

ROBERT F. MITCHELL

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EDUCATION

- 2012 **Doctor of Philosophy**, University of Illinois at Urbana-Champaign (UIUC), Department of Entomology. Dr. Lawrence M. Hanks and Dr. Hugh Robertson, advisors.
Dissertation: Chemical communication in cerambycid beetles and the molecular basis of olfaction.
- 2008 **Master of Science**, UIUC, Department of Entomology. Dr. L. M. Hanks, advisor.
Thesis: Insect frass as a means of transmission for the bacterial wilt of cucurbits.
- 2005 **Bachelor of Science**, Duke University. Biology (major), Computer Science (minor).

APPOINTMENTS

- 2021–present **Associate Professor**, Department of Biology, University of Wisconsin Oshkosh.
- 2015–2021 **Assistant Professor**, Department of Biology, University of Wisconsin Oshkosh.
- 2015–present **Curator**, University of Wisconsin Oshkosh Insect Collection.
- 2013 **Adjunct Professor**, Pima Community College, Tucson, AZ.
- 2012–2015 **Postdoctoral Fellow**, Postdoctoral Excellence in Research and Teaching. National Institutes of Health, through the Center for Insect Science, University of Arizona, Tucson, AZ, and in the laboratory of Dr. J. G. Hildebrand.

REFEREED PUBLICATIONS (* denotes student authors)

37. Sylvester, T, R Adams, JG Millar, **RF Mitchell**, AM Ray, R Shen, NR Shin, and DD McKenna. 2024. Comparative analyses of the banded alder borer (*Rosalia funebris*) and Asian longhorned beetle (*Anoplophora glabripennis*) genomes reveal significant differences in genome architecture and gene content among these and other Cerambycidae. *J. Hered.* (*submitted*)
36. Steffek*, GL, AS Grommes, LM Hanks, and **RF Mitchell**. 2024. (*R*)- γ -Decalactone is a pheromone component of the North American scarab beetle *Osmoderma eremicola* (Coleoptera: Scarabaeidae). *J. Chem. Ecol.* (*in review*)
35. Cohen, Z, MS Crossley, **RF Mitchell**, P Engsontia, YH Chen, and SD Schoville. 2023. Adaptive evolution of chemosensory genes in Colorado potato beetle, *Leptinotarsa decemlineata*. *J. Evol. Biol.* (*in press*)
34. Haddad, S, DJ Clarke, S-H Jeong, **RF Mitchell**, and DD McKenna. 2023. Antennal sensilla in longhorn beetles (Coleoptera: Cerambycidae). *Ann. Entomol. Soc. Am.* 116: 83–113.
33. Coates, BS, and the **Western Corn Rootworm Genome Consortium***. 2023. A draft *Diabrotica virgifera virgifera* genome: insights into control and host plant adaption by a major maize pest insect. *BMC Genom.* 24:19.

32. **Mitchell, RF**, D Doucet, S Bowman, MC Bouwer, and JD Allison. 2022. Prediction of a conserved pheromone receptor lineage from antennal transcriptomes of the pine sawyer genus *Monochamus* (Coleoptera: Cerambycidae). *J. Comp. Physiol. A* 208: 615–625.
31. Rice, ME, LM Hanks, S Halloran, JA Mongold-Diers, AC Grommes, **RF Mitchell**, AM Ray, and JG Millar. 2022. Methionol, a sulfur-containing pheromone component from the cerambycid beetle *Knulliana cincta cincta*. *J. Chem. Ecol.* 48: 347–358.
30. Oppert, B, and the **Lesser Grain Borer Genome Consortium***. 2022. The genome of *Rhyzopertha dominica* (Fab.) (Coleoptera: Bostrichidae): Adaptation for Success. *Genes* 13:446.
29. **Mitchell, RF**, and MN Andersson. 2021. Olfactory Genomics of the Coleoptera. *In*: Blomquist, G, and R Vogt (eds), *Insect Pheromone Biochemistry and Molecular Biology*, 2nd Ed. Academic Press, Cambridge, MA, USA, pp. 547–590.
28. **Mitchell, RF**, TM Schneider*, AM Schwartz*, MN Andersson, and DD McKenna. 2020. The diversity and evolution of odorant receptors in beetles (Coleoptera). *Insect Mol. Biol.* 29: 77–91.
27. Andersson, MN, CI Keeling, and **RF Mitchell**. 2019. Genomic content of chemosensory genes correlates with host range in wood-boring beetles (*Dendroctonus ponderosae*, *Agrius planipennis*, and *Anoplophora glabripennis*). *BMC Genomics* 20: 690.
26. Hanks, LM, JA Mongold-Diers, **RF Mitchell**, Y Zou, JCH Wong, LR Meier, TD Johnson, and JG Millar. 2019. The role of minor pheromone components in segregating 14 species of longhorned beetles (Coleoptera: Cerambycidae) of the subfamily Cerambycinae. *J. Econ. Entomol.* 112: 2236–2252. Journal cover. 
25. **Mitchell, RF**, AM Ray, LM Hanks, and JG Millar. 2018. The common natural products (*S*)- α -terpineol and (*E*)-2-hexenol are important pheromone components of *Megacyllene antennata* (Coleoptera: Cerambycidae). *Environ. Entomol.* 47: 1547–1552.
24. Schoville, SD, YH Chen, and the **Colorado Potato Beetle Genome Consortium**. 2018. A model species for agricultural pest genomics: the genome of the Colorado potato beetle, *Leptinotarsa decemlineata* (Coleoptera: Chrysomelidae). *Sci. Rep.* 8: 1931.
23. Millar, JG, **RF Mitchell**, JA Mongold-Diers, Y Zou, CE Bográn, MK Fierke, MD Ginzel, CW Johnson, JR Meeker, TM Poland, IR Ragenovich, and LM Hanks. 2018. Identifying possible pheromones of cerambycid beetles by field testing known pheromone components in four widely separated regions of the United States. *J. Econ. Entomol.* 111: 252–259.
22. Millar, JG, **RF Mitchell**, LR Meier, TD Johnson, JA Mongold-Diers, LM Hanks. 2017. (2*E*,6*Z*,9*Z*)-2,6,9-pentadecatrienal as a male-produced aggregation-sex pheromone of the cerambycid beetle *Elaphidion mucronatum*. *J. Chem. Ecol.* 43: 1056–1065.
21. **Mitchell, RF**, LP Hall, PF Reagel, DD McKenna, TC Baker, and JG Hildebrand. 2017. Odorant receptors and antennal lobe morphology offer a new approach to understanding the olfactory biology of the Asian longhorned beetle. *J. Comp. Physiol. A* 203: 99–109.
20. **Mitchell, RF**, T Curkovic, J Mongold-Diers, L Neuteboom, H-M Galbrecht, A Tröger, J Bergmann, W Francke, and LM Hanks. 2017. Evidence that cerambycid beetles mimic vespid wasps in odor as well as appearance. *J. Chem. Ecol.* 43: 75–83.
19. McKenna, DD, ED Scully, Y Pauchet, K Hoover, R Kirsch, SM Geib, **RF Mitchell**, RM Waterhouse, and the Asian Longhorned Beetle Genome Consortium*. 2016. Genome of the Asian longhorned beetle (*Anoplophora glabripennis*), a globally significant invasive species, reveals key functional and evolutionary innovations at the beetle-plant interface. *Genome Biol.* 17:227.

18. Ray, AM, JG Millar, JA Moreira, JS McElfresh, **RF Mitchell**, JD Barbour, and LM Hanks. 2015. North American species of cerambycid beetles in the genus *Neoclytus* share a common hydroxyhexanone-hexanediol pheromone structure. *J. Econ. Entomol.* 108: 1860–8.
17. **Mitchell, RF**, PF Reagel, JCH Wong, LR Meier, WD Silva, J Mongold-Diers, JG Millar, LM Hanks. 2015. Cerambycid beetle species with similar pheromones are segregated by phenology and minor pheromone components. *J. Chem. Ecol.* 41: 431–440. Journal cover. 
16. Goldman-Huertas, B, **RF Mitchell**, RT Lapoint, CP Faucher, JG Hildebrand, and NK Whiteman. 2015. Evolution of herbivory in Drosophilidae linked to loss of behaviors, antennal responses, odorant receptors, and ancestral diet. *Proc. Natl. Acad. Sci. USA* 112: 3026–3031. Journal cover. 
15. Hanks, LM, PF Reagel, **RF Mitchell**, JCH Wong, LR Meier, CA Silliman, EE Graham, BL Striman, KP Robinson, JA Mongold-Diers, and JG Millar. 2014. Seasonal phenology of the cerambycid beetles of east-central Illinois. *Ann. Entomol. Soc. Am.* 107: 211–226.
14. **Mitchell, RF**, JG Millar, and LM Hanks. 2013. Blends of (*R*)-3-hydroxyhexan-2-one and alkan-2-ones identified as potential pheromones produced by multiple species of cerambycid beetles. *Chemoecology* 23: 121–127.
13. Allison, JD, JL McKenna, JG Millar, JS McElfresh, **RF Mitchell**, and LM Hanks. 2012. Response of the woodborers *Monochamus carolinensis* and *Monochamus titillator* to known cerambycid pheromones in the presence and absence of the host plant volatile alpha-pinene. *Environ. Entomol.* 41: 1587–1596.
12. Ray, AM, JD Barbour, JS McElfresh, JA Moreira, I Swift, IM Wright, A Žunic, **RF Mitchell**, EE Graham, RL Alten, JG Millar, and LM Hanks. 2012. 2,3-Hexanediols are female-produced sex attractant pheromones for cerambycid beetles in the prionine genus *Tragosoma*. *J. Chem. Ecol.* 38: 1151–1158.
11. Hanks, LM, JG Millar, JA Mongold-Diers, JCH Wong, LR Meier, PF Reagel, and **RF Mitchell**. 2012. Using blends of cerambycid beetle pheromones and host plant volatiles to simultaneously attract a diversity of cerambycid species. *Can. J. For. Res.* 42: 1050–1059.
10. **Mitchell, RF**, DT Hughes, CW Luetje, JG Millar, F Soriano-Agatón, LM Hanks, and HM Robertson. 2012. Sequencing and characterizing odorant receptors of the cerambycid beetle *Megacyllene caryae*. *Insect Biochem. Mol. Biol.* 42: 499–505.
9. Wong, JCH, **RF Mitchell**, BL Striman, JG Millar, and LM Hanks. 2012. Blending synthetic pheromones of cerambycid beetles to develop trap lures that simultaneously attract multiple species. *J. Econ. Entomol.* 105: 906–915.
8. Richardson, ML, PF Reagel, **RF Mitchell**, and DW Whitman. 2012. Opportunistic carnivory by *Romalea microptera* (Orthoptera: Acrididae). *Ann. Entomol. Soc. Am.* 105: 28–35. Journal cover. 
7. **Mitchell, RF**, EE Graham, JCH Wong, PF Reagel, BL Striman, GP Hughes, MA Paschen, MD Ginzel, JG Millar, and LM Hanks. 2011. Fuscumol and fuscumol acetate are general attractants for many species of cerambycid beetles in the subfamily Lamiinae. *Entomol. Exp. Appl.* 141: 71–77.

6. Richardson, ML, DM Lagos, **RF Mitchell**, GL Hartman, and DJ Voegtlin. Life history and morphological plasticity of the soybean aphid (*Aphis glycines*). 2011. Entomol. Exp. Appl. 140: 139–145.
5. Richardson, ML and **RF Mitchell**. 2010. Longer living through science. Am. Entomol. 56: 186–188.
4. Graham, EE, **RF Mitchell**, PF Reagel, JD Barbour, JG Millar, and LM Hanks. 2010. Treating panel traps with a fluoropolymer dramatically enhances their efficiency in capturing cerambycid beetles. J. Econ. Entomol. 103: 641–647.
3. Richardson, ML, **RF Mitchell**, PF Reagel, and LM Hanks. 2010. Causes and consequences of cannibalism in non-carnivorous insects. Annu. Rev. Entomol. 55: 39–53.
2. Philpott, DE, SH Berlocher, **RF Mitchell**, and LM Hanks. 2009. Molecular validation of a morphological character for distinguishing between the armored scale insects *Chionaspis pinifoliae* and *C. heterophyllae* (Hemiptera: Diaspididae). Ann. Entomol. Soc. Am. 102: 381–385.
1. **Mitchell, RF**, and LM Hanks. 2009. Insect frass as a pathway for transmission of bacterial wilt of cucurbits. Environ. Entomol. 38: 395–403.

MISCELLANEOUS PUBLICATIONS

5. **Mitchell, RF**. 2019. Journal cover photo, J. Econ. Entomol. 112, accompanying Hanks et al. (2019).
4. **Mitchell, RF**. 2015. Journal cover photo, J. Chem. Ecol. 41, accompanying Mitchell et al. (2015).
3. **Mitchell, RF**. 2012. Journal cover photo, Ann. Entomol. Soc. Am. 105, accompanying Richardson et al. (2012).
2. **Mitchell, RF**, and LM Hanks. 2008. Movement of a bacterial plant pathogen through the gut of its beetle vector. Abstract, Transactions of the Illinois State Academy of Science 101 (Suppl.): 85.
1. **Mitchell, RF**, ML Richardson, PF Reagel, and LM Hanks. 2007. Consequences of cannibalism in non-carnivorous insects. Abstract, Transactions of the Illinois State Academy of Science 100 (Suppl.): 72.

COMPETITIVE GRANTS AND FELLOWSHIPS

Note: Collaborative or mentored student grants are listed under mentored research.

2021–26	\$1,271,532	National Science Foundation , with S Haddad and DD McKenna (PI), “ <i>Investigating chemosensory evolution in longhorned beetles using a comparative phylogenomic framework that integrates genomic, morphological, and biochemical data</i> ,” DEB-2110053.
2019–21	\$49,907	Applied Research Grant , with SD Schoville, “ <i>Olfactory-Based Pest Control of the Colorado Potato Beetle</i> ,” WiSys Technology Foundation, Inc.
2017–18	\$11,700	Faculty Development Grant , “ <i>Olfactory genetics of an insect pest</i> ,” University of Wisconsin Oshkosh, Oshkosh, WI.
2015	\$2,400	KEY Award for New Faculty , NIGHTSEA and Electron Microscopy Sciences.
2013–14	\$10,000	Center for Insect Science Seed Grant , with NK Whiteman (PI), LA Oland and CP Faucher. “ <i>Evolution of the antennal lobe in herbivorous insect brains</i> .” Center for Insect Science, University of Arizona, Tucson, AZ.
2012–15	\$144,500	Postdoctoral Excellence in Research and Teaching , “ <i>Oviposition preference</i> ”

		<i>in Manduca sexta (L.) and the neural circuitry governing host choice.</i> National Institutes of Health, through the Center for Insect Science, University of Arizona, Tucson, AZ.
2011	\$1,000	Isabel Norton Award , School of Integrative Biology, UIUC.
2011	\$750	William H. Luckmann Award for Research in Applied Entomology , Illinois Natural History Survey, UIUC.
2011–12	\$20,000	Scott Dissertation Completion Fellowship , The Graduate College, UIUC.
2010	\$500	Francis M. and Harlie M. Clark Research Support Grant , School of Integrative Biology, UIUC.
2009	\$1,000	Francis M. and Harlie M. Clark Research Support Grant , School of Integrative Biology, UIUC.
2004–5	\$4,800	Research Experiences for Undergraduates , with Dr. H. F. Nijhout. National Science Foundation, through Duke University, Durham, NC.

HONORS, AWARDS, TRAVEL GRANTS

2017	Entomological Collections Workshop Travel Grant , Entomological Collections Network and Entomol. Soc. Am. (\$1000)
2013	ISCE Travel Grant , International Society of Chemical Ecology. (\$1000)
2012	Robert Emerson Memorial Award , School of Integrative Biology, UIUC.
2011	First Place , Student Competition for the President’s Prize, Annual Meeting, Entomol. Soc. Am.
2011	Best Student Presentation Award , Annual Meeting, International Society of Chemical Ecology, Burnaby, BC, Canada.
2011	Ellis MacLeod/DuPont Award for Outstanding Teaching by a Graduate Student in the Department of Entomology , Department of Entomology, UIUC.
2011	Second Place for Outstanding Presentation of Entomological Research in the Student Competition , North Central Branch Meeting, Entomol. Soc. Am. Minneapolis, MN, March 2011.
2010	Stinger Award ¹ , with ML Richardson, for “The Pharate Carnivore.” Annual Meeting, Entomol. Soc. Am., Indianapolis, IN. Media coverage of video in the online edition of the New York Times, 29 November 2012.
2010	First Place for Outstanding Presentation of Entomological Research in the Student Competition , North Central Branch Meeting, Entomol. Soc. Am. Louisville, KY, March 2010.
2010	Department Travel Grant , Department of Entomology, UIUC. (\$200)
2009	National Champion Team , Captain, Linnaean Games ² , Annual Meeting, Entomol. Soc. Am. Indianapolis, IN, December.
2009	First Place for Outstanding Presentation of Entomological Research in the Student Competition , North Central Branch Meeting, Entomol. Soc. Am. St. Louis, MO, March.
2009	Conference Travel Grant , The Graduate College, UIUC. (\$300)
2006	Graduate Teaching Certificate , Center for Teaching Excellence, UIUC.
2001	Outstanding Student Oral Presentation , Annual Meeting, South Carolina Entomological Society
	List of Teachers Ranked Excellent by Their Students , Center for Teaching Excellence, UIUC:
	2009 (Fall), Insect Pest Management
	2006 (Fall), Introduction to Entomology
	2006 (Spring), Insects and People
	2005 (Fall), Animal Biology

¹ Award for short film on an entomological topic.

² Academic trivia competition among teams of four students, focused on entomological knowledge.

INSTRUCTION AND MENTORSHIP

Semester Courses

2016–present N=7	Instructor , BIO332/532: Entomology, University of Wisconsin Oshkosh, Oshkosh, WI. An introduction to the study of insects for biology majors and graduate students, covering morphology, physiology, ecology, management, and ID. Lecture + lab.
2015–present N=18	Instructor , BIO230: Biology of Animals, University of Wisconsin Oshkosh, Oshkosh, WI. Course for undergraduate biology majors and nonmajors that covers diversity and ecology of major phyla in the animal kingdom. Lecture + two labs.
2019–present N=6	Instructor , BIO105: Biological Concepts – Unity, University of Wisconsin Oshkosh, Oshkosh, WI. Introductory biology for majors and nonmajors, broadly covering biological organization, cell biology, genetics, and evolution. Lecture only.
2019–2020 N=2	Instructor , INTRDSCP 302: McNair Research Methods (Natural Science Research). University of Wisconsin Oshkosh, Oshkosh, WI. Three-week spring interim course required for undergraduate researchers in the McNair Scholars program. Overview of research methods, statistics, science writing, and oral presentation.
2018 (Spring)	Instructor , BIO766: Advanced Topics in Biology (Chemical Ecology). University of Wisconsin Oshkosh, Oshkosh, WI. For graduate students and second-semester seniors. Overview of the field of chemical ecology, emphasizing methods and current literature.
2013 (Fall)	Instructor , BIO206: Biotechnology Instrumentation I, Pima Community College, Tucson, AZ. Combined laboratory/lecture course designed to train students in multiple genetic techniques including restriction digests, gel electrophoresis, southern blotting, PCR, cloning, quantitative PCR, and bioinformatics.
2009 (Fall)	Teaching Assistant , IB482: Insect Pest Management, School of Integrative Biology, U. Illinois at Urbana-Champaign (UIUC), Urbana, IL. Course for entomology graduate students, duties included teaching laboratory sections, coordinating guest lecturers and tours of external facilities, guiding students in preparing insect collections, and presenting lectures on biology and management of insect pests.
2006 (Fall)	Teaching Assistant , IB460: Introduction to Entomology, UIUC. Course for graduate students and undergraduate biology majors. Duties included developing and teaching labs in insect physiology, behavior, ecology, and systematics.
2006 (Spring)	Teaching Assistant , IB109: Insects and People, UIUC. Course for undergraduate non-majors, duties included teaching lab sections and review sessions for lecture.
2005 (Fall)	Teaching Assistant , IB104: Animal Biology, UIUC. Course for undergraduate biology majors, duties included teaching lab sections and proctoring practicals and exams.

Mentored Graduate Students, University of Wisconsin Oshkosh

2022–present	Kayla Hefner . Comparative transcriptomics of longhorned beetle antennae. Oral presentations of research: National Meeting of Entomol. Soc. Am., 2023; Midwestern Ecol. Evol. Conference, 2023.
2017–present	Lyndsay Poeschl . Description and functional study of stridulatory organs in cerambycid beetles. <i>Received 2018 UWO Graduate Student Travel Grant, \$500</i> . Poster presentations of research: North Central Branch of Entomol. Soc. Am., 2018; UWO Celebration of Scholarship (UWOCS), 2018.
2017–2021	Doua Yang . Relating the architecture of antennal lobes to pheromone use in cerambycid beetles. <i>Received 2018 UWO Graduate Student/Faculty Collaborative Research Grant, \$3,550</i> . Poster presentations of research, UWOCS, 2018 and 2019 (Best Graduate Research Presentation Award).

Committee Member

Master's	Aaron Postle, Travis Smith, Isaac Kamara (MS 2023), Jenna Fossen (MS 2019), Chelsea Hughes (MS 2018)
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Doctoral Bonnie Ohler (Dept. Entomology, UW Madison)

Mentored Undergraduate Research, University of Wisconsin Oshkosh

2023–present **Javit Thao**. Annotation of olfactory genes from cerambycid genomes. *Honors College thesis project*.

2023–present **Rachel Rush**. Annotation of olfactory genes from cerambycid antennal transcriptomes.

2023–present **Cody Kessler**. Annotation of olfactory genes from cerambycid antennal transcriptomes.

2022–present **Geryd Steffek**. Pheromone biology of wood-boring scarabs. *Received 2022 UWO Undergraduate/Faculty Collaborative Research Grant, \$3,546; 2022-23 Ronald E. McNair Scholar award, \$2,800*. Poster presentation of research, UWO Celebration of Scholarship (UWOCS), 2023 (John & Linda Schuch Best Poster Presentation).

2022–2023 **Joshua Bowers**. Improving gene annotation methods for insect chemosensory genes.

2021–2023 **Mathew Price**. Annotation of olfactory genes from firefly and red milkweed beetle genomes and field collections of longhorned beetles. Poster presentations of research, UWOCS, 2022; Midwestern Ecol. Evol. Conference, 2023.

2021–2022 **Mahad Osman**. Annotation of odorant binding proteins from beetle genomes. *Received 2022-23 Ronald E. McNair Scholar award, \$4,000*. Poster presentation of research, McNair Heartland Conference, 2022.

2020–2021 **Brandi Dickinson**. Assessment of novel methods for sampling urban insect abundance and diversity. Poster presentation of research, UWOCS, 2021 (Best Undergraduate Research Presentation Award).

2019–2020 **Hattie Bauer**. Electroantennography of genetically modified beetles.

2019–2020 **Rachel McKay**. Annotation of olfactory genes from numerous beetle genomes. *Received 2019-20 Ronald E. McNair Scholar award, \$4,000*.

2019 **Nicole Peters**. Dissection of stridulatory plates on beetle cuticle.

2018–2019 **Audra Jenson**. Annotation of olfactory genes from grain pest genomes.

2018–2019 **Maria Nummerdor**. Survey of calyptrate flies of east-central Wisconsin.

2017–2018 **Allison Clausen**. Characterizing changes in volatile compounds produced by wild lupine under drought and flood conditions. *Received 2017 UWO Undergraduate Small Grant, \$430*.

2016–2018 **Troy Schneider**. Annotation of odorant receptors from numerous beetle genomes. Poster presentation of research, UWOCS, 2018.

2016 **Sean Kirkpatrick**. Effect of urbanization on diversity of longhorned beetles in Winnebago Co., WI. Poster presentation of research, UWOCS, 2017.

2015–2016 **Adam Schwartz**. Annotation of odorant binding proteins and odorant receptors from the emerald ash borer. Poster presentations of research, UWOCS, 2016; UW System Symposium, 2016.

Mentored Undergraduate Research, Other Institutions

2014 **Tiffany Bledsoe**, Pima Community College. Annotation of odorant binding proteins from the Asian longhorned beetle genome, and 3'RACE of incomplete odorant receptor transcripts from other cerambycid species.

2013 **Lauren Amos**, Middlebury College. 16-channel neural recording to identify response of *Manduca sexta* antennal lobe neurons to five blends of host plant volatiles.

2012–2013 **Arthur Abougou**, Pima Community College. Annotation of select odorant receptor genes in two cerambycid species.

Curatorial Training, University of Wisconsin Oshkosh Insect Collection

Jackie Behrens (2023), Velay Her (2022), Matthew Price (2021–2023), Jacob Udell (2020–present), Sara Rottman (2020–2021), Brandi Dickinson (2020–2021), Douglas Mittelstaedt (2020–2021), Nathan Nozzi

(2020), Naomi Krawczyk (2019), Lyndsay Poeschl (2019), Benjamin App (2016–2019), Evan Laplant (2018–2019), Kyle Kettner (2017–2018), Amber All (2016–2017).

Workshops

“McNair Research Methods,” May 2018, University of Wisconsin Oshkosh. Intensive, 3-week workshop on methods, statistics, and science writing designed for undergraduate researchers in the McNair Scholars program. Later expanded to a spring interim class for course credit.

“Web Design Workshop,” April 2010, January 2010, January 2008, UIUC. 3-hour course in basic HTML. Participants created personal web sites with CV and research interests that were linked to the departmental web page.

“What Is (and Isn’t) a Bee,” BeeSpotter Workshop, 25 June 2008, Champaign, IL. 1-hour course on distinguishing bees from bee mimics, as part of a lecture series during National Pollinator Week in Champaign-Urbana.

MEETINGS ORGANIZED

Symposium: Basic and Applied Chemical Ecology in Cerambycid Beetles, with A. M. Ray and W. D. Silva. 2023. National Meeting, Entomol. Soc. Am. National Harbor, MD, 5–8 November.

Symposium: Semiochemicals of Wood-Boring Beetles, with A. M. Ray. 2019. National Meeting, Entomol. Soc. Am. St. Louis, MO, 17–20 November.

Symposium: Arthropod chemoreceptors, with M. N. Andersson. 2018. Annual Meeting, International Society of Chemical Ecology. Budapest, Hungary, 12–18 August.

Symposium: Chemical communication in longhorned beetles, with M. D. Ginzel and E. E. Graham. 2014. National Meeting, Entomol. Soc. Am. Portland, OR, 16–19 November.

Symposium: Bringing insect diversity to your backyard: Understanding the importance of biodiversity in temperate climates, with SM Colvin and members of the NCB Student Affairs Committee. 2011. North Central Branch Meeting, Entomol. Soc. Am. Minneapolis, MN, 13–16 March.

INVITED LECTURES

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| 2019 | Biology Department, Bucknell University, Lewisburg, PA. 12 September. |
| 2018 | Great Lakes Forestry Centre, Canadian Forest Service, Sault Ste. Marie, Canada. 28 May. |
| 2018 | College of Letters and Science Dean’s Symposium, UW Oshkosh, Oshkosh, WI. 25 April. |
| 2018 | Biology Department, Ripon College, Ripon, WI. 9 February. |
| 2017 | Department of Entomology, Purdue University, West Lafayette, IN. 14 September. |
| 2017 | Department of Entomology, University of Illinois at Urbana-Champaign, Urbana, IL. 23 January. |
| 2016 | Department of Entomology, University of Wisconsin, Madison, WI. 4 March. |
| 2016 | Department of Biology, Lawrence University, Appleton, WI. 21 January. |
| 2014 | Great Lakes Forestry Centre, Canadian Forest Service, Sault Ste. Marie, Canada. 16 October. |
| 2014 | Max Planck Institute for Chemical Ecology, Jena, Germany. 6 October. |
| 2013 | Department of Entomology, University of Arizona, Tucson, AZ. 26 September. |

INVITED SYMPOSIUM PRESENTATIONS (* denotes student authors)

- Mitchell, RF**, KM Hefner*, RH Adams, S Haddad, R Shen, T Sylvester, and DD McKenna. 2023. *Symposium: Basic and Applied Chemical Ecology in Cerambycid Beetles*. National Meeting, Entomol. Soc. Am. National Harbor, MD, 5–8 November.
- Ugine, TA, **RF Mitchell**, S Behmer, and J Losey. 2023. *Symposium: New Advances in Insect Chemoreception*. National Meeting, Entomol. Soc. Am. National Harbor, MD, 5–8 November.
- Mitchell, RF**, and SD Schoville. 2021. Faculty Research Showcase, WiSys Technology Foundation, 28 July (*virtual*).
- Mitchell, RF**. 2020. *Symposium: Olfaction in forest insects*. Working Party 7.03.16: Behavioral and Chemical Ecology of Forest Insects, International Union of Forest Research Organizations, 17 September (*virtual*).
- Mitchell, RF**, TM Schneider*, AM Schwartz*, MN Andersson, and DD McKenna. 2018. *Symposium: Arthropod Chemoreceptors*. Annual Meeting, International Society of Chemical Ecology. Budapest, Hungary, 12–18 August.
- Mitchell, RF**. 2018. *Symposium: Sensible Symposium: Exploring the Sensory Ecology of Insects and Related Arthropods*. North Central Branch Meeting, Entomol. Soc. Am. Madison, WI, 18–21 March.
- Mitchell, RF**, T Curkovic, JA Mongold-Diers, J Bergmann, W Francke, and LM Hanks. 2017. *Symposium: Chemical Ecology of Cerambycid Beetles: Basic Science and Practical Applications*. National Meeting, Entomol. Soc. Am. Denver, CO, 5–8 November.
- Doucet, D, J Duan, S Bowman, JD Allison, **RF Mitchell**, P Krell, and J Sweeney. 2017. *Symposium: Chemical Ecology of Cerambycid Beetles: Basic Science and Practical Applications*. National Meeting, Entomol. Soc. Am. Denver, CO, 5–8 November.
- Mitchell, RF**, D Doucet, and JD Allison. 2017. *Symposium: Chemical Ecology of Forest Ecosystems*. Annual Meeting, International Society of Chemical Ecology. Kyoto, Japan, 23–27 August.
- Mitchell, RF**, AM Schwartz*, and DD McKenna. 2016. *Symposium: Forest Entomology*. North Central Branch Meeting, Entomol. Soc. Am. Cleveland, OH, 5–8 June.
- Mitchell, RF**, and JG Hildebrand. 2014. *Symposium: Chemical communication in longhorned beetles*. National Meeting, Entomol. Soc. Am. Portland, OR, 16–19 November.
- Hall, LP, J Wei, **RF Mitchell**, K Hoover, JG Hildebrand, M Domingue, and TC Baker. 2015. *Symposium: Chemical communication in longhorned beetles*. National Meeting, Entomol. Soc. Am. Portland, OR, 16–19 November.
- Mitchell, RF**, BL Striman, JG Millar, and LM Hanks. 2012. *Symposium: Chemical ecology of cerambycid beetles*. National Meeting, Entomol. Soc. Am. Knoxville, TN, 11–14 November.
- Mitchell, RF**, DT Hughes, CW Luetje, JG Millar, HM Robertson, and LM Hanks. 2012. *Symposium: Forest Insect Semiochemistry*. Pacific Branch Meeting, Entomol. Soc. Am. Portland, OR, 25–28 March.
- Mitchell, RF**, BL Striman, KP Robinson, EE Grahahm, JD Barbour, JG Millar, and LM Hanks. 2011. *Symposium: Hardly Boring: Cerambycid Workers Symposium*. National Meeting, Entomol. Soc. Am. Reno, NV, 13–16 November.
- Mitchell, RF**, HM Robertson, and LM Hanks. 2010. *Symposium: Semiochemistry of the Cerambycidae: A diversity of signaling strategies*. National Meeting, Entomol. Soc. Am. San Diego, CA. 12–17 December.
- Hanks, LM, JG Millar, JD Barbour, AM Ray, **RF Mitchell**, EE Graham, JCH Wong, BL Striman, and MD Ginzal. 2010. *Symposium: Semiochemistry of the Cerambycidae: A diversity of signaling strategies*. National Meeting, Entomol. Soc. Am. San Diego, CA. 12–17 December.
- Ray, AM, JD Barbour, **RF Mitchell**, EE Graham, I Swift, JS McElfresh, LM Hanks, and JG Millar. 2010. *Symposium: Semiochemistry of the Cerambycidae: A diversity of signaling strategies*. National Meeting, Entomol. Soc. Am. San Diego, CA. 12–17 December.
- Alleyne, M, **RF Mitchell**, B Odintsov. 2010. *Symposium: Novel methods to address long-standing questions in entomological research*. North Central Branch Meeting, Entomol. Soc. Am. Louisville, KY, 14–17 March.
- Mitchell, RF**, EE Graham, JG Millar, HM Robertson, and LM Hanks. 2009. *Symposium: The long and short of longicorns: Cerambycid workers symposium*. National Meeting, Entomol. Soc. Am. Indianapolis, IN, 13–16 December.

CONTRIBUTED PRESENTATIONS (* denotes student authors)

- Lower, SE, S Pring, H Tran, MA Price*, and **RF Mitchell**. 2024. National Meeting, Soc. Integr. Comp. Biol. Seattle, WA, 2–6 January.
- Shen, R, T Sylvester, NR Shin, **RF Mitchell**, and DD McKenna. 2023. National Meeting, Entomol. Soc. Am. National Harbor, MD, 5–8 November.
- T Sylvester, RH Adams, S Haddad, **RF Mitchell**, R Shen, NR Shin, and DD McKenna. National Meeting, Entomol. Soc. Am. National Harbor, MD, 5–8 November.
- Hefner*, KM, RH Adams, S Haddad, DD McKenna, and **RF Mitchell**. 2023. National Meeting, Entomol. Soc. Am. National Harbor, MD, 5–8 November.
- Hefner*, KM, RH Adams, S Haddad, DD McKenna, and **RF Mitchell**. 2023. Midwestern Ecol. Evol. Conference. Louisville, KY, 21 March–2 April.
- Mitchell, RF**, and SD Schoville. 2021. National Meeting, Entomol. Soc. Am. Denver, CO, 31 October–3 November (*virtual*).
- Mitchell, RF**, AM Ray, LM Hanks, and JG Millar. 2015. Annual Meeting of the International Society of Chemical Ecology. Stockholm, Sweden, 29 June–3 July.
- Mitchell, RF**, LP Hall, TC Baker, DD McKenna, and JG Hildebrand. 2014. Annual Meeting of the International Society of Chemical Ecology. Urbana-Champaign, IL, 8–12 July.
- Goldman-Huertas B, RT Lapoint, **RF Mitchell**, and NK Whiteman. 2014. Pacific Branch Meeting, Entomol. Soc. Am. Tucson, AZ, 6–9 April.
- Mitchell, RF** and DD McKenna. 2014. Pacific Branch Meeting, Entomol. Soc. Am. Tucson, AZ, 6–9 April.
- Mitchell, RF** and JG Hildebrand. 2013. National Meeting, Entomol. Soc. Am. Austin, TX, 10–13 November.
- Mitchell, RF**, JG Millar, and LM Hanks. 2013. Annual Meeting of the International Society of Chemical Ecology. Melbourne, Australia, 19–23 August.
- Mitchell, RF**, DT Hughes, CW Luetje, JG Millar, LM Hanks, and HM Robertson. 2012. International Congress of Entomology. Daegu, South Korea, 19–25 August.
- Mitchell, RF**, DT Hughes, CW Luetje, JG Millar, HM Robertson, and LM Hanks. 2011. National Meeting, Entomol. Soc. Am. Reno, NV, 13–16 November.
- Mitchell, RF**, DT Hughes, CW Luetje, JG Millar, HM Robertson, and LM Hanks. 2011. Annual Meeting of the International Society of Chemical Ecology. Burnaby, British Columbia, Canada, 24–28 July.
- Mitchell, RF**, EE Graham, JCH Wong, BL Striman, JG Millar, and LM Hanks. 2011. North Central Branch Meeting, Entomol. Soc. Am. Minneapolis, MN, 13–16 March.
- Mitchell, RF**, HM Robertson, JG Millar, LM Hanks. 2010. North Central Branch Meeting, Entomol. Soc. Am. Louisville, KY, 14–17 March.
- Wong, JCH, **RF Mitchell**, PF Reagel, BL Striman, KP Robinson, JD Barbour, JG Millar, and LM Hanks. 2009. National Meeting, Entomol. Soc. Am. Indianapolis, IN, 13–16 December.
- Graham, EE, **RF Mitchell**, PF Reagel, and LM Hanks. 2009. National meeting, Entomol. Soc. Am. Indianapolis, IN, 13–16 December.
- Mitchell, RF**, EE Graham, PF Reagel, JG Millar, and LM Hanks. 2009. North Central Branch Meeting, Entomol. Soc. Am. St. Louis, MO, 15–18 March.
- Mitchell, RF**, EE Graham, PF Reagel, JG Millar, and LM Hanks. 2008. National meeting, Entomol. Soc. Am. Reno, NV, 16–19 November.
- Mitchell, RF**, and LM Hanks. 2008. Annual Meeting, Illinois State Acad. Sci. Champaign, IL, 4–5 April.
- Mitchell, RF** and LM Hanks. 2008. North Central Branch Meeting, Entomol. Soc. Am. Columbus, OH, 24–27 March.
- Mitchell, RF** and LM Hanks. 2007. National Meeting, Entomol. Soc. Am. San Diego, CA, 9–12 December.
- Mitchell, RF**, ML Richardson, PF Reagel, and LM Hanks. 2007. Annual Meeting, Illinois State Acad. Sci. Springfield, IL, 21–22 April.
- Richardson, ML, PF Reagel, **RF Mitchell**, and LM Hanks. 2006. National Meeting, Entomol. Soc. Am. Indianapolis, IN, 10–13 December.
- Mitchell, RF**. 2001. Annual Meeting, South Carolina Entomol. Soc.

CONTRIBUTED POSTERS (* denotes student authors)

Note: Student posters presented at internal university functions are listed under mentored research.

Price*, MA, RH Adams, S Haddad, DD McKenna, and **RF Mitchell**. 2023. Midwestern Ecol. Evol. Conference. Louisville, KY, 21 March–2 April.

Mitchell, RF, A Jenson*, ED Scully, and B Oppert. 2019. Annual Meeting, International Society of Chemical Ecology. Atlanta, GA, 2–6 June.

Poeschl*, LS, E Reading, JL Sedlock, and **RF Mitchell**. 2018. North Central Branch Meeting, Entomol. Soc. Am. Madison, WI, 15–18 March.

Schwartz*, AM, and **RF Mitchell**. 2016. University of Wisconsin System Symposium, Stevens Point, WI, 22 April.

AFFILIATIONS

Entomological Society of America (2005–present)

International Society of Chemical Ecology (2011–present)

SERVICE

Review:

Journal manuscripts: *in* Agricultural and Forest Entomology; American Journal of Undergraduate Research; Annals of the Entomological Society of America; Austral Entomology; BMC Genomics; Bulletin of Insectology; The Canadian Entomologist; Comparative Biochemistry and Physiology D; Ecological Entomology; Entomologia Experimentalis et Applicata; Entomological Science; Environmental Entomology; European Journal of Entomology; Frontiers in Ecology and Evolution; Frontiers in Physiology; Genes|Genomes|Genetics; Gene; The Great Lakes Entomologist; Insect Science; International Journal of Environmental Research and Public Health; Invertebrate Biology; iScience; Journal of Chemical Ecology; Journal of Comparative Physiology A; Journal of Economic Entomology; Journal of Insect Behavior; Journal of Insect Physiology; Journal of Insect Science; Journal of Theoretical Biology; Molecular Ecology; Molecular Phylogenetics and Evolution; Molecules; Oriental Insects; Naturwissenschaften; PeerJ; Pest Management Science; PLoS ONE; Scientific Reports; Zoology.

Grants and Awards: Chilean Antarctic Research Institute, Czech Science Foundation; Deutsche Forschungsgemeinschaft; Maine Agricultural and Forest Experiment Station; National Research Development and Innovation Office of Hungary; US-Israel Binational Agricultural Research and Development Fund; US Army Corps of Engineers; University of the District of Columbia Land-Grant Programs.

Curriculum: University of Wisconsin Extended Campus; STEM Achievement in Baltimore Elementary Schools.

Professional Societies:

Webmaster, International Society of Chemical Ecology, 2012–2023.

Website design, International Society of Chemical Ecology, 2012.

Member, Entomology Games Committee, Entomol. Soc. Am., 2019–2022.

Judge, Student oral competition, Annual Meeting, Entomol. Soc. Am., Portland, OR, 2014.

Judge, Student poster competition, Pacific Branch Meeting, Entomol. Soc. Am. Tucson, AZ, 2014.

Chair, Student Affairs Committee, North Central Branch, Entomol. Soc. Am, 2010–2011. Vice-Chair, 2009–2010, Student Representative, 2008–2009.

Campus:

Committees, University of Wisconsin Oshkosh: Professional Education Council (2017–2019), Science Building White Paper Workgroup (2023).

Committees, Department of Biology, UW Oshkosh: Executive (2022–present; Chair, 2022–present), Graduate (2018–2021), Ad-hoc Merit (2017–2018), Ad-hoc Curriculum (2016–2017), Assessment (2016–2017), Search and Screen (2016–2017, 2019–2020), Budget & Finance (2015–2016, 2023–present).

Grant Review, Student/Faculty Collaborative Research Grants (UWO, 2017, 2019, 2020), R. F. Chapman Graduate Student Prize (University of Arizona, 2015), Center for Insect Science Graduate Student Travel Awards (University of Arizona, 2013).

Webmaster, Department of Biology, UW Oshkosh, 2017–present.

Volunteer, UWO Math Problem Solving Contest, Oshkosh, WI, 2017–2019, 2022–2023.

Volunteer, Webster on the Water, Webster Stanley Middle School, Oshkosh, WI, 2017.

Judge, Student poster competition, Wisconsin Science and Technology Symposium, WiSys Technology Foundation, Oshkosh, WI, 2016.

Advisory Board member, Postdoctoral Excellence in Research and Teaching (PERT), Center for Insect Science (CIS), University of Arizona, 2013–2015.

Outreach entomologist, Department of Entomology, UIUC. 2010–2011.

Website design, Department of Entomology Centennial Celebration, UIUC. 2009.

President, University of Illinois Entomology Graduate Students Association, 2008–2010. Graduate Student Admissions Committee Representative, 2011. Secretary, 2005–2008.

Festival Director, Insect Fear Film Festival, Department of Entomology, UIUC, 2010 and 2009. Volunteer, 2006–2008, 2011–2012.

Volunteer, BugScope (<http://bugscope.beckman.uiuc.edu/>), The Imaging Technology Group, Beckman Institute for Advanced Science and Technology, UIUC, 2009–2010.

Volunteer, UIUC Pollinarium outreach programs, Fall 2009.

Website design, Department of Entomology, UIUC, 2007; design update, 2010.

Webmaster, Department of Entomology, UIUC, 2006–2012.

Website design, Entomology Graduate Students Association, UIUC, 2006.

Public:

Outreach program on monarch biology, Oshkosh Public Library, Oshkosh, WI, September 2022.

Outreach program on beetle pheromones, Chemists Celebrate Earth Week, Northeast WI Local Section of the American Chemical Society, Oshkosh, WI, April 2022.

Media interviews, Unusual mosquito emergence in east-central Wisconsin, WBAY, WHBY, KFIZ, and AM1570, Oshkosh, WI, 17–19 September 2018.

Media interview, “On the Water” (magazine), Lake Winnebago chironomid emergence. Interview date 10 April 2017.

Volunteer, Wisconsin Science Festival, University of Wisconsin Oshkosh, Oshkosh, WI, 2016.

Media interview, Lake Winnebago chironomid emergence, NBC26, Oshkosh, WI, 12 May 2016.

Media interview, overwintering behavior of multicolored Asian lady beetle, WLUK FOX11 News, Oshkosh, WI, 22 October 2015.

Volunteer, Arizona Insect Festival, University of Arizona, Tucson, AZ, 2012–2014.

Media interview, 2012 Insect Fear Film Festival, Environmental Almanac, WILL-AM Radio, Champaign, IL, air date 23 February 2012. Transcript published in *The News-Gazette* 19 February 2012.

Media interview, 2011 Insect Fear Film Festival, Environmental Almanac, WILL-AM Radio, Champaign, IL, air date 24 February 2011. Transcript published in *The News-Gazette* 20 February 2011.

Media interview, 2010 Insect Fear Film Festival, Environmental Almanac, WILL-AM Radio, Champaign, IL, air date 25 February 2010. Transcript published in *The News-Gazette* 21 February 2010.

Media interview, 2010 Insect Fear Film Festival, UI-7 (UIUC Television), Champaign, IL, 24 February 2010.

Media interview, 2009 Insect Fear Film Festival, WICD, Champaign, IL, 27 February 2009.

Media interview, 2009 Insect Fear Film Festival, Environmental Almanac, WILL-AM Radio, Champaign, IL, air date 26 February 2009. Transcript published in *The News-Gazette* 22 February 2009.

Photo credit, "Centipede Cinema' theme for this year's film festival." *The News-Gazette*, Champaign IL, 22 February 2009.

Media interview, 2009 Insect Fear Film Festival, WCIA, Champaign, IL, 25 February 2009.

Volunteer, National Pollinator Week in Champaign-Urbana, 2008.

Media interview, 2008 Insect Fear Film Festival, Environmental Almanac, WILL-AM Radio and *The News-Gazette*, Champaign, IL, 17 February 2008.

Photo credit, "Insect Fear Film Fest features social insects." *The News-Gazette*, Champaign IL, 17 February 2008.

Website design, National Pollinator Week in Champaign-Urbana, 2008.

Author, "What is (and isn't) a bee?", BeeSpotter Project, Champaign, IL (<http://beespotter.mste.uiuc.edu/topics/mimics/mimics.html>).

Media interview, 2008 Insect Fear Film Festival, Illini Radio Group (WLRW/WIXY/WCFF/WXTT), Champaign, IL, 14 February 2008.

Media interview, colony collapse disorder, WICD, Champaign, IL, 18 October 2007.

Media interview, 2007 Insect Fear Film Festival, WCIA, Champaign, IL, 21 February 2007.

Media interview, 2007 Insect Fear Film Festival, Illini Radio Group (WLRW/WIXY/WCFF/WXTT), Champaign, IL, 8 February 2007.

MEDIA COVERAGE OF RESEARCH

UW Oshkosh Today, University of Wisconsin Oshkosh. Johnson, N. "UWO researcher to sniff out genetics of smell, taste in beetles as part of \$1.3 million NSF study". 28 October 2021. <https://uwosh.edu/today/100646/uwo-researcher-to-sniff-out-genetics-of-smell-taste-in-beetles-as-part-of-1-3-million-nsf-study/>

UW Oshkosh Today, University of Wisconsin Oshkosh. Schlosser, L. "Oshkosh Corporation's donation boosts UW Oshkosh microscope laboratory". 27 March 2019. <https://uwosh.edu/today/73157/oshkosh-corporations-donation-boosts-uw-oshkosh-microscope-laboratory/>

UW Oshkosh Today, University of Wisconsin Oshkosh. Johnson, N. "UWO biology grad student investigates beetle brain structure". 16 July 2018. <https://uwosh.edu/today/59312/uwo-biology-grad-student-investigates-beetle-brain-structure/>

UANews, University of Arizona. Jensen, M. "How longhorned beetles find Mr. Right". 27 May 2015. <https://uanews.arizona.edu/story/how-longhorned-beetles-find-mr-right>. Additionally published in EurekaAlert!, ScienceDaily, Phys.org, Electronic Components News Today, Vermont Invasives.

Entomology Today, Entomol. Soc. Am. (entomologytoday.org). "Pheromones Are Not Enough, Timing is Important Too". 28 May 2015.

Futurity (futurity.org). "Beetles use 'right time' cologne as come-on". 28 May 2015.

Before It's News (beforeitsnews.com). Smith, B. "Longhorned beetles use timing to find mates." 29 May 2015.

Nature World News (natureworldnews.com). Stallard, B. "Pick-up-lines: Even for beetles they're all about timing". 30 May 2015.

Arizona Public Media, "Bug brains reveal secrets of smell." 19 March 2013.