

**AARON F. HOWARD**  
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## EDUCATION

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Ph.D. in Biology, Georgetown University Thesis: Fitness, Pollen Dispersal, and Floral-display Size Evolution in Animal-pollinated Plants Adviser: Dr. Edward M. Barrows	2011
B.S. in Biology and Education, Cum Laude, Grove City College Adviser: Dr. Jan Dudt	2005

## APPOINTMENTS

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Visiting Assistant Professor, Biology Department, Franklin & Marshall College	Present
Instructor, Department of Biology, Northeastern Illinois University	2012–2015

## HONORS AND AWARDS

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Student Center for Science Engagement Summer Research Grant (\$8,060)	2015
Student Center for Science Engagement Summer Research Grant (\$5,270)	2014
Faculty Teaching Excellency Award (Northeastern Illinois University)	2014
Graduate Biology Student of the Year Award	2010
Biology Department Travel Grant (\$900)	2010
Georgetown Center for the Environment Travel Grant (\$500)	2010
Washington Biologists' Field Club Award (\$2,300)	2009
Georgetown Graduate School Travel Grant (\$300)	2009
Blandy Experimental Farm Graduate Fellowship (\$4,400)	2008, 2009
Washington Biologists' Field Club Award (\$2,285)	2008
Grant-in-Aid of Research Award, Sigma Xi (\$500)	2008
Washington Biologists' Field Club Award (\$1,500)	2007
Top 5 Biology GPA, Grove City College	2005

## PUBLICATIONS

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\* indicates undergraduate student author

**Howard, A. F.** (under review). Branching patterns and reproductive success in the Swamp Milkweed (*Asclepias incarnata*).

Mallory, H. S., **Howard, A. F.**, and Weiss, M. R. 2016. Timing of Environmental Enrichment Affects Memory in the House Cricket, *Acheta domesticus*. PLoS ONE 11(4). Retrieve from <http://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0152245>.

**Howard, A. F.** and E. M. Barrows. 2014. Self-pollination rate and floral-display size in *Asclepias*

*syriaca* (Common Milkweed) with regard to floral-visitor taxa. BMC Evolutionary Biology 14. Retrieve from <http://www.biomedcentral.com/1471-2148/14/144>.

Barrows, E. M., **A. F. Howard**, and B. W. Steury. 2013. Phenology and floral visitors of *Lithospermum virginianum* L. (Boraginaceae) in Great Falls Park and Chub Sandhill Natural Area Preserve, Virginia. *Marilandica* 4:6–9.

Barrows, E. M., **A. F. Howard**, and B. W. Steury. 2012. Fruit production and phenology of *Phacelia covillei* S. Watson (Hydrophyllaceae) in the Potomac Gorge Area of Maryland and Virginia. *Marilandica* 3:10–16.

Barrows, E. M., **A. F. Howard**, and B. W. Steury. 2011. Phenology and floral visitors of *Valeriana pauciflora* Michaux (Valerianaceae) in the Potomac River Gorge Area of Maryland and Virginia, United States. *Marilandica* 2:6–10.

Brenner, F. J., **A. F. Howard**, and R. Pearson. 2008. Successional changes in plant community in an acid mine drainage treatment wetland. *Journal of the Pennsylvania Academy of Science* 82: 62–66.

#### **PUBLICATIONS IN PREP. (all data collected)**

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**Howard, A. F.**, H. A. Bookstein\*, and E. M. Barrows. (in prep.). Pollinium removal from *Asclepias syriaca* flowers and the size of *Apis mellifera* and *Bombus griseocollis*.

**Howard, A. F.** and E. M. Barrows. (in prep.). Geitonogamy and mating patterns in monoecious, pollen-bearing clonal plants.

**Howard, A. F.**, E. M. Barrows, and M. B. Hamilton. (in prep.). Selection on multiple levels of floral-display size through female fitness in *Asclepias incarnata*.

#### **TEACHING EXPERIENCE**

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Visiting Assistant Professor, Franklin & Marshall College	Present
Biostatistics	
Insect Evolution	
Principles of Evolution, Ecology, & Heredity	
Principles of Physiology and Development	
Instructor, Northeastern Illinois University	2012–2015
General Ecology	
Introduction to Biology (non-majors)	
Introductory Biology II (majors)	
The Changing Natural Environment	
Course Coordinator, Northeastern Illinois University	2015
Introductory Biology II	
Adjunct Professor, Northeastern Illinois University	2012
The Changing Natural Environment	
General Ecology	

Adjunct Professor, Aurora University Biology of Cells (Introductory Biology I)	2012
Population Genetics Seminar Teacher, Georgetown University Population Genetics for Armed Forces DNA Identification Laboratory (AFDIL)	2010
Biology Teaching Fellow, Georgetown University Introductory Biology Forest Ecology Plant-Animal Interactions Global Climate Change Ecology	2006–2008
Biology Student Teacher, Grove City College/West Middlesex High School General Biology and AP Biology	2005
Biology Tutor, Grove City College	2004–2005
Naturalist, Allegany State Park	2004, 2005

### **MENTORING EXPERIENCE**

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Mentor, Franklin & Marshall College Dillon Alderfer -Volunteer work and independent project quantifying the effect of floral color on Common Milkweed ( <i>Asclepias syriaca</i> ) pollen transport and pollinator community -Awarded a summer research scholarship from the Lucille and William Hackman endowment at Franklin and Marshall College Haley Plante -Volunteer work on sample analysis and data entry for a project examining the effect of floral color on the Common Milkweed ( <i>Asclepias syriaca</i> ) pollinator community Celeste Watkins -Volunteer work on sample analysis and data entry for a project examining the effect of pollinator anatomy on Common Milkweed ( <i>Asclepias syriaca</i> ) pollination	Present
Mentor, Northeastern Illinois University Karen Segura -Independent Project: Effect of floral color on Common Milkweed ( <i>Asclepias syriaca</i> ) pollination -Awarded a Northeastern Illinois University Student Center for Science Engagement Summer Fellowship -Awarded travel funding to present at the Annual Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS) National Conference in 2015 Omar Morales -Independent Project: Branching patterns and fruit production in the	2013–2015

Swamp Milkweed (*A. incarnata*).

Adriana Roman

- Independent Project: Effect of pollinator anatomy on pollen removal from Common Milkweed (*Asclepias syriaca*) flowers.
- Awarded a Northeastern Illinois University Student Center for Science Engagement Summer Fellowship
- Awarded travel funding to present at the Annual Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS) National Conference in 2014

Varun Kalhan

- Independent Project: Effect of branching patterns on reproductive success in the Swamp Milkweed (*A. incarnata*).

Mentor, Georgetown University 2008–2011

Patrick Nicholson

- Independent Project: The relationship between reproductive success (seed set) and floral-display size in *Asclepias incarnata* (Swamp Milkweed).

Harrison Bookstein

- Thesis Project: The genetics of pollen transported by milkweed pollinators.
- Awarded the Zukowski-Kolleng Summer Fellowship

### **ADDITIONAL EXPERIENCE AND SKILLS**

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Contract R-Statistical Programmer, University of Chicago, Psychology Department 2011–2015

Smithsonian Internship in Marine Invasion Ecology 2006  
Smithsonian Environmental Research Center

Investigative Problems in Biology (Independent Research) 2004–2005  
Grove City College

Biology Laboratory Assistant 2004  
Grove City College

Computer Skills: R program in statistical computing, SAS, SPSS, STELLA, Blackboard, Desire2Learn (D2L), and Canvas educational online technologies

### **SERVICE**

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Paper Reviewer, Environmental Entomology Present  
Franklin & Marshall College

Paper Reviewer, BMC Evolutionary Biology 2014–Present  
Northeastern Illinois University

Abstract Reviewer, Student Research Symposium (SCSE) 2014  
Northeastern Illinois University

Biology Representative to the Graduate Student Organization (GSO) 2009–2011  
Georgetown University

Marine Discovery Science Outreach Facilitator 2009–2011  
Georgetown University / Anne Beers Elementary School

Forest Ecology Trip Co-supervisor 2007–2009  
Georgetown University

### **PROFESSIONAL AND STUDENT SOCIETIES**

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Ecological Society of America (ESA)	2013–Present
Society for the Study of Evolution (SSE)	2008–Present
Beta Beta Beta/TriBeta (Biology Honors Society)	2002–2005
Kappa Delta Pi (International Education Honors Society)	2002–2005

### **PRESENTATIONS AND POSTERS**

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\*indicates undergraduate student author

#### **PRESENTATIONS:**

**Howard, A. F.** Fractal-like Branching Expectations and Fruit Production in the Swamp Milkweed (*Asclepias incarnata*). The 6<sup>th</sup> Workshop on Mathematical Modeling, Northeastern Illinois University, May 1, 2015.

**Howard, A. F., E. M. Barrows.** Impact of Pollinators on Self-pollination Rate and Floral-Display of *Asclepias syriaca*. Evolution Conference, Portland State University, June 28, 2010.

**Howard, A. F., E. M. Barrows.** Impact of Pollinators on the Reproductive Success and Floral Display of Milkweeds (*Asclepias* sp.). Washington Biologists' Field Club, July 9, 2009.

**Howard, A. F., E. M. Barrows.** *Asclepias* Pollination and Floral Display. Annual Blandy Experimental Farm Research Symposium, Blandy Experimental Farm, July 23, 2008.

**Howard, A. F., R. Pearson, F. J. Brenner.** Plant Composition Comparison of Constructed Wetland and Naturally Occurring Wetland. Slippery Rock Watershed Coalition, Investigating Watershed Issues, Westminster College, April 14, 2005.

#### **POSTERS:**

Segura, K.\* and **A. F. Howard.** The Impact of *Asclepias syriaca* (Common Milkweed) Flower Pigmentation on Floral-visitor Behavior and Pollination. Annual SACNAS National Conference in Washington, DC, October 2015.

Roman, A.\* and **A. F. Howard.** The Influence of Floral-visitor Anatomy on Pollen Removal from the Common Milkweed (*Asclepias syriaca*). The Student Center for Science Engagement Seventh Annual Research Symposium, Chicago, IL, September 2015.

Morales, O.\* and **A. F. Howard.** Fractal-like Branching Expectations and Fruit Production in the Swamp Milkweed (*Asclepias incarnata*). Chicago Area Undergraduate Research Symposium (CAURS), Chicago, IL, April 2015.

Roman, A.\* and **A. F. Howard.** The Influence of Floral-visitor Anatomy on Pollen Removal from

*Asclepias syriaca* (Common Milkweed). Annual SACNAS National Conference in Los Angeles, CA, October 2014.

Kalhan, V.\* and **A. F. Howard**. Branching Patterns and Reproductive Success in the Swamp Milkweed (*Asclepias incarnata*). Chicago Area Undergraduate Research Symposium (CAURS), Chicago, IL, April 2014.

Bookstein, H. A.\*, E. M. Barrows, and **A. F. Howard**. Pollinium Acquisition in Three Pollinator Taxa of *Asclepias syriaca*, Common Milkweed (Apocynaceae). Ecology Conference (ESA), Portland, OR, August 2012.

**Howard, A. F.** and E. M. Barrows. Self-pollination and Fitness in Pollen Bearing Clonal Plants. Evolution Conference, University of Oklahoma, June 20, 2011.

Mallory, H. S., D. Uma, **A. F. Howard**, and M. R. Weiss. Elementary Education Outreach: Teaching Ecological Concepts Using Locally Abundant Species. Ecology Conference (ESA), Albuquerque, NM, August 2009.

**Howard, A. F.** and E. M. Barrows. Pollinator-mediated Floral-display Evolution in an Herbaceous, Hermaphroditic Angiosperm (*Asclepias syriaca*, Apocynaceae). Evolution Conference, University of Idaho, June 24, 2009.