

Announcement

The Jacques Cousteau 2020 Margaret A. Davidson Summer Undergraduate Internship

The Jacques Cousteau National Estuarine Research Reserve (JC NERR) is now accepting applications for summer internships in topics on estuarine science, education, and management to introduce undergraduates to future opportunities with the graduate level [Margaret A. Davidson Graduate Fellowship Program](#). Up to four awards will be offered. This special summer internship is aimed at matriculated third or fourth-year undergraduates or students that have recently graduated with a Bachelor's degree. Awardees will work with mentors from the JC NERR (see contacts below) to develop projects broadly relevant to core areas of interest (listed below) for the Reserve.

Internships will last eight weeks (June 15 to August 7). During this period, interns can be housed at the Rutgers University Field Station dormitory in Tuckerton, NJ and receive a stipend of \$4,000. Interns will have access to office and research facilities at the JC NERR Coastal Education Center and the nearby Rutgers University Marine Field Station. A program of social engagement with up to three additional interns as well as graduate students will promote science-integrated networking and collaboration skills through kayaking, boating, and other field trips. At the conclusion of the period, interns will present their research projects and posters at a capstone research symposium.

This is a competitive process. Applications will be reviewed and evaluated by JC NERR staff, with decisions to be announced by April 1, 2020. Intern projects must be compatible with ongoing activities and available facilities. Therefore, applicants are highly encouraged to contact a mentor to discuss feasibility prior to developing an application.

The application will consist of and be evaluated on 1) a letter of interest aligned with one of the core areas including a brief description of a potential project and a brief statement describing how the internship will benefit the career goals of the student (no more than 2 pages together); 2) a letter of recommendation from the student's advisor or major professor; and 3) an unofficial copy of the student's transcript. Applications due March 13, 2020.

Application packages should be submitted via a Google Form found at <https://jcnerr.org/internships.html> after speaking with a potential mentor. A list of mentors with their area of expertise appears below:

Management/Policy

Michael De Luca

Reserve Manager

848-932-3474

deluca@marine.rutgers.edu

Management/Policy

Lisa Auermuller

Assistant Manager

609-812-0649 x204

auermull@marine.rutgers.edu

Research

Thomas Grothues, Ph.D

Research Coordinator

609-296-5260 x 262

grothues@marine.rutgers.edu

Stewardship/Geoform/Mapping

Andrea Habeck

Stewardship Coordinator

732-708-1462

habeck@marine.rutgers.edu

Education/Outreach

Kaitlin Gannon

609-812-0649 x206

gannon@marine.rutgers.edu

Jacques Cousteau NERR Core Areas of Interest for Summer 2020 Internship Program

Habitat Mapping

The Jacques Cousteau NERR will be creating a new habitat map in early 2020 that will coincide with a mapping effort by NOAA's Office for Coastal Management. The JC NERR will be following the "Mapping Land Use and Habitat Change in the National Estuarine Research Reserve System Standard Operating Procedures" for conducting the habitat mapping efforts. The objectives of the NERRS habitat mapping and change planning effort are to map land cover, land use, and associated land cover changes in reserves and their watersheds; and enhance capacity within NERRS to map, model, and disseminate information on estuarine habitat trends and associated linkages with anthropogenic and climatic stressors.

The mapping process is both a Geographic Information System (GIS) and fieldwork process. The GIS mapping will be done using high resolution remote sensing data, and the habitats will be classified using both the NERRS Classification scheme and the Coastal and Marine Ecological Classification System (CMECS). The Davidson fellow would be taking the initial segmentation done from the mapping product and refine the habitat classifications using a GIS and accuracy assessments in the field.

Contact: Andrea Habeck, Stewardship Coordinator, habeck@marine.rutgers.edu

Coastal Training

The Davidson Fellow will work to assess the implementation needs of municipalities that have already undergone the Getting to Resilience process with the JC NERR. The Fellow will document local needs, identify trends and make recommendations for next steps with technical assistance projects for the JC NERR.

Contact: Lisa Auermuller, Assistant Manager, auermull@marine.rutgers.edu

Education

The JC NERR provides materials, content, and professional development opportunities for educators, but we seek to assess how well we are meeting school district priorities. Therefore we need information on the resources and support requirements that are most important. The Davidson Fellow will conduct an evaluation of professional development programs aimed at educators. In addition, the Fellow will assess behavioral change as part of Conservation Action Education programs. This will help to determine what materials, environmental topics, tools and resources are N.J. educators seeking to incorporate into their classroom.

Contact: Kaitlin Gannon, Education Coordinator, gannon@marine.rutgers.edu

Research

Ecological Impact of the OCNGS Shutdown on Fish

The Oyster Creek Nuclear Generating Station drew cooling water from the Barnegat Bay estuary and discharged warm effluent back into it since 1969 with potential impacts to fish ecology. The plant began shutdown in September 2018. A return to an earlier state of the estuary is anticipated, including the loss of warm refuge for overwintering southern species, redistribution of resident species, and change in production for species that previously experienced loss of larvae due to pump entrainments with potential cascades through the trophic web. A Davidson Fellow student would be involved as part of team using otter trawls and plankton nets to capture juvenile and larval fish, and measure water quality responses to the plant's shutdown. The student would use the data that they collected, in addition to data collected before the shutdown, to examine one of a number of ecological questions, chosen and formulated by them, that this unprecedented opportunity allows.

Juvenile fishes sampling applies a semi-balloon otter trawl with a headrope width of 4.9 m, a wing mesh of 19 mm, and a cod end of 6 mm bar mesh. Fish are identified, counted, and measured in the boat and released at the end of a sample station occupation under an IACUC-approved animal use protocol. Larval fish sampling employs a 1 m-diameter (1 mm mesh) circular plankton net fished passively from a bridge in current from flood tide flow. Larvae are sorted from the mixed planktonic catch and preserved in 90% Ethanol, and then identified, measured, and counted in the laboratory under a microscope. We do not expect any endangered or threatened species to be collected based on a history of 30 years sampling in this system with the same gear.

Algal bloom formation in the Jacques Cousteau National Estuarine Research Reserve

The Jacques Cousteau Reserve includes parts of a drowned river valley and a barrier island lagoon with a common inlet. One of these is naturally acidic and the other alkaline which potentially stimulates different responses in phytoplankton assemblage and growth within an otherwise common environmental, weather, and atmospheric system. The Reserve presents an ideal location for the study of pH and nutrients on the environmental forcing of the evolution of algal blooms. A Davidson Fellow student would collect water and sediment samples from marsh pools, creeks, and bay water and identify algal species and their life history stages (e.g. cysts) using a microscope, prepare samples for DNA fingerprinting, and analyze patterns of occurrence and abundance. Sampling would require wading or lowering samplers from bridges, as well as deploying hand-held electronic water quality data loggers. We do not expect any endangered or threatened species to be collected based on a history of 30 years sampling in this system with the same gear.

Contact: Dr. Thomas Grothues, Research Coordinator, grothues@marine.rutgers.edu