

# JESSICA L. BURNETT

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## Education

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**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

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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

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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](https://doi.org/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](https://doi.org/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](https://doi.org/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. 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
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

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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)

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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)

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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

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*Author and maintainer*

1. **Burnett, J.L.**..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\\_o.o.1.pdf](https://github.com/TrashBirdEcology/bbsAssistant/blob/master/man/bbsAssistant_o.o.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
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 & Fellowships

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Mendenhall Postdoctoral Fellowship, U.S. Geological Survey	<b>\$20,000 + salary</b>	2019 - 21
<a href="#">Meritorious Graduate Student</a> , School of Natural Resources, UNL	<b>\$500</b>	2018
Participant, <a href="#">Research Collaboration Workshop for Women in Mathematical Biology</a> , NIMBIOS		2018
Fling Fellow, University of Nebraska-Lincoln	<b>\$20,000</b>	2016 - 17
Othmer Fellow, University of Nebraska-Lincoln	<b>\$24,000</b>	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	<b>\$300</b>	2016
Resilience Alliance Young Scholar, The Resilience Alliance		2015 - 17

## Honors & Awards

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

## Teaching Experience

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<b>Co-instructor</b> Introduction to Applied Ecological Statistics, Kearney, NE	2017
<b>Instructor</b> Introduction to Program R	2017
<b>Guest Lecturer</b> Module: using citizen science data to understand ecological invasions; Course: Avian Invasions	2016
<b>Teaching Assistant</b> Wildlife Population Ecology, Department of Wildlife Ecology & Conservation, University of Florida	2015
<b>Teaching Assistant</b> Ecological Statistics, Department of Wildlife Ecology & Conservation, University of Florida	2015
<b>Guest Lecturer</b> Wetland birds module, Florida Master Naturalist	2013

## Research Presentations Given

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### *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

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### 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, 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 to the Profession

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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

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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 Seminar](#) Coordinator, School of Natural Resources  
Department Representative, UNL Graduate Student Association

2016  
2016  
2015 - 16

## Technical Reports

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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.