Nathan C Layman

Washington State University
School of Biological Sciences
Pullman, WA 99164

Phone: (509) 715-7481
Email: n8.layman@gmail.com

Doctoral research

Aug 2012–May 2018 Washington State University (Advised by Jeremiah Busch)
We use experimental and theoretical modeling techniques to explore the evolution of mating systems and the transition to selfing

Education

2011 BS Biology, University of Washington

2011 BA Environmental Studies, University of Washington

2001 AA, Wenatchee Valley College

Research Interests

The focus of my research is in understanding the drivers behind broad scale patterns in flowering plants. In particular, the breadth of diversity in floral structure has long been thought to reflect mechanisms ensuring cross-pollination. However, the hermaphroditic nature of many flowering plants makes the loss of obligate outcrossing a common evolutionary transition. My research is driven by a desire to understand this dynamic. I am particularly interested in identifying why mechanisms that ensure outcrossing evolve and what factors contribute to their maintenance or loss in nature.

Publications

Published

Layman, N.C., Fernando, T.R., Herlihy, C.R., Busch, J.W. 2017. *Costs of selfing prevent the spread of a self-compatibility mutation that causes reproductive assurance.* Evolution, 71: 884-897. doi:10.1111/evo.13167

In preparation

Layman, N.C., Busch, J.W.. *The Spread of Selfing in Polyploids.* Target: American Naturalist

Layman, N.C., Busch, J.W.. *Population-genetic expectations for ecological filtering and adaptive evolution of plant breeding systems on islands.* Target: Evolution

Press

Feb 2017 Harkness, A. *Digest: Prudent self-denial: the advantage of incompatibility in Leavenworthia alabamica.* Evolution. Reviews Layman et al 2017

Grants and selected awards

2017	Rexford Daubenmire Award for Graduate Education
2017	Higinbotham Award
2016	NSF Doctoral Dissertation Improvement Grant (DDIG)
2014	Higinbotham Award
2013	Higinbotham Award
2012–2014	Aase Fellowship
2010	Fry-Hotson-Rigg award

Teaching

Spring 2017	Teaching assistant, Principles of Organic Evolution
Fall 2016	Teaching assistant, General Biology
Spring 2016	Teaching assistant, Principles of Organic Evolution
Fall 2015	Teaching assistant, Origins in the Natural World
Fall 2013	Teaching assistant, Origins in the Natural World
Spring 2013	Teaching assistant, Dynamic Systems in the Natural World
Fall 2012	Teaching assistant, Origins in the Natural World

Mentoring

2017	Mentored 3 WSU undergraduates - multiplex PCR and microsatellite analysis
2016	Mentored WSU undergraduate - radSeq analysis prep and labwork
2015	Mentored WSU undergraduate - DNA extraction of > 1000 seed samples for paternity analysis to test the reproductive assurance hypothesis of selfing

Presentations and invited seminars

2017 Invited speaker: *The fitness effects of an initial self-compatibility mutation in Leavenworthia alabamica..*
International Botanical Congress 2017, Shenzhen, China

2017 Co-author, invited talk: *Population-genetic expectations for trait filtering of self-incompatibility on islands.*
International Botanical Congress 2017, Shenzhen, China

2017 Invited speaker: *Inbreeding depression and polyploidy as a genetic island.*
Evolution 2017, Portland, OR

2017 Co-author, invited talk: *Population-genetic expectations for trait filtering of self-incompatibility on islands.*
Evolution 2017, Portland, OR

2017 Contributed poster: *Why is self-compatibility common on islands?*
SBS Recruitment Seminar 2017, Pullman, WA

2016 Contributed talk: *Inbreeding depression and the spread of selfing in polyploids.*
Evo-Wibo 2016, Port Townsend, WA

2016 Contributed talk: *Inbreeding depression and the spread of selfing in polyploids.*
SBS Recruitment Seminar 2016, Pullman, WA

2015 Contributed talk: *Inbreeding depression and the spread of selfing in polyploids.*
Botany 2015, Edmonton, AL, CA

2014 Contributed poster: *Challenging the Link Between Polyploidy and Self-compatibility.*
Botany 2014, Boise, ID

Other academic activities

Service

2017 Presented introduction to programming workshop series for WSU graduate students

2016-2017 Washington State University, School of Biological Sciences - Coordinator for the weekly seminar series, Biolunch

Organizations

2015–2016 Washington State University - Biology Graduate Student Association faculty liaison

2010-2011 University of Washington - Tri-Beta Biology Honor Society

Employment history

2014–2017 Research Assistant, Washington State University. *Challenging the reproductive assurance hypothesis.* Co-designed and implemented large scale field experiment - Moulton AL.

2011–2012 Fisheries Technician, Washington Department of Fish and Wildlife. *Maintained, evaluated, and transported fish stocks in central Washington.* - Chelan, WA

2011-2012 Botany technician, United States Forest Service. Supervisor: Brigitte Ranne. *Plant inventory and monitoring in western Oregon and Washington forests.* Supervised a 12 person field crew - Seattle, WA

Computational expertise

Programming - Proficient in modeling techniques, use of custom functions and classes, and analysis of large datasets in R, Python, Java, and C++

Phylogenetic analysis and software - RAxML, MrBayes, BEAST, Mesquite, MEGA, and more

GIS - Proficient in ArcGIS and QGIS

Representative Coursework

Quantitative Toolkit for Biologists

Mathematical Genetics

Molecular Ecology and Phylogeography

Principles of Systematic Biology

References

Jeremiah Busch, Associate Professor, School of Biological Sciences, Washington State University
Pullman, WA 99164. jwbusch@wsu.edu 509.335.0086

Richard Gomulkeiwicz, Professor, School of Biological Sciences, Washington State University
Pullman, WA 99164. gomulki@wsu.edu 509.335.2527

Chris Herlihy, Assistant Professor, Department of Biology, Middle Tennessee University
Murfreesboro, TN 37132. chris.Herlihy@mtsu.edu 615.898.2611