

HANNAH E. MARX

POSTDOCTORAL RESEARCH ASSOCIATE
DEPARTMENT OF ECOLOGY & EVOLUTIONARY BIOLOGY
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EDUCATION

- 2016 **Ph.D. Bioinformatics & Computational Biology**, University of Idaho, Moscow, ID
Dissertation: “Disentangling drivers of floristic diversity in island systems using phylogenetic approaches.”
Major Professor: Dr. David Tank (Department of Biology)
Thesis Committee: Drs. Luke Harmon, Jack Sullivan, Larry Forney & Scott Nuismer
- 2008 **B.S. Biology (Plant Biology)**, University of Washington, Seattle, WA

RESEARCH INTERESTS

Disentangling ecological and evolutionary drivers of diversity dynamics in natural communities, across space and time; island biogeography of multi-species assemblages; alpine flora; alien species

SKILLS & EXPERTISE

Research—phylogenetic inference, community phylogenetic diversity, community transcriptomic diversity

Computational—R programming, bash/ILinux, LaTeX, multivariate statistics, Illumina read processing, large data visualization, RMarkdown, parallel computing, Git version control and open access

Management—experimental design, grant application preparation, international and multidisciplinary collaboration

Laboratory—DNA and RNA extraction; high-throughput microfluidic PCR amplification; RNA-seq library prep, quantification and qualification

Field—plant identification (Pacific Northwest of North America, French Alps, North Eastern North America), fieldwork in plant ecology and floristics, herbarium processing and databasing

Other—public speaking, scientific writing, K-12 STEM outreach

EMPLOYMENT

- 2016—present **Postdoctoral Research Associate**, Barker & Dlugosch Labs, University of Arizona
Genomic plasticity of plant communities in response to changing environments

- 2014—2015 **Visiting Graduate Researcher**, Laboratoire d'Ecologie Alpine (TEEMBIO), CNRS Université Grenoble Alpes, Grenoble, France
NSF Graduate Research Opportunities Worldwide (GROW) international research collaboration with Dr. Sébastien Lavergne integrating phylogenetic, functional trait, and transcriptome diversity to understand community assembly in Alpine meadows.
- 2011—2016 **NSF Graduate Research Fellow**, Tank Lab, University of Idaho
- 2008—2010 **Laboratory Technician**, Olmstead Lab, University of Washington
Molecular phylogeny of the plant order Lamiales
- 2009 **Field Research Aid**, Halpern Lab, University of Washington
Plant surveys for long-term ecological monitoring of conifer encroachment into meadows throughout the Andrews Forest LTER site and the Three Sisters Wilderness, Oregon
- 2006—2008 **Undergraduate Research Assistant**, Olmstead Lab, University of Washington
Molecular phylogeny and systematics of the plant family Verbenaceae

PUBLICATIONS

Marx HE, Giblin DE, Dunwiddie PW, Tank DC. 2016. Deconstructing Darwin's Naturalization Hypothesis in the San Juan Islands using community phylogenetics and functional traits. *Diversity and Distributions*. 22: 318–331. DOI: 10.1111/ddi.12401. [GitHub](#)

Goldberg CS, Tank DC, Uribe-Convers S, Bosworth WR, **Marx HE**, Waits LP. 2012. Species designation of the Bruneau Dune tiger beetle (*Cicindela waynei*) is supported by phylogenetic analysis of mitochondrial DNA sequence data. *Conservation Genetics*. 13:373–380.

Marx HE, O'Leary N, Yuan YW, Lu-Irving P, Tank DC, Múlgura ME, Olmstead RG. 2010. A molecular phylogeny and classification of Verbenaceae. *American Journal of Botany*. 97(10): 1647-1663.

Yuan YW, Liu C, **Marx HE**, Olmstead RG. 2010. An empirical demonstration of using PPR (pentatricopeptide repeat) genes as phylogenetic tools: phylogeny of Verbenaceae and the Verbena complex. *Molecular Phylogenetics and Evolution*. 54: 23-35.

Yuan YW, Liu C, **Marx HE**, Olmstead RG. 2009. The PPR (pentatricopeptide repeat) gene family, a tremendous resource for plant phylogenetic studies. *New Phytologist*. 182: 272-283.

In Review

Marx HE, Dentant C, Renaud J, Delunel R, Tank DC & Lavergne S. Riders in the sky (islands): using a mega-phylogenetic approach to understand plant species distribution and coexistence at the altitudinal limits of angiosperm plant life. *Journal of Biogeography*.

Marx, HE, Richards M*, Tank CD. Evolutionary relationships illuminate alpine floristic diversity patterns in a remote North American wilderness. *Perspectives in Plant Ecology, Evolution and Systematics*.

Yang Y, Moore MJ, Brockington SF, Timoneda-Monfort A, Feng T, **Marx HE**, Walker JF & Smith SA. 2016. An efficient field and laboratory workflow for plant phylotranscriptomic projects. bioRxiv doi: <http://dx.doi.org/10.1101/079582>. *Applications in Plant Sciences*.

In Preparation

Marx, HE, Weigelt, P, Dawson W, Essl F, Kreft H, Pergl J, Pyšek P, van Kleunen M, Weber E, Winter M, Thuiller W, Lavergne S, Tank DC. Phylogenetic patterns of alien invasion across island archipelagos.

* *Indicates undergraduate researcher*

SELECTED PRESENTATIONS

Diversity dynamics of alpine flora using mega-phylogenetic approaches

Marx, Hannah E. and David C. Tank

Botany 2016, Savannah, Georgia. Aug 2016 (talk)

Patterns of community assembly on “sky islands” in the French Alps using mega-phylogenetic approaches

Marx, Hannah E., Sébastien Lavergne, Cédric Dentant, and David Tank

Botany 2015, Edmonton, Canada. Jul 2015 (talk)

IBEST Genomics Research Symposium, Moscow, ID. May 2015 (poster)

Dissecting drivers of invaded island communities in a comparative phylogenetic framework

Marx, Hannah E., Patrick Weigelt, Sébastien Lavergne, Wilfried Thuiller, and David Tank

Who Is Next?, Chartreuse, France. Jan 2015 (talk)

British Ecological Society & Société Française d’Ecologie. Lille, France. Dec 2014 (talk)

Modern Comparative Phylogenetic Methods. Seville, Spain. Nov 2014 (talk)

Botany 2014 Conference. Boise, ID. Jul 2014 (talk)

University of Göttingen. Göttingen, Germany. Apr 2014 (talk)

Alien encounters of the floral kind: patterns of community assembly on the San Juan Islands in Washington State

Marx, Hannah E., David Giblin, Peter Dunwiddie, David Tank

Laboratoire d’Ecologie Alpine. Grenoble, France. Feb 2014 (talk)

Botany 2013 Conference. New Orleans, LA. Jul 2013 (talk)

Evolution 2013 Conference. Snowbird, UT. Jun 2013 (talk)

Community phylogenetics of the vascular flora of the San Juan Islands archipelago

Marx, Hannah E., David Giblin, Peter Dunwiddie, David Tank

College of Science 2012 Student Research Exposition. Moscow, ID. Nov 2012 (poster)

First Annual IBEST Research Expo. Moscow, ID. Oct 2012 (poster)

Botany 2012 Conference. Columbus, OH. Jul 2012 (talk)

CONTRIBUTED DATASETS

Marx HE, Giblin DE, Dunwiddie PW, Tank DC (2015). Data from: Deconstructing Darwin's naturalization conundrum in the San Juan Islands using community phylogenetics and functional traits. Dryad Digital Repository. DOI: doi:10.5061/dryad.m88g7

SELECTED GRANTS, AWARDS & HONORS

IBEST Technology Access Grant, University of Idaho, 2015 (\$14,456)
GPSA International Travel Award, University of Idaho, 2015 (\$759)
Bioinformatics & Computational Biology Fellowship, University of Idaho, 2015-2016 (\$21,000)
Stillinger Herbarium Expedition Funds, University of Idaho, 2013 (\$2,428)
Society of Systematic Biologists Graduate Student Research Award, 2013 (\$2,000)
Society for the Study of Evolution Rosemary Grant Award, 2013 (\$2,250)
GPSA Travel Award, University of Idaho, 2013 (\$490)
Bioinformatics & Computational Biology Fellowship, University of Idaho, 2013-2014 (\$21,000)
Chateaubriand Fellowship, 2013-2014 (€11,000)
NSF Graduate Research Opportunities Worldwide (GROW), 2013-2014 (\$5,000)
BEACON Student Travel Award, University of Idaho, 2013 (\$500)
Stillinger Herbarium Expedition Funds, University of Idaho, 2012 (\$5,436)
GPSA Travel Award, University of Idaho, 2012 (\$490)
Bioinformatics & Computational Biology Fellowship, University of Idaho, 2012 (\$21,000)
IGERT C-CHANGE Program Trainee, University of Kansas, 2010 (\$60,000, declined)
NSF Graduate Research Fellowship Program Fellow, 2010-2015 (\$121,500)
Young Botanist of the Year Award, Botanical Society of America, 2008
Mary Gates Research Scholar, University of Washington, 2007-2008 (\$6,000)
HHMI Undergraduate Research Internship, University of Washington, 2006-2007 (\$7,000)

TEACHING

2013—2015	<p>Graduate Teaching Assistant, University of Idaho Organisms & Their Environment (undergraduate) *Advanced Field Botany (upper division undergraduate) *Advanced Field Botany (upper division undergraduate) *Applied Bioinformatics (upper division undergraduate / graduate)</p>
2014	<p>Teaching Assistant, Université Grenoble Alpes, Grenoble, France *Community Ecology and Evolutionary Biogeography (graduate)</p>
2011	<p>Teaching Assistant, University of Kansas *Systematic Botany (upper division undergraduate)</p>
2007	<p>Peer Teaching Assistant, University of Washington Plant Identification and Classification (undergraduate)</p>

* *Included developing curricula*

MENTORING & SUPERVISION

- 2014 **Laboratoire d'Ecologie Alpine, Grenoble, France**
Supervised master's student thesis project (Solène Knipping)
- 2012—2015 **Tank Lab, University of Idaho**
Undergraduate Research Mentor (Melissa Richards, Justin Olnes)

WORKSHOPS & TRAINING

- 2013 **Bodega Applied Phylogenetics Workshop, California**
2012 **São Paulo School of Advanced Sciences (SPSAS-evo), Ilhabela, Brazil**

SERVICE & OUTREACH

- 2016—present Reviewing Editor: Applications in Plant Science
2015 Prestigious Fellowship Workshop Panelist, Washington State University
2013 Senator At Large, Graduate and Professional Student Association (GPSA)
2013—2015 Vice President, Student Chapter of the Botanical Society of America
2012—2013 Student Representative for the BCB Department
2013 Mentor, Women in Math & Science, Coeur d'Alene, ID
2012 GPSA Representative on the Innovation Showcase Planning Committee
2012—2013 GPSA Travel Awards Committee
2012—2013 GPSA Senator

Scientific Peer Review: *Applications in Plant Science, Methods in Ecology and Evolution*

PRESS & SCIENCE COMMUNICATION

- 2016 PCEI Science After Hours, "Tank Lab Takeover"
2014 Invited blog post for NSF [BEACON Researchers at Work](#)
2012 Video Outreach, "[Plants Are Cool, Too! Episode 2 : Fossilized Forests!](#)"

FIELDWORK

Harvard Forest, MA (2016); **Écrins National Forest, France** (2014); **Col du Lautaret, France**, (2014); **Sawtooth National Forest, ID** (Cramer, Snowyside, Castle, Hyndman, Salzberger, & Lee Peaks, 2013); **Payette National Forest, ID** (2013); **Sawtooth National Forest, ID** (Thompson, Horstmann, & Braxon Peaks, 2012); **Taylor Ranch, Frank Church River of No Return Wilderness, ID** (2011); **Payette National Forest, Idaho** (ID/WTU Herbaria Foray, 2011); **San Juan Islands, WA** (WTU Herbarium Vegetation Survey, 2009); **Channeled Scablands, WA** (14th Annual WTU Herbarium Foray, 2009); **HJ Andrews Experimental Forest & Three Sisters Wilderness, OR** (2009); **Lolo National Forest, MT** (13th Annual WTU Herbarium Foray, 2008); **Southeast Texas** (Lippia/Lantana complex of Verbenaceae, 2008)

REFERENCES

Dr. David C. Tank

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Director, Stillinger Herbarium
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Dr. Michael S. Barker

Department of Ecology & Evolutionary Biology
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Director, Bioinformatics Degree
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Dr. Sébastien Lavergne

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