

CURRICULUM VITAE

L.M. Les) Lavkulich

THE UNIVERSITY OF BRITISH COLUMBIA

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Academic Affiliation:

- Director – Master Land and Water Systems
- Director – Global Resource Systems (LFS)
- UBC Representative Canada , SDSN Network- SDSN Waterloo , Global Science Initiative
- UBC Representative, Tokyo Agricultural University, International Student Summit Program.
- UBC Strategic Plan, 2020-28 Global Networks . Strategy 19
- UNC Strategic Plan, 2020-28 Interdisciplinary Education- Strategy 14.

Education:

- B.Sc. (Distinction); M.Sc. The University of Alberta
- Ph.D. Cornell University, New York

Academic Awards: (prior to final degree)

- Loveseth Ltd. Scholarship
- Province of Alberta Undergraduate Scholarship
- Cominco Ltd. Graduate Scholarship
- Province of Alberta Graduate Scholarship
- Cornell University Graduate Scholarship

Positions at UBC:

- Assistant Professor 1966- 1971
- Associate Professor 1971- 1975
- Professor 1975 to date
- Senator, Faculty Agricultural Sciences 1981-84
- Professor Emeritus (Faculty of Graduate Studies & Faculty of Land and Food Systems 2004 to date

- Professor and Director Institute for Resources, Environment and Sustainability September 1991 to July 2004.
- Director, Master Land and Water Systems, 2014- to date
- Director , Global Resource Systems, 2027 – to date

Administration - UBC:

- Head, Department Soil Science, 1980 - 1990
- Chair, Resource Management Science, 1979 - 1991
- Acting Director, Resource Ecology, 1985 - 1991
- Acting Director/Director, Fisheries Centre, 1991 - 1993
- Director, Institute for Resources, Environment and Sustainability, 1995 - 2004
- Chair, Resource Management and Environmental Studies, 1991 – 2004

Awards

- UBC, Killam ,Teaching Award
- UBC, Margaret Fulton, UBC-Outstanding Student Service Award
- B.C. Science Council, Service Award
- B.C. Science Council- Award of Merit
- Elected Fellow, Canadian Society Soil Science
- Honored Member, Montclair Who's Who in North America

Founder (UBC)

- Interdisciplinary Graduate Program, Resource Management and Environmental Studies;
- Institute for Resources, Environment and Sustainability
- Pacific Regional Society of Soil Science ;
- Master Land & Water Systems (graduate program)

Founding Member (UBC)

- Westwater (water resources) Research Centre;
- Sustainable Development Research Institute;
- Fisheries Centre,
- Liu Institute for Global Studies

- St John's College

Provincial / National Associations :

- Chair: B.C Land Resources Steering Committee (Resource Deputy Ministers)
- Chair: Agriculture & Food Sub-committee, B.C. Science Council
- Founding Member: B.C Technical and Research Committee Mine Reclamation
- Expert Committee on Land Resource Services (Soil Survey] 1968 -1980
- Founding Member- Association of Faculties of Agriculture in Canada, and Representative on Canada Agricultural Research Council

- President- Canadian Society of Soil Science – 1981

- Associate Editor- Canadian Journal Soil Science – 1980-85

- Member, Natural Sciences and Engineering Research Council- Grant Selection

University Program Reviews:

- * University Northern British Columbia – Environmental Programs,
- * University of Guelph - Landscape Architecture Program and School of Rural Development;
- * University of Manitoba- Faculty of Design;
- * University of Saskatchewan- School of Agriculture; and
- * U.B.C. Departments of : Anthropology and Sociology, Geography, Animal Science; School of Community and Regional Planning; Institute for International Relations; and Faculty of Forestry

Consultancies:

1) National:

- * (Former Consultancies- Agri-food Canada (CARC); Natural Resources Canada (MEND, C-CAIRN-BC); National Centres of Excellence- NSERC (Aqua-Net); B.C. Ministries of Agriculture, Food and Fisheries; Environment (Water, Land and Air Protection); Forests; Energy, Mines and Petroleum Res.);
- * CERME 3- Centre for Environmental Research in Minerals, Metals and Mining-Canadian Foundation for Innovation;
- * Advisory Committee, Abandoned Mine Sites, TetRus Consultants, Winnipeg;
- * Carbon Sequestration – Various Private Companies, Vancouver;
- * Program Development, New UBC Campus -Okanagan; Rural Communities;
- * Mining Association of B.C.;
- * Chair, Britannia Development Corporation Task Force on Research and Interpretation, Britannia Mines
- * Talisman Environmental Consultants, Vancouver;
- * ESQ Consultants, Surrey;

2) International :

- * Chair, Evaluation Team, Agricultural Expansion and Feasibility of the Huff-Huff Wadi- Saudi Arabia;
- * Member of Review Committee on Agriculture and Resource Programs, Sokoto, Nigeria;
- * Evaluation of Water Demand Profile for Bangkok, Thailand
- *Canadian Rep. NATO/CCMS- Water Management Strategies-European Union -1998- 2008

Research Interests:

Application of science to human welfare and policy development. Major focus on the conservation of resources and the rural landscape, mitigation of human impacts on the physical environment, mine reclamation, water resource management, sustainable communities, evaluation of management/decisions strategies for resource management, adaptation to change (climate, economic, cultural), soil and environmental chemistry, sustainability of agriculture/forestry, adaptive management, carbon dynamics and bridging natural science policy, and science communication.

Research Foci:

- 1) Characterization, Properties and Genesis of Major Soils of B.C.
- 2) Energy =Water Nexus
- 3) Mineral Weathering and Surface Characterization
- 4) Role of Xenobiotics in Aquatic Systems; Transport and Mitigation,
- 5) Land-use Dynamics and the Rural-Urban Landscape,
- 6) Rural Communities in Transition, and
- 7) Frameworks for Science-informed Policy

Professional Activities:

Soil processes, water- energy nexus, soil geochemistry, pedology and resource activities; land use dynamics; reclamation of disturbed sites; energy alternatives; resource conservation, natural science information/communication and policy; resource communities in transition.

Publications (2004 -2024):

Fausak Lewis, Joseph Anne, Reinesch Ana C., Kylstra Skylar, Diaz Osorio Fernanda, Watkinson Autumn, Lavkulich Les (2024) Effect of wetting and drying processes on ultramafic and mafic tailing minerals amended with topsoil. *Environmental Chemistry* 21, EN23037.

Torkaman, P.; Yoshimura, A.; Lavkulich, L.M.; Veiga, M.M. 2023. Experimenting with Dimethyl Sulfoxide to Leach Gold from a Colombian Artisanal Gold Ore. *Metals* 2023, 13, 1855. [https:// doi.org/10.3390/met1311185](https://doi.org/10.3390/met1311185)

Reinesch, A., Fausak, L., Joseph, A., and Lavkulich, L. (2022). Water, Energy and Nutrient Losses from Food Wastage of Selected Crops in Three Agro-Climatic Zones in British Columbia, Canada. *Agricultural Sciences*, **13**, 947-972. doi: [10.4236/as.2022.138059](https://doi.org/10.4236/as.2022.138059).

Reinesch, A., Fausak, L., Joseph, A., Kylstra, S., and Lavkulich, L. (2022). An Integrated Framework for Regional Assessment of Water, Energy, and Nutrients from Food Loss of Selected Crops in the Lower Fraser Valley, Canada. *Agricultural Sciences*, **13**, 633-657. doi: [10.4236/as.2022.135042](https://doi.org/10.4236/as.2022.135042).

Kylstra, S., Watkinson, A., Fausak, L., and Lavkulich, L. (2021). Irrigation Water Demand Model as a Comparative Tool for Assessing Effects of Land Use

Changes for Agricultural Crops in Fraser Valley, Canada. *Agricultural Sciences*, **12**, 888-906. doi: [10.4236/as.2021.128057](https://doi.org/10.4236/as.2021.128057).

Fausak, L., Watkinson, A.D., Dy, K., and Lavkulich, L.M. (2021). Assessment of metal contamination in soil and vegetation along the Arbutus greenway in Vancouver, B.C. *Plant Soil*. <https://doi.org/10.1007/s11104-021-04983-0>

Torkaman, P., M.M. Veiga, L.R.P. de Andrade, L.A. Oliverira, J.S. Motta, J.L. Jesus, and L.M. Lavkulich.2021. Leaching gold with cassava: An option to eliminate mercury use in artisanal gold mining. *Journal of Cleaner Production Volume 311*, 15 August 2021, 127531

Lavkulich, L.M. 2021. Soils of British Columbia and Yukon -The Western Cordillera. In Krzic, M., Walley, F.L., Diochon, A., Paré, M.C., & Farrell, R.E. (Eds.) 2021. *Digging into Canadian soils: An introduction to soil science*. Pinawa, MB: Canadian Society of Soil Science. <https://openpress.usask.ca/soilscience/>

Fausak, L., A.D. Watkinson, K. Dy, and L.M. Lavkulich . 2021. Assessment of metal contamination in soil and vegetation along the Arbutus Greenway in Vancouver, British Columbia. *Plant Soil* (2021). <https://doi.org/10.1007/s11104-021-04983-0>

Modi D, Simard S, Lavkulich L, Hamelin RC, Grayston S.J .2020. Stump removal and tree species composition promote a bacterial microbiome that may be beneficial in the suppression of root disease. *Fems Microbiology Ecology*. PMID [33053177](https://pubmed.ncbi.nlm.nih.gov/33053177/) DOI: [10.1093/femsec/fiaa213](https://doi.org/10.1093/femsec/fiaa213)

Juang LJ, Mazinani N, Novakowski SK, Prowse ENP, Haulena M, Gailani , D, Lavkulich LM, Kastrup CJ.2020. Coagulation factor XII contributes to hemostasis when activated by soil in wounds. *Blood Advances*. 4: 1737-1745. PMID [32339233](https://pubmed.ncbi.nlm.nih.gov/32339233/) DOI: [10.1182/bloodadvances.2019000425](https://doi.org/10.1182/bloodadvances.2019000425)

Modi D, Simard S, Bérubé J, Lavkulich L, Hamelin R, Grayston SJ.2020. Long-term effects of stump removal and tree species composition on the diversity and structure of soil fungal communities. *Fems Microbiology Ecology*. PMID [32275308](https://pubmed.ncbi.nlm.nih.gov/32275308/) DOI: [10.1093/femsec/fiaa061](https://doi.org/10.1093/femsec/fiaa061)

Simard SW, Roach WJ, Defrenne CE, Pickles BJ, Snyder EN, Robinson A, Lavkulich LM. 2020.Harvest Intensity Effects on Carbon Stocks and Biodiversity Are Dependent on Regional Climate in Douglas-Fir Forests of British Columbia *Frontiers in Forests and Global Change*. 3. DOI: [10.3389/ffgc.2020.00088](https://doi.org/10.3389/ffgc.2020.00088)

Roa García, Clara, Brown, Sandra , Maja Krzic , Lavkulich, Les and Roa-García, María Cecilia . 2020 Canadian Journal of Soil Science • 25 August • <https://doi.org/10.1139/cjss-2020-0066>

Jie Ying, Huang, T.A. Black, R.S. Jassal and L.M. (Les) Lavkulich. 2017. Modelling rainfall interception by urban trees Canadian Water Resources Journal. 42, No. 4, 336–348, <https://doi.org/10.1080/07011784.2017.1375865>

Rose, Ashley , Julie E. Wilson, Les M. Lavkulich. 2017. Analysis of Impervious Surface Area, and the Impacts on Soil-Based Agriculture and the Hydrologic Cycle: A Case Study in the Agricultural Land Reserve in Metro Vancouver, British Columbia, Canada. Agricultural Sciences 8 :837-856.

Wang, Yining , Julie E. Wilson, Drew Brayshaw and Les M. Lavkulich. 2017. Effects of Aggregate Extraction on Water Storage in the Pepin Creek Watershed, British Columbia, Canada. Natural Resources 8:461-477.

Zhang, Yuan, Julie E. Wilson, Les M. Lavkulich. 2017. Integration of Agriculture and Wildlife Ecosystem Services: A Case Study of Westham Island, British Columbia, Canada. Agricultural Sciences. 8: 409-425.

Wilson, Julie, E., Junsung Zhang, Cyprien Lomas, Les M. Lavkulich and Rickey Y. Yada. 2016. Instructor's perceptions on learning technologies in the multidisciplinary Faculty of Land and Food Systems at the University of British Columbia, Canada. Intern. J. Information Educ. Techn. 7:772-782.

Defrenne , Camille E. , Julie E. Wilson, Suzanne W. Simard, Les M. Lavkulich, 2016. Disturbance legacy on soil carbon stocks and stability within a coastal temperate forest of southwestern British Columbia, Canada. Open Journal of Forestry, 6: 305- 323, <http://www.scirp.org/journal/ojf>

Thomas, E.C. and Les M. Lavkulich. 2015. Anthropogenic effects on metal content in urban soil from different parent materials and geography locations: A Vancouver, British Columbia, Canada study. Soil Science 180:193-197.

Roussin, Rachael, Julie E. Wilson, Gregory Utzig and Les M. Lavkulich. 2015. Assessing the potential for pocket agriculture in mountainous regions: A case study in West Kootenay, British Columbia, Canada . Journal of Agriculture, Food Systems, and Community Development ISSN: 2152-0801 online www.AgDevJournal.com

Schreier, Hans and Les Lavkulich. 2015. Cumulative effects of the transport of asbestos-rich serpentine sediments in the trans-boundary Sumas Watershed in Washington State and British Columbia. C, Water Res. <http://dx.doi.org/10.1080/07011784.2015.1052495>

Thomas, E. C. and L. M. (Les) Lavkulich. 2015. Community considerations for quinoa production in the urban environment. Can. J. Plant Sci. 95: 397-404. doi:10.4141/CJPS-2014-228.

Grand, Stephanie and L.M. (Les) Lavkulich. 2015. Short-range order mineral phases control the distribution of important macronutrients in coarse-textured forest soils of coastal British Columbia, Canada, *Plant and Soil*, 390: 77-93. (DOI 10.1007/s11104-014-2372-6).

Oka, G.A., L.Thomas, and L.M.Lavkulich. 2014. Soil assessment for urban agriculture: A Vancouver case study. *J. Soil Sci. & Plant Nutr.* 14: 657-669.

Holmes, Emma, P . and L.M. (Les) Lavkulich.2014. The effects of naturally occurring acids on the surface properties of chrysotile asbestos. *Journal of Environmental Science and Health, Part A*, 49: 1445–1452

Cornelis, Jean-Thomas, Dominique Weis, Les Lavkulich, Marie-Liesse Vermeire, Bruno Delvaux and Jane Barling. 2014. Silicon isotopes record dissolution and re-precipitation of pedogenic clay minerals in a podzolic soil chronosequence. *Geoderma* 235-236: 19-25. ·

Grand, Stephanie, Robert Hudson and L.M.(Les) Lavkulich. 2014. Effects of forest harvest on soil nutrients and labile ions in Podzols of southwestern Canada: Mean and dispersion effects. *Catena* 122: 18-26.

Baugé, S. M. Y., L. M. (Les) Lavkulich, J. E. Wilson, H. E. Schreier.2014. Comparison of surface properties of synthetic and soil struvite. *Can. J. Soil Sci.* 94(2): 169-176,

Lavkulich, Les M., Hanspeter E. Schreier and Julie Wilson. 2014. Effects of natural acids on the surface properties of asbestos minerals and kaolinite. *J. Environ. Science and Health, Part A*, 49:617- 624.

Roa-García, Maria Cecilia, Sandra Brown, L.M. Lavkulich. 2014. Stream closure and water allocation in the Colombian Andes. *International Journal of Water.* 8:128-148.

Hund, Silija, Sandra Brown, Les M. Lavkulich and Sascha E. Oswald. 2013. Relating P liability in stream sediments to watershed land use via an effective sequential extraction scheme. *Water, Air, Soil Pol.* 224:1643-1656.

Baugé, S.M.Y., H. E. Schreier and L.M.Lavkulich. 2013 .Phosphorus and trace metals in serpentine affected soils of the Sumas Basin, British Columbia. *Can. J. Soil Sci.* 93: 359-367.

Grand, S. and L.M. Lavkulich. 2013. Potential influence of poorly crystalline minerals on soil chemistry in podzols of southwestern Canada. *Eu. J. Soil Sci.*64: 651-660.

Baugé, S.M.Y., L.M.Lavkulich and H.E. Schreier. 2013. Serpentine affected soils and the formation of magnesium phosphates (struvite). *Can. J. Soil Sci.* 93: 161-172.

Marie-Liesse Vermeire, Les Lavkulich and Jean-Thomas Cornélis. 2013. The interdependent relationship between C dynamics and soil-forming processes in a podzolic chronosequence under a temperate rainforest. *Geophysical Research*, 15, EGU2013-4661, 2013

Krzic, M., Rachel A. Strivelli, Emma Holmes, Stephanie Grand, Saaed Dynanatkar, Les. M. Lavkulich and Chris Crowley 2013. Virtual soil monoliths: Blending traditional and web-based educational approaches. *Nat. Sci. Educ.* 42: 1-8.

Grand, Stephanie and Les M. Lavkulich, 2012. Effects of forest harvest on soil carbon and related variables in Canadian Spodosols. *Soil Sci. Soc. Am. J.* 76: 1816–1827

Grand, S. and L. M. Lavkulich, 2012. Effects of logging disturbance on soil organic carbon and related variables in the Coastal Range of British Columbia, Canada, European Geosciences Union General Assembly 2012 APRIL Vienna, Austria,

Holmes, Emma P., Julie Wilson, Hans Schreier and Les M. Lavkulich. 2012. Processes Affecting Surface and Chemical Properties of Chrysotile: Implications for Reclamation of Asbestos *Can. J. Soil Sci.*92: 229-242.

Sajedi, Toktam, Cindy E. Prescott, Brad Seely and Les M. Lavkulich. 2012. Relationships among soil moisture, aeration and plant communities in natural and harvested coniferous forests in coastal British Columbia, Canada. *J. Ecol.*100S 605 - 618.

Roa-García, M.C., Brown, S., Schreier, H., & Lavkulich, L.M. 2011. The role of land use and soils in regulating water flow in small headwater catchments of the Andes. *Water Resour. Res.*, 47, 1-12. doi:10.1029/2010WR009582

Lavkulich, L.M. and J.M. Arocena. 2011. Luvisolic soils of Canada: Genesis, distribution, and classification. *Can. J. Soil Sci.* 91: 781-806.

Brown, Sandra , L.M. Lavkulich and Hanspeter Schreier. 2011. Developing indicators for regional water quality assessment: an example from British Columbia community watersheds. *Can..Water Res. J.* 271

Roa-García, M. C., S. Brown, H. Schreier, and L. M. Lavkulich.2011. The role of land use and soils in regulating water flow in small headwater catchments of the Andes, *Water Resources Res.*, 47,

Grand, S. and L.M. Lavkulich, 2011. Depth distribution of soil organic carbon in Podzols of a forested watershed in southwestern Canada, *Soil Science* 176: 164-174.

Brown, S., H. Schreier and L. Lavkulich. 2009. Incorporating virtual water into water management: a British Columbia example. *Water Resources Management.* 23:2681-2696

Lavkulich, L.M.(Les) and Ulazzi, E. 2008. Environmental indicators for water resources management. In, Meire, P. et al (eds) Integrated Water Management: Practical Experiences and case studies. Pp 325-342. Springer Verlag.

Smith, Ione, K.J. Hall, L.M. Lavkulich, and Hans Schreier. 2007. Trace metal concentrations in an intensive Agricultural Watershed in British Columbia, Can.. J. Am. Water Assoc. 43: No.6, pp1455-1467.

Schendel, K.E., J.R. MacDonald, H.E. Schreier and L.M. Lavkulich. 2007. Virtual water: A framework for comparative regional resource assessment.J. Environ. Assess't, Policy & Manag't. (Vol. 9, No. 3. pp. 341–355).

Chen, Margaret S., S. Wartel , L Goyens , L.M .Lavkulich, W. Baeyens and N. Brion 2007. Organic matter and dissolved inorganic nitrogen distribution in estuarine muddy deposits. Aquatic Ecosystem Health & Manag't. 10: 183-200,

Chen, M.S. S. Wartel, & L.M. Lavkulich. 2006. Spatial distribution and characteristics of flocs in the Schelde estuary (Belgium-Netherlands). Estuarine Res. Fed.

Schendel, E.K., H. Schreier and L.M. Lavkulich 2004. Linkages between phosphorus index estimates and environmental quality variables. Soil and Water Cons. J. 59:243-251.

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