

# Katie M. Schroeder

Avian ecologist with experience in bioacoustics and quantitative analysis

[kschroeder@talltimbers.org](mailto:kschroeder@talltimbers.org)

## PROFESSIONAL SUMMARY

- Research scientist with expertise in passive acoustic surveys and analysis of bird vocalizations
- Effective project manager with 7 projects personally led from conceptualization to publication or submission in high-impact journals
- Practiced in written and oral communication, having earned a conference presentation award and 2 university-wide Distinguished Teaching Award nominations

## EDUCATION

**PhD in Organismic and Evolutionary Biology**, University of Massachusetts, 2024

- Dissertation: Early learning, auditory perception, and signal evolution in songbirds

**Master of Science in Environmental and Organismic Biology**, East Carolina University, 2018

- Thesis: Vocal communication and acoustic monitoring of the King Rail (*Rallus elegans*)

**Bachelor of Science in Biology**, Juniata College, *magna cum laude*, 2015

- Thesis: Possible relationship between invasive plants and wetland use by migratory birds in central Pennsylvania

## PEER-REVIEWED PUBLICATIONS

Andes AK, **Schroeder KM**, Buckley BR, Dabbert CB, and White RA. (In press). Northern bobwhite chick survival, growth, and movement in relation to broadcast supplemental feed and drought. *Wildlife Biology*.

**Schroeder KM** and Podos J. (In press). Correlated divergence of ecology, morphology and fine-scale vocal motor performance among subspecies. *Behavioral Ecology*.

Podos J and **Schroeder KM**. (2024). Ecological speciation in Darwin's finches: Ghosts of finches future. *Science* 386(6718): 211-217. <https://www.science.org/doi/10.1126/science.adj4478>

**Schroeder KM** and Remage-Healey L. (2024). Social experience shapes forebrain responsiveness before the sensitive period of vocal learning. *Journal of Experimental Biology* 227 (21): jeb247956. <https://doi.org/10.1242/jeb.247956>

**Schroeder KM** and Podos J. (2023). Early exposure to songs of another subspecies enhances song discrimination in wild sparrow nestlings. *Animal Behaviour* 203: 123-132.

<https://doi.org/10.1016/j.anbehav.2023.06.015>

**Schroeder KM** and Remage-Healey L. (2021). Adult-like neural representation of species-specific songs in the auditory forebrain of zebra finch nestlings. *Developmental Neurobiology* 81(2): 123-138. <https://doi.org/10.1002/dneu.22802>

**Schroeder KM** and McRae SB. (2020). Automated auditory detection of rare, secretive marsh bird with infrequent and acoustically indistinct vocalizations. *IBIS* 162(3):1033-1046. <https://doi.org/10.1111/ibi.12805>

**Schroeder KM** and McRae SB. (2019). Vocal repertoire of the King Rail (*Rallus elegans*). *Waterbirds* 42(2): 154-167. <https://doi.org/10.1675/063.042.0202>

Lansverk AL, **Schroeder KM**, London SE, Griffith SC, Clayton DF, and Balakrishnan CN. (2019). The variability of song variability in zebra finch (*Taeniopygia guttata*) populations. *Royal Society Open Science* 6: 190273. <http://dx.doi.org/10.1098/rsos.190273>

**Schroeder KM** and McRae SB. (2018). Variable laying times among king rails (*Rallus elegans*). *Wilson Journal of Ornithology* 130(4): 1036-1041. <https://doi.org/10.1676/18-00005.1>

Stiffler L, **Schroeder KM**, McRae SB, Katzner T, and Anderson J. (2018). Quantitative acoustic differentiation of cryptic species: an example with king and clapper rails in eastern North America. *Ecology and Evolution* 8(24):12821-12831. <http://doi.org/10.1002/ece3.4711>

#### **SELECTED PRESENTATIONS \*denotes invited talk**

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\*Schroeder KM and Podos J. Behavioral ecology of swamp sparrows. Audubon Research Symposium, Newport, RI. 2024

\*Schroeder KM, Podos J, and Remage-Healey L. Early auditory experience affects song discrimination and neural development in nestlings. Songbird Satellite virtual meeting. 2023

Schroeder KM, Podos J, and Remage-Healey L. Early social experience alters behavioral and neural responses to species-specific song in cross-fostered zebra finch fledglings. Animal Behavior Society Conference. 2022

Schroeder KM, Remage-Healey L, and Podos J. Effect of early auditory experience on song recognition in wild swamp sparrow nestlings. Animal Behavior Society Virtual Meeting. 2021

\*Schroeder KM. Birds: Hobby or Science? Brookline Bird Club, Boston, MA. 2021

Schroeder KM, Macedo-Lima M, Podos J, and Remage-Healey L. Neural encoding of species-specific song discrimination in nestling passerines. Behaviour 2019, Chicago, IL. 2019

Schroeder KM and McRae SB. Vocalizations in a non-passerine: what can call structure tell us about an individual king rail? American Ornithology Conference, East Lansing, MI. 2017

\*Schroeder KM and McRae SB. Detection probability using the standardized marsh bird monitoring protocol in a coastal breeding king rail population. North Carolina Chapter of The Wildlife Society, Columbia, NC. 2017

\*Schroeder KM and McRae SB. A royal mystery: decoding the simple calls of king rails. Greenville Bird Club, Greenville, NC. 2017

KM and McRae SB. Detection probability using the standardized marsh bird monitoring protocol in a coastal breeding king rail population. The Waterbird Society, New Bern, NC. 2016

Schroeder KM and McRae SB. The role of microhabitat in the evolution of sound propagation of rail calls. North American Ornithological Conference, Washington, DC. 2016

## RESEARCH GRANTS (Total amount awarded: \$14,908.40)

UMass Natural History Collections Summer Graduate Research Scholarship: \$4,853	2022
UMass Graduate School Dissertation Grant: \$1,000	2021
American Ornithological Society Werner and Hilegard Hesse Award: \$2,304	2019
Wilson Ornithological Society Student Research Grant: \$1,500	2019
University of Massachusetts Bradford Blodget Fund for Ornithological Studies: \$1,000	2019
East Carolina University Coastal Maritime Council Coastal Research Award: \$753	2017
Association of Field Ornithologists E. Alexander Bergstrom Memorial Research Award: \$1,498	2016
Carolina Bird Club Research Grant: \$2,000	2016

## AWARDS AND HONORS

Center for the Integration of Research, Teaching, and Learning, Associate status granted	2022
Center for Teaching & Learning Distinguished Teaching Award nominations	2021,2023
OEB Graduate Program TA Award nomination	2020,2021
Animal Behavior Society Travel Award	2019
Outstanding MS Thesis in Life Sciences nomination, East Carolina University	2019
First-Year Organismic & Evolutionary Biology Fellowship, University of Massachusetts	2018
Student Oral Presentation Award, American Ornithological Society Conference	2017
American Ornithological Society Travel Award	2017
Next Step Scholarship, East Carolina University	2015, 2016
The Dr. Andrew B. and Maria F. Brumbaugh Science Prize	2015
Juniata College Honor Society, Induced member	2015

## LEADERSHIP AND SERVICE

Graduate Program Core Course Restructuring Task Force, <i>developed graduate-level course</i>	2023
Review Committee for UMass Distinguished Teaching Award, <i>Non-Tenure Track candidates</i>	2023
Graduate Program Student Body President, <i>oversaw student committees and facilitated meetings</i>	2022
Food for Thought Committee, <i>weekly academic discussion group planner</i>	2020-2022
DEI Research & Recruitment Task Force, <i>created faculty guide for inclusive recruiting</i>	2020-2021
DEI Data Committee, <i>reviewed website reporting retention/graduation stats by race/gender</i>	2020-2021
Graduate Student Peer Mentor, <i>one-on-one mentor for 3 first-year graduate students</i>	2019-2021
East Carolina University Ornithology Club Co-founder and President, <i>10 active members</i>	2017-2018
Biology Graduate Student Association Secretary, <i>maintained meeting notes and email listserv</i>	2017

## SCIENCE COMMUNICATION AND OUTREACH

Kestrel Land Trust, <i>led birding walks for 20 adult participants</i>	2021,2023,2024
UMass BioBlitz, <i>led birding walks for 3 hours with 70 undergraduate participants</i>	2023
Hampshire Bird Club, <i>Co-led Female Birdsong workshop, 1 hour with 30 participants</i>	2023
Life Science Café, <i>team member and 3x MC for events with up to 50 community participants</i>	2019-2022
Skype a Scientist, <i>connected with 4 separate elementary classrooms</i>	2020-2022
Local bird club research presentations, <i>1 hour each, Greenville, NC and Brookline, MA</i>	2017,2021
Letters to a Pre-scientist, <i>exchanged 8 letters with an 8<sup>th</sup> grade student</i>	2016
Hawk Mountain Sanctuary, <i>week-long day camp assistant for 15 4<sup>th</sup> &amp; 5<sup>th</sup> graders</i>	2008,2009

## PROFESSIONAL DEVELOPMENT

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Teaching Portfolio Workshop	2023
CNS Teaching Fellow ( <i>including 3 full days of training plus associated course development/implementation</i> )	2022
Learning to Make Fieldwork More Accessible Panel	2022
Creating More Inclusive Science Environments for Students with Different Identities Workshop	2022
Acoustics for Biologists Workshop	2021
Engaging Students in Zoom Workshop	2020
Fostering an Inclusive Community in the Online Classroom Workshop	2020
Teaching Animal Behavior Online Workshop	2020
5 Things for the First Day of Class Workshop	2019
Teaching at Smaller Institutions Panel	2018
Grant Writing Workshop	2018
Geometric Morphometrics Workshop	2015

## TEACHING EXPERIENCE

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Quantitative Systems Biology Laboratory, University of Massachusetts, Lab Instructor	2021, 2022,2024
Animal Behavior Laboratory, University of Massachusetts, Lab Instructor	2019, 2020, 2021,2023
Biology of Social Issues, University of Massachusetts, Teaching Assistant	2019,2020,2023
Communication in the Animal World, University of Massachusetts, <b>Instructor of Record</b>	2022
Introductory Biology II, University of Massachusetts, Teaching Assistant	2022
Animal Behavior, Guest Lecturer on sensory systems	2019
Principles of Biology I Laboratory, East Carolina University, Lab Instructor	2017
Principles of Biology II Laboratory, East Carolina University, Lab Instructor	2015, 2016, 2017

## MENTORSHIP EXPERIENCE

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<b>Abigail H.</b> <i>Independent research student.</i> Honors thesis on mouth parasites in <i>Drosophila</i> .	2023-2024
<b>Makenzie L.</b> <i>Lab assistant and independent research student.</i> Video behavioral analysis. Honors thesis on song divergence in Carolina wrens.	2021-2022
<b>Daniel B.</b> <i>Lab assistant.</i> Bioacoustics analysis. Coding in R.	2021-2022
<b>Eden S., Liz S., and Chance Y.</b> <i>Field assistants.</i> Nest-finding, bird morphological measurements, and behavioral assays with wild birds.	2022
<b>Colin B.</b> <i>Lab assistant.</i> Histology and Nissl staining.	2021
<b>Madeleine Z.</b> <i>Field assistant.</i> Nest-finding, bird morphological measurements, and behavioral assays with wild birds.	2021
Peer-mentor for 3 first-semester PhD students in my graduate program (1/year)	2019,2020,2021
<b>Julian B and Alexis S.</b> <i>Lab assistant.</i> Remote bioacoustics analysis.	2020
<b>Nikki S.</b> <i>Independent research student.</i> Senior thesis on temporal and environmental factors influencing night singing in wild swamp sparrows.	2019-2020
<b>Zahra A.</b> <i>Lab assistant.</i> Histology, Nissl staining, and immunohistochemistry.	2019
<b>Sabrina E., Monali F., Nikki S., Rachel T., and Isabel V.</b> <i>Lab assistants.</i> Daily care and enrichment of captive sparrows.	2018-2019
<b>Wes B.</b> <i>Independent research student.</i> Senior thesis on effects of an introduced crayfish on a threatened rail species. This project is currently being revised for publication in a peer-reviewed journal.	2017-2018
<b>Wes B. and Daniel W.</b> <i>Field assistants.</i> Nest-finding, mist-netting, bird banding, remote sensing, marsh bird monitoring surveys, and playback experiments.	2017
<b>Cara M., Brittany C., and Viktor A.</b> <i>Field assistants.</i> Nest-finding, mist-netting, bird banding, remote sensing, marsh bird monitoring surveys, and playback experiments.	2016

## DETAILED RESEARCH EXPERIENCE

<b>Postdoctoral Researcher</b>	Sept. 2024-present
Tall Timbers, Tallahassee, FL and Texas Tech University, Lubbock, TX	
<ul style="list-style-type: none"><li>Quantitative analysis and management of northern bobwhite across the southeastern US</li></ul>	
<b>Doctoral Researcher</b>	Aug 2018-May 2024
University of Massachusetts, Amherst, MA	
<ul style="list-style-type: none"><li>Designed and implemented 4 research projects to study species recognition and signal evolution in songbirds, so far resulting in 11 public presentations and 2 peer-reviewed publications</li><li>Collected, managed, and analyzed multiple large datasets including 1.1 million action potentials from bird brain recordings and over 15,500 sparrow song notes using R, Python, and Luscinia</li><li>Managed all aspects of research including project logistics, budget, permitting, hiring, training, and scheduling of 16 research assistants</li><li>Procured site permits from MA Department of Natural Resources and a local non-profit</li><li>Procured \$10,657 from 5 independent grant proposals to fund this research, including stipends for low socioeconomic status field assistant hires</li></ul>	
<b>Master's Researcher</b>	May 2015-May 2018
East Carolina University, Greenville, NC	
<ul style="list-style-type: none"><li>Designed and implemented research projects to compare survey methods for king rails and provide a comprehensive reference of their call repertoire to improve population management</li><li>Managed and analyzed dataset of 3,300 hours of audio to detect king rail calls remotely</li><li>Trained recognizer algorithm for automated detection of king rail calls in large audio files</li><li>Produced 8 public presentations, 3 first-author publications, and 2 publications from cross-departmental collaborations</li><li>Procured \$4,251 from 3 independent grants to fund this research</li><li>Reported to USFWS refuge manager while living and working at Mackay Island NWR</li><li>Managed all aspects of research including project logistics, budget, permitting, hiring, training, and scheduling of field assistants</li></ul>	
<b>Field Technician</b>	May 2015-July 2015
East Carolina University	
<ul style="list-style-type: none"><li>Found and monitored waterbird nests (least bittern and King Rail), including nest height and water level measurements, for a study on how rising seawater levels may affect nest success</li></ul>	
<b>Field Technician</b>	Jan 2015-May 2015
Pennsylvania State Game Commission, Huntingdon, PA	
<ul style="list-style-type: none"><li>Reported to managers on timing of incubation and brood rearing activities at a bald eagle nest</li></ul>	
<b>Research Assistant</b>	Sept 2014-May 2015
Juniata College, Huntingdon, PA	
<ul style="list-style-type: none"><li>Conducted transect surveys of bird at wetland study sites and analyzed correlations between presence of invasive plants and various avian feeding guilds</li><li>Surveyed tree, fish, and macroinvertebrate diversity and health in relation to Hemlock woolly adelgid presence</li><li>Used ArcGIS to assess correlation between PA state spatial habitat assessment data and real-world sightings from eBird to identify information gaps</li></ul>	
<b>Intern</b>	May 2013-August 2013
Hawk Mountain Sanctuary, Kempton, PA	
<ul style="list-style-type: none"><li>Monitored post-fledging dispersal behaviors at 5 American kestrel nests using radio telemetry and re-sighting of color bands</li><li>Banded nestling American kestrel nestlings across two counties in coordination with landowners</li></ul>	