

# Charlotte BROWN

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🌐 USA/Canada

📍 Département de biologie  
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## Professional positions

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2023-Current	NSERC Postdoctoral Fellow Faculté de Science, Université de Sherbrooke, Sherbrooke QC, Canada Main collaborator: Dr. Mark Vellend
2021-23	Ike Russell Postdoctoral Fellow Desert Laboratory on Tumamoc Hill, University of Arizona, Tucson AZ, USA Department of Ecology and Evolutionary Biology, University of Arizona, Tucson AZ, USA Main collaborator: Dr. Deborah Goldberg
2014-15	Wildlife Biologist School of Natural Resources and Environment, University of Arizona, Tucson AZ, USA

## Education

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Ph.D. in Ecology 2021	University of Alberta Advisor: James F. Cahill Jr. Dissertation: Disentangling competitive processes to better understand their drivers and consequences in a native grassland community Received a Faculty of Science Dissertation Award, nominated for Governor General's Gold Medal
B.Sc. Honors in Environmental Science 2014	Dalhousie University Honours advisor: Jermeij Lundholm, Saint Mary's University Thesis: The effect of extensive green roof substrate composition on native low-bush blueberry ( <i>Vaccinium angustifolium</i> ) and crowberry ( <i>Empetrum nigrum</i> ) growth and performance University Medal for First in Major, Certificate in Environmental Impact Assessment

## Funding (Total funding in excess of \$300,000)

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### Grants

RII Accelerate for Success Grant, University of Arizona (Co-PI) (\$47,872 USD)	2022
Principal investigator: Dr. Brian Enquist	
*I am the primary grant writer and a collaborator on the grant	
Vertically Integrated Project Grant, University of Arizona (Co-PI) (\$7,500 USD)	2021

Undergraduate Research Initiative Support Fund, University of Alberta (\$500 CAD)	2017
Grant in Biodiversity, Alberta Conservation Association (\$13,990 CAD)	2016
<u>Scholarships, Fellowships and Awards</u>	
NSERC Postdoctoral Fellowship (\$90,000)	2022-23
-Major fellowship awarded through a national competition	
Nominated for the Governor General's Gold Medal, University of Alberta	2021
-Recognizes the doctoral graduate who achieves the highest academic standing	
Faculty of Science Dissertation Award, University of Alberta	2020
-Awarded to exceptional PhD theses that contribute to national and international knowledge	
Andrew Stewart memorial graduate prize, University of Alberta (\$5,000 CAD)	2020
-Recognizes excellence in research and pursuit of new knowledge at the doctoral level	
Alexander Graham Bell Canada Graduate Scholarship-Doctoral, NSERC (\$70,000 CAD)	2018-20
-Major scholarship awarded through a national competition	
President's Doctoral Prize of Distinction, University of Alberta (\$20,000 CAD)	2017-20
Early-Career Plant Population Ecology Member of the Month, Ecological Society of America	Feb. 2019
Ecological Society of America Plant Population Ecology Student Travel Award (\$200 USD)	2018
NSERC Postgraduate Scholarship- Doctoral Program (\$21,000 CAD)	2017-18
-Major scholarship awarded through a national competition	
Nominated for Vanier Canada Graduate Scholarship	2017
University of Alberta Doctoral Recruitment Scholarship (\$5,000 CAD)	2017
Alexander Graham Bell Canada Graduate Scholarship, NSERC Canada (\$17,500 CAD)	2016-17
-Major scholarship awarded through a national competition	
Walter H. Johns Graduate Fellowship, University of Alberta (\$5,700 CAD)	2016
University of Alberta Thesis-Based Masters Scholarship (\$22,433 CAD)	2015-16
Julia O Hrapko Graduate Scholarship in Plant Ecology, University of Alberta (\$3,300 CAD)	2015
University Medal in Environmental Science, Dalhousie University	2014
-Awarded to undergraduate student who achieved the highest academic standing	
International Student Scholarship, Dalhousie University (\$750 CAD)	2013
L A Dewolfe Memorial Scholarship, Dalhousie University (\$1,000 CAD)	2012
Killam American Fund Scholarship, Dalhousie University (\$500 CAD)	2012
Dalhousie Entrance Scholarship, Dalhousie University (\$1,500 CAD)	2010

## Publications

\*Undergraduate author

### *Submitted, In review, and Preprints*

21. Oppon, K., Peetoom Heida, I., Brown, C., Cahill Jr, J. F. (Submitted). Social context affects net impact of soil biota on plant growth. *Oikos*.
  
20. Holden, E., Salimbayeva, K., Brown, C., Stotz, G., Cahill Jr, J. F. (Submitted). Negative plant-soil feedbacks of invasive species compound over time but are not helpful in aiding native plant recovery. *Ecology*

19. Lortie, C.J, Brown, C., Filazzola, A., Haas-Desmarais, S., Lucero, J., Callaway, R., Braun, J. (In Review). Dryland plant networks are more connected by invasive brome and native shrub facilitation. *Scientific Reports*.
18. Chagnon, P.L., Brown, C., Cahill Jr, J.F. 2020. Non-pathogenetic drivers of plant-soil feedbacks. *Authorea Preprints*.

*Peer-Reviewed*

17. Radujkovic, D., [and 35 other authors, including Brown. C]. 2023. Consistent predictors of microbial community composition across spatial scales in grasslands reveal low context-dependency. *Molecular Ecology*. Early View.
16. Brown, C., Rodriguez-Buritica, S., Goldberg, D.E., Reichenbacher, F., Webb, R.H., Venable, L., Wilder, B.T. (In Press). 106 years of change in a Sonoran Desert plant community: impact of climate anomalies and trends in species sensitivities. *Ecology*.
15. Mahal, H. F., Barber-Cross, T., Brown, C., Spaner, D., Cahill Jr, J. F. 2023. Changes in the amount and distribution of soil nutrients and neighbours have differential impacts on root and shoot architecture in wheat (*Triticum aestivum*). *Plants* 12(13): 2527.
14. Liu, C.\*, Groff, T.\*, Anderson, E.\*, Brown, C., Cahill Jr, J.F., Paulow L., Bennet, J. A. 2023. Effects of the invasive leafy spurge (*Euphorbia esula* L.) on plant community structure are altered by management history. *NeoBiota* 81: 157-182.
13. Barber-Cross, T.\*, Filazzola, A., Brown, C., Dettlaff, M., Batbaatar, A., Grenke, J., Peetom Heida, I.\*, Cahill Jr, J.F. 2022. A global inventory of animal biodiversity measured in different grazing treatments. *Scientific Data*, 9(1): 1-8.
12. Smith, E.A.\*, Holden, E.M., Brown, C., Cahill Jr, J.F. 2022. Disturbance has lasting effects on functional traits and diversity of grassland plant communities. *PeerJ*, 10:e13179
11. Brown, C., Cahill Jr, J.F. 2022. Competitive size-asymmetry, not intensity, leads to short-term species loss and gain in native plant communities. *Ecology*, 103(6): e3675.
10. Lortie, C. J., Filazzola, A., Brown, C., Lucero, J. 2021. Facilitation promotes plant invasions and indirect negative interactions. *Oikos*, 130(7): 1056-1061.
9. Davison, J., [and 41 other authors, including Brown. C]. 2021. Temperature and pH define the realized niche space of arbuscular mycorrhizal fungi. *New Phytologist*, 231(2): 763-776.
8. Peetom Heida, I.\*, Brown, C., Dettlaff, M., Oppon, K.\*, Cahill Jr., J. F. 2021. Presence of a dominant native shrub is associated with minor shifts in the function and composition of grassland communities in a northern savannah. *AoB Plants*, 13(2): plab011.
7. Brown, C., Cahill Jr, J.F. 2020. Standing vegetation as a coarse biotic filter for seedbank dynamics: effects of gap creation on seed inputs and outputs in a native grassland. *Journal of Vegetation Science*, 31(6): 1006-1016. Special feature: "Dispersal and establishment".
6. Filazzola, A., Brown, C., Westphal, M., Lortie, C. J. 2020. Establishment of a desert foundation species is limited by exotics and light but not herbivory or water. *Applied Vegetation Science*, 23(4): 587-597.

5. Filazzola, A., Brown, C., Dettlaff, M., Batbaatar, A., Grenke, J., Bao, T., Peetom-Heida, I.\*, Cahill Jr., J.F. 2020. Grazing effects on global biodiversity is multi-trophic: a meta-analysis. *Ecology Letters*, 23(8): 1298-1309.
4. Brown, C., Cahill Jr, J.F. 2019. Vertical size structure is associated with productivity and species diversity in a short-stature grassland: Evidence for the importance of height variability within herbaceous communities. *Journal of Vegetation Science*, 30(5): 780-798.
3. Brown, C., Oppon, K.J.\*, Cahill Jr, J.F. 2019. Species-specific size vulnerabilities in a competitive arena: Nutrient heterogeneity and soil fertility alter plant competitive size-asymmetries. *Functional Ecology*, 33(8):1491-1503.
2. Chagnon, P.L., Brown, C., Stotz, G., Cahill Jr, J.F. 2018. Soil biotic quality lacks spatial structure and is positively associated with fertility in a northern grassland. *Journal of Ecology*, 106(1): 195-206.
1. Brown, C. & Lundholm, J. 2015. Microclimate and substrate depth influence green roof plant community dynamics. *Landscape and Urban Planning*, 143: 134-142.

### *Reports*

2. Brown, C. & Cahill Jr., J.F. Competitive size-asymmetries in a native grassland: what resources drive it and what are its consequences? In Alberta Conservation Association Grants in Biodiversity Biennial Report 2018/2019. Report. Edmonton (AB): ACA Grants in Biodiversity; 2019, p.7.
1. Brown, C. & Cahill Jr., J.F. Causes and consequences of size-asymmetric competition in a native grassland. In Alberta Conservation Association Grants in Biodiversity Biennial Report 2016/2017. Report. Edmonton (AB): ACA Grants in Biodiversity; 2017, p.49.

### Presentations (co-authored presentations not listed)      presenting author, \*undergraduate author

- Brown C. 2023. Species-specific sensitivity to environmental change: patterns and consequences in plant communities. Departmental seminar, Département de Biologie, Université de Sherbrooke. (Invited)
- Brown, C., Rodriguez-Buritica, S., Goldberg, D., Reichenbacher, F., Venable, L., Webb, R. H., Wilder, B. T. 2022. 105+ years of vegetation change in the Sonoran Desert: the impact of climate on species turnover and demography. Oral presentation at the 2022 Ecological Society of America and Canadian Society for Ecology and Evolution Joint Conference, Montreal, QC, Canada.
- Brown, C. 2021. Disentangling competitive processes to better understand their drivers and consequences in a native plant community. Departmental seminar, Department of Ecology & Evolutionary Biology, University of Arizona. (Invited)
- Brown, C. 2020. Disentangling competitive processes to better understand their drivers and consequences in a native plant community. Departmental seminar, Department of Biological Sciences, University of Alberta.
- Brown, C. Barber-Cross, T.\*, Mahal, H.\*, Dale, M. Cahill Jr., J.F. Using network analysis to determine the transitivity of plant-plant interactions under varying resource availability. Talk in the “Network Ecology: The interplay of network structure and function” symposium at the 2020 Canadian Society of Ecology and Evolution, Edmonton, AB, Canada. [Conference canceled due to COVID-19]. (Invited).

Brown, C. & Cahill Jr, J.F. 2019. Size-dependent competition nor competitive intensity is associated with species diversity and composition in a native grassland. Oral presentation at the joint meeting of Canadian Society of Ecology and Evolution (CSEE), the Entomological Society of Canada (ESC), and the Acadian Entomological Society (AES), Fredericton, NB, Canada. [Shortlisted for CSEE student oral presentation award]

Brown, C. & Cahill Jr, J.F. 2019. Effects of standing vegetation on seed inputs and outputs are independent of its composition: consequences for seedbanks. Oral presentation at the International Association for Vegetation Science 62<sup>nd</sup> Annual Symposium. Bremen, Germany. (Invited).

Brown, C. & Cahill Jr, J.F. 2018. Size-asymmetry of plant competition is altered by nutrient distributions and abundance. Oral presentation at the Ecological Society of America Annual Meeting, New Orleans, LO, USA. [Awarded the ESA Plant Population Ecology Student Travel Award]

Brown, C. & Cahill Jr, J.F. 2016. Causes and consequences of size-asymmetric competition in a native grassland. Oral presentation at the CONFORWest Conference, Kananaskis, AB, Canada.

Brown, C. & Lundholm, J. 2014. The effect of extensive green roof substrate composition on native low-bush blueberry (*Vaccinium angustifolium*) and crowberry (*Empetrum nigrum*) growth and performance. Poster presentation at the Science Atlantic Environment Conference, Antigonish, NS, Canada.

Brown, C. & Lundholm, J. 2014. The effect of extensive green roof substrate composition on native low-bush blueberry (*Vaccinium angustifolium*) and crowberry (*Empetrum nigrum*) growth and performance. Poster presentation at the 10th Annual Sustainability and Environmental Research Symposium, Halifax NS, Canada.

## Teaching experience

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Fall/Winter 2023, 2022	Co-Instructor, The future of life in the desert Arizona Institute for Resilience & Department of Ecology and Evolutionary Biology, University of Arizona Co-developed and co-taught course with Dr. Deborah Goldberg; small seminar-based course with a large student-led research component
Fall 2021, 2017, 2016	Guest lecturer, Natural and Human impacts on Arid Lands University of Arizona
Fall 2019, 2017, 2016	Guest lecturer, Plant Ecology Department of Biological Sciences, University of Alberta
Fall 2019	Teaching assistant, Plant Ecology Department of Biological Sciences, University of Alberta
Winter 2018	Guest lecturer, Experimental Biology Department of Biological Sciences, University of Alberta
Fall/Winter 2014, 2013, 2012	Teaching Assistant, Introduction to Ecology Department of Biology, Dalhousie University

## Mentoring experience

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### Undergraduate supervision

- 2023 Sophie Guiraud, University of Arizona  
Project: Using a trait-based approach to predict desert plant responses to climate
- 2021-23 The future of life in the desert
- Scully Young- The relationship of desert plant species' average fine root diameter and their sensitivity to drought.
  - Camille Tinerella- Specific leaf area effect on drought sensitivity of desert species.
  - Kelly Eaton- Leaf thickness and drought sensitivity in changing desert environments.
  - Shaila Rios-Dominguez- How will desert plant species react to climate change? Linking root characteristics to drought sensitivity.
  - Alexander Jerome- Root tissue density and drought sensitivity in Sonoran Desert plants.
  - Lev Brikmanis- Drought sensitivity on leaf succulence of desert plants.
  - Maxwell Eller- Leaf dry matter content as a predictor of drought sensitivity across a variety of Sonoran Desert plants
  - Nikki Reck- Stem specific density as a predictor for drought sensitivity in desert plants.
  - Alexander Jerome- Effect of neighbours on Krameria bicolor
  - Britt Dobroslavic- Intermediate amount of invasive buffelgrass increased growth rate in triangle-leaf bursage
  - Camille Tinerella- Opuntia species and drought on Tumamoc Hill
  - Jennifer Hall- Impact of neighbour proximity on brittlebush survival
  - Ryan Scott- Seed germination and allelopathic leaf litter
- 2018-19 Isaac Peetoom Heida (NSERC USRA), University of Alberta  
Project: Encroachment by a native shrub is associated with minor shifts in the productivity and composition of grassland communities in a northern savannah (published in AoB Plants).
- 2018-19 Tianna Barber-Cross (NSERC USRA), University of Alberta  
Project: Consequences of the shyness-boldness continuum on plant competition
- 2018-19 Kenneth Oppon, University of Alberta  
Project: Effects of neighbor interactions and soil origin on plant-soil feedbacks
- 2017 Kenneth Oppon (URI support fund), University of Alberta  
Project: Determining the relationship between foliar nitrogen, plant size and soil nutrient properties (data published in Brown et al. 2019 Functional Ecology)

#### Field & lab assistants

2019	Brody Nagtegaal	2017-18	Jacey Bronson
2019	Kenneth Oppon	2016-17	Sydney Wild
2018-19	Habba Mahal	2016	Kaeleigh Stinnisen
2018-19	Tianna Barber-Cross	2016	Logan Fairgrievan-Park
2018	Isaac Peetom Heida	2016	Megan Ljubotina
2018	Jonathan Wild	2016	Kelsie Hardman
2017-18	Theodore Blenkinsopp		

## Service and broader community involvement

### Service on Committees and Associations

- 2021-23 Postdoctoral fellow representative, Student Affairs Policy Committee, University of Arizona

- Elected, Volunteer position
- 2019-21 Graduate student representative, Teaching and Learning Enhancement Fund Selection Committee, University of Alberta
- Elected, Volunteer position
- 2019-21 Graduate student representative, Adjunct Professor Selection Committee, University of Alberta
- Elected, Volunteer position
- 2017 Graduate student representative, Grassland Conservation Biologist Recruitment Committee University of Alberta
- Invited, Volunteer position

Workshop and Symposium Organization

- 2023 Workshop co-organizer, The future of the Saguaro, University of Arizona  
Audience: academics, researchers, and professionals in the natural sciences
- 2019-20 Planning Committee Member, Canadian Society for Ecology and Evolution Annual Meeting  
Audience: members of the Canadian Society of Ecology and Evolution (students, professionals, and academics) \*\*meeting cancelled due to COVID-19
- 2018 Workshop co-instructor, An Introduction to Community Analyses for Ecologists, University of Alberta  
Co-instructed workshop with Dr. Alessandro Filazzola  
Audience: undergraduate and graduate students at the University of Alberta
- 2016-18 Academic Coordinator, CONFORWest Graduate Student Conference  
Audience: graduate students at North American universities

Public outreach presentations and demonstrations

- 2023 “Sonoran Desert plants in a changing climate: what do long-term data tell us?” Lectures at the Desert Laboratory on Tumamoc Hill, University of Arizona. March 2023. 30 members of the general public (Invited talk)
- 2023 “Lessons from undergraduate research on desert plant traits: can we predict resilience?” Tumamoc Steward training, University of Arizona. January 2023. 9 members of the Tumamoc community. (Invited talk).
- 2022 Saguaro and plant ecology field collection demonstration: Hands-on presentation and activities about how to age Saguaros and measure plant community change for high school students
- 2022 “105+ years of vegetation change in the Sonoran Desert: insights from the Spalding-Shreve plots on Tumamoc Hill”. Tumamoc Steward training series, University of Arizona. March 2022. 15 members of the Tumamoc community. (Invited talk)
- 2021 Plant ecology research demonstration: Hands-on presentation and activity about how to establish and monitor long-term vegetation plots for elementary school children

Journal reviewer

Journal of Ecology, Nature Ecology & Evolution, Oecologia, Plant Ecology, Biological Invasions, Ecological Applications, Journal of Vegetation Science, Flora, Biology letters, New Phytologist

Professional memberships

Canadian Society for Ecology and Evolution, Ecological Society of America (including the Plant Population Ecology Section and Canadian Chapter)