

JESSICA L. BURNETT

📧 trashbirdecology 📞 +1 352 792 5425 ✉ jburnett@usgs.gov | Updated: March 19, 2020

Education

Ph.D., Natural Resource Sciences, Specialization Applied Ecology 2015 - 19
School of Natural Resources, University of Nebraska-Lincoln, Nebraska USA

M.Sc., Wildlife Ecology & Conservation 2013 - 15
Department of Wildlife Ecology & Conservation, University of Florida, Florida USA

B.Sc. Wildlife Ecology & Conservation 2010 - 13
Department of Wildlife Ecology & Conservation, University of Florida, Florida USA

Skills Highlight

Languages: R, LaTeX, MatLab, HTML, English
Reproducibility and open science
Applied statistics
Avian ecology and conservation
Data science

Professional Experience

Research Ecologist & Mendenhall Postdoctoral Fellow September 2019 - present
Science Analytics and Synthesis, Core Science Systems
U.S. Geological Survey, Lakewood, Colorado, USA

Graduate Research Assistant August 2015 - August 2019
Nebraska Cooperative Fish & Wildlife Research Unit
School of Natural Resources
Department of Agronomy & Horticulture
University of Nebraska-Lincoln, Nebraska, USA

Young Scholar May 2018 - September 2018
Applied Systems Analysis Research Group
International Institute for Applied Systems Analysis Laxenburg, Austria

Graduate Teaching Assistant August 2013 - August 2015
Department of Wildlife Ecology & Conservation
University of Florida, Florida, USA

Geospatial Analyst Intern April 2012 - August 2012
Florida Fish and Wildlife Research Institute Gainesville, Florida, USA

Research Assistant January 2011 - April 2012
Avian Ecology and Conservation Lab University of Florida, Gainesville, FL, USA

Crew Leader, Smithsonian Fellow April-September 2011 and April-September 2013
Neighborhood Nestwatch Program
Smithsonian Migratory Bird Center, Gainesville, FL, USA

Publications

1. **Burnett, J.L.**, L.S. Wszola, and G. Palomo-Munoz. 2019. bbsAssistant: An R package for downloading and handling data and information from the North American Breeding Bird Survey. Journal of Open Source Software, 4(44), 1768, DOI: [10.21105/joss.01768](https://doi.org/10.21105/joss.01768)

2. Donovan, V.M., **J.L. Burnett**, C.H. Bielski, H.E. Birge, R. Bevens, D. Twidwell, and C.R. Allen. 2018. Social-ecological landscape patterns predict woody encroachment from native tree plantings in a temperate grassland *Ecology and Evolution* 8(19): 9624-9632 DOI:10.1002/ece3.4340
3. **Burnett, J.L.**, K.L. Pope, A. Wong, C.R. Allen, D.M. Haak, B.J. Stephen, and D.R. Uden. 2018. Thermal tolerance limits of the invasive Chinese mysterysnail *Bellamya chinensis* and implications for management". *American Malacological Bulletin* 36(1): 140-144 DOI:10.4003/006.036.0106
4. Roberts, C.P., D. Twidwell, **J.L. Burnett**, V.M. Donovan, C. Wonkka, C.H. Bielski, A.S. Garmestani, D.G. Angeler, T. Eason, B.W. Allred, M.O. Jones, D.E. Naugle, S. Sundstrom, C.R. Allen . 2018. Early warnings for state transitions. *Rangeland Ecology and Management* DOI:10.1016/j.rama.2018.04.012
5. La Sorte, F.A., C.A. Lepczyk, **J.L. Burnett**, A. Hurlbert, M. Tingley, and B. Zuckerberg. 2018. Opportunities and challenges for big data ornithology. *The Condor* 120(2): 414-426 DOI:10.1650/CONDOR-17-206.1
6. Chuang, W.C., A.S. Garmestani, T. Eason, T.L. Spanbauer, H.B. Fried-Peterson, C. Roberts, S. Sundstrom, **J.L. Burnett**, D. G. Angeler, B. Chaffin, L. Gunderson, D. Twidwell, C.R. Allen. 2018. Enhancing quantitative approaches for assessing ecological and community resilience. *Journal of Environmental Management* 213: 353-362 DOI:10.1016/j.jenvman.2018.01.083
7. **Burnett, J.L.**, C.R. Allen, C.P. Roberts, M.Bomberger Brown, and M.P. Moulton. 2017. Eurasian Tree Sparrow (*Passer montanus*) range expansion in North America. *Biological Invasions* 19(1): 5-9 DOI:10.1007/s10530-016-1273-4
8. **Burnett, J.L.** and K.E. Sieving. 2016. Songbird distress call as a detection enhancement method and application to Red-shouldered Hawks (*Buteo lineatus*). *Florida Field Naturalist* 44(4):157-168
9. C.R. Allen, H.E. Birge, S.L. Bartlett-Hunt, R.A. Bevens, **J.L. Burnett**, B.A. Cosens, X. Cai, A.S. Garmestani, I. Linkov, E.A. Scott, M.D. Solomon, and D.R. Uden. 2016. Avoiding decline: Fostering resilience and sustainability in midsize cities. *Sustainability* 8(9):844-868 DOI:10.3390/su8090844
10. **Burnett, J.L.** and M.P. Moulton. 2015. Recent trends in House Sparrow (*Passer domesticus*) distribution and abundance in Gainesville, Alachua County, Florida. *Florida Field Naturalist* 43(4):167-172

Book Chapters

1. **Burnett, J.L.** and C.R. Allen. 2020. Continental Analysis of Invasive Birds: North America in Downs, C.T. and Hart, L.A. (eds) Global trends and impacts of alien invasive birds. CABI, Wallingford, U.K., pp. XX-XX.

Manuscripts Under Review (primary author)

1. **Burnett, J.L.**, R. Wilcox, B. Stephen, D. Haak, D. Uden, C.R. Allen, and K. Pope. Shell strength does not limit predation of an invasive snail species (*Bellamya chinensis*) by native fish. *under review at Malacological Bulletin*

Manuscripts in Preparation (primary author)

1. **Burnett, J.L.**, et al. Great Tit (*Parus major*) range expansion in the Northern U.S.
2. **Burnett, J.L.**, N.B. Price, A.J. Tyre, D.G. Angeler, T. Eason, D. Twidwell., and C.R. Allen. Deconstructing the steps for calculating Fisher Information as a measure of abrupt change in ecological systems.
3. **Burnett, J.L.**, Kratter, A. and Robinson, S.K. Using a Christmas Bird Count to understand local and regional changes in bird populations in Northcentral Florida.

4. **Burnett, J.L.**, N.B. Price, C.R. Allen, D. Twidwell, A.J. Tyre. Velocity of distance travelled as a measure of ecosystem trajectory and abrupt change.
5. **Burnett, J.L.**, Z. Warren, M. Podebrovska, B. Dueker, K. Lamke, B. Seguin, D. Twidwell, and C.R. Allen. Sexual size dimorphism in mammalian communities of Mediterranean Australian regions.
6. **Burnett, J.L.**, L. Wszola, N. Mirochnitchenko, E. Stuber, M. Bomberger Brown, C.R. Allen, D. Twidwell, and J. Carroll. Large-scale crop patterns influence Gray Partridge (*Perdix perdix*) site occupancy in North America.
7. **Burnett, J.L.**, B.D. Fath, E. Rovenskaya, and A.J. Tyre. Effects of data quality and quantity on inference gained from regime shift detection methods.

Notable Code and Software

Lifecycle: maturing, stable

1. **Burnett, J.L.**, L.S. Wszola, and G. Palomo-Munoz. 2019. [bbsAssistant](#): An R package for downloading and handling data and information from the North American Breeding Bird Survey: U.S. Geological Survey software release. DOI: [10.5066/P93WoEAW](#).
2. Price, N.B., C. Chizinski, and **J.L. Burnett**. [radsets](#). An R package for interactive, network-based visualizations of overlapping sets. [Github:natbprice/radsets](#)
3. **Burnett, J.L.**, N.B. Price, and A.J. Tyre. [distanceTravelled](#). An R package for calculating the distance traveled by a multispecies community along a time series.
4. Price, N.B. and **J.L. Burnett**. [tvdiff](#). An R package for numerical differentiation of noisy, non-smooth data. [Github:natbprice/tvdiff](#)

Lifecycle: dormant

1. **Burnett, J.L.**, N.B. Price. [regimeDetectionMeasures](#). An R package for calculating univariate and multivariate regime detection methods using community time series.

Lifecycle: experimental

1. **Burnett, J.L.**, et al. [USAvian](#): An interactive map for connecting and visualizing the bird conservation and management networks in the U.S.

Research Grants

Funded

2020

Pedersen, E., **J.L. Burnett**, G. Simpson, C. Bahlai. 2020. Creating a unified approach to evaluate regime shift detection methods. **\$12,400 CAD**

2019

Mendenhall Postdoctoral Research, Core Science Systems Science Analytics and Synthesis, U.S. Geological Survey. **~\$222,000**

Under Review

Pedersen, E., **J.L. Burnett**, G. Simpson, C. Bahlai. Creating a unified approach to evaluate regime shift detection methods. Powell Center Synthesis Working Group, U.S. Geological Survey **\$166,642**
 Informing the design and deployment of a conservation tool, USAvian: learning through co-production, synthesizing lessons learned. Community for Data Integration, U.S. Geological Survey **\$70,539** ## Not Funded

2019

Benito, X., C. Bahlai, **J.L., Burnett**, E. Pedersen, and G. Simpson. SESYNC working group proposal.

2018

Burnett, J.L. Population Biology Program of Excellence (PoE) Postdoctoral Fellowship, University of Nebraska-Lincoln

Burnett, J.L., C.R. Allen, G. Sugihara, and H. Ye. Scale mismatches in ecological research and management: consequences and solutions through data management. Powell Center Synthesis Working Group, U.S. Geological Survey

2016

Burnett, J.L. Mozilla Fellowship for Science

2013

Burnett, J.L. NSF Graduate Research Fellowship

Fellowships, Honors & Awards

2019

School of Natural Resources, University of Nebraska-Lincoln	\$750
University of Nebraska Graduate Travel Fund	\$750
Association for Women in Mathematical Biology	\$650
School of Natural Resources, University of Nebraska-Lincoln	\$1050

2018

Meritorious Graduate Student award, School of Natural Resources, UNL	\$500
National Academy of Sciences research award	\$5,500
Participant, Research Collaboration Workshop for Women in Mathematical Biology, NIMBIOS	\$900
National Science Foundation & NimBios	\$550
Nelson Memorial Fellowship, University of Nebraska-Lincoln (<i>3x recipient, 2016, 17, 18</i>)	totaling \$3,217
Center for Great Plains Studies travel award, University of Nebraska-Lincoln (<i>4x recipient; 2015, 2016, 2017, 2018</i>)	totaling \$3,000

2017

Kellogg Biological Station, Michigan State University	\$500
Big Ten Academic Alliance Traveling Scholar	

2016

2nd place, School of Natural Resources Elevator Speech Competition	\$300
American Ornithologists' Union travel award	\$250
Fling Fellow, University of Nebraska-Lincoln	\$20,000
Othmer Fellow, University of Nebraska-Lincoln	\$24,000
AAAS/Science Program for Excellence in Science Award	
Graduate Fellow, Center for Great Plains Studies, University of Nebraska	

2015

Resilience Alliance Young Scholar, The Resilience Alliance (2015-2017)	2015 - 17
NSF Diversity Travel Award, Southeastern Ecology and Evolution Conference	\$650
Graduate Student Council, University of Florida	\$350
Office of Research, University of Florida	\$350

2014

Travel Award, Department of Wildlife Ecology & Conservation, University of Florida (2x recipient) \$500

2013

Travel Award, Office of the Dean, Institute of Food and Agricultural Sciences, University of Florida	\$750
American Ornithologists' Union Undergraduate Student Membership Award	
IFAS Extension Internship for Undergraduate Research, University of Florida	\$2,200
Ordway-Swisher Biological Station Undergraduate Research Grant, University of Florida	\$550

Teaching

Course Development

Reproducible Research and Collaboration in Ecology. Course materials can be found on [GitHub](#).

Instruction

Co-instructor Introduction to Applied Ecological Statistics, Kearney, NE 2017 - Week-long workshop for employees of the Nebraska Game and Parks Commission employees

Instructor Introduction to Program R 2017 - Designed and taught a series of half-day workshops for graduate students - Basics of data management and analysis using Program R

Guest Lecturer Module: using citizen science data to understand ecological invasions; Course: Avian Invasions 2016 - Designed and taught series of lectures on citizen science data use and applications

Teaching Assistant Wildlife Population Ecology, Department of Wildlife Ecology & Conservation, University of Florida 2015 - Lead quantitative laboratory sessions

Teaching Assistant Ecological Statistics, Department of Wildlife Ecology & Conservation, University of Florida 2015 - Lead and moderate discussions - Provide statistical support

Guest Lecturer Wetland birds module, Florida Master Naturalist 2013 - Designed and taught module on wetland bird identification and ecology

Organized Sessions & Symposia

1. Using the integrated modelling framework to bridge science and decision making: advances, applications, and opportunities. Co-organizer with J.A. Royle. Ecological Society of America conference 2020
2. Opportunities and Challenges in Big Data Ornithology. Co-organizer with F.A. LaSorte and C.A. Lepczyk. North American Ornithological Conference V, Washington, D.C. 2016

Presentations (primary author)

Invited

1. Regime Detection Measures for the Practical Ecologist, Department of Wildlife Ecology & Conservation, University of Florida 2019

2. Detecting abrupt change in bird community time series using distance travelled. *Association for Women in Math Biology Symposium*, Special session "Current Challenges in Mathematical Biology", Houston, TX 2019
3. Decline of the Once-Ubiquitous House Sparrow in North America. *Nebraska Invasive Species Council*, Lincoln, NE 2015

Contributed

1. **Burnett, J.L.**, N.B. Price, and A.J. Tyre. A novel method for tracking ecosystem trajectory and abrupt change in space-time: distance traveled. *International Association for Landscape Ecology*, Oral presentation. Fort Collins, CO, 2019
2. **Burnett, J.L.**, R. Crystal-Ornelas, D. Fogarty, K. Hogan, C.R. Allen, M. Bomberger Brown, D. Twidwell, and C.A. Lepczyk. Impacts of non-native birds on native wildlife in urban ecosystems: where is the evidence? *Natural Areas Conference*, Oral presentation. Indiana, 2018
3. **Burnett, J.L.**. Advances in ecological regime shift detection, *International Institute for Applied Systems Analysis*, Oral presentation. Laxenburg, Austria, 2018
4. **Burnett, J.L.**, N.B. Price, A.J. Tyre, T.J. Hefley, C.R. Allen, T. A. Eason, D.G. Angeler, and D. Twidwell. Community velocity as a regime shift detection method. *Great Plains Grassland Summit*, Poster presentation. Denver, Colorado, 2018
5. **Burnett, J.L.**, L. Wszola, N. Mirochnitchenko, E. Stuber, M. Bomberger Brown, C.R. Allen, D. Twidwell, and J.P. Carroll. Gray partridge distribution in North America: Changing landscapes and environment for an introduced species. *Perdix XIV and IUGB*, Oral presentation by JPC, Montpellier, France, 2017
6. **Burnett, J.L.**, N.B. Price, A.J. Tyre, T.J. Hefley, C.R. Allen, T. A. Eason, D.G. Angeler, and D. Twidwell. System trajectory and Fisher information as early-warning indicators of ecological regime shifts. *Resilience 2017: Resilience Frontiers for Global Sustainability*, Poster presentation. Stockholm, Sweden, 2017
7. **Burnett, J.L.**, N.B. Price, A.J. Tyre, T.J. Hefley, C.R. Allen, T. A. Eason, D.G. Angeler, and D. Twidwell. System trajectory and Fisher information as early-warning indicators of ecological regime shifts. *Ecological Society of America*, Poster presentation. Portland, OR, 2017
8. **Burnett, J.L.**, Roberts, C.P., Allen, C.R., Angeler, D.G., Twidwell, D., and Tyre, A.J. Ecological Regime Shifts in the Central Great Plains. *Great Plains Symposium*, Oral presentation. Nebraska Innovation Campus, Lincoln, NE, 2017
9. **Burnett, J.L.**, Roberts, C.P., Allen, C.R., Angeler, D.G., Twidwell, D., and Tyre, A.J. Using Big Data to Detect Regime Shifts in Space and Time. *North American Ornithological Conference VI*, Poster presentation. Smithsonian Migratory Bird Institute, Washington, D.C., 2016
10. **Burnett, J.L.**, Moulton, M. P., Sieving, K.E., Avery, M., and Robinson, S.K. Are House Sparrow declines a byproduct of urban greening? *Southeastern Ecology and Evolution Conference*, Oral presentation. University of Georgia, Athens, GA, 2015
11. **Burnett, J.L.**, Moulton, M. P., Sieving, K.E., Avery, M.L., and Robinson, S.K. Are House Sparrow declines a byproduct of urban greening? *American Ornithologists' Union and Cooper Ornithological Society Annual Meeting*, Poster presentation. Norman, OK, 2015
12. **Burnett, J.L.**, Moulton, M.P., and Sieving, K.E. House sparrow: the decline of a once ubiquitous, invasive species. *Florida Chapter of The Wildlife Society Annual Conference*, Poster presentation. Safety Harbor, FL, 2014.

13. **Burnett, J.L.**, Moulton, M. P., Sieving, K.E., Avery, M.L., and Robinson, S.K. House Sparrow decline and distribution in North Central Florida. *Florida Cooperative Fish and Wildlife Research Unit annual cooperators meeting*, Poster presentation. Gainesville, FL, 2014
14. **Burnett, J.L.** and Sieving, K.E. Detecting birds of prey using tufted titmouse distress calls. *USGS Florida Cooperative Fish and Wildlife Research Unit Committee Meeting*, Poster presentation. Gainesville, FL, 2013
15. **Burnett, J.L.** and Sieving, K.E. Do actual and perceived risks of small forest birds align? *Florida Ornithological Society Conference*, Oral presentation, St. Petersburg, FL, 2013
16. **Burnett, J.L.** and Sieving, K.E. Perceived predation risks of small forest birds. *Association of Field Ornithologists Annual Conference*, Poster presentation. Venus, FL, 2013

Scientific Outreach

Community Involvement

Letters to a Pre-scientist, United States	2019-present
Skype a Scientist, United States	2017-present
Co-PI, Community grant to develop on-site nature trail and viewing opportunities at the Reichert House, Gainesville, FL	2014-15
Hands-on captive herpetological opportunities for studnets of the Reichert House, Gainesville, FL	2014-15
Birdwatching and live banding demonstrations for K-12 students, A Girls' Place, Gainesville, FL	2013-15
Science, mathematics and reading tutor for middle and high school students, Friends of the Micanopy Library, FL	2011-13
Learning assistant and tutor for geometry and pre-calculus students, Valencia Community College, Orlando, FL	2008-10

Blogs

[Connecting to nature and understanding ecosystem services: urban perspective](#), Envirobites
[Big data, big problems](#), Resilience Alliance
[Panarchy in the Anthropocene](#), Resilience Alliance - [Regime shifts, traps and how to deal with them](#), Resilience Alliance
[Connecting to nature and understanding ecosystem services: the urban perspective](#), Resilience Alliance
[Leadership resilience and your workplace](#), Resilience Alliance

Radio

[House Sparrow declines in North American](#), Urban Wildlife Podcast

Service

Code and Software Peer Reviews

Journal of Open Source Software (1)

Research Article Peer Reviews

Bioinvasions Records (1), *Conservation Biology* (1), *Ecological Informatics*, (2) *Ecological Modelling* (4), *Journal of Molluscan Studies* (2), *PLOS One* (1), *ReScience* (pending), *Wilson Journal of Ornithology* (3)

USGS Selected Peer Reviews

Abstracts (2), Research Articles (1), Software/code (1)

University of Nebraska-Lincoln

Co-founder, Natural Resources Diversity Initiative committee, School of Natural Resources	2017
Co-founder, Institutional membership to the Association for Women in Science	2016
Faculty Advisory Committee , School of Natural Resources	2016-18
Digital Team, School of Natural Resources	2016
Organizer, Association for Women in Science Mentor Workshop	2016
Seminar Coordinator, School of Natural Resources	2016
Department Representative, UNL Graduate Student Association	2015 - 16

Reports

White Papers

1. **Burnett, J.L.**, Roberts, C.P., Allen, C.R., Angeler, D.G., Twidwell, D. 2017. White Paper: Regime Shift Detection Using Fisher Information. Strategic Environmental Research and Development Program (SERDP RC 25-10), Department of Defense.

Grant Reports

1. Allen, C.R., Angeler, D.G., Twidwell, D., **Burnett, J.L.**, Roberts, C.P. 2017. Interim Report (RC 25-10): Global Change, Vulnerability, and Resilience: Management Options for an Uncertain Future. Strategic Environmental Research and Development Program (SERDP), Department of Defense.
2. Twidwell D., Bielski, C.H., **Burnett, J.L.**, Donovan, V.M., Wonkka, C.L. 2017. Review of LANDFIRE Biophysical Settings Models (BpS) in the Great Plains. LANDFIRE Project.