapagos Conservancy (US)
- Galapagos Conservation Trust (UK)
- Galapagos Darwin Trust (Luxembourg)
- Japan Association for Galapagos (JAGA)
- Nordic Friends of Galapagos
- Swiss Friends of Galapagos

General Assembly Members

The General Assembly is the governing body of the CDF and reflects its international character. Members include scientists, philanthropists, Ecuadorian Government officials, and others dedicated to the CDF mission. The Assembly sets policy, issues regulations, elects the Board of Directors, and approves the operating plan and budget. The President of the CDF presides over the General Assembly at its annual meeting in Ecuador.

Board

- Peter Kramer – President
- Rodolfo Rendón - Vice President
- Pablo Iturralde - Treasurer
- Sylvia Harcourt-Carrasco – Secretary
- Foreign Affairs Ministry
- Robert Bensted-Smith
- Dennis Geist
- Randal Keynes
- Barbara West

Honorary members

- Rodrigo Borja Cevallos
- Sixto Duran-Ballén
- Oswaldo Hurtado Larrea
- Plutarco Naranjo
- Roger Perry
- Tom Simkin

Active institutional members

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- Frankfurt Zoological Society
- Galapagos Conservancy
- Galapagos Conservation Trust
- Galapagos National Park
- Geographic Military Institute
- National Galapagos Institute (INGALA)
- National Fishery Institute
- Naval Oceanographic Institute (Inocar)
- IRD
- Max-Planck-Institute for Ornithology
- Metropolitan Touring
- Ministry of Environment
- Ministry of Agriculture and Livestock (MAG)
- Ministry of Tourism
- Museum of Natural Sciences
- Presidency of Ecuador
- Senacyt
- Smithsonian Institution
- UNESCO
- Vice Presidency of Ecuador
- International Union for Conservation of Nature (IUCN)

- WWF – Galapagos
- WWF

Active members (individuals)

- David Anderson
- Laura Arcos
- Alfredo Arévalo Tello, M.Sc.
- María Eulalia Arízaga de Balfour
- Léon Baert
- Oswaldo Báez
- David Balfour
- Bernardo Beate
- Rodrigo Bustamante
- Luis Calvopiña
- Linda Cayot
- Segundo Coello
- Guy Coppois
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- Desirée Cruz
- Sarah Darwin
- Tui De Roy
- Dolores Gangotena de Diez
- Irenaeus Eibl-Eibesfeldt
- Fernando Espinosa
- Joe Flanagan
- Emma Flor de Tejada
- Lynn Fowler de Abad
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- Óscar Gordillo
- Peter Grant
- Rosemary Grant
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- Luis Maldonado Robles
- Kazumi Matsuoka
- Conley K. McMullen
- Godfrey Merlen
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- Fritz Trillmich
- Roberto Troya
- Carlos Valle
- Hernán Vargas
- José L. Villa
- Tjitte de Vries
- Pádraig Whelan
- Martin Wikelski

Correspondings members

- Katherine Coolidge
- Felipe Cruz
- Kay T. Dodge de Peraza
- Jacinto Gordillo
- Cleveland Hickman Jr.
- Marinus S. Hoogmoed
- Charles Huttel
- Richard Keynes
- Bernard Landry
- John Lastavica
- Duncan Porter
- José Rodríguez Rojas



Staff Santa Cruz

We are CDF 2008 - 2009

The efforts of the CDF depend on a hardworking and dedicated group of people. More than 70% of CDF staff is permanent resident in Galapagos and nearly 90% are Ecuadorian.

- Daniel Acurio
- Fernando Andrade
- Andrea Angulo
- Yasmín Asunción
- Rachel Atkinson
- Ronal Azuero
- Alejandra Ballesteros
- Enrique Ballesteros
- Lorena Balón
- Stuart Banks
- Juan Barreno
- Israel Bravo
- Carola Buitrón
- Frank Bungartz
- Fredy Cabrera
- Goberth Cabrera
- Angela Cadena
- Sandy Calderón
- Roslyn Cameron
- Wellington Carrión
- Wilson Carrión
- Mauricio Castrejón
- Williams Castro
- Ruben Ceballos
- Víctor Chang
- Freda Chapman
- Martha Chica
- María Chilinguinga
- Sonia Cisneros
- Alex Cortez
- Paulina Couenberg
- Felipe Cruz
- Adelita Cruz
- David Cruz
- Julio Delgado
- Pilar Díaz
- Olivier Devieau
- Santiago Espinel
- Elena Farías
- Luis Fernandez
- Birgit Fessl
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- Ivonne Guzmán
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- Alex Hearn
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- Henri Herrera
- Jorge Herrera
- Janhella Insuasti
- Jorge Intriago
- Aldo Jaramillo
- Patricia Jaramillo
- Delsy Jaramillo
- José Jiménez
- Yamer Jiménez
- Freddi Jiménez
- Gustavo Jiménez
- Juan Leon
- Piedad Lincango
- Alizon Llerena
- Yasmania Llerena
- José Loayza
- J. Gabriel López
- Marcelo Loyola
- Andrea Marín
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- María Teresa Martínez
- José Mazaquiza
- Alejandra Mejía
- Luis Molina
- Evelyn Montalván
- Francis Mora
- Henry Mora
- Simon Mora
- Walter Mora
- Mariuxi Moreano
- Jerson Moreno
- Jasmany Moreno
- Francisco Morenos
- José Naula
- Francis Nicolaidis
- Marisol Ochoa
- Mario Olaya
- Alex Ontaneda
- Ana Ortega
- Jimena Pacheco
- Ximena Pacheco
- Mariela Padilla
- Roberto Palacios
- Marco Paz
- Jorge Pazmiño
- Claudio Peñafiel
- Jaime Peñafiel
- César Peñaherrera
- Roberto Pépolas
- Amable Pilla
- Mercedes Pincay
- Roberto Proaño
- Olger Quishpe
- Enrique Ramos
- Luis Ramos
- Solanda Rea
- Bolivia Rentería
- Daniel Rivas
- Patricia Robayo
- Angélica Rodríguez
- Bolívar Romero
- Cristina Ron
- Lázaro Roque
- Edgardo Rubio
- Sara Ruiz
- Diego Ruiz
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- María Santillán
- Anna Schuhbauer
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- Saskia Silva
- Miriam Silva
- Sayonara Suárez
- Sandra Tapia
- Mónica Tigse
- Natalia Tirado
- Ma. Fernanda Tomalá
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- Alejandro Tupiza
- Janina Valarezo
- Carlos Vega
- Verónica Veliz
- Angela Vera
- Mariana Vera
- Sophie Veran
- Gabriela Verdesoto
- Graham Watkins
- Matthias Wolff
- Geoconda Zambrano
- Patricia Zárate



Staff Quito



Staff San Cristóbal



Staff Isabela

Scholars

CDF offers scholarships to exceptional students in Galapagos and provides financial aid and other forms of support to promising Ecuadorian postgraduate students in the fields of conservation, science, and education.

Galapagos Scholars

Susanita Araujo, Magaly Balladares, Carolina Carrión, Johanna Carrión, María Escarabay, Cristina Espinar, Sandra García, Vanessa Jalka, Edgar Masaquiza, Natasha Oviedo, Grac Pesantes, Felix Reyes, Jenifer Suárez, Wagner Vernaza, Juana Villón.

Galapagos Thesis Scholars

Edison Arturo, Ana Carrión, Javier Carrión, Omar Castillo, María Castro, Lady Márquez, Verónica Michuy, Francis Mora, Fredy Nugra, Edgar Vélez.

National Thesis Scholars

María González, Ángela Kuhn, David Loaiza, Edison Lomas, Viviana Morales, Jorge Rentería, Raquel Valencia.

Volunteers

National and international students and professionals who volunteer benefit from a hands-on conservation experience with the CDF. Their considerable expertise and dedication contributes to building the Foundation's capacity to effectively respond to the challenges facing Galapagos.

Local volunteers

Paulo Altamirano, María Arce, Diana Ávila, Augusta Balladares, Jorque Baque, María Buitrón, Jhon Calderón, Natalia Calle, Christian Castro, María Castro, William Castro, José Cedeño, Nuria Cedeño, Katherine Cevallos, Alicia Coello, Donna Daugherty, Mireya Freire, Grecia Gálvez, Genaro Garcés, Jonathan Gómez, María Hidalgo, Ana Iza, Daniel Lara, María Logroño, Carmen López, Diana Loyola, Rosario Martínez, Luciana Masaquiza, Pablo Mejía, Evelyn Montalván, Miriam Muñoz, Jonathan Ortuño, Jeniffer Palma, Marco Paz, Byron Pilataxi, Verónica Precilla, Tania Quisingo, Felix Reyes, Felix Javier Reyes, Jessenia Reyes, Daniel Sabando, Diana Salazar, Betzy Sánchez, Edwin Sánchez, Ema Sánchez, Washington Sandoval, Miriam Silva, Andrea Tález, Mónica Tigse, Olivier Tisalema, Yanella Tutivén, Angel Ulloa, Rosa Vargas, Cristian Vargas, Mario Yépez, Wilson Zambrano, Carolina Astudillo, Fátima Barreno, Pamela Barrera, Cinthya Cargua, Lourdes Carrillo, Cindy Palma, Stefanie Schreyer, Jennifer Vásquez.

National volunteers

Sofía Acosta, Pablo Acosta, Estefanía Baquerizo, Emilio Castro, Claudio Creso, Valeria Dután, Belén Egas, Luis Espinoza, Mari Jaramillo, Walter Jimbo, Flora Macías, Andrés Marchant, Sofía Márquez, Ana Naranjo, Roberto Palacios, Rocío Paredes, Karina Paredes, Sandra Pozo, Fabián Puebla, Juan Real, José Rivera, Juan Rodríguez, Marco Rodríguez, José Ruiz, Eduardo Sandoval, Oscar Suing, Pablo Tamayo, Sabrina Tapia, Darío Veintimilla, Gabriela Vergara, Pamela Villarreal.

National FAE volunteers

Wilmer Cando, Nestor Cobos, Marcelo Coronel, Diego Jiménez, Juan López, Xavier Paredes, Marco Reascos, Héctor Roman, Jhon Urgilés, Pablo Vaca,

International volunteers

Anna Dolma, Juliet Bell, Stephen Blake, Jill Blythe, Thomas Bogard, Manuela Borja, Trevor Brown, Jamie Bruce, Henrik Brumm, Emily Buettner, Ethan Burton, Karina Busto, David Carroll, Samuel Clarke, Emmanuel Cléder, Marcel Comtois, Elizabeth Corry, Ernest Craigie, Sara d'Ozouville, Sharon Deem, Michael, Dvorak, Sara Dyer, Julis Endris, María Espinosa, Alejandro Espinosa, Dale Foster, Harriet Good, Jennifer Gouveia, Clarie Havens, Peter Hiemstra, Alison Hillegeist, Kristin Jacobi, Marco Jenis, Niels Jobstvogt, Gabrielle Jonhson, Christina Kachulis, Vincent Kneefel, Daniel Knight, Elizabeth Knight, María Eva Koziner, Philip Kramer, Jacob Krushel, Annika Krutwa, Lilith Kuckero, Beryl Manning-Geist, Ann Margillo, Robert Marino, Steven Miller, Lilly Milligan, Alycia Monopoli, Clarissa Niewiadomski, Etienne Ouvrad, Lucy Owen, Macarena Parra, Ian Perkins, Mahome Prager, Nadine Rachimow, Verena Rademaker, Claire Rainford, Margarita Roa, Mariantú Robles, Eva Rodríguez, Vivian Salas, Julia Schwartz, Robert Silberman, Anne Simonis, Marten Sims, Amy Snyder, Sarah Stewart, Elizabeth Swanton, John Tiernan, Nilam Trivedi, Amanda Trueman, Christina Tubb, Marta Tufet, Jacintha Van Beveren, Emma Walden, Catherine Wigglesworth, Mark Williams, Mary Witoshynsky, Francis Woods, Frauke Ziemmeck.

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Visiting Scientists

Abzhanov Arkhat (Harvard University-National Science Foundation) Genetic Bases for Beak Development in Darwin's Finche • Ricardo Mallarino • Gabriel Granja • Francisco Moscoso.

Altamirano Marco-Zaher Hussam (Universidad de Sao Paulo-Museo Ecuatoriano de Ciencias Naturales) Molecular Phylogeny and Phylogeography of Snakes of the Genera *Alsphi*, *Philodryas* and *Antillophis* in the Galapagos Archipelago • Luciana Moreira • Felipe Gobbi • Miguel Trefaut • Mario Yáñez.

Anderson David (Wake Forest University-National Science Foundation) Galapagos Seabird Monitoring Program • Carlos Zavalaga • Carolina Proaño • Sebastián Cruz • Steve Emslie • Kathryn Huyvaert • Paul Doherty • Teresa Maness • Jacqueline Grace • Donald Mitchell • Abby McBride.

Baert Léon (Royal Belgian Institute of Natural Sciences) A Contribution to the Study of Evolutionary Ecology, Biogeography and Systematics of Terrestrial Arthropods in the Galapagos Archipelago with Emphasis on Spiders and *Coleoptera Carabidae* • Charlotte De Busschere • Steven Van Belleghem • Wouter Dekoninck • Frederik Hendrick.

Bausch Marlene (University of Bremen) Communities of Microorganisms in Galapagos Saltwater Lagoons.

Chadwick William (Oregon State University-National science Foundation) Monitoring Sierra Negra Volcano • Nathalie Vigouroux • Kim Berlo • Abraham Morrison.

Chaves Jaime (California University) Deciphering the Origin of the Galapagos Canary (*Dendroica Petechia Aureola*) and its Importance for Conservation of Unique Evolutionary Lineages • Wolfgang Buermann • Johann Besserer.

Clayton Dale (University of Utah-National Science Foundation) Impact of Introduced and Native Ectoparasites on Darwin's Finches • Jennifer Koop • Roger Clayton • Celine Le Bohec.

Dowler Robert (Angelo State University) Conservation Strategies for the Galapagos Rice Rat of Santiago Island • Danny Wharton • Marilyn Hoyt • Mario Yépez.

Ebinger Cynthia & Geist Dennis (University of Rochester and National Science Foundation) Magma Migration under the Ferdinand and Sierra Negra Volcanos • Jane Hjelm • Eliana Arias-Dotson • Falk Amelung • Daniel Pacheco • Mario Ruiz.

French Susannah (Indiana University) Effects of Human Disturbance on the Health and Susceptibility of Galapagos Marine Iguanas (*Amblyrhynchus Cristatus*) • Dale DeNardo • Dianne DeNardo • Timothy Greives • Christine Strand • Christian Pílamunga • Trevor Brown

Gibson Sally & Geist Dennis (University of Cambridge) Temporal and Spatial Variations in Volcanic Activity on Santiago. • Andrew Thurmann • Fernanda Hidalgo.

Geist Dennis (Idaho University-National Science Foundation) Magma Migration under the Sierra Negra Volcano • Nathalie Vigouroux • Andrés Ruiz • Sally Gibson • Andrew Thurmann.

Glynn Peter (University of Miami - Rosenstiel School of Marine and Atmospheric Science) Galapagos Island Coral Reefs: Following the Course of 30 Years of Changes • Ian Enochs • Derek Manzello • Adrienne Simoes.

Grant Peter (Princeton University-National Science Foundation) Ecology of Darwin's Finch Populations on Daphne • Rosemary Grant.

Hubber Sarah (University of Utah) Impact of Introduced and Native Ectoparasites on Darwin's Finches • Dale Clayton • Jannifer Koop • Sarah Bush.

Haberle Simon & Froyd Cynthia (National Australian University-Oxford University) Human Colonization and Environmental Changes in the Galapagos Islands, Remote Islands in the Eastern Pacific Ocean • Alsitair Seddon • Emily Coffey • Salome Maldonado.

Keller Lucas (University of Zurich) Galapagos Mockingbird Interbreeding and Disease Susceptibility Study • Paquita Hoec • Juerg Stauffer • Michele Wegmann • Fernanda Holguín.

Kleindorfer Sonia (Flinders University of South Australia-Max Planck Institute) Understanding *Philornis Downsi* Behavior and Impact on Darwin's Finches • Jody O'Connor • Maricruz Jaramillo • Noni Allen • Toby Galligan • Zonnetje Auburn.

Mackie Roderick (University of Illinois) Study of Environmental and Anthropogenic Stress on Galapagos Marine Iguanas: Methanogenic and Metabolic Analysis of Intestinal Microbial Fauna in Marine and Land Iguanas of the Galapagos Island • Emily Wheeler • Augusto Haz Beltrán.

Sachs Julian (University of Washington) Sediment Sampling from Flamingo lagoon on Floreana • Alyssa StWood • Daniel Nelson • Gabrielle Rocap • Simon Haberle.

Starks Phillip & Sulloway Frank (Tufts University) Examining the Genetics of the Invasive Wasp *Polistes Versicolor* in the Galapagos Islands • Charles Lamme • Christopher Sasaki • Daniel Sabando • Eric Evans Rorer • James Costa • Robert Smith • Ryan Buss.

Sulloway Frank (University of California) Following Darwin's Steps in the Galapagos Islands and Documenting Ecological Changes Since his Visit. • Charles Lamme • Christopher Sasaki • Daniel Sabando • Eric Evans Rorer • James Costa • Robert Smith • Ryan Buss.

Tebich Sabine (Austrian Science Foundation-Max Plank Institute for Ornithology) Flexibility Study on Darwin Finch Behavior and Its Importance in the Woodpecker Finch's Use of Tools • Irmgard Teschke • Sophia Stankewitz • Mari Cruz Jaramillo

Trillmich Fritz (Bielefeld University-Max Planck Institute for Ornithology). 1) Social Structure in Sea Lion Colonies 2) Ontogeny of Diving Behavior in the Galapagos Sea Lion • Birte Mueller • Ulrich Poerschmann • Casey Younglesh • Christian Suárez • Diana Serrano • Kristine Meise • Paolo Piedrahita • Katharina Strauss • Jana Jeglinski • Valentina Franco • Daniel Costa • Stella Villegas • David Anchundia • María Szephegyi • Sara Maxwell • Enzo García • Birgitte McDonald.

Violette Sophie (Pierre et Marie Curie University of Paris) Study of Hydrological Functioning in the Galapagos Islands • Alexandre Pryet • Clara Castro • Noémie d'Ozouville • Benoit Deffontaines • James Ramm.

Adjunct Scientists

Adersen Henning (University of Copenhagen) Vegetation recovery and tortoise reintroduction on Española and Pinta.

Alava Juan Jossé (Simon Fraser University) Sea Lion Project • Franciscus Gobas.

Baker Susan (Graham Edgar) Climate Change Workshop

Blake Stephen / M Wikelski (Max Planck Institute for Ornithology) Ecology of the Restoration of the Giant Tortoise on Santa Cruz, Galapagos • Greg Marshall • Kyle Abernathy • Elham Sadeghayobi.

Clerc Philippe (Botanical Gardens, Geneva) The Lichen Genus *Usnea* in the Galapagos Islands • Camille Truong • María de Los Angeles Herrera

Collins Kenneth (University of Southampton) Development of Marine Research Projects with the National Oceanography Centre in England • Jennifer Mallinson.

Conner William (Wake Forest University) Evolution Chemical Ecology and Conservation of *Archtilidae* in the Galapagos Islands • Michelle Dacosta • Sarah Garret.

Deem Sharon / Parker Patricia (University of Missouri-St. Louis and St. Louis Zoo) Early detection of introduced diseases in native and domestic birds.

Edgar Graham (Conservation International-DAAD) Subtidal Ecological Monitoring/Distribution of Species with Climate Change.

Fierke Melissa (State University of New York) *Philornis* Control • Warren Helman • Max Collington.

Gibbs James (American Bird Conservancy) 1.) Restoration of the Albatross Nesting Habitat on Española Island • Hara Woltz. 2.) "Galapagos Conservancy Consultancy.

Hodde Mark (University of California – Riverside and University of Massachusetts) Assessment of *Rhodolia cardinales* Introduction in Galapagos • Christina Hodde • Charlotte Causton • Roy Van Driesche • Piedad Lincango.

Howarth Peter (Santa Barbara Marine Mammal Center) Sea Lion Project • Edward Stetson • Charles Powell • Danielle Storz • David Noble • Joseph Geraci • Natalie Nelson • Nathan Stebor • Samantha Crane.

Huyvaert Kathryn (Colorado State University) Albatross Monitoring.

Jäger Heinke (Experimental Management) Monitoring of Remaining Red Quinine Tree Quadrants in the Highlands of Santa Cruz.

Klimley Peter (University of California, Davis) Shark Research and Conservation in the Galapagos Marine Reserve • James Ketchum • Alex Hearn • Taylor Chapple.

Morrison John (NASA – UNCW) Marine Research Area's Community and Ecosystem Research and Monitoring Unit • Gene Feldman.

Muñoz Ramón (Universidad de la Coruña) Special Management of the Spiny Lobster Resource in the Galapagos Islands • Pablo Pita.

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To provide knowledge and assistance, through scientific research and complementary action, to ensure the conservation of the environment and biodiversity in Galapagos.



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