

# ELSA YOUNGSTEADT

## Curriculum Vitae

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North Carolina State University  
Department of Entomology and Plant Pathology  
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<http://elsakristen.com>  
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### EDUCATION

- PhD**, Entomology, North Carolina State University, Raleigh, NC **2008**  
*Dissertation*—Neotropical ant gardens: Behavioral and chemical ecology of an obligate ant-plant mutualism  
*Adviser*—Coby Schal
- MS**, Biological Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI **2003**  
*Thesis*—The effects of ants on the carnivorous butterfly caterpillar *Feniseca tarquinius* and the role of chemical camouflage in the *Feniseca*-ant interaction  
*Advisers*—Phil DeVries and Gretchen Meyer
- BA**, Biology, Truman State University, Kirksville, MO **1999**  
*Valedictorian*

### RESEARCH FUNDING

#### **Grants: Total > \$661,000 awarded**

- 2016 NCSU Research Innovation Seed Funding. 1 year, **\$24,999**  
Effects of climate and atmospheric change on plant-pollinator interactions  
PIs: E. Youngsteadt, V. Aneja (atmospheric science), D. Seth Carley (horticulture), S. D. Frank (entomology), R. Irwin (applied ecology), T. Ruffy (crop and soil science)
- 2015 NCSU Extension, Engagement, and Economic Development Seed Grant. 1 year, **\$9,995**  
Pollinator education and outreach for county agents and Extension Master Gardeners  
PIs: E. Youngsteadt, S. D. Frank, and D. R. Tarpy
- 2013 USDA AFRI. 4 years, **\$469,000**  
Can forests take the heat? Managing pests and ecosystem services in a warming climate  
PIs: S. D. Frank and E. Youngsteadt
- 2013 NSF RAPID. 2 years, **\$157,324**  
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  
PIs: S. D. Frank and R. R. Dunn  
\*Although I was not a PI, I was part of the team of five who wrote this proposal.

#### **Fellowships: Total > \$180,000**

- 2006 U.S. Department of Education GAANN Biotechnology Fellowship. 2 years, **~\$60,000**  
Neotropical ant-gardens: Behavioral and chemical ecology of an ant-plant mutualism
- 2005 Amazon Conservation Association Graduate Research Grant. **~\$4000**  
Behavioral and chemical ecology of Neotropical ant gardens
- 2004 North Carolina Entomological Society Travel Award. **~\$1000**  
Behavioral and chemical ecology of Neotropical ant gardens

- 2004 Sigma Xi Grant-in-Aid of Research. **\$200**  
Behavioral and chemical ecology of Neotropical ant gardens
- 2000 National Science Foundation Graduate Research Fellowship. 3 years, **~\$96,000**  
Evaluating interactions between a carnivorous butterfly caterpillar and ants
- 2000 University of Wisconsin-Milwaukee Graduate School Fellowship. 1 year, **~\$20,000**  
Evaluating interactions between a carnivorous butterfly caterpillar and ants

## RESEARCH POSITIONS

**Research Associate**, North Carolina State University, Entomology **2013 – Present**

Major projects:

- Reproductive ecology and conservation genetics of endangered plants
- Consequences of urban warming for plant-insect interactions
- Pollinator education and outreach for county agents and Extension Master Gardeners
- Hurricane Sandy effects on ant diversity and function in New York City

**Postdoctoral Researcher**, North Carolina State University, Entomology **2012 – 2013**

- Insect response to warming across urban, historical, and latitudinal temperature gradients

**PhD Student**, North Carolina State University, Entomology **2003 – 2008**

- Chemical ecology of seed-carrying behavior in a tropical ant-plant mutualism
- Population genetics and chemical recognition in tropical parabiotic ants
- Rate and timing of cuticular hydrocarbon synthesis and provisioning in a viviparous cockroach

**MS Student**, University of Wisconsin-Milwaukee, Biological Sciences **2000 – 2003**

- Behavioral and chemical ecology of tritrophic interactions between ants, aphids, and carnivorous caterpillars

**Curator**, Milwaukee Public Museum, Milwaukee, WI **1999 – 2002**

- Managed research collection of ~290,000 Lepidoptera specimens. Maintained living insects in indoor butterfly vivarium. Assisted in sustainable cacao agriculture research (Costa Rica).

**Ecologist**, The Nature Conservancy, Madison, WI **2001**

- Monitored endangered butterflies and moths, recommended habitat management actions.

## SCIENCE COMMUNICATION POSITIONS

**Book Reviews Editor**, *American Entomologist*, Entomological Society of America **2014 – Present**

- Evaluate technical and popular books for potential review; solicit and edit reviews.

**Associate Editor**, *American Scientist* magazine, Research Triangle Park, NC **2011 – 2012**

- Worked with invited authors to develop, refine and illustrate thought-provoking articles for a readership of more than 100,000 scientists, engineers and educators. Wrote five news articles and 135 research summaries. Trained staff in podcasting and other multimedia production.

**Programs Manager**, Sigma Xi, Research Triangle Park, NC **2008 – 2011**

- Reported and produced 214 original news items for PRI's *The World* science podcast during 28-month collaboration. Prepared how-to guide and workshops for organizers of informal public science cafés. Developed research ethics program: Recruited collaborators and drafted proposal for research that was ultimately funded by the NSF in 2013.

**Freelance Science Writer** **2006 – 2012**

- Reported 30 news stories in ecology and life sciences for *ScienceNOW*, PRI's *The World* and other outlets.

- News Writing Intern**, *Science* magazine, Washington, DC **2008**
- Reported and wrote 25 online news articles, 5 print news and feature stories, 5 podcast segments and about 30 short news items during 6-month internship. Covered life sciences.
- Science Writing Intern**, National Evolutionary Synthesis Center, Durham, NC **2007 – 2008**
- Created online resource for biology educators by writing 12 "Evolution in the News" articles with questions for classroom discussion.
- AAAS Mass Media Fellow**, WOSU Public Media, Columbus, OH **2007**
- Prepared 20 news and feature stories for local public radio during 9-week fellowship. Covered agriculture, physics, engineering and other fields.
- Staff Writer**, *Technician* newspaper, North Carolina State University, Raleigh, NC **2005 – 2006**
- Contributed more than 30 articles to "Science and Tech" and "News" sections. Topics included biology, medicine, engineering, physics, and computer science.

## PUBLICATIONS

**Totals: 20** peer-reviewed publications  
**7** extension and trade publications  
**>100** other publications

\* indicates mentored coauthor

### ***Selected manuscripts in progress***

Youngsteadt, E., R. E. Irwin, M. Kunz, D. Suiter, A. Fowler, S. J. Connon, M. A. Bertone, and C. E. Sorenson. *In revision*. Venus flytrap rarely traps its pollinators. For resubmission to ***American Naturalist***, October 2017.

Hamblin, A. L.\* †, E. Youngsteadt †, and S. D. Frank. *In review*. Wild bee abundance declines with urban warming, regardless of floral density. Submitted to ***Urban Ecosystems***, March 2017. †Co-first authors.

### ***Peer-reviewed publications***

20. Terando, A. J., E. Youngsteadt, E. K. Meineke, and S. G. Prado. *In press*. Ad hoc instrumentation methods in ecological studies produce highly biased temperature measurements. ***Ecology and Evolution***.
19. Savage, A. M., E. Youngsteadt, A. F. Ernst, S. Anderson Powers\*, R. R. Dunn, and S. D. Frank. *In press*. Homogenizing an urban habitat mosaic: Arthropod diversity declines in NYC parks after Super Storm Sandy. ***Ecological Applications***.
18. Hamblin, A. L.\* †, E. Youngsteadt †, M. M. López-Urbe, and S. D. Frank. 2017. Physiological thermal limits predict differential responses of bees to urban heat-island effects. ***Biology Letters*** 13: 20170125. †Co-first authors
  - Featured in the *News and Observer* and WUNC (North Carolina public radio)
17. López-Urbe, M. M., R. H. Appler, E. Youngsteadt, R. R. Dunn, S. D. Frank, and D. R. Tarpay. 2017. Higher immunocompetence is associated with higher genetic diversity in feral honey bee colonies (*Apis mellifera*). ***Conservation Genetics*** 18:659–666.
16. Youngsteadt, E., A. F. Ernst, R. R. Dunn, and S. D. Frank. 2016. Responses of arthropod populations to warming depend on latitude: evidence from urban heat islands. ***Global Change Biology*** 23: 1436–1447.
15. Meineke, E. K., E. Youngsteadt, R. R. Dunn, and S. D. Frank. 2016. Urban warming reduces above-ground carbon storage. ***Proceedings B*** 283:20161574.
  - Featured in *Nature* (Research Highlights, 58:143)

14. [Youngsteadt, E.](#), H. Moylett, M. López-Urbe, and A. Hamblin\*. 2016. T. B. Mitchell: the man behind *The Bees of the Eastern United States*. ***American Entomologist*** 62:157–162.
13. Dale, A. G., [E. Youngsteadt](#), and S. D. Frank. 2016. Forecasting the effects of heat and pests on urban trees: impervious surface thresholds and the 'Pace to Plant' technique. ***Arboriculture and Urban Forestry*** 42:181–191.
12. Reese, A., A. M. Savage, [E. Youngsteadt](#), K. McGuire, A. Koling, O. Watkins, S. D. Frank, and R. R. Dunn. 2016. Urban stress is associated with variation in microbial species composition—but not richness—in Manhattan. ***The ISME Journal*** 10: 751–760.
11. [Youngsteadt, E.](#) †, R. H. Appler†, M. López-Urbe, D. R. Tarpy, and S. D. Frank. 2015. Urbanization increases pathogen pressure on feral and managed honey bees. ***PLOS ONE*** 10:e0142031. †Co-first authors.
  - Featured on WUNC (North Carolina public radio)
10. [Youngsteadt, E.](#), R. C. Henderson\*, A. M. Savage, R. R. Dunn, and S. D. Frank. 2015. Habitat and species identity, not diversity, predict the extent of refuse consumption by urban arthropods. ***Global Change Biology*** 21:1103–1115.
  - Featured in *The New York Times*, *Science Friday*, *Scientific American*, and >20 other original news articles, broadcasts, podcasts, and videos in the U.S., Europe, and South Korea
9. Savage, A. M., B. Hackett, B. Guénard, [E. Youngsteadt](#), and R. R. Dunn. 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.
  - Featured in *The New York Times*, *Scientific American*
8. [Youngsteadt, E.](#), A. G. Dale, A. J. Terando, R. R. Dunn, and S. D. Frank. 2015. Do cities simulate climate change? A comparison of herbivore response to urban and global warming. ***Global Change Biology***. 21:97–105.
  - Featured in *Newsweek*, *Greenwire*, *Entomology Today*
7. [Youngsteadt, E.](#), P. Guerra\*, and C. Schal. 2010. Divergent chemical cues elicit seed collecting by ants in an obligate multi-species mutualism in lowland Amazonia. ***PLOS ONE*** 5:e15822.
6. [Youngsteadt, E.](#), J. Alvarez\*, J. Osborne, and C. Schal. 2009. Species-specific seed dispersal in an obligate ant-plant mutualism. ***PLOS ONE*** 4:e4335.
  - Featured in *Miller McCune* podcast
5. Booth, W., [E. Youngsteadt](#), C. Schal, and E. Vargo. 2009. Characterization of 8 polymorphic microsatellite loci in the Neotropical ant-garden ant, *Camponotus femoratus*. ***Conservation Genetics*** 10:1401–1403.
4. Booth, W., [E. Youngsteadt](#), C. Schal, and E. Vargo. 2009. Polymorphic microsatellite loci for the ant-garden ant, *Crematogaster levior* (Forel). ***Conservation Genetics*** 10:639–641.
3. [Youngsteadt, E.](#), S. Nojima, C. Häberlein, S. Schulz, and C. Schal. 2008. Seed odor mediates an obligate ant-plant mutualism in Amazonian rainforest. ***PNAS*** 105: 4571–4575.
  - Featured in *BioScience*, *ScienceNOW*
2. [Youngsteadt, E.](#), Y. Fan, B. Stay, and C. Schal. 2005. Cuticular hydrocarbon synthesis and its maternal provisioning to embryos in the viviparous cockroach *Diploptera punctata*. ***Journal of Insect Physiology*** 51:803–809.
1. [Youngsteadt, E.](#), and P. J. DeVries. 2005. The effects of ants on the entomophagous butterfly caterpillar *Feniseca tarquinius* and the putative role of chemical camouflage in the *Feniseca*-ant interaction. ***Journal of Chemical Ecology*** 31:2091–2109.

### ***Extension and trade publications***

Frank, S. D., A. G. Dale, and [E. Youngsteadt](#). 2016. Measuring impervious surface cover with the Pace to Plant technique. **NC Cooperative Extension Fact Sheet**.

- Frank, S. D., and E. Youngsteadt. 2015. Squash bee. **NC Cooperative Extension Insect Note**. Department of Entomology, NC State University, Raleigh, NC.
- Frank, S. D., and E. Youngsteadt. 2015. Cicada killer wasp. **NC Cooperative Extension Insect Note**. Department of Entomology, NC State University, Raleigh, NC.
- Youngsteadt, E. 2014. Chestnut growers guide to site selection and environmental stress. *The Journal of the American Chestnut Foundation* 28:10–15.
- Youngsteadt, E., and K. Gurney. 2013. Chestnut growers guide to pests and diseases. *The Journal of the American Chestnut Foundation* 27:17–23.
- Frank, S. D., E. K. Meineke, A. G. Dale, and E. Youngsteadt. 2013. Pests in the city. ***Nursery and Landscape Notes***.
- Frank, S. D., E. K. Meineke, A. G. Dale, E. Youngsteadt. 2013. Pests in the city. ***Urban and Community Forestry Newsletter***, North Carolina Urban Forest Council, Summer Issue.

### **Edited proceedings**

- Frank, S. D., E. K. Meineke, A. G. Dale, E. Youngsteadt, and R. R. Dunn. 2013. Hot in the city: Effects of urban heat on the ecology and evolution of urban forest pests. Proceedings of the International Symposium on Biological Control of Arthropods, Pucón, Chile.

### **Book reviews**

- Youngsteadt, E. 2016. Review of T. R. New, 2015, *Insect Conservation and Urban Environments*. *American Entomologist* 62:E2–E3.
- Youngsteadt, E. 2012. Insect escape artists (review of G. Waldbauer, 2012, *How Not to Be Eaten: The Insects Fight Back*). *American Scientist* 100:254–255.
- Youngsteadt, E. 2011. Speaking for the data (review of N. Baron, 2010, *Escape from the Ivory Tower*, and D. Meredith, 2010, *Explaining Research*). *American Scientist* 99:86–87.
- Youngsteadt, E. 2009. Short takes on three books (review of J. McWilliams, 2008, *American Pests: The Losing War on Insects from Colonial Times to DDT*). *American Scientist* 97:348.

### **Selected popular articles (more than 100 published or broadcast, 2006 – 2012)**

- Youngsteadt, E. 2012. Biodiversity's invisible palette. *American Scientist* 100:342–343. (Interview with ecologist Greg Asner about remote sensing of tropical forest health and diversity.)
- Youngsteadt, E. 2012. Decoding a flower's message. *American Scientist* 100:297–298. (On how floral scents may evolve to repel herbivores rather than attract pollinators.)
- Youngsteadt, E. 2012. The other honey. *American Scientist* 100:121–122. (A look at the global status and potential of stingless bee beekeeping.)
- Youngsteadt, E. 2012. How a fungus boosts a beetle's invasion. *American Scientist* 100:24–25.
- Youngsteadt, E. 2012. Could climate change alter lizard learning? **ScienceNOW**, January 10.
- Youngsteadt, E. 2011. Customized atlases of the Amazon. PRI's **The World**, August 25. (Radio story and slide show on indigenous cultural change and mammal ecology, with on-site reporting in Guyana.)
- Youngsteadt, E. 2011. Bats gorge during exercise. *American Scientist* 99:124.
- Youngsteadt, E. 2010. Forget mice, elephants really hate ants. **ScienceNOW**, September 2.
- Youngsteadt, E. 2008. Genetics: Simple sleepers. *Science* 321:334–337. (Feature about genetic basis of sleep in model organisms.)
- Youngsteadt, E. 2008. Community ecology: All that makes fungus gardens grow. *Science* 320:1006–1007. (Feature about ecology of fungus-gardening ants.)

## SCIENTIFIC PRESENTATIONS

### *Invited presentations*

- Youngsteadt, E. Upcoming 10 Oct. 2017. Too hot downtown? The effect of urban warming on bee Communities. **Protecting Pollinators in Urban Landscapes Conference**, Traverse City, MI.
- Youngsteadt, E. 2017. Do cities simulate climate change? Using urban insect communities to test global warming predictions. **Pennsylvania State University**, Department of Entomology, University Park, PA.
- Youngsteadt, E. 2017. Climate change and plant-pollinator interactions. **North Carolina State University**, global change seminar series, Raleigh, NC.
- Youngsteadt, E. 2016. Warming up species interactions: What can we learn from cities? **Duke University**, ecology seminar series, Durham, NC.
- Youngsteadt, E., E. K. Meineke, A. G. Dale, and S. D. Frank. 2016. Cambio climático en el bosque: Efectos del calentamiento urbano y global en los árboles y sus plagas. **Sociedad Colombiana de Entomología**, Manizales, Colombia.
- Youngsteadt, E. Efectos de los hábitats urbanos sobre la ecología de los insectos. 2016. **Bogotá Botanical Garden**, Bogotá, Colombia.
- Youngsteadt, E., R. R. Dunn, A. F. Ernst, and S. D. Frank. 2015. Insects and urban warming: Does latitude matter? For symposium "Insects in the City: Urban Ecology and Human Influence on Insect Populations." **Entomological Society of America**, Minneapolis, MN.
- Savage, A., E. Youngsteadt\*, R. R. Dunn, and S. D. Frank. 2015. Arthropod biodiversity and ecosystem services are decoupled across New York City green spaces. **Entomological Society of America**, Minneapolis, MN. \*Presenting author
- Youngsteadt, E. 2014. Climate change in the forest: Effects of urban and global warming on trees and pests. **The Nature Conservancy**, Durham, NC.
- Youngsteadt, E., A. M. Savage, R. R. Dunn, and S. D. Frank. 2014. Urban ecosystems in the wake of a superstorm: Arthropod communities withstand extreme flooding in New York City. **European Congress of Entomology**, York, England.
- Youngsteadt, E. 2012. Communicating chemical ecology to a broader audience. **Ecological Society of America**, Portland, OR.
- Youngsteadt, E. 2012. *Feniseca tarquinius*, a wolf in sheep's chemistry. **Carolina Butterfly Society**, Hickory, NC.
- Youngsteadt, E. 2008. Ant gardens: Species specificity and chemical communication in an obligate ant-plant mutualism. **Missouri State University**, Department of Biology, Springfield, MO.
- Youngsteadt, E. 2008. Picky ants and smelly seeds: Specificity and communication in a tropical ant-plant mutualism. **Truman State University**, Department of Biology, Kirksville, MO.
- Youngsteadt, E. 2006. Jardines de hormigas: Agricultura y guerra en el mundo pisado. **Centro de Investigación y Capacitación Río Los Amigos**, Madre de Dios, Perú.
- Youngsteadt, E. 2006. Ecología química y de comportamiento en los jardines de hormigas. **Universidad Nacional de San Antonio Abad del Cusco**, Department of Biology, Cusco, Perú.
- Youngsteadt, E. 2003. The effects of ants on the carnivorous butterfly caterpillar *Feniseca tarquinius* and the role of chemical camouflage in the *Feniseca*-ant interaction. **Milwaukee Public Museum**, Milwaukee, WI.

### *Contributed presentations*

- Mata, M.\*, E. Youngsteadt, D. Seth Carley, and T. Ruffy. Upcoming, 20 Sept. 2017. Environmental effects on pollen in four insect-pollinated herbaceous annuals. **American Society for Horticultural Science**, Waikoloa, HI.

- Youngsteadt, E., K. Backe, and S. D. Frank. 2016. Reducing urban tree pests through data-driven planting: what can we learn from municipal tree inventories? **International Congress of Entomology**, Orlando, FL.
- Youngsteadt, E., R. R. Dunn, and S. D. Frank. 2014. Heat islands in the megalopolis: Effects of urban and regional climate on street-tree arthropods from Raleigh to Boston. **Entomological Society of America**, Portland, OR.
- Youngsteadt, E., A. M. Savage, R. R. Dunn, and S. D. Frank. 2013. Weathering the storm: Hurricane Sandy effects on New York City arthropods. **Entomological Society of America**, Austin, TX.
- Youngsteadt, E., S. D. Frank, N. Sanders, and R. R. Dunn. 2012. Canary in the coal mine: Do urban areas predict pest outbreaks in a warming climate? **Entomological Society of America**, Knoxville, TN.
- Youngsteadt, E., and R. Chatterjee. 2010. PRI's *The World Science*: Combining radio, podcasts and forums. **Science Online**, Research Triangle Park, NC.
- Youngsteadt, E. 2007. Neotropical ant-gardens: Species specificity and complex chemical cues in an obligate ant-plant mutualism. **Entomological Society of America**, San Diego, CA.
- Youngsteadt, E., S. Nojima, and C. Schal. 2006. Divergent chemical cues elicit seed collecting in Neotropical ant-garden ants. **International Union for the Study of Social Insects**, Washington, DC.
- Youngsteadt, E., and P. J. DeVries. 2003. The effects of ants on the carnivorous butterfly caterpillar *Feniseca tarquinius* and the role of chemical camouflage in the *Feniseca*-ant interaction. **Ecological Society of America**, Savannah, GA.
- Youngsteadt, E., and P. J. DeVries. 2003. The effects of ants on the carnivorous butterfly caterpillar *Feniseca tarquinius* and the role of chemical camouflage in the *Feniseca*-ant interaction. **Society for the Study of Evolution**, Chico, CA.

## EXTENSION AND OUTREACH PRESENTATIONS

### ***Bee-related extension and outreach presentations***

With a team of 3, developed outreach materials to convey native bee diversity, habitat requirements, and pollination biology to children and adults.

- Example materials include: specimens in shadow boxes and clear resin blocks, how-to handouts, games, trading cards, bee hotel craft activity.
- These materials have been used by 17 presenters at 50 events reaching >70,000 people since 2014. Selected events where I personally presented are listed below.
- Program website: <http://ecoipm.org/native-pollinators>

June 2017	<b>Keynote lecture:</b> Those are bees, too? Diversity and ecology of native pollinators in NC NC Extension Master Gardener College, Raleigh, NC
Oct 2016	<b>Invited lecture:</b> NC native bees: Biology, diversity, and conservation University of North Carolina, Maker in Residence Program, Chapel Hill, NC
Jun 2016	<b>Webinar:</b> NC native bees: Biology, diversity, and outreach resources For NC Extension Agents and Extension Master Gardener Volunteers (attendance 98) Co-presented with Debbie Roos, Chatham County Extension
Oct 2015	<b>Poster presentation:</b> Teaching bee diversity and habitat requirements: Tools for outreach and Extension Master Gardeners Protecting Pollinators in Ornamental Landscapes Conference, Hendersonville, NC
Sept 2015	<b>Bilingual outreach booth:</b> Native bees as pollinators La Fiesta del Pueblo, Raleigh, NC (attendance at booth ~300)
Sept 2015	<b>Booth:</b> Your Backyard Jungle (in collaboration with the North Carolina Botanical Garden) BugFest, NC Museum of Natural Sciences, Raleigh, NC (attendance 33,000)

- Sept 2015 **Invited workshop:** Gardening for pollinators  
North Carolina Botanical Garden, Chapel Hill, NC (attendance 30, sold out)
- June 2015 **Invited lecture:** Saving our pollinators: Recognizing and reversing bee decline  
North Carolina Botanical Garden, Chapel Hill, NC (attendance 100)
- June 2015 **Exhibit:** Bee-Hold the Humble Pollinator  
North Carolina Botanical Garden, Chapel Hill, NC  
Worked with exhibit committee to develop and edit content panels. Prepared biological material for display (e.g., preserved nests, specimens). Volunteered >50 hours total. Exhibit free to the public, June – October 2015.
- June 2015 **Invited booth:** Fun with bees!  
North Carolina Botanical Garden, Chapel Hill, NC (attendance 300)
- June 2015 **Booth:** Native bees  
Pollinator Festival, Lake Crabtree County Park, Morrisville, NC (attendance 100)
- May 2015 **Booth:** Native bees  
Pollinator Day, **Chatham County Extension**, Pittsboro, NC (attendance 300)
- May 2015 **Workshop:** Gardening for pollinators  
**J. C. Raulston Arboretum**, Raleigh, NC (attendance 30, sold out)  
With team of four, proposed, organized, and presented 3-hour workshop including indoor lecture, outdoor observation, and hands-on garden installation. Secured plant donations worth \$675. Participant evaluation scores averaged 3.8/4.
- April 2015 **Invited booth:** Making homes for native bees  
Raulston Blooms! **J. C. Raulston Arboretum**, Raleigh, NC (attendance 1,000)
- Sept 2014 **Booth:** Native bee diversity and conservation  
Work day, **Simple Gifts Community Garden**, Apex, NC (attendance 100)
- Sept 2014 **Booth:** Native bee pollinators  
BugFest, **NC Museum of Natural Sciences**, Raleigh, NC (attendance 33,000)
- June 2014 **Booth:** Gardening for native bees  
Share the Buzz, **Whole Foods**, Raleigh, NC (attendance 200)

### ***Other extension and outreach***

- Nov 2015 Assessing and managing tree risk of scale-insect infestations  
**2015 State Extension Conference**, Raleigh, NC
- July 2014 Science Café: Urban ants and what they do for you  
**NC Museum of Natural Sciences**, Raleigh, NC
- Sept 2013 Booth: Insects in the city  
BugFest, **NC Museum of Natural Sciences**, Raleigh, NC

### **LIVE MEDIA APPEARANCES**

- June 2015 *The State of Things* (North Carolina statewide public radio program)  
Interview topic: Diversity and status of native bees
- Dec 2014 *Science Friday* (U.S. nationwide public radio program)  
Interview topic: Urban ants as clean-up crew
- Dec 2014 *Take Two* (Southwestern U.S. regional public radio program)  
Interview topic: Urban ants as clean-up crew
- Jan 2013 *Mystery Roach* (NCSU local radio program)  
Interview topic: Scale insects and urban heat islands



## PROFESSIONAL SERVICE

**Symposium organizer**, “Ecology in the Sixth Mass Extinction: Detecting and Understanding Rare Biotic Interactions.” Plant-Insect Ecosystems Section Symposium, Entomological Society of America, Denver, CO, November 2017

Organized by E. Youngsteadt, M. M. López-Urbe, and C. E. Sorenson

**Conference organizing committee**, Protecting Pollinators in Urban Landscapes  
Biennial conference organized by Michigan State University and NC State University, first held in 2015. Targets academic and industry researchers, landscape and nursery practitioners, and extension educators; three-day event includes poster session and invited speakers

**Guest editor**, *Urban Naturalist*, 2017

**Secretary**, North Carolina Entomological Society, 2017

**Judge and Moderator**, Student Ten-Minute Paper Competition, International Congress of Entomology, Orlando, FL, 2016

**Judge**, Student Poster Competition, Entomological Society of America, Minneapolis, MN, 2015

**Judge**, Student Ten-Minute Paper Competition, Entomological Society of America, Portland, OR, 2014

**Grant reviewer**, Sigma Xi Grants-in-Aid of Research, Research Triangle Park, NC, 2 funding cycles, 2014

**Presentation judge**, Sigma Xi Student Showcase, Research Triangle Park, NC, 2014

**Symposium organizer**, “Insect Ecology in the World’s Most Populated Habitat: Connecting Scientists, Practitioners, and the Public.” Plant-Insect Ecosystems Section Symposium, Entomological Society of America, Austin, TX, November 2013

Organized by E. Youngsteadt, E. K. Meineke and A. G. Dale.

**Manuscript reviewer**, *Apidologie*, *Ecology Letters*, *Insect Conservation and Diversity*, *Insectes Sociaux*, *Journal of Ecology*, *Journal of the Lepidopterists’ Society*, *Journal of the North Carolina Academy of Sciences*, *Journal of Tropical Ecology*, *Myrmecological News*, *Oecologia*, *PLOS ONE*, *Trends in Plant Science*

## TEACHING

### **Courses**

**Climate Change and Plant-Insect Interactions** (ENT 601/801). Instructor (fall 2017), co-instructor (spring 2016). North Carolina State University.

**Survey of Zoology** (BIO SCI 100). Teaching assistant, laboratory instructor (fall 2000, spring 2001). University of Wisconsin-Milwaukee.

### **Guest lectures**

September 2017. Insects in the city. In: Urban Wildlife Management (FW 403). Fisheries, Wildlife and Conservation program, **North Carolina State University**.

June 2017. NC native bees: Biology, diversity, and conservation. In: Agricultural Entomology Practicum (ENT 841). Department of Entomology and Plant Pathology, **North Carolina State University**.

February 2016. Urban ants and what they do for you. In: Insects and People (ENT 201). Department of Entomology, **North Carolina State University**.

January 2016. Supporting native bees in North Carolina: Diversity, nutrition, and nesting. In: Honors Capstone Seminar (HON 496). **North Carolina State University**.

November 2015. NC backyard bees: Importance, diversity, and conservation. In: Permaculture: Sustainable Living (HS432). Department of Horticulture, **North Carolina State University**.

March 2015. Urban ecosystems in the wake of a superstorm. In: Conservation for the 21st Century (AEC495). Department of Applied Ecology, **North Carolina State University**.

Jan 2015. Ecosystem services and beneficial insects. In: Design-Build Studio. Department of Landscape Architecture, **North Carolina State University**.

April 2010. The sound of science: Telling science stories with audio. In: Explaining Science to the Public (ENG498/STS490). Department of English, **North Carolina State University**.

September 2005. Taller: Extracción y fraccionamiento de compuestos activos. Laboratorio del Área de Entomología, **Universidad Nacional de San Antonio Abad del Cusco**, Perú.

## **MENTORING**

### **Graduate committee membership**

- Marisol Mata, MS, Horticulture, anticipated 2017  
Thesis project: Environmental effects on floral resources and pollen quality
- April L. Hamblin, MS, Entomology, graduated 2015  
Thesis project: Native bee community composition and thermal tolerances related to urban heat

### **Undergraduate mentorship**

Students who worked closely with me for >1 month and coauthored papers:

- Shelby Anderson Powers (NCSU, 2013 – 2014)
- Ryanna C. Henderson (NCSU, 2013 – 2014)
- Jeniffer Álvarez-Baca (Universidad Nacional de San Antonio Abad del Cusco, Perú, 2006)
- Patricia Guerra-Bustios (Universidad Nacional de San Antonio Abad del Cusco, Perú, 2005)

### **Additional mentorship**

- Eighteen undergraduate student research assistants trained and supervised (2007 – 2017)
- Two elementary school students mentored during personalized laboratory visits (2014 – 2015)
- Invited panelist: Putting your PhD to work inside and outside the ivory tower. Postdoc Professional Development, National Evolutionary Synthesis Center, Durham, NC (June 2011)
- Invited speaker: The successful transition to the real world. Focus on Your Future (professional development day), NCSU Career Services, Raleigh, NC (January 2009)

## **WORKSHOPS AND SPECIAL TRAINING**

- 2014 Native bee identification workshop (Smithsonian Institution and USGS, Washington, DC and Beltsville, MD, April 12 – 13)
- 2014 Rare plants of North Carolina workshop (NCSU Herbarium, Raleigh, NC, April 25)
- 2014 Gas exchange and fluorescence course (LI-COR Biosciences, Lincoln, NE, April 1 – 3)
- 2011 Reporters Institute (Society of Professional Journalists, St. Petersburg, FL, July 10 – 13)
- 2011 Editorial Bootcamp (Professional copy-editing training, Research Triangle Park, NC)
- 2009 Multimedia Bootcamp (UNC Chapel Hill Journalism School, 5-day curriculum)

## **HONORS AND AWARDS**

- 2016 Writing Residency, PLAYA, Summer Lake, OR
- 2009 Graduate School Dissertation Award, North Carolina State University (1 award per year)
- 2009 Kenneth R. Keller Award for Excellence in Doctoral Dissertation Research (2 awards per year)
- 2008 Outstanding PhD Student Award, North Carolina Entomological Society (1 award per year)
- 2007 First-place poster in behavior and ecology, Entomological Society of America
- 1999 Truman State University President's Recognition Award for Outstanding Academic Achievement
- 1995 National Merit Scholarship
- 1995 Truman State University Pershing Scholarship (full tuition for 4 years; 12 awards per year)

## PROFESSIONAL MEMBERSHIPS

Entomological Society of America (Plant-Insect Ecosystems)  
American Association for the Advancement of Science  
Sigma Xi, The Scientific Research Society

## LANGUAGES

English (native)  
Spanish (advanced)  
French (intermediate)

## OTHER INTERESTS

**Distance running**, selected awards:

2016 2<sup>nd</sup> place female, Mountains-to-Sea Trail 50K Challenge, 50-km trail run (Raleigh, NC)

2015 2<sup>nd</sup> place female, Eno River Run, 11-mile trail run (Durham, NC)

2014 1<sup>st</sup> place female, Uwharrie Mountain Run, 40-mile trail run (Uwharrie National Forest, NC)

**Gardening native plants, fruits, and vegetables:** Increased plant richness by more >80 species and recorded >75 bee species on my half-acre property since 2013.

**English for speakers of other languages:** Taught active-learning English classes for small groups of adult students, Durham Literacy Center (Durham, NC), 2010 – 2012.