

UNC CENTER FOR GALAPAGOS STUDIES

• the CAMPAIGN for CAROLINA •



“Through our culture of collaboration and unwavering commitment to educating the next generation of leaders, Carolina will continue to solve the grand challenges of our time, serving the people of North Carolina and beyond.”

— **Kevin M. Guskiewicz, *Chancellor***

Everything we do is driven by a motivation that’s profoundly human. Carolina’s deep roots in public service have grown into a University-wide effort to make more than just a difference, but a better future. We act because we must. Humanity needs us, and we will show the world the strength in humanity. The UNC Center for Galapagos Studies is central to that vision.

For all that’s now, for all that’s new, for all that’s next, we will continue to forge forward, imbued with compassion and compelled by circumstance. With your help, we will maximize our impact, ensuring it is felt across North Carolina and throughout the world.

Dear Friends,

At Carolina, we have an unparalleled opportunity to ask complicated questions about our ecosystems and the human elements we find there in a ‘living laboratory’ where so much of what we know about the biological origins of life began: the Galapagos Islands of Ecuador.

As we learned from Charles Darwin more than a century-and-a-half ago, the Galapagos Islands are the ideal place to study the delicate balance between promoting the health of human populations and conserving the world’s natural treasures. Now buffeted by rising ocean temperatures, extreme weather events, a rise in ocean levels, increasing tourism, burgeoning resident populations and invasive species, these iconic Islands represent both the world’s greatest vulnerability and also its greatest opportunity for study.

These global challenges require an interdisciplinary, problem-solving approach, and UNC-Chapel Hill is uniquely positioned for success as a leader in multidisciplinary research that engages natural, social, spatial and computational sciences. UNC-Chapel Hill has already made significant investments, partnering with the leading university in Ecuador to create the Galapagos Science Center on San Cristobal Island. This is the only institution of its kind in the Galapagos Archipelago and is unlikely to be duplicated by any other research institution.

We are poised to make a dramatic leap forward in our understanding of the Galapagos and how to mitigate the dual challenges of environmental change and human impact on the natural world. Our initiative is at a turning point, just emerging from start-up phase, and could be quickly scaled-up, given additional investment.

Those who join us in this investment have an opportunity to support the kind of discovery that transcends nations and waters, to allow a student to see a new world that opens her/his mind to new questions, to place faculty researchers in the path of transformative knowledge few will have the chance to find, and to collect the kind of social and ecological data scientists and conservationists may use to preserve the precious assets of our natural world.

We invite you to join us on our journey of discovery to not only save the Galapagos, but the world.

Stephen J. Walsh, Ph.D.

Lyle V. Jones Distinguished Professor of Geography

Director, Center for Galapagos Studies & Galapagos Science Center



Our Purpose

A unique collaborative partnership between the University of North Carolina at Chapel Hill and the Universidad San Francisco de Quito in Ecuador has been the genesis of powerful projects that are exploring the challenges facing one of the world's most priceless gems — the Galapagos Islands. As a world-renowned national park, marine reserve and World Heritage Site, the Galapagos Islands are at risk from the threats associated with human population growth, economic development and climate change.

The joint UNC-USFQ Galapagos Science Center — a state-of-the-art research center located on San Cristobal Island, and the *only university science facility of its kind in the Galapagos* — fosters research, education and outreach programs to advance science and conservation efforts in the Galapagos. The goal is to then extend these learnings and promote better understanding of ecologically sensitive and protected areas worldwide as we seek to understand complex interactions between population, health and environment in the “Enchanted Islands.”

Our Promise

The Center for Galapagos Studies will engage the best and brightest minds and intense passions to address the complex interactions among social, terrestrial and marine environments through an integrated perspective that emphasizes coupled human and natural systems. A strong interdisciplinary approach guides our research, education and outreach activities. Our goal is that UNC-Chapel Hill's work in the Galapagos will be a model for understanding similarly challenged environments around the world and the social-ecological threats to island sustainability.

Our Priorities

Engage Students and Faculty

Every time we provide research fellowships for Ph.D. students of all fields, support the kind of student travel that opens eager minds to new ideas, or give our students and faculty the freedom to explore complex questions about the nature of our world, we come ever closer to our mission of advancing science and conservation efforts in the Galapagos and promoting a richer understanding of ecologically sensitive and protected areas worldwide. A competitive predoctoral fellowship program on “Islands and Sustainability” will translate into new and innovative knowledge we can use to protect and conserve coastal Carolina and our fragile barrier islands. Undergraduate students are learning through doing as research assistants, interns and study abroad participants — allowing them to impact science, conservation and scholarship through a personal journey of discovery that embraces transformative and global experiences.

Connect the Campus

A Galapagos Venture Fund will provide support for interdisciplinary collaborations among faculty and students. In providing opportunities that encompass the campus, we can further integrate faculty and students from a variety of disciplines into research activities conducted at the Galapagos Science Center. Inspiring this kind of connectivity leads to dynamic global projects, engaging several campus units whose missions contribute to our interdisciplinary understanding of the social, terrestrial and marine subsystems in the Galapagos, in North Carolina and, ultimately, around the globe.

Impact Island Life

Residents and tourism in the Galapagos have increased exponentially, requiring complex policy decisions around the sustainable use of land, water and other resources. Faculty and students can engage in long-running studies on the issues that impact the present-day Galapagos — water use, nutrition, farming, invasive species, land use and the impacts of tourism. Enhancement of community outreach and engagement

programs will further enable Carolina faculty and students to confront important issues vital to life in the Galapagos. Working with the islands' local populations, community leaders and NGOs, faculty and students can contribute to actions and programs that influence island sustainability and the adaptive capacity of ecosystems to dynamic social-ecological forces of change.

Conserve Precious Resources

Many marine species including fishes, sharks, sea lions and sea turtles, travel widely. Cutting-edge technology allows us to “wire an island,” by tagging and tracking populations with acoustic transmitters. We already preliminarily tag sea turtles and sharks to document migration and help conserve the species. Expanding this work to explore why and where fishes and marine mammals move relative to habitat dynamics and the forces of climate change can help us understand and perhaps reverse fisheries decline and its impact on the livelihoods of fisherfolk as well as conserve threatened species. We have been invited by the Galapagos National Park and Ecuadorian government to develop a biobank to preserve biological material and DNA records for future generations. This will serve as a central repository for plant and animal specimens and permit more coordinated, large-scale research to take place, eventually leading to more effective action and informed management.

Create New Knowledge

We will develop a first of its kind integrated system to monitor social, terrestrial and marine environments in the Galapagos Islands and for similarly challenged island ecosystems around the globe through our *International Galapagos Science Consortium* and the *International Islands Network-of-Networks*. Multi-scale data will be collected, integrated and curated to assess human-environment interactions across island ecosystems. We will assess scenarios of change that are linked to climate change, expanding human dimension and social-ecological disturbances on island sustainability. We will create an *Island Data Observatory* for the Galapagos to support the work of global scientists and conservationists as well as citizens of the world.



A Living



LABORATORY


Parque Nacional
GALAPAGOS
Ecuador

A Window to the World

The Galapagos Science Center is a 20,000-square-foot state-of-the-art research, education and outreach facility located on San Cristobal Island in the Galapagos Archipelago of Ecuador.

A central hub for UNC and USFQ's researchers, the center advances our shared goal of promoting science and education that will help protect the fragile island ecosystems and enhance the lives of their inhabitants. Four laboratories allow dedicated research enterprises in terrestrial ecology, marine ecology, microbiology and genetics, and geospatial mapping technologies. The Galapagos is an extraordinary training ground for every kind of exploration, from basic and foundational research to applied science in areas from geography and public health, to marine sciences and biology, and to education and anthropology. The center allows UNC-Chapel Hill faculty and students in health sciences and physical, natural and social sciences to work closely in concert with the Galapagos National Park and USFQ on various initiatives. These, in turn, allow us to better understand how wildlife, climate, marine and terrestrial environments, and the human dimension impact the islands and beyond.



A MISSION OF CONSERVATION

The Galapagos Marine Reserve is the central area of marine conservation in Ecuador and one of the primary areas of protection and study in the world. We aim to build a scientific monitoring system that will encompass the entire Galapagos archipelago. In collaboration with the Galapagos National Park and USFQ, the center has increased the diversity and scale of collected data and derived information about the Galapagos by monitoring environmental changes in the diverse ecosystems in the archipelago and measuring the dynamic populations of species, such as sea lions, iguanas, sea birds and sea turtles.

Through marine expeditions and cruises of the Galapagos Islands that began in 2014, in cooperation with the Galapagos National Park and USFQ, we are learning more about the impacts of El Niño events in the Galapagos and how changes in marine conditions impact ocean productivity, species populations and their health and well-being, as well as the connections between a dynamic marine environment and human behavior.



Once IN A LIFETIME

Students study at the joint USFQ/UNC-Chapel Hill Galapagos Science Center

Steve Butts and Addie Miller had what he calls “an awakening” on a trip to the Galapagos with their family.

“We’re the only University to have these research operations in the Galapagos, with USFQ. If UNC students could get there to do their work, it would be an opportunity like no other. It was powerful to realize that, at this point in our lives, we could make that happen, and it could lead to tangible outcomes for the islands, local residents and for these students.”

Butts and Miller funded four student travel grants that allow rising student researchers to work at the Galapagos Science Center with rare access to a region where they can ask pressing questions about ecosystems, public health, water security and safety, human health and behavior and more, and where they can make discoveries that benefit the islands and beyond.

With these summer experiences, travelers return to Carolina transformed, with broader horizons, confidence to ask bigger questions and motivated to reach for more, wherever they go.

To be able to provide the kinds of expansive experiences they did not have growing up — and know those experiences can impact the world — has left Butts and Miller changed, too.



Steve Butts and Addie Miller

“It’s a once in a lifetime opportunity to go down and not only to experience the Galapagos, but also it’s a once in a lifetime opportunity to go down and get immersed in what the scientists are doing at the research center and how they are making a difference in our world.”



World's most

*priceless
gems*



Opening *the Door* to Impact

Travel grants for undergraduate and graduate students place these engaged scientists in labs and within an environment unlike any other. The ability to move seamlessly between the classroom, field and labs at the Galapagos Science Center provides an essential element of student training and education in the 21st century, and experiential learning and STEM training are critical components of the Galapagos experience.

In the summer before her last semester at UNC-Chapel Hill, Emily Solomonson traveled to San Cristobal to work with faculty collecting water samples from freshwater springs in the highlands. This provided valuable experience as the environmental science major and geography minor seeks employment in water systems.

Alyssa Grube, a doctoral candidate in Environmental Sciences & Engineering, is using a “One Health” approach in the Galapagos

to understand how human inputs shape antibiotic resistance in the environment. She has teamed up with researchers from UNC-Chapel Hill, USFQ and NCSU to cast a net to look at antibiotic resistance genes across the archipelago — including in wildlife!

Khristopher Nicholas, a doctoral candidate in nutrition, designed a project investigating food climates and their impact on human health in the Galapagos with a team from UNC-Chapel Hill, USFQ and government officials on Isabela Island. Khris also found time to mentor a group of undergraduate researchers along the way.

Adrian Marchetti, a UNC-Chapel Hill oceanographer, has taken students aboard a research vessel to conduct oceanographic surveys around the Galapagos archipelago to monitor how the effects of El Niño influence the waters surrounding the islands. These cruises are a collaboration between researchers at USFQ, UNC-Chapel Hill and the Galapagos National Park Service.



“At GSC during my semester abroad I learned about a specific interest I have in water systems as well as human-environment interactions. This opportunity was the perfect way to explore those fields.”

— Emily Solomonson



“The Galapagos Islands provide a unique environment to ask key questions about antibiotic resistance in minimally impacted areas. This research has global significance — addressing one of our generation’s most pressing public health challenges — and also local significance for the health of Galapagos wildlife.”

— Alyssa Grube



“As a nutrition Ph.D. student with a background in spatial analysis, my research centers on characterizing food environments and determining how they impact human health. This work is important to me because, in health disparity research, the ‘where’ often underpins the ‘why’ a health concern exists.”

— Khristopher Nicholas



“During El Niño events, the waters around the Galapagos Islands get considerably warmer, affecting ocean circulation and nutrient levels. The cruises provide these students with a natural laboratory to examine the effects of El Niño on the marine ecosystem and potential climate change impacts around the globe.”

— Adrian Marchetti

FOR NOW

FOR NEW

FOR NEXT



The University of North Carolina at Chapel Hill is a place like no other.

It's a place built from a public mission, propelled by a shared desire and unafraid to fight for a better future. We come together to make the world a better place for all.

The UNC Center for Galapagos Studies epitomizes that mission, yet our job is far from complete. With the strength of your partnership and generous investment in students, faculty and research, we will provide what humankind needs.

The world is listening. What will you say next?

For all that's now, for all that's new, for all that's next. For everyone today and in the future, join us in the next step for all kind.

To learn more about how you can support the UNC Center for Galapagos Studies and the University of North Carolina's Campaign for Carolina, visit galapagos.unc.edu or campaign.unc.edu.



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

FOR
ALL
KIND

the
CAMPAIGN
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