**Robert Walter Buchkowski | PhD**

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| **Personal Information:**Research ScientistAtlantic Forestry CentreFredericton, NBCanadian Forest Service | Citizenship: CanadianTel: (705) 312-4483Email: robert.buchkowski@gmail.com Website: robertwbuchkowski.github.io |

**Education:**

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| 2019 | PhD  | Yale School of the Environment\* |
| 2014 | MESc | Yale School of the Environment\* |
| 2012 | HBSc | Lakehead University |

\*School of Forestry & Environmental Studies until June 2020.

**Work experience:**

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| 2021-present | Research Scientist (Term) | Canadian Forest Service (NRCan) |
| 2020-2021 | NSERC Postdoctoral Fellow | Western University |

**Publications:**

*Summary:* I author papers when I make a significant contribution to two of the following four areas: question development/study design, data collection/modelling, data analysis, and writing. Being a first author typically means that I was involved in three or four of these areas and drafted the paper.

(19 total/ 11 first author)

\* Mentee

1. **Buchkowski, R.W.** and Schmitz, O.J., 2021. Weak interactions between strong interactors in an old-field ecosystem: control of nitrogen cycling by coupled herbivores and detritivores. *Functional Ecology*. <https://doi.org/10.1111/1365-2435.13932>
2. Daly, A.B., Jilling, A., Bowles, T.M., **Buchkowski, R.W.**, Frey, S.D., Kallenbach, C.M., Keiluweit, M., Mooshammer, M., Schimel, J.P., and Grandy, A.S. 2021*.* A holistic framework integrating plant-microbe-mineral regulation of soil bioavailable nitrogen*. Biogeochemistry*. <https://doi.org/10.1007/s10533-021-00793-9>
	* I helped with the design and writing.
3. **Buchkowski, R.W.** and Lindo, Z. 2021. Stoichiometric and structural uncertainty in soil food web models. *Functional Ecology*, 35: 288-300*.* <http://dx.doi.org/10.1111/1365-2435.13706>
	* I led the design, modelling, model analysis, and writing.
4. **Buchkowski, R. W.**, Morris, D. W., Halliday, W. D., Dupuch, A., Morrissette-Boileau, C., and Boudreau, S. 2020. Warmer temperatures promote shrub radial growth but not cover in the central Canadian Arctic. *Arctic, Antarctic, and Alpine Research*, 52: 582–595. <https://doi.org/10.1080/15230430.2020.1824558>
	* I led the writing and helped with design, data collection, and analysis.
5. Guiliano, S.\*, Karr, C.\*, Sommer, N.\*, **Buchkowski, R.W.** 2020. Woodlice change the habitat use of spiders in a different food chain. *Peer J* 8:e9184. <https://doi.org/10.7717/peerj.9184>
	* I led modelling and helped with design, data collection, and analysis.
6. Donihue, C.M., Kowaleski, A., Algar, A., Baeckens, S., **Buchkowski, R.W.**, Fabre, A.-C., Frank, H.K., Geneva, A.J., Mahler, D.L., Reynolds, R.G., Stroud, J.T., Velasco, J.A., Kolbe, J.J., Losos, J.B., Herrel, A. 2020. Hurricane effects on neotropical lizards span geographic and phylogenetic scales. *PNAS.* <https://doi.org/10.1073/pnas.2000801117>
	* I helped with the data collection, data analysis, and writing.
	* New York Times: <https://www.nytimes.com/2020/04/27/science/lizards-hurricanes-toes.html>
	* CNN: <https://www.cnn.com/2020/04/27/us/lizards-hurricane-adaptation-scn/index.html>
	* Miami Herald: <https://www.miamiherald.com/news/nation-world/national/article242321091.html>
	* Inside Science: <https://www.insidescience.org/news/lizards-evolve-bigger-toepads-hang-during-hurricanes>
7. **Buchkowski, R**.**W.**, Shaw, A.N., Sihi, D., Smith, G.R., Keiser, A.D. 2019. Constraining carbon and nutrient flows in soil with ecological stoichiometry. *Frontiers in Ecology and Evolution*, 7: 382s*.* [https://doi.org/10.3389/fevo.2019.00382](https://www.frontiersin.org/articles/10.3389/fevo.2019.00382/abstract)
	* I led the design, modelling, model analysis, and writing.
8. Benedek, K., Bálint, J., Máthé, I., Mara, G., Felföldi, T., Szabó, A., Fazakas, C., Albert, C., **Buchkowski**, **R. W.**, Schmitz, O. J., and Balog, A. 2019. Linking intraspecific variation in plant chemical defence with arthropod and soil bacterial community structure and N allocation. *Plant and Soil*, 444, 383-397. <https://doi.org/10.1007/s11104-019-04284-7>
	* I helped with the data analysis and writing.
9. **Buchkowski, R.W.**,Leroux, S.J., & Schmitz, O.J. 2019. Microbial and animal nutrient limitation change the distribution of nitrogen within coupled green and brown food chains. *Ecology*, 100, e02674. <https://doi.org/10.1002/ecy.2674>
	* I led the design, modelling, model analysis, and writing.
10. **Buchkowski, R.W.**,Schmitz, O.J., Bradford, M.A. 2019. Nitrogen recycling in coupled green and brown food webs: weak effects of herbivory and detritivory when nitrogen passes through soil. *Journal of Ecology*, 107, 963-976. <https://doi.org/10.1111/1365-2745.13079>
	* I led the design, data collection, analysis, and writing.
11. Schmitz, O.J., **Buchkowski, R.W.**, Smith, J.R., Telthorst, M. & Rosenblatt, A.E. 2017. Predator community composition is linked to soil carbon retention across a human land use gradient. *Ecology*, 98, 1256-1265. <https://doi.org/10.1002/ecy.1794>
	* I helped with the data collection and writing.
12. **Buchkowski, R.W.**, Bradford, M.A., Grandy, A.S., Schmitz, O.J. & Wieder, W.R. 2017. Applying population and community ecology theory to advance understanding of belowground biogeochemistry. *Ecology Letters*, 20, 231-245. <https://doi.org/10.1111/ele.12712>
	* I led the design, modelling, model analysis, and writing.
	* Top 20 downloaded article 2017-2018 in *Ecology Letters*
13. **Buchkowski, R.W.** 2016. Top-down consumptive and trait-mediated control do affect soil food webs: it’s time for a new model. *Soil Biology and Biochemistry*, 102: 29-32. <https://doi.org/10.1016/j.soilbio.2016.06.033>
14. Mendelsohn, R., Prentice, I.C., Schmitz, O., Stocker, B., **Buchkowski, R.W.** & Dawson, B. 2016. The ecosystem impacts of severe warming. *The American Economic Review*, 106: 612-614.  [https://doi.org/10.1257/aer.p20161104](%20https%3A//doi.org/10.1257/aer.p20161104)
	* I helped with the design and writing.
15. **Buchkowski, R. W.**, Williams, C. J., Kelly, J., Veinot, J. G., and Xenopoulos, M. A. 2016. Nanosilver and nano zero-valent iron exposure affects nutrient exchange across the sediment–water interface. *Bulletin of Environmental Contamination and Toxicology*, 96: 83-89. <https://doi.org/10.1007/s00128-015-1697-z>
	* I led the design, data collection, analysis, and writing.
16. **Buchkowski, R. W.** and Schmitz, O. J. 2015. Detritivores ameliorate the enhancing effect of plant-based trophic cascades on nitrogen cycling in an old-field system. *Biology Letters*, 11: 20141048. <https://doi.org/10.1098/rsbl.2014.1048>
	* I led the design, data collection, analysis, and writing.
17. **Buchkowski, R. W.**, Schmitz, O. J., and Bradford, M. A. 2015. Microbial stoichiometry overrides biomass as a regulator of soil carbon and nitrogen cycling. *Ecology*, 96:1139-1149. <https://doi.org/10.1890/14-1327.1>
	* I led the design, data collection, analysis, and writing.
18. Schmitz, O. J., **Buchkowski, R. W.**, Burghardt, K. T., and Donihue, C. M. 2015. Functional traits and trait-mediated interactions: connecting community-level interactions with ecosystem functioning. *Advances in Ecological Research*, 52: 319-343. <https://doi.org/10.1016/bs.aecr.2015.01.003>
	* I helped with the design and writing.
19. Dashtban, M., **Buchkowski, R.W.**, and Qin, W. 2011. Effect of different carbon sources on cellulase production by *Hypocrea jecorina* (T*richoderma reesei*) strains. *International Journal of Biochemistry and Molecular Biology* 2:274-286. <https://www.ncbi.nlm.nih.gov/pmc/PMC3193291/>
	* I led the data collection and helped with analysis and writing.

**Non-refereed publications:**

1. Helton, A., Lewis, R., Hoffnagle, G., Prewo, K.M., Kane, K., Smith, W.J., Keiser D.A., Stahl, J., Klug, J.L. Tobias, C., Raymond, P.A., **Buchkowski, R.W.**, Coplin, K., Weber, L., Strauss, R.H., Clark, T., and Bertini, A.G. 2014. Methods to measure phosphorus and make future projections. The Connecticut Academy of Science and Engineering. Reported Dec. 17/2014: 1-66.
	* I helped with the design, data collection, data analysis, and writing.

**Software:**

1. **Buchkowski, R.W.**, Barreto, C. and Lindo, Z. soilfoodwebs, https://github.com/robertwbuchkowski/soilfoodwebs

**Theses:**

* Doctor of Philosophy (*with Distinction*)
	+ Title: ‘Feedbacks between plant-based and detritus-based food chains and their impacts on carbon and nitrogen cycling’
	+ Committee: Dr. O.J. Schmitz (chair), Dr. M.A. Bradford, and Dr. S.J. Leroux
* Master of Environmental Science
	+ Title: ‘Detritivores ameliorate the enhancing effect of plant-based trophic cascades on nitrogen cycling in an old-field system’
	+ Advisor: Dr. O.J. Schmitz
* Honors Bachelor of Science
	+ Title: ‘Precipitation limits shrub growth in the Central Canadian Arctic’
	+ Advisor: Dr. D.W. Morris

**Teaching Experience:**

* Western University
	+ Biology 4412: Biodiversity Science (Spring 2020)
		- Duties: Instructor of record
* Yale University
	+ Workshop: Diversity and Inclusion in Teaching (Spring 2019)
	+ Applied Math for Environmental Studies (Fall 2013, 2015)
		- Duties: Lectures, office hours, grading
	+ Dynamics of Ecological Systems (Spring 2015)
		- Duties: Lectures, office hours, grading
	+ Ecosystems and Landscapes (Fall 2014)
		- Duties: Led a field and laboratory section
* Lakehead University
	+ Animal Biology (Fall 2011)
		- Duties: Led a laboratory section
	+ Comparative Animal Physiology (Spring 2011)
		- Duties: Led a laboratory section

**Mentoring Experience:**

* High school science fair mentoring
	+ L. Mannan, D. Barak, H. Khan, A. Gilbride, J. Benedetti, C. Karr, S. Guiliano, and S. Parmet
* Undergraduate mentoring\*
	+ T. Pettit (Western University), J. Lienau (Wheaton College), Z. Miller (Yale University), and A. Houston (Yale University)
	+ Ingalls Field Ecology Program (Yale University; 5-10 students per field season)
* Graduate mentoring\*
	+ N. Sommer (Yale University) and M. Swain (Memorial University)

\* not a formal supervisor or committee member

**Awards/ Honors:**

* Flag Bearer (top academic performance), Yale School of the Environment, 2014
* Best Master’s thesis presentation, Yale School of the Environment, 2014
* Robert Poulin Memorial Award for Outstanding Citizenship, Lakehead University 2012
* Lakehead University President’s Award for Community Leadership, 2012
* Dean of Science and Environmental Studies Metal, Lakehead University, 2012
* Biology Prize, Lakehead University, 2012
* Gold Metal in Earth and Environmental Sciences, Canada Wide Science Fair, 2008

**Scholarships & Fellowships** (Total ≅ $646,000 CAN)**:**

* Postdoctoral Fellowships Program, Natural Science and Engineering Research Council of Canada 2019, $90,000 CAN
* Postgraduate Scholarship for Doctoral Students, Natural Science and Engineering Research Council of Canada 2014, $63,000 USD
* Yale University Doctoral Fellowship, 2014, $ 264,000 USD
* Mackenzie King Scholarship, 2013, $8,300 CAN
* Faculty of Forestry and Environmental Studies Entrance Scholarship, Yale University 2012-2013, $40,000 USD
* Postgraduate Scholarship for Masters Students, Natural Science and Engineering Research Council of Canada 2012, $17,300 CAN
* Undergraduate Student Research Award, Natural Science and Engineering Research Council of Canada 2011, $4,500 CAN
* Undergraduate Student Research Award, Natural Science and Engineering Research Council of Canada 2010, $4,500 CAN
* Undergraduate Student Research Award, Canada Wide Science Fair 2009, $4,500 CAN
* President’s Scholarship, Lakehead University 2008, $24,000 CAN
* Local Excellence Award, Canada Millennium Scholarship Program 2008, $4,000 CAN

**Grants for Graduate Research** (Total ≅ $40,800 CAN)**:**

* Kohlberg Fellowship, 2018, $1000 USD
* Yale Institute for Biospheric Studies Fellowship, 2017, $1,500 USD
* Kohlberg Fellowship, 2017, $1000 USD
* Schiff Fund, Yale University, 2016, $8,500 USD
* Yale Institute for Biospheric Studies Fellowship, 2014-2016, $9,250 USD
* Edna Bailey Sussman Fund, 2013, $6,300 USD
* Schiff Fund, Yale University, 2013, $3,500 USD

**Research Grants** (Total ≅ $82,500 CAN)**:**

* Fenichel, E., Yan, Y., **Buchkowski, R.W.**, Leroux, S,J. Environment and Climate Change Canada Economics and Environmental Policy Research Network Grant, Smart Prosperity Institute, 2020-2023, $60,000 CAN
* **Buchkowski, R.W.**, Midgley, M. Center for Tree Science Fellowship, Morton Arboretum, 2020 (*Implementation delayed to 2021 because of COVID-19*), $12,700 USD
* **Buchkowski, R.W.**, Lambert, M. Yale Natural Lands Grant, 2016-2017, $5,144 USD

**Invited Seminars:**

* **Buchkowski, R.W.** October 2019. When do interactions between green (production) and brown (decomposition) food chains matter? *Memorial University*, St. John’s, NL, CAN
* **Buchkowski, R.W.**, Schmitz, O.J., Bradford, M.A. October 2018. Insect herbivory impacts leaf-litter nitrogen with cascading effects on detritivory but not on plant growth. *University of Maryland*; College Park, MD, USA
* **Buchkowski, R.W.**, Schmitz, O.J. September 2016. Unanticipated interactions explain the combined effects of plant-based and detritus-based food chains on nitrogen cycling. *Memorial University*, St. John’s, NL, CAN
* **Buchkowski, R.W.**, Schmitz, O.J. March 2014. Putting animals back into the nitrogen cycle*. Trent University*; Peterborough, ON, CAN

**Conference Seminars:**

* **Buchkowski, R.W.** April 2019. Earthworms work alone: the combined impact of non-native earthworms and native herbivores on plants and nutrient cycling in Connecticut old fields. *The Northeast Natural History Conference*; Springfield, MA, USA
* **Buchkowski, R.W.**, Schmitz, O.J., Bradford, M.A. July 2018. Empirical insights on the feedbacks between terrestrial green and brown food chains. *Canadian Society for Ecology and Evolution*; Guelph, ON, CAN
	+ Co-organized the symposium “Merging theory and empirical research on ecosystem functioning of connected ecosystems” with S.J. Leroux
* **Buchkowski, R.W.**, Schmitz, O.J., Bradford, M.A. August 2017. Plant growth responds to the detritivore processing of leaf litter only when that litter has a history of herbivory. *Ecological Society of America*; Portland, OR, USA
* **Buchkowski, R.W.**, Schmitz, O.J., Bradford, M.A. August 2015. An empirical assessment of a stoichiometrically and microbially explicit nutrient cycling model. *Ecological Society of America*; Baltimore, MD, USA
* **Buchkowski, R.W.**, Schmitz, O.J. June 2015. Detritivores ameliorate the enhancing effect of plant-based trophic cascades on nitrogen cycling. *Rhizosphere 4*; Maastricht, Limburg, Netherlands
* **Buchkowski, R.W.**, Schmitz, O.J. April 2014. How do aboveground and belowground consumers impact nitrogen mineralization? *Ecological Society of America*; Sacramento, CA, USA

**In-house Seminars:**

* **Buchkowski, R.W.**, Lindo Z. March 2021. Structure and stoichiometry in soil food webs. *Western University Biology Departmental Seminar*
* **Buchkowski, R.W.**, Schmitz, O.J., Bradford, M.A. November 2018. The effects of herbivores and decomposers on plant communities and nutrient cycles. *Yale Institute for Biospheric Studies*
* **Buchkowski, R.W.**, Schmitz, O.J., Bradford, M.A. April 2018. Upgoer 5: Animals change where matter is in fields, but only when we consider the starting place and the ground. *Research Colloquium at Yale University*
* **Buchkowski, R.W.**, Schmitz, O.J., Bradford, M.A. September 2015. Is it what you eat or where you live that matters? *Yale University Doctoral Conference*
* **Buchkowski, R.W.**, Schmitz, O.J. April 2014. How do aboveground and belowground consumers impact nitrogen mineralization? *Research Colloquium at Yale University*
	+ Awarded best oral presentation.

**Public Presentations:**

* **Buchkowski, R.W.** 2020. Morton Arboretum summer REU program mentor lectures. Online (Chicago, IL, USA)
* **Buchkowski, R.W.** 2017-2019. Annual research talks. Yale-Myers Forest; Eastford, CT, USA
* **Buchkowski, R. W.** 2015. Isopods and how they fit into the old-field nitrogen cycle. Yale-Myers Forest Seminar Series; Eastford, CT, USA
* **Buchkowski, R.W.** 2014. GMOs: Let’s talk. The Green Café; New Haven, CT, USA
* Grome, M., Lauridsen, H., **Buchkowski, R.W.** 2014. OMG GMOs! Food for thought. Yale Science Diplomats: Science in the News; New Haven, CT, USA

**Memberships in Professional Societies:**

* Canadian Society for Ecology and Evolution 2017-present
* Ecological Society of America 2012-present

**Professional Service:**

* Reviewer: *Applied Soil Ecology, Basic and Applied Ecology*, *Biological Invasions,* *Biology and Fertility of Soils, Ecological Modelling, Ecological Monographs, Ecology, Ecosphere, Environmental Microbiology, Environmental Toxicology Reports, Evolution, Functional Ecology, Geoderma, Global Change Biology, Nature Geoscience, New Phytologist, Pedobiologia, Peer Community in Ecology, Proceedings B,* and *Soil Biology and Biochemistry*
* Regular Member: Arthropods Specialist Subcommittee for the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) 2021-2024
* Associate Editor: *Ratios Matter* 2020-present
* Group leader: Stoichiometry in emerging models of terrestrial organic matter dynamics, WoodStoich 4, 2019
* Doctoral Student Member, Yale-Myers Forest Research Committee, 2015-2019
* PhD Representative, Student Academic Affairs Committee, 2014-2015
* Research Team Member, Connecticut Academy of Sciences and Engineering (Working Group 2 from CT Public Act 12-155), 2013-2015
* Student Senator, Lakehead University Senate, 2009-2012
* Undergraduate Representative, Lakehead University Library Committee, 2009-2012

**Volunteering:**

* Judge, New Haven Science Fair, 2019
* Co-leader, SCOPE: Data Analysis Mentoring Group, 2018-2019
* Co-organized a high school student program at Yale Research Day, 2018-2019
* Co-organized the Environmental Café for high school students, 2018-2019
* Co-organized a Science Communication Workshop, Yale University, 2017
* Public Presenter, Yale University Science In The News, 2013
* Volunteer, New Haven Science Fair, 2013
* Events Coordinator, Lakehead Association of Biology Students, 2010-2011
* Host Committee, Canada Wide Science Fair, 2010
* Chaperone, Canadian Biology Olympiad, 2009-2010
* Student Ambassador, Lakehead University, 2008-2011

**Languages:**

* English: Native
* Portuguese (Brazilian): Intermediate
* French: Beginner