

**M. Deane Bowers**  
**CURRICULUM VITAE**  
February, 2020

**PRESENT POSITION**

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Chair, Ecology and Evolutionary Biology, July 2014 – present.  
Professor of Biology and Curator of Entomology, University of Colorado, 1995 – present

**ADDRESS:** University of Colorado Museum of Natural History and  
Department of Ecology and Evolutionary Biology  
University of Colorado  
334 UCB  
Boulder, CO 80309  
Office: (303) 492-5530

**EMAIL:** deane.bowers@colorado.edu

**RESEARCH INTERESTS:** chemical ecology, insect ecology and evolution, Lepidoptera, plant-insect interactions, multitrophic interactions, insect defenses, biological control of invasive plants, effects of nitrogen deposition on multitrophic interactions, insects and climate change

**PREVIOUS POSITIONS**

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2010-2011 Visiting Researcher, Brown University (sabbatical)  
2007-2008 Interim Director, University of Colorado Museum of Natural History (6 month appointment)  
1996-1997 Visiting Researcher, University of California, Davis (sabbatical)  
1989-1995 Associate Professor of Biology and Curator of Entomology, University of Colorado  
1986-1989 Associate Professor of Biology and Hessel Associate Curator of Lepidoptera, Harvard University  
1986-1987 Visiting Associate Professor in Chemistry, Colorado State University  
1981-1986 Assistant Professor of Biology and Hessel Assistant Curator of Lepidoptera, Harvard University  
1977-1979 Teaching Associate, University of Massachusetts  
1974-1975 Teaching Assistant, University of Massachusetts,

**EDUCATION**

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Post-doctoral Research Associate, Stanford University, California. 1979-1981  
University of Massachusetts, Amherst, Massachusetts (Ph.D. 1979) 1974-1979  
Smith College, Northampton, Massachusetts (B.A. 1974) 1970-1972, 1973-1974  
Williams College (exchange program) 1972-1973

**HONORS AND AWARDS**

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Outstanding Graduate Student Mentor Award, Graduate School, University of Colorado Boulder (2016)  
Elected as a Fellow of the Entomological Society of America (2015)

College Scholar Award, University of Colorado (for 2010-2011)  
Faculty Fellowship, University of Colorado (2003 – 2004)  
Lund Lecturer, University of Georgia (2003)  
Griswold Lecturer, Cornell University (2002)  
Chair (1998) of the Gordon Research Conference on “Plant-Herbivore Interactions”  
University of Colorado at Boulder: Boulder Faculty Assembly Award for Excellence in  
Research (1996)  
Co-chair (1995) of the Gordon Research Conference on “Plant-Herbivore  
Interactions”  
Vice-president, Lepidopterists’ Society (1992 - 1993)  
University of Massachusetts, Chancellor’s Fellowship (1975 – 1977)

## FELLOWSHIPS AND GRANTS

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### Current Funding

#### External Sources

- 2019—NSF “Collaborative research: Novel trophic interactions determined by  
Phytochemistry, pathogen infection, and parasitoids”. PI. (Collaborator: Angela  
Smilanich, University of Nevada, Reno). \$400,000 to University of Colorado; total  
award \$900,000. 9/1/2019 – 8/31/2023.
- 2015—NSF “Collaborative research: Understanding the evolution of diet breadth through  
ecoimmunology”. PI. (Collaborator: Angela Smilanich, University of Nevada, Reno).  
\$331,900 to University of Colorado; total award \$600,000. 3/1/2015 – 3/31/2020.

### Previous Funding

#### External Sources

- 2016—Boulder County Open Space. Bee community response to the 2013 flood. \$10,000.  
Co-PI; PI: Adrian Carper. 2016 – 2018.
- 2016—Greenwood Fund. \$2,000. PI Christy McCain, Co-PI Deane Bowers
- 2012—NSF “Collaborative Research: Southwest Collection of Arthropods Network (SCAN): A  
Model for Collections Digitization to Promote Taxonomic and Ecological Research”. PI.  
One of 10 participating institutions. 2012 – 2017. \$104,000 to Bowers.
- 2014—NSF Dissertation Improvement grant for Caitlin Kelly, “Chemical Mediation of  
Multitrophic Interactions: A Test of the Tri-trophic Interactions Hypothesis”. \$12,246.  
2014 – 2016.
- 2013—USDA “Impacts of herbaceous bioenergy production systems on bee communities:  
implications for pollinator declines and pollinator conservation” PI Mary Jamieson; Co-  
PIs Deane Bowers, Andrew Norton (CSU). \$499,997. 2013-2016,
- 2012—NSF Dissertation Improvement grant for Susan Whitehead, “Chemical Ecology of *Piper*  
(Piperaceae) Seed Dispersal by Frugivorous Bats in the Genus *Carollia* (Phyllostomidae).  
\$14,995, 2012-2014.
- 2011--National Geographic Waite Grant . PI: S.R. Whitehead, with co-PIs M.D. Bowers, B.  
Herrera-Rodriguez, M. Fernanda-Quesada, and A. Trowbridge . \$14,870.
- 2010—NSF. “RET Supplement to: Collaborative research: Are sequestered allelochemicals  
benefits or detriments to wasp and fly parasitoids?”. Bowers PI, L. Dyer and G. Gentry  
(Tulane University) Co-PI’s. \$10,375.
- 2009—NSF. Dissertation Improvement Grant for Carolina Quintero. “The Importance of Plant  
Ontogeny for Tritrophic Interactions”. \$8,227.

- 2009—NSF. “REU Supplement to: Collaborative research: Are sequestered allelochemicals benefits or detriments to wasp and fly parasitoids?”. Bowers PI, L. Dyer and G. Gentry (Tulane University) Co-PI’s. \$12,000.
- 2008—NSF Dissertation Improvement Grant for Mary Jamieson, “Effects of soil nitrogen enrichment on the chemical mediation of multitrophic interactions”. \$6,627.
- 2007—NSF. “A multi-species study of grasshopper phenology, distribution and body size responses to climate changes in the Front Range of Colorado”. C. Nufio PI, Bowers and Guralnick, Co-PIs. \$392,000 for 5 years.
- 2007-2011—NSF “REU Supplements to: A multi-species study of grasshopper phenology, distribution and body size responses to climate changes in the Front Range of Colorado”. C. Nufio PI, Bowers and Guralnick, Co-PIs. \$18,000.
- 2007—City of Boulder Open Space and Mountain Parks. “The influence of nitrogen availability on Dalmatian Toadflax (*Linaria dalmatica*) and its specialist herbivore, *Calophasia lunula*”. Bowers PI, M. Jamieson, Co-PI. \$6,280 for 1 year.
- 2007—NSF. “REU Supplement to: Collaborative research: Are sequestered allelochemicals benefits or detriments to wasp and fly parasitoids?”. Bowers PI, L. Dyer and G. Gentry (Tulane University) Co-PI’s. \$6,000.
- 2007—City of Boulder Open Space and Mountain Parks. “Long-term survey of butterfly communities on city of Boulder OSMP Land”. Bowers PI, N. Robinson, Co-PI. \$6,235 for 1 year.
- 2006--NSF. “Collaborative research: Are sequestered allelochemicals benefits or detriments to wasp and fly parasitoids?”. Bowers PI, L. Dyer and G. Gentry (Tulane University) Co-PI’s. \$293,400 for 5 years to University of Colorado.
- 2005--NSF. “Instrumentation for the analysis of biogenic organic compounds”. R. Monson PI, Bowers, Co-PI. \$248,474 for 2 years.
- 2005--NSF. “Improvement of the Gordon Alexander collection of Orthoptera at the University of Colorado” \$202, 201 for 2.5 years. Bowers PI, Co-PI’s C. Nufio, R. Guralnick.
- 2005—NSF. “REU Supplement: Improvement of the Gordon Alexander collection of Orthoptera at the University of Colorado”. \$6,000.
- 2001—NSF. "Research Experiences for Undergraduates, Undergraduate Research in Behavior, Ecology and Evolution". \$200,000 for 3 years. Co-PI, M. Breed project director.
- 1997--NSF. “Support for the 1998 Gordon Conference on Plant-Herbivore Interactions”. \$28,000 for 1 year.
- 1996—NSF. “Analytical chemical analysis in an ecological context: a High Pressure Liquid Chromatography Workstation, Fluorometer, and Spectrophotometer”. Co-PIs: Steve Schmidt, Russ Monson, Ted Raab. \$48,000.
- 1996—NSF. “The Evolution of Unpalatability in Insects: Biochemistry in an Evolutionary Context”. \$30,000 for 1 year.
- 1995—NSF. "Research Experiences for Undergraduates, Undergraduate Research in Behavior, Ecology and Evolution". \$150,000 for 3 years. Bowers, project director.
- 1994--NSF. “Support for the Gordon Research Conference on the Chemistry of Plant-Herbivore Interactions”. Mark Rausher Co-PI. \$7,300
- 1994--U.S. Department of Agriculture. “Support for the Gordon Conference on the Chemistry of Plant-Herbivore Interactions”. Mark Rausher Co-PI. \$7,300
- 1994—NSF. "Renovation and expansion of the E.P.O. Biology greenhouses". 7 Co-PI's. \$240,000.
- 1994--City of Boulder Open Space. “An insect survey of the Dowdy Draw Open Space. \$8,000 for 1 year. Virginia Scott, Co-PI.
- 1993—NSF. "Relative effects of hostplant chemistry and insect predators on herbivorous insects and their hostplants". \$100,000 for 3 years.

- 1993--City of Boulder Open Space, "An insect database for Boulder County", \$4000 for 4 months
- 1992—NSF. "Research Experiences for Undergraduates, Undergraduate Research in Behavior, Ecology and Evolution". \$150,000 for 3 years. Bowers, project director
- 1992--NSF Dissertation improvement grant for Mark Camara. (\$7,000)
- 1992--NSF Dissertation improvement grant for Lee Dyer. (\$8,000)
- 1991—NSF. "Research Experiences for Undergraduates: Undergraduate Research in Behavior, Ecology, and Evolution" (with Bill Bowman, Mike Breed, Pam Diggle, and Steve Schmidt). \$49,634 for 1 year.
- 1990—NSF. "Research Experiences for Undergraduates: Undergraduate Research in Behavior and Ecology" (with Bill Bowman, Mike Breed, Russ Monson, and Steve Schmidt). \$40,000 for 1 year.
- 1989—NSF. "The effects of hostplant chemistry and invertebrate predators on caterpillar foraging and hostplant fitness" \$140,500 for 3 years.
- 1989—NSF. "Research Experiences for Undergraduates: An Interdisciplinary Grant in Evolutionary Biology (with Steve Austad, James Carpenter, and Bruce Waldman) \$120,000 for 3 years
- 1988—NSF. "Research Experiences for Undergraduates: An Interdisciplinary Grant in Evolutionary Biology" (with Steve Austad, Rodney Honeycutt, and Bruce Waldman) \$40,000 for 1 year
- 1987--Whitehall Foundation, "Recycling Plant Chemical Defenses and the Evolution of Unpalatability". \$62,670 for 2 years.
- 1987—NSF. "Research Experiences for Undergraduates: an Interdisciplinary Program in Ecology, Evolution, Behavior and Genetics (with Steve Austad, James Birchler, Rodney Honeycutt, and Bruce Waldman). \$40,000 for 1 year
- 1987—NSF. "Improvement of the Insect Collections of the Museum of Comparative Zoology (with J.M. Carpenter and E.O. Wilson). \$143,438 for 2 years.
- 1986—NSF. Visiting Professorships for Women, "Processing of Plant Allelochemicals by Insect Herbivores". \$80,661 for 1 year.
- 1983—NSF. "Hostplant Specialization and the Evolution of Unpalatability: the Role of Iridoid Glycosides". \$70,000 for 2 years.
- 1982—NSF. "Improvement of the Insect Collections of the Museum of Comparative Zoology". (with R.J. McGinley and E.O. Wilson) (3 years, \$160,000).

### **Internal Sources**

- 2015-- University of Colorado Outreach Program. "The Bees' Needs part II". PI Deane Bowers, Alex Rose and Virginia Scott, Co-PIs. 2015-2016. \$8,000.
- 2013—University of Colorado Outreach Program. "The Bees' Needs: a Citizen Science Project". PI Alex Rose, Deane Bowers and Virginia Scott, Co-PIs. 2013 – 2016. \$24,000.
- 2010—University of Colorado College Scholars Award. "Effects of an Invasive Weed on the Ecology and Evolution of a Rare Butterfly". One half year's salary for sabbatical at Brown University.
- 2007—University of Colorado LEAP Program. "Assessing the Effects of Human Nitrogen Inputs on an Invasive Weed and Its Biological Control Agent". Bowers, PI. \$8,000 for 1 year.
- 2005 – 2006—CRCW, University of Colorado. "Caterpillar chemical defense and its effects on parasitoids", \$5,120
- 2003 – 2004—CRCW, University of Colorado. "The ecology and evolution of caterpillar chemical defense", \$5,600
- 1994--CRCW, University of Colorado. "Metabolic cost of detoxifying plant chemical defenses and the host specialization of herbivorous insects", \$6,800

1992--CRCW grant, University of Colorado, "The effects of temporal and spatial heterogeneity on the interaction of a plant and its insect herbivores", \$3,200

## PROFESSIONAL SOCIETIES

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International Society of Chemical Ecology  
Ecological Society of America  
Entomological Society of America  
Lepidopterists' Society  
American Association of Museums  
Xerces Society

## PROFESSIONAL ACTIVITIES

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Entomological Society of America. Fellows review board, 2017-2018  
Review of 15 – 20 manuscripts for professional journals per year  
NSF full proposal panel, Population and Community Ecology, September, 2019  
NSF preproposal panel, Population and Community Ecology, April, 2016  
NSF full proposal panel, Informal Science Education, May, 2015  
NSF full proposal panel, Systematics and Biodiversity, October 2014  
NSF Preproposal Panel, Systematics and Biodiversity, April 2012  
NSF Preproposal Panel, Informal Science Education, October 2011  
Organizing Committee 2012 meeting of the Lepidopterists' Society  
Organized 2013 meeting of the High Country Lepidopterists  
Organized 2008 meeting of the High Country Lepidopterists  
Organized 2006 meeting of the High Country Lepidopterists  
Organized 2004 meeting of the High Country Lepidopterists  
Organized 2001 meeting of the High Country Lepidopterists  
Editor, Journal of the Lepidopterists' Society. 1998 – 2001  
NSF panel on Informal Science Education, March 2009  
NSF panel on Ecological Processes and Evolution, April 2009  
NSF panel for the PEET (Partnerships for Enhancing Expertise in Taxonomy), May 2001  
NSF Ecology Panel, October, 1995; April, 1996; October, 1998, October, 1999, April 2000, October, 2006  
Chair, Gordon Conference on "Chemistry of Plant-Animal Interactions", 1998  
Co-chair, Gordon Conference on "Chemistry of Plant-Animal Interactions", 1995  
NSF Panel, Postdoctoral grants, February, 1994  
NSF Panel, Postdoctoral grants, May, 1993  
Ecological Society of America, Committee on Women and Minorities, 1992 - 1995  
USDA Panel, Research in entomology, July, 1993  
NSF meeting of site directors of REU programs, August, 1993  
Program chair of Lepidopterists Society meeting, Fort Collins Colorado, July 1993  
Oecologia editorial board, 1992 - 1998  
Chemoecology editorial board, 1990 - present  
Biochemical Systematics and Ecology editorial Board, 1996 - present  
Journal of the Lepidopterists' Society, editorial board - 1991 - 2001  
Review of grant proposals for NSF and USDA  
Organized and ran the fall, 1984 meeting of the Population Biologists of New England, at Harvard University.  
Consultant for Genetics Institute  
Lepidopterists' Society Executive Council, 1979 - 1982 and 1986 - 1989

Lepidopterists' Society Associate Editor, 1987 - 1992  
Lepidopterists' Society Vice-President, 1992 - 1993  
Cambridge Entomological Society president, 1984 - 1985  
Cambridge Entomological Society editorial board, 1981 - 1989

## **Membership of University and Departmental Committees**

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### Museum

Promotion to Full Professor, J. Eberle, fall 2016  
Acting Director CU Museum, 6 weeks in fall 2013  
Merit Committee, 2011, 2013  
Tenure Committee, Vertebrate Curator, 2013  
Search Committee (chair), Botany curator, 2011-2012  
Tenure Committee (chair), Botany Curator, 2009 - 2010  
Search Committee, Botany Curator, 2008 - 2009  
Museum and Field Studies Program Interim Director, Fall, 2007  
Bio Hall Committee, 2007 - 2011  
Marketing Committee, 2007 - 2008  
Salary Committee, 2006 - 2007, 2007 - 2008, 2008 - 2009, 2013-2014, 2018-2019  
Director Exploratory Committee (Chair), 2006 - 2007  
Search Committee, Vertebrate Zoologist, 2006 - 2007  
Museum Program Review Committee, 2005 - 2006  
Museum Self-Study Committee, 2004 - 2005  
Museum BFA representative, 2000 - 2008 (except sabbatical year, 2003 - 2004)  
American Association of Museums Accreditation Committee, 2000 - 2002  
Centennial Committee, 2002 - 2003  
Building Committee, 1998 - 2002  
Curriculum Committee, 1991-1993, 1998 - 2000, 2005-2006, 2007 - 2008, 2012-2013  
Steering Committee, 1999 - 2001  
Art Selection Committee, 2000 - 2001  
Search Committee Chair, Invertebrate zoologist and curator, 1999-2000  
Evaluation Committee (chair) for Linda Cordell, Director CU Museum, 1999  
Self-Study Committee, 1998 - 1999  
Reappointment Committee (chair) Alan DeQueiroz, 1998  
Promotion Committee Judith Harris, 1998 - 1999  
By-laws Committee, 1998  
Acting Director, summer, 1998  
Building Committee, 1996 - 1999  
Committee to review the status of Hunter Building, 1994  
Collection Committee, 1992 - 2005, chair 2004 - 2005  
Museum Studies Task Force, 1993  
Reappointment Committee (chair), Tom Ranker, 1992  
Post-tenure review committee, S-K. Wu, 1991  
Post-tenure review committee, W. Hay, 1990  
Museum Exhibits Committee, 1989-1990  
Search Committee, Herbarium Curator, 1989-1990

### Department of Ecology and Evolutionary Biology

Merit Committee (Chair)—2015, 2016, 2017, 2018  
Executive Committee (Chair)—2015, 2016, 2017, 2018

Arts and Science Council representative, 2013 - 2014  
 Tenure Committee (Chair), Patrick Kociolek, 2007 - 2008  
 Executive Committee, 2007 – 2008, 2013 - 2014  
 Search Committee, Ecologist, 2004 - 2005  
 Reappointment Committee for T. Lemieux (chair), 2004 – 2005  
 Graduate Committee, 1998 – 1999, 2004 – 2013  
 Reappointment Committee, Pei Tsai, 2003  
 Strategic Planning Committee, 2001 – 2002  
 Space Committee, 2002  
 Salary Committee, 2001, 2006-2007  
 Student Computer Facility, 1998 - 2001  
 Undergraduate Curriculum Committee, 1997  
 Divisional structure committee, 1997  
 Reappointment committee, Alan DeQueiroz, 1998  
 Chair, Graduate Committee, 1993 - 1995  
 Associate Chair of EPO Biology, 1993 - 1995  
 General Biology Committee, 1992 - 1994  
 Reappointment Committee, Tom Ranker, 1992  
 Search Committee: Plant-animal interactions, 1990 - 1991.  
 EPOB Executive Committee, 1990 - 1991, 1993 - 1995  
 EPOB Greenhouse Committee, 1990 - present; chair, 1992-1993  
 EPOB Greenhouse construction committee, 1992 - 1994  
 Coordinator, General Biology final, fall, 1990.  
 General Biology laboratory review committee, 1991.

### University of Colorado

University of Colorado, committee on the Bookstore--2018  
 University of Colorado Research Misconduct Committee—2017-present  
 New faculty workshop—member of panel on starting out as a faculty member at CU,  
 2017  
 Provost's Advisory Board, University of Colorado, 2016-2017  
 Research Innovations Advisory Board, University of Colorado, 2016 – 2018  
 Internal Evaluation Committee, Department of French and Italian, University of  
 Colorado, 2016  
 New Chairs workshop—member of panel on graduate student mentoring, 2016  
 New Faculty Workshop—led discussion on setting up a lab, 2015  
 Libraries Tenure and Promotion Committee, 2015  
 Undergraduate Research Opportunities Program Advisory Committee, 2007 – 2014  
 Arts and Sciences Tenure and Promotion Committee, 2009 – 2013  
 BFA Research Faculty Evaluation Committee, 2007- 2008  
 BFA Administrator Appraisal Committee, 2006 - 2010  
 CRCW Committee, 2004 - 2007  
 Boulder Faculty Assembly Executive Committee, 2001 – 2003, 2004 - 2005  
 Boulder Faculty Assembly Secretary, 2002 – 2003, 2004 – 2005  
 Chancellor's Committee on Gay, Lesbian, Bisexual and Transgendered Issues, 2001 –  
 2015  
 BFA Committee on Women, 2001 - 2003  
 Evaluation Committee (chair) for Linda Cordell, 1999  
 Science Advisor, Hughes Initiative Program, 1998 – 2014  
 BFA Awards Committee, 1999, 2006, 2014

Internal Review Committee for Fine Arts, 1998  
University Diversity Committee, 1994 - 1996  
Women's Advisory Team, 1997 – 1999 (chair, 1999)  
Search Committee: Museum Director, 1992 - 1993

## **CURATORIAL ACTIVITIES**

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### **Curated museum exhibits (University of Colorado)**

- 2017-2018. "Becoming Butterflies" travelling exhibit. Developed travelling exhibit to be set up at University of Nevada, Reno.
- 2016-2017. "Becoming Butterflies". Exhibit on the biology of butterflies featured at the University of Colorado Museum of Natural History and CU South Denver.
- 2010-2011. "Beetles". Exhibit at University of Colorado Museum of Natural History, featuring the diversity of beetles, using about 1000 specimens from the CU Entomology section collection.
- 2002-2003. "A window to the future; a door to the past". 100<sup>th</sup> anniversary of the CU Museum of Natural History. Curated insect portion of exhibit.
- 2010 - Present. Curated and provided specimens and text for numerous small exhibits in the CU Museum's "Biolounge", including exhibits on Monarch butterflies, state insects, Colorado Hairstreak (Colorado State Insect), insect gynandromorphs, beetle art.

### **Collection Administration**

- University of Colorado Museum of Natural History Entomology Section
  - Insect and arachnid collection: approximately 850,000 specimens, with special strengths in Hymenoptera, Orthoptera, Lepidoptera, and Coleoptera
  - Supervise: Collection Manager (Virginia Scott); Graduate Assistant; several volunteers
  - Answer questions from the public about insects (20 – 30 per year)
  - Insect identification (5 – 10 per year)
  - Collection tours (courses, school groups, visitors) (2 - 6 per year)

### **Major Collection-Related Projects**

- Databasing of ground-dwelling arthropods (as part of NSF TCN grant): databased over 100,000 specimens of ground-dwelling arthropods. 2012 - 2017
- Addition of over 80,000 bee and wasp specimens to collection through grants from U.S.D.A., City of Boulder Open Space, Boulder County Open Space.
- Imaging of targeted Orthoptera, Hymenoptera, and Coleoptera specimens for NSF TCN grant. 2012 - 2017.
- Digitization of historical Alexander Orthoptera collection (collected 1959, 1960, 1961) and incorporation into CU insect collection (~40,000 specimens) 2009-2012.
- Incorporation of ~40,000 Orthoptera specimens, collected as part of NSF grant.
- Accession and incorporation of Lepidoptera collection.
- Accession and incorporation of Willey Orthoptera collection (approximately 10,000 specimens). Donated in 2014.

## **OUTREACH ACTIVITIES**

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- Participation in "Girls in the Museum Exploring Science" (GAMES) program and the University of Colorado Museum of Natural History. 2010 - present.



Give numerous talks and presentations to public schools and public groups about insects.

Contribute to Evolution Outreach programs through Department of Ecology and Evolutionary Biology (featured speaker 2010 and 2014)

"The Bees' Needs" Citizen Science Project (2013 - 2017). Provided bee blocks to citizen scientists and oversaw data collection from these participants.

Science Advisory Board, Butterfly Pavilion (1995 – 2016)

Consultant for Baltimore Checkerspot restoration project, Maryland. 2010 – 2014.

Numerous talks to the public on topics such as “Butterfly Gardening”, “Moth Mania”, “Pollination Biology”, “Gardening for Pollinators”

## TEACHING

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### University of Colorado:

Biology 6300. Introduction to Research. Graduate seminar for new graduate students, Fall 2014, 2015, 2016, 2017, 2019.

Museum 5140, Collections Management, Fall, 2003, 2005; Spring, 2008, 2010, 2012, 2014

Biology 4660/5660. Insect Biology. (for advanced undergraduates and graduate students) fall, 1991, 1993, 1995, 1997, 2000, 2008, 2011, 2013, 2015, 2017 (lecture and laboratory)

Biology 6300. Graduate seminar in Chemical Ecology, fall, 2005

Biology 1220. General Biology, Spring, 2005, 2006

Biology 5320. Graduate Course in Plant-Animal Interactions, spring, 2003.

Museum 5196. Advanced Graduate Course in Entomology, fall 2002

Biology 4800/5800. Critical thinking: Plant-animal interactions, fall 1994, 1997, 1998.

Biology 6200. Graduate seminar in plant-insect interactions.

Biology 5280. Graduate course in laboratory techniques (with 4 co-instructors).

Biology 4130/5130. Plant-animal interactions. for advanced undergraduates and graduate students. spring 1990, fall 1992.

Biology 1230. General Biology. fall, 1990, 1992

Biology 6210. Graduate seminar in nutritional ecology and biochemistry. Spring 1991.

Museum 4936/5936. Internship in entomology. spring 1991, 1992, 1993, 1994.

Biology 6250. Graduate seminar, “Scientific Survival”. fall, 1996, spring 1997, 1998, 1999, 2000, 2003, 2005.

Museum 5200. Collections and Data Management. spring, 1998, 1999, 2000.

### Harvard University:

Biology 132. Chemical Ecology (lecture and laboratory)

Biology 116. Insect Biology: Structure and Function (lecture and laboratory)

Biology 252. Plant-Animal Interactions (graduate seminar)

Biology 280. Plant Products, Pests, and Pathogens (graduate seminar, co-taught)

Biology 10. Invertebrate Zoology (the insect lectures)

Biology 144. Biology of the Flower (team-taught; my responsibility was for 1/4 of the course the section on pollination biology and herbivory)

### Colorado State University:

Entomology 570. Chemical Ecology (lecture and laboratory; co-taught)

### Organization for Tropical Studies (OTS)

Faculty resource person, 1986, 1992, 2002

**The Lepidoptera Course (American Museum of Natural History)**  
Instructor, August 2012, 2013

## STUDENTS

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### Graduate Students, Harvard University

Mark Skinner (Ph.D. 1988)  
Eric Fajer (Ph.D. 1990)  
Kathy Burgess (Ph.D. 1991)

### Graduate Students, University of Colorado

Karolyn Darrow (MBS, 1993)  
Lee Dyer (Ph.D., 1994)  
Ruth Heisler (M.A., 1995)  
Mark Camara (Ph.D., 1995)  
Jamie Alton (M.S., 1997)  
Jill Dreves (M.S., 2001)  
Celeste Park (M.A., 2001)  
MarieAnn de la Fuente (Ph.D. 2002)  
Steve Armstead (M.S. 2003)  
David Bettman (M.A. 2004)  
Kasey Barton (Ph.D. 2007)  
Ken Keefover-Ring (Ph.D. 2008, coadvised)  
Jessica Vargas (M.A. 2009)  
Jeff McClenahan (M.S. 2009)  
Natalie Robinson (M.A. 2009; Ph.D. 2013, coadvised)  
Crystal Boyd (M.S. 2011)  
Mary Jamieson (Ph.D. 2010, co-advised)  
Carolina Quintero (Ph.D. 2011)  
Susan Whitehead (Ph.D. 2013)  
Katie Wolfson (M.S. 2015)  
Collin Schwantes (M.A 2015)  
Brian Stucky (Ph.D. 2015, coadvised)  
Caitlin Kelly (Ph.D. 2016)  
Megan Blanchard (Ph.D. 2019)  
Tobin Hammer (Ph.D. 2018, co-advised)  
Erin Barbeau (M.S. 2019)  
Katherine Hernandez (Ph.D. expected 2021)  
Megan Zabinski (Ph.D. expected 2020)  
Jessica Mullens (M.S. expected 2021)

### Post-doctoral Fellows

Gillian Puttick (1981-1983)  
Suzanne Dobler (1993-1996)  
Dana Garrigan (1994 - 1996)  
Cesar Nufio (2005 – 2009)  
Evan Lampert (2007 – 2010)  
Susan Whitehead (2013 – 2014)

Peri Mason (2013 – 2016)  
Adrian Carper (2013 – present)

**Graduate Student Committees (University of Colorado only)**

Rick Adams, Elizabeth Ammon, Jan Bernstein, Robin Bingham, Kate Bowell, Amanda Cook, Dave Denton, Alex Elliott, Tim Farkas, David Fleck, Chloe Garfinkel, Anna Goebel, Nate Howard, Jo Jeral, Ken Keefover-Ring, Scott Kelley, David Knochel, Claire Lay, Bethany Lewis, Marcy Litvak, Claire Lay, Sukuan Liu, Margaret McDole, Terry McGlynn, Chris McGuire, Sam Messier, Kailen Mooney, Mardy Nelson, Michelle Ochomogo, Sonora Rasmussen, Michael Rodriguez, Terry Smith-Glaser, Brian Stucky, Tim Szewczyk, Amy Trowbridge, Shaharra Usnick, Ann West, Mathew Wilkins, Carla Wise, Jane Zelikova

**Graduate Student Committees—other Universities**

Leah Dudley (University of Missouri, Ph. D. 2005)  
Angela Smilanich (Tulane University, Ph.D. 2008)  
Christina Alba (Colorado State University, Ph.D. 2011)  
Peri Mason (Wesleyan University, Ph.D. 2012)  
Stacy Endriss (Colorado State University, Ph.D. 2016)  
Elizabeth Barnes (University of Denver, Ph.D. 2017)  
Leif Richardson (Dartmouth University, Ph.D. 2015)  
Cheryl Bowker (Colorado State University, Ph.D. 2017)  
Laurel Cepero (University of Denver)  
Nate Haan (University of Washington, Ph.D. 2017)  
Jessica Bray (Virginia Commonwealth, M.S. 2015)

**Undergraduate Honors Theses (at University of Colorado only)**

Demetri Theodoratus (1998) *magna cum laude*  
Megan Petri (2008) *summa cum laude*  
Frances Drachenberg (2010) *magna cum laude*  
Angela Knerl (2010) *summa cum laude*  
Sean MacNamara (2011) *cum laude*  
Daniel Minahan (2011) *magna cum laude*  
Mike Belazis (2012) *magna cum laude*  
Jordan Tiramani (2012) *cum laude*  
Pornsawan Poopat (2013) *cum laude*  
Alexandra Morphew (2017) *summa cum laude*  
Micaela Enger (2017) *cum laude*  
Hannah Hartung (2019) *summa cum laude*

**Undergraduate students doing independent research (at University of Colorado only)**

Michele Arntz, Mike Belazis, Lauren Bradley, Patty Brezovar, Eowyn Burke, Marie Ann de la Fuente, Scott Denton, Frances Drachenburg, Robb Ecker, Alexander Ellis, Micaela Enger, Tara Glover, Colin Gottlieb, Hannah Hartung, Alex Hill, Kevin Johnson, Janine Johnston, Heidi Kippenhan, Angela Knerl, Quinn Langsfeld, Edwin Lynch, Sean MacNamara, Marie Massa, Kelly Matheson, Jeff McClenahan, Danny Minahan, Alex Morphew, Ann Nelson, Celeste Park, Pornsawan Poopat, Katie Ramsey, Pamela Ridley, Joni Sakurada, Nathan Sanders, Erin Schon, Kelly Sensecqua, Jan Simms, Shelby Soulia, Demetri Theodoratus, Leslie Van Stelten, Allyson Sudborough, Jordan Tiramani, Jason Wong, Abigail Wright

## FIELD EXPERIENCE

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North America--Northern California, Colorado and New England  
South America--Peru, Argentina, Costa Rica, Venezuela

## INVITED SEMINARS AND SYMPOSIA PARTICIPATION (last 15 years)

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- 2020 Rotary Club of Boulder (forthcoming)  
Texas A&M University (forthcoming)
- 2019 Gordon Conference on Plant Herbivore Interactions. Discussion Leader for session on  
“The Ecology and Evolution of Unconventional Herbivores”  
Entomological Society of America. Smilanich, A., M.D. Bowers, N. Muchoney, H. Slinn.  
The gravity of top-down forces: Effects of parasitoids and viruses on the ecology  
of caterpillars. Invited symposium presentation.  
Entomological Society of America. Keynote speaker in symposium, “Caterpillars in a  
tritrophic world: Adaptations and counteradaptations”  
University of Colorado Women’s Club  
Pennsylvania State University
- 2018 Michigan State University  
CU Denver
- 2017 Ecological Society of America, Portland, Oregon. Invited symposium presentation.
- 2016 Boulder Valley Schools Education Program  
University of Colorado Museum of Natural History  
Northern Arizona University  
Tufts University
- 2015 Entomological Society of America, Minneapolis, Minnesota. Invited symposium  
presentation.
- 2014 University of Colorado Evolution Outreach Program. Keynote speaker.  
Entomological Society of America, Portland, Oregon. Invited symposium presentation.  
Laboratorio Ecotono, CONICET–INIBIOMA, Universidad Nacional del Comahue,  
Bariloche, Argentina.  
University of Wyoming  
University of Wisconsin
- 2013 Entomological Society of America, Austin, Texas. Symposium on Plant Secondary  
Chemistry and Insect-Plant Interactions: The Role of Iridoid Glycosides (Co-  
Organizer and speaker)  
Entomological Society of America, Austin Texas. Symposium on The Environment as the  
Sculptor: How Abiotic Factors Shape Plant-Insect Interactions  
University of Denver
- 2012 Dartmouth University  
State of Maryland Natural Resources  
University of Colorado Museum of Natural History
- 2011 Binghamton University  
University of Nevada at Reno
- 2010 Brown University  
Rhode Island Audubon Society  
Dartmouth University
- 2009 Texas A&M University  
Swarthmore College  
Butterfly Pavillion  
University of Colorado Museum

- 2008 International Congress of Entomology, Durban, South Africa. Symposium on Role of Plant Chemistry in Multi-trophic Interactions
- 2007 Western Interior Paleontological Society, Symposium on Evolution and the Fossil Record  
Colorado College  
Entomological Society of America, Symposium in honor of Elizabeth Bernays  
Butterfly Pavilion  
Colorado Native Plant Society, keynote speech
- 2006 Wesleyan University  
University of Oregon  
Georgetown University  
University of Maryland

**PAPERS AND POSTERS PRESENTED AT PROFESSIONAL MEETINGS (last 12 years)**

\* = undergraduate contributors

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- 2019 Gordon Conference on Plant Herbivore Interactions. Discussion Leader for session on “The Ecology and Evolution of Unconventional Herbivores”  
Gordon Conference on Plant Herbivore Interactions. Bowers, M.D. Fluctuating chemical defense in two checkerspot butterflies (poster).  
Gordon Conference on Plant Herbivore Interactions. Hernandez, K. (presenter) and M.D. Bowers. Hungry caterpillars: Assessing host plant effects on larval performance of a generalist butterfly (poster).  
Gordon Conference on Plant Herbivore Interactions. Blanchard, M. and M.D. Bowers. From pods to populations: Chemical variation across scales (poster).  
Gordon Conference on Plant Herbivore Interactions. Smilanich, A.M. (presenter), N. Muchoney, M.D. Bowers, M. Teglas, A. Carper. “The effects of a pathogenic virus on herbivores host plant range expansion (poster).  
Ecological Society of America. Carper, A.L. (presenter), M. Enger, M.D. Bowers. Impacts of host plant on sequestration and immune response across development in a specialist caterpillar.  
Entomological Society of America. Muchoney, N. (presenter), M.D. Bowers, P. Mason, A.L. Carper, A. Smilanich. Phytochemical and immunological mediation of interactions between a pathogenic densovirus and its lepidopteran hosts.
- 2018 Entomological Society of America. Hernandez, K. (presenter) and M.D. Bowers. “Larval performance of a multivoltine generalist herbivores: Effects of diet and time”  
Entomological Society of America. Muchoney, N. (presenter), M.D. Bowers, A.L. Carper, and A. Smilanich. “Larval host plant species influences development and survival of viral infection in *Anartia jatrophae* (Lepidoptera: Nymphalide).  
Entomological Society of America. M.D. Bowers (presenter). “Annual variation in chemical defense of two sympatric checkerspot butterflies”.  
Entomological Society of America. A. Smilanich (presenter), A. Wantanabe, N. Muchoney, C. Chung, A.L. Carper, and M.D. Bowers. “Host plant dependent variation in survival against a lepidopteran densovirus”.  
Ecological Society of America. Blanchard, M. (presenter), M.D. Bowers. “From pods to populations: A comparison of lupine seed defense across scales”  
Lepidopterists’ Society. Hernandez, K. (presenter), M.D. Bowers. “Larval performance of a multivoltine generalist herbivore: Effects of diet and time”.

- Society for the Study of Evolution. Muchoney, N. (presenter), M.D. Bowers, A. Smilanich. "Consequences of novel host plant use for pathogen exposure, immunocompetence and chemical defense in a specialist herbivore".
- 2017 High Country Lepidopterists. Bowers, M.D. "Non-native plants and native herbivores: Chemical defense and higher trophic levels"
- Ecological Society of America. Carper, A.L. (presenter), C.J. Schwantes, S. Endriss, A. Norton, M.D. Bowers, M.A. Jamieson. "Exploring variation in local and landscape factors driving grassland bee communities in Colorado".
- Ecological Society of America. Bowers, M.D. (presenter), N. Muchoney, P. Mason, A. Smilanich. "Non-native plants and native herbivores: Chemical defense and higher trophic levels". Invited symposium presentation.
- Ecological Society of America. Muchoney, N.D. (presenter), P. Mason, M. Teglas, A. Smilanich. "Consequences of novel host plant utilization for pathogen exposure, immunocompetence, and chemical defense in wild populations of *Euphydryas phaeton*". (poster).
- Ecological Society of America. Haan, N.L. (presenter), J.D. Bakker, and M.D. Bowers. Novel and ancestral host plants and their effects on the endangered butterfly, Taylor's checkerspot.
- Ecological Society of America. Bohanon, K.H. (presenter), A.L. Carper, M.D. Bowers. "Effects of woody debris and its management on wild bee communities along Colorado's Front Range. (poster).
- Ecological Society of America. Blanchard, M.L. (presenter) and M.D. Bowers. From pods to populations: Variation in lupine seed defense across scales. (Poster).
- Gordon Conference on Plant Herbivore Interactions. Bowers, M.D. (presenter), N. Muchoney, P.A. Mason, A.M. Smilanich. "Consequences of novel host plants for native insect herbivores: pathogens, immune response and chemical defense". (Poster)
- Front Range Open Space Research Symposium, Boulder, CO. Carper, A.L. (presenter) & M.D. Bowers. The conservation value of woody debris for cavity-nesting bees on Boulder County Open Space.
- Gordon Conference on Plant Herbivore Interactions. Megan Blanchard (presenter) and M.D. Bowers. "Within- and between-plant variation in lupine alkaloids". (poster)
- 2016 Ecological Society of America. "Conservation grassland plantings promote wild cavity-nesting bee reproduction in agroecosystems". Poster. Alexandra Morphew\* (presenter), Adrian Carper, M. Deane Bowers, Mary Jamieson.
- Ecological Society of America. "How does allocation of defensive compounds change with tissue type over the growing season?". Poster. Megan Blanchard (presenter), M. Deane Bowers.
- Lepidopterists' Society. "Localization of defense chemicals in two checkerspot butterflies (*Euphydryas*, Nymphalidae)". M. Deane Bowers (presenter) and Peri Mason.
- International Congress of Entomology. "Utilization of a novel host plant impairs immunity and increases pathogen prevalence in wild populations of *Euphydryas phaeton*". Poster. N. Muchoney (presenter), P. Mason, M. Teglas, J. Hsueh, M.D. Bowers, A. Smilanich.
- International Congress of Entomology. "The Bees' Needs: Integrating ecological research and outreach: V. Scott (presenter), A. Rose, A.L. Carper, M.D. Bowers.
- International Congress of Entomology. "Host range expansion and the insect immune response". A. Smilanich, P. Mason, C. Mo, N. Muchoney, T. Langus, S. Yoon, M.D. Bowers.

- International Congress of Entomology. “Host plant effects on buckeye (*Junonia coenia*) survival and immunity during infection with the *Junonia coenia* denovirus. Poster. C. Mo (presenter), M.D. Bowers, P. Mason, M. Teglas, J. Hsueh, C. Dodson, A. Smilanich.
- 2015 Entomological Society of America. “*The Bees’ Needs: Assessing the conservation value of bee nesting blocks through citizen science*”. Poster. Virginia Scott (presenter), Alexandra Rose, Collin Schwantes, Katherine Wolfson, Adrian Carper, M. Deane Bowers.
- Eastern Branch Entomological Society. “Responses of the Catalpa Sphinx and its primary parasitoid to high and low levels of iridoid glycosides”. Jessica Bray (presenter), Deane Bowers, and Karen Kester.
- Citizen Science Conference. “Partnering for discovery: Exploring the connection between citizen science and museums.” Katie Wolfson (presenter) and Deane Bowers.
- AAAS. “Imagine all the imaging: One entomology collection’s quest for the perfect insect image”. Katie Wolfson (presenter), Megan Blanchard, Virginia Scott, and Deane Bowers.
- Ecological Society of America, Baltimore, MD. “Nectar chemistry mediates the behavior of parasitized bees: consequences for plant fitness”. Leif Richardson (presenter), Rebecca Irwin, Deane Bowers
- 2014 Ecological Society of America meeting, Sacramento, CA. “Iridoid glycosides in floral nectar alter pollinator behavior and pollen transfer dynamics”. Leif Richardson (Presenter), Rebecca Irwin, Deane Bowers
- Entomological Society of America, Portland, Oregon. “Population variation in chemical defense in the specialist butterfly, *Euphydryas phaeton* (Nymphalidae)”. Peri Mason (presenter) and Deane Bowers.
- Entomological Society of America, Portland, Oregon. “Consequences of non-native host plants for caterpillars and their natural enemies”. Deane Bowers (presenter). Invited symposium presentation.
- Entomological Society of America, Portland, Oregon. “Interactions between territorial soldier beetles (*Chauliognathus basalis*) and bees visiting sunflowers (*Helianthus periolaris*). Poster. Collin Schwantes (presenter) and Deane Bowers.
- Entomological Society of America, Portland, Oregon. “Responses of Catalpa Sphinx and its primary parasitoid to vary levels of host plant iridoid glycosides”. Poster. Jessica Bray (presenter), Deane Bowers, and Karen Kester.
- Entomological Society of America, Portland, Oregon. “Extreme weather events and native bees: Effects of the 2013 Colorado flood”. Poster. Virginia Scott (presenter), Adrian Carper, and Deane Bowers.
- Entomological Society of America, Portland, Oregon. “Conservation grasslands support diverse native bee assemblages in agroecosystems”. Poster. Adrian Carper (presenter), Collin Schwantes, Stacy Endriss, Andrew Norton, Deane Bowers, Mary Jamieson.
- 2013 Gordon Conference on Plant-Herbivore Interactions. Ventura, California. “Sequestration of iridoid glycosides by a specialist geometrid and the evolution of iridoid sequestration in the Lepidoptera”. Deane Bowers (Presenter). Poster.
- Gordon Conference on Plant-Herbivore Interactions. Ventura, California. “Effects of sustained herbivory on conifer defenses: consequences for herbivore performance”. Amy Trowbridge (presenter), Deane Bowers, Henry Adams, Nate McDowell, and Russell Monson. Poster.
- Gordon Conference on Plant-Herbivore Interactions. Ventura, California. “Chemical trade-offs in seed dispersal: Defensive metabolites in fruits alter preferences of

- seed-dispersing bats”. Susan Whitehead (presenter), Maria Obando-Quesada, Deane Bowers. (Poster).
- Gordon Conference on Plant-Herbivore Interactions. Ventura, California. Chemical defense profiles in native and non-native *Lonicera* species: partitioning variance and associations with herbivore resistance. Deah Lieurance, Sourav Chakraborty, Susan R. Whitehead, Jeff Powell, Pierluigi Bonello, Deane Bowers, and Don Cipollini (Presenter). Poster.
- Gordon Conference on Plant-Herbivore Interactions. Ventura, California. Does nectar robbing induce iridoid glycosides in *Linaria vulgaris*? Jessamyn Manson (presenter), Rebecca Irwin, Deane Bowers. Poster.
- Entomological Society of America. Austin, Texas. “Plant chemical variation and trophic interactions: time is of the essence”. Deane Bowers (Presenter) and Carolina Quintero. (invited symposium contributor)
- Entomological Society of America. Austin, Texas. “Ecology and evolution of iridoid glycoside sequestration in the Lepidoptera”. Deane Bowers. (invited symposium contributor).
- Entomological Society of America. Austin, Texas. “The Bees’ Needs: a Citizen Science Project. Virginia Scott (presenter), Alex Rose, Deane Bowers. Poster.
- 2012 Terrestrial Invasive Species Conference, “Variation in defensive secondary metabolites of native and non-native *Lonicera* species grown in the common garden: responses to nutrient availability and relationships with herbivore resistance” Deah Lieurance (Presenter), Sourav Chakraborty, Pierluigi Bonello, Susan Whitehead, Deane Bowers and Don Cipollini
- Guild of Rocky Mountain Ecologists and Evolutionary Biologists. “Chemical ecology of *Eucaterva variaria* (Geometridae) and its host plant, Desert Willow, *Chilopsis linearis* (Bignoniaceae)”
- Lepidopterists’ Society, Denver, Colorado. “Chemical ecology of *Eucaterva variaria* (Geometridae) and its host plant, Desert Willow, *Chilopsis linearis* (Bignoniaceae)”
- Ecological Society of America, Portland, Oregon. “Does variation in defensive secondary metabolites in native and non-native *Lonicera* species explain invasive success?: responses to nutrient availability and relationships with herbivore resistance in a common garden experiment” Deah Lieurance (Presenter), Sourav Chakraborty, Pierluigi Bonello, Susan Whitehead, Deane Bowers and Don Cipollini
- 2011 Ecological Society of America, Austin, Texas. “Are ripe fruit secondary compounds a function of foliar defense: patterns of intra-specific variation in *Lonicera x bella*” (with Susan Whitehead, presenter).
- Lepidopterists Society, New Haven, Connecticut. “Within and between year variation in chemical defense of two co-occurring butterfly species” (with Alex Hill\*, Frances Drachenburg\*, Carolina Quintero)
- 2010 Gordon Conference on Plant-Herbivore Interactions. Galveston, Texas, “Annual variation in chemical defense of two checkerspot butterflies”. (with Alexander Hill\*, Frances Drachenburg\*, and Carolina Quintero). (poster)
- Gordon Conference on Plant-Herbivore Interactions. Galveston, Texas, “Effects of host plant species on performance of caterpillars and their parasitoids: a comparison of two systems” (with Evan Lampert, presenter). (poster).
- Society for the Study of Evolution. “Phytochemical variation in *Mimulus guttatus* (Yellow Monkey Flower)” (with Liza Holeski (presenter), Ken Keefover-Ring and Rick Lindroth.



- Ecological Society of America. “Ontogenetic variation in herbivore defense phenotypes in the introduced weed *Verbascum thapsus* (common mullein)” (with Christina Alba-Lynn (presenter), Dana Blumenthal and Ruth Huffbauer).  
 Guild of Rocky Mountain Ecologists and Evolutionary Biologists. Pingree Park, CO  
 Whitehead, S.R. and M.D. Bowers “Are ripe fruit secondary compounds a consequence of foliar defense? Patterns of intraspecific chemical variation in *Lonicera tatarica* (Caprifoliaceae)”
- 2009 Ecological Society of America, “Caterpillar chemical defense: sources of variation and effects on an endoparasitoid”. (with Evan Lampert and Lee Dyer)  
 Ecological Society of America, “Effects of plant ontogeny on chemical defense of *Plantago lanceolata*”. (with Carolina Quintero, presenter).  
 Guild of Rocky Mountain Population Biologists, “Caterpillar chemical defense: sources of variation and effects on an endoparasitoid”. (with Evan Lampert)  
 Spring symposium, Department of Ecology and Evolutionary Biology, University of Colorado. The effect of ingested iridoid glycosides on the White Peacock (Lepidoptera: Nymphalidae). (with Angela Knerl\*, presenter).
- 2008 North Central Branch of the Entomological Society of America, “Host plant identity and interactions between a generalist herbivore and its parasitoid”. (with Evan Lampert, presenter).  
 International Congress of Entomology, Durban, South Africa, “Variation in caterpillar chemistry: Effects on predators versus parasitoids”. (invited symposium presentation).  
 International Congress of Entomology, Durban, South Africa, “Multi-trophic maintenance of herbivore populations: How plant secondary chemistry indirectly benefits parasitoid natural enemies”, (with Angela Smilanich, presenter, Lee Dyer, Jeff Chambers).  
 Ecological Society of America, Milwaukee, WI, “The effects of climate change on the grasshoppers of the southern Rocky Mountains of Colorado”, (with C. Nufio, presenter).  
 Entomological Society of America, “A comparison of mixed host plant diets on the sequestration of iridoid glycosides by three lepidopteran species” (with Evan Lampert, presenter).  
 Guild of Rocky Mountain Ecologists and Evolutionary Biologists. “Impacts of diet variation in secondary compounds on a generalist herbivore”. (with Evan Lampert, presenter)
- 2007 Gordon Conference on Plant-Herbivore Interactions, “Iridoid glycosides in an invasive weed, Dalmatian Toadflax (*Linaria dalmatica*) and its biological control agent (*Calophasia lunula*)” (poster).  
 Ecological Society of America, “Effects of nitrogen deposition on biological control of an invasive weed, *Linaria dalmatica* (Scrophulariaceae). Poster (with Mary Jamieson, presenter).  
 Ecological Society of America, “Costs of sequestration in the buckeye caterpillar (*Junonia coenia*). Smilanich, A.M (presenter)., Dyer, L.A., Chambers, J.Q., and Bowers, M.D.  
 Entomological Society of America, “Costs of sequestration in the Buckeye caterpillar, *Junonia coenia* (Nymphalidae)”. (with Angela Smilanich, presenter, Lee Dyer, Jeff Chambers).  
 Entomological Society of America, “Caterpillar chemistry: Sequestration of iridoid glycosides by woolly bears (Arctiidae)”. Invited symposium presentation.

- Entomological Society of America, “Tritrophic interactions among *Catalpa*, the Catalpa Sphinx (*Ceratomia catalpae*), and the parasitoid *Cotesia congregata*”. Poster. (With Evan Lampert, presenter, and Lee Dyer).
- Colorado Native Plant Society. “Eating and being eaten: Plant-insect interactions in the Colorado Front Range”. Key note speaker.
- 2006 Lepidopterists’ Society, “Sequestration of host plant defense compounds by a biological control agent, *Calophasia lunula* (Noctuidae)”.  
International Society of Chemical Ecology, “Ontogeny of checkerspot chemical defense” (poster)

## PUBLICATIONS (Peer-reviewed)

H-index = 49 (Google Scholar)

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\* indicates undergraduate author

\*\* indicates graduate student or post-doctoral author

139. Blanchard, M.E. and M.D. Bowers. 2019. Critical phenological events affect chemical defense of plant tissues: Iridoid glycosides in a woody shrub. *Journal of Chemical Ecology*. <https://doi.org/10.1007/s10886-019-01135-8>
138. Carper, A. L., Enger\*, M., and M.D. Bowers. 2019. Host plant effects on immune response across development of a specialist caterpillar. *Frontiers in Ecology and Evolution*. doi: 10.3389/fevo.2019.00208. invited contribution to special topics issue.
137. Schwantes\*\*, C.J., A.L. Carper, and M.D. Bowers. 2018. Solitary floral specialists do not respond to cryptic flower-occupying predators. *Journal of Insect Behavior* 31: 642-655.
136. Bradley\*, L., C. Kelly, M.D. Bowers. 2018. Host plant suitability in a specialist herbivore, *Euphydryas anicia* (Nymphalidae): Preference, performance and sequestration. *Journal of Chemical Ecology* 44:1051-1057.
135. Kelly\*\*, C. and M.D. Bowers 2018. Host plant iridoid glycosides mediate herbivore interactions with natural enemies. *Oecologia* 188:491-500. .
134. Quintero\*\*, C. and M.D. Bowers. 2018. Plant and herbivore ontogeny interact to shape the preference, performance and chemical defense of a specialist herbivores. *Oecologia* 187:401-412. (Invited contribution to special topic issue).
133. Haan\*\*, N. J.D. Bakker, M.D. Bowers. 2018. Hemiparasites can transmit indirect effects from their host plants to herbivores. *Ecology* 99: 399-410.
132. Kelly\*\*, C. and M.D. Bowers. 2017. The perennial *Penstemon*: variation across years, populations and tissues. *Journal of Chemical Ecology* 43:599-607.
131. Mason\*\*, P. and M.D. Bowers. 2017. Localization of defensive chemicals in two congeneric butterflies (*Euphydryas*, Nymphalidae). *Journal of Chemical Ecology* 43:480-486.
130. Trowbridge\*\*, A., M. D. Bowers, R.A. Monson. 2016. Conifer monoterpene chemistry during an outbreak enhances consumption and immune response of an eruptive folivore. *Journal of Chemical Ecology* 42:1381-1292.
129. Schultz, C. J. Zemaitis, C. Thomas, M.D. Bowers, E. Crone. 2016. Nontarget effects of grass-specific herbivores differ among species, chemicals and host plants in *Euphydryas* butterflies. *Journal of Insect Conservation* 20: 867-877.
128. Whitehead\*\*, S., M. Obando Quesada, M. D. Bowers. 2016. Chemical trade-offs in seed dispersal: Defensive metabolites in fruits deter consumption by mutualist bats. *Oikos* 125:927-937..

127. Whitehead\*\*, S., J. Tiramani\*, M.D. Bowers. 2016. Iridoid glycosides from fruits reduce the growth of fungi associated with fruit rot. *Journal of Plant Ecology* 9: 357-366.
126. Kelly\*\*, C. and M.D. Bowers. 2016. Preference and performance of generalist and specialist herbivores on chemically defended host plants. *Ecological Entomology* 41: 308-316.
125. Richardson, L.\*\*, M.D. Bowers, R. Irwin. 2016. Nectar chemistry mediates the behavior of parasitized bees: consequences for plant fitness. *Ecology* 97:325-337.
124. Lieurance\*\*, D., S. Chakraborty, S.R. Whitehead\*\*, J. Powell, P. Bonello, M.D. Bowers, D. Cipollini. 2015. Comparative herbivory rates and secondary metabolite profiles in the leaves of native and non-native *Lonicera* species. *Journal of Chemical Ecology* 41:1069-1079.
123. Bowers, M.D. 2015. From caterpillars to chemistry. In: L.A. Dyer and M.L. Forister (eds.). *The Lives of Lepidopterists*. Springer. Pp. 3 – 9.
122. Hammer\*\*, T. and M.D. Bowers 2015. Gut microbes may facilitate insect herbivory of chemically defended plants. *Oecologia* 179:1-14.
121. Lampert\*\*, E. and M.D. Bowers. 2015. Incompatibility between plant-derived defensive chemistry and immune response of 2 sphingid herbivores. *Journal of Chemical Ecology* 41:85-92.
120. Murphy, S., J. Lill, M.D. Bowers, and M. Singer. 2014. Enemy-free space for parasitoids. *Environmental Entomology* 43:1465-1474..
119. Keefover-Ring, K., L.M. Holeski, M. Deane Bowers, A.D. Clauss, and R. L. Lindroth. 2014. Phenylpropanoid glycosides of *Mimulus guttatus* (yellow monkeyflower). *Phytochemistry Letters* 10:132-139.
118. Lampert\*\*, E., L. A. Dyer, and M.D. Bowers. 2014. Dietary specialization and the effects of plant species on potential multitrophic interactions of three species of nymphaline caterpillars. *Entomologia Experimentalis et Applicata* 153:207-216.
117. Alba\*\*, C., M. D. Bowers, D. Blumenthal, R.A. Hufbauer. 2014. Chemical and mechanical defenses vary among maternal lines and leaf ages in *Verbascum thapsus* L. (Scrophulariaceae) and reduce palatability to a generalist insect. *PLOS One* 9(8): e104889.
116. Quintero\*\*, C., E.C. Lampert\*\*, and M.D. Bowers. 2014. Time is of the essence: Direct and indirect effects of plant ontogenetic trajectories on higher trophic levels. *Ecology* 95:2589-2602.
115. Robinson\*\*, N., T. Kadlec, M.D. Bowers, R.P Guralnick. 2014. Integrating species traits and habitat characteristics into models of butterfly diversity in an urban fragmented ecosystem. *Ecological Modelling* 281:15-25.
114. Whitehead\*\*, S. and M.D. Bowers. 2014. Chemical ecology of fruit defense: synergistic and antagonistic interactions among amides from *Piper*. *Functional Ecology* 28:1094-1106.
113. Whitehead\*\*, S.R., M. Leonard, C. Jeffrey, C. Dodson, L.A. Dyer, and M.D. Bowers. 2013. Optimal defense theory predicts patterns of secondary metabolite allocation to fruits and seeds in *Piper reticulatum*. *Journal of Chemical Ecology* 39:1373-1384..
112. Knerl, A\*, and M.D. Bowers. 2013. Incorporation of an introduced weed into the diet of a native butterfly: Consequences for preference, performance and chemical defense. *Journal of Chemical Ecology* 39:1313-1321.
111. Whitehead\*\*, S. and M.D. Bowers. 2013. Evidence for the adaptive significance of secondary compounds in vertebrate-dispersed fruits. *American Naturalist* 182:563-577. **Recognized by the Faculty of 1000.**

110. Lampert\*\*, E. and M.D. Bowers. 2013. Detrimental effects of plant compounds on a polyembryonic parasitoid are mediated through its highly polyphagous herbivore host. *Entomologia Experimentalis et Applicata* 148:267-274.
109. Bowers, M.D. and L. Richardson. 2013. Use of two oviposition plants in populations of the Baltimore Checkerspot, *Euphydryas phaeton* (Nymphalidae). *Journal of the Lepidopterists' Society* 67:299-300.
108. Bowers, M.D. and J. Schmitt. 2013. Overcrowding leads to lethal oviposition mistakes by the Baltimore Checkerspot, *Euphydryas phaeton* (Nymphalidae). *Journal of the Lepidopterists' Society* 67:227-229.
107. Holeski\*\*, L., K. Keefover-Ring\*\*, M.D. Bowers, Z. T. Harnenz, and R.L. Lindroth. 2013. Patterns of phytochemical variation in yellow monkeyflower (*Mimulus guttatus*). *Journal of Chemical Ecology* 39: 525-536.
106. Quintero\*\*, C. and M.D. Bowers. 2013. Moderate insect herbivory alters chemical defenses and growth of *Penstemon virgatus* (Plantaginaceae) during seedling development. *Annals of Botany* 112:661-669.
105. Whitehead\*\*, S. and M.D. Bowers. 2013. Iridoid and secoiridoid glycosides in a hybrid complex of bush honeysuckles (*Lonicera spp.*, Caprifoliaceae): implications for evolutionary ecology and invasion biology. *Phytochemistry* 86:57-63.
104. Richards\*\*, L.A., E.C. Lampert\*\*, M.D. Bowers, C.D. Dodson, A.M. Smilanich, and L.A. Dyer. 2012. Synergistic effects of iridoid glycosides on the survival, development and immune response of a specialist caterpillar (*Junonia coenia*, Nymphalidae). *Journal of Chemical Ecology* 38:1276-1284..
103. McGuire\*\*, C., C. Nufio, M.D. Bowers and R.P. Guralnick. 2012. Thermal regime trends along a plains-to-alpine elevational transect in the Colorado Front Range over a 54 and 20 year record. *PLOSOne* 7(9) e44370;
102. Jamieson\*\*, M.A., M.D. Bowers, A.C. Pagan\*, T. Seastedt. 2012. Influence of soil nitrogen availability and insect biocontrol on chemical defense and performance traits of an invasive plant (*Linaria dalmatica*). *American Journal of Botany* 99: 1630-1637.
101. Robinson\*\*, N., S. Armstead\*\*, M.D. Bowers. 2012. Butterfly response to and recovery from drought in a temperate ecosystem. *Entomologia Experimentalis et Applicata* 145:50-61.
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### In Review

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