

M. Deane Bowers

CURRICULUM VITAE

PRESENT POSITION

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
(303) 492-5530

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

PREVIOUS POSITIONS

2007-2008 Interim Director, University of Colorado Museum of Natural History (3 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

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

Faculty Fellowship, University of Colorado (2003 - 2004)
Lund Lecturer, University of Georgia (2003)
Griswold Lecturer, Cornell University (2002)
Elected 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)
Elected Co-chair (1995) of the Gordon Research Conference on "Plant-Herbivore Interactions"
Elected Vice-president, Lepidopterists' Society (1992 - 1993).
University of Massachusetts, Chancellor's Fellowship (1975 - 1977)

FELLOWSHIPS AND GRANTS

External Sources

Current Funding

- 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 "REU Supplement 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. \$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—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.
- 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 3 years to University of Colorado.

Previous Funding

- 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—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.
- 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.

2002 - NSF. Dissertation Improvement Grant: An investigation of the dynamic roles of model and mimic in a classic mimicry system". \$9,394. Katy Prudic, graduate student.

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

- 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

International Society of Chemical Ecology
 Ecological Society of America
 Entomological Society of America
 Lepidopterist's Society
 American Association of Museums

PROFESSIONAL ACTIVITIES

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 manuscripts for American Naturalist, Ecology, Evolution, Oecologia, Psyche,
Journal of the Lepidopterist's Society, Journal of Chemical Ecology, Science,
Environmental Entomology, Ecological Entomology, PNAS.
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

Museum

Search Committee, Botany Curator, 2008 - 2009
Museum and Field Studies Program Interim Director, Fall, 2007
Bio Hall Committee, 2007 - present
Marketing Committee, 2007 - present
Salary Committee, 2006 - 2007, 2007 - 2008
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
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 - present, 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

EPO Biology

Tenure Committee, Patrick Kociolek, 2007 - 2008
Executive Committee, 2007 - 2008
Search Committee, Ecologist, 2004 - 2005
Reappointment Committee for Tom Lemieux (chair), 2004 - 2005
Graduate Committee, 1998 - 1999, 2004 - 2009
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

Arts and Sciences Tenure and Promotion Committee, 2009 - present
BFA Research Faculty Evaluation Committee, 2007- 2008
BFA Administrator Appraisal Committee, 2006 - 2009
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 - present
BFA Committee on Women, 2001 - 2003
Evaluation Committee (chair) for Linda Cordell, 1999
Science Advisor, Hughes Initiative Program, 1998 - present
BFA Awards Committee, 1999, 2006
Internal Review Committee for Fine Arts, 1998
University Diversity Committee, 1994 - 1996
Women's Advisory Team, 1997 - 1999 (chair, 1999)

TEACHING

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)

University of Colorado:

- Museum 5140, Collections Management, Fall, 2003, 2005; Spring, 2008
- 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 4660/5660. Insect Biology. for advanced undergraduates and graduate students, fall, 1991, 1993, 1995, 1997, 2000, 2008 (lecture and laboratory)
- 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.

Organization for Tropical Studies (OTS)

- Faculty resource person, 1986, 1992, 2002

STUDENTS

Graduate Students, Harvard University

- Mark Skinner (Ph.D. 1988) Pollination Biology and Floral Evolution in the genus *Lilium*.
- Eric Fajer (Ph.D. 1990) Research on the effects of elevated CO₂ environments on plant-insect interactions.
- Kathy Burgess (Ph.D. 1991). Research on floral herbivory.

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)
Jessica Vargas (M.A. 2009)
Natalie Robinson (M.A. 2009; Ph.D. expected 2013)
Mary Jamieson (co-advised with Tim Seastedt) (Ph.D. expected 2009)
Carolina Quintero (Ph.D. expected 2010)
Susan Whitehead (Ph.D. expected 2011)
Jeff McClenahan (M.S. expected 2009)
Crystal Boyd (M.S. expected 2011)
Caitlin Kelly (Ph.D. expected 2014)

Post-doctoral Fellows

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

Graduate Student Committees (University of Colorado only)

Rick Adams, Elizabeth Ammon, Jan Bernstein, Robin Bingham, Kate Bowell, Amanda Cook, Dave Denton, David Fleck, Anna Goebel, Nate Howard, Jo Jeral, Ken Keefover-Ring, Scott Kelley, David Knochel, Bethany Lewis, Marcy Litvak, Claire Lay, Margaret McDole, Terry McGlynn, Chris McGuire, Sam Messier, Kailen Mooney, Mardy Nelson, Liesl Peterson, Sonora Rasmussen, Terry Smith-Glaser, Shaharra Usnick, Ann West, Carla Wise, Jane Zelikova

Graduate Student Committees—other Universities

Leah Dudley (University of Missouri, Ph. D. 2005)
Angela Smilanich (Tulane University, Ph.D. 2008)

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

Michele Arntz, Patty Brezovar, Eowyn Burke, Marie Ann de la Fuente, Scott Denton, Frances Drachenburg, Robb Ecker, Alexander Ellis, Tara Glover, Colin Gottlieb, Alex Hill, Kevin Johnson, Janine Johnston, Heidi Kippenhan, Angela Knerl, Marie Massa, Kelly Matheson, Jeff McClenahan, Ann Nelson, Celeste Park, Katie Ramsey, Pamela Ridley, Joni

Sakurada, Erin Schon, Kelly Senescqua, Jan Simms, Demetri Theodoratus, Leslie Van Stelten, Allyson Sudborough, Nathan Sanders

FIELD EXPERIENCE

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

INVITED SEMINARS AND SYMPOSIA PARTICIPATION (last 10 years)

- 2009 Texas A&M University
Swarthmore College
Butterfly Pavillion
- 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
- 2005 Symposium on the Biology of the Arctiidae, Tucson, Arizona
University of Missouri, Columbia
- 2004 Colorado State University
Indiana Univeristy (2 seminars)
- 2003 Western State University
University of Georgia (2 seminars)
American Association of University Women, Boulder Chapter
- 2002 SUNY Binghamton (2 seminars)
Cornell University (2 seminars)
University of Colorado Museum
Organization for Tropical Studies
- 2001 Smith College
Brown University
Denver Museum of Natural History
- 2000 Plant Animal Interactions Symposium, SICB meeting, Atlanta, Georgia
University of Kansas
University of Utrecht, Netherlands
- 1999 La Selva Biological Station, La Selva Costa Rica
University of Vermont
Association of Educational and Research Greenhouse Curators—invited talk
Boulder County High Schools student research program
Hughes Initiative Training Program for Science Teachers, Boulder, Colorado;
Butterfly Pavilion, Westminster, Colorado;

PAPERS PRESENTED AT PROFESSIONAL MEETINGS (last 5 years)

- 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).
- 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., 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)
- 2005 Lepidopterists' Society, "Chemical defense of checkerspot butterflies: the importance of hostplant and life stage"
- 2003 Ecological Society, "Competition and neighbors affect chemical defense of *Plantago lanceolata*." (with K. Barton, presenter)

PUBLICATIONS

85. Lampert, E. and M.D. Bowers. 2009. Effects of plant diet on the quality of the generalist, *Trichoplusia ni* (Noctuidae), as a host for the polyembryonic parasitoid *Copidosoma floridanum* (Hymenoptera: Encyrtidae). *Entomologia Experimentalis et Applicata* (in press).
84. Jamieson, M. and M.D. Bowers. 2009. Iridoid Glycoside Variation in the Invasive Plant Dalmatian Toadflax, *Linaria dalmatica* (Plantaginaceae), and Sequestration by the Biological Control Agent *Calophasia lunula* (Noctuidae). *Journal of Chemical Ecology* (in press).
83. Bennett, A., J. Bever, and M.D. Bowers. 2009. Arbuscular mycorrhizal fungi can suppress inducible plant responses and alter plant defensive strategies following herbivory. *Oecologia* 160:771-779.
82. Smilanich, A., L.A. Dyer, J. Chambers, and M.D. Bowers. 2009. Immunological cost of chemical defence and the evolution of herbivore diet breadth. *Ecology Letters* 12:612-621.
81. Nufio, C., Lloyd, K., Bowers, M.D., Guralnick, R. 2009. Gordon Alexander, Grasshoppers, and Climate Change. *American Entomologist* 55:10 - 13.
80. Bowers, M.D. 2009. Chemical Defenses in Woolly Bears: Sequestration and Efficacy against Predators and Parasitoids. Chapter 5 in: W. Conner (ed.). *Tiger Moths and Woolly Bears: Behavior, Ecology and Natural History of the Arctiidae*. Oxford University Press. Pp. 83-101.
79. Bowers, M.D. and C. Nufio. 2008. The Gordon Alexander grasshopper collection: Newly curated and available on-line. *Newsletter of the Orthopterists' Society* 27(2): 6 - 8.
78. Barton, K.E. and M.D. Bowers. 2006. Neighbor species alter resistance phenotypes in *Plantago* (Plantaginaceae). *Oecologia* 150:442-452.
77. Prudic, K., Oliver, J. and M.D. Bowers. 2005. Soil nutrient effects on oviposition preference, larval performance, and chemical defense of a specialist insect herbivore. *Oecologia* 143:578-587.
76. Fuchs, A. and M.D. Bowers. 2004. Patterns of iridoid glycoside production and induction in *Plantago lanceolata* (Plantaginaceae) and the importance of plant age. *Journal of Chemical Ecology* 30:1723-1742.
75. Bowers, M.D. 2003. Coevolution of insects and plants. In: *Encyclopedia of Plant and Crop Science*. M. Kogan and S. Rao (eds.). Marcel Dekker Inc.
74. Bowers, M.D. 2003. Defensive chemistry and ecology of the Catalpa Sphinx, *Ceratonia catalpae* (Sphingidae). *Journal of Chemical Ecology* 29:2359-2367.
73. Stamp, N.E. and M.D. Bowers. 2000. Herbivore response to hostplant genotype and presence of predators. *Ecological Entomology* 25:486-492.

72. Stamp, N.E. and M.D. Bowers. 2000. Do enemies of herbivores influence plant growth and chemistry? Evidence from a semi-natural experiment. *Journal of Chemical Ecology* 26:2367-2386..
71. Jarzomski, C., N.E. Stamp, and M.D. Bowers. 2000. Effects of nutrients and herbivory on iridoid glycosides and growth of plantain. *Oikos* 88:371-379.
70. Darrow, K. and M. D. Bowers. 1999. Effects of nutrition and time on induction of iridoid glycosides in *Plantago lanceolata* (Plantaginaceae). *Journal of Chemical Ecology* 25:1427-1440.
69. Theodoratus, D. H. and M.D. Bowers. 1999. Effects of sequestered iridoid glycosides on prey choice of the Prairie Wolf Spider, *Lycosa carolinensis* (Lycosidae). *Journal of Chemical Ecology* 25: 283-295.
68. Ellis, A. and M.D. Bowers. 1998. Effects of diet on growth of buckeye (*Junonia coenia*) and painted lady (*Vanessa cardui*) caterpillars in the laboratory and field. *Journal of the Lepidopterists' Society* 52:65-75.
67. Strohmeyer, H.H., N.E. Stamp, C.M. Jarzomski, M. D. Bowers. 1998. Effects of prey species and prey diet on two invertebrate predators, stinkbugs and jumping spiders. *Ecological Entomology* 23:68-79.
66. Bowers, M.D. and N.E. Stamp. 1997. Fate of hostplant iridoid glycosides in larvae of the Nymphalidae and Arctiidae. *Journal of Chemical Ecology* 23:2955-2965.
65. Bowers, M.D. and N.E. Stamp. 1997. Effect of hostplant genotype and predators on iridoid glycoside content of pupae of Buckeyes, *Junonia coenia* (Nymphalidae). *Biochemical Systematics and Ecology* 25:571-580.
64. Johnston, J., M. D. Bowers, T.A. Ranker. 1997. Iridoid glycoside and allozyme variation within and among populations of *Plantago rhodosperma*. *Biochemical Systematics and Ecology* 25:581-590.
63. Darrow, K. and M.D. Bowers. 1997. Phenological and population variation in iridoid glycosides of *Plantago lanceolata* (Plantaginaceae). *Biochemical Systematics and Ecology* 25:1-11.
62. Bowers, M.D. 1996. Variation in iridoid glycosides in *Plantago patagonica* (Plantaginaceae) in Colorado. *Biochemical Systematics and Ecology* 24:207-210.
61. Dyer, L.A. and M.D. Bowers. 1996. The importance of sequestered iridoid glycosides as defenses against a voracious ant predator. *Journal of Chemical Ecology* 22:1527-1539.
60. Stamp, N.E. and M.D. Bowers. 1996. Consequences for hostplant chemistry and performance of plantain (*Plantago lanceolata*) when its herbivores are attacked by predatory wasps and stinkbugs. *Ecology* 77:535-549.
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