Kaitlin M. Baudier, PhD

Postdoctoral Research Associate
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Education

2017 **Doctor of Philosophy - Biological Sciences**
Drexel University, Philadelphia, PA
Dissertation: Microhabitat and elevational patterns in thermal tolerance and thermoregulation of Neotropical army ants (Formicidae: Dorylinae)

2008 **Bachelor of Science, *cum laude* - Biological Sciences**
Louisiana State University, Baton Rouge, LA

Additional Training

2019 Weaving the Future of Animal Behavior (WFAB), Animal Behavior Society, Chicago, IL
2019 Workshop on Insect-Inspired Models for Social Behavior (WIIMSB), DARPA, Tempe, AZ
2009 Neotropical Social Insects Grad Course, Organization for Tropical Studies, Costa Rica

Academic Positions

2017-present **Postdoctoral Research Associate,** Social Insect Research Group, School of Life Sciences, Arizona State University, Tempe, AZ
Advisors: Jennifer Fewell, Ted Pavlic, Stephen Pratt

2012-2017 **PhD Student/Candidate,** Department of Biodiversity, Earth & Environmental Sciences, Drexel University, Philadelphia, PA, Advisor: Sean O'Donnell

2010-2012 **Entomologist,** Department of Entomology, Audubon Insectarium, Audubon Nature Institute, New Orleans, LA

2009 **Research Associate,** Department of Entomology, Louisiana State University, Baton Rouge, LA, Advisor: Linda Hooper-Bùi

2006-2008 **Undergraduate Researcher,** Department of Entomology, Louisiana State University, Baton Rouge, LA, Advisor: Linda Hooper-Bùi

Publications

†Invited review, ‡Awards, *coauthored by mentee, §co-first authors

Google scholar metrics: citations = 113, h-index = 5, i10-index = 3

13† **Baudier KM** (2019). Brood Stimulation Hypothesis. In *Encyclopedia of Social Insects*, ed. Starr CK. Cham, Switzerland: Springer International

12* **Baudier KM**, Ostwald MM, Grüter C, Segers FH, Roubik DW, Pavlic TP, Pratt SC, Fewell JH (2019). Changing of the guard: mixed specialization and flexibility in nest defense (*Tetragonisca angustula*). *Behavioral Ecology*, 30(4): 1041-1049.

11* **Baudier KM**, D'Amelio CL, Sulger E, O'Connor MP O'Donnell S (2019*)* Plastic collective endothermy in a complex animal society (army ant bivouacs: *Eciton burchellii parvispinum*). *Ecography.* 42(4): 730-739.

10 Strickland LG, **Baudier KM**, Bowers KP, Pavlic TP, Pippin CP (2018) Bio-inspired role allocation of heterogeneous teams in a site defense task, *Distributed Autonomous Robotic Systems*. 9:139-151*. 1 citation*

9 **Baudier KM**, S O'Donnell (2018). Complex body size differences in thermal tolerance among army ant workers (*Eciton burchellii parvispinum*). *Journal of Thermal Biology*. 78:277–280.

8* Ostwald MM, Ruzi SA, **Baudier KM** (2018) Ambush predation of stingless bees (*Tetragonisca angustula*) by the solitary-foraging ant *Ectatomma tuberculatum. Journal of Insect Behavior.* 31(5): 503–509. *2 citations*

7* **Baudier KM**, D'Amelio CL, Malhotra R, O'Connor MP, O'Donnell S (2018) Extreme insolation: climatic variation shapes the evolution of thermal tolerance at multiple scales. *The American Naturalist*, 192(3):347–359. *5 citations*

6 O'Donnell S, **Baudier KM**, Fioca K, Marenda DR (2018) Erythritol ingestion impairs adult reproduction and causes larval mortality in Drosophila melanogaster fruit flies (Diptera: Drosophilidae). *Journal of applied entomology*, 142(1–2):37–42. *6 citations*

5† **Baudier KM**, O'Donnell S (2017) Weak links: How colonies counter the social costs of individual variation in thermal physiology. *Current Opinion in Insect Science*, 22:85-91. *3 citations*

4 **Baudier KM,** O'Donnell S (2016) Structure and thermal biology of subterranean army ant bivouacs in a tropical montane forest. *Insectes Sociaux*. 63(3):467–476. *7 citations*

3 O'Donnell S, **Baudier KM**, Marenda DR (2016) Non-nutritive polyol sweeteners differ in insecticidal activity when ingested by adult *Drosophila melanogaster*. *Journal of Insect Science* 16(1):1-3. *15 citations*

2*‡ **Baudier KM**, Mudd AE, Erickson SC, O'Donnell S (2015) Microhabitat and body size effects on heat tolerance: implications for responses to climate change (army ants: Formicidae, Ecitoninae). *Journal of Animal Ecology* 84(5):1322–1330. *43 citations*

1* **Baudier KM**, Kaschock-Marenda SD, Patel N, Diangelus KL, O'Donnell S, Marenda DR (2014) Erythritol, a non-nutritive sugar alcohol sweetener and the main component of Truvia®, is a palatable ingested insecticide. *PLoS ONE* 9(6):e98949. *29 citations*

Submitted:

14 **Baudier KM**, O'Donnell S. (*In review*). Rain shadow effects predict population differences in thermal tolerance of leaf-cutting ant workers (*Atta cephalotes*). *Biotropica.*

15* Welch L, **Baudier KM**, Harrison J (*In review*) Impact of temperature and time of day on leaf intake and ant speed in *Atta colombica. Insectes Sociaux.*

In Preparation:

16* **Baudier KM**§, Bennett MM§, Ostwald MM, Pavlic TP, Fewell JH (*In prep*) Age-dependent alarm kairomone response among guards of stingless bees, *Tetragonisca angustula*

17 Bennett MM, **Baudier KM** (*In prep*) The night shift: Nest entrance closure and defense in the stingless bee *Tetragonisca angustula*

18* **Baudier KM**, Wu R, Bennett MM, Ostwald MM, Fewell JH, Harrison JF. Flight metabolic dynamics of morphologically distinct soldiers and their age differentiated task groups (stingless bee *Tetragonisca angustula*)

19* **Baudier KM**, Bennett MM, Barrett M, Cossio F, Wu R, O'Donnell S, Fewell JH (*In prep*) Modality-specific neural investment in soldiers of the stingless bee *Tetragonisca angustula*

20 **Baudier KM,** Zoppas de Albuquerque E, Calixto JM (*In prep*) One ant's dump is another ant's dinner: Neotropical army ant middens are transient resources for a diverse assemblage of ants.

21 **Baudier KM**. O'Donnell S. (*In prep*) Tradeoffs between reducing thermal range and raising thermal mean in high elevation bivouacs of *Eciton burchellii parvispinum*

Research Support

2018-2020	**DARPA W31P4Q-18-C-0054 – *Senior personnel***	**$500,000**
	Autonomous System Control via Social Insect Models (ASC-SIM)	
	United States Defense Advanced Research Projects Agency (DARPA)	
2018-2019	**Innovative Post-Doctoral Research Award – *Co-PI***	**$5,790**
	Modalities of task specialization in the stingless bee Tetragonisca angustula	
	School of Life Sciences, Arizona State University, Tempe, AZ	
2017-2018	**US Air Force/Eglin AFB/FL A8651-17-F-1013 – *Senior personnel***	**$600,000**
	Bio-Inspired Swarming (BioSwarm) Seedling project	
	United States Defense Advanced Research Projects Agency (DARPA)	
2016-2017	**Claudio Elia Environmental Science & Engineering Fellowship – *PI***	**$7,500**

Using ants to model thermal physiology along tropical temperature gradients
Drexel University, Philadelphia, PA

2016 **McLean Fellowship for Environmental Science & Ornithology – *PI*** **$12,500**
Multilevel thermal adaptation in Neotropical army ants
Academy of Natural Sciences, Philadelphia, PA

2014 **Christiane and Christopher Tyson Research Fellowship – *PI*** **$3,482**
Ecological and physiological factors in Neotropical army ant thermal tolerance
Organization for Tropical Studies, San Jose, Costa Rica

Travel awards:

2019	Weaving the Future of Animal Behavior (WFAB) Travel Award	$1002
2018	International Union for the Study of Social Insects NAS Travel Award	$1500
2016	Drexel University Biology Department Travel Award	$250
2014	Drexel University Graduate Student Organization Travel Award	$230
2013-2015	Drexel University BEES Dept. Graduate Student Travel Awards	$1200
2007	Louisiana State University Study Abroad Award	$1000

Teaching experience

University Co-Instructor:

2018 **Tropical Biology (Study Abroad - Panama), BIO 494**
School of Life Sciences, Arizona State University

University Teaching Assistant:

2016 **General Ecology, ENVS 230**
Department of Biodiversity, Earth & Environmental Sciences, Drexel University

2013 & 2015 **Evolution and Organismal Diversity Lab, BIO 124**
Department of Biology, Drexel University

2014 **Drosophila Methods, BIO 480**
Department of Biology, Drexel University

2014 **Function and Evolution of Vertebrates, BIO 224**
Department of Biology, Drexel University

2013 **Discoveries in Animal Behavior, ENVS 226**
Department of Biodiversity, Earth & Environmental Sciences, Drexel University

2013 **Watershed Approach, ENVS 203**
Department of Biodiversity, Earth & Environmental Sciences, Drexel University

2013 **Physiology & Ecology Lab, BIO 126**
Department of Biology, Drexel University, Philadelphia, PA

2012 **Community Ecology Lab, ENVS 287**
Department of Biodiversity, Earth & Environmental Sciences, Drexel University

High School:

2016 **Drexel Environmental Science Leadership Academy (grades 9-12)**
Department of Biodiversity, Earth & Environmental Sciences, Drexel University

Teaching Awards

2013 Drexel Students Tackling Advanced Research Outstanding Mentor Award
2013 Drexel University Teaching Excellence Award Nominee

Mentorship

*publication coauthor †thesis committee service

Graduate:

2017-2018 *Madeleine Ostwald - Arizona State University

Post baccalaureate:

2015-2016 *Elisabeth Sulger - Drexel University
2014-2015 *Catherine D'Amelio - Drexel University
2014 *Rumaan Malhotra - Drexel University

2012-2013 *Shayna Erickson - Drexel University

Undergraduate:

2019 *Robert Wu - Arizona State University
2018 - 2019 *Frank Cossio - Arizona State University
2018 Kacy Reitnauer - Academy of Natural Sciences of Drexel University
2018 Nhu Nguyen - Arizona State University
2018 Melissa Hayhurst - Arizona State University
2018 †Catherine T. Prendergast - Arizona State University
2018 *Lauren Welch - Arizona State University
2018 Rebecca Hockenberry - Arizona State University
2017-2018 Zachary Roland - Arizona State University
2017 Jordan Erhardt - Arizona State University
2017 Abdullah Almartah - Arizona State University
2017 Kelsey Capobianco - Drexel University
2016-2017 Iris Nagai - Drexel University
2015-2016 Vishakha Hariawala - Drexel University
2015 Sharon Stein - Drexel University
2013-2014 *Katherine Diangelus - Drexel University
2013-2014 *Nirali Patel - Drexel University
2012-2013 *Abigail Mudd - Drexel University

Academic Honors

2017 Organization for Tropical Studies, Outstanding student paper - honorable mention
2016 XXV International Congress of Entomology, 2nd place graduate student oral presentation
2015 Drexel Research Day, 1st place poster in Biology & Biomedical research
2012-2014 Drexel College of Arts & Sciences Dean's Fellowship
2007-2008 Louisiana State University, Dean's list
2004-2008 Taylor Opportunity Program for Students (TOPS) - Opportunity Award

Professional Service

2019 56th Annual Conference of the Animal Behavior Society, *moderator*
2019 Workshop on insect inspired models for social behavior, *organizing committee chair*
2018-present International Union for the Study of Social Insects - North America, *awards committee*
2017 Entomological Society of America, Annual Meeting, *student competition judge*
2013-2015 George Washington Carver Science Fair (grades 4-12), *guest judge*

Public Outreach:

2019 Gamboa Discovery School, Gamboa, Panama (K-4), *guest speaker*
2018 Phoenix March for Science, *meet-and-greet scientist*
2018 Smithsonian Tropical Research Institute, Ant Day, *meet-and-greet scientist*
2016 Women in Natural Sciences (9-12), Academy of Natural Sciences, *mentor*
2016 Frances Velay Fellowship (undergrad women in science), Drexel/Temple, *mentor*
2014-2015 Philadelphia Science Festival volunteer (K-12 + families), *guest exhibitor*
2013-2016 Drexel Students Tackling Advanced Research (STAR) program, *mentor*
2013-2015 Biology Graduate Student Association, Drexel University, *community chair*
2010-2012 Interactive talks at Orleans Parish Public schools via KIDsmART, *guest entomologist*

Manuscripts Refereed:

Nature Ecology & Evolution, Ecology, Royal Society B: Biological Sciences, The American Naturalist, Journal of Animal Ecology, PLOS ONE, Animal Behaviour, Global Ecology & Biogeography, Behavioral Ecology, *Functional Ecology*, *Ecology and Evolution*, *Biogeography, Journal of Insect Science, Conservation Physiology, Myrmecological News, Current Zoology, Heredity, Revista de Biologia Tropical, Southwestern Naturalist*

Presentations

†invited, ‡awards, *coauthored with mentee, [1]national meeting, [2] international meeting

Talks:

[1]**Baudier KM**, Bennett MM, Fewell JH, Pratt SC, Pavlic TP. Ageing modulates defensive tasks performed by soldiers of the stingless bee *Tetragonisca angustula*. 56th Annual Conference of the Animal Behavior Society. 27 July 2019 in Chicago, IL.

†**Baudier KM**. Insect colony defense strategies as a model for human defense allocation. Workshop on Insect-Inspired Models for Social Behavior (WIIMSB). 14 January 2019 in Tempe, AZ

†**Baudier KM**. Catching more flies with Truvia: Erythritol as a human-safe pesticide. Arid Land Agricultural Research Center (USDA-ARC), 3 December 2018 in Maricopa, AZ

†[2]**Baudier KM**, Fewell JH, Pavlic TP, Pratt SC. Changing of the guard: Task dynamics of stingless bee nest defense in cleptoparasitic environments. International Union for the Study of Social Insects. 5-10 August 2018 in Guarujá, Brazil

†[2]**Baudier KM**, O'Donnell S. Interacting climate scales of army ant thermal tolerance. International Union for the Study of Social Insects. 5-10 August 2018 in Guarujá, Brazil

†Pippin C, Squires E, **Baudier KM**. Swarming in the presence of adversaries. Workshop: Bio-Inspired Algorithms for Managing Emergent Behavior in Sociotechnical Systems. 14 November 2017 in Tempe, AZ

[1]**Baudier KM**, O'Donnell S. Weak links: Behavioral and physiological implications of thermal tolerance variation within insect societies. Entomological Society of America. 8 November 2017 in Denver, CO

Baudier KM, O'Donnell S. Elevation, site choice, & brood age factors in army ant bivouac thermoregulation. Social Insects in the North-East Regions meeting. 10 December 2016 in Washington, DC

†**Baudier KM**. Social thermoregulation along elevational clines: lessons from a Neotropical army ant. Philadelphia Evolution Group. 10 October 2016 in Philadelphia, PA

[1]**Baudier KM**, O'Donnell S. Microhabitat, elevation and body size effects on thermal tolerance among Neotropical army ants. International Union for the Study of Social Insects North American Section Colloquium. 24 September 2016 in Orlando, FL

‡[2]**Baudier KM**, O'Donnell S. Thermoregulatory responses to thermal clines: Bivouac function across the wide elevational range of a Neotropical army ant (Formicidae: Dorylinae: *Eciton burchellii parvispinum*). XXV International Congress of Entomology. 27 September 2016 in Orlando, FL

†**Baudier KM**. La tolerancia térmica y la termorregulación de un grupo de hormigas legionarias neotropicales. Reserva Biológica del Bosque Nuboso de Monteverde. 25 April 2016 in Monteverde, Puntarenas, Costa Rica

Baudier KM, O'Donnell S. Geographic patterns of thermoregulation: homeostasis in surface & below-ground bivouacking army ants. Social Insects in the North-East Regions meeting. 10 December 2015 in Scranton, PA

[1]Baudier KM, O'Donnell S. Social thermal physiology: How superorganismal homeostasis confronts elevational thermal clines (Formicidae: Ecitoninae: *Eciton burchellii parvispinum*). Entomological Society of America National Meeting, 16 November 2015 in Minneapolis, MN

[1]Baudier KM, O'Donnell S. Microclimate and body size affect thermal tolerance among Neotropical army ants (Ecitoninae). Entomological Society of America National Meeting, 18 November 2014 in Portland, OR

†Baudier KM. Thermal tolerance in Neotropical army ants: body size, microhabitat & elevational effects. American Entomological Society Monthly Meeting. 26 March 2014. Academy of Natural Sciences in Philadelphia, PA

[1]Baudier KM, Austero M, Schauer C, O'Donnell D. Evolution of larval adhesive structures in the ant subfamily Ponerinae. Entomological Society of America National Meeting, 12 Nov 2013 in Austin, TX

Baudier KM, Austero M, Schauer C, O'Donnell S. The Evolution of Sticky Tubercles in Ponerine Larvae. Social Insects in the North-East Regions meeting, 24 May 2013 in Newark, NJ

[1]Strecker R, **Baudier KM**, Hooper-Bui L. Effects of a d-Limonine product on leaf-cutting ant *Atta texana* Entomological Society of America National Meeting, 17 Nov 2008 in Reno, NV

[2]Hooper-Bui L, Wiltz B, **Baudier KM**. Effect of hurricanes Katrina and Rita on the ant fauna of South Louisiana. XXIII International Conference of Entomology, 6-12 Jul 2008 in Durban, South Africa

[1]Hooper-Bui L, Wiltz B, **Baudier KM**, Strecker R. Post-Katrina pest ants in south Louisiana. National Conference for Urban Entomology, 17-20 May 2008 in Tulsa, OK

Posters:

*Reitnauer KA, Betancourt IS, **Baudier KM**. Developing a Species Inventory of the Ants [Hymenoptera: Formicidae] of Center City Philadelphia, Pennsylvania Through Fountain Sampling. Entomological Society of Pennsylvania. 3 November 2018 in Millersville, PA

Baudier KM, O'Donnell S. Hot bivouacs: Nest thermoregulation in subterranean army ants (Dorylinae: *Labidus praedator*). Department of Biodiversity, Earth & Environmental Science Research Day, 10 March 2016 in Philadelphia, PA

Baudier KM. Bivouac warming in Labidus praedator. (wearable poster) Social Insects in the North-East Regions meeting. 10 December 2015 in Scranton, PA

‡***Baudier KM**, D'Amelio CL. Measuring thermal physiology to predict animal responses to directional climate change. Drexel Research Day, 1 May 2015 in Philadelphia, PA

*Khodak P, Sluger E, **Baudier KM**, Bulova S, O'Donnell S. Evolutionary ecology of brain structure in army ants (Formicidae: Ecitoninae). Colonial Academic Alliance Conference, 28 March 2015 in Philadelphia, PA

***Baudier KM**, Mudd A, Erickson S, O'Donnell S. The weakest link: Body size and species differences in heat tolerance among Neotropical army ants. Drexel research day, 10 April 2014 in Philadelphia, PA

***Baudier KM**, Mudd A, Erickson S, O'Donnell D. The weakest link: Body size and species differences in heat tolerance among Neotropical army ants. College of Arts & Sciences Research Day, 18 February 2014 in Philadelphia PA

Baudier KM, Austero M, Schauer C, O'Donnell S. Sticky fingers: Evolution and mechanism of larval adhesive structures in ponerine ants. Drexel University College of Arts & Sciences Research Day, 9 April 2013 in Philadelphia, PA

[1]**Baudier KM**, Hooper-Bui L. Impacts of Flooding on Ant Diversity in Urban and Rural Regions of Southern Louisiana. International Union for the Study of Social Insects North American Chapter Meeting, 5-7 October 2012 in Greensboro, NC

[2]Hooper-Bui L, Lee A, **Baudier KM**. Maximizing student learning through active learning in entomology: service learning, case studies, and wikis. XXIII International Conference of Entomology, 6-12 July 2008 in Durban, South Africa

Professional Affiliations

- Animal Behavior Society
- International Union for the Study of Social Insects – North American Section
- Association for Tropical Biology and Conservation
- Entomological Society of America