SUMMER 2024

UNDERGRADUATE RESEARCH INTERNSHIPS

APPLICATIONS DUE MAY 2, 2024 | 5PM EDT

Sea Grant FLORIDA

ABOUT

Summer internships with Florida Sea Grant are hosted by affiliate faculty with the University of Florida. **Internships are related to marine and coastal sciences**, targeted at providing undergraduate students with research experience in this field. Selected interns will be paid **$15/hour for up to 260 hours** full or part-time.

AVAILABLE PROJECTS

(more details attached)

PROJECT TITLE (#1)

Exploring different disinfectant methods to remove ciliates from marine copepod cultures

PROJECT LOCATION

Tropical Aquaculture Laboratory
Ruskin, FL

PROJECT FACULTY MENTOR

Dr. Matthew DiMaggio, University of Florida

PROJECT FOCUS AREA

Fisheries & Aquatic Sciences

PROJECT TITLE (#2)

Sourcing, germination, and production strategies for Spartina alterniflora (smooth cordgrass) for living shorelines

PROJECT LOCATION

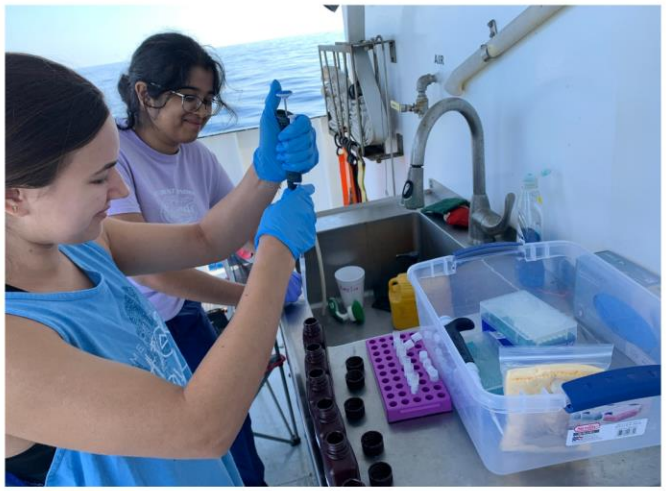
University of Florida Campus
Gainesville, FL

PROJECT FACULTY MENTOR

Dr. Carrie Reinhardt Adams, University of Florida

PROJECT FOCUS AREA

Environmental Horticulture



ELIGIBILITY

- Undergraduate at an accredited institute of higher learning

- Ability to work at project location (housing not provided by internship)

- Student should be enrolled in Fall 2024 semester and not planning to graduate prior to completion of internship.

- Student should have an interest in marine and coastal sciences

APPLY AT:

https://eflseagrant.ifas.ufl.edu/

PROJECT TITLE (#1)

Exploring different disinfectant methods to remove ciliates from marine copepod cultures

PROJECT LOCATION

Tropical Aquaculture Laboratory
Ruskin, FL

PROJECT FACULTY MENTOR

Dr. Matthew DiMaggio, University of Florida

PROJECT FOCUS AREA

Fisheries & Aquatic Sciences

PROJECT DESCRIPTION

The aquaculture industry in Florida is dominated by ornamental fish, invertebrates, and plants with Florida being the largest producer of ornamentals in the United States. The majority of freshwater fish in the aquarium trade originate from aquaculture, where most marine ornamental fish originate from wild sources. Approximately 19% of marine ornamental fishes in the aquarium trade have been successfully cultured in captivity, and only 7% of these are frequently commercially available. These discrepancies exist due to the complexities of marine fish larviculture that are not as prevalent in freshwater fish larviculture.

Marine fish larviculture often relies on the use of live feeds such as copepods, rotifers, and Artemia sp. during early larval stages. These live feeds are offered to first feeding larvae because of their small size, high digestibility, and ability to elicit a feeding response via natural movement. First-feeding marine larval fish often require small, nutrition-dense live feeds due to their small mouth gapes and high energy demand for the growth of muscle tissue and organs throughout development.

Copepod nauplii, such as those produced by Parvocalanus crassirostris and Oithona colcarva, are considered an ideal food source for first-feeding larval fish due to their high nutritional value and small size (30-40 m wide). Species including the Pacific blue tang (Paracanthurus hepatus), golden domino damselfish (Dascyllus auripinnis), and melanurus wrasse (Halichoeres melanurus) have been successfully raised at the Tropical Aquaculture Laboratory (TAL) using copepod nauplii. However, there are challenges associated with copepod culture that can affect the reliability of naupliar production, thus limiting the success of larval fish rearing. Contamination of copepod cultures by ciliates such as Euplotes sp. can severely disrupt copepod production. These ciliates rapidly reproduce in copepod culture systems, leading to decreased food availability for copepods and subsequent decreases in copepod production and survival. Successful removal of ciliates from copepod cultures will allow for significant increases in naupliar production, increased utilization efficiency of microalgae, and thus, increased larval fish production.

This project aims to investigate methods to remove nuisance ciliates from P. crassirostris and O. colcarva culture systems while maintaining copepod survival and production. Several different disinfection methods (i.e. sodium hypochlorite, formalin, hydrogen peroxide, iodine, etc.) will be applied to copepod eggs with the goal of eliminating ciliates while maintaining the efficacy of the eggs. Different disinfectant dosages and durations will be explored and copepod hatch rates will be measured. Successful disinfection methods will be applied to larger copepod production systems to ensure efficacy for commercial production.

This project will take place at the TAL in Ruskin, FL, where researchers have been improving culture methods for freshwater and marine ornamental fish species for over 25 years. The TAL features a large hatchery building, five greenhouses with various recirculating aquaculture systems, and over 40 ponds. Several marine ornamental species are bred on-site including Pacific blue tang, flame hawkfish, golden domino damselfish, and clownfish. This project will run over 6 weeks (40 hrs/week) with approximate/flexible dates of **June 24, 2024 through August 9, 2024.**

INTERN RESPONSIBILITIES

The student will have the opportunity to run a series of replicated copepod culture disinfection studies using several different disinfectants at various dosages and exposure times. The student will aid in experimental design, experimental setup, and data collection. The student will measure the viability of copepod eggs after disinfection by quantifying hatch rate and copepod survival and conduct subsequent statistical analyses. The student will also have the opportunity to write up a UF EDIS publication for dissemination to the marine ornamental aquaculture industry and/or a peer-reviewed publication for dissemination to the scientific community. Additionally, the student will gain experience using biosecure techniques to culture two species of copepods and four species of microalgae. There will be additional opportunities for the student to participate in fish broodstock husbandry, broodstock spawning, egg collection/incubation, and larval fish culture.

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PROJECT TITLE (#2)

Sourcing, germination, and production strategies for Spartina alterniflora (smooth cordgrass) for living shorelines

PROJECT LOCATION

University of Florida Campus
Gainesville, FL (with some day trips)

PROJECT FACULTY MENTOR

Dr. Carrie Reinhardt Adams,
University of Florida

PROJECT FOCUS AREA

Environmental Horticulture

PROJECT DESCRIPTION

This internship will assist with research that aims to address critical gaps in understanding and optimizing plant sourcing strategies, particularly focusing on Spartina alterniflora, a commonly planted low marsh species for living shorelines (LSLs) in north Florida. Spartina's genetic diversity influences key traits impacting LSL functions, yet there is a lack of knowledge regarding trait differences among different sources of Spartina. Preliminary data highlight significant trait variations among commonly used Spartina sources in Florida, suggesting the need for guidelines to select sources to maximize LSL benefits. The research also explores the relationship between genetic diversity and ecosystem function. Despite evidence supporting the benefits of diverse plantings, sourcing constraints often limit the implementation of diverse planting strategies.

This intern will assist with research that explores seed-based restoration approaches for Spartina alterniflora in living shoreline projects. Currently, Spartina is predominantly sourced as clonally propagated plants, limiting genetic diversity.

Nurseries in Florida are interested in seed-based restoration to overcome sourcing issues, yet low germination rates pose a challenge. Direct seeding offers a cost-effective and logistically feasible alternative to traditional planting methods, potentially leading to higher genetic diversity and restoration success. However, germination protocols for Spartina are hindered by low success rates and labor-intensive methods. This research will investigate techniques to enhance Spartina germination directly in sediment, considering factors such as sediment type, flooding patterns, and pre-treatments like salinity exposure. The goal is to develop effective germination protocols that can be incorporated into nursery production and direct seeding efforts, ultimately improving the quality, diversity, and scalability of Spartina restoration in living shorelines.

INTERN RESPONSIBILITIES

After 2 months of work on a FL Sea Grant funding project on this topic, we have preliminary results that suggest additional germination experiments that will contribute to our understanding of the potential for seed based restoration with Spartina. The intern will work alongside the Adams Lab team, including 2 graduate students that work directly on this project. Duties will include:

- implementation and data collection for planned germination experiments
- primary responsibility for design, implementation, data collection, analysis and results interpretation for an individual project
- field work and travel to acquire plant material and visit example projects
- watering, maintenance, and care of greenhouse plants
- production and editing of extension materials related to this work
- assistance with other relevant projects that also address plant materials for restoration

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