

CHELSEA J. LITTLE
University of British Columbia
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EDUCATION

University of Zürich **Zürich, Switzerland**
PhD Ecology May 2019
Dissertation: Keystone shredders and the headwater stream meta-ecosystem
Advisor: Florian Altermatt

Université Montpellier II* **Montpellier, France**
MS Ecology & Biodiversity 2014

Uppsala University* **Uppsala, Sweden**
MS Biology 2014

Thesis: Community, functional group, and species responses to decades of experimental warming in the High and Low Arctic

Advisors: Juha Alatalo & Elisabeth Cooper, University of Tromsø

**Part of the dual-degree Erasmus Mundus Master Programme in Evolutionary Biology*

Dartmouth College **Hanover, NH, USA**
BA Biology with High Honors 2009

Thesis: Effects of mine disturbance & contamination on pollination of subalpine wildflowers

Advisor: Rebecca Irwin

CURRENT POSITION

University of British Columbia **Vancouver, Canada**
Killam Postdoctoral Research Fellow September 2019-present
Advisor: Rachel Germain

GRANTS, FELLOWSHIPS, & SCHOLARSHIPS (in Canadian dollars; total = \$155,100)

UBC Collaborative Research Mobility Grant 2020 \$3,800

Office of the V.P. Research & Innovation, University of British Columbia

* awarded with Rachel Germain, PI

Killam Postdoctoral Research Fellowship Sept. 2019-2021 \$104,000

Izaak Walton Killam Memorial Fund for Advanced Studies

Claraz-Donation Research Grant 2016 \$1,000

Georges and Antoine Claraz-Donation via University of Zürich

* co-awarded with Elvira Mächler

Arctic Field Grant 2014 \$8,000

Svalbard Science Foundation

Category “A” Scholarship Sept. 2012-2014 Erasmus Mundus Program of European Commission	\$35,000
Kaminsky Family Fund Research Grant 2008 Kaminsky Family Fund, Dartmouth College	\$2,000
Mellon Grant for Environmental Research 2008 Dartmouth Outing Club	\$1,300

AWARDS AND RECOGNITION

Outstanding Paper Award (\$390) Early Career Section, Ecological Society of America	2020
Distinction for Doctoral Thesis (\$1,300) University of Zurich, Faculty of Science	2019
Outstanding Student Research in Ecology Award (\$400) Student Section, Ecological Society of America	2018
Best Aquatic Sci. Student Talk at ESA Annual Meeting (\$400) Aquatic Ecology Section, Ecological Society of America	2017
Best Talk at PhD Symposium (\$130) Department of Aquatic Ecology, Eawag	2016, 2017
Runner-Up Best Student Talk at ITEX Meeting (\$65) International Tundra Experiment consortium	2015
Distinction “Très Bien” for Masters Courses (first in class) Université Montpellier II, MEME evolutionary biology program	2013
Willard W. Eggleston Botany Prize (\$65) Dartmouth College Biology Department	2009
Rufus Choate Scholar (GPA top 5% of class for the year) Dartmouth College	2009
Cum Laude (4-year GPA top 35% of graduating class) Dartmouth College	2009

PUBLICATIONS

31 peer-reviewed publications to date, with 11 publications as first author.

[d] links to data in a repository, [c] links to code in a repository

31. Gounand I., **Little C.J.**, Harvey E., Altermatt F. (2020) Global quantitative synthesis of ecosystem functioning across climatic zones and ecosystem types. *Global Ecology and Biogeography* (in press); DOI 10.1111/geb.13093 [\[d\]](#)

30. Altermatt F., **Little C.J.**, Maechler E., Wang S., Zhang X., Blackman R.C. (2020) Uncovering the complete biodiversity structure in spatial networks: the example of riverine systems. *Oikos* 129:607-618.

29. **Little C.J.**, Fronhofer E.A., Altermatt F. (2020) Nonlinear effects of intraspecific competition alter landscape-wide upscaling of ecosystem function. *The American Naturalist* 195(3):432-444. [[d](#)]
28. Thomas H.J.D., et al (including **Little C.J.**). (2020) Global plant trait relationships extend to the climatic extremes of the tundra biome. *Nature Communications* 11:1351. [[d](#) & [c](#)]
27. Maechler E.*, **Little C.J.***, Wuethrich R., Alther R., Fronhofer E.A., Gounand I., Harvey E., Huerlemann S., Walser J.-C., Altermatt F. (2019) Assessing different components of biodiversity across a river network using eDNA. *Environmental DNA* 1(3):290-301. [[d](#) [1](#), [2](#)]
- * *equal contribution*
26. Cooper E.J., **Little C.J.**, Pilsbacher A.K., Mörsdorf M.A. (2019) Disappearing green: Shrubs decline and bryophytes increase with nine years of increased snow accumulation in the High Arctic. *Journal of Vegetation Science* 30(5): 857-867.
25. **Little C.J.**, Fronhofer E.A., Altermatt F. (2019) Dispersal syndromes can impact ecosystem functioning in spatially structured freshwater populations. *Biology Letters* 15:20180865. [[d](#)] [[c](#)]
24. Von Schiller D., Detry T., ... **Little C.J.**, ... *et al* (92 authors). (2019) Sediment Respiration Pulses in Intermittent Rivers and Ephemeral Streams. *Global Biogeochemical Cycles* 33(10):1251-1263.
23. **Little C.J.** & Altermatt F. (2019) Differential resource consumption in leaf litter mixtures by native and non-native amphipods. *Aquatic Ecology* 53(2):151-162. [[d](#)] [[c](#)]
22. Shumilova O., *et al.* (including **Little C.J.**). (2019) Simulating rewetting events in intermittent rivers and ephemeral streams: a global analysis of leached nutrients and organic matter. *Global Change Biology* 25(5):1591-1611.
21. Thomas H.J.D., et al (including **Little C.J.**). (2019) Traditional plant functional groups explain variation in economic but not size-related traits across the tundra biome. *Global Ecology and Biogeography* 28:78-95. [[d](#) & [c](#)]
20. Gounand I., **Little C.J.**, Harvey E., Altermatt F. (2018) Cross-ecosystem carbon flows connecting ecosystems worldwide. *Nature Communications* 9:4825.
19. Fronhofer E.A., et al (including **Little C.J.**) (2018) Bottom-up and top-down control of dispersal across major organismal groups. *Nature Ecology & Evolution* 2:1859-1863. [[d](#) & [c](#)]
18. Bjorkman AD, et al (including **Little C.J.**). (2018) Tundra Trait Team: A database of plant traits spanning the tundra biome. *Global Ecology and Biogeography* 27:1402-1411. [[d](#) & [c](#)]
17. Bjorkman A.D., et al (including **Little C.J.**). (2018) Plant functional trait change across a warming tundra biome. *Nature* 562:57-62.
16. **Little C.J.** & Altermatt F. (2018) Landscape configuration alters spatial arrangement of terrestrial-aquatic subsidies in headwater streams. *Landscape Ecology* 33:1519-1531. [[d](#)]
15. **Little C.J.** & Altermatt F. (2018) Species turnover and invasion of dominant freshwater invertebrates alter biodiversity-ecosystem function relationship. *Ecological Monographs* 88:461-480. [[d](#)]

14. Datro T., et al (including **Little C.J.**). (2018) A global analysis of terrestrial plant litter dynamics in non-perennial waterways. *Nature Geosciences* 11:497–503. [[d](#)]
13. **Little C.J.** and Altermatt F. (2018) Do priority effects outweigh environmental filtering in a guild of dominant freshwater macroinvertebrates? *Proceedings of the Royal Society B*: 285:20180205. [[d](#)]
12. Gounand I., Harvey E., **Little C.J.**, Altermatt F (2018). On Embedding Meta-ecosystems into a Socioecological Framework: A Reply to Renaud *et al.* *Trends in Ecology and Evolution* 33:484-486.
11. Gounand I., Harvey E., **Little C.J.**, Altermatt F. (2018) Meta-Ecosystems 2.0: Rooting the Theory Into the Field. *Trends in Ecology and Evolution* 33:36-46.
10. **Little C.J.**, Cutting H.B.U., Alatalo J.M., Cooper E. (2017) Short-term herbivory has long-term consequences in warmed and ambient high Arctic tundra. *Environmental Research Letters* 12:025001. [[d](#)]
9. Harvey E., Gounand I., **Little C.J.**, Fronhofer E.A., Altermatt F. (2017) Upstream trophic structure modulates downstream community dynamics via resource subsidies. *Ecology & Evolution* 7:5724–5731. [[d](#) & [c](#)]
8. **Little C.J.**, Chapuis M.-P., Blondin L., Chapuis E., Jourdan-Pineau H. (2017) Exploring the relationship between tytoparthenogenesis and inbreeding depression in the Desert Locust, *Schistocerca gregaria*. *Ecology & Evolution* 7:6003–6011.
7. **Little C.J.**, Wheeler J.A., Sedlacek J., Cortés A.J., Rixen C. (2016) Small-scale drivers: the importance of nutrient availability and snowmelt timing on performance of the alpine shrub *Salix herbacea*. *Oecologia* 180:1015-2024.
6. Pfeifer-Meister L., Bridgman S.D., Reynolds L.L., Goklany M.E., Wilson H.E., **Little C.J.**, Ferguson A., Johnson B.R. (2016) Climate change alters plant biogeography in Mediterranean prairies along the West Coast, USA. *Global Change Biology* 22:845-855.
5. **Little C.J.**, Jägerbrand A.K., Molau U., Alatalo J.M. (2015) Community and species-specific responses to simulated global change in two subarctic-alpine plant communities. *Ecosphere* 6(11):227.
4. Alatalo J.M., **Little C.J.**, Jägerbrand A.K., Molau U. (2015) Vascular plant abundance and diversity in an alpine heath under observed and simulated global change. *Scientific Reports* 5:10197.
3. Alatalo J.M., **Little C.J.**, Jägerbrand A.K., Molau U. (2014) Dominance hierarchies, diversity and species richness of vascular plants in an alpine meadow: contrasting short and medium term responses to simulated global change. *PeerJ* 2:e406
2. Alatalo J.M. and **Little C.J.** (2014). Simulated global change: contrasting short and medium term growth and reproductive responses of a common alpine/Arctic cushion plant to experimental warming and nutrient enhancement. *SpringerPlus* 3:157.
1. Pfeifer-Meister L., Bridgman S.D., **Little C.J.**, Reynolds L., Goklany M.E., and Johnson B.R. (2013). Pushing the limit: experimental evidence of climate effects on plant range distributions. *Ecology* 94:2131-2137.

INVITED SEMINARS & PRESENTATIONS

Little C.J. (2020) Ecosystem function in the watershed meta-ecosystem. Simon Fraser University, Burnaby, British Columbia, Canada.

Little C.J. (2020*) Multi-scale processes determining organic matter processing in stream meta-ecosystems. International Association for Landscape Ecology North America Annual Meeting, Toronto, Ontario, Canada. (Symposium* “Ecosystem functioning across scales”)

** symposium and talk canceled due to COVID-19*

Little C.J. (2020) Everything is moving: ecosystem function in a changing world. Biodiversity Research Seminar, University of British Columbia, Vancouver, British Columbia, Canada.

Little C.J. (2019) Land, water, and space: predicting organic matter processing in stream meta-ecosystems. Canadian Society for Ecology & Evolution & Entomological Society of Canada joint meeting, Fredericton, New Brunswick, Canada. (Symposium: “Toward an empirical meta-ecosystem framework”)

Little C.J. (2019) Keystone Shredders and the Headwater Stream Meta-Ecosystem. University of Fribourg, Fribourg, Switzerland.

Little C.J. and Altermatt F. (2018) If one shredder is good, are more shredders better? Upscaling biodiversity experiments to functioning of river catchments. Oral presentation. British Ecological Society Annual Meeting, Birmingham, England. (Symposium “Upscaling Biodiversity-Ecosystem Functioning Research”)

Little C.J. (2018) Amphipod priority effects and terrestrial subsidies add up to freshwater ecosystem function. University of Ljubljana, Ljubljana, Slovenia.

CONFERENCE & OTHER PRESENTATIONS

Little C.J. (2019) Animals link ecosystems through resource movement. Poster presentation. Eco-Evo Retreat, Squamish, BC.

Little C.J. and Altermatt F. (2019) Upscaling biodiversity experiments to functioning of riverine catchments. Oral presentation. Society for Freshwater Science Annual Meeting, Salt Lake City, UT.

Little C.J. and Altermatt F. (2018) Biodiversity and ecosystem function across a large river’s dendritic network. Oral presentation. Ecological Society of America Annual Meeting, New Orleans, LA.

Little C.J. and Altermatt F. (2018) Community Assembly Processes Impact Ecosystem Function in Stream Catchments. Poster presentation. Gordon Research Conference “Unifying Ecology Across Scales”, Biddeford, ME.

Little C.J. (2017) Terrestrial subsidies and priority effects add up to freshwater ecosystem function. Oral presentation. Behavior, Ecology, Environment, and Evolution seminar (BEEES), University of Zurich, Zurich, Switzerland.

Little C. J. (2017) Why are amphipods where they are? Oral presentation. Eawag Eco PhD Symposium, Dübendorf, Switzerland.

Little C.J. and Altermatt F. (2017) Spatio-temporal dynamics of ecosystem fluxes and biodiversity in stream catchments. Oral presentation. Ecological Society of America Annual Meeting, Portland, OR.

Little C.J. and Altermatt F. (2016) Interacting effects of litter and decomposer diversity and identity on stream ecosystem functioning. Oral presentation. Ecological Society of America Annual Meeting, Fort Lauderdale, FL.

Little C.J., Fronhofer E., Altermatt F. (2016) Non-native freshwater macro-invertebrates have density- and resource-dependent effects on ecosystem functioning. Oral presentation. Canadian Society for Ecology and Evolution Annual Meeting, Victoria, BC.

Little C. J. (2016) Litter diversity and species identity of a dominant invertebrate interact to determine ecosystem functioning in Central European streams. Oral presentation. Eawag Eco PhD Symposium, Dübendorf, Switzerland.

Little C.J. (2016) What kind of biodiversity promotes ecosystem functioning? Oral presentation. Zurich Interaction Seminar (ZIS), University of Zurich, Zurich, Switzerland.

Little C.J. and Altermatt F. (2015) Differing effects of competition and species replacement on decomposition and ecosystem functioning. Oral presentation. British Ecological Society Annual Meeting, Edinburgh, Scotland.

Little C.J., Alatalo J.M., Cooper E.C. (2015) Changes in process, not pattern, after a decade of warming in Adventdalen tundra vegetation. Oral presentation. International Tundra Experiment (ITEX) meeting, Uppsala, Sweden.

Little C.J. (2015) Don't forget the details: the importance of nutrient availability and snowmelt timing on performance of the alpine shrub *Salix herbacea*. Oral presentation. Biology15, The Swiss Conference on Organismic Biology, Dübendorf, Switzerland.

Little C.J. (2013) Role of microhabitat in growth and phenology of an alpine shrub, *Salix herbacea*. Oral presentation. Northeast Alpine Gathering, Hancock, NH.

Little C.J. (2009) The effects of mine disturbance and contamination on pollination of subalpine wildflowers. Poster presentation. Karen E. Wetterhahn Science Symposium, Hanover, NH.

ACADEMIC SERVICE

A. Departmental

Session presider, Eco-Evo Retreat, Squamish, British Columbia, Canada	2019
Organizing Committee, Erasmus Mundus Evolution Winter School, Lisbon, Portugal	2014
Organizing Committee, Erasmus Mundus Evolution Winter School, Erken, Sweden	2013

B. Non-departmental

Session presider, Ecological Society of America Annual Meeting, Portland, Oregon	2017
Member fundraiser, Science-a-Thon, Earth Science Women's Network (personally)	2017

raised \$3,180)

Organizing Committee, Biology15 Swiss Organismal Biology Conference, Dübendorf, Switzerland	2015
Volunteer, International Tundra Experiment Conference, Bergun, Switzerland	2014
Volunteer, European Conference on Speciation Research, Montpellier, France	2013

C. Reviewer services

Peer reviewer for *Oikos* (x5), *The American Naturalist*, *New Phytologist*, *Journal of Animal Ecology*, *Aquatic Ecology* (x2), *Plant Ecology*, *Ecology and Evolution* (x2), *Hydrobiologia* (x2), *Austral Ecology*, *Journal of Biogeography* (x2)

TEACHING EXPERIENCE

A. University courses

Guest Lecturer – Bachelors course “Advanced Ecology” (BIOL 306), guest lecture “Population dynamics: from local to regional” (University of British Columbia)	2020
Guest Lecturer – Bachelors course “Aquatic Ecology” (BIOL 402), guest lecture “Stream and River Ecosystems” (University of British Columbia)	2019
Field Instructor - Masters course “Ecology”, field lab teaching & exam supervision (University of Zurich)	2016

B. Student mentoring (University of Zurich)

Project Advisor/Teacher - Block course “Limnoecology”, masters student project supervision (Georg Flückiger, Sascha Brunner)	2016
Project Advisor/Teacher - Block course “Limnoecology”, masters student project supervision (Denis Lasic, Marcel Preisig)	2015

I have also assisted in the mentorship of the following masters students in the Altermatt Lab at Eawag (2015-2019): Fabienne Santschi, Kathrin Hohenstein; and in the mentorship of the following undergraduate students in the Germain Lab at UBC (2019-2020): Jenny Mackay, Kately Nikiforuk.

C. Science outreach & communication

Skype a Scientist (2x) : Skype discussion with families of elementary-school students (matched with families rather than classrooms during COVID-19 school closures)	2020
Skype a Scientist (3x) : Skype discussion with elementary school classrooms about ecology, natural history, and climate change	2019

BioTweeps: Posted from the @Biotweeps Twitter account (5,000+ followers) for a week, interacting with users about ecology, conservation, and the practice of science	2019
Classroom visit: Presented to a high school environmental studies class at the Zurich International School about freshwater ecology	2019
MEME Stream Podcast: Interviewed about my masters project on plant-herbivore interactions and climate change in the High Arctic	2019
Science In Progress Podcast: Interviewed about my doctoral research on stream ecosystems, and advice for American students interested in graduate school in Europe	2018
Nordic Nation Podcast: Discussed my doctoral research as an introduction to an interview about my work in cross-country skiing, bringing ecology to a new audience	2018

PROFESSIONAL DEVELOPMENT

Postdoctoral Teaching Internship (one semester: mentoring by Dr. Mary O'Connor, guest lecturing in BIOL 306 Advanced Ecology, & workshops at the University of British Columbia's Center for the Integration of Research, Teaching, and Learning [CIRTL])	2020
Foundations of Pedagogy (eight-week course through UBC CIRTL)	2020
Instructional Skills Workshop (three-day intensive teaching workshop at UBC CIRTL)	2019
"Intersectionality: What is it and how can it inform our workplace and research practices?" (half-day workshop, Symposium for Women Entering Ecology and Evolution Today [SWEEET])	2019
Bystander Intervention Training (workshop at the Ecological Society of America Annual Meeting)	2018
Evidence-Based Policymaking (two-day course with independent project, Univ. of Zürich)	2017
Project Management for Research (four-day course, Univ. of Zürich)	2016
Leadership Skills for Doctoral Candidates (three-day course, Univ. of Zürich)	2016
Data Management for Ecologists and Evolutionary Biologists (two-day Data Carpentry course, University of Neuchatel)	2016

OTHER RESEARCH EXPERIENCE

WSL Swiss Federal Institute for Forest, Snow and Landscape Research 6-month masters project research; Advisor: Christian Rixen	2013
Université Montpellier II & Cirad 3-month masters project research; Advisor: Hélène Jourdan-Pineau	2013

University of Oregon Research Technician for Scott Bridgham & Bart Johnson	2011-2012
University of Florida Research Assistant for Margo Stoddard	2011
Dartmouth College & Rocky Mountain Biological Laboratory Research Assistant for Rebecca Irwin	2006-2008