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EDUCATION

- 2017–present Dartmouth College
Ph.D. candidate, Graduate Program in Ecology, Evolution, Environment and Society
Thesis: Patterns of Sound and Vibration Signal Use in Orthopteran Communication
Advisor: Dr. Hannah ter Hofstede
- 2017 University of Pittsburgh
B.S., Ecology and Evolution, *magna cum laude*
Honors thesis: Integration of Spatial and Acoustic Information in Frog-Eating Bats

PUBLICATIONS

- in press Symes, L.B., Madhusudhana, S., Martinson, S.J., **Kernan, C.E.**, Hodge, K.B., Salisbury, D.P., Klinck, H., ter Hofstede, H. Estimation of katydid spatial distribution and calling activity from soundscape recordings. *Journal of Orthoptera Research*.
- 2022 **Kernan, C.E.**, Jones, J., Robillard, T., ter Hofstede, H.M. Stereotyped signals reflect a trade off between signal amplitude and timing in a duetting insect. *Animal Behaviour* 193. [Link](#).
- Kernan, C.E.**, Yiambilis, A.N.*, Searcy, Z.E.*, Pulica, R.M.*, Page, R.A., Caldwell, M. Mid-flight prey switching in the fringed-lipped bat (*Trachops cirrhosus*). *The Science of Nature* 109(43). [Link](#).
- 2021 Symes, L.B., Robillard, T., Martinson, S.J., Dong, J., **Kernan, C.E.**, Miller, C.R., ter Hofstede, H.M. Daily signaling rate and the duration of sound per signal are negatively related in Neotropical forest katydids. *Integrative and Comparative Biology* 61(3). [Link](#).
- 2020 Symes, L.B.†, Martinson, S.J.†, **Kernan, C.E.**, and ter Hofstede, H.M. Sheep in wolves' clothing: prey rely on passive defenses when predator and non-predator cues are similar. *Proceedings of the Royal Society B* 287: 20201212. [Link](#).
- Geipel, I.†, **Kernan, C.E.**†, Litterer, A.S., Carter, G., Page, R.A.‡, ter Hofstede, H.M.‡ Predation risks of signaling and searching: bats prefer moving katydids. *Biology Letters* 16: 20190837. [Link](#).

→ Featured in [Outside JEB](#) by the Journal of Experimental Biology

Natural history notes

in press **Kernan, C.E.** Observation of a bullet ant (*Paraponera clavata*) foraging on a lizard (*Anolis* sp.). *Entomologica Americana*.

†‡Equal authorship contributions

*Undergraduate author

PRESENTATIONS

Talks

- 2022 **Kernan, C.E.**, Hamel, J., Martinson, S., Symes, L., and ter Hofstede, H.M. Comparing airborne and substrate-borne signaling investment across pseudophylline katydids. Talk presented at the Third International Symposium on Biotremology.
- 2022 Hamel, J., Iwan, A., Ross, J., Gamble, M., **Kernan, C.E.**, and ter Hofstede, H.M. A study of multi-modal communication using multiple approaches: uncovering signal functions in a neotropical katydid. Talk presented by J. Hamel at the Third International Symposium on Biotremology.
- 2022 Symes, L., Madhusudhana, S., Martinson, S., Geipel, I., **Kernan, C.E.** and ter Hofstede, H.M. Passive acoustic monitoring and machine learning analysis reveal details of katydid ecology and behavior. Talk presented by L. Symes at Animal Behavior Society annual conference.
- 2022 Caldwell, M.S., Yiambilis, A.N.*, Searcy, Z.E.*, Pulica, R.M.*, Page, R.A., and **Kernan, C.E.**. Do eavesdropping bat predators update foraging decisions during attack flights? Talk presented by M. Caldwell at Animal Behavior Society annual conference.
- 2021 ter Hofstede, H.M., Symes, L.B., Robillard, T., Martinson, S., Dong, Jiajia, **Kernan, C.E.**, and Miller, C. Tradeoffs in Acoustic Signaling and Movement in Neotropical Forest Katydid. Talk presented by H. ter Hofstede at Animal Behavior Society annual conference.
- 2021 Symes, L.B., Madhusudhana, S., Martinson, S., **Kernan, C.E.**, and ter Hofstede, H.M. Sexual selection, natural selection, and artificial intelligence. Talk presented by L. Symes at the Society for Integrative and Comparative Biology annual conference.
- 2020 Geipel, I., **Kernan, C.E.**, Litterer, A.S., Carter, G.G., Page, R.A., and ter Hofstede, H.M. Risky business: courtship movements put katydids in danger. Talk presented by I. Geipel at Animal Behavior Society annual conference.
- 2019 **Kernan, C.E.**, Ralston, J., ter Hofstede, H.M. How do different conspecific receivers respond to a multicomponent cricket call? Talk at Animal Behavior Society annual conference.
- 2017 **Kernan, C.E.** Integration of Spatial and Acoustic Information in Frog-Eating Bats. Senior honors thesis presentation at the University of Pittsburgh.
- 2016 **Kernan, C.E.** Behavioral observations of *Brookesia superciliaris* in Ranomafana National Park. Independent project presentation at Centre ValBio in Madagascar.

Posters

- 2021 **Kernan, C.E.** Do crowdsourced observations of katydids reflect the relative risks of mate finding strategies? Poster presented at the Entomological Society of America's annual conference.
- 2021 Ross, J.L*, Gamble, M.M., **Kernan, C.E.**, ter Hofstede, H.M., and Hamel, J.A. The role of sound and vibration in mediating courtship and competition in a Neotropical katydid. Poster presented by J. Ross at Animal Behavior Society annual conference, who won first place in the

Genesis Award undergraduate poster competition.

- 2019 **Kernan, C.E.**, Jones, J. ter Hofstede, H.M. Bat Monitoring at Hubbard Brook Experimental Forest. Poster presented at The Future of the Northern Forest workshop, hosted by Dartmouth College.

Iwan, A.*, **Kernan, C.E.**, Litterer, A.S., ter Hofstede, H.M., and Hamel, J. Studying the functions and contexts of vibrational communication in Neotropical katydids. Poster presented by A. Iwan at Animal Behavior Society annual conference.

Hamel, J., Iwan, A.*, **Kernan, C.E.**, Martinson, S., Symes, L., and ter Hofstede, H.M. A comparative study of vibrational signaling in Neotropical katydids. Poster presented by J. Hamel at Animal Behavior Society annual conference.

Kernan, C.E., Hamel, J., Iwan, A.*, Litterer, A., Martinson, S., Symes, L., and ter Hofstede, H. Flexible signaling strategies in a Neotropical katydid. Poster for the 2019 Smithsonian Tropical Research Institute Fellows' Symposium.

- 2018 **Kernan, C.E.**, Hamel, J., Iwan, A.*, and ter Hofstede, H.M. Calling, Courtship, and Post-Mating Tremulations in a Neotropical Katydid. Poster / flash talk for the Second International Symposium on Biotremology.

- 2017 Laing, A.M., Turner, A.H., **Kernan, C.E.**, Werning, S., Smith, N., Irmis, R. and Nesbitt, S.J. A New Shuvosaurid Taxon (Archosauria: Pseudosuchia) from the Late Triassic Hayden Quarry of New Mexico, USA. Poster presented by A. Laing at the Society of Vertebrate Paleontology.

**Undergraduate author*

GRANTS, FELLOWSHIPS & AWARDS

- 2019 Scholarly Studies Award (as Co-Investigator). Smithsonian Institution.
Graduate Research Fellowship. National Science Foundation.
- 2018 EEES External Course Award. Dartmouth.
Travel Award. Dartmouth.
Graduate Fellowship. Dartmouth.
- 2017 Graduate Assistance in Areas of National Need (GAANN) Fellowship. Dartmouth.
Cramer Research and Professional Development Funds. Dartmouth.
Honorable mention – Graduate Research Fellowship. National Science Foundation.
- 2016 Short Term Fellowship. Smithsonian Tropical Research Institute.
- 2015 Research Experience for Undergraduates. Smithsonian Tropical Research Institute.
First place, Ossip Writing Award. For sensory ecology essay. University of Pittsburgh.

TEACHING & MENTORING

Courses

- 2022 Tropical Biology – field course teaching assistant. Dartmouth College.
• Helped undergraduates develop, conduct, analyze and write reports on independent research projects, as one of two full-time teaching assistants during the 10-week course. Taught formal modules on insect classification, coevolution, statistical analysis, and reference management.
- 2019 Conservation of Biodiversity – teaching assistant. Dartmouth College.
• Taught modules on Netlogo and Stella modeling software.

- 2018 Ecology – lab instructor. Dartmouth College.
- 2017 Physiology – lab instructor. Dartmouth College.
- 2015 Organic chemistry – lab co-instructor. University of Pittsburgh.
- 2020, 2022 Animal communication guest lectures. Dartmouth College.

Individual undergraduate mentees

Co-supervised with Dr. Hannah ter Hofstede (Dartmouth) and Dr. Jen Hamel (Elon)

- 2020 M. Gray. Conducted independent research on sound transmission of katydid signals in the rainforest. Awarded a Dartmouth leave term grant in support of this research.
- 2020 J. Ross. Conducted independent research on katydid signal functions. Elon University. Received the Association for Southeastern Biologists Oral Presentation Award.
- 2019 E. Legge. Research assistant. Dartmouth College.
- 2019 S. Rosentsvit. Research assistant. Dartmouth College.
- 2018-2019 A. Iwan. Conducted honors thesis fieldwork in Panama on katydid vibrational signals during courtship. Elon University. Awarded second place in the John Bowley Derieux Research Award for oral presentation in Ecology, Botany, and Zoology (North Carolina Academy of Sciences, 2019) and a Turner Fellowship by the Animal Behavior Society.
- 2018 M. Sears. Research assistant doing fieldwork in Panama. Elon University.

PAST RESEARCH EXPERIENCE

- 2015-2016 Acoustic preferences and spatial biases in frog-eating bats
REU intern; Short-term fellow, Rachel Page lab. Smithsonian Tropical Research Institute.
 - Conducted flight cage experiments investigating how spatial information influences foraging behavior in predatory bats.
- 2015-2016 Color vision in jumping spiders
Research assistant, Nate Morehouse lab. University of Pittsburgh.
 - Projects included GIS mapping of field sites; spider identification and macrophotography; and improving spiderling survival rates in a lab colony.
- 2014-2015 Physiological and genetic variation in Arabidopsis populations
Research assistant, Steven Tonsor lab. University of Pittsburgh.
 - Helped grow, harvest, and extract DNA from hundreds of plants for SNP genotyping and next-generation sequencing.
- 2014 Classification of a shuvosaurid
Research assistant, Alan Turner lab. Stony Brook University.
 - Described fossils from and scored a phylogenetic matrix for a new specimen of a clade of Triassic crocodylians.

Field courses

- 2016 Ranomafana National Park, Madagascar
Stony Brook University field course
 - Included field methods for studying primates, comparing ecosystem types across Madagascar, and Malagasy language lessons.
- 2014 Laramie and Rock River, Wyoming
University of Pittsburgh Honors College field course
 - Included stream arthropod and sediment sampling, compass mapping, bird mist-netting and banding, plant identification, rock and soil classification, and paleontology.

OUTREACH

- 2022 Saint-Gaudens National Historic Park, New Hampshire, U.S.A.
• Helped with well-attended National Park Service Working Woodlands Workshop "Bats in the Barn: Nighttime Bat Education Program."
- 2020 Barro Colorado Island, Panama
• Videochatted with primary school students in N.J. for the "Rainforest Connection" program and 7th grade students in N.H., answering questions about insect hearing and communication.
- 2019 Barro Colorado Island, Panama
• Answered New Jersey primary school student questions about rainforests and insects via videochat for the "Rainforest Connection" program.
- Top identifier of katydids in Panama on the community science network iNaturalist.
Profile: [@greatest_auk](#)
- Hanover, N.H., U.S.A.
• Created activities about insects and animal communication and presented them at Dartmouth College "Science Day," an outreach, open-lab event for primary school children.
- 2018 Hubbard Brook, N.H., U.S.A.
• Wrote a public website feature about the bats species recorded at the Hubbard Brook Experimental Forest. URL: <https://hubbardbrook.org/story/the-bats-of-hubbard-brook/>
- 2016 Gamboa, Panama
• Led mist-netting demonstrations for field courses and at monthly community [Bat Nights](#).
- 2016 Pittsburgh, P.A., U.S.A.
• Created animal communication activities for Assemble!, a non-profit that hosts after-school workshops for Pittsburgh primary and secondary public school students.
- 2013 Cold Spring Harbor, N.Y., U.S.A.
• Updated and redesigned exhibits on local historical figures and cetacean evolutionary morphology for the Cold Spring Harbor Whaling Museum.

PROFESSIONAL ACTIVITIES

Journal reviewer

- 2018 Frontiers of Ecology & Evolution (1)

Current society membership

Entomological Society of America, Animal Behavior Society

Workshop participant

- 2018 Responsible stewardship of academic environments: lessons in professional conduct at field sites. Dartmouth College, led by Dr. Katie Hinde and Dr. Robin Nelson.
- 2018 Sound Recording and Analysis Workshop. Cornell Lab of Ornithology, at San Francisco State University Sierra Nevada Field Campus. Training in wildlife field recording and sound analysis techniques using Raven Pro.
- 2018

Creating an inclusive learning environment. Dartmouth Center for the Advancement of Learning and Dartmouth Office of Institutional Diversity and Equity.

2017 TA training panel. Dartmouth Center for the Advancement of Learning.

Service

2020-2022 Participated as a panel member and student "buddy" for the [EEES Scholars Program](#), a three-day workshop about the graduate school application process for students with backgrounds historically underrepresented in ecology and related fields.

SKILLS

Sound recording and analysis

SOFTWARE:

Raven
Audacity
Avisoft SASLab
R (seewave, monitoR)
Python (koogu)
Sonobat

HARDWARE:

Avisoft ultrasonic equipment
Polytec Laser Doppler Vibrometer
Pettersson bat detectors
Swift recorders
...& more!

First Aid

2021 Wilderness First Responder (6 day course, Wilderness Medical Associates International)

Macrophotography

2020 Cover image for Journal of Orthoptera Research 29(2).

2019 Best in show and first place for "Nature in Panama" - Smithsonian Tropical Research Institute Fellows photo contest.

Other technical skills

R	JMP Pro	Adobe Illustrator
R Markdown	LaTeX	Adobe Photoshop

Languages

English (native)
Spanish (conversational; ~CEFR B1)