TEACHING PORTFOLIO

Submitted to the Graduate School for consideration for the
2024 Excellence in Teaching Award

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UNIVERSITY OF
GEORGIA
1785

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Odum School of Ecology

28 November 2023

Dear Members of the Excellence in Teaching Awards Selection Committee:

We are writing to wholeheartedly endorse Ms. Carolyn Cummins for the Excellence in Teaching Awards at the University of Georgia. Ms. Cummins is a PhD student in the Odum School of Ecology, and her dedication to teaching and academic excellence is truly exemplary. We have collectively worked with Carolyn since Spring 2020 as teaching assistantship supervisors, co-instructors, and teaching mentors and are consistently impressed by her dedication to innovative, inclusive, and equitable teaching and mentoring. Whether she is teaching in the lab or field or mentoring undergraduate students in research, Carolyn consistently works to maximize student learning and skills development while centering equity and inclusion. In addition, her involvement in pedagogical research and curriculum development sets her apart from other teaching assistants (TAs) as someone who is engaged in all aspects of teaching and course development.

Carolyn has excelled at a broad range of teaching experiences while at UGA. Since her first TA role as part of our Ecology lab (ECOL 3500L) team in Spring 2020, Carolyn has served as a TA and undergraduate research mentor for Ecology study abroad courses in Costa Rica (Fall 2021: ECOL 3500L, ECOL 3100, ECOL 4960). As a TA, she co-led the development (Fall 2022) and instruction (Spring 2023) of a new upper-division Ecosystem Ecology lab (ECOL 4010L/6010L) and the upper-division Freshwater Ecosystems Lab (ECOL4310L). Carolyn has also been an instructor of record for the domestic field study Interdisciplinary Field Program ecology courses (Summer 2022: ECOL 1000H/1000L, ECOL 4160/4160L). In addition, she has taken on the responsibilities of both teaching assistant and instructor of record for the general ecology laboratory course for majors, demonstrating her versatility and commitment to providing quality education. In each successive instructional position, Carolyn has taken on more ownership and independence in her teaching. She has proposed and lead the development of new course activities, coordinated new field experiences, and integrated cutting-edge approaches into lab activities. Her focus on creating active and experiential learning opportunities has played a pivotal role in supporting student success in these courses.

Across her teaching roles, Carolyn exemplifies student-centered instruction, working to ensure course content is relatable to students with diverse interests and backgrounds so they can apply what they are learning to their own lives. Carolyn also actively works to center justice, equity, diversity, and inclusion (JEDI) in her teaching, putting her values into practice in the classroom. As one example of what that looks like: As the COVID-19 pandemic was beginning to grow worldwide in Spring 2020, Carolyn navigated a tricky classroom situation in ECOL 3500L in which a student made a passing racist remark about Asian culture and COVID emergence. Rather than shying away from the situation or pretending she didn't hear the comment, which is the preferred strategy of some of our other lab TAs, Carolyn addressed the class directly to remind them that even in times of uncertainty and fear, community norms are valuable and important in her classroom. Despite the overall upheaval that ensued between that in-person interaction and end-of course feedback, multiple students acknowledged the importance of this interaction in maintaining the inclusive classroom Carolyn sought to build. Students also routinely share how much they appreciate her thoughtfulness and enthusiasm for teaching, and Carolyn has received consistently high student evaluations.

Ms. Cummins's dedication extends beyond the classroom. She has been a consistent mentor for undergraduate research since 2017, contributing to the development and growth of aspiring researchers. Her mentorship has undoubtedly played a significant role in the success of these students. Carolyn is also unique among our Ecology graduate students in her pursuit of diverse teaching opportunities in field settings. For example, as a TA with the UGA Costa Rica program, Carolyn led lab activities in the field and helped students with independent research projects. Her knowledge, enthusiasm for teaching, support for students, and priority for creating inclusive learning spaces made our Costa Rica labs run better than they ever had before. Students were engaged, and their final products were above average because of Carolyn's clear grading rubrics and timely and constructive feedback. Most notably, her teaching and mentorship did not stop once our plane landed back in the US. She has continued to support, encourage, and mentor our students on campus, exemplifying the community that our undergraduate program and courses are known for.

As Carolyn has gained teaching experience, she has increasingly contributed to course development through her TA roles. In Fall 2022, Carolyn was instrumental in developing a new lab course to accompany our upper-division Ecosystem Ecology course. The goal of the lab (ECOL 4010L/6010L) is to meld hands-on training in field methodology with data science; for example, by having students mirror field data collection methods used by the National Ecological Observatory Network (NEON) and then learn to quantify ecosystem carbon stocks at NEON sites using the R programming language. Carolyn's contribution to developing this course has been substantial: she has led the development of learning outcomes, assessment tools, pre-lab activities, experiential learning activities, and tutorials in R. Her insight, experience, and contributions to course development far exceed what would be expected of a TA, and even rival those of most early-career faculty.

Carolyn's engagement in teaching goes beyond direct interactions with students, as demonstrated by her interest and engagement in the scholarship of teaching and learning (SoTL) and curricular administration. As part of her UGA Interdisciplinary Certificate in University Teaching, Carolyn has gone beyond the baseline expectation for teaching-related coursework (GRSC 7770) to better understand pedagogical best practices and what motivates students, including an 8000-level course on the psychology of learning and instruction (EPSY 8180). While in Costa Rica, Carolyn led a SoTL teaching-as-research study to assess how different methods of engaging with peer-reviewed literature can help improve students' scientific literacy and comprehension of primary literature. Carolyn co-led the IRB application and developed pre- and post- surveys to gauge student perceptions about and comprehension of ecological topics in papers that were paired with different classroom activities and teaching interventions. Her initial case study was presented at the UGA Spring Teaching Symposium, and we plan to continue and expand this research with on-campus ECOL 3500 students in upcoming semesters. Finally, Carolyn was the 2021-22 graduate student representative on the OSE Undergraduate Program Committee of which we are all members. In this role, Carolyn fully engaged in helping to plan our undergraduate curriculum retreat, assessing student award applications, and other committee business. In addition to exceeding our committee expectations for graduate student engagement, Carolyn's involvement further demonstrated her commitment to building her professional understanding of curriculum development and higher ed. administration, which will serve her long-term career goals.

Among the many TAs we have collectively worked with, Carolyn stands out in her pursuit of well-rounded training as a university level instructor. Her holistic approach that incorporates pedagogical research, curriculum development, one-on-one research mentoring, and JEDI-focused classroom instruction distinguishes her amongst her TA peers at OSE and UGA. Ms. Cummins's outstanding

contributions to teaching have been duly recognized, with the Distinguished Graduate Student Teaching Award in the Odum School and the Outstanding Teaching Award from UGA in 2022. Additionally, her recognition as a finalist for the 2023 Excellence in Teaching Award further underscores her sustained commitment to excellence in education.

In conclusion, Ms. Carolyn Cummins is a highly deserving candidate for the Excellence in Teaching Awards. Her leadership, innovation, and unwavering dedication to student success make her an outstanding educator. We wholeheartedly support her nomination and express our sincere hope that the committee will recognize and celebrate her exceptional contributions to teaching at the University of Georgia. If you require any additional information or testimonials in support of Ms. Cummins's nomination, please feel free to contact us.

Thank you for your time and consideration.

Sincerely,

Kaitlin J. Farrell, Ph.D.
Lecturer
Odum School of Ecology

Nina Wurzburger, Ph.D.
Associate Professor
Odum School of Ecology

Amanda Rugenski, Ph.D.
Lecturer & Undergraduate Coordinator
Odum School of Ecology

Krista Capps
Associate Professor
Odum School of Ecology
The Savannah River Ecology Laboratory

Alexander Strauss
Assistant Professor
Odum School of Ecology

Personal Statement | Carolyn S. Cummins

As a graduate student in the Odum School of Ecology, I have dedicated myself to high-quality teaching and mentorship in preparation for a career that explicitly centers these activities. I have taught or assisted in teaching 13 course sections, reaching over 140 students across majors from Classics to Ecology. Further, I have engaged beyond my assigned duties through teaching-related professional development and service, creating new lessons and courses, and extensive undergraduate mentorship. As an instructor, I am driven by a passion for inclusive learning environments and broadening participation in ecology education, research, and careers.

I have consistently committed time and effort beyond my assigned teaching duties to develop my instructional skills and contribute to effective courses. In Fall 2021, I traveled to Costa Rica as the Teaching Assistant (TA) for the UGA Tropical Sciences Study Abroad program (UGACR). There, in addition to my official role as General Ecology Lab TA, I assisted with all other program courses and played a major role in program leadership. For General Ecology Lab, I developed the syllabus, created new lessons and activities, and re-vamped course materials and assessments. Teaching on UGACR required my full attention and time during Fall 2021 and was instrumental in my development as an instructor. I continued my involvement with UGA field programs as an Instructor-of-Record on the 2022 Interdisciplinary Field Program, which also required a full-time commitment during my four weeks on the program. In addition to facilitating existing IFP lessons, I created new lesson plans and projects to maximize student engagement and place-based learning (see "Description of Courses Taught," "Sample Teaching Materials," and "Examples of Student Work" for example course materials).

I have also served in a variety of intensive and innovative teaching roles on campus. In Fall 2022, I worked with Dr. Nina Wurzburger to design a brand-new Ecosystem Ecology lab (see "Sample Teaching Materials" and "Examples of Student Work"). I developed the course learning objectives, activities, assessments, and lesson plans, and I served as the lead course instructor in Spring 2023. I am teaching this course again in Spring 2024, solidifying it as a core part of the UGA Ecology curriculum. I have served as a TA for General Ecology Lab in both semester and summer sessions, and I taught Ecology's other upper-division lab (Freshwater Ecosystems Lab) in Fall 2022. Through these roles, I have worked closely with multiple OSE faculty to build innovative and inclusive course policies, content, and assessments.

My commitment to teaching extends beyond the classroom, and I have pursued extensive professional development aimed at improving my instructional skills. I completed nine credits of teaching coursework and a Scholarship of Teaching and Learning project through the UGA Graduate Certificate in University Teaching, applying tools and techniques learned along the way in my instruction. I have also received training in effective and inclusive field education through the River Field Studies Network (see "Teaching-Related Professional Development and Training"), and in 2023, I completed Swiftwater Rescue and Wilderness First Responder certifications with the goal of helping me keep students safe in the field. As a passionate educator, I am tirelessly committed to my own learning and growth.

My teaching has been recognized by my department (Odum School of Ecology Distinguished Graduate Student Teaching Award, 2022) and the broader UGA community (Outstanding Teaching Award, 2022; Excellence in Teaching Award Finalist, 2023). Further, my teaching evaluations highlight the engaging, effective, and welcoming nature of my courses (see "Evaluations – students"). I will graduate from UGA this spring, and moving forward, I will draw upon my experiences to create experiential and inclusive ecology courses and curricula. I thank the committee for considering me for the 2024 UGA Excellence in Teaching Award.

TEACHING PHILOSOPHY

I believe that a STEM education can provide a powerful means for students to develop creativity, gain transferrable skills, and practice collaboration. To promote student success in these endeavors, it is the role of the instructor to create and facilitate learning experiences that promote student engagement and curiosity. As an educator, I cultivate engaged student learning through lessons and courses that are (1) inclusive, (2) experiential, and (3) interdisciplinary.

(1) A culture of inclusion: Effective teaching cannot exist without inclusion – all students must feel welcomed and valued in order to learn. On the first day of my classes, I facilitate an activity where students develop community norms. Using Google Jamboard, students outline expectations for their interactions with one another and their instructor, which are re-visited throughout the semester. Further, I align my courses with Universal Design for Learning (UDL), which considers how students' backgrounds, values, and experiences affect learning. UDL-aligned courses employ diverse modes of content delivery and assessment, so my students engage in writing, readings, discussions, projects, and more. This varied instruction ensures that a broad range of students can demonstrate their strengths. Another way I build inclusive courses is by ensuring participation from all students. For example, during group data collection, students often self-assort into specific roles (e.g., data "collectors" vs. "recorders"). I encourage each student to try the hands-on elements of each lesson (e.g., field sampling) and instruct students to take turns recording data or taking notes. These are just some examples of practices that form a teaching philosophy centered on student success for all. In each new teaching endeavor, I set out with the knowledge that creating inclusive classrooms is a lifelong process of learning.

(2) Experiential learning: Ecology lends itself to experiential learning in both classroom and field settings. Through my field-based teaching roles, I have learned that student success in the field starts with a culture of care. To promote this culture, I communicate extensively with students about site details and safety, schedule regular check-ins, and connect students with resources both within and outside the field environment. These practices support student engagement by alleviating the stress associated with intensive field-based education, allowing students to immerse themselves in their learning. My field lessons combine content delivery with hands-on, place-based learning. For example, in a lesson I co-created for the River Field Studies Network (RFSN), students watched videos about how log jams shape stream channels and organismal habitat. In the field, students were first prompted to recall video content, then received a field methods demonstration for measuring log jams in streams. They then practiced these methods in groups, an essential element for building students' science identity and field research skills. This lesson was designed to be integrated with other RFSN lessons about topics from fish diversity to water governance and to be applicable across different stream sites. In addition to field-based teaching, I have explored experiential learning techniques in classroom settings. Through a Scholarship of Teaching and Learning project I completed as part of UGA's Graduate Certificate in University Teaching, I investigated which activities best promote student understanding of scientific literature. In this study, I quantified student perception and comprehension of scientific papers through surveys distributed before and after students read papers and participated in class activities. Further, I have learned and applied valuable skills for promoting engaged student learning through my pedagogical coursework, including case-based learning techniques and effective scaffolding for complex tasks.

(3) Interdisciplinarity: Ecology is an inherently interdisciplinary field, and students are often most interested in the applications of ecology to anthropology, geography, public health, and policy. Thus, I work to incorporate diverse perspectives and disciplines into my teaching. As an instructor for the University of Georgia Interdisciplinary Field Program (IFP), I aligned ecology lessons with geology and anthropology content throughout three weeks of travel and teaching from Sapelo Island, GA to Zion National Park, UT. For example, in a new lesson I designed for IFP 2022, I connected aridland river ecology to cultural and natural history through a field-based lesson on the Rio Grande River. Students first received a lecture about the ecology of the Rio Grande, its historical and cultural significance, and the urban environment in Albuquerque, New Mexico that the river currently flows through. Students then collected water and aquatic insect samples in the Rio Grande River and in adjacent human-constructed wetlands at a park in Albuquerque. As a follow-up, students wrote a report comparing data between the wetlands and the river and reflecting on how humans interact with these ecosystems. This lesson connected ecology content about drought and water diversion to a broader social-ecological context. In my future teaching roles, I aim to build courses and curricula that incorporate a broad range of ecological applications, including conservation, water governance, and policy.

Future goals: I have intentionally prepared for a career that centers undergraduate teaching and mentorship. Moving forward, I aim to build on my teaching experiences to create inclusive, hands-on, and engaging learning experiences for students. I am eager to design and implement new field courses, including a river-based field course comparing the ecology, policy, geology, and anthropology of southwestern and southeastern rivers. I am also excited to teach ecology courses that incorporate course-based undergraduate research, helping to improve the accessibility of student research experiences. Overall, I will utilize my ecological expertise, my pedagogical training, and my prior teaching experiences to engage a diverse student body.

DESCRIPTION OF COURSES TAUGHT
Field-based and experiential learning courses:

Interdisciplinary Field Program (IFP), Summer 2022

ECOL1000 – Ecological Basis of Environmental Issues (16 students)
Course description: ECOL1000 examines ecological concepts that underly environmental issues. IFP students learn about these topics on a traveling field program, visiting over 30 national parks, monuments, and historic sites.

Role: Instructor of Record. I created original course materials and taught interdisciplinary ecology lessons alongside Geology and Anthropology instructors. I also camped and traveled alongside students from GA to NV and assisted with course leadership.

ECOL4160 – Ecology of North America (5 students)
Course description: Students in ECOL4160 apply ecological principles in the context of human-environment interactions. IFP ECOL4160 students read scientific papers relevant to the places we visited and led their peers in paper discussions.

Role: Instructor of Record. I guided students through best practices for reading scientific papers, helped them brainstorm discussion questions, and attended student-led paper discussions.

University of Georgia Tropical Science Program, Costa Rica (UGACR), Fall 2021

ECOL3500L – General Ecology Lab (8 students)
Course description: ECOL3500L addresses ecology concepts across scales from populations to ecosystems. Students develop skills for scientific inquiry, data collection, data analysis, and writing. UGACR students learn these skills in the context of tropical ecosystems in Costa Rica.

Role: Teaching Assistant/Lead Instructor. I created original materials for the lab, including the syllabus, updates to the stream ecology project, and a rubric for student stream reports. I facilitated lab sessions and graded student work.

WILD4060/WILD4060L – Ornithology/Ornithology Lab (11 students)
Course description: WILD 4060L students learn about avian physiology, ecology, evolution, and conservation. Exercises emphasize identification, ecology, and behavior of tropical birds.

Role: Teaching Assistant. I attended birding trips to aid students in identification, helped facilitate an avian anatomy lab, kept a list of birds sighted, and assisted with grading.

ECOL3100 – Tropical Ecology (11 students)
Course description: ECOL 3100 examines natural history, biodiversity, and ecological patterns in tropical ecosystems. Students explore these topics through visits to diverse tropical ecosystems, seminars and tours facilitated by local experts, and hands-on projects.

Role: Teaching Assistant. I helped facilitate activities such as coffee and chocolate tours, snorkeling trips, a river float, and hikes. I also assisted in the creation of the final lab practical.

Classroom-based teaching

ECOL4310L – Freshwater Ecosystems Lab (13 students)
Course description: ECOL4310L explores freshwater ecosystems, their biota, physical/ chemical properties, and effects of global change. Students learn key methods in aquatic ecology including field sampling, experimental design, data analysis, and science communication.

Role: Teaching Assistant/Lead Instructor. I taught classroom- and field-based labs, facilitated the setup of a student-led lab experiment, and guided students through online modules. I also organized materials and created video tutorials for future ECOL4310L Teaching Assistants.

ECOL4010L/6010L – Ecosystem Ecology Lab (9 students)
Course description: In ECOL4010L, students build relevant skills for ecologists including field methods; data analysis in RStudio; and study design/ execution. Students learn these skills in the context of ecosystem ecology, grounding lecture material in scientific practice.

Role: In Fall 2022, I co-designed this course alongside Dr. Nina Wurzburger. The course grounds data science in field methods during the first half of the semester, then focuses on data analysis and visualization in the second half. This is a split-level course, so I cannot serve as Instructor of Record. However, I played a major role in designing this course and was its lead instructor in Spring 2023. I will act in a similar role in Spring 2024 (12 students).

ECOL3500L – General Ecology Lab (Spring 2020: 60 students; Summer 2023: 29 students)
Course description: ECOL3500L addresses ecology concepts across scales from populations to ecosystems. Students develop skills for scientific inquiry, data collection/ analysis, and writing.

Role: Teaching Assistant/Partial Instructor of Record. I taught two sections of this course in SP 2020 and two sections in SU 2023. I independently taught all lab sessions and graded student work. In SP 2020, I managed the transition to online instruction during COVID-19, ensuring continuity in instruction. In SU 2020, I taught the course on an accelerated, 8-week timeline

SAMPLE TEACHING MATERIALS

1. Inclusion: I work to build an inclusive classroom community by setting clear expectations for a culture of respect, facilitating community building exercises on the first day of class, and creating course materials that allow all students to succeed.

A. On the first day of my classes, students outline shared classroom agreements. We revisit these norms throughout the course (e.g., when starting group projects)

Blue - Expectations for ourselves/our peers
- Respect all students/TA and be kind
- Come to class and ask questions and for clarification when needed
- Manage time effectively to ensure the completion of all assignments
- Come to class prepared for the assignments/tasks and ready to learn

Pink - Expectations for group discussions
- Ensure that everybody has a chance to contribute
- Participation from all group members
- Be constructive and come to conclusions by working together
- Be respectful of what everybody has to say

Green - Expectations for group work
- Equal contribution
- Clear communication on everyone's tasks and when to finish them by
- Being flexible with everyone's time
- Be respectful of the time dedicated for group work and stay on task
- Being reliable and communicative

Orange: Expectations for our TA
- Clear and constructive feedback on assignments
- Responding to emails within a timely manner
- Being patient with teaching R
- Being understanding if we might not get something right away

Classroom Agreements
ECOL4010L - Spring 2023

Yellow: Other

Group Agreements - NEON project - ECOL4010L - Spring 2023
*adapted from Carnegie Mellon's Eberly Center for Teaching Excellence & Educational Innovation; cmu.edu/teaching/designteach/teach/instructionalstrategies/groupprojects/tools/index.html

Group Name: _____

Date: _____

Goals: What are our goals for this project? What do we want to accomplish? What skills do we want to develop or refine?

Expectations: What do we expect of one another in regard to attendance at meetings, participation, frequency and type of communication, quality of work, etc.?

B. In line with principles of **Universal Design for Learning**, I create lessons, assignments, and projects that allow students to demonstrate skills and knowledge in diverse ways.

For the semester-long data science project I designed for Ecosystem Ecology Lab, students were assigned a variety of tasks including data analysis (a), writing assignments (b), and a group presentation (see "Examples of student work").

General Ecology Lab students were given the flexibility to represent hypotheses and study design in a format of their choice

Activity: Experimental design scenarios

1. Design a study to test the question and hypothesis you wrote down earlier today.

2. Represent your study design using diagrams, bulleted list, drawings, etc.

3. Write a prediction. If your hypothesis is supported, what patterns do you expect to see?

a)

Part I: Data analysis

1. Revisit part III, step 2 of your lab 8 handout. For your specific C pool, how do you think C stocks will vary across the sites you've chosen? Write a hypothesis about this, including which site you think will have the highest C stock, which will have the lowest, which 2 will be in the middle, and your reasoning for ranking the sites as such.

2. In R (you can keep working in the same Rmd as you did for data carpentry, if you like), perform an ANOVA to test whether there are differences in C stocks across your sites. Then, perform a Tukey's HSD for this ANOVA.

b)

Individual results write-up:

Now that you have completed data carpentry, data analysis, and visualization, you will write a summary for the results associated with your specific C pool.

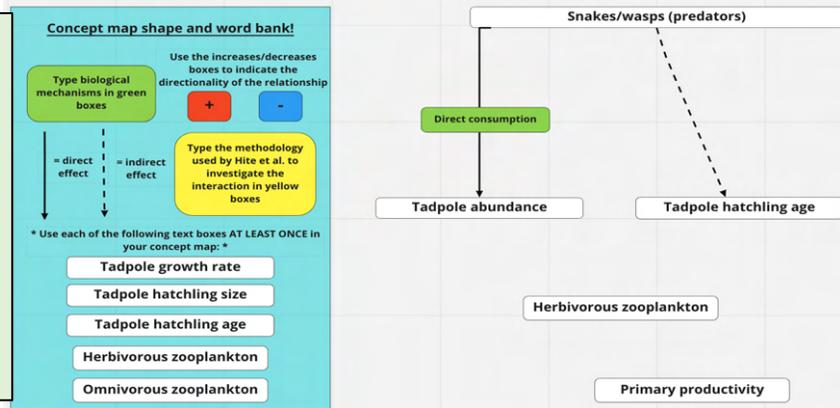Requirements for the individual results write-up (total of 25 points)

(1) Title and author name - first line of the document

(2) Minimum 1, maximum 2 pages of text (Times New Roman, 12 pt font, 1-inch margins, single-spaced).

(3) An introduction stating the goal/purpose of this project (2 pts)

(4) A description of the C pool you were looking at and the sites you chose to compare (include a *brief* description of each site) (3 pts)

(5) Your hypothesis from Part I (1) above (1 pt)

(6) Methods for data carpentry - where did you get the data? What were the important data carpentry steps? What were your methods for data analysis? (2 pts)

(5) What were the results of your analysis? (3 pts)

(6) Discussion (3-5 sentences) (4 pts)

　*Discussion points (must discuss each of these, but you're not limited to these. Feel free to write about other things as you see fit!):

　　(a) Did you see the pattern you hypothesized? If so, what does this tell you?

　　(b) How might you expect the patterns in C stocks for your C pool to compare to the patterns in the other pools across your sites?

　　(c) What future directions or additional questions do these results indicate?

2. Experiential learning: I integrate hands-on activities across multiple formats (e.g., readings, written assignments, and field-based teaching) to help students apply and enhance their learning

A. General Ecology students on the UGA Costa Rica program read a scientific paper about predator-prey interactions, then worked in teams to complete a concept map. I provided scaffolding for this activity in the form of a word bank and an example concept map.

B. Ecosystem Ecology Lab students completed a data analysis and visualization project using large datasets from the National Ecological Observatory Network. In teaching students to use RStudio, I provided template R files with step-by-step instructions for data analysis. Students applied general R skills learned throughout the semester to execute the assignment instructions.

```
39
40   *Step 2*
41   (a) Select variables of interest from both spc_biogeochem and spc_bulk density.
42
43   - For spc_biogeochem, you will need the following columns: domainID, siteID, plotID, collectDate, horizonID, horizonName
     biogeoTopDepth, biogeoBottomDepth, carbonTot.
44
45   - For spc_bulkdensity, you will need the following columns: domainID, siteID, plotID, collectDate, horizonID,
     horizonName, bulkDensThirdBar
46
47   (b) Join the subsetted dataframes from (a). You want to retain all of the observations from spc_biogeochem, filling in
     bulk density values where they exist and, otherwise, filling in NA. If you need help remembering what type of join to
     use, refer to the lab 7 slides!
48 ▾ ```{r}
49
50
51
52 ▲ ```
53
54   *Step 3*
55   (a) Create a new column in your joined dataframe from step 2 that contains the depth for each horizon
56
57   (b) For all bulk density calculations, we will use the data for the third bar bulk density method. In the dataframe, thi
     column is called bulkDensThirdBar. Find the mean bulk density for all of your data and assign this value to an object
     called global.mean.bd
58
59   (c) Next, calculate how many NA values you have for bulk density and comment this value below the line of code
60 ▾ ```{r}
61
62
63
64 ▲ ```
65
```

C. Through my participation in the River Field Studies Network, I co-created a field-based lesson to familiarize students with how large wood shapes stream channel morphology and habitat. This lesson was recently published on QUBES, and is designed to be adaptable to instructors' and students' unique needs and educational environments.

Microhabitats and macroinvertebrates: Logjam influences on stream morphology and macroinvertebrate traits

Author(s): Carolyn Cummins[1], Adriana E. Martinez[2]

1. University of Georgia 2. Southern Illinois University Edwardsville

Learning Outcomes:
- **Identify** how logjams influence microhabitat locations.
- **Map** microhabitats (riffles, runs, and pools) as they relate to logjams and channel characteristics.
- **Conduct logjam measurements** (orientation, embeddedness, size, # of pieces, etc).
- **Predict** the traits of stream macroinvertebrates that might be found in different logjam-influenced stream habitats.
- **Create**, **label**, and **interpret** informative field sketches of stream characteristics and habitats.
- Be able to **discuss** how stream habitat is shaped by channel features such as log jams, as well as how these principles could apply to systems outside the study site.
- Gain **transferrable, field-based research skills**, including mapping and measuring channel features (including log jams)

3. Interdisciplinarity: Teaching on experiential learning programs has required me to creatively connect ecology course content to the broader context of diverse places and ecosystems. Thus, I have developed innovative activities and lessons designed to build a place-based, interdisciplinary understanding of ecology, leveraging the tools available to students and instructors in the field.

A. Stream ecology field project: I designed and implemented a hands-on stream ecology project for the Interdisciplinary Field program, emphasizing connections between anthropology and ecology.

1. I first gave an introductory lecture about aridland river ecology and southwest water issues in the Rio Grande River

Stream ecology project – Tingley Beach, Albuquerque, NM.

Lesson overview: we will sample and compare biological and physical characteristics between **human-made wetlands** and the **Rio Grande River** at Tingley Beach, a popular recreation area in Albuquerque, New Mexico.

- Tingley Beach was Albuquerque's first public swimming area, built originally as a flood control project for the Rio Grande. Today, the **human-made wetlands** are used for fishing, and people also use the area's trails for walking and river access.
- The **Rio Grande** is the second longest river system in the continental United States. Today, this river often runs dry in places due to water diversion for irrigation and drinking water. **This river is important to and affects many people many different ways**, and has provided ecosystem services to the people that live near it for centuries. The river also affects international politics, as it serves as the border between the United States and Mexico.

2. We traveled to our field site at Tingley Beach in Albuquerque, New Mexico, where I gave a methods demonstration and split students into sampling teams.

3. Students then collected water and invertebrate samples from two human-constructed wetlands and the Rio Grande River.

Assignments associated with the stream ecology project emphasized both ecological comparisons and social-ecological interactions in the Rio Grande River system (see "Examples of Student Work")

B. Connecting ecology to other disciplines through readings and discussions: IFP students also read and discussed articles and scientific papers which connected ecology course content about wildlife disease, plant communities, fire ecology, climate change, and more to a broader social, economic, and even geologic context

Why ecology needs archaeologists and archaeology needs ecologists
J.M. Briggs, K.A. Spielmann, H. Schaafsma, K.W. Kintigh, M. Kruse, K. Morehouse, K. Schollmeyer
Frontiers in Ecology and the Environment, May 2006

■ ENVIRONMENT
Research connects black gill in shrimp to warming climate
Although harmless for human consumption, parasitic disease can cut harvests for coastal shrimpers.
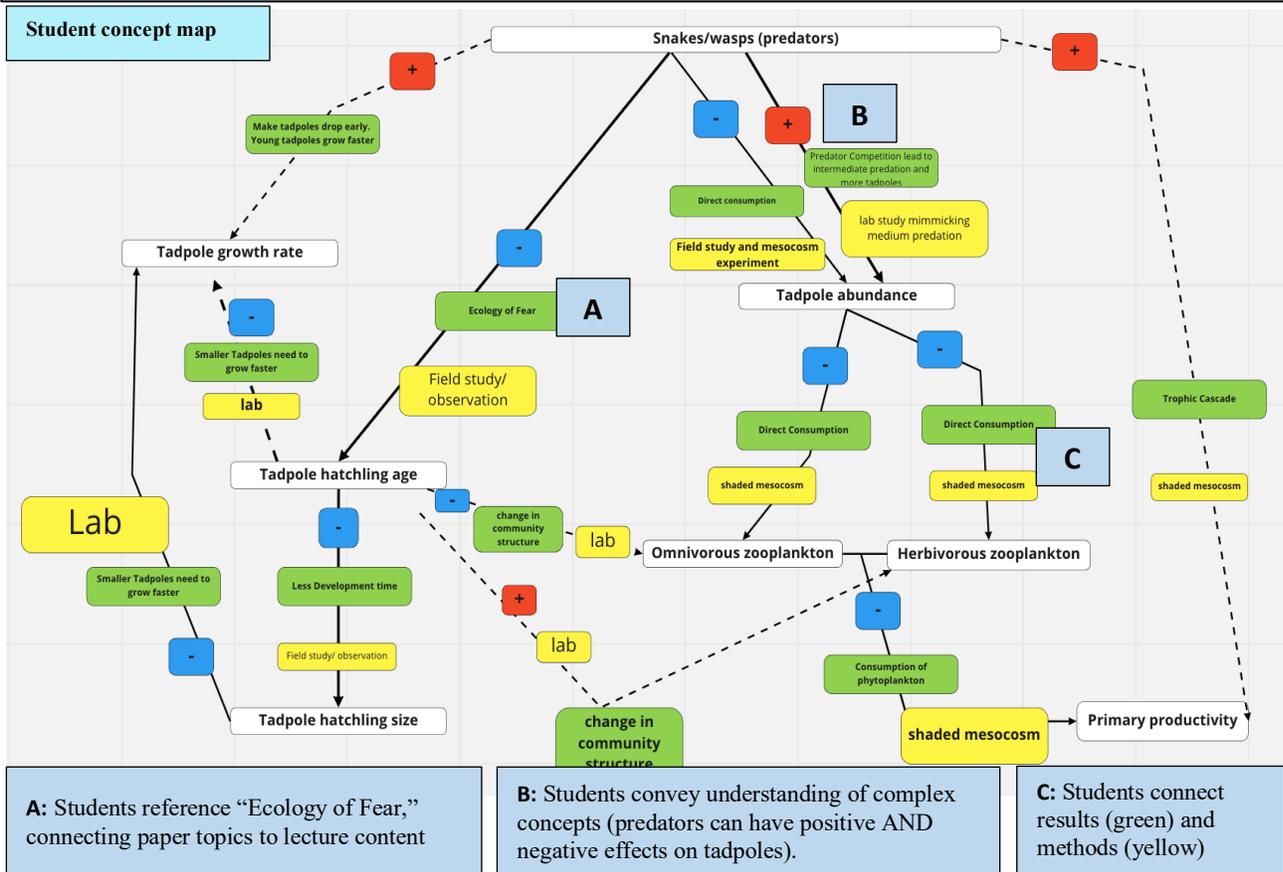
Economic Importance of Bats in Agriculture
Insectivorous bat populations, adversely impacted by white-nose syndrome and wind turbines, may be worth billions of dollars to North American agriculture.

Examples of readings assigned to IFP students as they traveled from Sapelo Island, Georgia across the southwest United States. Students drew upon readings during assignments and discussions
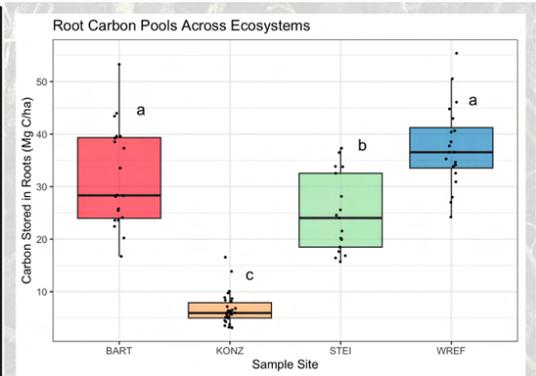
EXAMPLES OF STUDENT WORK

1. Concept mapping to understand scientific papers: In this concept mapping activity for General Ecology, students worked in teams to outline interactions between predators and prey based on a paper they read in class.

Student concept map

A: Students reference "Ecology of Fear," connecting paper topics to lecture content

B: Students convey understanding of complex concepts (predators can have positive AND negative effects on tadpoles).

C: Students connect results (green) and methods (yellow)

2. Culmination of a semester-long data science project: The example slides below have been excerpted from final student presentations in Ecosystem Ecology lab. Here, students present their hypotheses, results, and conclusions for their final projects based on a semester of learning to analyze large datasets in RStudio.

3. Ecology assignments in the field: Limited access to technology in the field can make assignments like data collection and lab reports difficult. I designed IFP assignments so that students could record, visualize, and interpret data in notebooks, maintaining high academic standards despite a lack of technology.
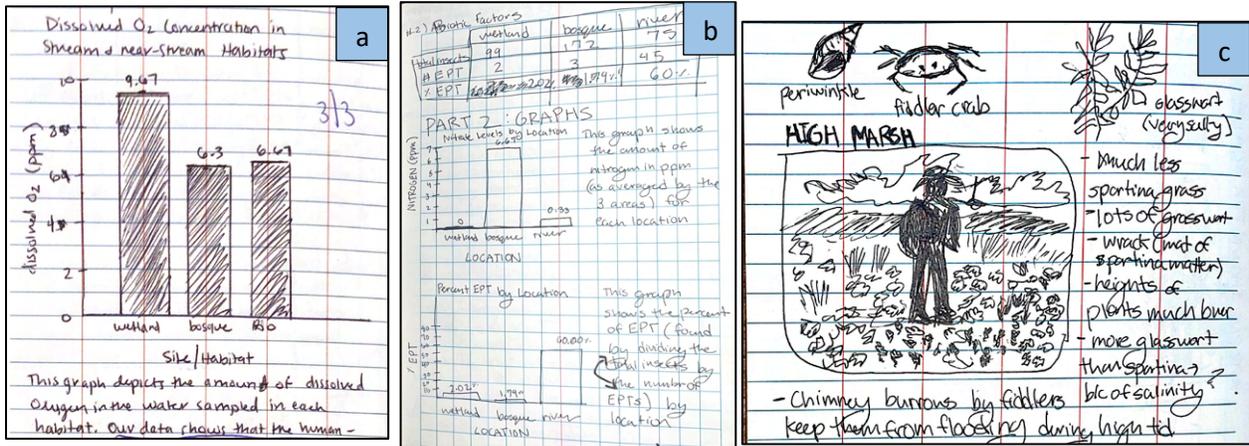
Students recorded and visualized data, generated sketches, and took detailed notes in their field notebooks
(a & b: stream ecology field assignment, c: sketches and notes from marsh field trip).

INNOVATIVE TEACHING PROJECTS AND ROLES

Students are often assigned to read and discuss scientific papers, which can be difficult due to complex terminology and style. For my Scholarship of Teaching and Learning Project, **I was interested in which in-class activities best promote student understanding and perception of scientific papers.**

1. Students took a **pre-reading survey** to assess their perception of the paper, then participated in three activities.

Activity 1: students answered **reading assurance** questions and participated in a class discussion.

Activity 2: students participated in a **concept mapping activity** (see above sections for examples)

Activity 3: students read different paper sections, then taught their peers about their assigned section (**jigsaw - above**)

3. Students completed a **post-reading survey** to re-assess perceptions and test paper comprehension. We assessed changes in perception from pre- to post-survey and compared comprehension across the three papers.
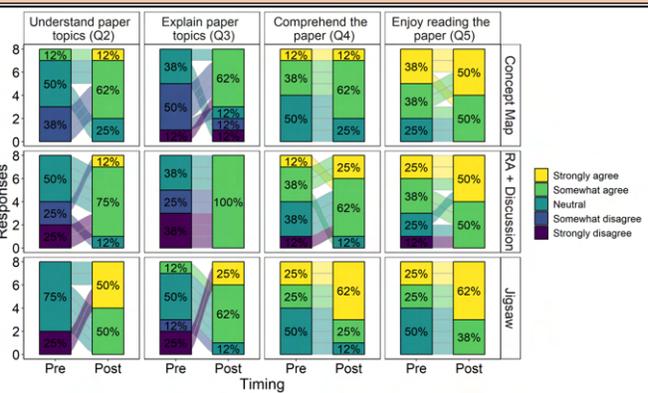
Changes in student perceptions of papers from pre- to post-survey
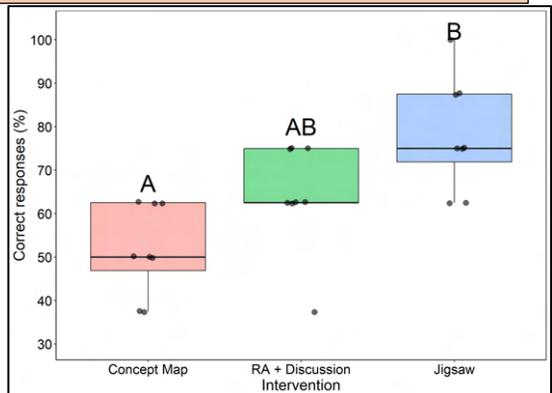
Comprehension post-test scores for each of three papers.

We found that student perception and comprehension of scientific papers increased over time, and that the highest effects on perception came following the jigsaw activity.

EVALUATIONS AND FEEDBACK – STUDENTS

Freshwater Ecosystems lab – Fall 2023

Quantitative survey responses (3 responses):

Question/prompt	Results
The instructor clearly explained course objectives	[3: 100.0%] Strongly Agree
The instructor effectively engaged students in class.	[3: 100.0%] Strongly Agree
The instructor was responsive to student inquiries	[3: 100.0%] Strongly Agree

Student comments:

"I...liked the variety of locations we visited and how both field and lab methods were covered..."

"Carolyn was so understanding and helpful when anyone had questions or problems during the classes. She did a great job teaching us!"

General Ecology lab – Summer 2023

Quantitative survey responses by section (17 responses):

Question/prompt	Average response	
	Section 1 (10)	Section 2 (7)
The instructor clearly explained course objectives	4.5	4.9
The instructor effectively engaged students in class.	4.4	4.9
The instructor was responsive to student inquiries	4.9	4.9

*note: student responses were based on a scale from strongly agree (5) to strongly disagree (1)

Student comments:

"Writing the paper taught me a lot about collaborative writing and how to work as a team."

"Carolyn Cummins was a wonderful TA and does a great job of engaging with her students and is very receptive to answering questions and providing thorough feedback on assignments."

Ecosystem Ecology lab – Spring 2023

Quantitative survey responses by section (5 responses):

Question/prompt	Average response	
	Section 1 (3)	Section 2 (2)
The instructor clearly explained course objectives	5	5
The instructor effectively engaged students in class.	5	5
The instructor was responsive to student inquiries	5	5

*note: student responses were based on a scale from strongly agree (5) to strongly disagree (1)

Student comments:

"The R project helped me better my code and also helped me understand ideas surrounding carbon storage. Also, Carolyn was a very helpful and kind TA!"

"The lab…added to my understanding of the main course, as well as helping me develop other skills like R and field techniques. Carolyn was really helpful and engaging, and clearly cared about where all the students needed help."

"All...assignments were helpful since they forced everyone to improve their R coding skills... skills that are very competitive for the job market."

Interdisciplinary Field Program - Summer 2022

Quantitative survey responses: ECOL1000 (6 responses):

Question/prompt	Results
Concern for Students. In a positive learning environment, an instructor shows respect and concern for the intellectual development of students. How well does your instructor do so?	[6: 100.0%] Strongly Agree
Preparation. Effective teaching requires that the instructor be well prepared for each class. How well prepared was your instructor?	[6: 100.0%] Strongly Agree
Overall Rating: Instructor. Taking into account the many qualities that contribute to good teaching, your instructor was an effective teacher.	[6: 100.0%] Strongly Agree

Student comments – ECOL1000:

"She was great at explaining things in a way that made it understandable and interesting. She was very approachable and great explaining things 1-on-1 too. It is clear she is passionate about the subject which makes it more interesting listening to her lecture."

"Carolyn did a great job making the course engaging and emphasizing things that she knew we were interested in. She made ecology super fun and definitely sparked my interest!"

UGA Costa Rica Tropical Science Study Abroad Program - Fall 2021

Student comments (optional feedback forms were distributed following course completion):

"Carolyn is a phenomenal teacher. Carolyn specifically helped to develop my research skills….She helped to develop my methods section and collected a large portion of my data with me…She has played a large role in my development as a student, and she is a primary reason I want to continue my education in graduate school."

"She was an amazing instructor both in and out of the classroom and helped me learn more about the field of ecology…After the course was over, she has continued to…support me…by helping me create and format a CV and providing advice about what career I should pursue..."

General Ecology Lab – Spring 2020

Quantitative survey responses (by section)

Question/prompt	Average response	
	Section 1 (23)	Section 2 (14)
My TAs explained concepts clearly	4.78	4.92
My TAs stimulated my interest in the subject matter.	4.43	4.71
My TAs were responsive to my questions/concerns.	4.86	4.79

*note: students answered surveys on a scale from strongly agree (5) to strongly disagree (1).

Student comments:

"The best part about this course was probably the instructor. Carolyn cares very deeply about the course material but also about her student's experiences. She is very easily accessible and helpful outside of the classroom and strives to make everyone feel included and heard…"

"Ms. Cummins was really great in being present to explain concept and making sure that no student felt left out...she was very understanding and willing to help whenever I needed it..."

"…She made the lab exciting and something I looked forward to. She was also willing to answer questions and further explain concepts that she realized may have been difficult to understand."

EVALUATIONS AND FEEDBACK – PEERS AND COLLEAGUES

Dr. Megan Conger – IFP 2022 Anthropology co-instructor
I got to teach alongside Carolyn Cummins during the summer 2022 Interdisciplinary Field Program at the University of Georgia, and was struck by her creative and good-humored approach to connecting high-level scientific concepts to the world that students are currently experiencing….She also made it easy for students to have a truly interdisciplinary experience, by regularly making connections to lectures that I gave relating to the anthropology and archaeology of the places we were working. This enhanced the experience of students; as the program went on, I started to notice that they began to make these connections themselves, following Carolyn's lead. She is an innovative and high quality teacher, who makes students feel comfortable even in challenging environments.

Dr. Sonia Hernandez – UGA Costa Rica 2021 Program Faculty
I enthusiastically recommend Carolyn for the Excellence Teaching Award. I had the pleasure of working with her as a TA on the 2021...Tropical Ecology Fall Semester in Costa Rica... As a study abroad teaching assistant, she had many simultaneous responsibilities because she was both assisting in various courses at once, but also instrumental in managing a lot of the logistics (e.g. making sure students brought the right attire and equipment or shepherding students to and from places), and the social aspects of a study abroad course... Carolyn is a thoughtful, caring, and meticulous instructor. She is holistic in her approach as she recognizes that teaching is not a "one size fits all" endeavor…For ornithology, ...she prepared in advance and participated in every activity, including almost daily 6 am hikes to look for and identify birds. She often crafted activities that would help the students assimilate the information best. She lights up when students succeed. She guided the students on how to manage large amounts of information in a stepwise fashion but also understands how to have high expectations of students. Despite how much she helped me and the other instructors, what makes Carolyn deserving of this award is how the students related with and respected her... On a personal note, Carolyn is a joy with whom to work. She keeps calm in stressful situations, she brings a positive attitude to all situations, she is all about laughter and brings sunshine with her wherever she goes. In all my years teaching, and specifically in regard to her true love for teaching and effort spent in doing it, she has been in the 1% of teaching assistants with whom I have worked. Please feel free to reach out if you need further information.

PROFESSIONAL ACTIVITIES RELATED TO TEACHING AT UGA

EcoReach Co-Coordinator - Fall 2019 - Spring 2021: EcoReach is an ecology outreach organization based in the Odum School of Ecology (OSE). Prior to serving as Co-Coordinator, I also served as EcoReach Secretary (2018-19) and as a volunteer (2017-18). I designed and implemented over 50 K-12 environmental education programs in Athens-Clarke County (ACC), including at events (e.g., Insectival, Athens Water Festival) and in classrooms. During the COVID-19 pandemic, I led the organization of virtual events and the creation of virtual activities for at-home learning. I also helped launch the Binoculars for Young Black Birders program, which raised over $18,000 to purchase 131 pairs of binoculars for Black ACC K-12 students.

OSE Undergraduate Program Committee Representative – Fall 2021 - Spring 2022: As a member of the Undergraduate Program Committee, I participated in conversations about aligning

OSE curriculum with department-wide learning objectives, allocation of student awards, and the planning of the OSE curriculum retreat.

Undergraduate Mentorship: I have mentored 18 undergraduate students. Six students completed independent research projects, three served as EcoReach communications interns, and one was a high-school intern through the UGA YoungDawgs program. Many of these students have gone on to pursue graduate school or careers in ecology and other STEM fields.

Undergraduate mentees (*independent research; [#]EcoReach intern; [%]UGA YoungDawgs)

2022-23	Olivia Allen Ally Whiteis	2021-22	Caroline Anscombe* Skye Remko*	2020-2021	Paola Gonzalez[#] Chancey Phillips[#] Olivia Allen Ally Whiteis
2019-20	Reagan Mahaley* Olivia Allen Carter Watson Olivia Wilson Shea Peters[%]	2018-19	Quentin Rice* Anna Kaz* Reilly Farrell Kayla Wagner Brady Griggs[#]	2017-18	Tia Manns Charlie Bond* Ashley Boston

Guest Lectures:

ECOL1000 (Ecological Basis of Environmental Issues). *Effects and management of excess nutrients in inland waters.* 28 November 2022. 50 minutes. ~200 undergraduate students.

ECOL8000 (Topics in Modern Ecology). *Inclusive and effective teaching: Actionable strategies for graduate students.* 29 September 2022. 75 minutes. 8 PhD students.

TEACHING-RELATED PROFESSIONAL DEVELOPMENT AND TRAINING

University of Georgia Graduate Certificate in University Teaching (2019 - present)

Coursework: GRSC 7770 - Graduate Teaching Seminar; EPSY8180 - Psychology of Learning and Instruction; EDIT6400E - Emerging Approaches in Teaching, Learning, and Technology

Scholarship of Teaching and Learning Project: Effects of instructional technique on student perception and comprehension of scientific literature.

Description: For my SoTL project, I designed and implemented a research project in which General Ecology students read primary literature articles, participated in 3 different in-class activities, and filled out pre- and post-surveys aimed at measuring comprehension and perception. I analyzed survey data and presented study results at the Spring 2022 UGA Center for Teaching and Learning Spring Teaching Symposium.

River Field Studies Network (RFSN) Instructor & Curriculum Professional Development Program (2023 - present): In January 2023, I was selected for the 2023 cohort of RFSN Scholars. Over a year-long training cycle, I attended monthly workshops and collaborated with other scholars to develop inclusive and effective place-based field lessons centered on stream and river ecology. In June 2023, I attended the RFSN's week-long "River Rendezvous" in Flagstaff, AZ, where I participated in a 4-day river trip and received training in river-based field course implementation and swiftwater safety. While in Flagstaff, we also piloted the lessons we had developed over the previous six months with a group of ~15 undergraduates. The lesson I co-developed for the RFSN was recently published on QUBES (doi:10.25334/ZVG7-2F67).