Coastal and Environmental

&

Science and Engineering

2024 FELLOWSHIP PROJECTS

(Updated 2.6.2024)

Audubon Society of Rhode Island

#1 - Biodiversity and Habitat Conservation

This project is part of Audubon's larger mission to save and manage habitat for wildlife. One way to assess success is through monitoring of living and nonliving components of the environment. A Fellow will be responsible for a focused project in collaboration with a team of conservationists. The focus will be selected from ongoing conservation mission goals of Audubon including monitoring restoration projects for use by native animals, tabulating pollinator activities and evaluating the impact of invasive species. One project could include gathering and interpreting camera trapping data from several remote sites. Work sites can involve any of the 9,000 acres of land protected by Audubon.

Preferred skills and interests include some background in field ecology work, willing to learn native plant and animal identification and some GIS/GPS use. Some skills will be taught by Audubon and field equipment will be provided. Much of the work is field based in hot and occasionally strenuous conditions. Some office work will be included. A Fellow will be expected to work well on teams as well as occasionally independently with transportation to work site expected of the Fellow.

This project requires Primarily field with some office work.

Hours: 25 hours/wk.

Project Mentor: Scott Ruhren, sruhren@asri.org

Biological Sciences (BIO)

#2 - Genetic analysis of plant cell wall synthesis

Coastal Fellows will use CRISPR to edit genes involved in cell wall synthesis in a model plant species and analyzing the resulting phenotypes. After an initial training period, fellows will choose a specific research question in consultation with Dr. Roberts.

Recommended coursework includes BIO 102/104, CMB 211, and any plant biology courses. Fellows will learn plant tissue, PCR, plasmid cloning, CRISPR-based genetic modification, and microscopy. Work will take place in the laboratory and will include both independent and group work.

This project requires Primarily lab work.

Hours: 20 hours/wk.

Project Mentor: Dr. Alison Roberts, aroberts@uri.edu

#3 - How do multiple coastal stressors limit oyster recruitment?

Fellows will be responsible for conducting experiments on larval and juvenile oysters at the Narragansett Bay Campus. This will involve feeding, maintaining, and spawning adult oysters. It also requires larval culture and experimental maintenance, and water quality monitoring and testing. Larval experiments may require time commitments at odd hours and over weekends.

This project requires primarily wet lab work at Narragansett Bay Campus.

Hours: 20-30 hours/wk.

Project Mentor: Dr. Jonathan Puritz (jpuritz@uri.edu)

#4 - Movements of tiger sharks at French Frigate Shoals, Northwestern Hawaiian Islands

Acquisition of food is a powerful motivator of many aspects of the biology of animals, including their movements. Tiger sharks are common at French Frigate Shoals, a small atoll in the Northwestern Hawaiian islands, where they feed upon large prey such as monk seals, green sea turtles and blackfooted albatross. Some of these prey are seasonally abundant, with variable density within the atoll. The fellows will examine movement patterns of tiger sharks instrumented with acoustic transmitters and monitored with acoustic receivers at French Frigate Shoals over a four-year span at French Frigate Shoals. Seasonal and diel patterns of movement of the sharks will be characterized and investigated in relation to prey availability. The students will be required to organize and analyze large data sets.

Data analysis experience required, GIS and R experience preferred. Much of the data analysis will involve independent work, but the students will also be part of a team conducting field work. In addition to telemetry work, the students will regularly fish for sharks from a small boat in Rhode Island waters. Sharks will be examined and tagged from the boat. The work will include early mornings and long days under sometimes less than ideal conditions, often exposed to the elements. The students will also assist with URI Shark Camp for one week in July. Transportation to and from campus and Wickford is desirable.

This project requires laboratory and field work along with some outreach.

Hours: 20+ hours/wk.

Project Mentor: Dr. Brad Wetherbee, wetherbee@uri.edu

#5 - Methane in coastal wells and ophiolites

Methane is a potent greenhouse gas that has been detected on Earth and Mars. For this summer project, we will measure methane emissions from groundwater wells in a coastal estuary where a recent dam has been removed and salt marsh restoration is underway. This involves applying a new set of tubing connectors and a PVC cap in a closed sampling loop with a laser-based (cavity enhanced absorption spectroscopy) portable greenhouse gas analyzer (LICOR 7810). Assistance with basic geochemical modeling will be useful for predicting ideal conditions for biological or chemical methane production. These tools are being tested using local groundwater wells in RI for comparison to sites with predominantly chemical methane production (coastal ophiolites in Clear Lake, CA) as part of a NASA funded collaboration to Moseman-Valtierra and Cardace.

General chemistry course work preferred, interest and ability to tolerate warm and muddy field conditions.

This project requires a mix of lab and field work.

Hours: 20+ hours/wk.

Project Mentor: Dr. Serena Moseman-Valtierra, smoseman@uri.edu

#6 - Evolution of gene copies / families

Interest in genomics and/or bioinformatics

**More information on this project will be provided.*

This project requires primarily computational work.

Hours: 30 hours/wk.

Project Mentor: Rachel Schwartz (rsschwartz@uri.edu)

Biological and Environmental Sciences (BES)

#7 - Does habitat quality affect the prey species utilized by American woodcock?

We will be capturing and tagging American woodcock and attaching VHF transmitters to them. The fellow will be scouting for and tracking birds in a variety of conditions including wetlands/swamps, thick brush/briar, forest and open habitats. They may also have to take soil cores to collect insect samples. Fellows will be required to work alone for VHF but in a group for bird capture. A valid drivers license in necessary as they student will be driving a URI truck to field sites, with the possible use of their personal vehicle if trucks are unavailable. Working conditions may not always be ideal (rain, heat, biting insects) so I am looking for someone willing to tough it out! Bird handling and VHF tracking experience preferred but not required.

This project requires Primarily field work.

Hours: 20 hours/wk.

Project Mentor: Shannon Wesson (shannon_wesson@uri.edu), Dr. Scott McWilliams (srmcwilliams@uri.edu)

Fisheries, Animal and Veterinary Science (FAVS)

#8 - Non-invasive hormone analysis in zoo species

This research project aims to develop and implement methods to measure various hormones in samples collected from zoo and aquarium animals. We emphasize the use of non-invasive samples, such as feces, to detect physiological states such as pregnancy. The student will receive samples, process them, prepare them for analysis, and validate and run hormone assays on these samples. This work will primarily be completed independently in the lab in CBLS. All necessary training will be provided; no prior laboratory experience is necessary.

This project requires Primarily lab work.

Hours: 20 hours/wk.

Project Mentor: Justin Richard, jt_richard@uri.edu

#9 - Isolation and characterization of pathogens and probiotics from shellfish

Bivalve hatcheries experience “crashes” that seriously compromise production of seed for an expanding aquaculture industry. Besides vibriosis, the cause/s of many crashes of bivalve larvae are unknown. There is growing evidence that the “hatchery microbiome” is an important factor in production outcomes. Our overall goal is to develop novel tools to increase larval resilience and improve production in shellfish hatcheries. Our team has previously discovered and developed safe and effective commercial formulations of probiotic bacteria that reduce the threat of vibriosis in shellfish hatcheries. We are currently working with industry partners to develop additional microbial products that improve larval resilience to threats beyond vibriosis.

In collaboration with a team of graduate students and one Research Associate, the fellow will be involved in developing and testing a novel multi-step process to identify and isolate candidate probionts and pathogens. The work will be mainly in the laboratory, and it will involve the use of basic microbiological techniques, as well as assays with oyster and clam larvae and hemocytes.

This project requires Primarily lab work.

Hours: 35 hours/wk.

Project Mentor: Dr. Marta Gomez-Chiarri, gomezchi@uri.edu

Geosciences (GEO)

#10 - Groundwater Responses to Dam Removal Activities

Dam removals are in increase across the U.S. due to their ecological and societal values. The presence or absence of reservoirs had direct influence on groundwater recharge. When dams are removed, consequently reservoirs are removed. This can likely affect groundwater levels and impact water supplies for domestic, industrial and agricultural use. The research project aims at studying shallow wells around the dam locations and develop scenarios of water table based on dam removal alternatives.

GIS and knowledge of hydrology will be important.

This project requires field work.

Hours: 20 hours/wk.

Project Mentor: Dr. Soni Pradhanang, spradhanang@uri.edu

Graduate School of Oceanography (GSO)

#29 - Analyzing downstream flow patterns of cold-water coral structure

We are seeking a motivated student to assist in data processing for an ongoing experiment that examines the effects of cold-water coral (Lophelia pertusa) skeletal structure on downstream fluid motion and its implications for deep-sea reef function. The individual will work directly with a doctoral student to process large hydrophysical datasets collected in an experimental flume using laser particle image velocimetry (PIV), an experiment which marks the first use of this methodology for the species. This internship offers an opportunity to learn various analytical techniques used in biological oceanography including basic time series analysis and comparative statistics, as well as the chance to contribute novel physical-ecological research in critical deep-sea reef habitats and corals as “ecosystem engineers”.

Background: Scleractinian corals form complex three-dimensional structures that can obstruct or redirect water flow. This alteration in flow acts as a positive feedback mechanism to the coral organism that plays a significant role in several ecological processes, including the delivery of food and nutrients, reproductive export, and wash-out of potentially harmful sediments and pollutants. The goal of this study is to quantify the specific effects of L. pertusa branching colony structures on downstream flow patterns and to better understand how individual colonies within a reef may mutually influence one another . This is accomplished by placing L. pertusa skeletons within an experimental flume facility and measuring fine-scale hydrodynamic metrics.

Work will primarily be performed on-site in the Coastal Institute building at the URI Bay Campus, along with some remote work as needed. While all activities will involve closely supervised training and mutual learning, the ideal candidate should have basic skills in coding (R preferred) and statistics, willingness to learn and work independently when required, and a keen interest to develop knowledge in computational data analysis, marine ecology, and/or fluid dynamics. We view this fellowship as a mutually beneficial collaboration, with the successful fellow walking away with competitive skill sets, useful experience writing and presenting their research, and an excellent working relationship with their supervisor and fellow lab members.

This project requires primarily lab work.

Hours: 30 hours/wk.

Project Mentor: Jane Carrick, jvcarrick@uri.edu, and Dr. Andy Davies, davies@uri.edu

#30 - Species Distribution of Mesophotic Coral Reefs

The student has the option of building a time series of sessile benthic invertebrates of 5-10 years at a hydrothermal vent system in the Lau Basin, or building a habitat map of deep-sea sponge or coral gardens. The student will pick a genus or family of organisms, such as cnidarians, bivalves, or gastropods to analyze the change in diversity and distribution over the time series, or to analyze the effects of sponge/coral presence on the diversity and distribution. Data has been collected via cameras mounted on ROV (remotely operated vehicle) and AUV (autonomous underwater vehicle), as far back as 2002, and as recent as 2021.The student will use a combination of image and video analysis of this data for their project, and will make decisions on how to select images and assemble an even analysis.Images and videos will be used to quantify factors including area coverage, organism density and diversity. The student may work independently or in a group, but will be expected to work with the Davies Lab. The student will be expected to work at the Graduate School of Oceanography Bay Campus, and is able to work hybrid as well.

Required qualifications: Familiarity with basic data analysis skills (e.g. electronic data recording, graphing data).
Preferred qualifications: Image and/or video analysis experience, and deep sea invertebrate identification experience

This project requires primarily lab work.

Hours: 30 hours/wk.

Project Mentor: Jasper Meagher, jasper.meagher@uri.edu and Dr. Andy Davies, davies@uri.edu

Natural Resource Sciences (NRS)

#11 - Coastal and Subaqueous in Long Island

Fellows will be working in the lab and in the field. Some of the things that they are doing in the lab is:

Oxidized pH, Bulk density (g/cc), Moisture content (%), Soil organic Matter content (%), Soil organic carbon content (%), Carbonate content (%), and Particle size distribution (For any samples with less than 12% soil organic carbon).

The students will also be able to help a Graduate student in the field working in local Marshes.

This project requires About 65% in lab and 35% in field

Hours: ~35 hours/wk.

Project Mentor: Kelly Addy Lowder, Kelalow226@uri.edu; (along with Dr. Mark Stolt)

#12 - URI Watershed Watch: Developing a Cyanotoxin Analysis Program

URI Watershed Watch (WW) is a Cooperative Extension volunteer water quality monitoring program in the Natural Resources Science Department. We are the largest volunteer monitoring/citizen science program in RI. There are ~400 volunteers in the program, 1 full-time staff and 3-4 students. Each year we take on 1-2 Coastal Fellows as student staff, who are fully integrated into all aspects of the program, from training new volunteers, field monitoring, lab analyses, and data entry to helping with public outreach. Fellows work with the mentor to develop a project that advances or expands core WW programs, such as cyanobacteria monitoring, microbiology or pollution projects, or advanced lake water quality research. Alternatively, Fellows may work directly with coastal or river watershed organizations on a project of the organization's choosing.

Qualifications: Ability to work well in a group as well as
independently. Comfortable working in a laboratory and also outdoors. Good computer skills, Excel in particular, are extremely helpful. Must have a valid driver's license and be able to swim. Attention to details, willingness to read and follow directions and an interest in working with a diverse clientele (our volunteers) and staff are preferred. Interest in water quality, salt or fresh. Interest and courses in the sciences, biological or physical are helpful.

Skills - ability to follow directions, drivers license and a vehicle to use, able to swim.
Students work in groups sometimes and independently others

This project requires Primarily lab but some field and outreach work too.

Hours: 20-30 hours/wk.

Project Mentor: Elizabeth Herron, eherron@uri.edu

#13 - Understanding Habitat Use of Shorebirds in New England

We're seeking a fellow to assist with data collection and field work aimed at understanding shorebird habitat use in New England. Our goal is to quantify habitat quality and use for shorebirds at multiple sites. We also aim to better understand their local and migratory flight pathways as it relates to offshore wind development in southern New England and the Gulf of Maine. The project will include traveling to multiple locations around New England for field work including Napatree and Block Island in RI, and Monomoy National Wildlife Refuge in Massachusetts. Fieldwork will include capturing and sampling shorebirds. These birds will be captured using mist nets, have blood samples taken, and will receive small radio transmitters that will be used to track their movements using the Motus Wildlife Tracking system. This project will also include invertebrate sampling, which includes collecting sediment cores along transects in coastal habitats as well as sieving, preserving, and eventually sorting samples by taxon. The Coastal Fellow would be involved in all aspects of bird capture/handling and invertebrate sampling for this project, while conducting their own data-based research project.

The Coastal Fellow project will be aimed at understanding how Napatree Conservation Area has provided habitat for shorebirds over time, and determining what factors influence habitat availability. The fellow would use sediment/geography data, horseshoe crab spawning surveys, and eBird data to determine if and how shorebird abundance has changed overtime, and which factors influence those changes. We expect this position to be 8-10 weeks from late April through June for 40 hrs/week. The work schedule would be flexible in the beginning while the semester is ongoing. The project will involve intense fieldwork, including living in tents on a remote island with breeding birds and in group housing situations for periods of time with frequent travel between field sites. Interested fellows should be able to lift 40 lbs and be able to walk long distances on uneven terrain carrying heavy gear. Experience working with wild birds and mist nets are a plus but not required. The fellow should be very organized, comfortable working with computers-with some experience with excel and should be comfortable with (or open to learning about) handling wild animals. We seek a fellow who is flexible, eager to learn, and comfortable working in large and diverse groups.

This project primarily requires field work.

Hours: 20+ hours/wk.

Project Mentor: Rebecca Linhart (rebecalinhart@uri.edu), Dr. Peter Paton (ppaton@uri.edu), Dr. Scott McWilliams (srmcwilliams@uri.edu)

#14 - Update GIS data for National Park Service

This project will support the National Park Service (NPS) by developing or updating GIS datasets for NPS lands in the Northeast with a focus on Cape Cod National Seashore. These datasets include trails, roads, buildings, points-of-interest, and parking areas as defined by the NPS core data standards. The work will primarily involve on-screen digitizing and editing of NPS GIS data using the ArcGIS Pro software. Additional activities may involve spatial analyses of NPS data, creation of static maps or web maps, and providing other GIS support for the park service as needed. The work location will be URI's Environmental Data Center (EDC) lab. The student will work with EDC staff and NPS personnel.

NRS 410 or equivalent GIS experience with ArcGIS Pro is required. The work will contribute to a nationwide initiative to streamline geospatial data and make it more accessible to park staff and the public.

This project work will take place in the EDC lab.

Hours: 20 hours/wk.

Project Mentor: Dr. Jason Parent, jason_parent@uri.edu

#15 - Improving and protecting Water Quality in and around Green Hill & Ninigret Ponds

Fellow will gain valuable lab, fieldwork and science communication skills while supporting Onsite Wastewater Resource Center (a Cooperative Extension program) staff in ongoing grant-funded activities. We work closely with our external partners (Town of Charlestown, Salt Ponds Coalition, Save the Bay) on a project designed to improve and protect water quality in two salt ponds in southern RI, which offers meaningful networking opportunities for the fellow. The fellow's main duties will revolve around supporting monthly field sampling of advanced septic systems in southern RI, and lab analyses of water quality parameters (to monitor how septic systems are performing) – this work will be centered on campus during normal working hours. Additionally, depending on time and interest, fellow will also contribute to or attend community engagement events with local residents and stakeholders to help them understand how their choices on their property can impact water quality in and around the salt ponds.

Fellow will mainly work as a member of the team with staff members, but will have the opportunity to work independently (on campus or possibly remotely) on their co-designed fellowship project or other tasks. Opportunities for job shadowing and experiential learning with external project partners and relevant state organizations may be possible if candidate is interested and schedules align. No prior field or lab experience necessary – we will provide training to interested fellow. A valid driver's license a plus (but not strictly necessary), as are passion and/or skills in design, visual/creative art(s), communication, technology tools, GIS, data science and/or other interests or talents they wish to leverage in our community engagement work, or their fellowship project.

This project will be a combination of lab work (~50%), fieldwork (~30%) and public outreach (~20%) – to be co-determined with fellow

Hours: 20+ hours/wk.

Project Mentor: Dr. Alissa Cox, alibba@uri.edu

#16 - Responses of coral reef fish to habitat degradation

Habitat loss and degradation are major causes of population decline, and this project will test ideas about the mechanisms for decline for coral reef fishes. While it is ultimately obvious that reef-associated fishes depend on coral reefs to provide habitat, the specific nature of their dependence and how they react as reef habitats gradually die off is hard to predict. These predictions are further complicated by shifts in habitat use with age, so that adult fishes of a species often use different habitat than juveniles. For 3-spot damselfishes, we have shown that over the past 30 years juveniles have shifted to occupy coral species that provide lower-quality habitat as their preferred corals died off. Adult 3-spot damsels, however, prefer to associate with different coral species from juveniles. We will identify the coral habitats selected and occupied by adult 3-spots, and compare their present-day habitat use to habitat measures of their habitat selection in previous decades. We will thus test whether shifts in habitat use over the past 30 years by adult 3-spots either ameliorate or exagerate the effects of habitat degradation previously documented for juveniles.

The fellow will assist with a field study performed on SCUBA in the Virgin Islands that involves measuring habitat selection and occupancy of fishes underwater. The fellow will also assist with tracking the fate of individual fish occupying different habitat types to determine habitat quality. Working underwater, the fellow will assist with the measurement of habitat used by, and available to, the fish and monitor their behavior.

We are looking for a fellow who has the following qualifications:
1) A passport and willingness to spend roughly 4-5 weeks of the summer at an isolated Caribbean field site is essential.
2) Current AAUS research diver certification is essential. See https://web.uri.edu/research-admin/diving-safety-research-program/scientific-research/for diving requirements. Applicants with both a current AAUS research diving certification and some experience (e.g. > 50 logged research dives) may be preferred.
5) The ability to perform physically demanding field work for long hours each day in a team setting under sometimes stressful field conditions is essential. Some specific tasks include the ability to lift and carry SCUBA tanks (approx. 43 lb) and paddle a kayak approx. 1.5 miles.
3) A strong academic background in ecology and marine biology, and an interest in marine conservation is preferred. Willingness to read primary scientific literature and contribute to project design.
4) Familiarity with the animals and plants that occupy Caribbean coral reefs is a plus but not essential. The ability to recognize coral and fish species visually may be preferred.

This project is all field work.

Hours: 20+ hours/wk.

Project Mentor: Dr. Graham Forrester, gforrester@uri.edu

#17 - New England Cottontail Conservation Genetics

The New England cottontail (Sylvilagus transitionalis) is a species of conservation concern and the focus of a multi-agency and multi-institutional effort to conserve the species. Some of the main reasons for their decline have been the loss of habitat and competition from the non-native eastern cottontail. In Rhode Island, New England cottontail have nearly disappeared from the landscape. In collaboration with the RI Department of Environmental Management's Division of Fish and Wildlife, United States Fish and Wildlife Service, and other partners throughout the Northeastern United States, we have been documenting the distribution of New England cottontail and eastern cottontail. Each year, our collaborators collect thousands of rabbit pellets and we extract DNA from the samples to identify the species of origin.

This project would include processing fecal samples for species identification, learning conservation genetic laboratory techniques, database management, and computer analyses. This information will help state and federal biologists conserve the species. The location of the laboratory work would be at the Wildlife Genetics and Ecology Laboratory in the Coastal Institute on URI's main campus. Preferred skills are experience conducting laboratory work using micropipettes, computer analyses, course work on genetics and conservation, and enthusiasm for conserving species.

This project is primarily lab work.

Hours: 20-30 hours/wk.

Project Mentor: Dr. T.J. McGreevy, tjmcg@uri.edu

Plant Science & Entomology (PSE)

#18 - Evaluating Pollinator Plantings and Bumble Bee Nesting

The URI Bee lab https://web.uri.edu/beelab/ is working on several aspects of bee conservation and pollination ecology. Casey Johnson, Research Associate and former Coastal Fellow, is heading up a survey of bees at several established Natural Resource Conservation Service (NRCS) pollinator meadows throughout Rhode Island. This research entails travel to study sites, surveying bees and plants in bloom and analyzing data. Coastal Fellows will be trained to identify bees on the wing as well as plant identification and data analysis. Some prior experience with plant ID would be beneficial.

Lauren (Ren) Johnson is a Ph.D. student who is starting her research on increasing nesting habitat for bumble bees. Coastal Fellows will assist Ren in setting out, monitoring and collecting data on bumble bee nesting boxes placed at five locations in Rhode Island. Julia Vieira (M. S. 2023) and former Coastal Fellow conducted research on the establishment and importance of several clovers, self-heal, and creeping thyme to Bombus fervidus, a long-tongue bumble bee which is listed as vulnerable on the International Union for Conservation of Nature (IUCN) Red List. The latest evaluation by IUCN (2014) stated: "If this species' relative abundance continues to decline at the same rate, we project that the species will go extinct in the next 70 to 80 years." Coastal Fellows will assist in evaluating established pollinator plantings at URI's East Farm by surveying bees (especially Bombus fervidus) attracted to the various clovers, self-heal and creeping thyme plots under drought conditions. We also maintain 20 honey bee colonies at East Farm which are used to evaluate novel Varroa mite (pest of honey bees) controls. Coastal Fellows may be asked to assist in all of these projects and any new projects as well.

This project primarily requires field research.

Hours: 35 hours/wk.

Project Mentor: Dr. Steven Alm, stevealm@uri.edu

#19 - Vegetable Variety Trials

Interested in sustainable agriculture and vegetable production? Wondering if farming is for you? Come learn research methods and farming skills as a member of the URI Agronomy Vegetable Farm Crew. You will work on variety trials to evaluate heat tolerance in broccoli, disease resistance in cucumbers, and production methods for husk cherries. You will also assist with management of the gardens that produce the vegetables for Rhody Outpost and the Free Farmers Market.

Gardening/farming/landscape maintenance experience is preferred. This project is primarily outdoor work as part of a group - expect to get dirty and sweaty and have fun! The farm is located on the west edge of the URI campus in Kingston. Expect to work 5 mornings per week (M-F) from May 20 until the end of August. Time off is possible. Benefits include abundant free vegetables.

This project primarily requires field work.

Hours: 25 hours/wk.

Project Mentor: Rebecca Brown, brownreb@uri.edu

#20 - Roadsides as Pollinator Habitat

The medians and shoulders of limited access roadways are one of the largest sources of early-succession grassland habitat in New England. As such, they have potential to be a significant resource for our native grassland pollinators, particularly ground-nesting bees. We have established plantings of native wildflowers in the median of interstate 95 in Rhode Island and are collecting data on the plant species and pollinators. This project is field-based and the student will work with a graduate student to conduct surveys at the project site. All appropriate safety precautions are utilized, but this project does require a willingness to work within 20 feet of a high-speed roadway. Experience with plant identification and insect identification preferred. There are also possibilities for the fellow to participate in development of materials for public education as part of this project.

This project primarily requires field work.

Hours: 25 hours/wk.

Project Mentor: Rebecca Brown, brownreb@uri.edu

#21 - Aquaculture Laser Scarecrow

Laser scarecrows are a new tool for scaring birds away from places where they are not wanted. The laser scarecrows have proven effective against starlings and blackbirds in crop fields and against geese at airports. They are being investigated as a way to keep gulls and cormorants from roosting on oyster aquaculture gear and potentially contaminating the oysters with fecal bacteria. This fellowship involves working with the mentor to design and fabricate laser scarecrows and wide-angle digital cameras to be deployed on aquaculture farms in Rhode Island and Massachusetts. The scarecrows and cameras will be deployed in late July and the fellow will re-join the project in September to assist with collecting data on bird activity from the images recorded by the cameras. This project provides opportunity to develop skills in electronics fabrication, 3D-printing, and computer-aided analysis of digital images.

This project requires primarily laboratory work with some trips to field sites.

Hours: 20 hours/wk.

Project Mentor: Rebecca Brown, brownreb@uri.edu

#22 - Trapping and Identifying of Mosquito species for disease surveillance program

One Fellow will work with 3 other DEM seasonal employees conducting weekly state-wide trapping and identifying mosquitoes to species, during early June - late Sept. The final project/goal will present the disease surveillance program particulars and 2024 season's results. Students will work at URI's East Farm, 35 hrs/week, $15.50/hr. This is a great opportunity to collaborate with members of the Rhode Island Department of Environmental Management. For further information please contact Al Gettman at agettman@etal.uri.edu or 401 640-4504.

This project requires primarily field work.

Hours: 35 hours/wk.

Project Mentor: Alan Gettman, agettman@etal.uri.edu (Adjunct Professor in PSE and RI Department of Environmental Management)

#23 - Evaluation of local parasitism of Acanaloniidae planthoppers

This project will include field collection of planthoppers in pastures and meadows using a sweep net, identification and rearing, or maintenance of the insects collected. The fellow will monitor planthopper nymphs for the presence of parasitoids and identify all that are found. This project will also involve some field sampling for spotted lanternfly as this research is being conducted along with our spotted lanternfly biocontrol project.

This project will involve about 50% field work, and 50% lab work.

Hours: 35 hours/wk.

Project Mentor: Lisa Tewksbury, lisat@uri.edu

#24 - Biological control of spotted wing drosophila, an invasive fruit fly

This project will involve survey and collection of fruit, including blueberries, blackberries and native berries to find spotted wing drosophila (SWD) larvae and potential parasitoids of SWD.

The fellow will spend about half of their time in the field and half in the lab.

Hours: 35 hours/wk.

Project Mentor: Lisa Tewksbury, lisat@uri.edu

#25 - Identification of scale species using PCR

This project will involve rearing native scale species and identification of each species is critical. These scales will be used in host range testing for a biocontrol program for an invasive scale. The fellow will work with a Research Associate and independently to care for scale species, their host plants, and will learn to identify species using molecular techniques.

This position will primarily involve lab work, some greenhouse, and some field work.

Hours: 30 hours/wk.

Project Mentors: Alexandra Johnson (ajohnson13@uri.edu) and Lisa Tewksbury (lisat@uri.edu)

#26 - Identifying plant disease pathogens

Identification of plant disease pathogens is a pivotal step in diagnosing and controlling plant diseases. The objective of this project is for the fellow student to gain an understanding of the process of diagnosing plant pathogens by using microscopy, serological, and culturing techniques. The student will learn the different techniques used to identify plant pathogens. Under the direction of the clinic director, the student will help with the day-to-day operation of the diagnostic clinic and will help develop protocols for morphological identification of economically important plant pathogens at the University of Rhode Island Plant Protection Clinic.

It is preferable but not required that the student have some knowledge of plant identification, plant pathology, or entomology. The student will be expected to work in the laboratory at the Skogely Turf Building. It is expected for the student to be able to work alone/independently under the direction of the clinic director.

This project requires Primarily lab work.

Hours: 20 hours/wk.

Project Mentor: Keiddy Urrea-Morawicki, (kurrea-morawick@uri.edu) and Dr. Lisa Townson, (ltownson@uri.edu)

#27 - Residential Tick Management: assessment and natural product testing

Effective residential tick control is an important tool for preventing tick bites and disease. Fellows will assist researchers on two projects related to assessing residential tick control. In one project, we will be field testing new natural and synthesized tick control products in a novel micro-arena system (https://web.uri.edu/tickencounter/research/peer-reviewed/tick-control-research/). Students will help launch the trials by releasing lab-reared ticks into arenas, then will help sample the arenas multiple times to determine the level of tick control for each product. The second project (Project ITCH--stands for Is Tick Control Helping) is part of a large New England-wide collaboration and involves recruiting and then sampling in 50-60 Rhode Island residential yards where homeowners either do or do not use some form of tick control.

In addition to tick sampling, students will assist in administering surveys to participants and curating tick samples for pathogen testing. Interns will work as part of a group, visiting residential yards in southern Rhode Island and conducting experiments at URI East Farm and Jamestown.

This project requires primarily field work but some lab work.
Hours: 35 hours/wk.

Project Mentor: Dr. Thomas Mather, tmather@uri.edu

South Kingstown Land Trust (SKLT)

#28 - Mapping Mill Pond (SKLT)

Profile of Mill Pond:

The Profile output would consist of the following and be in a story map (GIS) format.
We envision that the story map would not get into too much detail on each section but would be an accurate compilation of key features.

1. History of the pond -- when the dam was created, purpose of mill, restoration of mill Role of the Land Trust in the pond and mill (ownership of the dam). How it is used today.

2. Features of the pond:
- Start with a map of the area
- a depth map (likely would need to be generated with a fish finder);
- Aquatic vegetation in the pond -- any prior controls measures
- sampling data (the student would do weekly sampling of dissolved oxygen, temperature, and clarity; biweekly sampling of chlor a; nutrient sampling -- all the standard WW tests)
- Bottom sediments (with WW dredge)
- Any indication of blue-green algae blooms would be noted
- Bird life -- the pond is a great habitat for water birds.

3. Features of the watershed --
- a map of the streams and land use and wetlands that comprise the watershed
- Identification of the fish hatchery -- and a brief description of the fish hatchery -- when created, what is raised, numbers of fish
- incoming tributaries and data on flow and quality if possible.
- A map of the watershed that shows wetland soils, stratified drift, dense till and friable till (this will be based on the soil map)

4. Downstream watershed --
- Another map or two
- where does the pond drain?
- What are the features of the receiving waters that the pond drains to?

Oversight will be provided by South Kingstown Land Trust (SKLT) board members Elise Torello, GIS & mapping, Art Gold, watershed, Linda Green, water quality & testing

This project primarily requires Field work, research, GIS mapping.

Hours: 25 hours/wk.

Project Mentor: Julia Landstreet, julia.landstreet@sklt.org