

CURRICULUM VITAE

Ann Marie Ray

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Personal History and Professional Experience

Educational Background

- Ph. D. (2009) Department of Entomology, University of Illinois at Urbana-Champaign (UIUC),
Dr. Lawrence M. Hanks, advisor. Dissertation title: Evolution and taxonomic distribution of volatile
pheromones in cerambycine longhorned beetles
- M. S. (2005) Department of Entomology, UIUC, Dr. Lawrence M. Hanks, advisor. Thesis title: Predicted
taxonomic patterns in pheromone production by cerambycid beetles
- B. A. (2003) Department of Biology, Bellarmine University, Louisville, KY
Minor concentration in chemistry, *Magna cum laude*

Academic Positions Since Final Degree

Associate professor (2016-present) Department of Biology, Xavier University, Cincinnati, OH
Assistant professor (2010-2016) Department of Biology, Xavier University, Cincinnati, OH
Postdoctoral fellow (2009-2010) Department of Entomology, University of California, Riverside. Dr. Jocelyn
Millar, supervisor. Chemical ecology and behavior of longhorned beetles.

Appointments

Advising coordinator (Summer 2019-present) Department of Biology, Xavier University, Cincinnati, OH
Adjunct curator of zoology (2014-2015) Cincinnati Museum Center, Cincinnati, OH

Professional Development

- Ignatian Pilgrimage: In the Footsteps of St. Ignatius and Early Jesuits, program exploring university heritage and
mission, northeast Spain and Rome, 28 May-7 June 2017
- Agilent Technologies, Interpretation of Mass Spectra H4063A, Schaumburg, IL, 10-12 August 2004
- ESEM Training, Philips XL30 ESEM-FEG, Beckman Institute for Advanced Science and Technology, Urbana,
IL, August 2004
- Research Assistantship, Kentucky Biomedical Research Infrastructure Network, Bellarmine University,
2002-2003

Honors, Recognitions, and Outstanding Achievements

- Province Ignatian Educator of Distinction, Midwest Province of the Society of Jesus, in recognition of dedication
to the Jesuit Catholic educational mission: March 2019
- Fulbright U.S. Scholar Award to Brazil. Project title: Identification of attractant pheromones for emerging
longhorned beetle pests in Brazil; collaboration with Laboratório de Semioquímicos, Departamento de
Química, Universidade Federal do Paraná; August – December 2015
- Joan G. McDonald Award for Outstanding Teaching in the Sciences, Xavier University; April 2014
- US Department of Agriculture (USDA) Plant Protection and Quarantine 2012 Deputy Administrator's
Safeguarding Award, for Cooperative agreement: Identification of Port Interceptions in Wood Packing
Material; November 2013
- Entomological Society of America, Student and Young Professional Travel Award, for International Congress of
Entomology, Daegu, South Korea; August 2012
- Entomological Society of America, Student Competition for the President's Prize, First Place Ten-Minute Talk,
Plant-Insect Ecosystems: Behavior, Reno, NV; November 2008
- William H. Luckmann Award for Student Research in Applied Entomology, UIUC Department of Entomology
and the Illinois Natural History Survey; July 2008

Educational Project Award, Board Certified Entomologists of Mid-America, for Bugscope Project; 2008
Student and Young Professional Award, Entomological Society of America; 2008, 2009, 2011, 2012
North Central Branch Graduate Student Scholarship, Entomological Society of America; 2008
Elected to associate membership of Sigma Xi; 2006
List of Teachers Ranked Excellent by their Students, UIUC, for course Organismal and Evolutionary Biology
Spring 2004; course Introduction to Entomology Fall 2004
Faculty Merit Award, Natural Sciences, Bellarmine University; April 2003

Grants, Contracts, and Cooperative Agreements

In progress:

- Ray, A. M. (Principal Investigator) and J. Francese (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative): 2019-2020. "Biology, chemical ecology and trapping of invasive woodboring beetles in Ohio." **\$198,041** requested from USDA
- Ray, A. M., and E. K. L. Franzen (Co-Principal Investigators): "St. Gobnait's Beekeeping Club." Grant funded for **\$2500** by the Xavier University Women of Excellence Giving Circle to establish beehives on Xavier's campus.
- Urban, J. M. (Principal Investigator), Ray, A. M. (Cooperator), H. Nadel (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative), S. Myers (Co-Principal Investigator): "Investigating the role of endosymbionts in growth and development of *Lycorma delicatula*, the spotted lanternfly (Hemiptera: Fulgoridae)." Sub-agreement funded for **\$33,132** by USDA - Animal and Plant Health Inspection Service (APHIS) - Plant Protection and Quarantine (PPQ) - Center for Plant Health Science and Technology (CPHST) between Xavier University and the Pennsylvania State University.
- Ray, A. M. (Principal Investigator), H. Nadel (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative), S. Myers (Co-Principal Investigator): "Development of diagnostic tools for species of an economically important leafhopper genus *Scaphytopius* (Hemiptera: Cicadellidae: Deltocephalinae)." Cooperative agreement funded for **\$84,994** by USDA - Animal and Plant Health Inspection Service (APHIS) - Plant Protection and Quarantine (PPQ) - Center for Plant Health Science and Technology (CPHST) between Xavier University and USDA Otis Laboratory.
- Ray, A. M. (Principal Investigator), H. Nadel (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative), S. Myers (Co-Principal Investigator): 2018-2019. "Development of an identification tool for genera and species of lace bugs (Hemiptera: Tingidae) intercepted at US ports of entry." Cooperative agreement funded for **\$68,220** by USDA - Animal and Plant Health Inspection Service (APHIS) - Plant Protection and Quarantine (PPQ) - Center for Plant Health Science and Technology (CPHST) between Xavier University and USDA Otis Laboratory.
- Ray, A. M. (Principal Investigator) and M. Cooperband (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative): 2018-2019. "Support for spotted lanternfly and velvet longhorned beetle studies." Cooperative agreement funded for **\$73,341** by USDA - APHIS - PPQ - CPHST between Xavier University and USDA Otis Laboratory.
- Ray, A. M. (Principal Investigator) and J. Francese (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative): 2017-2018. "Biology, chemical ecology and trapping of invasive woodboring beetles in Ohio." Cooperative agreement funded for **\$223,000** by USDA - APHIS - PPQ - CPHST between Xavier University and USDA Otis Laboratory. Renewed for **\$180,252** for FY 2018-2019.

Completed:

- Ray, A. M. (Principal Investigator), and J. Francese (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative): 2016-2017. "Biology and trapping of the velvet longhorned beetle (VLB), *Trichoferus campestris*." Cooperative agreement funded through US Farm Bill for **\$24,724** by USDA - APHIS - PPQ - CPHST between Xavier University and USDA Otis Laboratory. Renewed for **\$29,700** for FY 2017-2018 (with a different funding source). Renewed for **\$32,871** for FY 2018-2019.
- Ray, A. M. (Principal Investigator), H. Nadel (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative), S. Myers (Co-Principal Investigator): 2012-2013. "Identification of Port Interceptions in Wood Packing Material." Cooperative agreement funded for **\$74,250** by USDA - APHIS

– PPQ - CPHST between Xavier University and USDA Otis Laboratory. Renewed for **\$89,100** FY 2013-2014; Renewed for **\$89,925** FY 2014-2015. Renewed for **\$99,894** FY 2015-2016. Renewed for **\$98,222** FY 2016-2017, Renewed for **\$99,804** FY 2017-2018.

Ray, A. M. (Principal Investigator) and J. Francese (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative): 2013-2016. "Biology of the Asian longhorned beetle in Ohio." Cooperative agreement funded for **\$498,410** by USDA - APHIS – PPQ - CPHST between Xavier University and USDA Otis Laboratory. Renewed for **\$181,937** FY 2016-2017.

McKenna, D. D. (Principal Investigator), H. Nadel (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative), A. M. Ray (Co-Principal Investigator): 2015-2016. "A biosystematic identification and threat assessment tool for wood-boring longhorned beetles (family Cerambycidae)." Cooperative agreement funded for **\$104,522** by USDA - APHIS – PPQ - CPHST between University of Memphis and USDA Otis Laboratory.

Ray, A. M. (Principal Investigator), B. Wang (Co-Principal Investigator and Authorized Departmental Officer's Designated Representative): 2014-2015. "Biology and trapping of the velvet longhorned beetle, *Trichoferus campestris*." Cooperative agreement funded for **\$26,043** by USDA – APHIS – PPQ - CPHST between Xavier University and USDA Otis Laboratory.

Ray, A. M. (Principal Investigator), E. E. Graham (USDA Forest Service Forest Health Protection Lead): 2013-2014. "Evaluation of Pheromone Release Devices and Trap Design to Develop a Broad-Range Survey Tool for Exotic Longhorned Woodboring Beetles in Alaska." USDA Forest Service (FS) Special Technology Development Program competitive grant funded for **\$34,030** cost share between USDA-FS and Xavier University. Renewed for **\$28,963** FY 2014-2015.

March Gladness Summer Research Fund: **\$3000**: 2017

Robert Borcer Endowment Fund, Xavier University: **\$4000**: 2011, 2012; **\$7400**: 2013, 2014; **\$8000**: 2015; **\$6000**: 2017; **\$10000**: 2018; **\$8000**: 2019

Herbert Holdsworth Ross Memorial Fund Grant, UIUC: 2006, 2008

Francis M. and Harlie M. Clark Research Support Grant, UIUC: 2004, 2006, 2007, 2008

Animal Behavior Society Student Research Grant: 2005

Graduate College Conference Travel Grant, UIUC: November 2003, 2006, 2007, April 2005

Publications

Wu, Y., S. M. Krishnankutty, K. A. Vieira, B. Wang, H. Nadel, S. W. Myers, A. M. Ray. Invasion of *Trichoferus campestris* (Coleoptera: Cerambycidae) to the United States characterized by high levels of genetic diversity and recurrent introductions. Biol. Invas. *Submitted*.

Krishnankutty S. M., K. Bigsby, J. Hastings, Y. Takeuchi, Y. Wu, S. W. Lingafelter, H. Nadel, S. W. Myers, A. M. Ray. Predicting establishment potential of an invasive wood-boring beetle, *Trichoferus campestris* (Coleoptera: Cerambycidae) in the US. Ann. Entomol. Soc. U.S.A. *In revision*.

Ray, A. M., J. A. Francese, Y. Zou, K. Watson, D. J. Crook, J. G. Millar. 2019. Isolation and identification of a male-produced aggregation-sex pheromone for the velvet longhorned beetle, *Trichoferus campestris*. DOI: <https://doi.org/10.1038/s41598-019-41047-x> Sci. Rep. 9: 4459 Open Access: <https://rdcu.be/buuzs>.

Mitchell, R. F., A. M. Ray, L. M. Hanks, and J. G. Millar. 2018. The ubiquitous plant volatiles (*S*)- α -terpineol and (*E*)-2-hexenol are important pheromone components of the cerambycid beetle *Megacyllene antennata*. DOI: <https://doi.org/10.1093/ee/nvy126> Environ. Entomol. 47: 1547-1552

Lopez V. M., M. S. Hoddle, J. A. Francese, D. R. Lance and A. M. Ray. 2017. Assessing the flight potential of the invasive Asian longhorned beetle, *Anoplophora glabripennis* (Motschulsky), with computerized flight mills. DOI: <https://doi.org/10.1093/jee/tox046> J. Econ. Entomol. 110: 1070-1077

Wu, Y., N. F. Trepanowski, J. J. Molongoski, P. F. Reagel, S. W. Lingafelter, H. Nadel, S. W. Myers, and A. M. Ray. 2017. DNA barcoding and morphology identify unwelcomed hitchhikers (Cerambycidae and Buprestidae, Coleoptera) entering the United States in wood packing material. DOI: <https://doi.org/10.1038/srep40316> Sci. Rep. 7:40316. Open Access: www.nature.com/articles/srep40316.

Thiemann, D., V. Lopez, A. M. Ray, and D. Cipollini. 2016. The history of attack and success of emerald ash borer on white fringetree in southwestern Ohio. Environ. Entomol. 45:961-966

McKenna, D. D., E. D. Scully, Y. Pauchet, K. Hoover, R. Kirsch, S. M. Geib, R. F. Mitchell, R. M. Waterhouse,

- S. Ahn, D. Arsala, A. K. Bennett, J. B. Benoit, H. Blackmon, T. Bledsoe, J. H. Bowsher, A. Busch, B. Calla, H. Chao, C. Childers, D. J. Clarke, L. Cohen, J. Demuth, H. Dinh, H. V. Doddapaneni, A. Dolan, J. J. Duan, S. Dugan, M. Friedrich, K. M. Glastad, M. A. D. Goodisman, S. Haddad, Y. Han, D. S. T. Hughes, P. Ioannidis, I. M. Vargas Jentsch, J. S. Johnston, J. W. Jones, L. A. Kuhn, D. R. Lance, C. Lee, S. L. Lee, H. Lin, J. A. Lynch, A. P. Moczek, S. C. Murali, D. M. Muzny, D. R. Nelson, S. R. Palli, K. A. Panfilio, D. Pers, M. Poelchau, H. Quan, J. Qu, A. M. Ray, J. P. Rinehart, H. M. Robertson, R. Roehrdanz, A. J. Rosendale, S. Shin, C. Silva, A. C. Torson, J.H. Werren, K. C. Worley, G. Yocum, E. M. Zdobnov, R. A. Gibbs, and S. Richards. 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. DOI 10.1186/s13059-016-1088-8. Genome Biol. 17:227. Open Access: <http://genomebiology.biomedcentral.com/articles/10.1186/s13059-016-1088-8>.
- Ray, A. M., J. G. Millar, J. A. Moreira, J. S. McElfresh, R. F. Mitchell, J. D. Barbour, and L. M. Hanks. 2015. North American species of cerambycid beetles in the genus *Neoclytus* share a common hydroxyhexanone-hexanediol pheromone structure. J. Econ. Entomol. 108: 1860-1868
- Zou, Y., J. G. Millar, J. S. Blackwood, R. V. Duzor, L. M. Hanks, J. A. Mongold-Diers, J.C.H. Wong, and A. M. Ray. 2015. (*E*)-2-hydroxyoct-4-en-3-one, a male-produced attractant pheromone of the cerambycid beetle *Tylonotus bimaculatus*. J. Chem. Ecol. 41: 670-677
- Vaisvil, A. V., E. E. Graham, and A. M. Ray. 2015. Pheromones and carcasses: how do burying beetles find love? Forest Health Conditions in Alaska 2014, A Forest Health Protection Report. Anchorage, Alaska. U.S. Forest Service, Alaska Region. Publication R10-PR-36: 72-74
- Ray, A. M., R. A. Arnold, I. Swift, P. A. Schapker, S. McCann, C. J. Marshall, J. S. McElfresh, and J. G. Millar. 2014. (*R*)-Desmolactone is a sex pheromone or attractant for the endangered Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* and several congeners (Cerambycidae: Lepturinae). DOI /10.1371/journal.pone.0115498. PLOS One. 9: e115498. Open Access: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0115498>.
- Ray, A. M., J. D. Barbour, J. S. McElfresh, J. A. Moreira, I. Swift, I. M. Wright, A. Žunic, R. F. Mitchell, E. E. Graham, R. L. Alten, J. G. Millar, and L. M. 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
- Ray, A. M., I. P. Swift, J. S. McElfresh, R. L. Alten, and J. G. Millar. 2012. (*R*)-Desmolactone, a female-produced sex pheromone component of the cerambycid beetle *Desmocerus californicus californicus* (subfamily Lepturinae). J. Chem. Ecol. 38: 157-167
- Ray, A. M. 2011. EntoPrint: An Easy Way to Make a Bunch of Identical Labels (If You Have a Steady Hand). Scarabs Newsletter. 66: 8-10
- Barbour, J. D., J. G. Millar, J. Rodstein, A. M. Ray, D. G. Alston, M. Rejzek, J. D. Dutcher, and L. M. Hanks. 2011. Synthetic 3,5-dimethyldodecanoic acid serves as a general attractant for multiple species of *Prionus* (Coleoptera: Cerambycidae). Ann. Entomol. Soc. Am. 104: 588-593
- Ray, A. M., A. Žunič, R. L. Alten, J. S. McElfresh, L. M. Hanks, and J. G. Millar. 2011. *cis*-Vaccenyl acetate, a sex attractant pheromone of *Ortholeptura valida*, a longhorned beetle in the subfamily Lepturinae. J. Chem. Ecol. 37: 172-178
- Rodstein, J., J. G. Millar, J. D. Barbour, J. S. McElfresh, I. M. Wright, K. S. Barbour, A. M. Ray, and L.M. Hanks. 2011. Determination of the relative and absolute configurations of the female-produced sex pheromone of the cerambycid beetle *Prionus californicus*. J. Chem. Ecol. 37: 114-124
- Robinson, S., C. Conway, C. Wallace, A. M. Ray, and U. Thakkar. 2011. Bugscope: Online K-12 microscopy outreach. Microscopy Today. March 2011: 26-29
- Swift, I. P., and A. M. Ray. 2010. Nomenclatural changes in North American *Phymatodes* Mulsant (Coleoptera: Cerambycidae). Zootaxa. 2448: 35-52
- Ray, A. M., I. P. Swift, J. A. Moreira, J. G. Millar, and L. M. Hanks. 2009. An aggregation pheromone produced by males of the desert cerambycid beetle *Anelaphus inflaticollis* (Coleoptera: Cerambycidae). Environ. Entomol. 38: 1462-1466
- Rodstein, J., J. S. McElfresh, J. D. Barbour, A. M. Ray, L. M. Hanks, and J. G. Millar. 2009. Identification and synthesis of a female-produced sex pheromone for the cerambycid beetle *Prionus californicus*. J. Chem. Ecol. 35: 590-600

- Ray, A. M., J. G. Millar, J. S. McElfresh, I. P. Swift, J. D. Barbour, and L. M. Hanks. 2009. Male-produced aggregation pheromone of the cerambycid beetle *Rosalia funebris*. *J. Chem. Ecol.* 35: 96-103
- Ray, A. M., M. D. Ginzl, and L. M. Hanks. 2009. Male *Megacyllene robiniae* (Coleoptera: Cerambycidae) use multiple tactics when aggressively competing for mates. *Environ. Entomol.* 38: 425-432
- Swift, I. P., and A. M. Ray. 2008. A review of the genus *Tragidion* Audinet-Serville, 1834 (Coleoptera: Cerambycidae: Cerambycinae: Trachyderini). *Zootaxa* 1892: 1-25
- Ray, A. M., C. Conway, U. Thakkar, C. Wallace, and S. J. Robinson. 2008. What does that hair do? Remote-access scanning electron microscopy and the Bugscope project. Instant Symposium feature: *American Entomologist* 54: 232-234
- Lacey, E. S., J. A. Moreira, J. G. Millar, A. M. Ray, and L. M. Hanks. 2007. Male-produced aggregation pheromone of the cerambycid beetle *Neoclytus mucronatus mucronatus*. *Entomol. Exp. Appl.* 122: 171-179
- Lacey, E. S., A. M. Ray, and L. M. Hanks. 2007. Calling behavior of the cerambycid beetle *Neoclytus acuminatus acuminatus*. *J. Insect Behavior* 20: 117-128
- Hanks, L. M., J. G. Millar, J. A. Moreira, J. D. Barbour, E. S. Lacey, J. S. McElfresh, F. R. Reuter, and A. M. Ray. 2007. Using generic pheromone lures to expedite identification of aggregation pheromones for the cerambycid beetles *Xylotrechus nauticus*, *Phymatodes lecontei*, and *Neoclytus modestus modestus*. *J. Chem. Ecol.* 33: 889-1126
- Ginzl, M. D., J. A. Moreira, A. M. Ray, J. G. Millar, and L. M. Hanks. 2006. (Z)-9-Nonacosene, major component of the contact sex pheromone of the beetle *Megacyllene caryae*. *J. Chem. Ecol.* 32: 435-451
- Nearns, E. H. and A. M. Ray. 2006. A new species of *Curius* Newman (Coleoptera: Cerambycidae) from Venezuela with notes on sexual dimorphism within the genus. *Zootaxa* 1256: 49-57
- Ray, A. M., E. S. Lacey, and L. M. Hanks. 2006. Predicted taxonomic patterns in pheromone production by longhorned beetles. *Naturwissenschaften* 93: 543-550

Book/chapter reviews

- Ray, A. M. Review of *Cerambycidae of the World: Biology and Pest Management*, by Q. Wang (editor). *Quarterly Review of Biology*. Submitted January 2019.
- Ray, A. M. 2018. Review of *Cerambycidae of Canada and Alaska*, by Y. Bosquet, et al. *Coleopterists Bulletin*. 72: 700-702. DOI: <https://doi.org/10.1649/0010-065X-72.4.700>
- Ray, A. M. 2016. Review of *Longhorned Woodboring Beetles (Coleoptera: Cerambycidae and Disteniidae) Primary Types of the Smithsonian Institution*, by S. W. Lingafelter, et al. *American Entomologist* 62: 60. Open Access: <https://doi.org/10.1093/ae/tmv027>

Invited Presentations

- Ray, A.M., J. Francese, Y. Zou, R. Bower, K. Watson, S. Krishnankutty, and J.G. Millar. "Field evaluation of lures for monitoring and control of the velvet longhorned beetle, *Trichoferus campestris*." Member Symposium: Systematics, Biogeography, and Ecology of Cerambycidae and Buprestidae. Annual meeting of the Entomological Society of America, Vancouver, BC, Canada, November 2018
- Ray A.M., J. Francese Y. Zou, R. Bower, K. Watson, D. Crook, and J.G. Millar. "Detection of velvet longhorned beetle populations using attractant baited traps." Smposium: Semiochemical application for invasive species. 34th Annual meeting of the International Society of Chemical Ecology, Budapest, Hungary August 2018
- Millar, J. G., L. M. Hanks, J. Wickham, A. Zunic-Kosi, S. Teale, and A. M. Ray. "Novel pheromones for detection and monitoring of exotic invasive species, and endangered native species of cerambycid beetles." Session 1, Agricultural and Forest Entomology. European Congress of Entomology, Naples, Italy, July 2018
- Krishnankutty, S., A.M. Ray, H. Nadel, S.W. Myers, J.J. Molongoski, Y. Wu, and S.W. Lingafelter. "Identification of port interceptions in wood packaging material." Western Plant Board meeting, Albuquerque, NM, May 14-17, 2018.
- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, D. J. Crook, and J. G. Millar. "Detection of velvet longhorn beetle populations using attractant baited traps." 29th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2018

- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, D. J. Crook, and J. G. Millar. "Field evaluation of an attractant pheromone for the invasive velvet longhorned beetle, *Trichoferus campestris* (Cerambycinae: Hesperophanini)." Section symposium: Chemical ecology of cerambycid beetles: Basic science and practical applications. National meeting of the Entomological Society of America, Denver, CO, November 2017
- Ray, A. M. "How to lasso a longhorn." Biological Sciences seminar series, Wright State University, Dayton, OH, 23 October 2017
- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, J. G. Millar, D. J. Crook, and B. Wang. "Isolation and identification of a male-produced attractant pheromone for the invasive velvet longhorned beetle, *Trichoferus campestris* (Cerambycinae: Hesperophanini)." 28th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2017
- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, J. G. Millar, D. J. Crook, and B. Wang. "Isolation and identification of a male-produced attractant pheromone for the invasive velvet longhorned beetle, *Trichoferus campestris* (Cerambycinae: Hesperophanini)." Systematics, Biogeography, and Ecology of Cerambycidae and Buprestidae, International Congress of Entomology, Orlando, FL, September 2016
- Ray, A. M. "Tossing all the balls into the air: how to do research at a teaching university" Department of Biology seminar series, Mount St. Joseph University, 16 September 2016.
- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, J. G. Millar, D. J. Crook, and B. Wang. "Evaluation of lure and trap design for capturing the velvet longhorned beetle, *Trichoferus campestris*." Western Plant Board Annual Meeting, Salt Lake City, UT, 13 May 2016
- Ray, A. M. "Chemical ecology of longhorned beetles." Department of Biological Science seminar series, University of Cincinnati, OH, 8 February 2016
- S. M. Krishnankutty, P. Reagel, H. Nadel, J. Molongoski, Y. Wu, A. M. Ray, and S. Myers. "Determining the identity and risks posed by cerambycids intercepted in solid wood packing material. PART A." Symposium: Regulatory Taxonomy: The study of organisms and how you Phylum. National meeting of the Entomological Society of America, Minneapolis, MN, November 2015
- Nadel, H., S. M. Krishnankutty, P. Reagel, J. Molongoski, Y. Wu, A. M. Ray, and S. Myers. "Determining the identity and risks posed by cerambycids intercepted in solid wood packing material. PART B." Symposium: Regulatory Taxonomy: The study of organisms and how you Phylum. National meeting of the Entomological Society of America, Minneapolis, MN, November 2015
- Ray, A. M. "Unusual pheromones of the longhorned beetles." O Programa de Pós-graduação em Sistemática, Taxonomia Animal e Biodiversidade, Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil, 7 October 2015
- Ray, A. M. "Unusual pheromones of the Cerambycidae." Tardes Entomológicas, Programa de Pós-graduação em Biodiversidade e Biologia Evolutiva, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil, 5 August 2015
- Ray, A. M. "Beyond the generics: unusual volatile pheromones of the Cerambycidae," Department of Biology seminar series, Morehead State University, Morehead, KY. March 10, 2015
- Ray, A. M. "Pheromone trapping for cerambycid beetles." National meeting of the Entomological Collections Network, Portland, OR, November 2014
- Ray, A. M., M. Apicella, A. Vaisvil, M. Buot, and E. E. Graham. "Evaluation of lure and trap design to survey for longhorned beetles in Southeast Alaska." Section symposium: Chemical communication in longhorned beetles. National meeting of the Entomological Society of America, Portland, OR, November 2014
- Crook, D., D. R. Lance, A. M. Ray, J. A. Francese, and V. C. Mastro. "Identification and behavior of a third male-produced pheromone component for the Asian longhorned beetle, *Anoplophora glabripennis*." Section symposium: Chemical communication in longhorned beetles. National meeting of the Entomological Society of America, Portland, OR, November 2014
- Nadel, H., P. Reagel, J. Molongoski, Y. Wu, A. M. Ray, and S. Myers. "Identification of cerambycids and buprestids from port interceptions in solid wood packing material: A model system for integrating DNA and morphological data to determine high risk pathways for forest pests." Symposium: The changing landscape of regulatory entomology and global trade: new technologies and strategies to reduce invasive pest risks in the Western US. Pacific Branch meeting of the Entomological Society of America, Tucson, AZ, April 2014

- Ray, A. M., R. A. Arnold, I. P. Swift, and J. G. Millar. "Volatile pheromones as a tool to monitor the U.S. federally threatened Valley Elderberry Beetle," Section symposium: Pitfalls, malaise, and hoping it all pans out: the state of the art in field collecting methods for insect biotic surveys. National meeting of the Entomological Society of America, Austin, TX, November 2013
- Ray, A. M. "Beyond the generics: unusual volatile pheromones of the Cerambycidae," Department of Entomology seminar series, Purdue University, West Lafayette, IN. October 17, 2013
- Ray, A. M., J. G. Millar, J. A. Moreira, J. S. McElfresh, I. Swift, J. D. Barbour, and L. M. Hanks. "Evidence for male-produced attractants of ten species in the cerambycid beetle genus *Neoclytus*." Symposium 34: Chemical ecology of invading species. International Chemical Ecology Conference, Melbourne, Australia, August 2013
- Millar, J. G., A. M. Ray, and L. M. Hanks. "Cerambycid beetles, a goldmine of new semiochemistry." Symposium: Chemistry of pheromones and other semiochemicals. Meeting of the Latin American Association of Chemical Ecology, Huerte Grande, Argentina, December 2012
- Ray, A. M., I. Swift, and J. G. Millar. "Using generic pheromones to survey for cerambycids in lowland Atlantic rainforest of Costa Rica." Member symposium: Chemical ecology of cerambycid beetles. National meeting of the Entomological Society of America, Knoxville, TN, November 2012
- Ray, A. M., I. Swift, L. M. Hanks, and J. G. Millar. "Volatile pheromones in the Cerambycidae: Making 'scents' of it all." Symposium: Systematics, biogeography and ecology of Cerambycidae and Buprestidae. International Congress of Entomology, Daegu, South Korea, August 2012
- Millar, J. G., L. M. Hanks, A. M. Ray, J. S. McElfresh, and R. F. Mitchell. "Semiochemistry of cerambycid beetles: Parsimony in pheromone structures, antagonism by pheromone analogs, and synergism by plant volatiles." Keynote speaker, Symposium 8: Applied Chemical Ecology. Meeting of the International Society of Chemical Ecology, Vilnius, Lithuania, July 2012
- Ray, A. M. "Volatile pheromones of the Cerambycidae: Making 'scents' of it all." Departmental Seminar, Department of Entomology, Ohio Agricultural Research and Development Center. The Ohio State University, Wooster, OH, April 2012
- Ray, A. M., I. P. Swift, J. S. McElfresh, R. L. Alten, and J. G. Millar. "(R)-Desmolactone, female-produced sex pheromone component of *Desmocerus californicus*, a longhorned beetle in the subfamily Lepturinae." Section symposium: Hardly Boring: Cerambycid workers symposium. National meeting of Entomological Society of America, Reno, NV, November 2011.
- Ray, A. M., R. F. Mitchell, E. E. Graham, J. D. Barbour, E. S. Lacey, I. P. Swift, L. M. Hanks, and J. G. Millar. "Trapping through the 2000s: What 10 years have taught us about beetle traps and lure design." Ecology Workshop, Institute of Chemistry, Chinese Academy of Sciences, Beijing, China, October 2011
- Ray, A. M., A. Žunič, R. L. Alten, J. S. McElfresh, L. M. Hanks, and J. G. Millar. "cis-Vaccenyl acetate, a sex attractant pheromone of *Ortholeptura valida*, a longhorned beetle in the subfamily Lepturinae." Annual meeting of the Asia Pacific Association of Chemical Ecologists, Beijing, China, October 2011
- Ray, A. M. "The sweet smell of Cerambycidae: pheromones, pits, pores, and phylogenies." Monthly meeting of the Langdon Club, Cincinnati Museum Center, March 2011
- Ray, A. M. "A volatile attractant for three species of the genus *Tragosoma* (Cerambycidae: Prioninae)." Member symposium: Semiochemicals of Cerambycidae: A diversity of signaling strategies. National meeting of the Entomological Society of America, San Diego, CA, December 2010
- Millar, J. G., J. Rodstein, A. M. Ray, J. Barbour, and L. M. Hanks. "Pheromones for the cerambycid beetles in the subfamily Prioninae." Symposium: Pheromone Chemistry. Latin American Association of Chemical Ecology, Colonia del Sacramento, Uruguay, October 2010
- Ray, A. M. "The sweet smell of Cerambycidae: pheromones, pits, pores, and phylogenies." Seminar, Department of Entomology, University of California Riverside, Riverside, CA, January 2010
- Ray, A. M., J. G. Millar, and L. M. Hanks. "Volatile pheromones of longhorned beetles." Section symposium: For the love of Longicornia: Cerambycid workers symposium. National meeting of the Entomological Society of America, Reno, NV, November 2008
- Hanks, L. M., J. G. Millar, J. D. Barbour, E. S. Lacey, and A. M. Ray. "Semiochemicals of cerambycids that signal across species and trophic boundaries." Member symposium: Semiochemicals that mediate behavior of cerambycid beetles. National meeting of the Entomological Society of America, Reno, NV, November 2008

- Ray, A. M., C. Conway, B. Grosser, and S. J. Robinson. "What does that hair do? Remote-access scanning electron microscopy and the evolution of the Bugscope project." Member symposium: From Field to Screen: Digital Imaging Technology in Entomology. National meeting of the Entomological Society of America. San Diego, CA, December 2007
- Hanks, L. M., J. G. Millar, J. D. Barbour, E. S. Lacey, and A. M. Ray. "Volatile pheromones of cerambycid beetles." Section C symposium: Semiochemicals mediating behavior of cerambycid beetles. National meeting of the Entomological Society of America. Indianapolis, IN, December 2006
- Lacey, E. S., A. M. Ray, J. A. Moreira, J. G. Millar, and L. M. Hanks. "Aggregation pheromones of cerambycine beetles endemic to North America." Section C symposium: Semiochemicals mediating behavior of cerambycid beetles. National meeting of the Entomological Society of America. Indianapolis, IN, December 2006
- Rutledge, C. E., E. S. Lacey, A. M. Ray, J. A. Moreira, J. G. Millar, and L. M. Hanks. "Potential pheromones of an invasive longhorned beetle, *Callidiellum rufipenne* (Coleoptera: Cerambycidae)." Section C symposium: Semiochemicals mediating behavior of cerambycid beetles. National meeting of the Entomological Society of America. Indianapolis, IN, December 2006
- Ray, A. M. "Evolution of chemical communication in the longhorned beetles: integrating imaging technology, chemical ecology, and natural history." Imaging Technology Group Forum. Beckman Institute for Advanced Science and Technology, Urbana, IL January 2006
- Ray, A. M. and L. M. Hanks. "Taxonomic patterns in volatile pheromone production by longhorned beetles." Section C symposium: Semiochemicals mediating behavior of cerambycid beetles. National meeting of the Entomological Society of America. Indianapolis, IN, December 2006
- Millar, J. G., L. M. Hanks, J. Moreira, E. S. Lacey, A. M. Ray, and J. Barbour. "Developing pheromone-based detection methods for exotic cerambycid beetles." Exotic/Invasive pests and diseases research program workshop. University of California, Davis, CA, October 2005

Contributed Presentations

- Gula, S., V. Lopez, A. Ray, S. Machtley, J. Hagler, and M. Ginzl. "A novel use of protein immunomarking in studying the dispersal of woodboring beetles." North Central Branch meeting of the Entomological Society of America, Cincinnati, OH, March 2019
- Tobin, K., E. Franzen, E. Geers, S. Estes, A. Ray and C. Traylor. "Does fluoropolymer preparation effect capture of longhorn beetles in panel intercept traps?" North Central Branch meeting of the Entomological Society of America, Cincinnati, OH, March 2019
- Traylor, C., E. Franzen and A. Ray. "Effects on native cerambycid diversity after large scale disturbance and implications for further invasion." North Central Branch meeting of the Entomological Society of America, Cincinnati, OH, March 2019
- Franzen, E. K. L., C. Traylor, and A.M. Ray. "Effects of Asian longhorned beetle eradication efforts on native cerambycid community composition." Annual meeting of the Entomological Society of America, Vancouver, BC, Canada, November 2018
- Gula, S.W., V.M. Lopez, S.A. Machtley, J.R. Hagler, A.M. Ray, and M.D. Ginzl. "A novel use of protein immunomarking in studying the dispersal of woodboring beetles." Annual meeting of the Ohio Valley Entomology Association, Indianapolis, IN, October 2018
- Franzen, E. K. L., S. Todd, S. Gula, W. Panagakos, and A.M. Ray. "Using dendrochronology to reconstruct the spread of the Asian longhorned beetle (*Anoplophora glabripennis*)(Lamiinae: Monochamini) in Ohio." National meeting of the Entomological Society of America, Denver, CO, November 2017
- Gula, S. L. Kuhn, A. M. Ray, and M. Ginzl. "Function of beta-glucosidases in chemical communication of the Asian longhorned beetle, *Anoplophora glabripennis* (Coleoptera: Cerambycidae)." National meeting of the Entomological Society of America, Denver, CO, November 2017
- Shin, S., A. Wijeratne, S. Haddad, H. Nadel, A. M. Ray, and D. D. McKenna. "Phylogenomics of longhorned beetles (Cerambycidae): Does expanded taxon sampling improve phylogenetic resolution?" National meeting of the Entomological Society of America, Denver, CO, November 2017
- Reagel, P. F., H. Nadel, S. Myers, and A. M. Ray. "Risks posed by cerambycids intercepted in solid wood packing material." National meeting of the Entomological Society of America, Portland, OR, November 2014

- Ray, A. M., R. A. Arnold, I. P. Swift, P. Schapker, S. McCann, C. Marshall, J. S. McElfresh, and J. G. Millar. “(R)-Desmolactone is a sex pheromone or sex attractant for the endangered Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* and several congeners (Cerambycidae: Lepturinae).” Meeting of the International Society of Chemical Ecology, Urbana, IL, July 2014
- Apicella, M. V., E. E. Graham, M. Buot, and A. M. Ray. “Evaluation of pheromone release devices and trap design to develop a broad-range survey tool for exotic longhorned woodboring beetles in Alaska.” National Conference on Undergraduate Research, Lexington, KY, April 2014
- Reagel, P. F., A. M. Ray, S. Myers, and H. Nadel. “Enhancing identification of cerambycids and buprestids from port interceptions in solid wood packing material.” 25th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2014
- Ray, A. M., I. P. Swift, J. S. McElfresh, R. L. Alten, and J. G. Millar. “(R)-Desmolactone, female-produced sex pheromone component of *Desmocerus californicus*, a longhorned beetle in the subfamily Lepturinae.” Meeting of the International Society of Chemical Ecology, Burnaby, BC, Canada, July 2011
- Millar, J. G., J. B. Barbour, A. M. Ray, and L. M. Hanks. “Chemistry of cerambycid beetle pheromones for practical applications.” 22nd USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2011
- Ray, A. M., D. D. McKenna, and L. M. Hanks. “Evolution of prothoracic pheromone glands in longhorned beetles.” National meeting of the Entomological Society of America, Indianapolis, IN, December 2009
- Ray, A. M., I. P. Swift, J. S. McElfresh, J. Barbour, J. G. Millar, and L. M. Hanks. “Male-produced volatile aggregation pheromone of the longhorned beetle *Rosalia funebris*.” National meeting of the Entomological Society of America, Reno, NV, November 2008
- Ray, A. M., and L. M. Hanks. “Phylogenetic relationships and patterns of pheromone use in the Cerambycinae” National meeting of the Entomological Society of America, San Diego, CA, December 2007
- E. S. Lacey, A.M. Ray, and L. M. Hanks. “Employing pheromone lures to trap cerambycid beetles.” National meeting of the Entomological Society of America, San Diego, CA, December 2007
- Ray, A. M., E. S. Lacey, and L. M. Hanks. “Predicted taxonomic patterns in pheromone production by cerambycid beetles.” North Central Branch meeting of the Entomological Society of America. Bloomington, IL, March 2006
- Lacey, E. S., A. M. Ray, J. G. Millar, and L. M. Hanks. “Behavior associated with pheromone release in the cerambycid beetle *Neoclytus acuminatus acuminatus*.” National meeting of the Entomological Society of America, Ft. Lauderdale, FL, December 2005
- Ray, A. M., J. B. Nardi, J. G. Millar, S. J. Robinson, H. M. Robertson, and L. M. Hanks. “Antennal sensilla associated with long-range and contact pheromones in longhorned beetles (Coleoptera: Cerambycidae).” North Central Branch meeting of the Entomological Society of America. West Lafayette, IN, March 2005
- Ray, A. M., M. D. Ginzl, E. S. Lacey, J. G. Millar, and L. M. Hanks. “Taxonomic patterns in the composition of cuticular hydrocarbons of longhorned beetles (Coleoptera: Cerambycidae).” National meeting of the Entomological Society of America. Salt Lake City, UT, November 2004
- Ray, A. M., M. D. Ginzl, J. G. Millar and L. M. Hanks. “Chemical basis for mate location and recognition in the longhorned beetle *Megacyllene caryae* (Gahan) (Coleoptera: Cerambycidae).” National meeting of the Entomological Society of America. Cincinnati, OH, October 2003

Contributed Posters

- Krishnankutty, S., A.M. Ray, H. Nadel, S.W. Myers, J.J. Molongoski, Y. Wu, and S.W. Lingafelter. *Trichoferus campestris* (Cerambycidae): port interceptions in wood packaging, inland detections, and risk of establishment in the United States. 29th Annual USDA Interagency Forum on Invasive Species, Annapolis, MD. 9-12 Jan., 2018
- Todd, S., E. K. L. Franzen, S. W. Gula, W. Panagakos, and A. M. Ray. “Dendrochronology study on the Ohio infestation of Asian longhorned beetle (*Anoplophora glabripennis*).” Midwest Ecology and Evolution Conference, Michigan State Kellogg Biological Station, Hickory Corners, MI April 2018
- Traylor, C. R., E. K. L. Franzen, and A. M. Ray. “Effect of invasive Asian longhorned beetle (*Anoplophora glabripennis* [Motschulsky]) eradication on diversity of native cerambycids in southwestern Ohio.” Midwest Ecology and Evolution Conference, Michigan State Kellogg Biological Station, Hickory Corners, MI April 2018

- Gula, S. W., V. M. Lopez, L. A. Kuhn, J. A. Francese, D. J. Crook, M. D. Ginzel, and A. M. Ray. "Response of adult *Anoplophora glabripennis* (Coleoptera: Cerambycidae) to potential host-derived attractants." International Congress of Entomology, Orlando, FL, September 2016
- Lopez, L. M., M. S. Hoddle, J. A. Francese, and A. M. Ray. "Assessing the flight capabilities of Asian longhorned beetle, *Anoplophora glabripennis* (Coleoptera: Cerambycidae), with computerized flight mills." International Congress of Entomology, Orlando, FL, September 2016
- O'Kane, M. L., S. W. Gula, E. K. L. Franzen, and A. M. Ray. "Response of adult Asian longhorned beetles to isothiocyanates in laboratory bioassays" Midwest Ecology and Evolution Conference, Urbana, IL March 2017
- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, J. G. Millar, D. J. Crook, and B. Wang. "Isolation and identification of a male-produced attractant pheromone for the invasive velvet longhorned beetle, *Trichoferus campestris* (Cerambycinae: Hesperophanini)." Joint meeting of the International Society of Chemical Ecology and Association of Latin American Chemical Ecology, Iguacu Falls, Brazil, July 2016
- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, J. G. Millar, D. J. Crook, and B. Wang. "Isolation and identification of a male-produced attractant pheromone for the invasive velvet longhorned beetle, *Trichoferus campestris* (Cerambycinae: Hesperophanini)." North American Forest Insect Work Conference, Washington, DC, May 2016
- Reitz, A., J. A. Francese, D. J. Crook, V. M. Lopez, S. W. Gula, and A. M. Ray. "Response of *Anoplophora glabripennis* (Coleoptera: Cerambycidae: Lamiinae) to variation in trap color." Midwest Ecology and Evolution Conference, Oxford, OH, March 2016
- Ray, A. M., J. A. Francese, Y. Zou, K. Watson, J. G. Millar, D. J. Crook, and B. Wang. "Isolation and identification of a male-produced attractant pheromone for the invasive velvet longhorned beetle, *Trichoferus campestris* (Cerambycinae: Hesperophanini)." USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2016
- Lopez, L. M., M. S. Hoddle, J. A. Francese, and A. M. Ray. "Assessing the flight capabilities of Asian longhorned beetle, *Anoplophora glabripennis* (Coleoptera: Cerambycidae), with computerized flight mills." USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2016
- Nadel, H., S. Myers, J. Molongoski, S. Krishnankutty, A. M. Ray, Y. Wu, A. Taylor, S. W. Lingafelter. "What have we learned from interceptions in Wood Packing Material: Findings from identification of insects and wood material." USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2016
- Ray, A. M., J. Francese, C. Burfitt, K. Watson, R. M. Collignon, J. G. Millar, D. Crook, and B. Wang. "Evaluation of generic attractants for trapping the velvet longhorned beetle *Trichoferus campestris* (Faldermann)." Meeting of the International Society of Chemical Ecology, Stockholm, Sweden, June 2015
- Vaisvil, A. V., E. E. Graham, and A. M. Ray. "(R)-fusicumol acetate: A candidate attractant pheromone of *Nicrophorus defodiens*." Midwest Ecology and Evolution Conference, Bloomington, IN, March 2015
- Ray, A. M., J. Francese, C. Burfitt, K. Watson, R. M. Collignon, J. G. Millar, D. Crook, and B. Wang. "Evaluation of generic attractants for trapping the velvet longhorned beetle *Trichoferus campestris* (Faldermann)." 26th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2015
- Nadel, H., S. Myers, J. Molongoski, P. Reagel A. Ray, Y. Wu, and S. Lingafelter. "What are we learning from identification of larvae intercepted in wood packing material? The case of an emerging pest, *Trichoferus campestris*." 26th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2015
- Lopez, V. M., S. Gula, M. S. Hoddle, A. M. Ray, and J. A. Francese. "Investigating the flight capabilities of Asian longhorned beetle, *Anoplophora glabripennis* (Coleoptera: Cerambycidae), with computerized flight mills." 26th USDA Interagency Research Forum on Invasive Species, Annapolis, MD, January 2015
- Crook, D., A. M. Ray, D. Lance, B. Wang, J. Francese, and V. Mastro. "Identification and behavior of a third male-produced pheromone component for the Asian longhorned beetle, *Anoplophora glabripennis*." National meeting of the Entomological Society of America, Portland, OR, November 2014
- Rodstein, J., J. S. McElfresh, J. D. Barbour, A. M. Ray, L. M. Hanks, I. M. Wright, K. Barbour, E. C. Maki, and J. G. Millar. "Identification and synthesis of a female-produced sex pheromone for the cerambycid beetle *Prionus californicus*." Poster 17923, Division of Organic Chemistry, Session: Asymmetric

Reactions and Processes; Biologically-related Molecules and Processes; Metal-mediated Reactions and Syntheses; Peptides, Proteins, and Amino Acids. National meeting of the American Chemical Society, Denver CO, August/ September 2011

Millar, J. G., L. M. Hanks, J. Moreira, E. S. Lacey, A. Ray, and J. Barbour. CSREES-USDA Awardee workshop at the Gordon Conference on Plant-Herbivore Interactions, Ventura, CA, February 2006

Lacey, E. S., A. M. Ray, J. G. Millar and L. M. Hanks. "Behavior associated with pheromone release in the cerambycid beetle *Neoclytus acuminatus acuminatus*." Annual meeting of the International Society of Chemical Ecology. Washington, DC, July 2005

Ray, A. M., E. S. Lacey, and L. M. Hanks. "Taxonomic patterns in use of long-range pheromones within the longhorned beetle subfamily Cerambycinae (Coleoptera: Cerambycidae)." Meeting of the International Society of Chemical Ecology. Washington, DC, July 2005

Ray, A. M., M. D. Ginzel, J. A. Moreira, J. G. Millar and L. M. Hanks. "Chemical basis for mate location and recognition in the longhorned beetle *Megacyllene caryae* (Gahan) (Coleoptera: Cerambycidae)." Joint meeting of the International Society of Chemical Ecology and the Phytochemical Society of North America. Ottawa, ON, Canada, July 2004

Meetings Organized

Section symposium with Eugenio Nearn; Systematics, biogeography, and ecology of Cerambycidae and Buprestidae. International Congress of Entomology, Helsinki, Finland, June 2020 (scheduled)

Section symposium with Robert Mitchell; Chemical ecology of cerambycid beetles. National meeting of the Entomological Society of America, St. Louis, MO, November 2019 (scheduled)

Section symposium with Eugenio Nearn; Systematics, biogeography, and ecology of Cerambycidae and Buprestidae. National meeting of the Entomological Society of America, Vancouver, BC Canada, November 2018

Section co-convenor for symposia on Insect Chemical Ecology. International Congress of Entomology, Orlando, FL, September 2016

Section symposium with Eugenio Nearn; Systematics, biogeography, and ecology of Cerambycidae and Buprestidae. International Congress of Entomology, Orlando, FL, September 2016

Local arrangements committee, Joint meeting of the International Society of Chemical Ecology/Latin American Association of Chemical Ecologists, Iguacu Falls, Brazil July 2016

Scientific committee, Meeting of the International Society of Chemical Ecology, Urbana, IL, July 2014

Member symposium with Elizabeth Graham and Matthew Ginzel; Chemical ecology of cerambycid beetles. National meeting of the Entomological Society of America, Knoxville, TN, November 2012

Section symposium with Amy Berkov; Hardly boring: Cerambycid workers symposium. National meeting of the Entomological Society of America, Reno, NV, November 2011

Section symposium with James Barbour and Matthew Ginzel; Semiochemicals of Cerambycidae: A diversity of signaling strategies, Part 2. National meeting of the Entomological Society of America, San Diego, CA, December 2010

Member symposium with James Barbour and Matthew Ginzel; Semiochemicals of Cerambycidae: A diversity of signaling strategies, Part 1. National meeting of the Entomological Society of America, San Diego, CA, December 2010

Section symposium with Amy Berkov; The long and short of longicorns: Cerambycid workers symposium. National meeting of the Entomological Society of America, Indianapolis, IN, December 2009

Section symposium with Amy Berkov; For the love of longicornia: Cerambycid workers symposium. National meeting of the Entomological Society of America, Reno, NV, November 2008

Symposium with Student Affairs Committee; Walking the entomological line: Making the transition from student to professional. North Central Branch meeting of the Entomological Society of America, Columbus, OH, March 2008

Popular Press

- “What’s Darwinism got to do with it?” Xavier University College of Arts & Sciences E-newsletter.
<https://www.xavier.edu/now/2019/cas-newsletter-spring/darwinism-class>. April 2019
- “Genomic tools to combat the spread of the invasive Asian longhorned beetle,” by the Swiss Institute of Bioinformatics. www.sciencedaily.com/releases/2016/11/161111120733.htm. ScienceDaily, 11 November 2016.
- “Newly discovered beetle genome helps to explain woodland destruction,” by Allison Huseman, <https://www.bcm.edu/news/genome-sequencing/beetle-genome-explains-woodland-destruction>. Baylor College of Medicine News, 11 November 2016.
- “Rare, Controversial Beetle Still Hangs On in Delta” by Chris Clarke, KCET, Los Angeles CA, <http://www.kcet.org/news/define/rewild/invertebrates/rare-controversial-beetle-still-hangs-on-in-delta.html>, 7 July 2015
- “Sex Attraction Pheromone Improves Detection of a Threatened Beetle.” by R. A. Arnold, A. M. Ray, and J. G. Millar. <http://entomologytoday.org/2015/03/03/sex-attraction-pheromone-improves-detection-of-a-threatened-beetle/>. Entomology Today. 3 March 2015
- “The New Beetle Mania” by Jen Saltsman, Xavier Magazine, Summer 2013, pp. 32-33.
- “Pheromone Gland” Image of the Week: Imaging Technology Group, Beckman Institute for Advanced Science and Technology, UIUC, 3 May 2005.

Courses Taught

Xavier University, College of Arts and Sciences (as assistant/associate professor)

BIOL 122/123, BIOL 255 Tropical Biodiversity (lecture/ laboratory), Tropical Ecology in Costa Rica

Winter intersession 2011, 2012, 2014, 2015, 2016

BIOL 160: General Biology I

F 2010, F 2011, F 2012, F 2013, F 2014, F 2016, F 2017, F 2019

BIOL 161: General Biology I Laboratory

F 2010, F 2011

BIOL 162: General Biology II

S 2011, S 2012, S 2013, S 2014, S 2016, S 2017, S 2018, S 2019

BIOL 163: General Biology II Laboratory

S 2011, S 2012

BIOL 231: Genetics Laboratory

S 2011

BIOL 270/271: Introduction to Entomology (lecture and laboratory, new course F 2012)

F 2012, F 2013, F 2014, F 2016, F 2017, F 2018, F 2019

BIOL 290: Tutorial in Biology

F 2011, S 2012, F 2014, S 2017, F 2017, S 2019

BIOL 495: Directed Study in Biology

F 2014, F 2017, S 2019

BIOL 496: The Biology of Smell and Taste, senior capstone seminar (new course S 2014)

S 2014, S 2016

BIOL 498/499: Methods of Biological Research I/II

F 2011, S 2012, F 2012, S 2013, F 2018, S2019, F 2019

HONR 300: The Rhetoric of Darwinism (team taught with Dr. Renea Frey, new course F 2018)

F 2018

UIUC, School of Integrated Biology (as graduate teaching assistant)

IB 104: Introduction to Animal Biology, Laboratory

F 2004

IB 150: Organismal and Evolutionary Biology, Discussion

S 2005

IB 460: Introduction to Entomology, Laboratory

F 2005

Post-doctoral Fellows Supervised

Xavier University

Peter F. Reagel, Sindhu Krishnankutty, Vanessa M. Lopez

Students Supervised

Purdue University (*M. S. in Entomology, 2019*) *co-advised by Matthew D. Ginzel

Scott Gula

Xavier University (*undergraduates*)

Ryan Rugg, Ryan Lawson, Abigail Morton, Ifidon Ohiomah, Erika Ratcliff, Summer 2019-Spring 2020

Samantha Estes, Erica Geers, Kelsey Tobin, Clayton Traylor, Summer-Fall 2018

Samantha Estes, Stephen Todd, Clayton Traylor, Ihsan Walker, Summer 2017

Mackenzie O’Kane, Stephen Todd, Summer 2016

Patrick Gemperline, Samuel Engle, Mackenzie O’Kane, Alexander Reitz, Brenna Walters, Summer 2015

Michael Apicella, Grace Lambert, Michael Kunz, Alexander Vaisvil, Summer 2014

Michael Apicella, Summer 2013

Alyssa DeWees, Patrick Martin, Megan Montalvo, 2011-2012

UIUC (*undergraduates*)

Brett Forestiere, 2008, “Effects of contamination sources on cuticular hydrocarbons of the red-headed ash borer, *Neoclytus a. acuminatus*”

Paul Masonick and Mark Knaub, 2007, “Influence of body size in mate competitions in the locust borer, *Megacyllene robiniae*”

Michael Currier, 2006, “Cuticular hydrocarbons of the Carolina pine sawyer, *Monochamus carolinensis*”

Academic Advising

Xavier University, College of Arts and Sciences (*as assistant/associate professor*)

Academic and career advising: 20-45 undergraduate biology, natural sciences, and biomedical science majors (Fall 2011-present; number of advisees varies by semester)

Other Contributions to Instructional Programs

Peer mentor, Xavier University Center for Mission and Identity Ignatian Mentoring Program, with Adam Azman, Fall 2019-Spring 2020

Peer mentor, Xavier University Center for Teaching Excellent Teaching Mentoring Pairs program, with Cynthia Dulaney, Spring 2019

Organizer, General Biology I and II “Freshman Fridays/Future Focus Friday,” professional development series for first year students, Fall 2017-Spring 2019.

Panelist, Preparing Future Faculty, University of Cincinnati, September 2012, February 2012, February 2016, March 2018

Instructor, Xavier University MCAT prep course, Critical Analysis and Reading Section (4 lectures), Spring 2015, Spring 2016, Spring 2017

Delegate, Xavier University College of Arts and Sciences, 33rd International Lilly Conference on College Teaching, Miami University, Oxford, OH, 22-24 November 2013

Panelist, Professional Development for Biology graduate students (BIOL9004), University of Cincinnati, Department of Biology, April 2013

Visiting researcher, Taxonomy and Systematics of Coleoptera (graduate course), Organization for Tropical Studies, La Selva Biological Station, June 2012

Co-principal investigator (with J. G. Millar and B. Maxwell), Diné Environmental Institute, Diné College, Tuba City, AZ, Summer 2010. Student interns: Sinah Manygoats and Sha Sha Yazzie, “Assessing the response of *Prionus* spp. to prionic acid in dune ecosystems of the Navajo Nation”

Guest lecture, Insect Physiology, IB 427, UIUC, April 2008; Lab presentation: “Physiology of pheromone production in cerambycid beetles.”

Guest lecture, Introduction to Pest Management, IB 482, UIUC, November 2007; Lab presentation: “Semiochemicals in IPM.”

Guest lecture, Introduction to Entomology, IB 460, UIUC, July 2005; “Pheromones of cerambycid beetles.”

Guest lecture, Introduction to Entomology, IB 460, UIUC, October 2004; “Circulation and thermoregulation.”

Professional Service

Editorship

Editorial board member, Nature Scientific Reports (2019-present)

Associate editor, Behavior section, Environmental Entomology (2018-present)

Subject editor, Cerambycidae, ZooKeys (2015-2016)

Service to Academic/ Research Institutions

Advisory board, Mount St. Joseph University, Department of Biology, August 2014-present

Northern Kentucky University Research and Education Field Station Strategic Planning Committee, June 2017-present

Technical reviewer, U.S. Fulbright Commission, proposals in entomology and parasitology, November 2018

Research advisory committee, master’s student: Daniel Nemeth, “Variation in host preferences in *Drosophila mohavensis*.” University of Cincinnati, Department of Biological Sciences, May 2016-June 2017

Identified insect specimens in the collection of the Comissão Executiva do Plano da Lavoura Cacaueira (CEPLAC) research station at Ouro Preto do Oeste, Rondônia, Brazil: August 2015

Service to Disciplinary or Professional Societies or Associations

Judge, Larry Larson Graduate Student Award for Leadership in Applied Entomology, Entomological Society of America, 2018-2021

Moderator, Student competition, Systematics and Evolutionary Biology section, National meeting of the Entomological Society of America, Vancouver, BC, Canada November 2018

Moderator, Student competition, Systematics and Evolutionary Biology section, National meeting of the Entomological Society of America, Denver, CO November 2017

Panelist, “Down with Publish or Perish: Non-Traditional Careers in Entomology,” Lunch and Learn, International Congress of Entomology, Orlando, FL, 30 September 2016

Councilor (elected position), International Society of Chemical Ecology, 2012-2015

Judge, student oral presentation and poster competition, Meeting of the International Society of Chemical Ecology, Stockholm, Sweden, July 2015

Judge, student travel award competition, Meeting of the International Society of Chemical Ecology, Stockholm, Sweden, February 2015

Councilor (elected position), Coleopterists Society, 2013-2014

Judge, Student poster competition, Meeting of the International Society of Chemical Ecology, Urbana, IL, July 2014

Moderator, Forest insect chemical ecology, Meeting of the International Society of Chemical Ecology, Urbana, IL, July 2014

Moderator, ISCE Student travel award presentations, Meeting of the International Society of Chemical Ecology, Urbana, IL, July 2014

Contributor/Question author, 30th Annual Linnaean Games, National meeting of the Entomological Society of America, Austin, TX November 2013

National Awards Committee, North Central Branch of the Entomological Society of America, 2010-2013 (chair 2012-2013)

Moderator, Student competition, Plant Insect Ecosystems: Section 10, National meeting of the Entomological Society of America, Knoxville, TN, November 2012

Judge, Student competition, Systematics and Evolutionary Biology: Section 4, National meeting of the Entomological Society of America, Reno, NV, November 2011

Reviewer for the Entomological Society of America *Common Names of Insects and Related Organisms*, (Coleoptera: Cerambycidae), April 2011

Honorary Awards Committee, North Central Branch of the Entomological Society of America, student member, 2008-2009

Student Affairs Committee, National Entomological Society of America, North Central Branch Representative, 2008-2009
Registration volunteer, North Central Branch meeting of the Entomological Society of America, Columbus, OH, March 2008
Career center volunteer, National meeting of the Entomological Society of America, Reno, NV, November 2008
Student Affairs Committee, National Entomological Society of America, ad-hoc member, 2007-2008
Student Affairs Committee, North Central Branch of the Entomological Society of America, 2007-2009, vice-chair, 2008-2009
Registration volunteer, National meeting of the Entomological Society of America, San Diego, CA, December 2007
Registration volunteer, National meeting of the Entomological Society of America, Indianapolis, IN, December 2006
Local Arrangements Committee volunteer, North Central Branch meeting of the Entomological Society of America, Bloomington, IL, March 2006
Audiovisual volunteer, National meeting of the Entomological Society of America, Ft. Lauderdale, FL, November 2002

Reviews

Journal manuscripts (N=46): *American Entomologist*, *Annals of the Entomological Society of America*, *Arboriculture and Urban Forestry*, *Bulletin of Entomological Research*, *Chemocology*, *The Canadian Entomologist*, *The Coleopterists Bulletin*, *Ecological Entomology*, *Environmental Entomology: Pest Management*, *Environmental Entomology: Plant-Insect Interaction*, *The Great Lakes Entomologist*, *Insecta Mundi*, *Journal of Chemical Ecology*, *Journal of Economic Entomology*, *Journal of Experimental Zoology: Molecular and Developmental Evolution*, *Journal of Insect Physiology*, *Journal of Insect Science*, *Journal of Pest Management*, *Naturwissenschaften*, *Pan-Pacific Entomologist*, *PLOS One*, *Revista Brasileira de Entomologia*, *Tetrahedron Letters*, *Zootaxa*
Pre-publication reviews: *An Illustrated Key to the Longhorned Woodboring Beetles of the Eastern United States*, by S. W. Lingafelter, for the Coleopterists Society (2006); *Busy with Bugs: 160 Extremely Interesting Things to Do with Bugs*, by Toni Albert, Trickle Creek Books (2010)

Department/College/University Service (Xavier University)

Core Curriculum Committee: 2019-2022
Admissions Committee: 2018-2021
Next Gen Teacher Scholar committee, workload focus group: March 2017-present
Faculty advisor, Biology Club: Fall 2013-present
Manresa for staff, overnight retreat: 2012, 2013, 2014, 2016, 2017, 2018, 2019
Core Curriculum Writing Flag committee: 2014-2019 (chair 2016-2019)
Aspiring Anti-Racist Allies: Fall 2018-Spring 2019
Advisory board, Center for Teaching Excellence: Fall 2017-Spring 2020
Speaker, Meet the Majors, Manresa new student orientation: August 2010, 2011, 2014, 2016, 2017, 2019
Things Faculty Want Students to Know, Manresa student orientation: August 2016, 2017, 2019
St. Francis Xavier Scholarship competition: 28 March 2015, 17 March 2018, Winter 2019
Student mentor, Celebration of Student Research and Creative Activity: annually, each April since 2012
Bias Advisory Response Team: April 2016-October 2018
Courageous Conversation on Sexuality and (Trans)Gender: all day workshop 26 October 2018
Joan G. McDonald Award for Outstanding Teaching in the Sciences selection committee: Spring 2018
Presenter, First Year Seminar writing pedagogy workshop: 14 March 2018
Association of Jesuit College and Universities Heartland/Delta Conversations Conference on Diversity/Inclusion: 16 -18 February 2018
Pilot cohort, Diversity and Inclusion Teaching Academy: Fall 2017
Pride Parade, Xavier LGBTQ Alliance: 24 June 2017
Hiring committee for Director of Student Success and Retention: May 2017
Mock class, Xperience Day: April 2017

Biology Department ambassador, Xperience Day: Nov. 2010, Sep. 2012, Apr. 2013, Sep. 2014, April 2016
Chair, Department of Biology Rank and Tenure committee for Dr. Jennifer Robbins: November 2016
Biology Department ambassador, Majors Fair: September 2016
Faculty advisor, Bass Fishing Team (club sport): Fall 2014-Spring 2015
Student life space committee: Fall 2014
Manresa (orientation to university mission for new employees), on-campus program: 17 September 2014
Biology/ Natural Sciences advising, freshman phone PREP: April 2013
Search committee for tenure-track faculty in biology: Fall 2011-Spring 2012
University Common Reading Experience discussion leader: August 2011
Biology/ Natural Sciences advising, Freshman PREP: 21 May 2011, 19 August 2011
Faculty advisor, NEXUS Community Garden Steering Committee: 2011
Volunteer, Higher Learning Commission site visit: March 2011

Department/University Service (UIUC)

Graduate student representative, administrator evaluation committee for Dr. May Berenbaum, March 2008
Event coordinator, 23rd Annual Insect Fear Film Festival, Graduate Student Association, February 2006
Sales and event coordinator, 22nd Annual Insect Fear Film Festival, Graduate Student Association, Department of Entomology, February 2005
President, Graduate Student Association, Department of Entomology, 2004–2006

Public Service

Skype a Scientist, with 3rd Grade at Horizon Academy West, Albuquerque, NM, 9 April 2018
Organizer and presenter, Xavier University Summer Innovation Creativity Exploration STEM camp for middle school girls, “What are the insects in your neighborhood?” 2 hour lab workshop, 24 July 2017
Advanced naturalist workshop, Cincinnati Museum Center, Edge of Appalachia Preserve, May 2016 (full weekend program)
Organizer and presenter, Xavier University Summer Innovation Creativity Exploration STEM camp for middle school girls, “What are the insects in your neighborhood?” 2 hour lab workshop, 20 July 2015
Workshop on insect identification, St. Xavier High School Science Olympiad Team, December 2014
Interview, Girls In Real Life Sciences newsletter, Cincinnati Museum Center, Museum of Natural History and Science, (<http://girls.cincymuseum.org/june-2014/>), June 2014
Media interview about mosquitoes and ticks, WXIX-19 Cincinnati, OH, March 16, 2012
Bugscope volunteer, Beckman Institute for Advanced Science and Technology, 2004-2011
Presenter, Volunteer workshop, “Invasive Species, Past and Present,” Cincinnati Nature Center, February 7, 2011
Presenter, Nature Knowledge Night, “Invasive Species, Past and Present,” Cincinnati Nature Center, February 7, 2011
Volunteer, Christmas Bird Count, San Fernando Valley Audubon Society, Santa Clarita, CA: December 28, 2010
Identified beetle specimens for the Cincinnati Nature Center: October 2010
Guest presenter, field biology program, Rancho Los Mochos Boy Scout Camp, Livermore, CA, July 29, 2009
Media interview for Bugscope, Pittsburgh Post-Gazette, November 5, 2008
Advisor to M. Brezic, Willoughby, OH, on identification of insects, November 2008
Guest presenter, insect program, Kids Adventure Camp, Placerita Canyon Nature Center, Newhall, CA, August 15, 2008
Volunteer, Mountains Recreation and Conservation Authority, native plant garden at East Canyon Newhall, CA, June 2008
Volunteer, trail mapping, Coalition for America's Wilderness under the guidance of the Community Hiking Club, Santa Clarita, CA, June 2008
Media interview for 2008 Insect Fear Film Festival, Environmental Almanac, WILL-AM Radio and The News-Gazette, Champaign, IL, February 21, 2008
Consultant to Dr. Jakub Michalcewicz, Dept. of Forest Entomology, Hugo Koffłataj Agricultural University, Krakow, Poland, on the eggs of longhorned beetles, January 2008
Coach, Illinois Science Olympiad, “Don’t Bug Me” event, Campus Middle School for Girls, Urbana, IL, Spring 2007

Volunteer, Microscopy Suite, Beckman Institute Open House, UIUC, March 2007
Advisor to L. Burge, Johnson City, TN, on identification of insects, December 2006
Advisor to D. Geiman, Chicago, IL, on identification of insects, August 2006
Media interview for 2006 Insect Fear Film Festival, UIUC News Bureau, February 2, 2006
Advisor to D. Carlsen, Park Ridge, IL, on identification of insects, November 2005
Consultant to Dr. Jon Sweeney, Natural Resources Canada, on pheromone-producing tissues in longhorned beetles, October 2005
Advisor to L. Connelly, Chicago, IL, on identification of insects, June 2005
Volunteer, Microscopy Suite, Beckman Institute Open House, UIUC, March 2005
Advisor to M. Baer, New Jersey, on identification of insects, March and May 2005
Consultant to Dr. Christopher Pierce, Coordinator for the Indiana Cooperative Agricultural Pest Survey, USDA-APHIS-PPQ, on obtaining voucher specimens of invasive wood-boring insects, May 2005
Media interview for 2005 National Science Olympiad, The News-Gazette, Champaign-Urbana, IL, May 23, 2005
Moderator/ Judge, Middle school division "Don't Bug Me" Event, National Science Olympiad, UIUC, May 2005
Consultant to Dr. Claire Rutledge, USDA-ARS, on protocols for extracting cuticular hydrocarbons of longhorned beetles, April 2005
Co-organizer and presenter, Brownie "Bugs" Try-It Activity, Girl Scouts of America: Green Meadows Council, Urbana, IL, March 2005
Media interview for 2005 Insect Fear Film Festival, WCIA-3 Champaign, IL, February 19, 2005
Coordinator, Insect "Fear" Outreach Event, National Science Olympiad, UIUC, May 2005
Cooperator with Claus Tittiger, Dept. of Biochemistry, Univ. of Nevada, Reno, on PCR-based survey of cDNAs of wood-boring beetles for genes involved in detoxification of secondary compounds of pines, May 2004
Organizer and Coordinator, Cadette Eco-Action Interest Project Workshop, Girl Scouts of Kentuckiana, Metro Service Unit, Louisville, KY, March 2003
Assistant/ "Bug Hike" Leader, Area 12 Day Camp, Camp Shantituck, Girl Scouts of Kentuckiana, Metro Service Unit, Louisville, KY, July 2002

Memberships and Affiliations

TriBeta Biological Honor Society
Coleopterists Society
Entomological Society of America
International Society of Chemical Ecology