

Mary Margaret Gardiner
gardin18@msu.edu

Department of Entomology
Michigan State University
204 CIPS Bldg.
East Lansing, MI 48824
Telephone (517) 432-5282
Mobile phone (517) 927-8867

Education

Ph.D. Entomology (currently enrolled)
Michigan State University, East Lansing, MI
Department of Entomology
Attended September 2004 - present
GPA: 4.0

M.S. Entomology
University of Idaho, Moscow, ID
Department of Plant, Soil, and Entomological Sciences
Attended September 1999 – August 2002
GPA: 4.0

B.S. Resource Ecology and Management
University of Michigan, Ann Arbor, MI
School of Natural Resources and Environment
Attended September 1995 – May 1999
GPA: 3.2

Employment and Research Experience

2004 – pres. Research Assistant (Ph.D.). Department of Entomology, Michigan State University, East Lansing, MI.

I am currently examining the effects of landscape structure and intraguild interactions on biocontrol services and predator species diversity and abundance in soybean fields.

2002-2004 Research Support Scientist. Department of Plant Soil and Entomological Sciences, University of Idaho, Parma Research and Extension Center, Parma, ID.

Determined the sub-lethal effects of pesticide exposure on pollinator behavior and pollination effectiveness. Measured the impact of crop cultivation practices and pesticide application on spider diversity and abundance.

2002 Lab Assistant. Biological Weed Control Laboratory, Department of Plant, Soil, and Entomological Sciences, University of Idaho, Moscow, ID.

Conducted pre-release host specificity testing on potential biological control agents of *Cynoglossom officinale* within the Washington State University quarantine facility.

1999-2002 **Research Assistant (M.S.). Department of Plant, Soil, and Entomological Sciences, University of Idaho, Moscow, ID.**

Examined the impacts of agricultural intensification on predator community structure in hop, *Humulus lupulus*. Examined the response of the predatory mite *Neoseiulus fallacis* to volatiles from *Tetranychus urticae*-infested hop plants.

1999 **Park Ranger. Leelanau State Park, Michigan Department of Natural Resources, Northport, MI.**

Oversaw piping plover rehabilitation project at Leelanau State Park in cooperation with USFWS and the University of Michigan. Recorded behavioral data for multiple nesting pairs and organized a volunteer outreach program to help protect nesting sites.

1998 **Lab Assistant. Terrestrial Ecosystems Laboratory, University of Michigan, Ann Arbor, MI.**

Assisted with measuring physical and chemical properties of soil samples.

Memberships and Professional Affiliations

International Organization for Biological Control of Noxious Animals and Plants (IOBC): 2007

Entomological Society of America: 1999-present.

Xi Sigma Pi (Forestry Honor Society): 1999-present

Phi Sigma (Biological Sciences Honor Society): 2001-present

Fellowships

2005 Pioneer Hi-Bred International Graduate Student Fellowship

2004 C. S. Mott Pre-doctoral Fellowship in Sustainable Agriculture, Michigan State University

2000 John L. Toevs Fellowship, University of Idaho

Awards and Honors

2007 International Organization for Biological Control (IOBC) Outstanding PhD Student Award

2007 Michigan State University Dr. Gordon Guyer Award for Excellence in Extension Entomology

2007 Board Certified Entomologists of America Educational Project Award for the Extension Bulletin and Website: Identifying Natural Enemies in Crops and Landscapes

2007 Board Certified Entomologists of America Educational Project Award for the On-Site Workshop: Enhancing Beneficial Insects with Native Plants

2006 Entomological Society of America, Presidents Prize for the Student Competition, First Place Oral Presentation, Session Cd3

2006 Invasive Species Award, First Place Oral Presentation, Invasive Species Symposium: Challenges and Opportunities, Michigan State University

- 2005 Entomological Society of America, Presidents Prize for the Student Competition, First Place Oral Presentation, Session Cd4
- 2003 University of Idaho H.C. Manis Award For Excellence in Entomological Research
- 2002 Entomological Society of America, Presidents Prize for the Student Competition, First Place Display Presentation, Session Cd2
- 2002 University of Idaho Graduate Student Association Research Exhibition Award, Second Place Presentation in Agricultural, Natural Resources and Life Sciences
- 1998-1999 University of Michigan James B. Angell Scholar Award

Publications

- Gardiner M.M. and D.A. Landis. 2007. Impact of intraguild predation by adult *Harmonia axyridis* (Coleoptera: Coccinellidae) on *Aphis glycines* biological control in cage studies. [Biological Control 40: 386-395](#).
- Gardiner M.M. and G.L. Parsons. 2005. *Hippodamia variegata* (Goeze) (Coleoptera: Coccinellidae) detected in Michigan soybean fields. [Great Lakes Entomologist 38: 164-169](#).
- Gardiner M.M., Barbour J.D., Eigenbrode S.D., and D. Cervantez. 2005. Response of *Neoseiulus faliacis* Garmen and *Galendromus occidentalis* Nesbitt (Acari : Phytoseiidae) to *Tetranychus urticae* Koch (Acari : Tetranychidae)-damaged hop *Humulus lupulus* (L.) (Urticales : Cannabaceae). [Agricultural and Forest Entomology 7: 245-251](#).
- Gardiner M.M., Barbour J.D., and Johnson J.B. 2003. Arthropod diversity and abundance on feral and cultivated *Humulus lupulus* L. (Urticales: Cannabaceae), in Idaho. [Environmental Entomology 32: 564-574](#).
- Duetting P.S., Gardiner M.M., Polerstock A.R., and Stehr A.A. 2003. Biological control and invasive species management in the United States. Con Position. pp 244-245. in J.K. Tomberlin. Biological control and invasive species management in the United States: A student debate. American Entomologist 49: 238-249.
- Gardiner M.M. 2002. The role of the host plant and natural enemies in the suppression of the two-spotted spider mite, *Tetranychus urticae* (Koch) (Acari: Tetranychidae), on hop, *Humulus lupulus* L. (Urticales: Cannabaceae). M.S. Thesis. University of Idaho, Moscow, ID.

Publications in Preparation

Submitted:

- Gardiner, M.M., A.K. Fiedler, A.C. Costamagna, and D.A. Landis. "Integrating Conservation Biological Control into IPM Systems" in [Textbook of Integrated Pest Management](#) (E.B. Radcliffe and W.D. Hutchison eds).
- M. M. Gardiner, D. A. Landis, C. Gratton, C. D. DiFonzo, M. O'Neal, J. Chacon, M. Wayo, N. Schmidt, E. Mueller and G. E. Heimpel. Landscape structure impacts on biocontrol services in north-central U.S. soybean fields. Ecological Applications.

In Preparation:

Gardiner M.M., D. A. Landis, C. Gratton, M. O'Neal, C. DiFonzo, G. Heimpel, E. Mueller, N. Schmidt, and J. Chacon. Native and exotic coccinellid communities respond differently to landscape structure. *Conservation Biology*.

Gardiner M.M., O'Neal M., Landis D.A., and N. Schmidt. Influence of landscape structure on intraguild predation of the native coccinellid *Coleomegilla maculata*. *Biological Control*.

Outreach Publications

Gardiner, M.M., C. DiFonzo, M. Brewer and T. Noma. 2006. Identifying Natural Enemies in Field Crops. Michigan State University Extension Bulletin E-2949.

(reprinted in 2007 with title: Identifying Natural Enemies in Crops and Landscapes.)

Grants

M. Gardiner. *The Impact of In-Class "Clicker Questions" on Student Exam Scores in an Undergraduate Entomology Classroom*. Michigan State University, Hutson Grant Program. \$1500. *funded*.

R. Isaacs, D. Landis, J. Tuell, A. Fiedler, M. Gardiner. *Maximizing Arthropod-Mediated Ecosystem Services in Agricultural Landscapes*. USDA NRI Integrative Biology of Arthropods and Nematodes. \$348,416. 9/07-8/11. *funded*.

Invited Research Presentations

2006 Gardiner M.M., N. Schmidt, E. Mueller, J. Chacon, D. A. Landis, M. O'Neal, C. DiFonzo, G. Heimpel, C. Gratton, and M. Brewer. *Landscape structure impacts soybean aphid biological control*. Symposium: Ecology and Management of the Soybean Aphid. Entomological Society of America North-Central Branch Meeting. Bloomington, IL.

2005 Gardiner M.M. and D.A. Landis. *Landscape structure impacts soybean aphid biocontrol*. Section F Symposium: Advances in Understanding Insect Dispersal to Improve Pest Management in Vegetable Systems. Entomological Society of America Annual Meeting. Fort Lauderdale, FL.

2005 Gardiner M.M., N. Schmidt, M. O'Neal, and D.A. Landis. *Landscape and habitat structure impact soybean aphid biocontrol*. Joint Meeting of NCR-125 Insect Biological Control and NC148 Insect Migration and Dispersal. Chicago, IL.

Submitted Research Presentations

2006 Gardiner M.M., N. Schmidt, E. Mueller, J. Chacon, D. A. Landis, M. O'Neal, C. DiFonzo, G. Heimpel, C. Gratton, and M. Brewer. *Landscape structure impacts soybean aphid biological control*. Oral Presentation at the Entomological Society of America Annual Meeting. Indianapolis, IN.

2006 Gardiner M.M., N. Schmidt, E. Mueller, J. Chacon, D. A. Landis, M. O'Neal, C. DiFonzo, G. Heimpel, C. Gratton, and M. Brewer. *Landscape structure impacts soybean aphid biological control*. Symposium: Invasive Species. East Lansing MI. Presented by M. M. Gardiner.

2005 Gardiner M.M. and D.A. Landis. *Harmonia axyridis as an intraguild predator of soybean aphid natural enemies*. Oral Presentation at the Entomological Society of America Annual Meeting. Fort Lauderdale, FL.

- 2004 Gardiner M.M., Barbour J.D., and J.P. Pitts. *Abundance and diversity of Araneae in Idaho alfalfa*. Poster presentation at the Entomological Society of America Annual Meeting, Salt Lake City, UT.
- 2004 Gardiner M.M., and J.D. Barbour. *Effects of insecticides on the nesting behavior of the alfalfa leafcutting bee*. Poster presentation at the Pacific Branch of the Entomological Society of America Annual Meeting, Bozeman, MT.
- 2004 Gardiner M.M., Barbour J.D., and J.P. Pitts. *Abundance and diversity of Araneae and Opiliones in Idaho alfalfa*. Poster presentation at the Pacific Branch of the Entomological Society of America Annual Meeting, Bozeman, MT.
- 2002 Gardiner M.M., Barbour J.D., and S.D. Eigenbrode. *Response of the predatory mite Neoseiulus fallacis, Garmen to volatiles from hop, Humulus lupulus (Urticales: Cannabaceae), damaged by spider mites*. Poster presentation at the Entomological Society of America Annual Meeting, Ft. Lauderdale, FL.
- 2001 Gardiner M.M., Barbour J.D., Shafii B., and J.B. Johnson. *Abundance and diversity of mites and insects on cultivated and feral hop in southern Idaho*. Poster presentation at the Entomological Society of America Annual Meeting, San Diego, CA.
- 2000 Gardiner M.M., Barbour J.D., and S.D. Eigenbrode. *Response of Neoseiulus fallacis and Galendromus occidentalis to Tetranychus urticae damaged and undamaged hop leaves in a Y-tube olfactometer*. Poster presentation at the Entomological Society of America Annual Meeting, Montreal, Quebec.

Teaching Experience (Teaching Portfolio Available Upon Request)

2007 Teaching Assistant, Michigan State University, Entomology 404: Fundamentals of Entomology, Dr. Chris DiFonzo

I am currently serving as the teaching assistant for this course. I am developing and presenting course material for both the lecture and laboratory sessions. I have organized field trips during and outside the laboratory session to introduce students to the diversity of arthropods present in a range of habitats. I am also conducting an educational research project measuring the effectiveness of an individual response system (“clickers”) on students’ ability to answer knowledge and application questions on exams.

2007 Michigan State University Certification in College Teaching Program (currently enrolled)

I will complete my certification upon graduation in May, 2008.

2007 Teaching Assistant, Michigan State University, Entomology 848: Biological Control, Dr. Doug Landis

I developed and presented course material in both the lecture and laboratory sections of the course. I led class discussions, held review sessions and developed in-class quizzes and a lab practical exam. I also aided students in the development of final projects assessing the efficacy of biological control agents. For this project, students selected a biological control agent, purchased the agent and developed an experiment to evaluate its effectiveness against an agricultural pest.

2005 Guest Lecture

Spiders as biological control agents. ENT 848 Biological Control, Dr. Doug Landis.

- 2004** **Directed Independent Study, University of Idaho**
- Directed an independent study project for an Albertson College Sophomore, Megan Blanksma, evaluating the effects of insect growth regulators on the development of leafcutting bee larvae.
- 1999** **Docent, Museum of Natural History, University of Michigan**
- Developed and presented educational tours focusing on MI wildlife to K-12 students.
- 1997** **Undergraduate Teaching Assistant, University of Michigan, Biology 102: Practical Botany**
- Presented introduction to selected laboratory sessions, aided students with projects in the greenhouse and laboratory.

Extension and Outreach

Presentations at Extension Meetings

- 2007 M.M. Gardiner and A.K. Fiedler. *Identifying natural enemies in the landscape*. Biological Control Workshop, Macomb County Extension Center, Macomb, MI.
- 2007 M.M. Gardiner and A.K. Fiedler. *Enhancing beneficial insects with native plants*. Ag Action Days, Kalamazoo, MI.
- 2006 M. M. Gardiner and D. A. Landis. *Landscape influences soybean aphid biological control*. Ag Action Days, Kalamazoo, MI.
- 2006 M. M. Gardiner. *Spiders in Residential Landscapes*. Biological Control Workshop, Macomb County Extension Center, Macomb, MI.
- 2004 Gardiner M.M and J.D. Barbour. *Lethal and sub-lethal effects of pesticides on the alfalfa leafcutting bee, Megachile rotundata, in alfalfa seed*. Northwest Alfalfa Seed Growers Association, Alfalfa Seed School, Reno, NV.
- 2004 Gardiner M.M and J.D. Barbour. *Lethal and sub-lethal effects of pesticides on the alfalfa leafcutting bee, Megachile rotundata, in alfalfa seed*. Northwest Alfalfa Seed Growers Association, Winter Meeting, Boise, ID.
- 2003 Gardiner M. M. *Effects of crop management practices on pollinators and pollination in alfalfa seed*. Pioneer Hi-Bred International, Inc. Grower Technical Meeting, Albertson College, Caldwell, ID.
- 2003 Barbour J.D., M.M. Gardiner, and L. Seymour. *Alfalfa seed IPM research in the Treasure Valley of S.W. Idaho and E. Oregon*. Northwest Alfalfa Seed Growers Association, Alfalfa Seed School, Reno, NV.
- 2002 Gardiner M.M., J.D. Barbour, B. Shafii, and J.B. Johnson. *Arthropod fauna of feral and cultivated hop in southern Idaho*. Hop Research Council Winter Meeting, Salishan, OR.
- 2002 Gardiner M.M., J.D. Barbour, S.D. Eigenbrode, and H.J. Ding. *Investigating the attraction of a predatory mite to spider-mite-damaged hop plants in a Y-tube olfactometer*. Hop Research Council Winter Meeting, Salishan, OR.

Workshops and Field Days

- 2006** **Isabella County Extension Great Lakes Field Day, Shepherd, MI.**
- Illustrated the importance of biological control to soybean aphid management and provided identification information on soybean aphid natural enemies (30 participants).
- 2006** **Using Native Plants to Enhance Beneficial Insects Field Day, East Lansing MI.**
- Developed and presented an interactive natural enemy identification workshop using pinned and live arthropod specimens (120 participants).
- 2006** **Diagnostic Days, Michigan State University, East Lansing MI.**
- Presented natural enemy identification in a field setting, illustrated importance of natural enemies in soybean aphid management using natural enemy exclusion cages (100 participants).
- 2006** **International Agro-Ecology and IPM Field Day, Michigan State University, East Lansing, MI.**
- Discussed soybean aphid biocontrol and biocontrol of purple loosestrife in the field with a group of international scientists (25 participants).
- 2006** **Biological Control Workshop, Macomb County Extension Center, Macomb, MI.**
- Presented biological control workshop on natural enemy biology and identification (70 participants).
- 2005** **Michigan State University Beet and Bean Field Day, Saginaw, MI.**
- Presented an update on soybean aphid population variation across MI to field crop growers and extension educators (200 participants).
- 2005** **International Agro-Ecology and IPM Field Day, Michigan State University, East Lansing, MI.**
- Discussed soybean aphid biocontrol in the field with a group of international scientists (25 participants).

Professional Service

- 2007 Entomological Society of America Member Symposium Co-organizer (with Dr. Chris DiFonzo) “Soybean Aphid in the North Central US: Implementing IPM at the Landscape Scale”
- 2007 Peer Reviewer, Biological Control
- 2006 Peer Reviewer, Great Lakes Entomologist
- 2005-2006 Graduate and Undergraduate Entomological Student Society, Michigan State University, Secretary
- 2005 Graduate Handbook Committee, Michigan State University
- 2001 Aldrich Entomology Club, University of Idaho, President