

Sean M. Mahoney

1064 E Lowell Street Tucson AZ 85719 USA

Phone :+1 610-639-4012 - E-Mail: seanmahoney@arizona.edu - Website: seanmahoneyresearch.weebly.com

Professional Appointments

- 2022-present Research Scientist III, School of Natural Resources and the Environment,
The University of Arizona
- 2021-2022 Lecturer, Department of Wildlife, Cal Poly Humboldt
- 2020-2021 Postdoctoral Research Fellow, Department of Biological
Sciences, Thompson Rivers University. Advisor: Dr. Matthew
W. Reudink

Education

- 2016-2020 Ph.D. Northern Arizona University, Biological Sciences, *with Distinction*
and *Awarded Best Dissertation in Biological Sciences*: Song and plumage
geographic variation in Willow Flycatcher subspecies and native bird
responses to tamarisk biological control. Advisors: Dr. Tad C. Theimer
and Dr. Bret Pasch
- 2013-2016 M.S. Northern Arizona University, Biological Sciences, *with Distinction*
Thesis: Successive non-native insect introductions to an invaded
community may change habitat quality for native warblers. Advisor: Dr.
Tad C. Theimer
- 2006-2010 B.S. The College of William and Mary, Biology Advisor: Dr. Matthias
Leu

Publications: 14 published/in press, 2 in revision, 2 in review (*Undergraduate student author (n=12 authors, 6 papers); ⁺Graduate student author (n=16, 10 papers); [^]Traditionally underrepresented student (n=2 authors, 2 papers); [#]Non-traditional student (n=2 authors, 2 papers)); ¹Equal contributions

18. R. Brzozowski⁺, A. Kobrina, **S. M. Mahoney**, and B. Pasch. In review
Advertising and receiving from heights increases transmission of
vocalizations in semi-arboreal mice. Submitted to Behavioral Ecology
and Sociobiology.
17. **S. M. Mahoney**¹, M. Oud^{*^1}, C. Pageau⁺, A. Menezes, N. Smith^{*}, J. V. In review
Briskie, M. W. Reudink. Global patterns of plumage colouration in
birds. Submitted to Ecology and Evolution.

16. K. K. Lauger⁺, **S. M. Mahoney**, E. M. Rothwell⁺, J. P. M. Corbin⁺, T. G. Whitham. A mammalian herbivore prefers locally adapted populations in a restored common garden: implications for climate change mitigation. Submitted to Restoration Ecology. In revision
15. S. Miller* ¹, **S. M. Mahoney** ¹, J. Schoen*, M. W. Reudink. Disentangling the mechanisms of signal evolution in Tyrannidae flycatchers Part II: Diet and climate influences plumage color. In revision Journal of Field Ornithology. In revision
14. J. Schoen*¹, S. Miller*, M. W. Reudink, Q. Jennings*, **S. M. Mahoney**¹. Disentangling the mechanisms of signal evolution in Tyrannidae flycatchers Part I: Song is constrained by morphology and covaries with climate. Accepted Journal of Field Ornithology. 2023
13. J. Walsh, R. Bowman, J. Brawn, K. M. Covino, K. M. Dugger, R. C. Fleischer, J. Houtz⁺, **S. M. Mahoney**, M. Pruett-Jones, C. E. Tarwater, J. Fair. Professional ethics in the American Ornithological Society: survey findings and future directions. Submitted to Ornithology. 2022
12. E. Thibault*, **S. M. Mahoney**, J. V. Briskie, M. Shaikh, M. W. Reudink. 2022. Extra-pair paternity drives plumage colour elaboration in male passerines. PloSOne. <https://doi.org/10.1371/journal.pone.0273347> 2022
11. **S. M. Mahoney**, M. J. Johnson, J. A. Holmes, T. Dudley, M. Kuehn, T. C. Theimer. 2022. Tamarisk biocontrol alters bird community composition in the absence of cottonwood and willow vegetation. Ornithological Applications 124: <https://doi.org/10.1093/ornithapp/duac012> 2022
10. E. Lundgren, K. Moeller, O. McLyne, O. Middleton⁺, **S. M. Mahoney**, C. Kwapich. Cicada nymphs are important food for desert-dwelling American black bears. Ecology and Evolution Nature Notes. <http://doi.org/10.1002/ece3.8577> 2022
9. **S. M. Mahoney**, M. W. Reudink, A. Costina, V. Schabert*, K. A. Roberts*, E. Gunther*, K. M. Covino. A tail of plumage colouration: disentangling geographic, seasonal, and dietary effects on plumage colour in a migratory songbird. Journal of Avian Biology. <https://doi.org/10.1111/jav.02957> 2022
8. **S. M. Mahoney**, B. Pasch, T. C. Theimer. Subspecific song discrimination in Willow flycatchers. Journal of Field Ornithology. <https://doi.org/10.1111/jfo.12366> 2021

7. G. Ward*, **S. M. Mahoney**, S. Joly^{#+}, M. W. Reudink. Effects of weather on Mountain Bluebird plumage coloration. *Journal of Avian Biology*. <https://doi.org/10.1111/jav.02616> 2021
6. **S. M. Mahoney**, M. W. Reudink, B. Pasch, T. C. Theimer. Song but not plumage geographically varies in Willow Flycatchers. *Journal of Avian Biology*. <https://doi.org/10.1111/jav.02621> 2020
5. **S. M. Mahoney**, R. R. Winton, L. M. McCabe⁺, M. J. Johnson. New locality of the biological control agent *Diorhabda* spp. in northern Arizona. *Southwest Entomologist* 45(1):293-296. doi.org/10.3958/059.045.0131 2020
4. **S. M. Mahoney**, A. N. B. Smith, P. J. Motyka⁺, E. Lundgren⁺, M. J. Johnson, R. R. Winton, B. Stevens⁺. 2019. Russian olive-dominated habitats support fewer bird species, functional groups and species compositions to mixed habitats. *Journal of Arid Environments*. doi.org/10.1016/j.jaridenv.2019.04.018 2019
3. **S. M. Mahoney**, J. B. Mike^{^+}, J. Parker⁺, L. S. Lassiter^{#+}, T. G. Whitham. Selection for genetics-based architecture traits in a native cottonwood negatively affects invasive tamarisk in a restoration field trial. *Restoration Ecology*. doi.org/10.1111/rec.12840 2018
2. **S. M. Mahoney**, T. C. Theimer, M. J. Johnson, J. Foster. Similar dietary but different numerical responses to nonnative tamarisk by two native warblers. *Biological Invasions*. 19(6):1935-1950. 2017
1. T. C. Theimer, A. Smith, **S. M. Mahoney**, K. Ironside⁺. 2016. Available data support protection of the Southwestern Willow Flycatcher under the Endangered Species Act. *Condor*. 118(2):289-299. 2016

Teaching Experience

- 2021-2022 **Upland Wildlife Management and Ecology, Instructor of record, Cal Poly Humboldt**
 Lecture and lab on wildlife habitat selection, field techniques, analyses, and policy
- Senior Thesis, Instructor of record, Cal Poly Humboldt**
 Students conduct independent field-based research projects and write full manuscript in *Journal of Wildlife Management* format and present a poster

Wildlife Professional Development Seminar, Instructor of record, Cal Poly Humboldt

Students learn how to apply and interview for wildlife professional jobs and/or graduate school programs

2018-2020 Ecology Lab instructor, Northern Arizona University

Oversee undergraduate field research projects
Instruction on field collection techniques, writing and statistical analyses
Instruction on full manuscript preparation

2018 Committee for Evidence Based Action seminar co-instructor, Northern Arizona University

Professional development course for mid-stage graduate students

**2017 Lead instructor, Northern Arizona University
Biology 201: Human Anatomy and Physiology**

Develop standardized video lectures for ~800 students using the program Camtasia

Assist in supervising ~30 graduate and undergraduate Teaching Assistants
Assist in teaching evaluations

Guest lecture, Northern Arizona University *Invited*

Vertebrate Zoology: Similar dietary but different numerical responses to nonnative tamarisk by two native warblers.

2013-2016 Lab instructor, Northern Arizona University

Biology 201: Human Anatomy and Physiology and curriculum development

2015 Guest lecture, Northern Arizona University *Invited*

Ornithology: The effects of invasive species on riparian bird communities

**Awards/Grants/Fellowships received (* indicates Co-PI on undergraduate research grant)
\$83,844 total in grants received and awards**

2022-2023 BLM UT 15.246 Threatened and Endangered Species Grant

Subspecies identity of Willow Flycatcher subspecies on the Green and Colorado Rivers \$65,000

2022 RiversEdge West Conference travel grant \$310

- 2021 **Western North American Naturalist Research Grant**
\$2000 for natural history research
- 2020 **Best Dissertation in Biological Sciences, Northern Arizona University**
- 53rd Joint Annual Meeting of the Arizona and New Mexico Chapters of the Wildlife Society and American Fisheries Society Student Presentation Competition (Wildlife)**
Awarded \$250 for best student presentation in wildlife science
- RiversEdge West Conference travel grant \$310**
- 2019 **Association of Field Ornithology Presentation Award**
Awarded \$250 for the Association of Field Ornithology Best Student Presentation award
- Association of Field Ornithology Travel Award**
\$504 to attend the Joint meeting of the Wilson Society and the Association of Field Ornithology
- RiversEdge West Conference travel grant \$310**
- Louis Stokes Alliance for Minority Participation Undergraduate Research Award*, Northern Arizona University**
\$3260 awarded to test the adaptive significance of song and plumage variation among willow flycatcher subspecies
- John Prather Award for Conservation Biology, Northern Arizona University**
\$1000 scholarship to support research in conservation biology
- Hooper Undergraduate Research Award*, Northern Arizona University**
\$3500 awarded to test the adaptive significance of song and plumage variation among willow flycatcher subspecies
- T&E, Inc. Grant**
\$3000 awarded to conduct playback experiments in Willow flycatcher subspecies

- 2018 **Landscape Conservation Initiative Science-Policy Fellowship, Northern Arizona University** Fellowship for students working at the interface between science and policy. \$2000 awarded for conservation biology research
- John Prather Award for Conservation Biology, Northern Arizona University**
\$1000 scholarship to support research in conservation biology
- 2016 **The Wildlife Society Joint Annual Meeting Student Presentation Competition Wildlife 2nd Place**
6 finalists in Wildlife research. Awarded \$150
- 2015 **3-Minute Research Presentation, Northern Arizona University 1st Place**
30 participants and 12 finalists open to every department in the NAU Graduate College. Awarded \$1,000

Research/Work Experience

- 2022-present **Research Scientist III, The University of Arizona, School of Natural Resources and the Environment, Mt. Graham Biology Programs**
Develop behavioral ecology projects to inform the conservation of Mt. Graham Red Squirrels
- 2020-2021 **Postdoctoral Research Fellow, Thompson Rivers University**
Comparative phylogenetic macroevolutionary analyses on birds and bats
- 2016-2020 **PhD Dissertation Research, Northern Arizona University**
Developed song playback experiment to test for subspecific song recognition in Willow Flycatchers
Recorded Willow flycatcher song across western US to investigate for subspecific song differences
Analyzed Willow flycatcher songs using Program Raven
Measured bird plumage using spectrophotometry using museum specimens
Developed international collaborations
Analyzed spectra data using Pavo package for Program R
Manuscript/scientific report preparation
- 2013-2016 **MS Thesis Research, Northern Arizona University**
Developed research questions and chose study sites
Conducted over 200 avian point counts
Mist netted and banded over 300 birds
Identified insect parts in over 100 bird feces

	<p>Extracted DNA from over 100 bird feces using DNesay</p> <p>Data analysis in Program R, Program Distance</p> <p>Data management in Microsoft Excel</p> <p>Manuscript preparation for technical report</p> <p>Manuscript preparation for publication in peer-reviewed journal</p>
2020	<p>Wild Rodent Technician, Northern Arizona University</p> <p>Monitored Northern Pygmy and Harvest mice with radio telemetry to estimate home range sizes</p>
2018	<p>Avian Point Count Field Technician, Colorado Plateau Research Station</p> <p>Helped design point count and habitat survey methods</p> <p>Completed 100 mixed-species point count surveys</p> <p>Completed habitat surveys</p>
2016-2017	<p>Southwestern willow flycatcher and Yellow-billed cuckoo surveyor (crew lead): Northern Arizona University and US Fish & Wildlife Service</p> <p>Completed southwestern willow flycatcher and yellow-billed cuckoo USFWS survey protocol training</p> <p>Conducted playback surveys on San Juan River, UT for two endangered bird species</p> <p>Boated over 100 miles of river in inflatable 14-ft oar raft</p> <p>Data management in Microsoft Excel</p> <p>Created maps in ArcGIS for field crew</p> <p>Manuscript preparation for technical report</p>
2015-2016	<p>GIS/Cartographer assistant: Contract work for National Park Service</p> <p>Created maps in ArcGIS for field crews</p> <p>Managed GPS units (Garmin and Trimble)</p>
2015	<p>Merriam-Powell Research Station, Northern Arizona University</p> <p>Estimating Giving Up Densities Using Camera Trap</p> <p>Used camera trapping to quantify wild rodent communities and estimate Giving Up Densities of rodents at Wupatki National Monument, AZ.</p>
2011-2011	<p>Southwestern plant ecology field technician: National Park Service</p> <p>Conducted approximately 120 0.5 HA vegetation sampling plots</p> <p>Data management in Microsoft Access</p>

- 2011-2012 **Southwestern avian ecology field technician: National Park Service & Northern Arizona University**
 Conducted over 200 point count surveys on Colorado Plateau Conducted extensive vegetation sampling Data management in Microsoft Access
- 2012 **Volunteer Spotted kiwi vocalization technician: Zealandia, Wellington, New Zealand**
 Recorded Spotted kiwi vocalizations
 Observed feeding behavior
- 2011 **Volunteer Fairy Tern nest monitor: Department of Conservation, Whangerei, New Zealand**
 Monitored Fairy tern nests
 Checked non-native predator kill-traps
- 2010 **Volunteer California Condor monitor: Grand Canyon National Park, National Park Service**
 Monitored wild California Condors using radio telemetry
- Sage Grouse Technician, University of Missouri**
 Monitored sage grouse habitat prior to wind farm development in WY
 Captured and fitted female sage grouse with radio transmitters
 Tracked sage grouse using radio telemetry
- Botany field technician, National Forest Service & University of Nevada-Reno**
 Established and monitored long term vegetation plots to measure Pinon pine encroachment
- 2009-2010 **Undergraduate researcher Applied Conservation and Ecological Research lab, The College of William & Mary**
 Completed literature review of invasive plants in Southeastern Virginia
 Conducted bird point counts
 Digitized fence lines on WY maps for sage grouse studies using ArcGIS
- 2009 **Student Conservation Association (SCA) Intern, Theodore Roosevelt National Park-North Unit, National Park Service**
 Volunteered approximately 500 hours managing invasive plants
 Passed ND chemical herbicide license application exam
 Assisted in trail maintenance
 Assisted in fence building
 Assisted with herbivory vegetation plots

Data collection and management

2008 **Rodent lab technician, The College of William and Mary**
Cared for lab mice. Changed cages, separated litters, maintained breeding log.

Relevant Training and Qualifications

2023-2025 USGS Bird Banding Lab Master Bander Permit (permit #24361)
2019-2024 USFWS Native Endangered Species Recovery Endangered Wildlife (permit #
TE33641D-0)

Selected Presentations

2023 **Arizona - New Mexico Chapter of Wildlife Society Joint Annual Meeting, Farmington, NM, US** *poster*
Towards automated detection of Mt. Graham Red Squirrel rattles. S. M. Mahoney, J. Laurenzi, B. Pasch

2022 **Colorado Plateau Biennial Conference, Flagstaff, AZ, US** *Invited*
Tamarisk biocontrol alters bird community composition in the absence of cottonwood and willow vegetation. S. M. Mahoney, M. J. Johnson, J. A. Homes, T. Dudley, M. Kuehn, T. C. Theimer

EcoSeries Seminar, Cal Poly Humboldt, Arcata, CA, US *Invited*
Bird community responses to invasive biocontrol, restoration challenges, and solutions

2021 **Guest Lecture, Westminster College, Salt Lake City, UT** *Invited*
Bird community responses to tamarisk biocontrol

Seminar Series, Saskatchewan University, Saskatoon, Canada *Invited*
Trait evolution in birds and bats

Seminar Series, Bangor University, Bangor, Wales, UK *Invited*
Trait evolution in birds and bats

Seminar Series, Thompson Rivers University, Kamloops, BC, Canada *Invited*
Trait evolution in birds and bats

- 2020 **North American Ornithological Conference, remote meeting**
Native bird responses to non-native tamarisk biocontrol, Willow flycatcher
taxonomy and conservation implications
- RiversEdge West Riparian Restoration Conference, Grand Junction, CO**
Invited Genetics-based restoration practices
- RiversEdge West Riparian Restoration Conference, Grand Junction, CO**
Invited Bird responses to non-native biological control
- 53rd Joint Annual Meeting of the Arizona and New Mexico Chapters of the
Wildlife Society and American Fisheries Society Student Presentation
Competition Session (Wildlife), Prescott, AZ**
Assessing geographic variation in song structure and plumage coloration in the
Willow Flycatcher species complex
- 2019 **Association of Field Ornithology, Cape May, NJ**
Assessing geographic variation in song structure and plumage coloration in the
Willow Flycatcher species complex
- 2018 **American Ornithological Society, Tucson, AZ**
Native bird community responses to tamarisk biological control

Service and outreach

- Associate Editor *Behaviour*** 2022-Present
- Journal Referee:** Animal Behaviour (1), Behaviour (3), Biodiversitas
Journal of Biological Diversity (1), Biological Invasions (1), Restoration
Ecology (2), USGS Internal review (2), Wilson Journal of Ornithology
(2), Wetlands (1) 2017-Present
- American Ornithological Society Annual Meeting Early Professional
Session Planning Committee** San Juan, Puerto Rico 2022
- Northwest Science Meeting Special Session Coordinator: New concepts
in wildlife science** Arcata, CA 2022

Association of Field Ornithologists Annual Meeting Technology Volunteer Virtual meeting	2021
American Ornithological Society Early Professional Committee	2019-present
American Ornithological Society Professional Ethics Committee	2021-Present
Committee for Evidence Based Action seminar co-instructor, Northern Arizona University - March for Science Advertising Chair	2019-2020
Committee for Evidence Based Action seminar co-instructor, Northern Arizona University - 2019 March for Science Fundraiser Hosted a fundraiser event and raised \$1000 for the Flagstaff March for Science. The event included raffle prizes and lightning research talks from NAU graduate students and researchers.	2019
Committee for Evidence Based Action seminar co-instructor, Northern Arizona University - 2018 March for Science Advertising Chair Graduate student-run organization promoting policy making rooted in science. Organized the Flagstaff, AZ March for Science	2018
Festival of Science, Flagstaff, AZ Co-organized activities on bird bill morphology	2017
Undergraduate Mentees (*Accepted peer reviewed manuscript n=1, ^Manuscript in review n=4 authors, 2 papers)	
Quinn Jennings ^ Cal Poly Humboldt Female song in Willow Flycatchers: Function and ecology	2022-Present
Mathieu Lizée Thompson Rivers University What factors influence migratory behavior in bats?	2021-Present
Sydney Miller ^ Thompson Rivers University Disentangling the mechanisms of plumage colour evolution in <i>Empidonax</i> flycatchers	2021-Present
Jacqueline Schoen ^ Thompson Rivers University Disentangling the mechanisms of song evolution in <i>Empidonax</i> flycatchers	2021-Present

Madison Oud[^] Thompson Rivers University Global patterns of passerine plumage colour evolution	2020-2021
Charlotte Hutchinson Thompson Rivers University Testing Foster's rule in bats	2020-2021
Morgan Rigelhof Thompson Rivers University Testing Bergmann's rule in bats	2020-2021
Aaron Veale Thompson Rivers University Testing Foster's rule in birds using a global dataset	2020-2021
Genevieve Ward* Thompson Rivers University Assessing the effects of age and weather on Mountain Bluebird plumage colour. Journal of Avian Biology.	2019-2021
Sarah I. Gonzalez Northern Arizona University Testing the adaptive significance of song and plumage in willow flycatcher subspecies	2018-2021
Dylan Christoff Northern Arizona University Testing the efficacy of two nest monitoring techniques: traditional mirror pole and "selfie stick" pole	2019-2020
Scarlett Jackson Northern Arizona University Assessing insect pollinator responses to forest thinning in Northern Arizona	2019-2020

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1064 E Lowell Street Tucson AZ 85719 USA

Phone :+1 610-639-4012 - E-Mail: seanmahoney@arizona.edu – Website: seanmahoneyresearch.weebly.com

References

Dr. Tad C. Theimer, Professor (PhD and MS advisor)

Department of Biological Sciences

Northern Arizona University

Flagstaff, AZ 86011

Phone: 928-523-8374

Email: Tad.Theimer@nau.edu

Dr. Bret Pasch, Associate Professor (PhD Co-advisor and current supervisor at UA)

School of Natural Resources and the Environment

The University of Arizona

Tucson, AZ 85721

Phone: NA

Email: Bretpasch@arizona.edu

Dr. Matthew W. Reudink, Professor (Postdoc advisor)

Department of Biological Sciences

Thompson Rivers University

Kamloops BC V2C 0C8 Canada

Phone: 250-828-5428

Email: Mreudink@tru.ca

Dr. Daniel Barton, Associate Professor (Department Chair)

Department of Wildlife

Cal Poly Humboldt

Arcata CA 95521

Phone: 707-826-3584

Email: Daniel.Barton@humboldt.edu