

# Paul David Nability

---

University of Arizona  
Department of Ecology and Evolutionary Biology  
1041 East Lowell St  
Tucson, Arizona, 85721  
Laboratory: (520) 626-9315 Fax: (520) 621-9190

e-mail: nability@email.arizona.edu  
pnability@gmail.com

## Professional Preparation

- USDA-NIFA Postdoctoral Fellow. 2012-2014. University of Arizona. Mentor: Dr. Noah K. Whiteman.
- Doctorate of Philosophy. 2012. University of Illinois at Urbana-Champaign. Plant Biology. 3.97 GPA, Advisor: Evan H. DeLucia.
- Organization for Tropical Studies: Ecology of Plant-Animal Interactions in the Tropics January 2010, La Selva Biological Station. Coordinators: K. Poveda, A. Kessler
- Master of Science. 2005. University of Nebraska, Lincoln. Entomology. 3.8 GPA. Thesis Topic: Physiological Ecology (Co-advisors- L Higley & T Heng-Moss)
- Bachelor of Science. 2002. University of Nebraska, Lincoln. 3.8 GPA (distinction) *Majors*: Environmental Studies, Water Science. *Minors*: Diversified Agriculture, Insect Science, Forestry/Fisheries and Wildlife, Mathematics.

## Honors and Awards

- 2012 ESA Physiological Ecology Section: Billings Award (for best presentation)
- 2012 New Phytologist Trust Travel Award
- 2010 University of Illinois Dissertation Completion Fellowship
- 2010 Incomplete list of Teachers ranked excellent (IB 447 Field Ecology) *ranked outstanding*
- 2010 University of Illinois Robert Emerson Memorial Award (top biology award)
- 2010 American Society of Plant Biologists Travel Award
- 2009 University of Illinois Dissertation Travel Award
- 2009 Incomplete list of Teachers ranked excellent (IB 447 Field Ecology) *ranked outstanding*
- 2007 Incomplete list of Teachers ranked excellent (IB 203 Ecology)
- 2007 University of Illinois Plant Biology Departmental Fellowship
- 2007 University of Illinois John R. Laughnan Travel Award
- 2004-2005 University of Nebraska Farmers National Company Fellowship for distinguished teaching.

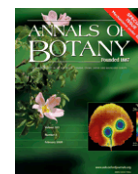
## Grants

- AFRI-USDA-NIFA Postdoctoral Fellowship \$130,000
- 2011, 2010, 2008 University of Illinois Graduate College Travel Grant \$375
- 2005 University of Nebraska Myron H. Swenk Grant-in-Aid for travel
- 2001-2002 University of Nebraska Agricultural Research Division (ARD) Honors Undergraduate Thesis Grant for independent research. \$2500

- 2000-2002 University of Nebraska Undergraduate and Creative Activities & Research Experiences (UCARE) Grants for independent research. Years I and II: \$2000 and \$2400

## Publications

20. **Nabity PD**, MJ Haus, MR Berenbaum, EH DeLucia. *In press*. Leaf-galling phylloxera on grapes reprogram host metabolism and morphology. PNAS.
19. **Nabity PD**, JA Zavala, EH DeLucia. 2013. Herbivore induction of jasmonic acid and chemical defenses reduces photosynthesis in *Nicotiana attenuata*. *J Exp Bot* 64:685-694
18. Zavala JA, **PD Nabity**, EH DeLucia. 2013. An emerging understanding of mechanisms governing insect herbivory under elevated CO<sub>2</sub>. *Annu Rev Entomol* 58:79-97
17. Zangerl AR, S Miresmailli, **PD Nabity**, A Lawrence, A Yanahan, CA Mitchell, KJ Anderson-Teixeira, MB David, MR Berenbaum, EH DeLucia. 2012. Role of arthropod communities in biofuel crop litter decomposition. *Insect Science*. DOI: 10.1111/j.1744-7917.2012.01532.x
16. DeLucia EH, **PD Nabity**, JA Zavala, MR Berenbaum. 2012. Climate change: resetting plant insect interactions. *Plant Physiol* 160:1677-1685
15. Donovan MD, **PD Nabity** EH DeLucia. 2012. Salicylic acid mediated reductions in yield in *Nicotiana attenuata* challenged by aphid herbivory. *Arthropod Plant Interactions* 7:45-52
14. **Nabity PD**, S Miresmailli, R Orpet, MR Berenbaum, EH DeLucia. 2012. Silica-based defenses of crops selected for biofuel production. *J Econ Entomol* 105:878-883
13. **Nabity PD**, ML Hillstrom, RL Lindroth, EH DeLucia. 2012. Elevated CO<sub>2</sub> interacts with herbivory to alter chlorophyll fluorescence and leaf temperature in *Betula papyrifera* and *Populus tremuloides*. *Oecologia* 169:905-913
12. **Nabity PD**, AR Zangerl, MR Berenbaum, EH DeLucia. 2011. Bioenergy crops *Miscanthus x giganteus* and switchgrass (*Panicum virgatum*) reduce growth and survivorship of *Spodoptera frugiperda* (Lepidoptera: Noctuidae). *J Econ Entomol* 104:459-464
11. De Freitas Bueno A, de Freitas Bueno RC, **PD Nabity**, LG Higley, OA Fernandes. 2009. Photosynthetic response of soybean to two-spotted spider mite (Acari: Tetranychidae) injury. *Braz Arch Biol Tech* 52:825-834
10. Zavala JA, CL Casteel, **PD Nabity**, MR Berenbaum, EH DeLucia. 2009. Role of cysteine proteinase inhibitors in preference of Japanese beetles (*Popillia japonica*) for soybean (*Glycine max*) leaves of different ages and grown under elevated CO<sub>2</sub>. *Oecologia* 161:1432-1439
9. **Nabity PD**, JA Zavala, EH DeLucia. 2009. Indirect effects of arthropod herbivory on leaf-level photosynthesis. *Ann Bot* 103:655–663 (Cover photo)
8. DeLucia EH, CL Casteel, **PD Nabity**, BF O’Neill. 2008. Insects take a bigger bite out of plants in a warmer, higher carbon dioxide world. *Proc Natl Acad Sci* 105:1781-1782
7. Spomer SM, **PD Nabity**, ML Brust. 2008. Larval description of *Cicindela (Dromochorus) pruinina* (Casey) (Coleoptera: Carabidae: Cicindelinae) with notes on habitat and adult behavior *Coleopterists’ Bull* 62:37-41
6. **Nabity PD**, LG Higley, TM Heng-Moss. 2007. Light-induced variability in development of forensically important blow fly, *Phormia regina* (Diptera: Calliphoridae). *J Med Entomol* 44:351–358
5. **Nabity PD**, TM Heng-Moss, LG Higley. 2006. Effects of insect herbivory on physiological and biochemical (oxidative enzyme) responses of the halophyte *Atriplex subspicata* (Chenopodiaceae). *Environ Entomol* 35:1677–1689



4. **Nabity PD**, LG Higley, TM Heng-Moss. 2006. Effects of temperature on development of *Phormia regina* and use of development data in determining time intervals in forensic entomology. *J Med Entomol* 43:1276–1286
3. **Nabity PD**, KD Hoagland. 2006. Seedbank viability of potential saline wetland restoration sites in agro-ecosystems. *Great Plains Res* 16:173–180
2. Brust ML, WW Hoback, SM Spomer, WJ Allgeier, **PD Nabity**. 2005. New county records for Nebraska tiger beetles. *Cicindela* 37:37–58
1. Spomer, SM, WJ Allgeier, **PD Nabity**. 2004. A fall collecting trip to southwestern and western Nebraska and a new state record for *Cicindela decemnotata*. *Cicindela* 36:57–59

### **Undergraduate Mentoring**

- Brent Cernyar – testing hypotheses on insect-induced phenotypes on grapes. 2013-present
- Robert Orpet – worked on silica-based defenses in crops selected for biofuels, 2010-2011 (co-authored manuscript)
- Michael Donovan – completed Honors project with Distinction on aphid-induced defenses in *Nicotiana* species, 2009-2011 (first-authored manuscript)

### **Graduate Research Assistantships**

- *June 2006 – 2012, University of Illinois, Urbana.*  
I investigated the effects of insect herbivory on photosynthesis across many model systems. I focused on the tradeoff between growth and defense and characterized the biochemical and genomic manipulation of host by galling parasites.
- *2005 – Apr 2006 University of Nebraska, Lincoln.*  
I examined protein profiles and enzyme activity of grasses (turf and sorghum) and also worked to develop a protocol for the enzyme characterization of Blissidae salivary glands.
- *2003–2005 University of Nebraska, Lincoln.*  
I investigated the effects of temperature on the development of calliphorid flies and the application of degree-day modeling to insect development. I also researched the effects of mechanical injury, insect herbivory, and water stress on halophyte gas exchange, water balance, fluorescence, and oxidative enzymes.
- *International Research,*
- *May 2004, Sao Paulo State University, Jaboticabal, Brazil.*  
I collaborated with O. Fernandes of Sao Paulo State University to evaluate agricultural plant (maize, soybean, citrus, and tomato) response to insect injury in a tropical setting for comparison with similar data from our temperate environment.

### **Teaching Experience and Graduate Teaching Assistantships**

- *Spring 2010, University of Illinois*  
Field Ecology (Integrative Biology 447)  
I aided in the organizing and execution of a 10d field ecology course through the ecosystems of the Ozark Mountains.
- *Fall 2009, University of Illinois*  
Ecology (Integrative Biology 203) <http://www.life.uiuc.edu/ib/203/> (see description below)
- *Spring 2009, University of Illinois*  
Field Ecology (Integrative Biology 447)

I aided in the organizing and execution of a 10d field ecology course through the ecosystems of the Florida panhandle.

- *Fall 2007, University of Illinois*  
Ecology (Integrative Biology 203) <http://www.life.uiuc.edu/ib/203/>  
I led weekly field trips and discussions encompassing various topics in population, community, and global ecological interactions. I also maintained the online course grading system and set up field activities.
- *Spring 2007, University of Illinois*  
CSI Biology (Integrative Biology 199) <http://www.life.uiuc.edu/ib/199.csi/>  
As a **volunteer** TA, I created and managed a course website, guest lectured on forensic entomology, and hosted guest speakers.
- *Spring 2007, University of Illinois*  
Introductory Plant Biology (Integrative Biology 103) <http://www.life.uiuc.edu/ib/103/>  
I conducted weekly lectures surveying the topic of botany. This included lectures on plant biology, physiology, taxonomy, and ecology.
- *Spring 2005, University of Nebraska*  
Forensic Entomology (Distance 414/814)  
I assisted in course development by developing case studies and study questions, and by managing online content on the Blackboard system. I also guest lectured on the application of degree-day modeling in forensic entomology, developed lecture notes, and graded assignments.
- *Fall 2001, 2004, Spring 2004, University of Nebraska*  
Insect Identification (ENTO 116)  
Over the 3 years I taught this course I conducted weekly lectures covering identification of insect orders and families, general insect morphology, and economic/medical importance of insect orders. In the first year I helped re-structure the course content to include interactive learning modules. I was also responsible for grading and achievement assessments.  
*Fall 2003, University of Nebraska*
- Aquatic Insect Identification (ENTO 402/802)  
I conducted weekly lectures covering aquatic insect identification to order, family, and genus. I focused on the use of taxonomic keys, developed quizzes and exams, monitored field trips, and graded student insect collections.

## **Professional Experience**

### *Reviewer:*

- American Journal of Botany, Basic and Applied Ecology, Global Change Biology, International Journal of Plant Science, Journal of Experimental Botany, Oecologia, Photosynthesis Research, Plant Physiology, PLoS One

### *Outreach and Extension:*

- 2009 National Pollinator Week in Champaign-Urbana, June 22-28 2009. Co-organized all events, presented seminars and nature walks.
- UIUC Pollinarium panel designer and editor. Fall 2008 <http://www.life.uiuc.edu/pollinarium>
- 2008 National Pollinator Week in Champaign-Urbana, June 22-28 2008. Led nature walk identifying prairie plants and pollinators. <http://www.life.uiuc.edu/entomology/pollinators/>
- U of I day at Chicago Public Schools, Chicago, IL Oct 5 2007. Guest lecture/workshops: I presented four interactive lessons on forensic entomology to 7<sup>th</sup> and 8<sup>th</sup> grade students.

- CSI: The Experience Forensic Saturdays “Forensic Entomology” at Museum of Science and Technology, Chicago, IL July 14, 2007. Guest lecture/workshop
- Entomology Judge, Nebraska State Fair, September 2005. I helped judge insect collections for various ages and skill levels of participants in the 4-H program.
- Bug Bash. Folsom Children’s Zoo, Lincoln, NE, September 2001 - 2005. Each fall I volunteered to help conducted informative learning modules on: predator prey relationships, insect communication, insect-borne diseases.
- Nebraska State Science Olympiad coordinator April 2004. I created and proctored the state Science Olympiad water quality exam for middle school students. The exam covered general water quality with an emphasis on bioindicator identification and function in the ecosystem.
- Early Awareness Outreach Program. Lincoln, NE, April 2004. For rotating waves of 4<sup>th</sup> grade inner -city students I presented information on insect roles, anatomy and diversity, and predator-prey ecological relationships.
- Cheney Elementary School, Lincoln, NE, Sept 29, 2003. See below.
- Rousseau Elementary School, Lincoln, NE, Oct 15, 2003. At each school I educated 1<sup>st</sup>–6<sup>th</sup> grade students on the importance of insect roles in nutrient cycling, and insect anatomy and diversity.

*Consulting:*

- Huntington, TE, LG Higley, FP Baxendale, and PD Nability. 2003. Lancaster Sheriff Office, Lancaster County, NE, Case#A4002092). As a trained (entomological) crime scene investigator (16 h accreditation; Indiana), I aided county law enforcement in collection of insect evidence samples and photographs.

**Presentations and Seminars**

- The extended phenotype of grape-phylloxera interactions. Dept of Entomology, University of Arizona. Oct 3, 2013.
- The extended phenotype of gall forming insects. Dept of Ecology and Evolutionary Biology, University of Arizona. Sept 25, 2012.
- Nability PD, MR Berenbaum, EH DeLucia. 2012. Testing the extended phenotype hypothesis as phylloxera induce stomata and reorganize metabolism in grapes. Ecological Society of America Portland, OR.
- Nability PD, MR Berenbaum, EH DeLucia. 2011. The galling parasite *Daktulosphaira vitifoliae* induces novel morphological change in *Vitis*. Entomological Society of America Reno, NV.
- Nability PD, JA Zavala, EH DeLucia. 2011. Herbivore induction of jasmonate-dependent defenses reduces photosynthesis in *Nicotiana attenuata* Ecological Society of America, Austin, TX
- Forensic Entomology, *Guest Lecture*. Insects and People. (IB109) University of Illinois, Urbana. March 12, 2010
- Construction of nest boxes for solitary bees. *Part of National Pollinator Week in Champaign-Urbana*. Champaign Public Library, Champaign, IL, June 27, 2009
- Nability PD, M Hillstrom, R Lindroth, EH DeLucia. 2008. Herbivory induced spatial patterns in plant physiology and gene expression under predicted future climate conditions. Entomological Society of America, Reno, NV.

- Forensic Entomology, *Guest Lecture*. Insects and People. (IB109) University of Illinois, Urbana. March 10, 2008
- Case study in forensic entomology, *Guest Lecture*. Insects and People. (IB109 honors section) University of Illinois, Urbana. March 14, 2008
- Nability PD, JA Zavala, IT Baldwin, EH DeLucia. 2007. Guild-specific herbivory alters physiology and the induction of plant defenses in *Nicotiana attenuata*. Ecological Society of America, San Jose, CA.
- Insect Film Fear Festival Northwestern University. May 31 2007. Introduced topic and films.
- Forensic Entomology, *Guest Lecture*. Insects and People. (IB109) University of Illinois, Urbana. April 18, 2007
- Introduction to Forensic Entomology. *Guest Lecture*. CSI Biology (IB199) University of Illinois, Urbana. February 10, 2007
- Nability, PD, TM Heng-Moss and LG Higley. 2006. Light induced variability in the development of *Phormia regina* (Meigen). North American Forensic Entomology Association West Lafayette, IN.
- Spring Creek Audubon Society, Denton, NE, “Twilight on the Tallgrass” September 10, 2005: I presented an interactive field entomology station followed by a blacklighting station for the public to experience prairie insects.
- Mead Middle School, Mead, NE, April 7, 2005: I presented on the basics of forensic entomology emphasizing PMI estimation, the integration of insects and law enforcement, and potential employment.
- Nability, PD Spatial distribution of Carabidae: studies of metapopulations. Department of Entomology. University of Nebraska, Lincoln. March 25, 2005.
- Nability, PD Social homeostasis and flexibility. Department of Entomology. University of Nebraska, Lincoln. February 13, 2004.

### Posters

- Nability PD, MR Berenbaum, EH DeLucia, RT LaPoint, NK Whiteman. 2013 Physiological and genomic basis for herbivore induced phenotypes in plants. Gordon Research Conference on Plant-Herbivore Interactions, Ventura, CA.
- Nability PD, MJ Segura, MR Berenbaum, EH DeLucia. 2012. Insect-induced stomata attenuate sink strength and enhance parasite fitness. New Phytologist Symposium on Stomata, Manchester England.
- Nability, PD, EH DeLucia. 2010. The galling parasite *Daktulosphaira vitifoliae* induces stomatal formation in *Vitis* American Society of Plant Biologists, Montreal, Quebec.
- Nability, PD, TM Heng-Moss, LG Higley. 2006. A literature review of the developmental data used in forensic entomology. North American Forensic Entomology Association, West Lafayette, IN.
- Nability, PD, TM Heng-Moss, LG Higley. 2005. Effects of herbivory on photosynthesis and enzyme activity of the halophyte *Atriplex subspicata* (Chenopodiaceae). Entomological Society of America, Fort Lauderdale, FL.
- TE Eickhoff, PD Nability, TM Heng-Moss, F Baxendale. 2005. Characterization of Peroxidase Changes in Warm-Season Turfgrasses Challenged by the Chinch Bug, *Blissus occiduus*. Entomological Society of America, Fort Lauderdale, FL.

- Nabity, PD, LG Higley. 2004. *Developmental response of Phormia regina (Calliphoridae) to temperature*. Sigma Xi Research Fair. Lincoln, NE, Kansas (Central States) Entomological Society. Lincoln, NE, Entomological Society of America, Kansas City, MO.
- Higley, LG, PD Nabity, FP Baxendale, TE Huntington. 2003. *Does Anyone Really Know What Time It Is: Problems in Estimating P.M.I. With Insect Thermal Development*. North American Forensic Entomology Conference, Las Vegas, NV.

## **Organization Affiliations**

### *Professional*

- American Society of Plant Biologists 2010-present
- Ecological Society of America 2007-present
- Entomological Society of America 2004-present
- Xerces Society for Invertebrate Conservation 2006-present

### *Graduate School (University of Illinois)*

- Plant Biology Association of Graduate Students, Chair 2009-2010
- Plant Biology Association of Graduate Students, Instructional Committee 2008-2009
- Graduates in Ecology and Evolutionary Biology, Webmaster 2008-2010