

# Nicholas Wehby Bard

<https://nicholasbard.github.io>

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## Degrees Earned

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*In prog.* Ph.D., Botany

Thesis title: Predicting Plant-Fungal Links

University of British Columbia

Supervisors: T.J. Davies, Q.C.B. Cronk

2018 M.S., Integrative Biology

Thesis title: Population Genomics of a Rare Edaphic Endemic

University of Colorado Denver

Supervisor: L.P. Bruederle

2013 B.S., *cum laude*, Environmental Science and Management

Portland State University

## Peer-reviewed Publications

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**Bard, N.W.**, Davies, T.J., Cronk, Q.C. 2024. *teknonaturalist*: A Snakemake pipeline for assessing fungal diversity from plant genome bycatch. *Molecular Ecology Resources*.

<https://doi.org/10.1111/1755-0998.14056>

Bruederle, L.P.B., Spencer, A., **N.W. Bard**. 2024. Noteworthy collections – *Carex scirpoidea* Lam. (Cyperaceae) in Wisconsin – now you see it ... *The Journal of the Torrey Botanical Society*. <https://doi.org/10.3159/TORREY-D-24-00004.1>

**Bard, N.W.**, Cronk, Q.C., Davies, T.J. 2024. Fungal endophytes can modulate plant invasion. *Biological Reviews*. <https://doi.org/10.1111/brv.13085>

**Bard, N.W.**, Miller, C.S., L.P. Bruederle. 2021. High genomic diversity maintained by *Carex scirpoidea* subsp. *convoluta*, a paraphyletic Great Lakes ecotype. *Conservation Genetics*. <https://doi.org/10.1007/s10592-020-01326-x>

## Manuscripts Under Review

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Stewart, R.D., **Bard, N.W.**, Davies, T.J., van der Bank, Michelle. Leveraging machine learning and citizen science data to describe flowering phenology across South Africa. In revision. *Plants, People, Planet*.

## Presentations

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**Bard, N.W.**, Q.C. Cronk, T.J. Davies. 2024. The missing links: host plants and their fungal endophytes and pathogens.

- Eco Evo Retreat, Nov 9, 2024, Squamish, BC, CAN (Oral - Blitz).
- Canadian Society for Ecology and Evolution, May 31, Vancouver, BC (Oral).
- International Biogeography Society, Jan 9, Prague, CZ (Poster).

**Bard, N.W.,** T.J. Davies, Q.C. Cronk. 2024. Fungal endophytes can modulate plant invasion.

- Botany Graduate Students Association Symposium, April 19, University of British Columbia, Vancouver, BC (Oral).

**Bard, N.W.** T.J. Davies, Q.C. Cronk. 2022-4. Assessing plant-associated fungal diversity from plant genome bycatch using the *teknoNaturalist* pipeline / Surveying fungal diversity: A genome mining approach.

- BC Chapter of Canadian Phytopathological Society, November 18, 2024, University of British Columbia, Vancouver, BC (Oral).
- Eco Evo Retreat, Oct 28, 2023, Squamish, BC, CAN (Poster).
- Ecological Society of America/Canadian Society for Ecology and Evolution, August 16, 2022, Montréal, QC (Oral).
- Botany Graduate Students Association Symposium, April 22, 2022, University of British Columbia, Vancouver, BC (Oral).

**Bard, N.W.,** Miller, C.S., and L.P. Bruederle. 2020. Conservation genomics of *Carex scirpoidea* subsp. *convoluta*.

- Botany, July 30, Virtual Conference (Oral).

**Bard, N.W.,** K.M. Westergaard, and L.P. Bruederle. 2018. Soil niche differentiation among populations of *Carex scirpoidea* (Cyperaceae).

- Botany, July 23, Rochester, MN, USA (Poster).
- Research and Creative Activities Symposium, April 27, University of Colorado Denver (Poster).

## Assistantships, Scholarships, and Grants

†=CAD  
§=USD

2024	Travel Grant (\$500 <sup>†</sup> )	University of British Columbia
2020-24	Four-Year Doctoral Fellowship (\$72,800 <sup>†</sup> + tuition)	University of British Columbia
2020-24	Teaching Assistantship (\$24,200 <sup>†</sup> )	University of British Columbia
2020-24	President's Academic Excellence Initiative PhD Award (\$2197 <sup>†</sup> )	Univ. British Col.
2018	Outstanding M.S. Student	University of Colorado Denver
2018	Dissemination Grants (\$1100 <sup>§</sup> )	University of Colorado Denver
2015-18	Teaching Assistantship (\$45,000 <sup>§</sup> )	University of Colorado Denver
2017	Graduate Student Research Award (\$500 <sup>§</sup> )	Botanical Society of America
2017	Research Grant for Graduate Students (\$800 <sup>§</sup> )	American Society of Plant Taxonomists
2017	Travel Grant for Botany 2017 (\$300 <sup>§</sup> )	American Society of Plant Taxonomists

2015 IB Graduate Student Scholarship (\$5,000\$) University of Colorado Denver

## Professional Experience

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- 2021- **Graduate Teaching Assistant** University of British Columbia
- served as instructor for Fundamentals of Evolutionary Biology (BIOL 336) Tutorial and Seed Plant Taxonomy (BIOL 324) Lab
  - led tutorials and labs, graded coursework, hosted office hours
  - led lecture while professor absent
- 2020 **Field Technician** National Ecological Observatory Network, Vancouver, WA
- created plant identification guide for Pacific Northwest region of USA (Domain 16)
  - ecological sampling; including plant diversity, vegetation structure, ground litter, dendrobands
- 2019-20 **Laboratory Technician** Molecular Vision Lab, Hillsboro, OR
- performed benchwork and computational analysis in a clinical diagnostic laboratory
  - assisted with protocol development and technical troubleshooting
- 2018 **Graduate Assistant** University of Colorado Denver
- assisted with plant specimen collection for Flora of Colorado (BIOL 4345/5345)
  - acquired collecting permits; arranged fieldwork; identified and collected specimens; maintained herbarium and specimen collections
- 2015-18 **Graduate Teaching Assistant** University of Colorado Denver
- assisted with Plant Science (BIOL 4335/5335), served as instructor for Flora of Colorado Lab (BIOL 4345/5345) & General Biology I & II Labs (BIOL 2071, 2072)
  - developed and led semester-long course-based research experience for Flora of Colorado that introduced ecological niche modeling and R skills
- 2015 **Conservation Biology Intern** Center for Biological Diversity, Portland, OR
- wrote draft Critical Habitat Petition for the Threatened Blackside Dace for submission to the US Fish and Wildlife Service
  - conducted large scale Monarch Butterfly query for legal defense
- 2015 **Stream Restoration Technician** StreamTeam, Vancouver, WA
- restored degraded stream habitats through strategic tree planting and maintenance; detected and removed invasive plants; installed irrigation systems
  - assisted with organization and setup of Earth Day community planting event
- 2014-15 **Bioprocessing Technician** Genentech, Hillsboro, OR
- assisted with manufacturing of sterile injectable pharmaceuticals following FDA Good Manufacturing Practices (GMP) and aseptic technique
  - operated and trained technicians on manufacturing equipment
- 2013 **Laboratory Technician** USDA-ARS, Aberdeen, ID
- assisted plant genetics research for Dr. Victor Raboy
  - collected and prepared plant tissue and seed samples; ran microtitre plate assays
- 2012 **Undergraduate Teaching Assistant** Portland State University
- Environmental Systems I (ESM 320)
  - graded homework; led exam review sessions; tutored students
- 2011-13 **Botany Data Assistant Intern** Institute for Natural Resources, Portland, OR

- performed data entry for vegetation surveys<sup>1,2</sup>
  1. Wet Meadow Plant Associations, Malheur National Wildlife Refuge, Harney County, Oregon
  2. Pine Creek Conservation Area: 2013 Mapping and Monitoring Report

## Skills

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Biological data analysis, bioinformatics, and biodiversity informatics (see *Programming*); statistical and ecological modeling, ecological fieldwork and sampling, plant taxonomy and identification, molecular biology benchwork, database querying, science education, scientific communication, herbarium techniques, grant writing, scientific protocol development, habitat restoration, website building, aseptic technique, basic Spanish and French (CEFR A2).

## Programming

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**R**, *incl.* dplyr, ape, adegenet, pegas, vegan, rgbif, ggplot2, etc.

**Python**,

**Snakemake**,

**shell/Perl**, *incl.* Megahit, Metavelvet, Stacks, dDocent, Structure, RAxML, Trinity, Kraken, ITSx, ipyRAD, Arlequin etc.

**Github**, repositories at <https://github.com/nicholasbard>

**Docker**

**GUI**, *incl.* jModelTest2, Genodive, Wordpress.

## Peer Review

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Journal of Systematics and Evolution (2020), PhytoKeys (2023), Brazilian Journal of Microbiology (2024), Molecular Ecology (2024)

## Service

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2023-24	Graduate Student Mentor	<b>Botany Department (UBC), BC</b>
2021-	Member	<b>Botany and Zoology Wellness Initiative (UBC), BC</b>
	<ul style="list-style-type: none"> <li>• planned and led wellness events for the UBC Botany and Zoology departments</li> <li>• attended organizational meetings</li> </ul>	
2022	Volunteer	<b>International Biogeography Society, Vancouver, BC</b>
	<ul style="list-style-type: none"> <li>• assisted with conference registration, IT support, and timekeeping</li> </ul>	
2021-23	Wellness Representative	<b>Botany Graduate Students Association (UBC), BC</b>
	<ul style="list-style-type: none"> <li>• attended organizational meetings on behalf of the Wellness Initiative</li> <li>• assisted event planning</li> </ul>	
2014	Volunteer	<b>PNW Invasive Plant Council, WA</b>
	<ul style="list-style-type: none"> <li>• identified and documented invasive plants and geographical coordinates</li> </ul>	

## Workshops Attended

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2017	Machine Learning with R for Botanists Dr. Alexey Shipunov; Botany Conference, Fort Worth, TX
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2016

Ecological Niche Modeling Crash Course  
Dr. Blaine Marchant, Dr. Pamela Soltis; University of Colorado Denver, 2016

### **Professional Memberships**

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Canadian Phytopathological Society (2024-), Canadian Society of Ecology and Evolution (2024-), International Biogeography Society (2023-), Ecological Society of America (2022-), Botanical Society of America (2016-2020), American Society of Plant Taxonomists (2016-2017), Colorado Native Plant Society (2015-2017).

### **Entertainment**

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Bass player for *Stickelback*. Gig at the Canadian Society for Ecology and Evolution student mixer, May 29 2024, Vancouver, BC.

### **Professional References**

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(omitted for their privacy, available upon request)