Galapagos Conservancy Saving One of the World's Great Treasures

ANNUAL REPORT 2019 www.galapagos.org



Lava Lizard © Dana Carson



2019 was a year of fascinating discoveries and great achievements. Galapagos still has the power to surprise us and nothing was as astonishing AMBASSADOR SOCIETY MEMBERS: 445 give \$1,000+ annually

GALAPAGOS GUARDIAN SOCIETY MEMBERS: **556** give monthly

GALAPAGOS LEGACY SOCIETY **55** have committed to making planned gifts

to the scientific community as the discovery of a single female tortoise on Fernandina, over one hundred years since the last tortoise was found. Subsequent efforts to find more tortoises have been stymied by volcanic eruptions and bad weather, but the conservation community is relentlessly optimistic. We believe that throughout the Archipelago

there are more discoveries to be made, more information to be gleaned from the natural world both terrestrial and marine. The enclosed report will reveal great achievements in tortoise conservation, educational reform, invasive species research and mitigation and native species protection. None of this would be possible without the support and encouragement of our supporters and the sense of purpose and mission we are fortunate to share.

For Galapagos,

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Johannah E. Barry, President

PROGRESS REPORT FOR 2019



GIANT TORTOISE RESTORATION INITIATIVE

© GTRI

A collaborative effort led by Galapagos Conservancy (GC) and the Galapagos National Park Directorate (GNPD), the Giant Tortoise Restoration Initiative (GTRI) remains dedicated to achieving its long-term goal of restoring tortoise populations to their historical distribution and numbers across Galapagos.

Santa Fe

In February a new cohort of juvenile Española tortoises was released on Santa Fe. Intensive monitoring and analysis suggests 99% of the released population remains alive. Additionally, 60 wildlife cameras were installed which are currently taking 10 to 100 images per day of passing wildlife (all species, at all times of the day and night). These photos will be analyzed and used to examine interactions between the tortoises and other fauna.

Santiago

Initial surveys in 2018-2019 reveal that Santiago has a very low number of adult female tortoises. In order to help restore this population to historical numbers, a management plan for this species is being developed around harvesting eggs and incubating them in the breeding center at female-producing temperatures with the target of releasing female hatchlings back to Santiago over a decade or more.

Santa Cruz

GTRI staff explored all areas between Puerto Ayora and the nesting zone named "La Torta" in order to determine the migration route of tortoises that are reaching the outskirts of Puerto Ayora. All tortoises were marked with microchips to determine their movements. GTRI staff and park guards discovered what is likely a new, previously unknown nesting area near Puerto Ayora from which many of the tortoises may be emanating.





A GTRI volunteer installs a camera on rocks (left); a young tortoise saunters under a camera attached to a cactus tree (right) © H. Goldspiel / GTRI.



Marking a tortoise in the field for future identification © GTRI.



A Park ranger collects data on a Darwin Volcano tortoise © Wacho Tapia / GTRI

Española

A large expedition was undertaken in August that evaluated the state of the tortoise population after 50 years of restoration, secured 31 subadult tortoises for translocation to Santa Fe island, advanced cactus restoration on the island and secured high resolution images of the tortoise habitats to monitor changes into the future.



GNPD Ranger Jeffreys Málaga in the field © GTRI

Darwin Volcano (Isabela)

After intense preparation, 11 hours on the R/V Sierra Negra, and with the help of a helicopter, thirty scientists and park rangers covered approximately 200 square kilometers of the volcano during a ten-day expedition in November. They managed to locate, take data from, and mark 1,150 tortoises with microchips. GTRI Director, Wacho Tapia, reports that a healthy population of growing giant tortoises, large numbers of Opuntia cacti, and an abundant presence of bird species are several indicators that the ecosystem on Darwin Volcano is recovering after the eradication of wild goats there in 2006.

Fernandina

GC's Wacho Tapia and Galapagos National Park ranger Jeffreys Málaga discovered a female tortoise on Fernandina during an expedition to the island. Fernandina tortoises (*Chelonoidis phantasticus*) were believed to be extinct for more than a century, making this a truly monumental find. The tortoise was transferred to the breeding center on Santa Cruz Island and geneticists at Yale University will evaluate a blood sample to confirm her genetic origin.





Teachers participate in an exercise that demonstrates the interconnectedness of different components of an ecosystem © Jóvenes Fotógrafos de Galápagos

EDUCATION FOR SUSTAINABILITY

Over the past year the Education for Sustainability in Galapagos Program (ESG Program) continued to work towards its goal of ensuring that the 7,000+ preK-12 students in the Islands graduate from high school as conservation-minded architects of a more sustainable Galapagos.

The ESG Program is different than most extra-curricular environmental education initiatives in that we believe that the right kind of formal education, starting in PreK and continuing through high school, provides a powerful platform for helping young people develop the environmental knowledge, skills and commitment (environmental literacy) needed anywhere, and especially in protected areas like Galapagos.

During 2019, 400 teachers and school principals participated in an average of 120 hours of intensive professional development to help them master a toolkit of proven strategies for teaching core subjects in the context of local ecological, cultural, and social issues and cross-cutting sustainability principles.

"This is an exciting program, in many ways. One of the coolest things about it is the re-investment of an environmental organization in education—more than that—an investment in foundational education reform work at a wonderfully high level. This is valuable not least in light of the historical tensions between environmental education and formal education."

Dr. Noah Feinstein, University of Wisconsin. Dr. Feinstein moderated of the ESG Program's presentation at the 2019 AREA Annual Meeting.

Teachers in action

Over the past year, 6th grade students designed and conducted a survey, by boat, to document terrestrial and marine species along the coast of Puerto Ayora. They then studied food sources and reproductive cycles of the species observed. Middle school students interviewed townspeople regarding dietary habits and the source of food they consume, to better understand local food systems as they relate to nutrition and invasive species. High school students analyzed plastics and microplastics on three different Galapagos beaches, attempted to identify their origin, and then planned and coordinated clean-up campaigns.



Biology teachers enter data collected during a field exercise © Buró Comunicación Integral



These are just a few examples of the new kinds of handson, place-based learning opportunities Galapagos teachers facilitated during 2019. We have much more to do before this kind of learning becomes the norm, but we are thrilled by the remarkable creativity and commitment being demonstrated by most participating teachers.

Sharing our experiences

In April 2019, the ESG Program was invited to share various aspects of its professional development model at the Annual Meeting of the American Education Research Association (AERA) in Toronto. Presentations focused on: our public-private partnership approach; how Intercultural Education Programs (special curricula designed for indigenous groups in Ecuador) can be adapted to meet the needs of unique locations such as Galapagos, while addressing the needs of the indigenous groups (in the



Data collection in the field © Jóvenes Fotógrafos de Galápagos

case of Galapagos, the Salasaca community with roots in Ecuador's Tungurahua Province) the programs are meant to serve; teacher contextualization of the Ecuadorian national science curriculum to local realities; and changes in teacher understanding of Education for Sustainability.

Several team members also contributed to an article entitled, "Contextualizing the Ecuadorian National Science Curriculum: Perspectives of Science Teachers in the Galapagos Island." This article will be included as a chapter of a book entitled "International Perspectives on the Contextualization of Science Education," to be published by Springer publishers in early 2020.





Data collection in the field during the June Teacher Institute © Buró Comunicación Integral



© Jóvenes Fotógrafos de Galápagos

CONTROL OF INVASIVE SPECIES

Invasive species (including the parasitic fly *Philornis downsi*) continue to be among the greatest threats to the native and endemic species of Galapagos. The multi-year work of Galapagos Conservancy, along with our partners at the Charles Darwin Foundation, Galapagos National Park Directorate, and the Galapagos Biosecurity Agency, remains dedicated to finding solutions to these challenges.



© Nicolás Moity



Threats to Landbirds

The first ever landbird counts on the islands of the Galapagos Archipelago neared completion this year and while some populations fared better than others, initial analysis has revealed a decline in at least 20% of these populations. Landbirds on the inhabited islands were particularly impacted. The multi-agency Landbird Conservation Project is bringing together invasive plant experts, restoration specialists, and specialists in sustainable agriculture practices to develop holistic conservation plans for these species using experimental and innovative approaches. This year three chemical compounds were identified from the endemic quayabillo plant that effectively deter mosquitoes (and possibly *P. downsi*) and new discoveries regarding the biology of *P. downsi* were made as well, which will aid in the development and evaluation of using the Sterile Insect Technique as a control tool.

Invasive Plants

Ongoing field work has now collected 21 years of data from the highland areas of Santa Cruz. This data revealed a decline in the size of the area invaded by the invasive quinine tree and a resulting increase in cover of native plant species including the endemic *Miconia robinsoniana*. However, invasive blackberry is slowly increasing in this area so the researchers will remain vigilant to this as well as the emerging issue of an invasive fungus which was discovered to be the cause of the quinine decline. Fine-scale mapping of dominant plant species on Santa Cruz and Floreana was also completed and is already being used by ornithologists as well to identify vegetation of the preferred habitats of the almost extinct population of the Little Vermilion Flycatcher.

Marine Invasives

Research has found that the number of marine introduced species in the Galapagos is 10 times the number previously thought, and that the biosecurity of the Galapagos Marine Reserve remains critical. In June 2019 the first International Workshop on Marine Biosecurity of the Tropical Eastern & Temperate Southeastern Pacific Ocean was held in the Galapagos Islands. Scientists and decision makers convened and created the first marine biosecurity network from Mexico to Chile. This network of science and management professionals will create uniform protocols for Early Detection - Rapid Response strategies, including coordinated international alerts to announce new incursions.

Vital Signs

In 2019, Galapagos Conservancy worked to create the highly anticipated Galapagos Vital Signs dashboard, an interactive, online tool which allows users to view current conditions in the Islands, such as sea and land temperatures, precipitation levels and plant productivity (or "greenness"). Due to launch in early 2020, the goal of this project is to provide up-to-date information on environmental conditions and biodiversity in Galapagos to inform the efforts of conservationists, scientists, agriculturalists, tour operators, divers, visitors and others in the Archipelago. It also includes a predictive model for use with climate change modeling efforts, which will be expanded in coming years as resources allow.



Removing Cinchona roots by hand © Heinke Jaeger / CDF



Vermilion Flycatcher © Rob Jansen



MISSION

To protect the unique biodiversity and ecosystems of Galapagos by supporting research and management, informing public policy, and building a sustainable society.

VISION

Galapagos Conservancy works to ensure a balance between human society and nature that will protect and enhance the unique ecosystems of the Galapagos Archipelago. We value innovative science and conservation management that constantly strive to add knowledge and context to the world's understanding of biodiversity conservation. We envision a healthy and engaged society within Galapagos that actively cares for and respects the sustainable and thoughtful use of resources.

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Galapagos Conservancy Financial Statements

Fiscal year beginning January 1, 2019 and ending December 31, 2019

Revenue & Other Support

Total Revenue and support:	4,769,333
Investment Income	<u>839,674</u>
Sales	16,228
Contributions & Membership	\$3,913,431

Expenses

Total Net Assets	\$6,878,249
Operating (loss) Income	\$653,034
Total Operating Expenses:	\$4,116,299
TOTAL Support Expenses:	1,007,306
Fundraising	<u>614,723</u>
Management & General	392,583
Support Services:	
Costs of Goods Sold	11,307
TOTAL Program Expenses:	3,097,686
Science for Conservation	<u>1,365,365</u>
Giant Tortoise Restoration Initiative	734,244
Education for Sustainability	998,077
Program Services:	

Operating Expenses

Grants & Conservation Investments: 75.53%

Fundraising: 14.93% Management: 9.54%

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We are grateful for the financial support provided by our 14,300+ members whose generosity is at the core of our conservation investments. Below, we recognize our Ambassadors, who made annual gifts of \$1,000 or more in 2019.

Legacy gifts are marked (L). Travel Partners are marked (TP). Corporate matching gift programs are indicated by (MGP).

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Galapagos Tortoises © John Duke of Myersville, MD



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