

# Amy M. Savage, PhD

## Contact Information

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## Education

**PhD, Rice University, Department of Ecology and Evolutionary Biology** *May 2011*  
Advisors: Drs. Jennifer A. Rudgers and Ken D. Whitney  
Dissertation: *Anoplolepis gracilipes* invasion of the Samoan Archipelago: Can mutualisms with native species amplify ecological consequences?

**MS, Western Washington University, Department of Biology** *December 2004*  
Advisor: Dr. Merrill A. Peterson  
Thesis: Mutualism in a community context: The positive feedback between an ant-aphid mutualism and a gall making fly.

**BS, The Evergreen State College** *June 2002*  
Advisor: Dr. John T. Longino  
Thesis: Daily patterns of activity and relative prey intake of the two closely related Neotropical ants, *Pachycondyla apicalis* and *Pachycondyla obscuricornis*

## Employment

**Assistant Professor, Rutgers University-Camden, Department of Biology** *September 2015-Present*

**Postdoctoral Scholar, NCSU Department of Biological Sciences** *July 2012-August 2015*  
Mentor: Dr. Robert R. Dunn

**Field Crew Leader, Rice University** *June 2012-July 2012*  
Department of Ecology and Evolutionary Biology  
Principle Investigator: Dr. Tom E. X. Miller

**Instructor, Rice University** *January-June 2012*  
Department of Ecology and Evolutionary Biology  
Course: Animal Behavior Lecture and Laboratory

## Awards

**International Society for the Study of Social Insects-North American Chapter**      *October 2012*  
Awarded best oral presentation in Neuroethology, Ecology & Evolution

**Organization for Tropical Studies**      *March 2012*  
Awarded the best student paper of 2011 for Savage and Whitney (2011).

**Rice University Department of Ecology and Evolutionary Biology**      *May 2009 & May 2011*  
Named the 'Best Graduate Teaching Assistant' 2008-2009 in the Department of Ecology and Evolutionary Biology at Rice University.

Awarded the Peter Savvas Nelson award 2010-2011, which is awarded to the 'Current graduate student in EEB that demonstrates formidable knowledge of their chosen discipline and a strong passion towards pursuing a meaningful and substantial contribution to science. Simultaneously, while striving for personal excellence, the chosen candidate should radiate an unprompted loyalty and compassion in their daily interactions that results in the improvement of the lives of others'.

## Funding:

**\$500: Arts and Sciences Dean's Undergraduate Research Grant**      *December 2015*  
Funding in support of my undergraduate student, Alexa Martinelli's independent research project, 'Relative thermal tolerance, ecological performance, and metabolic capabilities of urban and rural *Pyrrhartica Isabella* caterpillars'

**~\$2500: NCSU Departments of Biological Sciences and Entomology**      *January 2014*  
I created a *Postdoc IdeaFest* for NCSU postdoctoral scholars that study Ecology and Evolutionary Biology. I then secured donations from the departments of Biological Sciences and Entomology for a grant program to defray the costs associated with new interdisciplinary projects resulting from the *Postdoc IdeaFest*.

**\$157,768: National Science Foundation Rapid Response Grant**      *February 2013*  
*Consequences of extreme weather events for urban arthropod communities: Effects of Hurricane Sandy on ecosystem processes and the spread of exotic species in New York City.* Collaborative project; PIs: Dr. Steven D. Franks & Rob R. Dunn. I co-led writing, field work and analyses with another post-doc (Dr. Elsa Youngsteadt).

**\$11,000: Fordham University**      *December 2012*  
*Urban molecular ecology: Measuring the porosity of the New York City ecosystem to ecological invasion by ants.* Collaborative project; PI: Dr. Sergios Kolokotronis. I provided preliminary data and helped write the proposal (Dr. Kolokotronis was the lead author).

**\$600: Rice University Department of Ecology and Evolutionary Biology**      *March 2012*  
Awarded a travel grant to attend the annual meeting of the Organization for Tropical Studies.

**\$5,617: National Science Foundation East Asia and Pacific Summer Institute** *April 2010*  
Selected as a fellow for the National Science Foundation's East Asia and Pacific Summer Institute June 12-September 15, 2010 to conduct research in the lab of Dr. Phil Lester (Victoria University). Project: *Are nitrogen-fixing bacteria hidden but essential participants in ant-plant mutualisms?* (Flight to NZ & living allowance also included).

**\$300: Southeast Ecology and Evolution Conference Managing Committee** *March 2009*  
Awarded a travel grant to attend the Southeast Ecology and Evolution Conference in Gainesville, FL

**\$400: Sigma Xi Scientific Research Society** *December 2008*  
Awarded a grant-in-aid-of-research to defray travel costs associated with research on the effects of mutualisms between *Anoplolepis gracilipes* and *Morinda citrifolia* (described below).

**\$20,000: National Geographic Society Research and Exploration Grant** *May 2007*  
Awarded a research grant (together with Ken Whitney and Jennifer Rudgers) to conduct field research on the effects of mutualisms between a native plant, *Morinda citrifolia* and the invasive ant, *Anoplolepis gracilipes* on (1) dynamics of the invasion and (2) influences of the invader on the structure of local arthropod communities.

**\$3000 & \$300: Rice University Dean of Natural Sciences** *March & August 2006*  
Awarded a grant to defray the costs of an Organization for Tropical Studies graduate field course

Awarded a grant to attend the Ant Course in Cairns, Australia

**\$200 & \$200: WWU Department of Biology Travel Fund** *March 2003 & June 2004*  
Awarded a grant to attend and present a poster at the Pacific Branch meeting of the Entomological Society of America in Bozeman, MT.

Awarded a travel to cover travel expenses that exceeded the Ross Travel Grant attend and present a poster at the Organization for Tropical Studies' Tropical Science for the 21<sup>st</sup> Century Scientific Research Symposium.

**\$400: Western Washington University Ross Travel Fund** *March 2003*  
Awarded a Ross Travel Grant to attend and present a poster at the Organization for Tropical Studies' Tropical Science for the 21<sup>st</sup> Century Scientific Research Symposium

# Publications

## Journal articles:

- Savage, A.M.**, Youngsteadt, E., Earnst, A.F., Anderson Powers\*, S., Dunn, R.R. *In prep.* Disassembling complexity in an urban habitat mosaic: Arthropod diversity declines in low stress habitats of NYC after Super Storm Sandy. *Ecology (Manuscript available upon request).*
- Savage, A.M.**, Hills, J.L.\*, Driscoll, K.\*, Fergus, D.J\*\*. Grunden, A.M., & Dunn, R.R. 2016 Microbial diversity of extreme habitats in human homes. *PeerJ* 4: e2376. <https://doi.org/10.7717/peerj.2376>
- Urban, J.M.\*\*, Fergus, D.J.\*\*, **Savage, A.M.** Ehlers, M.\*\*, Menninger, H.L., Dunn, R.R., & Horvath, J.E.\*\* 2016. The effect of habitual and experimental antiperspirant and deodorant use on the armpit microbiome. *Peer J* 4:e1605 DOI: <https://doi.org/10.7717/peerj.1605>.
- Council, S.E.\*\*, **Savage, A.M.**, Urban, J.M.\*\*, Ehlers, M.E.\*\*, Skene, J.H.P., Platt, M.L., Dunn, R.R., & Horvath, J.E.\*\* 2015. Diversity and Evolution of the primate skin microbiome. *Proceedings of the Royal Society of London, Series B: Biological Sciences* 283: 20152586.
- Reese, A.T.\*, **Savage, A.M.**, Youngsteadt, E., McGuire, K.L., Kolling, A., Watkins, O., Frank, S.D., & Dunn, R.R. 2015. Urban Stress is associated with variation in microbial species composition-but not richness-in Manhattan. *International Society for Microbial Ecology (ISME) Journal*. doi:10.1038/ismej.2015.152
- Penick, C.A., **Savage, A.M.**, & R.R. Dunn. 2015. Stable Isotopes reveal links between human food inputs and urban ant diets. *Proceedings of the Royal Society of London, Series B: Biological Sciences* 282: 20142608.
- Savage, A.M.**, Hackett, B.\*, Guenard, B., & Dunn, R.R. 2015. Fine-scale heterogeneity across Manhattan's urban habitat mosaic is associated with variation in ant composition and richness. *Insect Conservation and Diversity* 8: 216-228.
- Youngsteadt, E., Hendersen, R.C.\*, **Savage, A.M.**, Ernst, A.F., Dunn, R.R., & Frank, S.D. 2015. Habitat and species identity, not diversity, predict the extent of refuse consumption by urban arthropods. *Global Change Biology* 21: 1103-1115.
- Lucky, A., **Savage, A.M.** (co-first author), Nichols, L.M., Castracani, C., Shell, L., Grasso, D.A., Mori, A. and Dunn, R.R. 2014. Ecologists, educators and writers collaborate with the public to assess backyard diversity in The School of Ants Project. *Ecosphere* 57: art.78.
- Savage, A. M.** & Rudgers, J.A. 2013. Non-additive benefit or cost? Disentangling the indirect effects that occur when plants bearing extrafloral nectaries and honeydew-producing insects share exotic ant mutualists. *Annals of Botany* 111:1295-1307.
- Savage, A.M.**, Johnson, S.D.\*, Whitney, K.D., & Rudgers, J.A. 2011. Do invasive ants respond more strongly to carbohydrate availability than co-occurring non-invasive ants? A test along an active *Anoplolepis gracilipes* invasion front. *Austral Ecology* 36: 310-319.
- Savage, A.M.** & Whitney, K.D. 2011. Mutualistic, trait-mediated indirect interactions in invasions: a highly invasive ant has unique behavioral responses to plant nectar. *Ecosphere* 2(9): 106. **Awarded best student paper of 2011 by the Organization for Tropical Studies.**

Rudgers, J. A., **Savage, A.M.**, & Rua, M. 2010. Geographic variation in a facultative mutualism alters local arthropod composition and diversity. *Oecologia* 163: 985-996.

**Savage, A.M.**, Rudgers, J.A., & Whitney, K.D. 2009. Elevated dominance of extrafloral nectary-bearing plants is associated with increased abundances of an invasive ant and reduced native ant richness. *Diversity and Distributions* 15: 751-761.

Johnson, S. D.\*, Horn, K.C.\*, **Savage, A.M.**, Windhager, S., Simmons, M.T. & Rudgers, J.A. 2008. Timing of prescribed burns affects abundance and composition of arthropods in the Texas Hill Country. *Southwestern Naturalist* 53: 137-145.

**Savage, A. M.**, & Peterson, M.A. 2007. Mutualism in a community context: the positive feedback between an ant-aphid mutualism and a gall making fly. *Oecologia* 151: 280-291.

\* Undergraduate advisee \*\* North Carolina Museum of Natural History collaborator

### **Public Science articles and blog posts:**

Carp, A. & Agnew, O. New Yorker Radio Hour, The street ants of Camden, New Jersey *September 2016*  
<http://www.wnyc.org/story/street-ants-camden-new-jersey/>

Moorehouse, E. City ants rule: Ecologist finds diverse ant population in urban environments. Rutgers-Camden News Now. *November 2015*  
<http://news.camden.rutgers.edu/2015/11/city-ants-rule-ecologist-finds-diverse-ant-population-in-urban-environments/>

**Savage, A.M.** Top 5 challenges of studying ants in the Big Apple! Blog Post. *September 2012*  
<http://www.yourwildlife.org/2012/09/adventures-in-urban-myrmecology-top-5-challenges-of-studying-ants-in-the-big-apple/>

Menninger, H.L. Ants on Broadway Storify series. Blog Post. *October 2012*  
<http://www.yourwildlife.org/2012/10/back-on-broadway/>  
<http://www.yourwildlife.org/2012/10/highlights-from-day-2-antsonbroadway/>  
<http://www.yourwildlife.org/2012/10/thats-a-wrap-day-3-of-antsonbroadway/>

Local Ecologist (blog). Ants on Broadway: Citizen science in Riverside Park *November 2012*  
<http://www.localecologist.org/2012/11/ants-on-broadway-citizen-science-in.htm>

Out walking the dog (blog). Ants in the Hood. *December 2012*  
<https://outwalkingthedog.wordpress.com/2012/12/13/ants-in-the-hood/>

McCullough, D. Researchers regroup post-Sandy. NCSU Bulletin. *February 2013*  
<http://bulletin.ncsu.edu/2013/02/insects/>

Shell, L. Scientists seeking mites in their dorm rooms. Blog Post. *February 2013*  
<http://www.yourwildlife.org/2013/02/scientists-seeking-mites-in-their-dorm-rooms/>

- Shell, L. Before they were scientists: Amy Savage. Blog Post. *January 2014*  
<http://www.yourwildlife.org/2014/01/before-they-were-scientists-amy-savage/>
- Spicer Rice, E. Amy Savage's take on ants in the big city. Blog post. *February 2014*  
<http://www.yourwildlife.org/2014/02/amy-savages-take-on-ants-in-the-big-city/>
- Capps, K. What we don't know about what's going on with bugs should worry us. *August 2014*  
 Atlantic Monthly  
<http://www.citylab.com/weather/2014/08/what-we-dont-know-about-insect-city-services/375421/>
- Kelly, D. School of Ants project shows citizen science data is up to snuff. *August 2014*  
<http://www.fondriest.com/news/school-ants-project-shows-citizen-scientist-data-snuff.htm>
- Carp, A. Ants of New York. The New Yorker. *September 2014*  
<http://www.newyorker.com/tech/elements/ants-new-york>
- Krisch, J.A. Ants abound in Manhattan's slivers of green. Scientific American Blog Post. *November 2014*  
<http://www.newyorker.com/tech/elements/ants-new-york>
- Savage, A.M.** This is what a scientist looks like at NC State: Amy Savage *December 2014*  
<https://news.ncsu.edu/2014/12/science-looks-like-amy-savage>
- Shell, L. Ants vs. Rats in NYC. Blog post. *December 2014*  
<http://www.yourwildlife.org/2014/12/ants-vs-rats-in-nyc/>
- Nuwer, R. The ants of Manhattan. New York Times. *December 2014*  
<http://www.newyorker.com/tech/elements/ants-new-york>
- Arnold, C. Bugs, Spiders keep NYC clean by eating garbage. National Geographic *December 2014*  
<http://www.newyorker.com/tech/elements/ants-new-york>
- Bakalar, N. Bugs in Manhattan compete with rats for food refuse. New York Times *December 2014*  
<http://www.newyorker.com/tech/elements/ants-new-york>
- Feltman, R. City ants are garbage-eating, rat-fighting machines. Washington Post. *December 2014*  
<https://www.washingtonpost.com/news/speaking-of-science/wp/2014/12/02/city-ants-are-garbage-eating-rat-fighting-machines/>
- Schultz, D. Bugs in Manhattan eat thousands of kilograms of trash each year. *December 2014*  
 Science Magazine.  
<http://news.sciencemag.org/biology/2014/12/bugs-manhattan-eat-thousands-kilograms-trash-each-year>
- Baggely, K. Cities are brimming with wildlife worth studying. Science News. *December 2014*  
<https://www.sciencenews.org/article/cities-are-brimming-wildlife-worth-studying>
- Ireland, P. Ants: The best kind of litterbug. *January 2015*  
 OnEarth: the magazine of the Natural Resources Council  
<http://www.onearth.org/earthwire/nyc-ants-food-waste>

# Research Presentations

## Invited Oral Presentations:

Montclair University, Department of Biology	<i>October 2016</i>
University of Pennsylvania, Department of Biology	<i>October 2015</i>
Rutgers University-Camden, Department of Biology	<i>October 2015</i>
Rowan University, Department of Biology	<i>September 2015</i>
University of Virginia, School of Architecture	<i>March 2015</i>
Pints of Science, hosted by Tir na Nog, Raleigh, NC	<i>January 2015</i>
North Carolina Museum of Natural Sciences	<i>September 2014</i>
Duke University, Ecology Program	<i>April 2014</i>
University of Georgia, Warnell School of Forestry and Natural Resources	<i>November 2012</i>
North Carolina State University, Department of Entomology	<i>September 2012</i>
OTS annual meeting, La Selva Biological Research Station, Costa Rica	<i>March 2012</i>
Western Washington University, Department of Biology	<i>October 2011</i>
Victoria University, Department of Biology, Wellington NZ	<i>September 2010</i>
American Samoa Community College. Tafuna, American Samoa	<i>August 2009</i>

## Conference Oral Presentations:

Ecological Society of America Annual Meeting, Fort Lauderdale, FL	<i>August 2016</i>
Social Insects in the North-East Region Meeting, Penn State U, PA	<i>June 2016</i>
Ecological Society of America Annual Meeting, Sacramento, CA	<i>August 2014</i>
Ecological Society of America Annual Meeting. Minneapolis, MN.	<i>August 2013</i>
Keck Center for Behavioral Biology Graduate Student and Postdoc Annual Symposium. Raleigh, NC.	<i>March 2013</i>
International Society for the Study of Social Insects North American Chapter Semi-annual meeting. Greensborough, NC.	<i>October 2012</i>
Ecological Society of America Annual Meeting. Portland, OR.	<i>August 2012</i>

City of Houston Ecology and Evolutionary Biology Symposium	<i>April 2009</i>
Southeast Ecology and Evolution Conference. Gainesville, FL.	<i>March 2009</i>
Texas A&M Ecological Integration Symposium. College Station, TX.	<i>March 2009</i>
Southeast Ecology and Evolution Conference. Tallahassee, FL.	<i>March 2008</i>

**Conference Poster Presentations:**

North Carolina State University's 3 <sup>rd</sup> Annual Postdoc Research Symposium	<i>May 2014</i>
Ecological Society of America Annual Meeting. Austin, TX.	<i>August 2011</i>
Sigma Xi, the Scientific Research Society annual conference. The Woodlands, TX.	<i>November 2009</i>
Entomological Society of America, Pacific Branch Annual Meeting	<i>June 2004</i>
Organization for Tropical Studies' Tropical Science for the 21 <sup>st</sup> Century Scientific Research Symposium	<i>March 2003</i>

## **Teaching Experience**

**Instructor:**

Tropical Field Ecology (faculty team teaching) Rutgers University-Camden, Department of Biology	<i>Spring 2017</i>
Population Ecology Rutgers University-Camden, Department of Biology	<i>Spring 2016 &amp; 2017</i>
Principles & Practices in Quantitative Biology Rutgers University-Camden, Department of Biology	<i>Fall 2015 &amp; 2016</i>
Honor's Seminar: The Ecology and Evolution of Daily Life North Carolina State University, Department of Biology	<i>Spring 2013</i>
Animal Behavior Lecture and Laboratory Rice University, Department of Ecology and Evolutionary Biology	<i>Spring 2012</i>
Guest lecturer-Describing ecological communities: Concepts and Methodologies Graduate core course in Ecology and Evolutionary Biology	<i>Fall 2010</i>

**Teaching Assistant:**

Insect Biology Lecture and Lab-Rice University	<i>Spring 2007 &amp; 2010</i>
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Plant Diversity Lecture and Lab-Rice University	<i>Spring 2009</i>
Animal Behavior Lecture-Rice University	<i>Fall 2006</i>
Lead TA: Introduction to Biology Laboratory (non-majors)-WWU	<i>Spring 2004 &amp; 2005</i>
Lead TA: Introduction to Evolution, Ecology & Biodiversity Laboratory (majors)-WWU	<i>Fall &amp; Winter 2004 &amp; Spring 2005</i>
Introduction to Evolution, Ecology and Biodiversity Laboratory (majors)-WWU	<i>Fall 2004</i>
Introduction to Cellular and Molecular Biology Laboratory (majors)-WWU	<i>Winter &amp; Spring 2003</i>
Introduction to Biology Laboratory (non-majors)-WWU	<i>Fall 2002</i>

## **Service**

### **University Service:**

Faculty Advisory Committee, e-Learning Symposium Rutgers University-Camden	<i>October 2016-Present</i>
General Education sub-committee: Physical & Life Sciences Rutgers University-Camden	<i>September 2016-Present</i>
University Senate, Rutgers University-Camden	<i>August 2016-Present</i>
Undergraduate Curriculum Committee Rutgers University Camden, Dept. of Biology	<i>April 2016-Present</i>
Graduate Admissions Committee, Rutgers University Camden, Dept. of Biology	<i>April 2016-Present</i>
Chair, Seminar Committee Rutgers University-Camden Dept. of Biology	<i>September 2015-Present</i>
Chair, Public Outreach Committee Rutgers University-Camden, CCIB	<i>December 2015-Present</i>
President of the NCSU Postdoc Association	<i>July 2014-June 2015</i>
President Elect of the NCSU Postdoc Association	<i>July 2013-June 2014</i>
Founder & President of the Triangle EEB Postdoc Group	<i>February 2013-June 2015</i>
President Rice EEB Graduate Student Association	<i>August 2007-May 2010</i>
Student Representative-Rice University EEB Faculty Hiring Committee	<i>Spring 2008</i>

Student Representative-WWU Biology Dept. Chair Hiring Committee	<i>Spring 2004</i>
Student Representative-WWU University-wide Graduate Council	<i>Summer 2003-Winter 2004</i>
Student Representative-Evergreen Faculty Hiring Committee	<i>Spring 2002</i>
Student Representative-Evergreen VP for Finance & Administration Hiring Committee	<i>Winter 2001</i>

**Referee for Scientific Journals:**

Ecology  
 Journal of Ecology  
 Oecologia  
 Biotropica  
 Biological Invasions  
 Botanical Journal of the Linnaean Society  
 Myrmecological News  
 Australian Journal of Entomology  
 Functional Ecology  
 PeerJ  
 Insectes Sociaux  
 Annals of Botany