

Dustin E. Brewer

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Education

- 2023 *PhD in Earth and Ecosystem Science* (4.0 GPA)
Central Michigan University; Mt. Pleasant, MI
Dissertation: Advancing secretive marsh bird conservation: monitoring methodology, habitat association, and conspecific attraction
Advisor: Tom Gehring
- 2016 *Master of Science in Biology*, concentration Applied Ecology (4.0 GPA)
Eastern Kentucky University; Richmond, KY
Thesis: Characteristics, contexts, and possible functions of the vocalizations of Blue Jays
Advisor: Gary Ritchison
- 2014 *Bachelor of Science in Wildlife*, (3.6 GPA)
Purdue University; West Lafayette, IN

Employment History

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|---|---|
| August 2023 to present | <i>Postdoctoral Research Fellow,</i>
University of Missouri |
| May 2023 to July 2023 | <i>Researcher,</i>
Central Michigan University |
| August 2019 to May 2023
(<u>while PhD student</u>) | <i>Research Assistant 2019 to 2021, 2022 to 2023; Teaching Assistant 2021 to 2022,</i>
Central Michigan University |
| January 2018 to July 2019 | <i>Research Associate and Lab Manager,</i>
Environmental Resilience Institute, Indiana University |
| January 2017 to December 2017 | <i>Florida Scrub-jay Field Biologist,</i>
Florida Fish and Wildlife Conservation Commission |
| September to December 2016 | <i>Migratory Hawk Counter,</i>
Detroit River Hawk Watch |
| August 2014 to May 2016
(<u>while Master's student</u>) | <i>Teaching Assistant, Avian Field Biologist (during summer of 2015),</i>
Eastern Kentucky University |
| May to August, 2013, 14, 16 | <i>Avian Point Count Technician,</i>
Bird Conservancy of the Rockies |
| August to December, 2012, 13
(<u>while Bachelor's student</u>) | <i>Teaching Assistant,</i>
Purdue University |
| May to July, 2011 | <i>Avian Point Count Technician,</i>
Purdue University |

Research Interests

Conservation Biology Field Ornithology Radio Telemetry Wetland Ecology Acoustics
Wildlife Pop. Monitoring Assisted Migration Urban Ecology Conspecific Attraction Habitat

Teaching/Mentoring Experience and Training

- 2022, 2023 **Wildlife Biology and Management** (BIO 541); guest lectured, taught a mix of undergraduate/graduate students about radio telemetry in the lab and field (Central Michigan University).
- 2021, 22 **Foundations of Evolution and Diversity** (BIO 111); taught three lab sections per semester for two semesters. Students were biology majors (Central Michigan University).
- 2019 Participated in a semester-long, voluntary workshop about teaching methods (Central Michigan University). [Certificate](#) of completion.
- 2018 Served as a Groups Scholar program mentor; instructed a student during the summer semester in research activities (Indiana University).
- 2015, 16 **Introductory Biology for Non-Majors** (BIO 100); taught two lab sections per semester for four semesters, which included completing a workshop focusing on teaching methods (Eastern Kentucky University).
- 2013, 14 **Dendrology** (FNR 225); taught multiple lab sections for two semesters (Purdue University).

Scientific Products

Published, Peer-reviewed

- Kane M.E., **D.E. Brewer**, T.M. Gehring, B.T. Shirkey, K.L. Pangle, D.G. Uzarski, M.A. Picciuto, J.W. Simpson. 2023. [King Rail \(*Rallus elegans*\) presence in the Midwestern United States is predicted by avian community and other local-scale wetland conditions](#). Ecology and Evolution.
- Brewer, D.E.**, T.M. Gehring, B.T. Shirkey, J.W. Simpson. 2023. [King Rail \(*Rallus elegans*\) response to audio playback: implications for population estimation, monitoring methodology, and trapping approach](#). Journal of Field Ornithology.
- Brewer, D.E.**, T.M. Gehring, M.M. Garcia, B.T. Shirkey, J.W. Simpson, A.M.V. Fournier. 2023. [King rail \(*Rallus elegans*\) home range and microhabitat characteristics in western Lake Erie coastal marshes](#). Ecology and Evolution.
- Dinehart R.M., **D.E. Brewer**, T.M. Gehring, K.L. Pangle, D.G. Uzarski. 2023. Ecologically-scaled responses of marsh birds to water-level fluctuations and invasive *Phragmites* expansion. Waterbirds.
- Liu, M., Q. Sun, **D.E. Brewer**, T.M. Gehring and J. Eickholt. 2022. [An ornithologist's guide for including machine learning in a workflow to identify a secretive focal species from recorded audio](#). Remote Sensing.
- Brewer, D.E.** 2022. The vocal repertoire of Blue Jays (*Cyanocitta cristata*): spectrographic snapshots and suggested nomenclature. Wilson Journal of Ornithology.

Brewer, D.E. and A.M. Fudickar. 2022. [A preliminary comparison of a songbird's song repertoire size and other song measures between an urban and a rural site](#). Ecology and Evolution.

Brewer, D.E. and R. Risch. 2021. [Viability of a Florida Scrub-jay \(*Aphelocoma coerulescens*\) population in north-central Florida](#). Florida Field Naturalist.

Brewer, D.E. and A.M. Fudickar. 2020. [Perceived wintering latitude determines timing of song output in a migratory bird](#). Ecology and Evolution.

Brewer, D.E. and A.M. Fudickar. 2019. [American Robin \(*Turdus migratorius*\) feeds a nestling carcass to nestlings in an urban environment](#). Urban Naturalist.

In Peer-review

Brewer, D.E., T.M. Gehring, M.P. Ward, E.M. Dunton, R. Pierce. Experimental evidence that broadcasting rail calls and habitat quality influences habitat selection by migrating rails.

Brewer, D.E., A.R. Mahon, M.J. Wirick. Using radio-telemetry to validate eDNA as a tool for detecting a rare secretive marsh bird.

Brewer, D.E., T.M. Gehring, B.T. Shirkey, J.W. Simpson. King Rail (*Rallus elegans*) morphometric, nesting, mortality, and movement notes from a northern study area.

Contracted Reports

Brewer, D.E. 2023. Bird diversity at two Chippewa Watershed Land Conservancy properties.

Brewer, D.E., and G. Norwood. 2016. [Detroit River Hawk Watch 2016 season summary](#). USFWS. Detroit River International Wildlife Refuge.

Brewer, D.E. and D. Brown. 2016. Bird diversity at the Hidden Valley Training Facility. Submitted to the National Guard.

Brewer, D.E. and D. Brown. 2016. Bird diversity at the Artemus Training Facility. Submitted to the National Guard.

Thesis and Dissertation

Brewer, D.E. 2023. [Advancing secretive marsh bird conservation: monitoring methodology, habitat association, and conspecific attraction](#). Central Michigan University, Mt. Pleasant, MI.

Brewer, D.E. 2016. [Characteristics, contexts, and possible functions of the vocalizations of Blue Jays](#). Eastern Kentucky University, Richmond, KY.

Presentations

*Denotes presenter

Brewer, D.E. 2023. Advancing secretive marsh bird conservation: monitoring methodology, habitat association, and conspecific attraction. CMU Biology Department Seminar. Talk.

- Brewer, D.E.***, T.M. Gehring. 2023. King Rail (*Rallus elegans*) response to audio playback: implications for population estimation, monitoring methodology, and trapping approach. Student Research and Creative Endeavors Exhibition, Central Michigan University. Poster.
- Brewer, D.E.***, T.M. Gehring, M.P. Ward, E.M. Dunton, R. Pierce. 2023. Experimental evidence that broadcasting rail calls and habitat quality can influence habitat selection by migrating rails. Michigan Fish and Wildlife Conference. Talk.
- Brewer, D.E.***, T.M. Gehring, M.M. Garcia, B.T. Shirkey, J.W. Simpson, A.M.V. Fournier. 2022. King rail microhabitat use and call response-rates in Ohio and Michigan. Winous Point Marsh Conservancy Research Symposium. Invited Talk.
- Brewer, D.E.***, T.M. Gehring, B.T. Shirkey. 2022. King Rail microhabitat and home range size in the Great Lakes region. Midwest Fish and Wildlife Conference. Talk.
- Brewer, D.E.***, Matthew Wirick, T.M. Gehring. 2021. A test of environmental DNA as a tool to indicate the presence of a rare marsh bird. Student Research and Creative Endeavors Exhibition, Central Michigan University. Recorded Talk.
- Brewer, D.E.***, T.M. Gehring, B.T. Shirkey, J. Schmit. 2020. King Rail microhabitat in the migratory range. The Wildlife Society Annual Conference. Poster.
- A.M. Fudickar* and **D.E. Brewer**. 2020. Distance matters: experimental test of the influence of avian migration distance on readiness to breed in spring. Society for Integrative and Comparative Biology Annual Meeting. Talk.
- Brewer, D.E.*** and A.M. Fudickar. 2019. Urban and rural comparison of the song repertoire size and characteristics of a songbird. American Ornithological Society Conference. Poster.
- Fudickar, A. M.*, **D.E. Brewer**, D. Gaughan. 2019. Impact of variation in non-breeding photoperiod on HPG stimulation in spring in migratory birds. Society for Behavioral Neuroendocrinology. Poster.
- Alcantara, S. *, **D.E. Brewer**, A.M. Fudickar. 2018. The impact of urbanization on song repertoires of Song Sparrows. Groups Scholar Research Symposium. Poster.
- Cardas, A,* K. Miller, **D. E. Brewer**, B. Bankovich, J. Garcia, R. Risch, J. Bishop. 2017. Florida scrub-jay translocations from Ocala National Forest: Winter 2017 Update. Florida Wildlife Society Conference. Poster.
- Brewer, D.E.** 2016. Characteristics, contexts, and possible functions of the vocalizations of Blue Jays. ECU Biology Department Seminar. Talk.
- Brewer, D.E.** 2016. Characteristics, contexts, and possible functions of Blue Jay Vocalizations. ECU Natural Areas Spring meeting. Talk.
- Brewer, D.E.*** 2015. Characteristics, contexts, and possible functions of Blue Jay Vocalizations. Spring Research Symposium – University of Kentucky (Center for Ecology, Evolution, and Behavior). Talk.

Served as Journal Reviewer

Wildlife Research
Journal of Avian Biology

Grants/Fellowships

Funded Research Grants (\$58,975.06)

2022. An experimental test of conspecific attraction as a tool for influencing breeding habitat selection by migrating rails. Animal Behavior Society. **\$940**

2021. An experimental test of conspecific attraction as a tool for influencing breeding habitat selection by migrating rails. Michigan Sea Grant Graduate Research Fellowship. **\$49,981**

2021. A description of King Rail habitat use in the Laurentian Great Lakes Region. Wetland Foundation. **\$800**

2020. A test of environmental DNA for detecting a rare marsh bird species. CMU Graduate Student Research Grant. **\$779.81**

2020. Marsh bird monitoring: Autonomous recording units, human observers, and eDNA. Indiana Audubon Society. **\$700**

2020. A description of King Rail habitat use in the Laurentian Great Lakes region. Society of Wetland Scientists. **\$1,000**

2020. A test of environmental DNA as a tool for detecting a rare marsh bird species. American Ornithological Society. **\$2,295.25**

2018. Effects of urbanization on the song repertoire size of Song Sparrows. Groups Scholars Program (NSF). **\$1,000**

2015. Characteristics, contexts, and possible functions of the vocalizations of Blue Jays. Burt Monroe Grant (Kentucky Ornithological Society). **\$879**

2015. Characteristics, contexts, and possible functions of the vocalizations of Blue Jays. Kentucky Society of Natural History Grant. **\$500**

2015. Characteristics, contexts, and possible functions of the vocalizations of Blue Jays. ECU Natural Areas Grant. **\$100**

Research Grants Not Funded

2021. Secretive marsh bird conservation. National Defense Science and Engineering Graduate Fellowship. **\$158,600** (ranked high enough to be placed on 'wait list').

2021. Conspecific Attraction in Secretive Marsh Birds: An Experimental Test. Waterbirds Society **\$1,351**.

2021. Conspecific Attraction in Secretive Marsh Birds: An Experimental Test. Wilson Ornithological Society. **\$1,500.**

2021. Comparing marsh bird monitoring techniques: ARUs, human observers, and eDNA. Sitka Ecosystem Grant. **\$3,035.**

2020. Secretive marsh bird conservation. National Defense Science and Engineering Graduate Fellowship. **\$158,600**

2020. Recording King Rail vocalizations. Sigma Xi. \$756.77. (on competitive scale, **ranked a 4 [5 the highest possible]**)

2020. Comparing marsh bird monitoring techniques: Autonomous recording units, human observers, and environmental DNA. Garden Club of America. **\$5,000**

2020. A test of environmental DNA as a tool for detecting a rare marsh bird species. Waterbirds Society. **\$2,986**

2020. Autonomous recording units and human observers: a comparison of methods to detect marsh birds. Wilson Ornithological Society. **\$2,497**

2019. A comparison of marsh bird monitoring techniques: ARUs, eDNA, and human observers. Scientific Product Grant Program (Wildlife Acoustics). **\$4,995**

2018. Effects of urbanization on song repertoire size, and song characteristics, in Song Sparrows. Indiana Academy of Science. **\$1,642**

2015. Characteristics, contexts, and possible functions of the vocalizations of Blue Jays. Marcia Athey Fund (Kentucky Academy of Science). **\$1,793**

2015. Characteristics, contexts, and possible functions of the vocalizations of Blue Jays. Sigma Xi. **~\$1,000**

Other Grants Awarded (\$1,000)

2022. Office of Research and Graduate Studies, CMU, Presentation grant. \$250

2021. Midwest Fish and Wildlife Conference Travel Grant. \$500

2021. The Wildlife Society Travel Award. TWS Wetlands Working Group. \$75

2020. The Wildlife Society Travel Award. TWS Biological Diversity Working Group. \$100

2020. Midwest Fish and Wildlife Conference Registration Grant. \$75

Awards/Honors

2023. Nominated to a Sigma Xi associate membership

2022. Outstanding Teaching Assistant nominee. Biology Department, Central Michigan University.

2022. Fenske Award Finalist (1 of 3). The Wildlife Society, Midwest Fish and Wildlife Conference.

Current Professional Memberships

- The Wildlife Society, since 2017 (Certified Associate Wildlife Biologist)
- The Midwest Migration Network, since 2018
- American Ornithological Society, since 2019
- Wilson Ornithological Society, since 2019
- Society of Wetland Scientists, since 2020
- The Waterbird Society, since 2020
- Animal Behavior Society, since 2021
- Ecological Society of America, since 2022
- Sigma Xi, since 2023

Executive/Leadership Experience

- Served as member of conservation committee for the Michigan chapter of the Wildlife Society (2023 to present).
- Served as member of conservation committee for the Waterbirds Society (2023 to present).
- Elected as an At-Large member of the Early Career Professional Working Group for The Wildlife Society. Led the 'Worker Compensation' sub-committee. 2-year term (2020 to 2022).
- Served as a member of the Student Affairs Committee for the North American Ornithological Conference (2019 to 2020)
- Served as a student member of the Central Michigan University Biology Department Seminar Speaker Committee (2019 to 2022)
- Formed the first club/social group for the EES PhD program, organized meetings (2019 to 2022)
- Board member of the Sassafras Audubon Society (2018 to 2019)
- President of the Biological Organization of Graduate Students (2015 to 2016)
- Vice-President of the Purdue Student Chapter of The Wildlife Society (2012 to 2013)

Service/Volunteer Experience

- Led a Christmas Bird Count survey section for three seasons (2021, 2022, 2023) in Mt. Pleasant, Michigan.
- Presented a talk at an Audubon Society meeting in Mt. Pleasant, Michigan. Described my rail research to 34 people (November 2023).
- Led a 'Big Tree Walk' at a local park. Introduced more than twenty people, ranging from children to adults, to local trees (October 2023).

- Judged posters at a departmental, undergraduate research symposium (Fall 2020, 2022)
- Helped to teach a class of third graders (3 days, Fall 2019; 2 days, Spring 2020) and children at the Mt. Pleasant Children's Museum (1 day, Fall 2019)
- Helped demonstrate to 65+ elementary students how to catch and track birds (April 2019), as seen during sec 27 to 36 of this [commercial](#)
- Wrote a [description](#) for a nature preserve on the Indiana Birding Trail (Fall 2018)
- Demonstrated how to catch and band birds to Girl Scouts, in conjunction with IN DNR (September 2018).
- Led a bird walk (6 attended) for the Sassafras Audubon Society (August 2018)
- Demonstrated how to catch and band birds to REU students (July 2018)
- Ran a Breeding Bird Survey route ('Pimento', IN) (June 2018, 2019)
- Helped lead a bird banding demonstration at Wings Over Muscatatuck Festival, with the Indiana Department of Natural Resources (May 2018)
- Monitored marsh birds during three separate surveys (April to June 2018)
- Educated children and adults during 'Bird Fest' in Bloomington, IN (April 2018)
- Helped to band Northern Saw-whet Owls (October to November 2017)
- Helped to conduct a count of Sandhill Cranes (October 2017)
- Presented to children: 'Bird Study' via Lake County Parks, FL (February 2017)
- Was the main graduate student contact/helper for the TWS 2016 Southeastern Wildlife Conclave (December 2015 to March 2016)
- Designed and conducted a monitoring project of Floracliff Nature Sanctuary's bird communities (September to December 2015)
- Led a fall migrants bird identification walk at Floracliff (September 2015)
- Participated in BioBlitzes at Floracliff Nature Sanctuary and Maywoods (June 2015)
- Instructed at the Floracliff Bird Banding Workshop (May 30 and May 31, 2015)

Coverage by Mass Media

2022. [Attracting Birds To Prime Habitat, By Playing Recordings Of Their Calls](#). Science Friday.
 2022. [Thin as a Rail](#). Interlochen Public Radio (NPR Member Station).

Relevant Publications (without peer review)

Brewer, D. E. 2021. [Long COVID can take more than your breath away](#). Council for the Advancement of Science Writing, New Horizons Newsroom.

Gingery, T. M., J. L. Merems, **D. E. Brewer**, J. K. Trudeau. 2021. What Now and What Next? Early Career Professionals Navigate the Pandemic. Wildlife Professional.

Brewer, D. E. 2020. [Finding Northern Indiana's Lost Marsh](#). Earth Island Journal.

Skills

Field

Mist-netting and banding birds
Nest searching and monitoring
Conducting avian point count surveys
ARU and eDNA avian monitoring
Radio telemetry tracking
Acquiring banding and collecting permits
Recording bird vocalizations

Lab

DNA Extraction (working knowledge)
R, R Studio
Github
Microsoft Suite (Excel, Word)
Raven Pro (vocal analysis software)
GIS (ArcPro, QGIS, Google Earth)
Machine Learning