JESSICA L. BURNETT

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Education

Ph.D., Natural Resource Sciences, Specialization Applied Ecology 2015 - 19
School of Natural Resources, University of Nebraska-Lincoln, Nebrasaka 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 community and population ecology
Population trend and parameter estimation

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

2. Donovan, V.M., **J.L. Burnett**, C.H. Bielski, H.E. Birge, R. Bevans, 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:0.1650/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. Bartlet-Hunt, R.A. Bevans, **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.**, 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. *under review at Ecological Modelling*

2. **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.**, Kratter, A. and Robinson, S.K. Using a Christmas Bird Count to understand local and regional changes in bird populations in Northcentral Florida.

2. **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.

3. **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.
4. **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.
5. **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.

Software

Author and maintainer

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. GitHub repository.
2. **Burnett, J.L.**, N.B. Price. 2019. `regimeDetectionMeasures`. An R package for calculating univariate and multivariate regime detection methods using community time series. Github:trashbirdecology/regimedetectionmeasures
3. **Burnett, J.L.**, N.B. Price, and A.J. Tyre. 2018. `distanceTravelled`. An R package for calculating the distance traveled by a multispecies community along a time series. Github:trashbirdecology/distancetravelled

Author

1. Price, N.B. and **J.L. Burnett**. `tvdiff`. 2019. An R package for numerical differentiation of noisy, non-smooth data. Github:natbprice/tvdiff
2. Price, N.B., C. Chizinski, and **J.L. Burnett**. `radsets`. 2019. An R package for interactive, network-based visualizations of overlapping sets. Github:natbprice/radsets

Grants in Review

Integrating Two Foundational USGS Data Products: the Breeding Bird Survey (BBS) and the Bird Banding Lab (BBL) Data, Community for Data Integration, U.S. Geological Survey — in review

Grants & Fellowships

Co-PI, CIEE/ICEE Working Group: Creating a unified approach to evaluate regime shift detection methods, **$12,400 CA** — 2020
Mendenhall Postdoctoral Fellowship, U.S. Geological Survey **~$222,000** — 2019 - 21
Meritorious Graduate Student, School of Natural Resources, UNL **$500** — 2018
Participant, Research Collaboration Workshop for Women in Mathematical Biology, NIMBIOS — 2018
Fling Fellow, University of Nebraska-Lincoln **$20,000** — 2016 - 17
Othmer Fellow, University of Nebraska-Lincoln **$24,000** — 2015 - 19
Big Ten Academic Alliance Travelling Scholar — 2017
AAAS/Science Program for Excellence in Science Award — 2016
Graduate Fellow, Center for Great Plains Studies, University of Nebraska — 2016 - 18
2nd place, School of Natural Resources Elevator Speech Competition **$300** — 2016
Resilience Alliance Young Scholar, The Resilience Alliance — 2015 - 17

Honors & Awards

School of Natural Resources, University of Nebraska-Lincoln **$750** — 2019
University of Nebraska Graduate Travel Fund **$750** — 2019

Association for Women in Mathematical Biology **$650** 2019
School of Natural Resources, University of Nebraska-Lincoln **$1050** 2019
National Academy of Sciences research award **$5,500** 2018
National Science Foundation & NimBios **$550** 2018
Kellogg Biological Station, Michigan State University **$500** 2017
Nelson Memorial Fellowship, University of Nebraska-Lincoln **$3,217** *(3x recipient)* 2016 - 18
Center for Great Plains Studies, University of Nebraska-Lincoln **$3,000** *(4x recipient)* 2015 - 18
American Ornithologists' Union **$250** 2016
NSF Diversity Award, Southeastern Ecology and Evolution Conference **$650** 2015
Graduate Student Council, University of Florida **$350** 2015
Office of Research, University of Florida **$500** 2015
Department of Wildlife Ecology & Conservation, University of Florida **$500** *(2x recipient)* 2014 - 15
Office of the Dean, Institute of Food and Agricultural Sciences, University of Florida **$750** 2013
American Ornithologists' Union Undergraduate Student Membership Award 2013
IFAS Extension Internship for Undergraduate Research, University of Florida **$2,200** 2013
Ordway-Swisher Biological Station Undergraduate Research Grant, University of Florida **$550** 2013

Teaching Experience

Co-instructor Introduction to Applied Ecological Statistics, Kearney, NE 2017

Instructor Introduction to Prorgam R 2017

Guest Lecturer Module: using citizen science data to understand ecological invasions; Course: Avian Invasions 2016

Teaching Assistant Wildlife Population Ecology, Department of Wildlife Ecology & Conservation, University of Florida 2015

Teaching Assistant Ecological Statistics, Department of Wildlife Ecology & Conservation, University of Florida 2015

Guest Lecturer Wetland birds module, Florida Master Naturalist 2013

Organized Sessions & Symposia

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

Research Presentations Given

invited

1. Regime Detection Measures for the Pratical 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, Oralndo, FL 2008-2010

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

Journal Referee

Bioinvasions Records (1), *Ecological Modelling* (4), *Journal of Molluscan Studies* (2), *Journal of Open Source Software* (1), *PLOS One* (1), *Wilson Journal of Ornithology* (3)

Student liaison, Urban Ecosystem Ecology Section, Ecological Society of America 2015 - 16

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

Grey Literature

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.