

Jessica L. Burnett

Macroecology | Complex Systems | Synthesis Science

Application for: Mendenhall Research Fellowship - Research Opportunity # S31.
Bridging the Disconnects Between Science and Decision Making.
Applicant became aware of opportunity via researching USGS postdoctoral opportunities.
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Citizenship: USA

1 | Education

2019 *expected* Ph.D., Natural Resource Sciences (Applied Ecology), University of Nebraska-Lincoln
2015 M.Sc., Wildlife Ecology and Conservation, University of Florida
2013 B.Sc., Wildlife Ecology and Conservation, University of Florida
2010 A.A., Biology, Valencia Community College

2 | Professional Appointments

2018 Visiting Scholar, International Institute for Applied Systems Analysis, Austria
2015- Graduate Research Assistant, University of Nebraska-Lincoln
2013-15 Graduate Teaching and Research Assistant, University of Florida
2013 Geospatial Analyst, Florida Fish and Wildlife Research Institute
2011-13 Research Assistant, Sieving Lab of Avian Ecology and Conservation, University of Florida
2011-13 Smithsonian Fellow, Neighborhood Nestwatch Crew Leader, Smithsonian Migratory Bird Center

2 | Peer-reviewed publications

1. 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
2. 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
3. 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
4. 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
5. **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

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

3 | First-authored manuscripts under review

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 Journal of Freshwater Ecology*

4 | First-authored manuscripts in preparation (available upon request)

1. **Burnett, J.L.**, N.B. Price, A.J. Tyre, T.J. Hefley, T. Eason, C.R. Allen, and D. Twidwell. A guide to Fisher Information for ecologists.
2. **Burnett, J.L.**, N.B. Price, C.R. Allen, B.D. Fath, E. Rovenskaya, D. Twidwell, A.J. Tyre, P. Zebrowski. Distance travelled: using Pythagorean's theorem to track 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-sacle crop patterns influence Gray Partridge (*Perdix perdix*) site occupancy in North America.

5 | R Packages (GitHub user: trashbirdecology)

Burnett, J.L., N.B. Price. 2018. *regimeDetectionMeasures*. A package for calculating univariate and multivariate regime detection methods using community time series.

Burnett, J.L., N.B. Price. 2018. *distanceTraveled*. A package for calculating the distance traveled by a multispecies community along a time series.

6 | Grants

for research

2018	National Academy of Sciences \$5,500
2013	IFAS Extension Internship for Undergraduate Research, University of Florida \$2,200
2013	Ordway-Swisher Biological Station Undergraduate Research, University of Florida \$550

for travel

2019	Association for Women in Mathematical Biology	\$650
2018	National Science Foundation & NimBios	\$550
2018	School of Natural Resources, University of Nebraska-Lincoln	\$250
2016-18	Center for Great Plains Studies, University of Nebraska-Lincoln	\$3,000 (<i>4 x recipient</i>)
2017	Kellogg Biological Station, Michigan State University and Big Ten Academic Alliance	\$500
2016-18	Nelson Memorial Fellowship, University of Nebraska-Lincoln	\$3,217 (<i>3 x recipient</i>)
2016	American Ornithologists' Union	\$250
2015	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
2014-15	Department of Wildlife Ecology and Conservation, University of Florida	\$500 (<i>2 x \$250</i>)
2013	Office of the Dean, Institute of Food and Agricultural Sciences, University of Florida	\$750

for membership

2013	American Ornithologists' Union Undergraduate Student Membership Award
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submitted & unfunded

2018	PI. USGS Powell Center Synthesis Working Group, "Scale mismatches in ecological research and management: consequences and solutions through data management." Co-PIs: Hao Ye, Craig R. Allen, George Sugihara.
2016	Mozilla Science Fellowship.

7 | Teaching Experience

1. **Co-instructor.** Five-day workshop. Introduction to Ecological Statistics. 2017. University of Nebraska and the Nebraska Game and Parks Commission, Kearney, NE
2. **Workshop instructor.** Half-day workshop. Introduction to R. 2017. School of Natural Resources, University of Nebraska
3. **Guest lecturer.** Module: using citizen science data to understand ecological invasions. 2016. Introduction to avian invasions, University of Florida
4. **Guest lecture.** Wetland bird module. 2013. Florida Master Naturalist

8 | Agency 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.

9 | Presentations

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.**, 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
2. **Burnett, J.L.**. Advances in ecological regime shift detection, *International Institute for Applied Systems Analysis*, Oral presentation. Laxenburg, Austria, 2018
3. **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
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. 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
5. **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
6. **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
7. **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
8. **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
9. **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
10. **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.
11. **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
12. **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

13. **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

10 | Honors & Awards

2018	Meritorious Graduate Student Award, School of Natural Resources, University of Nebraska	\$500
2018	Invited participant, Research Collaboration Workshop for Women in Mathematical Biology, National Institute for Mathematical and Biological Synthesis	
2018	Young Scientists Summer Program, International Institute for Applied Systems Analysis, Austria	
2017-18	Fling Fellowship, University of Nebraska-Lincoln	\$20,000
2017-18	Big Ten Academic Alliance Traveling Scholar	
2016-18	University of Nebraska Center for Great Plains Studies Graduate Fellow	
2016-	AAAS/Science Program for Excellence in Science Award	
2016	2nd place, School of Natural Resources Elevator Speech Competition	\$300
2015-	Resilience Alliance Young Scholar	
2015-18	Othmer Fellowship, University of Nebraska-Lincoln	\$24,000

11 | Outreach

scientific blogging

Connecting to nature and understanding ecosystem services: the 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**

interview broadcasts

Interviewee on House Sparrow population declines, Urban Wildlife Podcast

12 | Service

to the profession

Reviewer for *Ecological Modelling* (1), *Bioinvasions Records* (1), *Wilson Journal of Ornithology* (2)
 Student liaison, Urban Ecosystem Ecology Section, Ecological Society of America 2015-16

to the University of Nebraska-Lincoln

2018	Co-founder, Natural Resources Diversity Initiative ad-hoc committee, School of Natural Resources,	
	University of Nebraska-Lincoln	
2017	Co-initiated the institutional membership to the Association for Women in Science	
2016-	Student Representative, Faculty Advisory Committee, School of Natural Resources	
2016-	Student Representative, Digital Team, School of Natural Resources	
2016	Organizer, Association for Women in Science Mentor Workshop	
2016	Seminar Coordinator, School of Natural Resources	
2015-16	Founder & President, Natural Resources Diversity Initiative student group	

2015-16 Department Representative Representative, Graduate Student Association
2015 Founder, Affiliate Chapter of the Association for Women in Science

13 | Professional Memberships (since)

2018 Association for Women in Mathematics
2015 Ecological Society of America
2015 Resilience Alliance
2015 Wilson Ornithological Society

14 | References

1. Dr. Craig R. Allen
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3. Dr. Michael P. Moulton
Associate Professor, University of Florida
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Dr. Michael P. Moulton

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Budget

Funding requested (not including overhead and benefits): **\$ 183,640.**

	Estimated Cost	Quantity	Total
A. CONFERENCE TRAVEL			
i. Ecological Society of America 2020 (Utah)			
<i>Hotel</i>	\$125	6	\$750
<i>Per diem</i>	\$56	6	\$336
<i>Air and ground transport</i>	\$450	1	\$450
<i>Conference registration</i>	\$350	1	\$350
ii. The Wildlife Society 2020 ()			
<i>Hotel</i>	\$122	5	\$610
<i>Per diem</i>	\$61	5	\$305
<i>Air and ground transport</i>	\$700	1	\$700
<i>Conference registration</i>	\$350	1	\$350
iii. Local & regional conference travel			
<i>Ground transport</i>	\$250	2	\$500
<i>Conference registration</i>	\$350	2	\$352
TOTAL CONFERENCE TRAVEL SUPPORT REQUESTED			\$4,703
B. COMPUTING SUPPORT			
Computer	\$1,600	1	\$1,601
Ergonomic desk, keyboard, mouse	\$450	1	\$451
TOTAL CONFERENCE TRAVEL SUPPORT REQUESTED			\$9,922
C. FELLOW SUPPORT*			
Year 1	\$79,799	1	\$79,800
Year 2	\$82,459	1	\$82,460
FUNDING REQUESTED \$			183,640.00

* Fellow support salary does not include costs associated with overhead and benefits. Salary for Denver-Aurora locality adjustment at grade GS-12 Step 01 (Year 1) and Step 02 (Year 2)

