

POSITION ANNOUNCEMENT:

FUTURE PARK LEADERS of EMERGING CHANGE

The National Park Service (NPS) is pleased to support the *Future Park Leaders of Emerging Change* (FPL) program as a pathway for exemplary students in higher education (advanced undergraduate students and graduate students) to apply their skills and ideas to park-based challenges and solutions. The Initiative offers 12-week paid internships which allow students to gain valuable work experience, explore career options, and develop leadership skills through mentorship and guidance while helping to advance NPS efforts on emerging management issues. Successful students may be eligible for non-competitive hire into federal positions for which they qualify following completion of all academic requirements.

Coral Disease Intervention in Biscayne National Park

Biscayne National Park
Homestead, FL

INTERNSHIP PROJECT BACKGROUND

A thriving coral reef ecosystem was a key factor in the creation of Biscayne National Park. Fifty years later, reef health in the park mirrors regional and global patterns of demise linked to climate change, overfishing, and coastal development. However, Florida's coral reefs are currently experiencing a multi-year disease-related mortality event that has resulted in massive coral die-offs. The disease epidemic is driven by unidentified waterborne pathogens that have spread across the entire Florida Reef Tract, spanning local, state, and federal jurisdictions.

The disease, termed Stony Coral Tissue Loss Disease (SCTLD), presents as rapid tissue loss that usually results in whole-colony mortality. Federally protected and primary reef-building species are disproportionately affected. The disease was first observed near Miami in late 2014, and has spread north to Martin County and southwest through the Florida Keys. Reefs in BISC were affected in 2015-6. The outbreak is viewed as an ecological disaster and a multi-agency, coordinated emergency response effort is in progress. Disease intervention is of critical importance in the response effort, to slow the spread of disease, save colonies from total mortality, and maintain species diversity within the reef ecosystem.

The internship project will be to implement widespread coral disease intervention actions in BISC. Treatment sites will be prioritized by management significance, ecological significance, and presence of SCTLD-susceptible species. The intern will join a dedicated dive team of BISC professional and technical staff, who work together to accomplish reef restoration through marine debris removals, coral salvage/reattachment, and management of invasive lionfish. The intern will focus on coral disease intervention wherever this team is working. This multi-faceted strike team will accomplish an

unprecedented and beneficial combination of actions at focal reefs, improving coral reef health to the maximum extent possible.

INTERNSHIP PROJECT DESCRIPTION

At present, available disease intervention methods include trenching around lesions to make “firebreaks”, topical application of antibiotics and chlorinated epoxy on lesions, amputation of infected regions to prevent further spread through connected tissue, and relocation of healthy tissue away from spreading tissue margins.

The intern’s tasks will include identifying coral colonies for intervention, implementing treatment actions, and monitoring the short-term effectiveness of the efforts. The intern will assemble necessary materials, compounds, and tools; implement field activities; and document work with data such as colony measurements, percent live tissue and disease cover estimates, and serial underwater photography. Acquired skills will include use of underwater tools, underwater data collection and photography, dive planning, project reporting, and field project coordination.

The intern’s primary deliverable will be a report to park management that details the intervention methodologies implemented, as well as the treatment efficacy observed during subsequent monitoring. The report will include spatial and methodological information on treatments; photographic time series of treated colonies; recommendations to management on the success and benefit of the work performed; recommendations for continuation of disease intervention work; and refinements as needed to existing intervention protocols developed by the multi-agency coral disease intervention working group.

Because the disease front has already passed through BISC, the park is considered to be in the endemic zone. Limited resources available for intervention are directed towards reef areas in the invasion (i.e. within three months of infection) zone. The intern’s work will be among few efforts to conduct intervention in endemic zones, and will be of critical import to share with all parties involved with the response effort.

QUALIFICATIONS

Applicants must have completed advanced coursework towards a bachelor’s degree in biology, ecology, marine sciences or a related field. Graduate students in the aforementioned disciplines are encouraged to apply.

Minimum qualifications:

- SCUBA certification, scientific diver status through an AAUS organization, and 20+ scientific dives
- software proficiency: MS Word, MS Excel, MS Powerpoint, ESRI ArcGIS
- willingness to work with and take direction from a variety of coworkers
- willingness to withstand long field days with exposure to high temperatures, extended sun exposure, chilling associated with long hours in the water, biting insects, rough seas, and hazardous marine life

- knowledge of coral reef ecology
- experience with underwater data collection including photography

Preferred qualifications:

- previous experience with small boat operations
- experience with analysis of scientific data and scientific writing

LEADERSHIP DEVELOPMENT

- **Logistical coordination.** The supervisor and dive team members will help the intern develop leadership skills by gradually transferring responsibility for ensuring that project disease intervention objectives and tasks are incorporated into the field team's activities.
- **Problem solving.** A marine field scientist develops problem-solving skills on the job, in the challenging marine environment under task-loading scenarios; these skills will be developed as the intern's fieldwork ramps up.
- **Teamwork and communication.** The intern will ensure that other team members are trained and briefed as they assist with intervention activities. Similarly, the intern will support and assist the other team members with their respective activities.
- **Dissemination of project results.** The intern will have multiple opportunities to engage and inform management and stakeholders, including presentations to the park management team; local NPS staff, stakeholders, and interested parties; the disease intervention working group; and the multi-agency/stakeholder Disease Advisory Committee.

DATES OF POSITION

The internship requires 480 hours of work over approximately twelve weeks. The preferred dates for the internship are 10 June – 30 August, 2019. However, dates are somewhat flexible, depending upon availability. The intern will be required to attend a career development workshop in early August with all expenses paid.

COMPENSATION

This initiative supports one student at \$16/hour for 12 weeks, or 480 hours.

HOUSING

Housing will be available at the park's Convoy Point headquarters in Homestead FL at no cost to the participant. The housing unit consists of a comfortable, furnished two-bedroom one-bath apartment. The intern may be required to share a bedroom with one other person, and to share a bathroom with up to three other people. Each bedroom The unit is equipped with Wi-Fi. The kitchen is equipped with the basic items needed for preparing and eating meals. The tenants must bring their own towels and bedding. Pets are not allowed. A personal vehicle will be required for local transportation. The nearest town (Homestead FL) is nine miles from the park headquarters.

WORK ENVIRONMENT

The internship will involve roughly 75% field time with the remaining time spent on lab and office work. Fieldwork is strenuous and conducted in adverse heat and cold conditions with long hours spent in the water and potential exposure to stinging marine organisms. Applicants should be in good physical condition. Night and weekend work may be required.

Biscayne National Park (<http://www.nps.gov/bisc>) is one of the largest marine parks in the National Park System, with 95% of its 173,000 acres covered by water. The park is located in Homestead, FL, a small city south of Miami in Miami-Dade County. The park is known for its coral reef and seagrass communities, exceedingly clear water, and keys with hardwood hammocks, mangrove forests, sandy beaches and rocky intertidal areas. The park preserves a unique, sensitive marine environment that is an important component of the south Florida ecosystem and economy.

The park headquarters at Convoy Point is located nine miles east of Homestead, Florida. Homestead is a small community and provides medical and dental facilities (including a hospital), banking, groceries, educational and other amenities. Neighboring Miami, thirty miles to the north, provides all of the educational, medical, sporting, and cultural features of a thriving multi-ethnic metropolitan area. The Atlantic Ocean and Biscayne Bay provide unique opportunities for great swimming, windsurfing, canoeing, kayaking, fishing, boating, snorkeling and scuba diving on the coral reefs.

CONTACT INFORMATION

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