

Caroline R. Kanaskie

community ecologist studying southern pine beetle in New England

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EDUCATION

- 2019-2025 **PhD Candidate**, University of New Hampshire, Earth and Environmental Sciences
with **Cognate in College Teaching**
Advisor: Dr. Jeff Garnas
Dissertation: Responding to range expansion: Assessing insect communities, tree decline symptoms, and tree mortality risk as the southern pine beetle moves north
- 2017-2019 **Master of Science**, University of New Hampshire, Natural Resources
Advisor: Dr. Jeff Garnas
Thesis: Climate-driven range expansion in the southern pine beetle (*Dendroctonus frontalis*): Does the associated community change, and does it matter?
- 2013-2017 **Bachelor of Science**, Dickinson College, Environmental Science
with Minor in Biology, awarded with Latin & departmental honors
Thesis advisor: Dr. Carol Loeffler
Honors thesis: Foliar chemistry of the eastern hemlock (*Tsuga canadensis*)
Study abroad: Semester in Environmental Science at the Marine Biological Laboratory, Woods Hole, Massachusetts (Fall 2015); DIS Copenhagen, Denmark (Spring 2016)

PUBLICATIONS

- Kanaskie C. R.**, Hofstetter R. W., Klepzig K. D., Stephen F. M., Garnas J. R. Southern pine beetle associates: a systematic review. (*in prep.* – for submission to *Annals of the Entomological Society of America*, by February 2025)
- Kanaskie C. R.**, Rutledge, C. E., Bray, A. M., Ayres, M. P., Garnas, J. R. Insect community response to novel pheromone lures in New England pine forests. (*in prep.* – for submission to *Environmental Entomology*, by January 2025)
- Kanaskie C. R.**, Ducey M. J., Garnas J. R. Southern pine beetle risk assessment on National Park Service lands of the northeastern United States. (*in prep.* – for submission to *Northeastern Naturalist*, by December 2024)
- Kanaskie C. R.**, Routhier M. R., Fraser B. T., Congalton R. G., Ayres M. P., Garnas J. R. (2024). Early detection of southern pine beetle attack by UAV-collected multispectral imagery. *Remote Sensing*. 16(14), 2608. <https://doi.org/10.3390/rs16142608>
- Kanaskie, C. R.**, Dodds, K. J., Stephen, F. M., & Garnas, J. R. (2024). Southern pine beetle (Coleoptera: Curculionidae) and its associated insect community: similarities and key differences between

northeastern and southeastern pine forests. *Environmental Entomology*, 53(1), 143–156.

<https://doi.org/10.1093/ee/nvad112>

Kanaskie, C. R., Schmeelk, T. C., Cancelliere, J. A., & Garnas, J. R. (2023). New records of southern pine beetle (*Dendroctonus frontalis* Zimmermann; Coleoptera: Curculionidae) in New York, New Hampshire, and Maine, USA indicate northward range expansion. *The Coleopterists Bulletin*, 77(2), 248–251.

<https://doi.org/10.1649/0010-065X-77.2.248>

Hill, T. D., Sommer, N. R., **Kanaskie, C. R.**, Santos, E. A., & Oczkowski, A. J. (2018b). Nitrogen uptake and allocation estimates for *Spartina alterniflora* and *Distichlis spicata*. *Journal of Experimental Marine Biology and Ecology*, 507, 53–60. <https://doi.org/10.1016/j.jembe.2018.07.006>

Hill, T. D., Sommer, N. R., **Kanaskie, C. R.**, Santos, E. A., & Oczkowski, A. J. (2018a). Nitrogen and carbon concentrations and stable isotope ratios: Data from a ¹⁵N tracer study in short-form *Spartina alterniflora* and *Distichlis spicata*. *Data in Brief*, 21, 466–472. <https://doi.org/10.1016/j.dib.2018.09.133>

SELECTED PRESENTATIONS & POSTERS (as presenting author)

Invited presentations

2024 *Community ecology of the southern pine beetle: No evidence of enemy release in its expanding range.* **Entomological Society of America Eastern Branch Meeting**, Morgantown, West Virginia.

2024 *Protecting coastal pitch pine by predicting southern pine beetle risk: A story of trees and temperature.* **National Park Service Air Resources Division Extended Staff Meeting**, Online.

2023 *What Drives Early-Career Environmental Science Professionals?* **Acadia National Park Science Symposium**, Online.

2023 *Protecting coastal pitch pine in the northeastern U.S. by predicting southern pine beetle risk.* **Lunch & Learn, Acadia National Park Headquarters**, Bar Harbor, Maine.

Contributed presentations

2024 *How will insect communities respond to a novel chemical cue introduced by a range-expanding beetle?* [presentation]. **Entomological Society of America Annual Meeting**, Phoenix, Arizona.

2024 *Too many trees and warming winters: Acadian pitch pines are susceptible to southern pine beetle* [poster]. **Acadia National Park Science Symposium**, Winter Harbor, Maine.

2024 *Drones can detect southern pine beetle early attack* [poster]. **Entomological Society of America Eastern Branch Meeting**, Morgantown, West Virginia.

2023 *Revisiting aerial and ground-based detection protocols for the management of southern pine beetle in its expanding northern range* [poster]. **Entomological Society of America Annual Meeting**, National Harbor, Maryland.

- 2023 *The not-so southern pine beetle* [presentation]. **First US-Spanish Summer School on Climate Change and Ecosystem Management**, Aguilar de Campoo, Palencia, Spain.
- 2023 *Tree decline associated with southern pine beetle attack on Long Island: Preliminary results from ground and drone surveys* [presentation]. **Northeast Forest Pest Council (NEFPC) Annual Meeting**, Lake George, New York.
- 2022 *Southern pine beetle in New Hampshire and Maine: Impact of temperature and seasonality on detection* [presentation]. **New England Society of American Foresters (NESAF) & Northeastern Forest Pest Council (NEFPC) Joint Annual Meeting**, Portland, Maine.
- 2021 *Insect community responses to novel and co-evolved bark beetle pheromones: Predicting potential southern pine beetle associates in New England pine forests* [presentation]. **North American Forest Insect Work Conference (NAFIWC)**, Online.
- 2021 *Which insects will respond to a novel tree-killing beetle pheromone?* [poster]. **University of New Hampshire Graduate Research Conference**, Online.
- 2021 *Insect community responses to novel and co-evolved bark beetle pheromones: A preliminary look at potential southern pine beetle associates in New England hard and soft pine forests* [presentation]. **Northeastern Forest Pest Council Meeting (NEFPC) Annual Meeting**, Online.
- 2020 *Community matters: A tree-killing bark beetle does not escape its natural enemies as its range expands* [poster]. **University of New Hampshire Graduate Research Conference**, Online.
- 2020 *Southern pine beetle (*Dendroctonus frontalis*) & associated insect community in the pitch pine barrens of Long Island, NY* [presentation]. **Northeastern Forest Pest Council (NEFPC) Annual Meeting**, Portland, Maine.
- 2019 *Southern pine beetle on the move: What's happening in the expanded range?* **Three-Minute Thesis, University of New Hampshire**, Durham, New Hampshire.
https://media.unh.edu/media/2019+3MT+FinalsA+Caroline+Kanaskie%2C+M.S.+Natural+Resources+1_cd4vy1bm
- 2019 *Southern pine beetle (*Dendroctonus frontalis*) success and community dynamics in Long Island, NY* [presentation]. **Department of Natural Resources and the Environment Spring Seminar Series**, University of New Hampshire, Durham, New Hampshire.
- 2018 *Southern pine beetle (*Dendroctonus frontalis*) success and community dynamics in Long Island, New York* [presentation]. **Entomological Society of America Annual Meeting**, Vancouver, British Columbia.
- 2017 *Hemlock woolly adelgid abundance and hemlock health in hilltop vs. valley sites* [poster]. **Pennsylvania Academy of Science (PAS) Conference**, Wilkes Barre, Pennsylvania.
- 2016 *Aboveground N use, efficiency, and growth dynamics in *Spartina alterniflora* and *Distichlis spicata** [presentation]. **New England Estuarine Research Society (NEERS) Conference**, Block Island, Rhode Island.

2015 *Examining desert algal growth rates and quantum yield in response to nutrient availability* [presentation]. **Semester in Environmental Science (SES) Student Independent Research Symposium**, Marine Biological Lab (MBL), Woods Hole, Massachusetts.

GRANTS & FUNDING

UNH Dissertation Year Fellowship (2024-2025)	\$25,310
UNH Graduate School Travel Grants ($n = 9$; 2018-2024)	\$2,000
Second Century Stewardship Fellowship Research Fellow (2023)	\$20,000
UNH NRESS Student Support Fund Awards ($n = 3$; 2021, 2022, 2023)	\$2,100
UNH NREN Farrington Fund for Student Travel ($n = 2$; 2018, 2024)	\$2,000
UNH Summer Teaching Assistant Fellowship (STAF) ($n = 2$; 2018, 2024)	\$8,150
Environmental Protection Agency (EPA) Greater Research Opportunities (GRO) Grant (2015)	\$50,000
Total funding secured:	\$109,560

AWARDS

2024 **Best Graduate Student Poster**, Entomological Society of America Eastern Branch Meeting
 2020 **Best Student Talk**, Northeastern Forest Pest Council Gerald N. Lanier Student Forum
 2017 **Environmental Studies Award for Excellence in Service and Scholarship**, Dickinson College
 2016 **Baird Sustainability Fellow**, Dickinson College

TEACHING EXPERIENCE

Course name	My role	Enrollment	Years Taught
NR745: Forest Management	Teaching assistant	12	Spring 2024
FORT578: Ecology and Management of Forest Stressors	Teaching assistant	14	Spring 2024
NR782/882: Forest Health	Instructor of record	14	Fall 2023
NR602: Environmental Policy	Teaching assistant	30	Spring 2018, 2019
NR425: Field Dendrology	Teaching assistant	10	Fall 2017, 2018

Course descriptions & activities:

NR745: Forest Management, University of New Hampshire

Graded and provided feedback on written assignments in a writing-intensive course. Students developed a forest management plan for a university property throughout the semester.

FORT578: Ecology and Management of Forest Stressors, University of New Hampshire

Assisted with course design, delivered guest lectures, and facilitated labs. Key contributions included development of a lab session at the UNH Collection of Insects and Other Arthropods, and a guest lecture on biological control in forest systems.

NR782/882: Forest Health, University of New Hampshire

Designed and delivered lectures and labs for a 4-credit, combined undergrad/grad course using a variety of active learning techniques. We focused on insects, pathogens, abiotic factors, and human impacts on forests, and how all of these impacts interconnect. Students ultimately

prepared a literature review and developed a research proposal to investigate a forest health issue of their choice. In the standard Student Evaluation of Learning survey:

- All students recommend this course to other students (mean = 3.6 out of 5)
- All students recommend me as an instructor (mean = 3.9 out of 5)
- Students comment on my “creative and outcome-focused pedagogy” which “encourages learning higher levels of application, questioning, interpreting, and understanding than most other courses.”

NR602: Environmental Policy, University of New Hampshire

Responsible for developing and leading weekly lab activities for a section of 30 students relating to lecture content or improving student writing (writing intensive course). Helped to write and grade 80+ midterm and final exams. Set up peer-review groups, evaluated student writing 5+ times per semester and provided individual feedback.

NR425: Field Dendrology, University of New Hampshire

Primary instructor for a section of 10 students. Introduced over 100 species of trees and shrubs. Created and graded weekly quizzes in the field. Helped students properly prepare for first extended field experiences, teaching about gear and supplies needed for success. Worked one-on-one with the instructor of record to organize local field trips and a day-long trip to the White Mountain National Forest.

Guest lectures & other engagement:

BIOL950: Science Communication, Guest lecturer, University of New Hampshire (Spring 2021, 2024)

Designed and delivered a 1-hour lecture/discussion about science communication, focusing on social media including Instagram, LinkedIn, and Twitter/X, as well as personal websites.

NR965: Community Ecology, Guest lecturer, University of New Hampshire (March 2023)

Designed and delivered a 1-hour lecture focused on community interactions and networks, introducing broad concepts and later applying these to the southern pine beetle system as a case study. Assigned primary literature as preparatory reading and facilitated 1 hour of associated discussion.

UNH Child Study and Development Center, Guest teacher, Durham, NH (Feb. 2020)

Introduced children ages 3-5 to the world of insects! We explored basic insect anatomy and communication methods and compared these traits among orders.

AP Language Arts, Guest speaker, Minersville Area High School, Minersville, PA (Sept. 2019)

Shared how I use writing in my work as a scientist and explained the role of writing outside of language arts courses, with a focus on writing in undergraduate courses and in the workplace.

College Preparatory Biology, Guest speaker, Andover High School, Andover, MA (Nov. 2018)

Used my MSc research to create content for a broad group of students, focused on biodiversity and how to sample it. Gave a 20-minute lecture and answered student questions for 10+ minutes.

SCIENCE OUTREACH

Skype a Scientist:

- May 2024 4th Grade, Lexington, MA. *How do tiny beetles kill big trees?*
I developed this session to fit in with the current focus of the class: animal communication. Chemical communication is invisible, yet powerful!
- April 2024 5th Grade gifted & talented, Ringwood, NJ. *Adventuring in Acadia and the Alpine.*
This session supported a semester-long project in which students planned a road trip. I introduced forested ecosystems of the northeast that students could include in their itinerary.

Seacoast Sips of Science:

- May 2024 North Country Hard Cider, Dover, NH. *Below the bark: tiny animals have a big impact!*
In this 20-minute talk for the general public, I highlighted the ecology and natural history of bark beetles.

Instagram:

Since summer 2023, I have engaged in science outreach via my professional, science-focused Instagram account, [@ck_sci](#). I started this account with support from Schoodic Institute's Science Communication Specialist, Catherine Schmitt.

Volunteer experiences:

- Car Barn Pond BioBlitz – entomology group leader (September 2024; Hampton, NH)
I led the entomology group during a BioBlitz on National Public Lands day. We identified almost 30 taxa in one hour on a chilly morning!
- Bark and Ambrosia Beetle Identification Workshop – volunteer organizer (June 2024; Durham, NH)
I attended this training in 2017, and have since solidified my place as a scholar of Scolytinae. I am in regular contact with lead organizer, Marc DiGirolomo (USFS), and he invited me to assist in organizing the 2024 workshop. I welcomed participants to my university, helped shuttle people from place to place, assisted with beetle identification via dichotomous key, and carried out a variety of organizational tasks (especially preparation and wrap-up/clean-up).
- It's a Bug's World – welcome desk volunteer, (March 2024; Morgantown, West Virginia)
This outreach event gives back to the local community at the Entomological Society of America Eastern Branch meeting. I greeted guests and oriented them to the various activities at the event, including an insect petting zoo, a carnivorous plant exhibit, crafts, and games.
- Seacoast Sips of Science – organizing team member (2022-present; Seacoast NH)
This seminar series brings local scientists to Seacoast NH breweries to share their research with the public. Our team generates theme ideas for our events, coordinates with local breweries, connects with local scientists, and facilitates two-hour events with audio & visual. I planned and hosted an event in April 2023 focused on wildlife ecology, and in May 2024 I planned, hosted, and spoke at an event featuring insect science. Our *Bugs! Bugs! Bugs!* event also featured live insects (a tank of Madagascar hissing cockroaches) and a display from the UNH Collection of Insects and Other Arthropods.

MEDIA COVERAGE OF MY RESEARCH:

- 2024 [Coastal Conversations Radio Program: *Changing Acadia*](#) hosted by Catherine Devine.
- 2024 [“Warmer winters could push pine-tree killing beetle deeper into Maine”](#) by Lori Valigra, Bangor Daily News.
- 2022 [“Southern Pine Beetle Found in Maine and New Hampshire”](#) by Catherine Schmidt, Northern Woodlands.
- 2022 [“Destructive southern pine beetle begins northern migration”](#) by Chris Conte, Scripps Media.
- 2022 [“Surprising discovery shows destructive southern pine beetle marching north into NH”](#) by Claire Potter, Valley News.
- 2022 [“Tree killing beetle found in Maine forests, scientists say”](#) Associated Press.
- 2022 [“UNH Researchers Discover Destructive Southern Pine Beetle in Northern Forests”](#) by Robbin Ray, UNH Today.
- 2022 [“Maine forests at risk after discovery of southern pine beetle in York County”](#) by Paul Marino, Maine Public Radio.

PROFESSIONAL SERVICE

- Nov. 2024 **Volunteer, Entomological Society of America 2024 Annual Meeting**
Registration support volunteer at the 2024 meeting in Phoenix, Arizona
- 2022-2023 **President, Graduate Student Senate**, University of New Hampshire
New England Commission of Higher Education (NECHE) self-study team member
Graduate and Family Housing Survey Committee team member
- 2021-2022 **Vice President, Graduate Student Senate**, University of New Hampshire
Faculty Senate liason
- 2020-2021 **Graduate School Senator, Graduate Student Senate**, University of New Hampshire
Space Allocation, Adaption and Renewal Committee (SAARC)
Memorial Union Building (MUB) Director search
- April 2019 **Undergraduate Research Conference Interdisciplinary Science and Engineering symposium** judge, University of New Hampshire
- 2019-2020 **Graduate Teaching Community** Organizer, University of New Hampshire
- 2018-2020 **Spring Seminar Series** Organizer, University of New Hampshire Department of Natural Resources and the Environment
- 2018-2019 **Master’s student representative**, University of New Hampshire Department of Natural Resources and the Environment

FIELDWORK & TRAINING

Summer '24	Data collection , <i>Acadia Nat'l Park, Fire Island Nat'l Seashore, Cape Cod Nat'l Seashore</i>
June '24	Bark & Ambrosia Beetle Identification Workshop , <i>University of New Hampshire</i>
Sept. '23	First US-Spanish Summer School on Climate Change and Ecosystem Management: Promoting International Collaboration for a Sustainable Future – <i>Aguilar de Campoo, Palencia, Spain</i>
Summer '23	Data collection , <i>Acadia Nat'l Park, Fire Island Nat'l Seashore, Cape Cod Nat'l Seashore</i>
June '23	Schoodic Institute Science Communication training , <i>online</i>
Jan. '23	STEM Teaching Workshop Day (via NSF STEM Gateway), <i>University of New Hampshire</i>
Summer '22	Southern pine beetle life stage study , collection of UAV imagery, <i>Long Island, New York</i>
Summer '21	Funnel trapping study set up, and biweekly trap catch collection, <i>New England</i>
Summer '20	Funnel trapping study design, set up, and biweekly trap catch collection, <i>New England</i>
Spring '20	UNH Research Communications Academy cohort member
Jan. '20	Alan Alda Science Communication Experience , <i>University of New Hampshire</i>
Oct. '19	Southern pine beetle trap removal , <i>Long Island, New York</i>
Sept. '19	Reclaiming STEM science communication workshop, <i>University of New Hampshire</i>
Feb. '19	UNH PowerPlay implicit bias training, <i>University of New Hampshire</i>
Summer '18	Southern pine beetle sampling & rearing, trap set up, <i>Long Island, New York</i>
Aug. '17	Bark Beetle Identification Training workshop, <i>University of Massachusetts</i>
Summer '17	Southern pine beetle pilot studies , <i>Long Island, New York</i>

MENTORSHIP

Spring '24	Casey Coupe & Mariah Rietzel – lab technicians (insect ID) <i>University of New Hampshire</i>
Summer '22	Isabella Barbini – undergraduate field and lab technician, <i>University of New Hampshire</i>
Summer '18	Andrew West – undergraduate field technician, <i>University of New Hampshire</i>

OTHER EMPLOYMENT

- 2019-2023 Graduate Assistant, **University of New Hampshire Graduate School Career, Professional & Community Development Team**
- 2015 Citizen Science Intern, **Smithsonian Environmental Research Center (SERC)**
- 2013 – 2017 Watershed Coordinator, **Alliance for Aquatic Resource Monitoring (ALLARM)**

PROFESSIONAL SOCIETY MEMBERSHIP

- Entomological Society of America** (2018 – present)
Eastern Branch member (2018 – present)
Plant-Insect Ecosystems section member (2018 – present)
Eastern Branch Insect Detection, Evaluation, and Prediction committee member (2024 – present)
Formal and Informal Teaching pilot section member (2024 – present)
- Coleopterists Society** (2023 – present)
- Maine Entomological Society** (2023 – present)

PROFESSIONAL ONLINE PRESENCE

- ORCID - <https://orcid.org/0000-0002-4091-9607>
- LinkedIn - <https://www.linkedin.com/in/ckanaskie/>
- ResearchGate - <https://www.researchgate.net/profile/Caroline-Kanaskie>
- Google Scholar - <https://scholar.google.com/citations?user=Azf3B6cAAAAJ&hl=en>
- Instagram - https://www.instagram.com/ck_sci/
- Personal website - <https://carolinekanaskie.wixsite.com/science>