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.

Each opportunity has been color-coded as either REMOTE or FACE TO FACE or a combination of the two. Any face-to-face position requires that students adhere to all COVID safety policies. If any off-campus FACE-TO-FACE work is required, students also need to complete the Acknowledgement of Risk Form and upload this on HandShake.

**Basic Instructions:**

1) Student should review list of available projects below, and then contact faculty members directly (or other individual listed) to learn more about project expectations and qualifications (if any) that are needed. **Mark your subject line of your email as “Undergrad Research Inquiry” and in your email provide the following information:**

   *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 required for the project.*

2) **Priority deadline for applications is Monday, February 1st!!** Faculty will contact qualified students to arrange for interviews as appropriate. Selection of interns (for most projects) will occur by Monday, February 8th. Add/drop closes on Friday, February 12th and your enrollment should be finalized by that date (if at all possible).

3) To earn academic credit, an ENVSCI Independent Study contract must be completed by the student and forwarded to the sponsoring faculty member for approval. This form is editable on-line [https://eco.umass.edu/wp-content/uploads/2011/11/ENVSCI_IndepStudyForm_fields.pdf](https://eco.umass.edu/wp-content/uploads/2011/11/ENVSCI_IndepStudyForm_fields.pdf)

   Students should save the completed PDF contract with a new file name that includes their first and last names. This PDF should then be sent to their faculty sponsor for approval and the faculty member should then forward this by email to Deb Henson (dhenson@eco.umass.edu) for processing. Faculty sponsors can either “sign the form” or indicate their approval in an accompanying email.

4) Instructions for completing the form are provided on-line within the same document link. Be sure to indicate the number of credits being earned for the research experience and whether it is a graded project or mandatory pass/fail project (see #5 below regarding differences).

5) 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.

6) **The completed Independent Study Contract must be emailed to Deb Henson (dhenson@eco.umass.edu) prior to the close of the Add/Drop period on February 12th**
Community-Driven Solar Siting & Financing
REMOTE OPPORTUNITY

**Project description:** UMass Clean Energy Extension (CEE) is seeking an undergraduate student to help identify data sources and develop tools for municipalities seeking to carry out a community-driven planning process for solar development. CEE provides support to Massachusetts municipalities working to improve energy efficiency and integrate renewable energy technologies into their communities. Through funding from the National Renewable Energy Laboratory, we are currently working to develop a process that demonstrates “bottom-up” solar siting planning driven by community residents and municipal officials, and to offer models for evaluating financing mechanisms that can keep solar benefits within the community.

While our initial focus has been on Massachusetts towns, we are planning to ultimately develop a set of tools that can be used by communities across the Northeast. With this in mind, we are looking for a student to seek out, identify, and organize datasets that can be used to adapt our tools for other states. For example, the student may be researching energy use data, renewable energy goals, solar bylaws, solar incentives, and a variety of geospatial (GIS) data layers available for New England states and New York. The student may also have the opportunity to work on other aspects of this project as the need arises.

**Supervisor:** The student will be primarily supervised by Zara Dowling, CEE Postdoctoral Research Fellow, but will also work with Dwayne Breger, CEE Director and River Strong, CEE Associate Director

**Qualifications:** We are looking for a highly organized individual with competency in Excel, basic data analysis, and basic GIS; literature review research abilities, as well as good writing and interpersonal skills, are a plus.

**Time Commitment:** Approximately 5 hours a week

**Compensation available:** independent study credits (graded project); practicum credits (Pass/Fail); or paid hourly position @ $15/hour;

**Project Duration:** Dependent on funding, project may possibly continue through the summer and/or into the fall.

**To Apply:** please send a cover letter and resume to Zara Dowling (zdowling@umass.edu). Priority deadline is Feb.1, but applications may be considered after that date if a suitable candidate is not immediately found.
Project 1: Undergraduate research opportunity to work on invasive plant outreach to garden professionals

(This is primarily a **REMOTE** experience, with potential trips off campus to visit local plant nurseries.)

**Project description:** Every year, the United States imports billions of non-native plants to be planted in our homes and gardens. While most of these species are benign, a subset has escaped cultivation and become invasive in natural areas where they can have severe negative impacts to our native ecosystems. To combat the spread of invasive plants, we need to increase awareness about invasive species and gain a better understanding of why so many invasive plants are still sold through plant nurseries. This project will involve working with researchers and extension offices at UMass to build a network of nursery professionals and spread awareness about invasive plants in our region. Activities may include establishing contact with local growers, developing and distributing outreach materials about invasive plants, and building trust among stakeholders to work towards reducing the impacts of plant invasions.

**Supervisor:** Graduate student, Eve Beaury

**Qualifications:** No previous experience is required, but students must express an interest in environmental science and management, working with stakeholders to communicate research, and developing/organizing outreach activities. Access to a car is not required, but will be preferred.

**Time Commitment:** Expect 3 hours/week for each credit (3 credits = 9 hours/week)

**Compensation:** Independent study credits (1 to 3 credits, depending on time commitment)

**Project duration:** There is potential for this project to extend into paid work over the summer and in subsequent semesters.

**To Apply:** Interested students should email Eve (ebeaury@umass.edu) with a resume, transcript, and a few sentences about why they are interested in this project.

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Project 2: Investigating Nonnative Plants and how they are introduced to new locations

**REMOTE OPPORTUNITY**

**Project description:** Understanding the ways in which invasive plants have relocated to new areas in the past is crucial for determining how best to prevent future invasions. Existing research has already identified the introduction pathways for nonnative plant species in some of the countries that are most affected by invasions, including the United States, Australia, New Zealand, and Brazil. However, there are still many countries of concern lacking such data (e.g. Canada, Britain, Japan, and French Polynesia), and the existing datasets that contain introduction pathways for nonnative plants are largely disparate and difficult to locate and efficiently use. We are looking for an undergraduate student to assist us in creating a worldwide dataset of the introduction pathways of nonnative plants by compiling all existing country-scale data and researching the method of introduction for plant-country occurrences that have yet to be documented. Once complete, this comprehensive dataset will allow us to revisit the following questions from a global perspective: 1) Which introduction pathways are associated with the most invasive plant species?, 2) Are the relative proportions of introduction pathways the same for all invaded countries?, 3) For each species that has invaded multiple regions, is the introduction pathway always the same?, and 4) Do current management strategies appropriately match introduction pathways?

To Apply: Interested students should email Eve (ebeaury@umass.edu) with a resume, transcript, and a few sentences about why they are interested in this project.

Faculty Research Interests. Updated January 2021.
Supervisor: Will Pfadenhauer (PhD student, OEB graduate program)

Qualifications: There are no prerequisites for applying.

Time Commitment: We anticipate the selected student will spend ~9 hours per week on the project.

Compensation: This position will be a 3-credit independent study (graded, unpaid) during the Spring 2021 semester.

Project duration: Ideally, upon successful completion of the independent study, the selected student would be willing and able to continue work on the project during the summer (in a paid position). However, summer availability is not a requirement for applying.

To Apply: We request the following materials from each applicant: an unofficial undergraduate transcript and a 1-paragraph explanation of why they are interested in the project. Materials should be emailed to wpfadenhauer@umass.edu with the subject line “Independent Study Application” by Friday, February 5th.

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Project #3. Undergraduate project in Forest Stewardship
FACE to FACE (outdoor field work in Petersham, MA) and REMOTE combination

Project Description: Are you interested in practicing forestry? Gain experience with forest management planning by assisting with the full process of preparing a 10-year Massachusetts Forest Stewardship Plan. You’ll begin by reviewing examples of Forest Stewardship Plans, prepared by different foresters. Next, you will work with Licensed Forester Audrey Barker Plotkin to design and implement a forest inventory on an 87-acre woodlot (winter field work). Then, you will analyze and summarize the data, and write a draft Forest Stewardship Plan. If interested, the inventory can include additional components for the Foresters for the Birds program. The final product (for a grade of pass/fail) will be a full draft of the Forest Stewardship Plan and associated data. Audrey Barker Plotkin will meet with the student once at the field site (outdoors, following masking and distancing requirements) and weekly via Zoom. This is a one-semester project.

Supervisor: Audrey Barker Plotkin, ECo PhD candidate and Massachusetts Licensed Forester #385

Qualifications/Requirements: ability to drive to Petersham, MA; experience with forestry field measurements; experience working with data in Excel; ability and willingness to work alone in the woods

Compensation: 1 or 2 credits, either as an independent study (graded) or practicum (pass/fail). Depending on the student’s schedule, this can be 3 (1 credit) or 6 (2 credits) hours per week.

To Apply, please contact Audrey Barker Plotkin (abarkerplotk@umass.edu) with a paragraph describing your interests and experience in forest management, along with an unofficial transcript

Faculty Research Interests. Updated January 2021.
**Timothy Cook, Research Associate Professor**  
Sedimentology & Paleoclimatology  
Department of Geosciences  
tcook@geo.umass.edu

**Salt Marsh Vulnerability to Sea Level Rise: This is a **REMOTE** opportunity**

**Project description:** Students will work with the Principal Investigator in assessing the vulnerability of Salt Marshes in the northeastern US to future sea level rise. This ongoing research is examining connections between remotely sensed observations of marsh characteristics and marsh health with existing data sets that characterize the physical, oceanographic, and geologic attributes of individual salt marshes with the goal of identifying early predictors of marsh vulnerability. Students would be involved in the generation and analysis of geospatial datasets using Geographic Information Systems (GIS) software.

**Supervisor:** Tim Cook, PhD, Research Associate Professor and Principal Investigator

**Qualifications:** Students should be reasonably proficient in Geographic Information Systems (GIS) software and applications

**Time Commitment:** Flexible – 6 to 12 hours of work (2-4 credits) preferred

**Compensation available:** either independent study credits (graded project); or practicum credits (Pass/Fail) are available; hourly compensation might also be available

**Project duration:** Continuation of the research into the summer as a paid research assistant is possibly or for additional credit in the fall is possible.

**To Apply:** Students should submit a resume (including a list of completed classes) and cover letter describing their interest in the project to Tim Cook (tcook@geo.umass.edu) by Monday, February 1. Please also describe your availability/preference for the schedule (begin/end dates and hours per week) as well as any potential interest in paid summer continuation/follow-up research.

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**Michelle DaCosta, Associate Professor**  
Plant Stress Physiology  
Stockbridge School of Agriculture

**BOTH Face-to-face AND Remote opportunities available**

**Project description:** We are looking for motivated students to assist in ongoing research projects involving laboratory and greenhouse experiments in plant stress physiology. Our lab conducts studies to better understand physiological strategies that grasses use to survive environmental stresses such as drought, temperature extremes, and atmospheric pollutants. Students will have an opportunity for on-site research activities (subject to the limitations associated with COVID-19), and remote work is also available for assistance with data organization and analyses.

**Supervisors:** Supervision will be provided by graduate students Katie Webster and Jefferson Lu.

**Qualifications:** Students with prior experience working in a laboratory or greenhouse is desirable, but not required. However, we need someone that is highly organized, responsible, and pays attention to detail. Also, since this position may include greenhouse work, we need someone that literally does not mind getting their hands dirty!

**Anticipated duration:** Spring semester, with option to continue in summer and/or Fall semester.  
**Hours required:** We can accommodate projects requiring anywhere from 3 to 15 hours per week.

Faculty Research Interests. Updated January 2021.
**Compensation**: We can offer independent study credits (graded project) or practicum credits (Pass/Fail). 3 hours of effort per week for each 1 credit.

**To Apply**: Please send inquiries to Katie Webster (kwebster@umass.edu).

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**Om Parkash Dhankher**, Professor  
Stockbridge School of Agriculture  
*Plant Biotechnology*  
parkash@umass.edu

**FACE-TO-FACE** Research Opportunity

**Project description**: An undergraduate student will work on a project related to the use of nanomaterials as fertilizers for enhancing crop productivity and preventing uptake of heavy metals for food safety. Also, student will have a choice of working on another project to evaluate the genetically enhanced *Camelina sativa* lines for improved oil and seed yield for biofuels production.

**Supervisor**: Professor Dhankher

**Qualifications**: Interest in plant improvement and biotechnology. Completion of BIOL 152/153 or current enrollment. Additional course work in biology, plant science is a plus, but not absolutely required for consideration.

**Time Commitment**: 9-10 hours per week. Minimum two semester commitment.

**Compensation**: 3 graded Independent Study credits per semester.

**Project Duration**: At least two semesters. Students interested in longer-term Honors Thesis projects encouraged to apply.

**To Apply**: Email parkash@umass.edu with an unofficial transcript along with a statement about why you are interested in this type of research.

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**Elisabeth Hamin**, Professor  
Landscape Architecture and Regional Planning  
*Climate Change Adaptation*  
emhamin@umass.edu

**Masters-Level Education for Climate Change - REMOTE** Undergrad Research Opportunity

**Project Description**: Assist in a scan of U.S. city and regional planning programs to find course content on climate change. Use content analysis to characterize the content you find. Identify any related skills/pedagogic content such as interdisciplinary team leadership, public engagement, climate science, greenhouse gas inventories, etc.

**Time Commitment**: Flexible, but MINIMUM OF 3 HRS PER WEEK (3 hours/week = 1 credit)

**Compensation**: Independent Study (graded) or PRACTICUM (MPF) credits

**Project Duration**: Students who are willing to extend into the summer are preferred.

**To Apply**: Please contact me at emhamin@umass.edu, and include a 500 (or so) word statement covering why this is of interest to you, your education, relevant experiences to date, and career plans (if you have them already – don’t worry if you don’t). Please do this well but don’t let it be a barrier to applying – I just want to get a sense of your background.

Faculty Research Interests. Updated January 2021.
**Christine Hatch, Extens. Assoc. Professor**  
**Water Resources & Climate Change**  
**Department of Geosciences**  
chatch@geo.umass.edu

**Slow-The-Flow:** REMOTE OPPORTUNITY

**Project description:** The MassECAN Slow-the-Flow subgroup seeks a student to perform independent work-study in support of the subgroup mission to quantify watershed-scale interventions on hydrology. The student will compile a list of researchers working on hydrological issues in MA and across New England, focusing on those researchers who study management actions that mitigate flooding and hydrological risk. Such management interventions to consider include storm water management, wetland creation, large woody debris addition, channel reconfiguration, and floodplain reconnection, among others. The student will also compile a list of commonly used metrics to quantify hydrological response following intervention. Metrics will consider spatial and temporal scale necessary to quantify impacts. Finally, the student will review current and planned projects submitted through the Municipal Vulnerability Preparedness (MVP) program for relevance to Slow-the-Flow objectives.

**Supervisor:** Professor Christine Hatch  
**Qualification:** None  
**Time Commitment:** Nine (9) Hours per week  
**Compensation:** Three (3) independent study or practicum credits  
**To Apply:** Sent resume, cover letter and transcript to Christine Hatch (chatch@geo.umass.edu)

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**Scott Jackson, Extension Professor**  
**Climate Change Adaptation**  
**Department of Environmental Conservation**

Climate adaptation partnership building  
This is a REMOTE Opportunity

**Project description:** It is an exciting time to be advancing the emerging field of climate change adaptation! We are seeking a student to assist with UMass Extension climate adaptation initiatives to connect climate practitioners, foster collaboration and build communities of practice.

In particular, the student will help with:
- Developing workshop and event content  
- Online research on climate practitioners and organizations and help developing outreach content on their work  
- Compiling online resources and examples for leaders of climate adaptation networks/collaboratives to add to a Google Drive Resource Library

**Supervisor:** Melissa Ocana, Climate Adaptation Coordinator/Extension Educator  
**Qualifications:** Some familiarity with climate change topics. Must have excellent communication skills and be organized, detail-oriented, and proficient with Google Drive.  
**Time Commitment:** Estimated 6 hours/week and schedule is very flexible.  
**Compensation available:** We can offer 2 practicum credits (if 6 hours/wk), but a paid hourly position is possible contingent on funding.

Faculty Research Interests. Updated January 2021.
**Project duration:** The ideal student will be open to possibly continuing in Summer or Fall semester.

**To Apply:** Email Melissa Ocana at mocana@umass.edu with a resume and a few sentences explaining your interest and availability.

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**Olga Kostromytska, Assistant Professor**  
**Stockbridge School of Agriculture**  
Turfgrass Entomology Laboratory  
okostromytsk@umass.edu

**FACE-TO-FACE OPPORTUNITY**

**Project Description:** Multiple projects are conducted to understand the biology, phenology and behavior of the major insect pests which are damaging to managed landscapes in New England. The biology of invasive species, *Tipula* spp., has to be determined in New England, as well as better understanding of other turfgrass insect pest species. Research on various strategies of pest management of these pests, such as chemical biological and host plant resistance are studied. Student project will involve field data collection and experiments as well as lab and greenhouse studies.

**Supervisors:** Olga Kostromytska, and Isabel Jacome

**Qualifications:** Background and/or interests in turfgrass management or entomology, willingness to work outside and in the lab with the living organisms (insects).

**Time Commitment:** 3-9 hours per week (3 hours/wk = 1 credit)

**Project Duration:** Spring and summer commitment is preferred, and students seeking senior thesis project encouraged to apply.

**Compensation:** Independent Study, or paid hourly if work study funding is available.

**To Apply:** Send email to Olga Kostromytska okostromytsk@umass.edu

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**Michael F. Nelson, Lecturer**  
**Anne Averill, Professor**  
**Environmental Conservation**

**Spatial Analysis of Pollinator Landscape Composition**  
**Remote Research Opportunity**

**Project description:** Pollinator populations are declining across many landscapes. Much research has focused on community structure and plant-pollinator interactions. In addition, current research is revealing the importance of land use and land cover (LULC) surrounding pollinator habitat. This project is an opportunity to contribute to knowledge by conducting a literature search and performing multiscale descriptive spatial analyses of LULC in bumblebee habitats in Massachusetts.

**Supervisor:** Amanda Suzzi, Ph.D. student in ECo
Qualifications: A successful candidate should have some basic experience or coursework with R or another programming language. Programming experience can be from previous work, research, or courses. Experience with Geographic Information Systems (GIS) or working with spatial data in R is useful but not required. We will provide training and guidance in the technical components of spatial data analysis in R.

Completion of any of the following courses at UMass provide the necessary skills:
- NRC 290B: Introduction to Quantitative Ecology
- GEOGRAPH 493S: Spatial Decision Making and Support
- ECO 634: Analysis of Environmental Lab
- Any other course requiring work in a programming language like R or Python.

Time Commitment: 3, 6, or 9 hours per week

Compensation: This project will be a 1, 2, or 3-credit independent study or practicum (3, 6, or 9 hours per week).

Project duration: Possible extension of project through Summer 2021, as a paid position.

To Apply: Please email (michaelnelso@umass.edu) with questions or to apply. Send unofficial transcript, resume, and a brief cover letter describing your interest in the project, your previous experience with programming and computing in general, and how working on this project will contribute to your academic/research/professional career.

Timothy Randhir, Professor   Watershed Management & Conservation
Environmental Conservation   randhir@eco.umass.edu

REMOTE Opportunity #1:

Project description: To learn about Environmental NGO, compile information on environmental issues of the state, and develop an online resource for problem-solving.

Supervisor: Professor Randhir
Qualifications: NONE
Time Commitment: 3 hours/week (3 hours/week = 1 credit)
Compensation available: Independent Study (graded) or Practicum (P/F) credits - Unpaid
Project Duration: It is possible to continue this project into the summer and/or fall, but this is not specifically required.
To Apply: Send Email to randhir@umass.edu

REMOTE Opportunity #2:

Project description: To model impacts of land use on water resources using GIS

Supervisor: Professor Randhir
Qualifications: GIS experience preferred
Time Commitment: 3 hours/week (3 hours/week = 1 credit):
Compensation: Independent Study (graded) or Practicum (P/F) credits - Unpaid
Project duration: Project can extend through the Summer and/or Fall, but isn’t required.
To Apply: Email Professor Randhir; randhir@umass.edu

Faculty Research Interests. Updated January 2021.
Opportunity #1: FACE-TO-FACE

Project description: The Trace Metal Biogeochemistry Laboratory is looking for students to join as researchers on new and on-going projects. For the first project, we are examining nutrient and toxic metal transport rates through different soils from the eastern United States. Soil columns will be set up and metal leaching rates will be quantified. Students will gain practical laboratory experience for measuring soil properties and analytical chemistry of metals.

Supervisor: Students will report directly to Dr. Justin Richardson
Qualifications: Students will need to have completed Introductory soil science or Environmental Soil Science course.

Time Commitment: Students would be expected to work 3 to 6 hours and attend weekly meetings.

Compensation: Independent study credits, practicum credits, or paid hourly position are possible (especially if work-study is available).

Project duration: Extension into the summer and/or fall is possible.

To Apply: send Dr. Richardson an email (jbrichardson@umass.edu) with resume, pertinent course work completed.

Opportunity #2: Option of REMOTE – OR - FACE-to-FACE

Project description: The Trace Metal Biogeochemistry Laboratory is looking for students to join as researchers on new and on-going projects. For the second project, we are looking for a student to use ArcGIS to generate maps of watersheds in eastern Massachusetts. Students will learn and apply basic to advanced data manipulations to generate maps of watersheds, their soils, and land-uses. This project can be remote or face to face.

Supervisor: Students will report directly to Dr. Justin Richardson

Qualifications: Students need to have completed Introduction to GIS.

Time Commitment: Students would be expected to work 3 to 6 hours and attend weekly meetings.

Compensation: Independent study credits, practicum credits, or paid hourly position are possible (especially if work-study is available).

Project duration: Extension into the summer and/or fall are possible.

To Apply: send Dr. Richardson an email with resume, pertinent course work completed.
Multiple positions are available in freshwater and fish ecology working with graduate students. Students will work directly with graduate student mentors and are invited to participate in weekly lab meetings with the entire Roy lab group. Students interested in conducting Honor’s research projects in 2021–22 academic year are encouraged to reach out to Dr. Roy directly. Information about Dr. Roy’s research can be found at: https://www1.usgs.gov/coopunits/staff/1160013 General inquiries about the lab or questions can be directed to Allison Roy at aroy@eco.umass.edu.

Project 1: Juvenile River Herring Emigration (FACE-TO-FACE)

**Description:** When do baby river herring leave fresh water? These research opportunities are part of a statewide research project of the UMass-River Herring Research Lab to better understand the freshwater portion of the river herring life cycle. River herring are anadromous fishes, meaning they are born in freshwater, migrate to sea as juveniles, mature in the ocean, and return to their natal freshwater ponds to spawn upon maturity. We are evaluating what environmental and biological factors are associated with juvenile productivity, growth rates, and departure from freshwater to the ocean. One of these factors is availability of zooplankton food sources. The undergraduate assistants will learn how to process and identify different types of zooplankton to assess composition and density in freshwater and estuarine samples. This will involve microscope and lab work and adherence to University COVID-19 safety guidelines is required.

**Supervisor:** Meghna Marjadi, PhD candidate in Organismic and Evolutionary Biology

**Qualifications:** Familiarity with microscopes preferred for zooplankton and processing.

**Time Commitment:** 6–9 hours/week (2–3 credits)

**Compensation:** Practicum credits (pass/fail) or work study

**Duration:** Spring 2021 (with potential for continuation into Fall 2021, if desired)

**To Apply:** Email Meghna Marjadi (mmarjadi@umass.edu) with resume and short cover letter detailing your interest and experience.

Project 2: Effects of Winter Lake Drawdowns on Downstream Habitat (FACE-TO-FACE)

**Description:** The technician will assist in researching the changes in habitat as well as macroinvertebrate and periphyton response to annual flow alterations as a result of winter lake drawdowns across Central and Western Massachusetts. There are two opportunities associated with this project (a combination of lab and fieldwork is also possible) and both require adherence to University COVID-19 safety requirements:

- Macroinvertebrate and algae processing: Students will have the opportunity to learn methods of processing and sorting macroinvertebrate samples, processing periphyton ash free dry weight and chlorophyll a samples. This position requires independent, on-campus laboratory work and may include remote work (data management).

- Hydrology and biotic sampling: Students will have the opportunity to learn field collection of biological samples and maintaining an array of hydrologic monitoring stations. This position requires weekly field work as part of a 2-person team, and may include some on-campus or remote work (data entry/management).

To Apply: Email Meghna Marjadi (mmarjadi@umass.edu) with resume and short cover letter detailing your interest and experience.

Faculty Research Interests. Updated January 2021.
**Supervisor:** Alec Baker, MS student in Environmental Conservation

**Qualifications:** Preferred applicants will be detail-oriented, able to work independently, and have a strong interest in either laboratory and field-based research. Experience working in cold-water streams (for fieldwork) and using dissecting microscopes (for lab work) is preferred, but not necessary. For fieldwork, students need a driver’s license (to drive federal vehicles), and those with a full day per week available are preferred.

**Time Commitment:** 3-9 hours/week (2–3 credits)

**Compensation:** Practicum credits (pass/fail) or work study

**Duration:** Spring 2021

**To Apply:** Email Alec Baker (ambaker@umass.edu) with resume (include availability) and copy of current transcript (unofficial).

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**Project 3: Effects of Winter Lake Drawdowns on Fish Growth (REMOTE)**

**Description:** The technician will assist on a project examining the growth response of fishes to drawdowns in New England waterbodies. Work involves measuring the annuli (growth rings) from previously imaged otoliths (fish ear bones) using ImageJ software. These incremental widths will be compared to those from previous research and used to identify how fish are interacting with the biotic and abiotic components of drawdown lakes. Students comfortable with data entry and willing to work independently are encouraged to apply. In adherence to University COVID-19 safety guidelines, this position will be remote-only work, so access to a personal computer is necessary.

**Supervisor:** Tansy Remiszewski, MS student at Utah State University (and former UMass student)

**Qualifications:** None, but a familiarity with database management is preferred. The students will need to work on their own computer using free software.

**Time Commitment:** 6 hours/week (2 credits)

**Compensation:** Practicum credits (pass/fail)

**Duration:** Spring 2021

**To Apply:** Email Allison Roy (aroy@eco.umass.edu) with resume and short cover letter detailing your interest and experience.

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**Seda Salap-Ayca, Lecturer**
**Geographic Information Science & Land Use**
**Department of Geosciences**

**ssalapayca@umass.edu**

Dr. Salap-Ayca is offering **three (3) Fully-REMOTE Projects**

**Project #1 : Agricultural Preservation**

**Project Description:** Students participating in this project will write a brief literature review on the Agricultural Protection Program, criteria for prioritizing agricultural land units, and the application areas or ongoing practices in Massachusetts. This project is aimed to be extended in a multi-criteria analysis which will serve to understand the best possible ways to promote agricultural protection in
Massachusetts. Goals for the overall project include: Collect, manipulate, and analyze spatial data to gain insight and knowledge about agricultural preservation.

**Student Objectives:**
- Use Google Scholar to find at least 12 papers/sources published within the past five years on the study of agricultural preservation in Massachusetts.
- Create an annotated bibliography of 6 primary literature papers most relevant to our research goal. Detailed instructions will be provided for this.
- Submit a final report about your research progress in the form of a research brief including: background and overview, study design and methods, progress and results, detail your own contributions, and provided properly cited references. More information will be provided to interested student.

**Supervisor:** Professor Seda Salap-Ayca

**Qualifications or Prerequisite Knowledge:** Completion or enrollment in Intro to GIS

**Time Commitment:** Timing flexible based on student availability

**Compensation:** Independent study (graded) or practicum (P/F) credits. 3 hours/week = 1 credit

**Project duration:** Summer work possible if interested

**To Apply:** Email Seda (ssalapayca@umass.edu) with CV/Resume and a brief statement of interest.

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**Project #2. Multi-attribute Visualization Techniques for Uncertainty & Sensitivity Analysis**

**FULLY REMOTE**

**Project description:** Students participating in this project will write a brief annotated bibliography paper on the multi-attribute visualization techniques, particularly the techniques that can be applied to uncertainty and sensitivity analysis. This project is aimed to be extended in a literature review article which will help to improve uncertainty and sensitivity visualization.

**Student Goals:**
- Use Google Scholar to find at least 12 papers published within the past five years on the study of Geovisualization, uncertainty analysis or sensitivity analysis.
- Create an annotated bibliography of 10 primary literature papers most relevant to our research goal. Detailed instructions will be provided.

**Supervisor:** Professor Seda Salap-Ayca

**Qualifications or Prerequisite Knowledge:** Completion or enrollment in Intro to GIS

**Time Commitment:** Timing flexible based on student availability

**Compensation:** Independent study (graded) or practicum (P/F) credits. 3 hours/week = 1 credit

**Project duration:** Summer work possible if interested

**To Apply:** Email Seda (ssalapayca@umass.edu) with CV/Resume and a brief statement of interest.
Project #3. History of Information Graphics – **FULLY REMOTE PROJECT**

**Project description:** Students participating in this project will gather information about the history of information graphics and maps, where and when they were first started to be used along with the inventors. The students are expected to collect the historic milestones, bright ideas, graphical excellence together with the location it was invented/first used. Students will gather information and make connections to understand the evolution of cartography through history. **Research Question:** How the information graphics, maps, and visualization evolve in different regions?

**Student Goals:**

- Use Google, Google Scholar, library books or other printed media to find at least 50 examples of information graphics, maps and visualizations.
- Create an annotated bibliography table. Detailed instructions will be provided.

**Supervisor:** Professor Seda Salap-Ayca

**Qualifications or Prerequisite Knowledge:** Completion or enrollment in Intro to GIS

**Time Commitment:** Timing flexible based on student availability

**Compensation:** Independent study (graded) or practicum (P/F) credits. 3 hours/week = 1 credit

**Project duration:** Summer work possible if interested

**To Apply:** Email Seda (ssalapayca@umass.edu) with CV/Resume and a brief statement of interest.

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**Eve Vogel, Assoc. Professor**  
**Environmental Geography - Water Resources**  
**Department of Geosciences**  
**evev@umass.edu**

**Fishing & Environmental Justice on the Connecticut River.**  
Combination of both **REMOTE AND FACE-to-FACE** responsibilities

**Project description:** Seeking two undergraduates who can use multiple methods to create an initial survey of fishers on the Massachusetts portion of the Connecticut River related to goals of environmental justice. Work will start remote. Starting around mid-March, some responsibilities will be in the field. Students will maintain masks and social distancing under a research covid protocol.

Methods will include:

- Literature/documentary research on fishing and environmental justice, history of fishing sites in Massachusetts
- Google Earth / Google Map use, possibly remote sensing, to identify and mark key locations and use
- On-site photo documentation
- Interviews and/or survey
- Possibly the use of confidential licensing data to ascertain demographic and geographic information (under guidance of a Human Subjects research protocol)
- As possible, attendance at resource manager and/or fishing group meetings

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Faculty Research Interests. Updated January 2021.
**Supervisor:** Professor Eve Vogel

**Qualifications and Prerequisite Knowledge:**

**Required Qualifications:** Excellent communicator verbally and in writing, able to strike up conversations with anglers, consistent and organized communication with supervisor and collaborator, and strong writing skills

**Preferred Qualifications:**

- Experience angling, especially around the Pioneer Valley
- Experience with documentary / literature research and writing
- Background in fish or river ecology / geomorphology / hydrology, and also in resource policy, management and/or political economy
- Google map/earth skills; some background in remote sensing and/or GIS helpful
- Spanish or other language used by non-native-English-speaking fishers very helpful
- Access to a car if possible
- Commitment to environmental protection and environmental justice
- Experience or knowledge working with immigrant or refugee communities and/or food security / food justice

**Time Commitment:** 7-10 hours each week

**Compensation:** Practicum credits (2-3) GEOGRAPH 398R: P-Rsrch: Electricity and Rivers

**Project duration:** Possible that student can stay on as paid hourly for last 2 weeks of May

**To Apply:** Send an email to Prof Eve Vogel, evev@umass.edu, of about 3 paragraphs stating your interest, qualifications, and availability during and after the semester. Attach resume. Provide the name of one reference. Open until filled, but preference given to those who apply by February 1 at midnight.