

Biodiversity Conservation Internship

Summer 2017 Fellowship Application Form

APPLICATION

The Tropical Conservation and Innovation Program at FIU is seeking 10 outstanding undergraduate students to participate in research and hands-on training internship opportunities offered at FIU and partnering organizations during Summer 2017. Qualified students should possess an interest in conservation of plants and/or animals, and have basic knowledge of ecological research principles and procedures. Students must be self-motivated and willing to assist in research and work related duties. Participants should enroll in a 0-3 credit internship course for Summer 2017 and prepare a professional presentation upon project completion.

Interested applicants should submit a letter of intent, resume/CV, and one letter of recommendation along with this application form. A \$2000 Fellowship Award will be provided to recipients in increments throughout the internship period.

GENERAL INFORMATION

Name _____

Address _____

City _____ State _____ Zip Code _____

Phone _____ Email _____

Do you have health insurance? _____ *please note that a waiver of liability may be requested. Insurance options are available for those interested.

Permanent Home Address (if different) _____

City _____ State _____ Zip Code _____

Program of Study (i.e. B.S. Environmental Studies) _____

Year in Study _____ GPA _____ / _____ Career Goal _____

Mentor _____ Contact _____

Panther ID: _____

INTERNSHIP INFORMATION

Please order from 1-4 your preferred internship site and project area (see pages 2-5 for descriptions).

_____ FIU Conservation Research Project title(s): _____

_____ Deering Estate Project title(s): _____

_____ Zoo Miami Project title(s): _____

_____ Rare Species Project title(s): _____

*Please note for sponsored fellowship you will need to dedicate at least 12 hours per week on project (some time may be spent off-site). For additional information, please visit: <http://seas.fiu.edu/get-involved/students/tropical-conservation-internships/> or contact seas@fiu.edu with any questions or concerns. Due date: April 5, 2017 at 11:59 pm. All materials should be sent to seas@fiu.edu with subject line: *Summer 2017 Tropical Conservation Internship*. Interns will be notified in mid April if they are selected.

This opportunity is made possible by the generous support from the
Fernandez Pave The Way Foundation

FIU RESEARCH: SOUTH FLORIDA BIODIVERSITY CONSERVATION

Functional ecology of South Florida forests

Mentor: Michael Ross, FIU

Student(s) will work on the functional ecology of South Florida tropical hardwood hammocks, addressing the question of how these forests change over time, and may shift in the future as sea level rises. Interns will collect data on leaf functional traits of trees in Key Largo hammocks, as well as environmental conditions within the forest. Student research will supplement ongoing research in the Ross lab, and will be suitable for presentation in oral or poster form at a scientific meeting in 2017 or 2018.

Understanding the link between the ecology of tropical fish and freshwater inflows

Mentor: Jennifer Rehage, FIU

Coastal fishes in South Florida are of tropical origin and for many species, their ecologies are closely tied to pulsing hydrology and freshwater deliveries. We propose a study to examine the microchemistry of otoliths (earbones) from bonefish. Bonefish are a tropical Caribbean species that sustains an economically-valuable fishery throughout the Caribbean. In South Florida, bonefish are declining, concerning recreational anglers and guides whose livelihoods depend on this fishery. We propose to use analytical chemistry to examine the chemical composition of the ear bones of bonefish from South Florida, and thus better understand their dependency throughout their life history on freshwater deliveries. This will allow us to understand how altered hydrology is affecting this valuable recreational fishery.

Mapping and documentation of food forests in Miami Dade County Schools

Mentor: Cara Rockwell, FIU; Eddie Recinos, Education Fund

Urban agriculture, and specifically food forests, has been promoted as an alternative to the industrial food system and as a way to combat the so-called "food deserts" that are prevalent in impoverished neighborhoods in urban centers. The following project is a joint effort between Florida International University and the Education Fund, which has been working extensively with Miami Dade County elementary schools to develop food forests. This project has three goals: 1) to document the spatial extent of food forests located in 18 Miami Dade County schools; 2) to map the existing social networks in each of the neighborhoods associated with the 18 elementary schools (to assess community support); and 3) to map and document the species that have been planted in said food forests.

Plant Conservation at the International Center for Tropical Botany at The Kampong

Mentor: Christopher Baraloto, FIU and ICTB

The International Center for Tropical Botany (ICTB) at The Kampong has several opportunities for internships in programs related to tropical plant conservation. Projects include (i) the mapping and revision of the botanical determinations of the living collections at The Kampong on Biscayne Bay in Coconut Grove; (ii) horticultural assistance to plant orchids and tropical plants throughout The Kampong ; (iii) the development of databases and descriptive notecards for genera of tropical plants to be used in teaching and visitor displays; and (iv) work with the Young Explorers after-school environmental programs for middle school students.

Tracking One Million Orchids App

Mentors: Jennifer Fu, FIU; Hong Liu, FIU and Fairchild Tropical Botanic Garden

Fairchild is propagating one million native orchids to be planted in South Florida's urban landscapes (<http://www.fairchildgarden.org/Science-Conservation/The-Million-Orchid-Project>). This project engages the general public, particularly school children, by giving them opportunities to plant native orchids on urban trees and to beautify our urban space. It will stimulate the public's interest in South Florida's native orchids and their conservation needs. To facilitate the documentation and tracking of the orchids after they are planted, the FIU GIS Center is in the process of developing a web and mobile GIS application, which will allow the user to document orchids and its ecological interactions with photographs, identify the location and record its XY coordinates, visualize the distribution of all planted orchids, and track the status of their growth. The FIU GIS Center will train the students in web and mobile GIS tracking and visualization tools to help with the development of the app.

DEERING ESTATE

South Florida Biodiversity, Science, and Restoration at the Deering Estate

Mentor: Christopher Bumpus

The Deering Estate offers multiple options for study of plants and animals. Example internship projects include: (i) study of growth rates in the pine rocklands following a prescribed burn; (ii) studies of avian populations at Deering and avian uses of plants; (iii) habitat use and population studies of Reef Geckos (*Sphaerodactylus notatus*); (iv) surveys for invasive anoles; (v) biodiversity surveys in seagrass and mangrove environments; and (vi) examination of the effects of Chicken Key restoration on native biodiversity.

Macroalgal assemblages as environmental indicators at the Deering Estate

Mentor: Ligia Collado-Vides, FIU

The marine macroalgae research laboratory at FIU is conducting a survey of the impact of the Deering Estate Flow Way experiment on the macroalgal assemblages as indicators of potential impacts of the large scales project by the Coastal Everglades Restoration Program. Changes in salinity and nutrient availability are expected to impact the diversity and abundance of macroalgal flora and its associated invertebrates with potential impacts at the ecosystem level. Students will be helping with the collection of material, identification and curation for the herbarium collection of macroalgal specimens. In addition, invertebrates inhabiting macroalgal assemblages will be identified at the lowest taxonomic level and quantified. Results of this particular internship could be presented in diverse scientific meetings.

ZOO MIAMI

Mentors: Steven Whitfield and Frank Ridgely, Zoo Miami

Seed dispersal in tortoises

Tortoises are a highly threatened group of vertebrates around the world, and as tortoises disappear around the world, the ecological role they fill in habitats may be lost. Tortoises are herbivores, and in some habitats consume large numbers of seeds - dispersing seeds and inhibiting or facilitating germination. Zoo Miami is home to gopher tortoises living in pine rocklands surrounding the zoo, as well as a dozen species of captive tortoises from around the world. In this study, students could examine at germination rates of wild gopher tortoises or across a range of tortoise species at the zoo. By clarifying the ecosystem role of tortoises, this study should help understand ecosystem-level effects of tortoise extinction, and help provide justification for tortoise conservation programs.

Mapping Plants in Zoo Miami's Botanical Collection

Within Zoo Miami's public areas is a vast diversity of ornamental plant species, many of which are of botanical interest to guests. However, there is not currently a well-organized map of landscaping trees with a link to taxonomic information of the plants. A student could identify trees within zoo grounds, and map them using GPS units and GIS systems. This information could be used to produce an educational botanical guide to the zoo - a resource for zoo visitors.

Coastal Habitat Host Plant Assessment for Federally Listed Butterfly Species

The existing coastal habitats on the mainland of Miami-Dade County are in the historic home range for the imperiled Schaus' Swallowtail and Miami Blue butterflies. Although monitoring of these species and captive rearing programs have existed over the years in their core areas to aid in their recovery, no habitat assessment has been made to the suitability of parts of their former range for reintroduction. Conducting survey transects and mapping of existing host plant occurrence and density along the mainland coast protected areas is required to guide future management decisions for these species.

Monitoring Florida Bonneted Bats

Miami-Dade County Parks, Recreation and Open Spaces needs presence, absence, and habitat usage information of county owned and managed properties for the federally endangered Florida bonneted bat through acoustic surveys. This would require the student to go to several parks across the county and move the recording equipment and then analyze the data using software in the Conservation and Research Department. Results will be used to advise land managers and guide future use of parks and preserves within the county system. This could also include real time monitoring of the residential areas to identify roosts that are vital to understanding how these bats are adapting to the urban environment.

Duskywing Butterfly Life History

The Florida Duskywing Butterfly is an imperiled butterfly restricted to Florida's Pine Rocklands habitat, yet poor information on the life history of the butterfly prevent evidence-based habitat management. In this project, a student could document life history of the duskywing - measuring length of the larval period, number of instars, and survival to metamorphosis. Students could also compare the growth rates and survival on two separate host plants for duskywings - the native Locustberry and the introduced ornamental plant Barbados Cherry.

RARE SPECIES CONSERVATORY FOUNDATION

Mentors: Paul Reillo and Karen McGovern, Rare Species Conservatory Foundation

(located 1.5-2 hours north of FIU)

Individual East African bongo identification and monitoring

Using infrared camera traps and other secretive surveillance technology, interns will develop an identification scheme using the unique striping characteristics of individual bongo. Bongo are not bilaterally symmetrical in markings, and a combination of facial and stripe characters will enable animals to be tracked and identified. Methods will entail setting and tending to cameras, downloading and interpreting image data, building a identifier system and implementing techniques for daytime and nighttime (IR) sampling.

Red-browed Amazon parrot population management and studbook

Interns will learn population-management and studbook software (e.g., PopLink) to load and interpret pedigree and population data for South America's most endangered Amazon parrot. Students will interpret animal-records-keeping-system software (ARKS) to extract demographic and genetic data for all Red-browed parrots in captivity in North America. The original studbook, started in 1996, will be updated to include all living specimens at RSCF and partnering facilities, and aid in making critical management decisions, including breeding recommendations, calculating mean-kinship and relatedness, and for making recovery population projections. Students will also engage in the husbandry and life-support systems for the large Red-brow flock at RSCF.

Recording and interpreting pygmy marmoset vocalizations

Pygmy marmosets possess a broad vocabulary of vocalizations used for specific purposes (e.g., alarm calls, territoriality) and for distinguishing family groups. Interns will develop and employ a variety of video and audio-recording methods to capture pygmy vocalizations and develop an interpretive context and behavioral template. These tools will benefit pygmy husbandry and management at a critical time-- the pygmy marmoset population is plummeting.

Conservation media outreach and IT

Tech- and media-savvy interns will help develop novel media-gathering and disseminating approaches to connect conservation science with conservation education. Web-based, live-streaming video, social-media platforms and other information-packing systems will be used to enhance and engage U.S. and international audiences.

Grasshopper sparrow husbandry and management

Assist with daily care and hand-rearing of North America's most endangered bird. Learn, document and implement hands-on techniques, including artificial incubation, hand-rearing, diet preparation, data management, genetic tracking and disease assessment.