

Madeleine M. Ostwald, Ph.D.
Postdoctoral Scholar (2022 – present)
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Education

- 2022 **Ph.D. Animal Behavior**
Arizona State University, School of Life Sciences
- 2017 **M.Sc. Renaissance & Early Modern Studies**
University of Edinburgh (UK), College of Art
- 2016 **B.S. Biological Sciences**
Cornell University, College of Agriculture and Life Sciences

Publications (21 published, 3 in review) ‡ equal contribution *undergraduate mentee author

- 2023 **Ostwald MM**, Venegas VA*, Seltmann SC. (*In press*) Social conditions facilitate water conservation in a solitary bee. *Journal of Insect Science*. Preprint: <https://doi.org/10.22541/au.169230562.28273115/v1>
- 2023 Goffinet A, Darragh K, **Ostwald MM**, Buchmann S, Ramirez S. (2023). Individual variation in male pheromone production in carpenter bees correlates with size and sexual maturity. In revisions at *Journal of Chemical Ecology*.
- 2023 ‡**Ostwald MM**, ‡*Thrift CN, Seltmann KC. Phenotypic divergence in an island bee population: Applying geometric morphometrics to discriminate population-level variation in wing venation. *Ecology and Evolution*, 13(4), e10085.
- 2023 **Ostwald MM**, Tretter S, Buellesbach J, Calixto J, Fewell JH, Gadau J, Baudier KM. Body mass and cuticular hydrocarbons, but not queen number, underlie worker desiccation resistance in a facultatively polygynous harvester ant (*Pogonomyrmex californicus*). *Journal of Comparative Physiology B*, 193, 261-269.
- 2022 **Ostwald MM**, Minckley RL, Alba-Tercedor J, Buchmann SL. Three-dimensional morphology and ultrastructure of the hypertrophied sex pheromone gland in a lek-mating carpenter bee (*Xylocopa sonorina*). *Apidologie*, 53, 60.
- 2022 Handy M, Sbardellati D, Yu M, Saleh N, **Ostwald MM**, Vanette RL. Facultatively social carpenter bees (*Xylocopa*) host distinctive gut communities and display geographic structure as revealed by full-length 16S sequencing. *Molecular Ecology*, 32(6), 1530-1543.
- 2022 ‡Baudier KM, ‡**Ostwald MM**, Haney BR, Calixto JM, Cossio JF, Fewell JH. Social factors in heat survival: Multi-queen ant colonies have higher and more uniform thermal tolerance. *Physiological and Biochemical Zoology*, 95(5), 379-389.
- 2022 **Ostwald MM**, Fox TP, Hillery WS*, Shaffer ZS, Harrison JF, Fewell JH. Group-living carpenter bees conserve heat and body mass better than solitary individuals in winter. *Animal Behaviour*, 189, 59-67.
- 2022 **Ostwald MM**, Haney BR, Fewell JH. Ecological drivers of non-kin cooperation in the Hymenoptera. *Frontiers in Ecology and Evolution*, 10, 768392.
- 2021 **Ostwald MM**, Dahan RA, Shaffer ZS, Fewell JH. Fluid nest membership drives variable relatedness in groups of a facultatively social bee. *Frontiers in Ecology and Evolution*, 9, 767380.
- 2021 **Ostwald MM**, Fox TP, Harrison JF, Fewell JH. Social consequences of energetically costly nest construction in a facultatively social bee. *Proceedings of the Royal Society: B*, 288, 20210033.

- 2021 **Ostwald MM**, Guo X, *Wong T, *Malaek A, Harrison JF, Fewell JH. Cooperation among unrelated ant queens provides persistent growth and survival benefits during colony ontogeny. *Scientific Reports*, 11, 8332.
- 2020 Baudier KM, Bennett MM, **Ostwald MM**, *Hart S, Pavlic TP, Fewell JH. Age-based changes in kairomone response mediate task partitioning in stingless bee soldiers (*Tetragonisca angustula*). *Behavioral Ecology and Sociobiology*, 74, 125.
- 2020 **Ostwald MM**, *Lyman BR, Shaffer ZS, Fewell JH. (2020). Temporal and spatial dynamics of carpenter bee sociality revealed by CT imaging. *Insectes Sociaux*, 67, 203-212.
- 2019 **Ostwald MM**, Shaffer ZS, Pratt SC, Fewell JH. Multimodal cues facilitate nest recognition in carpenter bee aggregations. *Animal Behaviour*, 155, 45-51.
- 2019 Baudier KM, **Ostwald MM**, Grüter C, Segers F, Roubik DW, Pratt SC, Fewell JH. Changing of the guard: specialization and flexibility in nest defense (*Tetragonisca angustula*). *Behavioral Ecology*, 30(4), 1041-1049.
- 2018 **Ostwald MM**, Ruzi SA, Baudier KM. Ambush predation of stingless bees (*Tetragonisca angustula*) by the solitary foraging ant *Ectatomma tuberculatum*. *Journal of Insect Behavior*, 31(5), 1-7.
- 2016 **Ostwald MM**, Smith ML, Seeley TD. The behavioral regulation of thirst, water collection, and water storage in honey bee colonies. *Journal of Experimental Biology*, 219(14), 2156-2165.
- 2016 Smith ML, **Ostwald MM**, and Seeley TD. (2016). Honey bee sociometry: tracking honey bee colonies and their nest contents from colony founding until death. *Insectes Sociaux*, 63(4) 553-563.
- 2015 Smith ML, **Ostwald MM**, and Seeley TD. (2015). Adaptive tuning of an extended phenotype: honey bees seasonally shift their honey storage to optimize male production. *Animal Behaviour*, 103, 29-33.
- 2014 Smith ML, **Ostwald MM**, Loftus JC, and Seeley TD. (2014). A critical number of workers in a honey bee colony triggers investment in reproduction. *Naturwissenschaften*, 101(10), 783-790.

In review/revisions

- Ostwald MM**, Gonzalez VH, Chang C, Vitale N, Lucia M, Seltmann KC. Toward a functional trait approach to bee ecology. *Functional Ecology*. Preprint: <https://doi.org/10.22541/au.170147014.40641171/v1>
- Ostwald MM**, da Silva, CRB, Seltmann SC. How does climate change impact social bees and bee sociality? *Journal of Animal Ecology*. Preprint: <https://doi.org/10.22541/au.169175894.41597921/v1>
- Saleh N, **Ostwald MM**, Ramirez, S. Cuticular and glandular chemistry are correlated with ovary size in two populations of the facultatively social carpenter bee, *Xylocopa sonorina*. Preprint: <https://doi.org/10.21203/rs.3.rs-2500644/v1>

Grants & Awards

Research Grants & Fellowships

2023	USDA-NIFA Equipment Research Grant: "Micro-CT Visualization of Bees and their Nests to Investigate Drivers of Pollinator Declines" (<i>not funded</i>)	
2022	Coastal Fund Major Research Grant, UCSB Associated Students	\$4,200
2022	Miller Postdoctoral Research Fellowship, UC Berkeley (<i>awarded, declined</i>)	\$234,000
2022	Publication Grant, ASU Graduate & Professional Student Association	\$1,200
2021	Mistletoe Research Fellowship, Momental Foundation	\$10,000
2021	Publication Grant, ASU Graduate & Professional Student Association	\$1,200

2021	Publication Grant, ASU Graduate & Professional Student Association	\$900
2020	Charles Michener Bee Research Award, International Union for the Study of Social Insects	\$2,500
2020	E.O. Wilson Conservation Award, Animal Behavior Society	\$2,000
2020	Graduate Research Support Grant, Terminal Research Award, ASU Graduate & Professional Student Association	\$1,177
2018	Research & Training Initiative Grant, ASU School of Life Sciences	\$750
2018	Graduate Research Support Grant, Independent Research Award, ASU Graduate & Professional Student Association	\$727
2018	Student Research Grant, ASU Social Insect Research Group	\$1,853
2017	NSF Graduate Research Fellowship (GRFP)	\$138,000
<i>Travel Awards</i>		
2021	Internship Travel Grant, ASU Graduate & Professional Student Association	\$950
2019	Travel Award, ASU School of Life Sciences	\$400
2019	Travel Grant, ASU Graduate & Professional Student Association	\$608
2018	Travel Award, ASU School of Life Sciences	\$400
2018	Travel Grant, ASU Graduate & Professional Student Association	\$950
2017	Travel Grant, ASU Graduate & Professional Student Association	\$172
2018	Travel Grant, ASU Social Insect Research Group	\$1,890
		Total awarded = \$403,877

Honors and Awards

2023	Finalist (final award pending), <i>Sidnie Manton Award</i> for Best Review by an Early Career Researcher, <i>Journal of Animal Ecology</i>
2022	<i>Distinguished Graduate Student Award</i> , ASU Faculty Women's Association
2022	<i>Innovative Teaching Award</i> , ASU School of Life Sciences
2021	<i>George C. Eickwort Student Research Award</i> , International Union for the Study of Social Insects
2021	Finalist, <i>Zuk Award</i> , Society for Integrative and Comparative Biology, Division of Animal Behavior
2019	2 nd Place Award, <i>Best Graduate/Postdoctoral Oral Presentation</i> , Arizona Physiological Society
2018	<i>Graduate Excellence Award</i> , ASU College of Liberal Arts & Sciences
2017	<i>Doctoral Recruitment Award</i> , ASU School of Life Sciences
2017	<i>Best Dissertation Award</i> , Edinburgh College of Art
2016	<i>Andrew Grant Postgraduate Scholarship</i> , University of Edinburgh
2016	Finalist, <i>Outstanding Paper Prize</i> , <i>Journal of Experimental Biology</i>
2016	<i>Cynthia Kagarise Sherman Award</i> for Outstanding Thesis in Animal Behavior, Cornell University

Presentations

*Invited talk

Conference Talks

2023	*Ostwald MM, Chen K, Ding L, Seltmann KC. Using computer vision to link morphological traits to thermal tolerance in bees. <i>Entomological Society of America Annual Meeting</i> , National Harbor, MD
2023	Ostwald MM, Gonzalez VH, Seltmann KC. Toward a Global Bee Functional Trait Database. <i>Digital Data Conference</i> (virtual)
2022	Ostwald MM, Seltmann KC, Allen J, Brown BV, Carper A, Eldredge T, Engel MS, Franz N, Gilbert E, Grinter C, Gonzalez VH, Horsley P, Kung GA, Lee S, Maier C, Miko I,

- Morris P, Oboyski P, Pierce NE, Poelen J, Scott VL, Smith C, Smith M, Talamas EJ, Tsutsui ND, Tucker E. Announcing Big-Bee: An initiative to promote understanding of bees through image and trait digitization. (2022). *BeeCon*, York University (virtual)
- 2022 *Ostwald MM, Fewell JH. Nesting ecology as a context for social evolution in facultatively social carpenter bees. *International Union for the Study of Social Insects (IUSI) Meeting*, San Diego, CA
- 2021 Ostwald MM, Dahan RA, Shaffer Z, Fewell JH. (2021). Low nest fidelity underlies low within-group relatedness in a facultatively social bee. *Animal Behavior Society Annual Meeting* (virtual)
- 2021 Ostwald MM, Fox TP, Harrison JF, Fewell JH. (2021). Sociality confers energetic savings in a facultatively social bee. *Society for Integrative and Comparative Biology Meeting* (virtual)
- 2020 Ostwald MM, Hillery W, Shaffer ZS, Harrison JF, Fewell JH. Group living confers thermal and physiological benefits in winter nests of a facultatively social bee. *Entomological Society of America Meeting* (virtual)
- 2020 Ostwald MM, Fox TP, Harrison JF, Fewell JH. Sociality confers energetic savings in a facultatively social bee. *Animal Behavior Society Meeting* (virtual)
- 2019 Ostwald MM, Fox TP, Harrison JF, Fewell JH. Sociality confers energetic savings in a facultatively social bee. *Arizona Physiological Society*, Tempe, AZ
- 2019 Ostwald MM, Shaffer ZS, Pratt SC, Fewell JH. Multimodal cues facilitate nest recognition in carpenter bee aggregations. *Animal Behavior Society Meeting*, Chicago, IL

Invited Seminars

- 2022 Ostwald MM, Venkatesh S, Jacobs M. Challenges and Opportunities in STEM Prison Education. *Momental Foundation Webinar Series*
- 2021 Ostwald MM, Fewell JH. Ecological drivers of non-kin sociality in ants and bees. *ASU Social Insect Research Group Seminar*, Tempe, AZ
- 2018 Ostwald MM, Shaffer ZS, Pratt SC, Fewell JH. How do carpenter bees find their nests? *ASU Social Insect Research Group Seminar*, Tempe, AZ
- 2017 Ostwald MM, Smith ML, Seeley TD. The behavioral regulation of thirst, water collection, and water storage in honey bee colonies. *ASU Social Insect Research Group Seminar*, Tempe, AZ
- 2015 Ostwald MM, Smith ML, Seeley TD. The behavioral regulation of thirst, water collection, and water storage in honey bee colonies. Ecology, Evolution, Neurobiology & Behavior Graduate Student Seminar Series, Cornell University, Ithaca, NY
- 2014 Ostwald MM, Münz T, Rössler W. Synaptic plasticity of the honey bee mushroom bodies in precocious foragers. Dept. of Behavioral Physiology and Sociobiology Seminar Series, University of Würzburg, Würzburg, Germany

Conference Talks, History of Science

- 2020 Ostwald MM. "Go to the Ant:" Didactic anthropomorphism as an agent of monarchical and patriarchal power structures. *Arizona Center for Medieval and Renaissance Studies Annual Meeting*, Tempe, AZ
- 2019 Ostwald MM. Women in beekeeping and the scientific gendering of the bee in early modern Europe, 1400-1850. *Arizona Center for Medieval and Renaissance Studies (ACMRS) & Medieval Association of the Pacific (MAP) Joint Conference*, Phoenix, AZ
- 2018 Ostwald MM. Sahagún's *Florentine Codex* and indigenous knowledge of insect life in Aztec-European Encounters. *Arizona Center for Medieval and Renaissance Studies Annual Meeting*, Phoenix, AZ.

Teaching*Instructor of Record*

2021 – present	Biology Concepts (online), Estrella Mountain Community College, Avondale, AZ
2021	Marine Biology, Glendale Community College, Glendale, AZ

Co-Instructor (volunteer)

2022	Applications of Biological Collections to Global Change Research, UCSB
2017 – 2021	General Biology, Arizona Department of Corrections, Florence, AZ

Curriculum Development

2021 – 2022	Animal Behavior, Maricopa County Community College System, AZ
2018	Animal Physiology Lab, ASU Online Biology Program, ASU

Teaching Assistant

2019	Tropical Biology Research, ASU, Smithsonian Tropical Research Institute, Gamboa, Panama
2017	Animal Physiology Lab, ASU
2015 – 2016	Basic Rock Climbing, Cornell University
2015 – 2016	Intro to Outdoor Rock Climbing, Cornell University
2015	Issues in Social Biology, Cornell University

Mentorship**bold** = publication co-author (includes manuscripts in prep)*Post-Baccalaureate mentees*

2022 – 2023	Charlie Thrift	Biological Sciences	UCSB
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Undergraduate research mentees

2023	Jorge De La Cruz	Biological Sciences	UCSB
2023	Carrie Chang	Biological Sciences	UCSB
2023	Sheccid Trasvina	Biological Sciences	SB City College
2023	Evelyn Sanchez	Biological Sciences	SB City College
2023	Valentina Venegas	Data Science	SB City College
2023	Alec Buetow	Pharmacology	UCSB
2023	Lauren De Moor	Biological Sciences	UCSB
2023	Quinn Dodd-Spiegelberg	Biological Sciences	UCSB
2023	Amy Zhao	Biological Sciences	UCSB
2023	Elise Phan	Biological Sciences	UCSB
2023	Neha Reddy	Biological Sciences	UCSB
2023	Vanessa Sedano Ojeda	Biological Sciences	UCSB
2023	Nathalie Bonnet	Biological Sciences	UCSB
2022 – 2023	Kathryn Chen	Statistics & Data Science	UCSB
2022 – 2023	Luning Ding	Statistics & Data Science	UCSB
2022 – 2023	Juliana Goldman	Environmental Sciences	UCSB
2022 – 2023	Chaoming Xu	Biological Sciences	UCSB
2022 – 2023	Ryan Hirokawa	Microbiology	UCSB
2022	Rikki Radliff	Environmental Sciences	UCSB
2022	Emma Gobbell	Biological Sciences	UCLA
2021	Sean Gutierrez	Biological Sciences	ASU

2020 – 2021	Will Hillery	Biological Sciences	ASU
2018 – 2020	Tyler Wong	Biological Sciences	ASU
2018 – 2020	Armon Malaekheh	Biological Sciences	ASU
2018 – 2019	Brooke Lyman	Biological Sciences	ASU
2019	Victoria Depner	Biological Sciences	ASU
2019	Sarah Hart	Biological Sciences	ASU
2018	Rachel Traynor	Biological Sciences	ASU
2018	Nisha Parasher	Biological Sciences	ASU
<i>High school student research mentees</i>			
2023	Taite Jimerson	Santa Barbara, CA	
2018	Jamie Komarnisky	Tempe, AZ	
2018	Ella Shaffer	Tempe, AZ	

Scientific Outreach & Advocacy

2023	<i>Coordinator, Prison Correspondence Program, Freedom4Youth, Santa Barbara, CA</i>		
2023	<i>Editor, Freedom Philosophies Magazine, Freedom4Youth, Santa Barbara, CA</i>		
2021	<i>Program Coordinator, ASU Prison Biology Program, Arizona Dept. of Corrections, Florence, AZ</i>		
2017 – 2021	<i>Instructor and Curriculum Developer, ASU Prison Biology Program, Arizona Dept. of Corrections, Florence, AZ</i>		

Event coordinator/lead:

2019 – 2021	<i>Native Bees of the Sonoran Desert, Desert Botanical Garden, Phoenix, AZ</i>
2020	<i>Native Bees of the Sonoran Desert, Boyce Thompson Arboretum, Superior, AZ</i>
2020	<i>Native Bees of the Sonoran Desert, Casa Grande Natl. Monument, Coolidge, AZ</i>
2019	<i>Native Bees of the Sonoran Desert, Maricopa County Master Gardener Program, Apache Junction, AZ</i>

Event volunteer:

2019	<i>Native Plants of the Sonoran Desert, Desert Botanical Garden, Phoenix, AZ</i>
2019	<i>Native Plant Seedball Workshop Boyce Thompson Arboretum, Superior, AZ</i>
2018	<i>Flutterfest, Desert Botanical Garden, Phoenix, AZ</i>
2018	<i>Night of the Open Door, ASU, Tempe, AZ</i>
2018	<i>Gamboa Community Ant Day, Gamboa, Panama</i>
2016	<i>Native Bee Workshop, Orna J. Smith Natural History Museum, Caldwell, ID</i>

Professional Service

2023	<i>Review Editor, Social Evolution Section, Frontiers in Ecology and Evolution</i>
2020 – 2022	<i>Committee Member, Graduate Student & Postdoc Committee, International Union for the Study of Social Insects 2022 Planning Committee</i>
2021	<i>Session Moderator, Animal Behavior Society Annual Meeting</i>
2020 – 2021	<i>Founding Committee Member, Diversity, Equity, & Inclusion Committee, Social Insect Research Group, ASU</i>
2018 – 2020	<i>Board Member, ASU School of Life Sciences Grad Student Executive Board</i>
	<i>Grad Student Rep. to the Graduate Programs Committee (2022 – 2021)</i>
	<i>Grad Student Rep. to the Research & Training Initiative (2019 – 2020)</i>
	<i>Grad Recruitment Coordinator (2018 – 2019)</i>
	<i>Grad Mental Health Initiative Rep. (2018 – 2019)</i>
2017 – 2020	<i>Grant Reviewer, Graduate & Professional Student Association, ASU</i>

Journal Reviewer Service

Animal Behavior, Ecological Entomology, Insectes Sociaux, Current Zoology, Journal of Ethology, Behavioral Ecology and Sociobiology, Southwestern Naturalist, Behavioral Ecology, The Canadian Entomologist, PeerJ, Artificial Intelligence Review

Pedagogy and Mentorship Training

- 2023 *Teaching and Learning in the Community College*, Estrella Mountain Community College
- 2023 *Evolving Alongside Artificial Intelligence*, League for Innovation in the Community College
- 2023 *Creating Generative AI Policies in Your Courses*, League for Innovation in the Community College
- 2023 *Creating an Inclusive Classroom: Students with Disabilities*, National Center for Faculty Development and Diversity
- 2023 *Inclusive Teaching Symposium*, Office for Teaching and Learning, UCSB
- 2023 *Backwards Design and Assessment*, Office for Teaching and Learning, UCSB
- 2023 *Collaborative Learning and Student Engagement*, Office for Teaching and Learning, UCSB
- 2022 *Developing Anti-Oppressive Communities: Supporting Black Students and Mentees*, NCFDD
- 2022 *Effective Course Design*, Center for Teaching and Learning, EMCC
- 2022 *Equitable, Accessible, and Inclusive Teaching Practices*, National Center for Faculty Development and Diversity
- 2021 *Mentoring Tools to Facilitate Transitions*, Momental Foundation Webinar Series
- 2019 *Mentorship, Lab Culture, and Mental Health*, School of Life Sciences Graduate Seminar Series, ASU
- 2017 *Scientific Teaching*, School of Life Sciences, ASU