





# ADAM D. SMITH

As a Quantitative Ecologist with the [United States Fish & Wildlife Service Inventory and Monitoring Program](#), I provide ecological inventory and monitoring design and analytical assistance to the roughly 130 National Wildlife Refuges. In addition, I engage in diverse partnerships with conservation and resource management agencies and organizations to support a research program built around modern quantitative tools and approaches to understand the ecology and conservation of migratory animals. Most of my active projects are collaborative and integrate digitally-coded telemetry or GPS logging technology to answer landscape and local scale questions relevant to conservation and management. I am an open science advocate.

## EDUCATION

- 2013 • **Ph.D., Environmental Science**  
University of Rhode Island  Kingston, RI
  - Thesis: Migration and stopover ecology of songbirds and bats along a major ecological barrier
- 2006 • **M.S., Raptor Biology**  
Boise State University  Boise, ID
  - Thesis: Exploring raptor migration using stable isotope analysis: the Northern Goshawk in western North America
- 2000 • **B.S., Wildlife Biology**  
Murray State University  Murray, KY






## PROFESSIONAL EXPERIENCE

- 2019 | 2015 • **Quantitative Ecologist**  
U.S. Fish and Wildlife Service  Athens, GA
  - Provide ecological, design, and analytical assistance to southeastern National Wildlife Refuges
  - Build statistical models relevant to ecological research (e.g., occupancy models, hierarchical models)
  - Develop methodologies and tools (e.g., R packages) that facilitate the synthesis and analysis of ecological data.
  - Coordinate [installation and maintenance of automated telemetry stations](#) as part of the [Motus Wildlife Tracking network](#)
- 2019 • **Contract analyst**  
Birds Canada  Athens, GA
  - Provide visualization and analytical support for Red Knot movement data






View this CV online with links at [adamsmith.me/cv/cv.html](https://adamsmith.me/cv/cv.html)

## CONTACT

-  [avianmigration@gmail.com](mailto:avianmigration@gmail.com)
-  [github.com/adamsmith](https://github.com/adamsmith)
-  [adamsmith.me](https://adamsmith.me)
-  [Google Scholar](#)
-  [avianmigration](#)

## SKILLS

-  R
-  Digital telemetry
-  Bird banding (master)
-  Data analysis
-  GitHub
- Markdown

Made with [pagedown](#).

Source code on [github](#).

Last updated: 2019-12-12.

- 2015  
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2013
- **Postdoctoral Fellow**  
University of Rhode Island 📍 Kingston, RI
    - Described spatiotemporal variation in the behavior and abundance of sea ducks in southern New England and developed novel statistical methodologies to predict animal distribution and abundance relative to environmental covariates
    - Studied post-breeding and migratory movement ecology of migratory birds using automated telemetry
- 2008
- **Research Associate**  
University of Florida
    - Generated probabilistic (Bayesian) models of songbird resource use based on the isotopic composition of avian tissues and potential food resources to document the extent of community-level diet shifts and the seasonal importance of different food resources to migratory songbirds
- 2007  
|  
2005
- **Avian Research Technician II/III**  
Kentucky Department of Fish and Wildlife Resources 📍 Frankfort, KY
    - Coordinated and implemented statewide Bald Eagle and Peregrine Falcon monitoring, two Monitoring Avian Productivity and Survivorship (MAPS) banding stations, migratory songbird banding, winter raptor surveys, and songbird banding training for staff and cooperators



## PUBLICATIONS

- 2019
- (under review) McGowan, C, W Wiest, N Angeli, N Rankin, E Rivenbark, A Schwarzer, C Snyder, J Woodrow, J Wilson, R Anthony, K Barrett, C Hand, N Roach, T Schneider, [A Smith](#), F Smith, and B Watts. **Linking monitoring and data analysis to predictions and decisions for the range-wide eastern Black Rail status assessment.** *Endangered Species Research*.
- 2019
- (under review) Evans, K, [AD Smith](#), and D Richardson. **Actionable long-term monitoring for southeastern U.S. bat populations following White-nose Syndrome's western spread.** *Biological Conservation*
- 2019
- (in revision) Lefevre, KL and [AD Smith](#). **Florida's strategic position for collaborative automated-telemetry tracking of avian movements across the Americas.** *Journal of Fish and Wildlife Management*
- 2019
- [Smith, AD](#), [B Hofner](#), [JS Lamb](#), [JE Osenkowski](#), [T Allison](#), [G Sadoti](#), [SR McWilliams](#), and [PWC Paton](#). **Modeling spatiotemporal abundance of mobile wildlife in highly variable environments using boosted GAMLSS hurdle models.** *Ecology and Evolution* 9:2346-2364.

- 2018 ● Thomas, J, A Mayr, B Bischl, M Schmid, [AD Smith](#), and B Hofner. Gradient boosting for distributional regression: faster tuning and improved variable selection via noncyclical updates. *Statistics and Computing* 28:673-687.
- 2017 ● Moorman, MC, T Augspurger, JD Stanton, and [AD Smith](#). Where's the Grass? Disappearing submerged aquatic vegetation and declining water quality in Lake Mattamuskeet. *Journal of Fish and Wildlife Management* 8:401-417.
- 2016 ● [Smith, AD](#) and SR McWilliams. Bat activity during autumn relates to atmospheric conditions: implications for coastal wind energy development. *Journal of Mammalogy* 97:1565-1577.
- 2016 ● Jones, BC, [AD Smith](#), SE Bebus, and SJ Shoeck. Two seconds is all it takes: European starlings (*Sturnus vulgaris*) increase levels of circulating glucocorticoids after witnessing a brief raptor attack. *Hormones and Behavior* 78:72-78
- 2015 ● [Smith, AD](#), SR McWilliams, KJ Winiarski, CL Trocki, B Harris, JE Osenkowski, and PWC Paton. Using land-based surveys to assess sea duck abundance and behavior in nearshore waters of southern New England, USA. *Waterbirds* 38:252-259
- 2015 ● [Smith, AD](#), and SR McWilliams. What to do when stopping over: condition-dependent behavioral decisions of migrating songbirds. *Behavioral Ecology* 25:1423-1435
- 2014 ● [Smith, AD](#), PWC Paton, and SR McWilliams. Using nocturnal flight calls to assess the fall migration of warblers and sparrows along a coastal ecological barrier. *PLoS ONE* 9:e92218
- 2014 ● [Smith, AD](#), and SR McWilliams. Fruit removal rate depends on neighborhood fruit density, frugivore abundance, and spatial context. *Oecologia* 174:931-942
- 2013 ● Bolser, JA, RR Alan, [AD Smith](#), L Li, N Seeram, and SR McWilliams. Birds select fruits with more anthocyanins during autumn migration. *Wilson Journal of Ornithology* 125:97-108

- 2011 ● McCue, MD, [AD Smith](#), R McKinney, B Rewald, B Pinshow, and SR McWilliams. A mass balance approach to identify and compare differential routing of  $^{13}\text{C}$ -labeled carbohydrates, lipids, and proteins in vivo. *Physiological and Biochemical Zoology* 84:506-513
- 2009 ● [Smith, AD](#), CA Lott, JP Smith, KC Donohue, S Wittenberg, KG Smith, and L Goodrich. Poor reproducibility and inference in hydrogen-stable-isotope studies of avian movement: A reply to Wunder et al. (2009). *Auk* 126:926-931
- 2009 ● [Smith, AD](#), CA Lott, JP Smith, KC Donohue, S Wittenberg, KG Smith, and L Goodrich. Deuterium measurements of raptor feathers: does a lack of reproducibility compromise geographic assignment? *Auk* 126:41-46
- 2008 ● [Smith, AD](#), KC Donohue, and AM Dufty. Intrafeather and intraindividual variation in the stable-hydrogen isotope ( $\delta\text{D}$ ) content of raptor feathers. *Condor* 110:500-506
- 2005 ● [Smith, AD](#) and AM Dufty. Variation in the stable-hydrogen isotope composition of Northern Goshawk feathers: relevance to the study of migratory origins. *Condor* 107:547-558



## SOFTWARE

- 2019 ● Fiske, I, R Chandler, D Miller, A Royle, M Kery, J Hostetler, R Hutchinson, [A. Smith](#), and K Kellner. unmarked: models for data from unmarked animals. R package version 0.12-3.



## GRANTS

NOTE: asterisks (\*) indicate integral contribution to project development, design, and implementation, but institutional policies prevented inclusion as a PI.

- 2019 ● Given, A, and [AD Smith](#). Local and post-breeding movements of Painted Buntings associated with molt. \$3,500. Carolina Bird Club.
- 2018 ● \*McRae, S. Evaluating the use of autonomous recording units (ARUs) to survey Black Rails. \$19,715. U.S. Fish and Wildlife Service.

- 2017 ● **\*McRae, S. Inventory and assessment of secretive marshbirds: using eDNA to determine occupancy with a focus on Eastern Black Rail and King Rail. \$27,352. U.S. Fish and Wildlife Service.**
- 2016 ● **\*Moore, C, and R. Cooper. Black Rail ecology to inform effective survey design and support population modelling. \$172,907. U.S. Geological Survey.**
- 2016 ● **Smith, AD, and W Wiest. Secretive marsh bird surveys on southeastern National Wildlife Refuges. \$92,700. U.S. Fish and Wildlife Service.**
- 2016 ● **Smith, AD, and A Given. Seasonal connectivity of MacGillivray's Seaside Sparrow. \$11,750. U.S. Fish and Wildlife Service.**
- 2016 ● **\*Given, A. Seasonal connectivity of MacGillivray's Seaside Sparrow. \$4,800. Carolina Bird Club.**
- 2014 ● **\*McWilliams, SR. Automated telemetry monitoring of migratory birds. \$7,426. U.S. Fish and Wildlife Service.**
- 2010 ● **\*McWilliams, SR. Acoustic monitoring of migrating bats and birds of Rhode Island National Wildlife Refuges. \$33,038. U.S. Fish and Wildlife Services.**
- 2008 ● **\*McWilliams, SR. Rapid assessment of fruits available to songbirds during fall migration. \$9,276. U.S. Fish and Wildlife Service.**
- 2002 ● **\*Dufty, A. Migratory connectivity: linking raptors to their breeding areas. \$17,900. Idaho Department of Fish and Game.**



## TEACHING

- 2018 ● **(Workshop) Motus wildlife tracking**  
ACE Basin National Estuarine Research Reserve 📍 Charleston, SC  
• presented with N. Wallover and F. Sanders
- 2018 ● **(Workshop) Using the Motus wildlife tracking network to study avian migration pathways through the southeastern United States**  
Association of Southeastern Biologists 📍 Myrtle Beach, SC  
• presented with K. Lefevre and S. Mackenzie

- 2016 ● **Raster Processing in R**  
USFWS Geospatial Training Workshop 📍 Shepherdstown, WV
- 2014 ● **Scientific Computing and Programming for Coastal Resource Management: Fundamental Concepts and Open Access Tools**  
University of Rhode Island 📍 Kingston, RI  
• co-instructor with J. Hollister and P. August
- 2012 ● **Teaching Assistant, Wildlife Management Techniques**  
University of Rhode Island 📍 Kingston, RI
- 2004 ● **Head Teaching Assistant, Human Anatomy and Physiology**  
Boise State University 📍 Boise, ID
- 2003 ● **Teaching Assistant, Human Anatomy and Physiology**  
Boise State University 📍 Boise, ID
- 2001 |



## INVITED TALKS

- 2016 ● **Smith AD, SR McWilliams, R Gray, and C DeSorbo** Southbound Merlin migration in southern New England and the mid-Atlantic (Automated telemetry symposium). North American Ornithological Conference
- 2014 ● **Smith AD** Songbird migration and stopover dynamics along an ecological barrier. Connecticut College.



## CONTRIBUTED TALKS

- 2016 ● **McWilliams, SR, A.D. Smith, S Smith-Pagano, L Langlois, M Skrip, and B Pierce.** What is good quality habitat for migrating songbirds? A nutritional and physiological perspective. North American Ornithological Conference.
- 2015 ● **Hofner, B, and AD Smith.** Boosted zero-inflated negative binomial models for spatiotemporal abundance of sea birds. International Workshop on Statistical Modelling.
- 2015 ● **BC Jones, AD Smith, SE Bebus, and SJ Shoech.** Spectating is stressful: witnessing two seconds of a predator attack increases levels of circulating glucocorticoids. Society for Integrative and Comparative Biology.

- 2014 ● **Smith, AD**, and SR McWilliams. Keeping fruit biochemistry in context: neighborhood influences on patterns of fruit consumption. Wilson Ornithological Society.
- 2014 ● **Smith, AD**. Acoustic monitoring of migrating songbirds and bats in coastal Rhode Island. Northeast Regional Migration Monitoring Network.
- 2013 ● **Smith, AD**. Coastal bat migration and weather: like the birds or for the birds. University of Rhode Island.
- 2012 ● **Smith, AD**. What you don't know can't help you: linear mixed models in the environmental sciences. University of Rhode Island.
- 2010 ● **Smith, AD**. Body condition influences the stopover decisions of a migratory songbird. University of Rhode Island.
- 2009 ● **Smith, AD**. Inferring diets of migrating birds: are stable isotopes the answer? University of Rhode Island.










## ADVISING

- 2020 ● **David Tilson, M.S. candidate committee member**  
University of Georgia 📍 Athens, GA
- 2011 ● **Sarah Donlan, Senior Honors Project**  
University of Rhode Island 📍 Kingston, RI
- 2011 ● **Undergraduate Natural Resources Science Research Apprenticeships (x2)**  
University of Rhode Island 📍 Kingston, RI



## REFERENCES

- **Janet Ertel**  
U.S. Fish and Wildlife Service 📍 Albuquerque, NM
  - Supervisor; please notify me before contacting
  - 678-772-6336
  - [janet\\_ertel@fws.gov](mailto:janet_ertel@fws.gov)

- **Felicia Sanders**  
South Carolina Department of Natural Resources  McClellanville, SC
  - Red Knot and Whimbrel migration/stopover
  - 843-20-0961
  - [SandersF@dnr.sc.gov](mailto:SandersF@dnr.sc.gov)
- **Tim Keyes**  
Georgia Department of Natural Resources  Brunswick, GA
  - Red Knot and Saltmarsh Sparrow migration/stopover
  - 912-222-0424
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- **Kevin Kalasz**  
U.S. Fish and Wildlife Service Coastal Program  Big Pine Key, FL
  - Red Knot migration/stopover
  - 772-205-7140
  - [kevin\\_kalasz@fws.gov](mailto:kevin_kalasz@fws.gov)
- **Aaron Given**  
Town of Kiawah Island  Kiawah Island, SC
  - Saltmarsh Sparrow and Seaside Sparrow migration/stopover
  - 843-478-4264
  - [agiven@kiawahisland.org](mailto:agiven@kiawahisland.org)
- **Christy Hand**  
South Carolina Department of Natural Resources  Green Pond, SC
  - Black Rail surveys/autonomous recording /telemetry
  - 843-870-9381
  - [HandC@dnr.sc.gov](mailto:HandC@dnr.sc.gov)
- **Amy Schwarzer**  
Florida Fish and Wildlife Conservation Commission  Gainesville, FL
  - Black Rail surveys/autonomous recording /telemetry
  - 352-334-4201
  - [amy.schwarzer@myfwc.com](mailto:amy.schwarzer@myfwc.com)
- **Whitney Beisler**  
U.S. Fish and Wildlife Service Ecological Services  Charleston, SC
  - Black Rail surveys/autonomous recording
  - 201-403-5817
  - [whitney\\_beisler@fws.gov](mailto:whitney_beisler@fws.gov)