GRADUATE PROGRAM IN

THE UNIVERSITY OF MAINE

MARINE BIO-RESOURCES

Program of Study

The Program leading to the M.S. and Ph.D. degrees in Marine Bio-Resources is a cooperative offering of Animal and Veterinary Sciences, School of Marine Sciences, and Food Science and Human Nutrition. The graduate program in Marine Bio-Resources is designed to train professionals for a career in aquaculture and marine-related industries or for further academic training. The two degrees are intended to have a strong basis in the biological and/or physical sciences with an opportunity to emphasize one of the following specific areas: aquatic animal health, physiology and nutrition, aquaculture production, aquaculture/fisheries engineering, or food science and technology

The Program Faculty come from multiple disciplinary areas including pathology & pathobiology, immunology, parasitology, engineering, physiology, phycology, nutrition, seafood processing, and population and habitat modeling. Faculty work with a variety of marine species including but not limited to: cod, haddock, halibut, salmon, oysters, clams, sea urchins, sea vegetables, and shellfish, including lobsters.

Research Facilities

Extensive analytical facilities are associated research support are available on the Orono campus. Because of the interdisciplinary nature of the Marine Bio-Resource Program, student research efforts commonly involve facilities and faculty members of several departments. The Aquaculture Research Center (ARC) is located on the Orono campus and houses numerous temperature-controlled recirculating saltwater systems from 150 gallons to 4000 gallons. Facilities are available for egg incubation of cod, haddock, and halibut. A larval rearing laboratory allows the production of juvenile cod and haddocks as well as other fish species. A love food production laboratory is available for the production of rotifers and brine shrimp. The Center houses numerous aquaria for holding lobsters, shellfish, sea urchins, and tropical reef fish. The Center also houses a 120X8X4 ft wave tank which is used to conduct scale model tests. The Matthew Highlands Pilot Plant, also located on campus, has state-of-the-art food processing equipment including a blast freezer, smoke house, pasteurizer, ozone system, and other equipment necessary for value-added product development of wild-caught and farm raised aquatic species.

The Center for Cooperative Aquaculture Research (CCAR) is located on a 24-acre site in Franklin and has 610 feet of tidal marine frontage on Taunton Bay. It is a commercial scale aquaculture facility managed by the University of Maine, and its facilities comprise both seawater and freshwater aquaculture systems. Some of the objectives of CCAR are to develop integrated aquaculture techniques, to serve as a business incubator, to produce finfish juveniles for commercial grow-out, to develop sustainable aquaculture techniques, and to train staff and students in aquaculture techniques. The Center houses a salmonid egg incubation facility, pilot scale recirculation systems for marine finfish, a marine finfish nursery, a marine broodstock facility, and several large grow-out systems. The systems currently hold halibut, cod, seaworms, sea urchins, and the red alga Porphyra.

Applying

Consideration for admission to the program will be given to applicants holding a bachelor's degree from an accredited institution or the equivalent in one of the general areas of biology, animal science, food science, nutrition, or engineering. Admission to the Ph.D. program requires a Master's degree or equivalent in a science-related discipline with prior research experience. Applicants are expected to have at least a 3.0 grade-point average. Scores from the Graduate Record Examination (GRE) will be evaluated along with undergraduate transcripts and references from persons knowledgeable of the student's academic potential and work ethic. Applications will be considered by a Program Committee representing each of the participating units. Upon acceptance by the Program Committee, the applicant's file will be circulated among interested faculty. Admission into the program will rest on obtaining a suitable faculty advisor.

Upon admission, a program of study is planned by the student in consultation with the student's advisory committee. Courses are selected from the graduate offerings of all University of Maine Departments. The interests, background courses and future needs of the student will be considered in course selection. The student will participate in a research project developed in consultation with the advisory committee.

Correspondence

The Graduate School
5755 Stodder Hall Room 42
University of Maine
Orono, ME 04469-5755
207-581-3291
graduate@maine.edu

Dr. Linda Kling
School of Marine Sciences
Rogers Hall Room 207
Orono, ME 04469
207-581-2735
lkling@maine.edu

Graduate Faculty

Robert C. Bayer, Ph.D. (Michigan State), Professor. Biological Engineering. Lobster fisheries and aquaculture nutrition, management and physiology.

Brian F. Beal, Ph.D. (University of Maine), Professor. University of Maine at Machias. Shellfish aquaculture and estuarine biology.

Alfred A. Bushway, Ph.D. (Purdue University), Professor. Food Science and Human Nutrition. Chemical, physical, and sensory properties of processed meat products, and fruits and vegetables, extrusion technology, enzymology.

Rodney F. Bushway, Ph.D. (Texas A & M University), Professor. Fate and impact of agrichemicals in marine and estuarine environments.

William R. Congleton, Ph.D. (Kentucky), Associate Professor. Animal and Veterinary Science. GIS, GPS numerical modeling of the nearshore environment and animal breeding.

Darrell W. Donahue, Ph.D. (No. Carolina State), Associate Professor. Chemical and Biological Engineering. Food engineering, value added food production systems, information systems.

Linda J. Kling, Ph.D. (Maryland), Associate Professor. School of Marine Sciences. Larval fish nutrition and microdiet development. Development of aquaculture methodologies and strategies for alternate fish species.

H. Michael Opitz, D.V.M. (Free University of West Berlin), Associate Extension Educator. Biological Engineering. Fish health, pathology and management.

Bryan R. Pearce, Ph.D. (Florida), Professor. Civil and Environmental Engineering. Modeling of environment impacts on estuarine and marine systems.

John M. Riley, Ph.D. (Cornell), Professor. Biological Engineering. Aquacultural engineering, equipment design and construction.

Denise I. Skonberg, Ph.D. (University of Washington), Associate Professor and Graduate Coordinator. Food Science and Human Nutrition. Quality evaluation of aquatic foods, seafood by-product utilization, and aquaculture feed development.

Robert L. Vadas, Ph.D. (University of Washington), Professor. Biological Sciences, algal culture, marine ecology.

John E. Vetelino, Ph.D. (Rhode Island), Professor. Electrical and Computer Engineering. Bio sensors and food quality.

Associate Graduate Faculty

Richard Cawthorn, (Atlantic Veterinary College), Professor.

Stephen Fegley, (Maine Maritime Academy), Associate Professor.

Margie Lee Gallagher, (East Carolina University), Associate Professor.