

JESSICA L. BURNETT

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Employment

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

Graduate research assistant August 2015 - August 2019 *Nebraska Cooperative Fish & Wildlife Research Unit, School of Natural Resources University of Nebraska-Lincoln, Nebraska, USA*

Research fellow May - 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*

Education

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

Dissertation: Regime Detection Methods for the Practical Ecologist
Prestigious funded summer research sabbatical at IIASA in Laxenburg, Austria
Recipient of 2 university-wide fellowships and Meritorious Doctoral Student award

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

Thesis: House Sparrow (*Passer domesticus*) decline and distribution in North America

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

Undergraduate research thesis published (avian playback methodology)
Internship with the Florida Wildlife Research Institute (GIS analyst)

Skills Highlight

Program R, reproducibility, version control, open science
Data quality assessment and quality control, data management
Citizen science and long-term monitoring data
Avian community and population ecology
Population trend and parameter estimation
Multivariate statistics

Peer-reviewed Research Articles

1. 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](https://doi.org/10.1002/ece3.4340)
2. **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](https://doi.org/10.4003/006.036.0106)

3. 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
4. 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
5. 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
6. **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
7. **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
8. C.R. Allen, H.E. Birge, S.L. Bartlett-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
9. **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 (2019) 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.

Software

Author and maintainer

1. **Burnett, J.L.**, G. Munoz-Palomo, and L. Wszola. *under review at Journal of Open Source Software* bbsAssistant. 2019. An R package for downloading and manipulating the North American Breeding Bird Survey data. https://github.com/TrashBirdEcology/bbsAssistant/blob/master/man/bbsAssistant_0.0.1.pdf Github:trashbirdecology/bbsAssistant
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](https://github.com/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](https://github.com/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](https://github.com/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](https://github.com/natbprice/radsets)

Grants & Fellowships

Mendenhall Postdoctoral Fellowship, U.S. Geological Survey	\$20,000 + salary	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

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

Research Presentations Given

invited

1. 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
2. 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

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 2008-2010

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 to the Profession

Journal referee for *Bioinvasions Records* (1), *Ecological Modelling* (3), *PLOS One* (1), *Wilson Journal of Ornithology* (3)

Student liaison, [Urban Ecosystem Ecology Section](#), Ecological Society of America 2015 - 16

Service at the 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

Technical Reports

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), Department of Defense.
2. 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.
3. 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.