

# **SUMMER 2014**

## **Undergraduate Research Opportunities For Environmental Majors**

Students are encouraged to seek out research experience while pursuing their undergraduate degree. Students desiring a research experience should review the list of faculty research projects provided below and see what opportunities are available. Students must contact faculty directly to express their interest and get more information. Students may earn academic credit for their research experience. Some of these research opportunities are paid positions. Read each posting carefully to see what compensation is available.

### **Basic Instructions:**

- 1) Student should review list of available projects below, and then contact faculty members directly to learn more about project expectations and qualifications (if any) that are needed. **Students must provide the following information with their inquiry:**

**\*Student name, class year, GPA, list of any relevant course work completed, number of hours available to work on project each week; specific skills/experience/training/availability required for the project based on the advertisement listed here. Indicate "SUMMER RESEARCH INTERN" in the subject line of your email.**

- 2) To earn academic credit, an ENVSCI Independent Study contract must be completed and signed by both the student and the sponsoring faculty member. This form is available on-line at [http://eco.umass.edu/wp-content/uploads/2011/11/ENVSCI\\_IndepStudyForm\\_fields.pdf](http://eco.umass.edu/wp-content/uploads/2011/11/ENVSCI_IndepStudyForm_fields.pdf)

Instructions for completing the form are provided on-line within the same document link. Please note that all Independent Study projects (ENVIRSCI 296, 396, 496) must be letter graded. Student can choose to enroll in Internship/Practicum credits (ENVIRSCI 298, 398, 498), but these courses are mandatory Pass/Fail.

- 3) **To enroll for SUMMER Credits, the completed Independent Study Contract must be delivered to the ENVSCI Program Office at 310 Holdsworth Hall before the end of the Spring semester.** Additional paperwork is required to enroll through Continuing & Professional Education for Summer credits. You will be guided through this process. Please note that there is an additional tuition cost for enrolling in summer credits. (Note: It may be possible to roll-over some academic credit into the Fall term, depending on what follow-up written report might be required and when this work is conducted.)

SEE LIST OF FACULTY RESEARCH INTERESTS ON NEXT PAGE.

Faculty Summer Research Projects. Updated February 2014.

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## ~ Environmental Research Opportunities ~ Summer 2014~

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**Anne Averill, Professor**  
**Environmental Conservation**  
301 Holdsworth Hall

**Pollinator Ecology**  
[averill@eco.umass.edu](mailto:averill@eco.umass.edu)

Projects available to study native pollinators of a native crop. Research focuses on bumble bee decline, native bee conservation, cranberry pollination, and factors impacting health of bees (pathogens, parasites, landuse change, pesticides). Research activity is off-campus, centered in southeastern MA at the Cranberry Station Labs in East Wareham, MA (this is a UMass satellite unit with ca. 8 scientists and a staff of 25) 5 miles from the Cape Cod Canal. The job begins ca. early June and ends late August. 40 hours/week. Starting at \$11/hour.

We will carry out bee collections and conduct work in cranberry systems and natural settings e.g. wild bogs of Cape Cod, Quabbin Reservoir and arboretums. For our experimental studies, students must be equally comfortable conducting field observations under hot, exposed conditions, as well as long hours of lab dissections, microscope time, insect curation, and data entry sought. Must be comfortable around bumble bees (stings are exceedingly rare), pesticides, and a pesticide-treated crop. Sophomores able to return in subsequent years and on path to formulate an undergraduate thesis project, additional to assigned duties, preferred. There is NO housing provided. Student must be able to secure their own housing (and/or commute daily to/from the Cranberry Station in East Wareham.

**Michelle DaCosta, Associate Professor**  
**Stockbridge School of Agriculture**  
17 Stockbridge Hall , 413-545-2547

**Plant Stress Physiology**  
[mdacosta@umass.edu](mailto:mdacosta@umass.edu)

**Project description:** Our lab investigates physiological strategies that plants use to survive environmental stresses, including drought and temperatures extremes. Most of our research involves the study of grasses that are commonly used for turf, forage, and bioenergy. We are looking for a motivated student to assist in ongoing research projects consisting of both field, laboratory, and greenhouse experiments.

**Location of work:** Student will be working both at the Joseph Troll Turf Research Facility in South Deerfield and on the UMASS Amherst campus.

**Qualifications:** the student must have willingness to work under adverse environmental conditions (heat, rain, insects, etc.). Experience working with plants desired, but not necessary. Also, undergraduates with prior research experience working in a greenhouse or laboratory is good. Valid driver's license required (personal car preferred).

**Anticipated duration:** Start in May (after semester ends, although this may be flexible) and through the end of August. **Hours required:** 20 to 35 hours per week

**Compensation:** Student can earn \$9-\$11/hour, depending on experience. Academic credit is also an option if desired by the student.

**Application Deadline:** March 28, 2014

Faculty Summer Research Projects. Updated February 2014.

**Masoud Hashemi, UMASS Extension      Sustainable Farming Systems / Cover Crops**  
**Stockbridge School of Agriculture**      [Masoud@umass.edu](mailto:Masoud@umass.edu)  
207 Bowditch Hall , 413-545-1843

Two or three openings available for summer field research assistants, who can earn pass/fail practicum credits. A minimum of 15 hours (2 complete days) per week is required.

A brief description of the projects follow:

1) Title: Feasibility of growing fava beans as a new cash/cover crop in Massachusetts. In this project we are preparing guidance for basic management practices for growing fava beans in Massachusetts. Other components of the research are assessment of nitrogen contribution from fava beans to succeeding crop, measurement of Dopamine (used for curing Parkinson disease) in various parts of the plant and their accumulation trend.

2) Title: Optimum seeding rate and planting time of hairy vetch for maximum nitrogen contribution to corn. In this project we hypothesize that the current recommended seeding rate for growing vetch as cover crop is too high and can be reduced to 50% without compromising its nitrogen contribution to corn silage. In this project we also monitor nutrient release from mineralization of vetch cover crop and focus on synchronization of nutrient release from vetch and uptake by corn plants.

3) Title: Weed suppression in spring spinach through fall planted forage radish cover crop. This experiment is about integrated weed management in spinach by using forage radish. Forage radish was planted at three times in fall. Radish biomass and weed population and biomass have already been determined in late fall. In early spring we will plant spinach into radish residues. Four treatments will be studied; 1) no-till, no herbicide, 2) no-till, but using herbicide, 3) conventional tillage, no herbicide, and 4) conventional tillage, using herbicide. We hypothesized that no-till no herbicide spinach grown on radish residue can be as effective as conventional tillage and using herbicide in terms of weed control.

4) Title: Growing brewing barley in Massachusetts. In this experiment we study some basic management practices for growing barley for malting purpose. Unlike feed barley, the N content of brewing barley should be kept as low as possible for not interfering with fermentation. We hypothesized that brewing barley grown after a legume cover crops (we will study four legume species) can accumulate just enough nitrogen in their grains.

**David King, Research Wildlife Biologist**  
**US Forest Service**  
201 Holdsworth Hall, 413-545-6795

**Ornithology**  
[daveking@eco.umass.edu](mailto:daveking@eco.umass.edu)

**Description:** Students would be participating in a study on bird abundance and nesting success in Amherst conservation areas from mid-May through August under the supervision of graduate student Melanie Klein. The student would be maintaining trail cameras put out for surveying nest predators, checking bird nests located by paid technicians to establish if they are active or have been depredated or parasitized by cowbirds, and quantifying habitat characteristics. Students should have good observation skills, be able to make careful observations and record them accurately, and be comfortable walking off of trail in woodlands.

The anticipated hours per week would be 10 or more, and a 4-week minimum commitment is requested. **Compensation** would be training in standard bird field research techniques, as well as independent study or practicum credits. Students would have the option of participating in data entry and analyses during Fall 2014. [Note: Two of our former interns have enrolled in graduate programs, success attributable at least in some degree to the training and experience they gained working with us.]

**Susannah Lerman, Post-doctoral Researcher**  
**Environmental Conservation/US Forest Service**  
Holdsworth Hall

**Urban ecology**  
[slerman@cns.umass.edu](mailto:slerman@cns.umass.edu)

**Positions Available:** Paid Field Technician (1) and Unpaid Intern (2-3)

**Field Work Location:** Springfield, MA

**Duration:** Late April - September

**Job Description:** Technician needed to assist with a NSF-funded project investigating management regimes for improving urban biodiversity and sustainability. The study investigates how lawn mowing frequency in private yards influences pollinator and ground arthropod diversity, and soil conditions. Primary duties include lawn mowing, setting up pollinator and arthropod collection traps, collecting pollinators and arthropods, vegetation sampling, and soil sampling. The technician and interns will gain valuable experience collecting data for different taxa, and conducting field work in urban settings.

**Qualifications for Field Technician:** 1) Ability to lift heavy equipment (e.g., lawn mower); 2) Strong organizational skills; 3) Strong attention to detail and ability to follow directions; 4) Experience conducting field research and plant ID skills a plus; 5) Meticulous data entry and other office-related tasks; 6) Ability to project infectious enthusiasm for urban wildlife since the technician will have contact with the public; 7) Must have personal vehicle but will be reimbursed for mileage.

**Salary for Field Technician:** \$8-10 per hour, depending on experience

**Hours per week:** ranges between 20 and 40

**Qualifications for Interns:** 1) Commit to at least 2 days per week; 2) Strong enthusiasm for learning field techniques; 3) Prior field experience a plus but not necessary.

Intern positions are unpaid, with academic (practicum) credit available.

**To apply:** Please send cover letter, resume or curriculum vitae and contact information for three references to SUSANNAH LERMAN ([slerman@cns.umass.edu](mailto:slerman@cns.umass.edu)).

**Rick Peltier, Assistant Professor**  
**Public Health/Environmental Health Science**  
149 Goessmann Lab, 413-545-1317

**Air Quality**  
[rpeltier@schoolph.umass.edu](mailto:rpeltier@schoolph.umass.edu)  
<http://people.umass.edu/aerosollab>

Multiple projects available throughout the academic year. Graduate student funding available for an Environmental Protection Agency (EPA) study looking at indoor air quality pollutants in indigenous populations in Canada. Current juniors and seniors considering graduate study in air quality research should definitely inquire. Multiple undergraduate student projects also available. Students interested in Commonwealth College Honors Thesis projects are especially encouraged to apply. [rpeltier@umass.edu](mailto:rpeltier@umass.edu)

**Allison Roy, Research Assistant Professor**  
**Environmental Conservation/US Geological Survey**  
317 Holdsworth Hall, 413-545-4895

**Aquatic Ecology**  
[aroy@eco.umass.edu](mailto:aroy@eco.umass.edu)

**Four positions available** (be sure to indicate which position you desire when you apply):

### **Student Technician in Stream Hydrology and Fishes**

**Position description:** The technician will assist a PhD student in a project assessing the effects of surface water withdrawal reservoirs on downstream hydrology and fish assemblages. Duties will include maintaining stream hydrology gages, measuring discharge, surveying, and habitat assessments at 18 sites in eastern and central MA. The technician will also assist with fish sampling via backpack electrofishing. When not in the field, the technician will help with data management and calculation of flow statistics.

**Location:** Position is based at UMass Amherst, but will require driving to field sites throughout Massachusetts with USGS vehicles.

**Supervisors:** Allison Roy (PI) and Todd Richards (PhD student), Massachusetts Cooperative Fish and Wildlife Research Unit.

**Required qualifications:** Applicants with a strong background and interest in field work, particularly related to aquatic systems are preferred. Dependability, attention to detail, initiative, and independence will also be considered.

**Employment period:** May to August 2014 for 4-5 days (32-40 hours) per week.

**Salary:** \$10/hour

**Application procedure:** Email cover letter, resume (with your local contact information, pertinent experiences, relevant coursework, and names and contact information (email and phone number) for two references, including at least one academic reference), and unofficial transcript to Allison Roy <aroy@eco.umass.edu>.

**Application deadline:** 28 March 2014

### **Student Technician in Stream Habitat Assessments**

**Position description:** The technician will assist an MS student in a project investigating habitat quality in stream ecosystems with various levels of urban impact. We will use an electronic total station to survey stream cross sections and longitudinal profiles. Additionally, we will measure water quality, hydrology, substrate, riparian vegetation, and other habitat characteristics. When not in the field, the technician will help with equipment calibration and data entry.

**Location:** Position is based at UMass Amherst, but will require driving to field sites throughout Massachusetts with USGS vehicles.

**Supervisors:** Allison Roy (PI) and Kate Bentsen (MS student), Massachusetts Cooperative Fish and Wildlife Research Unit.

**Required qualifications:** Applicants with a strong background and interest in field work, particularly related to aquatic systems are preferred. Dependability, attention to detail, initiative, and independence will also be considered.

**Employment period:** May to August 2014 for 4-5 days (32-40 hours) per week.

**Salary:** \$10/hour

**Application procedure:** Email cover letter, resume (with your local contact information, pertinent experiences, relevant coursework, and names and contact information (email and phone number) for

two references, including at least one academic reference), and unofficial transcript to Allison Roy <aroy@eco.umass.edu>.

**Application deadline:** 28 March 2014

### **Student Technician in Aquatic Ecology**

**Position description:** The technician will assist in the field on a variety of research projects as needed throughout the summer. Duties may include: stream discharge sampling, stream habitat assessments, lake habitat assessments, water quality measurement, macroinvertebrate sampling, stream electrofishing, lake seining, observing fish habitat use via snorkeling, etc.

**Location:** Position is based at UMass Amherst, but will require driving to field sites throughout Massachusetts with USGS vehicles.

**Supervisors:** Allison Roy (PI) and graduate students, Massachusetts Cooperative Fish and Wildlife Research Unit.

**Required qualifications:** Applicants with a strong background and interest in field work, particularly related to aquatic systems are preferred. Dependability, attention to detail, initiative, and independence will also be considered.

**Employment period:** May to August 2014 for ~3 days (24 hours) per week

**Salary:** \$10/hour

**Application procedure:** Email cover letter, resume (with your local contact information, pertinent experiences, relevant coursework, and names and contact information (email and phone number) for two references, including at least one academic reference), and unofficial transcript to Allison Roy <aroy@eco.umass.edu>.

**Application deadline:** 28 March 2014

### **Student Technician in Freshwater Lake Fishes**

**Position description:** The technician(s) will assist on a project investigating alewife productivity in freshwater lakes and ponds in eastern MA. Juvenile fishes will be sampled using purse seines from boats at nighttime. Additional sampling will take place for water quality, habitat quality, plankton, etc.

**Location:** Position based in eastern MA. Housing (hotels, camping) during field days is provided.

**Supervisors:** Allison Roy (PI), Adrian Jordaan (PI), Andrew Whiteley (PI), and several graduate students.

**Required qualifications:** Applicants with a strong background and interest in field work, particularly related to fishes and aquatic systems are preferred. Must be able to swim and be comfortable on boats. Ability to work in a team is critical.

**Employment period:** May to August 2014, 40 hours/week. May be split into two, part-time positions.

**Salary:** \$10/hour

**Application procedure:** Email cover letter, resume (with your local contact information, pertinent experiences, relevant coursework, and names and contact information (email and phone number) for two references, including at least one academic reference), and unofficial transcript to Allison Roy <aroy@eco.umass.edu>.

**Application deadline:** 28 March 2014

**Patrick Roberts, Post-doctoral Researcher**  
**Environmental Conservation/US Forest Service**

**Forest Wildlife Ecology**  
[hprobert@eco.umass.edu](mailto:hprobert@eco.umass.edu)

**Job Description:** A hardworking and enthusiastic field intern is needed for a NRCS funded project studying the role that forest canopy gaps play in enhancing biodiversity. Fieldwork will be conducted in patches of dense, often thorny, shrub-land habitat surrounded by extensive forest. Duties will primarily involve deployment and collection of bee bowls, vegetation surveys, resighting color-banded birds and nest searching. The selected applicant will be expected to work at least 20 hrs/week.

**Location:** Western Massachusetts (primarily Quabbin Reservoir area)

**Qualifications:** While experience performing the tasks listed above is preferred, it is not required. It is most important that applicants are hardworking, enthusiastic and detail-oriented. All applicants should have a good sense of direction and be capable of working alone in the forest for extended periods of time. Applicants that are new to the field and eager to gain experience are encouraged to apply.

**Duration:** 8 weeks from late May to late July 2014

**Compensation:** \$200/week

**Application Deadline:** While this is not a strict deadline, I hope to make decisions by 04/1/2014.

**To Apply:** Please send your resume, a cover letter detailing your interest in this position and relevant experience, and the contact information for two references as a single document to: [hprobert@eco.umass.edu](mailto:hprobert@eco.umass.edu). Please include "UMass Field Intern 2014" within the subject line.

**Andrew Whiteley, Assist. Professor**  
**Environmental Conservation**  
107 Holdsworth Hall, 413-577-0204

**Conservation Genetics/Fisheries Ecology**  
[awhiteley@eco.umass.edu](mailto:awhiteley@eco.umass.edu)

### **Freshwater Fisheries Research Technician**

**Employment Period:** approximately 3-4 weeks, 40hrs/wk., beginning 7/21/2014

**Wage:** \$11.00 per hour

**Supervisor:** Zak Robinson, UMASS Amherst Graduate Student (advised by Andrew Whiteley)

**Location:** Shenandoah Valley of Virginia

**Description:** The position is to assist with ongoing University of Massachusetts Amherst graduate research in the beautiful Shenandoah Valley of Virginia. We will be conducting electrofishing surveys targeting brook trout as part of a genetic rescue study. The study aims to address the critical issue of fragmentation in aquatic ecosystems through assisted gene flow to isolated populations. This is an excellent opportunity for students interested in freshwater ecology, fisheries, and applied conservation genetics. Applicants should be aware that the work is physically demanding. The crew will be camping for the duration of the sampling period, so applicants should also enjoy camping or be willing to learn to love it. We work under all weather conditions, and crewmembers must facilitate good morale. All applicants must be in good physical condition and able to lift at least 50 pounds. Many sampling sites require vigorous hiking while carrying heavily loaded packs up to 10 miles in a day. If you're interested in spending a month of the summer exploring some of the more remote and scenic places in the east while getting valuable research experience email Zak Robinson ([zrobins@eco.umass.edu](mailto:zrobins@eco.umass.edu)) or Andrew Whiteley ([awhiteley@eco.umass.edu](mailto:awhiteley@eco.umass.edu)).

**Application Deadline:** 3/21/2014

Faculty Summer Research Projects. Updated February 2014.