

Sarah A. Johnson, MSc
PhD Candidate, Simon Fraser University
Administrative Director, Machen Manufacturing Ltd.
Curriculum Vitae – August 2025
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EDUCATION

2018-*: PhD Biological Sciences, Ecology. Simon Fraser University.

Thesis: Bumble bee community and landscape ecology after wildfire

Advisory Committee: Dr. Leithen M’Gonigle (PI), Dr. Elizabeth Elle, Dr. Claire Kremen

GPA: 4.33/4.00

*Leaves of absence: 2.33 years total (Summer 2020, Summer 2022, Fall 2022, Summer 2023, Summer 2024, Fall 2024, Spring 2025)

2015: MSc Biological Sciences, Ecology. University of Calgary.

Thesis: Scaling of density-dependent reproduction in bee-pollinated forbs of logged forests

Advisory Committee: Dr. Ralph V. Cartar (PI), Dr. Kathreen Ruckstuhl, Dr. Jana Vamosi, Dr. Paul Galpern

GPA: 4.00/4.00

2012: BSc Honours First Class. Natural Sciences. University of Calgary.

Thesis: Wing area affects an ecologically critical trait – load lifting capability – in bumble bees (*B. impatiens*)

Advisor: Dr. Ralph V. Cartar

GPA: 3.71/4.00, 3 years Faculty of Science Dean’s List

Concentrations in Biological Sciences and General Mathematics

2010: transfer credit in Biology & Earth and Ocean Sciences, University of Victoria

PUBLICATIONS

PEER-REVIEWED (* authors contributed equally):

231 citations, h-index 6

Cohen, A. L., L. R. Best, D. Clake, D. Edwards, M. Gavin, S. A. Johnson, J. Retzlaff, S. V. J. Robinson, J. Vickruck, and P. Galpern. 2025. A beneficial arthropod dataset for agricultural landscapes in Western Canada, and adjacent mountain ecosystems. *Scientific Data* 12:787.

Varner, E., K. Mark, H. Jackson, K. Singleton, L. Luo, S. Johnson, R. Gries, and G. Gries. 2023. Rodent odour bait: A new bumble bee conservation tool to enhance nest box occupancy. *Insect Conservation and Diversity* 16(3):324-334.

Johnson, S. A.*, H. Jackson*, H. Noth, and L. K. M’Gonigle. 2023. Positive impact of postfire environment on bumble bees not explained by habitat variables in a remote forested ecosystem. *Ecology and Evolution* 13:e9743.

Jackson, H., S. A. Johnson, L. A. Morandin, L. L. Richardson, L. M. Guzman*, and L. K. M’Gonigle*. 2022. Climate change winners and losers among North American bumble bees. *Biology Letters* 18(6):20210551.

- Galpern, P., L. R. Best, J. H. Devries, S. A. Johnson. 2021. Wild bee responses to cropland landscape complexity are temporally-variable and taxon-specific: Evidence from a highly replicated pseudo-experiment. *Agriculture, Ecosystems & Environment* 322:107652.
- Guzman, L. M., S. A. Johnson, A. O. Mooers, and L. K. M'Gonigle. 2021. Using historical data to estimate bumble bee occurrence: variable trends across species provide little support for community-level declines. *Biological Conservation* 257:109141.
- Johnson, S. A., M. M. Tompkins, H. Tompkins, and S. R. Colla. 2019. Artificial domicile use by bumble bees (*Bombus* (Latreille); Hymenoptera: Apidae) in Ontario, Canada. *Journal of Insect Science* 19(1):7; 1-5.
- Galpern, P., S. A. Johnson, J. L. Retzlaff, D. Chang, and J. Swann. 2017. Reduced abundance and earlier collection of bumble bee workers under intensive cultivation of a mass-flowering prairie crop. *Ecology and Evolution* 7(7):2414-2422.
- Cover Image (© S. A. Johnson) April 2017 Volume 7 Issue 7 *Ecology and Evolution*
- Johnson, S. A., and R. V. Cartar. 2014. Wing wear, but not asymmetry in wear, affects load-lifting capability in bumble bees *Bombus impatiens*. *Canadian Journal of Zoology* 92(3):179-184.
- NON-PEER-REVIEWED:**
- Johnson, S. A. March 2022. [Bee profile: The yellow-banded bumble bee](#). Quarterly Newsletter for the Native Bee Society of BC.
- Best, L. R., S. A. Johnson, E. E. N. Purvis, and S. V. J. Robinson. January 2021. Mount Revelstoke National Park bumble bee (Apidae: *Bombus*) inventory and community composition. Final report for pollinator sampling contract carried out by the Native Bee Society of BC prepared for Parks Canada.
- Johnson, S. A. 22 April 2020. [“The birth of a native bee society” and “The pollinator link”](#). Quarterly Newsletter for the Native Bee Society of BC.
- Aleksiuik, S., and S. A. Johnson. March 2019. [YYC's Young Citizen Scientists Nature Journal: Bumblebees](#). Green Calgary Association & CPAWS educational materials.
- Johnson, S. A. 26 July 2018. [Kicking off Canadian Bumble Bee Watch training events!](#) Xerces Society for Invertebrate Conservation blog.
- Rowe, G., and S. A. Johnson. May 2018. Bumble Bee Watch citizen science survey program. Final report prepared for Ontario Ministry of Natural Resources.
- Johnson, S. A. February 2018. Glenbow Ranch Provincial Park pollinator citizen science program. Final report prepared for TD Friends of the Environment Foundation and Alberta Environment and Parks.
- Johnson, S. A., G. Rowe, and A. Liczner. February 2018. Characterizing habitat requirements, evaluating use of nest boxes, and improving captive breeding techniques for declining bumble bees. Species at Risk Research Fund for Ontario final report prepared for the Ontario Ministry of Natural Resources.
- Rowe, G., and S. A. Johnson. February 2018. Understanding the decline of pollinators in Ontario through field research and monitoring. Species at Risk Stewardship Fund final report

prepared for the Ontario Ministry of Natural Resources.

Johnson, S. A. 19 January 2018. [Wildlife Preservation Canada continues training “Bumble Bee Watchers”](#). Xerces Society for Invertebrate Conservation blog.

Johnson, S. A. 24 November 2017. [5 weird and wonderful bumble bee facts from the field](#). Wildlife Preservation Canada blog.

Johnson, S. A. October 2017. [A bu\(zz\)y summer for bumble bees & the bumble bee life cycle](#). Wildlife Preservation Canada On the Edge Fall 2017 newsletter, 2 pp.

Tompkins, H., and S. A. Johnson. 27 April 2017. [Quest for queens](#). Wildlife Preservation Canada blog.

Tompkins, H., and S. A. Johnson. 11 April 2017. [Bumble bee conservation volunteer opportunity at Pinery and Awenda](#). Ontario Parks blog.

Johnson, S. A., and H. Tompkins. February 2017. BumbleBeeWatch.org citizen science survey program. Final report prepared for Ontario Ministry of Natural Resources.

Johnson, S. A., and H. Tompkins. February 2017. Investigating the effects of pesticides on declining bumble bee species and improving captive breeding techniques. Species at Risk Research Fund for Ontario final report prepared for the Ontario Ministry of Natural Resources.

Johnson, S. A., and H. Tompkins. February 2017. Conserving the buzz – saving Ontario pollinators and insect-pollinated plants from extinction. Species at Risk Stewardship Fund final report prepared for the Ontario Ministry of Natural Resources.

Johnson, S. A., and H. Tompkins. October 2016. [Bumble bee breeding](#). Wildlife Preservation Canada On the Edge Fall 2016 Newsletter, 2 pp.

Johnson, S. A. December 2015. Scaling of density-dependent reproduction in bee-pollinated forbs of logged forests. MSc Thesis, University of Calgary.

Johnson, S. A., and R. V. Cartar. Density-dependent reproductive success of common wildflowers in logged landscapes. In Alberta Conservation Association. ACA Grants in Biodiversity Biennial Report 2014/2015. Edmonton, AB: ACA Grants in Biodiversity; 2015, p. 24.

CONFERENCE PRESENTATIONS

Johnson, S. A. and L. K. M’Gonigle. November 2023. Determining a baseline for bumble bee community-level habitat use after wildfire. BOMBUSS 3.0 (Building Our Methods By Using Sound Science), San Cristóbal de las Casas, Chiapas, Mexico [poster presentation].

Johnson, S. A. and L. K. M’Gonigle. December 2021. Pollinator conservation management for climate change in British Columbia. 5th Living Labs Research Colloquium, BC [online presentation].

Johnson, S. A. October 2019. Piloting a blocked sampling design for minimizing lethal collections in a landscape-level community study. BOMBUSS 2.0 (Building Our Methods By Using Sound Science, Next steps in North American Bumble Bee Monitoring and Conservation), Toronto, ON [lightning presentation].

Johnson, S. A. February 2019. Artificial domicile use by bumble bees. Pacific Northwest Pollinator Symposium, Corvallis, OR, USA [poster presentation].

Johnson, S. A., and H. Tompkins. November 2018. Artificial domicile use by bumble bees in Alberta and Ontario. Crossing Borders: Entomology in a Changing World (ESA, ESC, and ESBC Joint Annual Meeting), Vancouver, BC [oral presentation].

Rowe, G., Johnson, S. A., MacPhail, V., and R. Hatfield. November 2018. Utilizing citizen science for conservation: the success of Bumble Bee Watch. Crossing Borders: Entomology in a Changing World (ESA, ESC, and ESBC Joint Annual Meeting), Vancouver, BC [poster presentation].

Do, V., Johnson, S. A., and J. S. MacIvor. September 2017. Queen bumblebees – pollination networks across a latitudinal gradient. Annual meeting of the Entomological Society of Ontario, Guelph, ON [poster presentation].

Galpern, P., Johnson, S. A., Retzlaff, J. L., Chang, D., and J. Swann. October 2016. High-intensity canola cultivation: an ecological trap for bumble bees? Annual Meeting of the Entomological Society of Alberta, Calgary, AB [oral presentation].

Johnson, S. A., and R. V. Cartar. May 2014. Density-dependent reproduction of forest herbs in logged landscapes – local vs. landscape effects on seed size. Genomes to Biomes Conference (CSEE, CSZ, SCL Joint Meeting), Montreal, QC [oral presentation].

Johnson, S. A., and R. V. Cartar. May 2013. Wing area affects an ecologically critical trait – load-lifting capability – in bumble bees. Annual Meeting of the Canadian Society for Ecology and Evolution, Kelowna, BC [oral presentation].

FUNDING

Total Awarded Value: \$585,493

Year	Award	Value
Grants		\$197,518
2021	BC Parks Living Lab for Climate Change and Conservation	\$19,425
2020	BC Parks Living Lab for Climate Change and Conservation (declined)	\$19,425
2019	Canada Summer Jobs Student Wage Subsidy (declined)	\$3,880
2018	Species at Risk Stewardship Fund	\$37,788
	Alberta Ecotrust Foundation Community Grant	\$7,500
	Canada Summer Jobs Student Wage Subsidy	\$7,594
2017	Species at Risk Research Fund for Ontario, 2 years	\$59,126
	Species at Risk Stewardship Fund	\$18,480
	TD Friends of the Environment Foundation	\$9,400
	Canada Summer Jobs Student Wage Subsidy	\$5,100
2013	Alberta Conservation Association Grant in Biodiversity	\$9,800
Scholarships		\$387,975
2019	Vanier Canada Graduate Scholarship (CGS), 3 years	\$150,000
	NSERC Alexander Graham Bell CGS – Doctoral, 3 years (declined)	\$105,000
2018	Simon Fraser University Graduate Dean's Entrance Scholarship, 4 years	\$84,000
2015	University of Calgary Departmental Graduate Program Excellence Award	\$5,000
2014	Alberta Graduate Student Scholarship	\$3,000

Year	Award	Value
2013	NSERC Alexander Graham Bell CGS – Master’s	\$17,500
	University of Calgary Department of Biological Sciences Scholarship	\$3,000
2011	Grace LeBel Bursary	\$700
	Student Peer Assistance Undergraduate Bursary	\$400
2009	P.U.R.E. (Program for Undergraduate Research Experience) Award	\$4,000
2008	Wilfred Archibald Walter Bursary	\$2,500
	Jason Lang Scholarship (Alberta Scholarship Programs)	\$1,000
2007	BC Innovation Council Science Achievement Award	N/A
	Governor General’s Academic Medal	N/A
	University of Calgary Admission Scholarship	\$1,750
	Dean's Merit Admission Award - Faculty of Science	\$1,000
	President’s Entrance Scholarship at UBC (declined)	\$4,000
	Passport to Education	\$1,125
	Grade 12 Graduation Program Examinations Scholarship	\$1,000
	North Okanagan-Shuswap Teachers Association Scholarship	\$1,500
	CUPE-SCFP Okanagan Valley School Employees Union Scholarship	\$1,000
	Shane Birzins Memorial Scholarship	\$500

WORK AND RESEARCH EXPERIENCE

Machen Manufacturing Ltd., Salmon Arm, BC

Managing Director

March 2022-February 2025

Administrative Director

March 2025-present

Wildlife Preservation Canada, Guelph, ON

Lead Biologist – Native Pollinator Initiative

August 2016-August 2018

City of Calgary, Calgary, AB

Native Bee Collection Technician – Calgary Bee Project

May-August 2018

University of Calgary, Faculty of Environmental Design, Calgary, AB

Pollinator Field Research Coordinator

June 2015-August 2016

University of Calgary, Department of Biological Sciences, Calgary, AB

Graduate Research Assistant

July 2012-November 2015

University of Calgary, Department of Biological Sciences, Calgary, AB

Field Research Assistant for PhD candidate

May-July 2009

TEACHING EXPERIENCE

South Canoe School, Outdoor Learning Program, Salmon Arm, BC

Native Bees & Gardening for Pollinators Grades 2-4 Guest Instructor

May 2023

Native Bee Habitats at the Community Garden for Grade 3 Guest Instructor

October 2023

University of British Columbia, Faculty of Land and Food Systems, Vancouver, BC

APBI 490 (Conservation Agriculture & Biodiversity) Guest Lab Instructor

May 2019

Oregon State University, Department of Horticulture, Corvallis, OR, USA

“Bee School” Native Bee Taxonomy Course Assistant Instructor

July 2018

Mount Royal University, Department of Earth and Environmental Science, Calgary, AB*Ecol 1111 (Terrestrial Ecology) Lecture Instructor*

Jan-Apr 2018

Ecol 1111 Lecture and Lab Instructor

Jan-Apr 2016

Ecol 2211 (Terrestrial Ecology) Lab Instructor

Jan 2013-Apr 2014

University of Calgary, Department of Biological Sciences, Calgary, AB*Graduate Teaching Assistant for multiple courses**Ecol 413 (Field Course in Ecology)*

August 2015

Scie 311 (Write and Review Scientific Reports)

January-April 2015

Scie 501 (Project Course in Natural Sciences)

January-April 2015

Ecol 417 (Aquatic Communities and Ecosystems)

September-December 2014

Biol 313 (Introduction to Ecology and Evolutionary Biology)

January-April 2013

Ecol 429 (Ecology of Individuals)

September-December 2012

OUTREACH CONTRIBUTIONS

SCIENCE PRESENTATIONS AND WORKSHOPS:

Hansen, A., and S. A. Johnson. 18 July 2025. Bees! Art (encaustics) & science (relationships between native bees & plants). Kúme Exhibition at the Salmon Arm Art Gallery [invited expert presentation].

Johnson, S. A. and D. Mann. 21 June 2025. Pollinator week education by the Native Bee Society of BC and Shuswap Pollinators. Downtown Salmon Arm Farmers Market & Shuswap Food Action Society [outreach display and native plant seedling sale].

Johnson, S. A. 10 June 2025. The Wonderful World of Wild Bees in BC. Salmon Arm Bay Nature Enhancement Society Annual General Meeting [invited presentation].

Johnson, S. A. 17 May 2025. Native plant & pollinators question & answer session. Drought Tolerant Plants for the Shuswap by the City of Salmon Arm Environmental Advisory Committee & Meadow Brae Farm [invited expert].

Johnson, S. A. and D. Mann. 26 April 2025. Shuswap Pollinators and the Native Bee Society of BC. Salmon Arm Earth Day Celebration [outreach display and invited native bee expert].

Johnson, S. A. 13 April 2025. Your pollinator friendly garden & using native plants. Shuswap Food Action Society Sunday Sessions for Self Sufficiency [outreach presentation].

Johnson, S. A. and D. Mann. 22 June 2024. Don't Worry Bee Happy: Pollinator week event by the Native Bee Society of BC and Shuswap Pollinators. Downtown Salmon Arm Farmers Market & Shuswap Food Action Society [outreach display and native plant seedling sale].

Johnson, S. A. and D. Mann. 20 April 2024. Shuswap Pollinators and the Native Bee Society of BC. Salmon Arm Earth Day Celebration [outreach display and invited native bee expert].

Johnson, S. A. 20 March 2024. [Plan Bee for your lawn: tips for supporting plants and pollinators](#). Shuswap Climate Action Society Lose the Lawn educational webinar series [invited presentation].

Johnson, S. A. 12 March 2024. Bumbling in the Pacific Northwest. Northwest Washington District Beekeepers' Association [invited presentation].

- Johnson, S. A. 2 March 2024. Native bees and climate change. Shuswap Seed Savers 30th Annual Seed Swap [invited presentation].
- Johnson, S. A. 26 November 2023. [Pollinators through the seasons](#). Shuswap Food Action Society Sunday Sessions for Self Sufficiency [outreach presentation].
- Johnson, S. A. 25 May 2023. Summer planting: Growing a pollinator garden. Shuswap Food Action Society Community Garden Work Bee [outreach presentation].
- Johnson, S. A. 23 April 2023. Spring has sprung: The importance of pollinators for your garden and the environment. Shuswap Food Action Society Community Garden Work Bee [outreach presentation].
- Johnson, S. A. 11 March 2021. The beginner bumbler's toolkit: An introduction to identifying bumble bees in B.C. SFU Biological Sciences Les Ecologistes Seminar Series [outreach presentation].
- Johnson, S. A. 30 November 2020. An introduction to British Columbian bumble bee identification. Native Bee Society of BC Annual General Meeting webinar [outreach presentation].
- Johnson, S. A. 10 September 2020. [Due North: Getting to know the bumble bees of western Canada](#). Oregon State University Extension Service Wild World of Bees lecture series [invited seminar].
- McCann, S., L. Weidenhammer, and S. A. Johnson. 22 July 2020. [Communing with the Bees: Beginner macrophotography tips and tricks](#). Native Bee Society of BC webinar event [training workshop].
- Johnson, S. A. 3 June 2020. Basic bumble bee identification and survey training. University of British Columbia Farm summer work learn students [invited training workshop].
- Johnson, S. A., and L. Weidenhammer. 4 May 2019. Pollinator component of annual Mayne-Galiano bioblitz. Mayne Island Conservancy & Galiano Conservancy Association event [invited native bee expert].
- Johnson, S. A. 8 April 2019. Graduate student peer-support CV workshop. Biology Graduate Caucus event [training workshop].
- Simon, A., and S. A. Johnson. 29-30 March 2019. Plants for pollinators – inter-island citizen science initiative. Mayne Island Conservancy & Biodiversity Galiano Island event [invited outreach presentation].
- Uriel, Y., and S. A. Johnson. 13 March 2019. Biology graduate student scholarship workshop. Biology Graduate Caucus event [training workshop].
- Johnson, S. A. 22 July 2018. Bumble bee bioblitz. Weaselhead Glenmore Park Preservation Society event [outreach presentation and invited bumble bee expert].
- Johnson, S. A. 21 July 2018. Native pollinator initiative at Glenbow Ranch Provincial Park. Friends of Fish Creek Provincial Park Society Parks Day & Creekfest event [outreach display and presentation].
- Johnson, S. A. 20 June 2018. Pollinator showcase and “in pursuit of pollinators”. Hillhurst Sunnyside Farmers Market Pollinator Party event [outreach display and presentation].

- Johnson, S. A. 23 June 2018. What's the buzz? Bumble bee citizen science hands-on training sessions (3 events). Wildlife Preservation Canada citizen science program [training workshops].
- Johnson, S. A. 18-22 June 2018. What's the buzz? Bumble bee citizen science classroom training sessions (3 events). Wildlife Preservation Canada citizen science program [training workshops].
- Johnson, S. A. 13 June 2018. Native bee conservation in Alberta. BP Alumni Club quarterly meeting [invited presentation].
- Johnson, S. A. 26 May 2018. Native pollinators in Alberta. Cochrane Environmental Action Committee Branches and Banks event [outreach display and presentation].
- Johnson, S. A. 28, 30 April 2018. 2nd Annual Glenbow Ranch Provincial Park pollinator citizen science program: Save the Bumble Bees! Learn to build and install nest boxes. Wildlife Preservation Canada citizen science program [training workshops].
- Johnson, S. A. 24 April 2018. What's all the buzz? Using artificial nest boxes to study bumble bee nesting ecology at Glenbow Ranch Provincial Park. Park Talks Series [invited presentation].
- Candell, S., S. A. Johnson, and A. Ciupa. 30 March 2018. Bee City Canada: partnering together to commit, educate, and celebrate pollinators. Calgary Zoo Easter Eggstravaganza event [outreach display and invited native bee expert].
- Johnson, S. A., and H. Tompkins. 6 August 2017. Pollinator education with Wildlife Preservation Canada: an introduction to bumble bee conservation. Grundy Lake Provincial Park Natural Heritage Education program [invited presentation and training workshop].
- Johnson, S. A., and H. Tompkins. 5 August 2017. Celebrating pollinators with Wildlife Preservation Canada: an introduction to bumble bee conservation. Celebrating Pollinating Event at Wye Marsh Wildlife Centre [invited presentation].
- Tompkins, H., and S. A. Johnson. 18 July 2017. Wildlife Preservation Canada hosts bumble bee 101. Girls Can Too & Bolton Camp youth educational program [outreach presentation].
- Johnson, S. A., Retzlaff, J., and M. Kohler. 8 July 2017. Pollinator citizen science identification and survey training: bees at Glenbow Ranch Provincial Park. Wildlife Preservation Canada citizen science program [training workshop].
- Johnson, S. A., and H. Tompkins. 24, 25 June & 15 July 2017. BumbleBeeWatch.org citizen science survey training: searching for rare bumble bees. Pinery and Awenda Provincial Parks, Alderville First Nation Black Oak Savanna, Wildlife Preservation Canada citizen science program [training workshops].
- Johnson, S. A. 18 June 2017. Native bee conservation in Ontario. Royal Botanical Gardens Pollination Festival event [outreach display].
- Johnson, S. A., Tompkins, H., Harrison, T., and R. Jeffery. 31 May 2017. The plight of the pollinators: how bumble bee monitoring contributes to conservation. Ontario Parks – Annual Natural Heritage Education Spring Workshop [invited presentation and training workshop].

Johnson, S. A. and J. Retzlaff. 22 April 2017. Glenbow Ranch Provincial Park bumble bee citizen science – nest boxes. Wildlife Preservation Canada citizen science program [training workshop].

Johnson, S. A. 12 April 2017. Making an impact for pollinator species at risk: an introduction to bumble bee conservation. Escarpment Biosphere Conservancy Preserving Biodiversity Series [invited presentation].

Johnson, S. A. 8 March 2017. Engaging in pollinator conservation – your chance to participate in multiple Wildlife Preservation Canada Native Pollinator Initiatives. Alternative Land Use Services Participants Annual Meeting [outreach display and presentation].

Johnson, S. A. 24 January 2017. Yellow-banded Bumble Bee (*Bombus terricola*) captive breeding. Toronto Zoo Wildlife Health Centre [information session].

Johnson, S. A. 6 November 2015. Scaling of density-dependent reproduction in bee-pollinated forbs of logged forests. University of Calgary [M.Sc. exit seminar and oral defense].

Johnson, S. A. 26 April 2013. Density-dependent reproductive success of understory forest herbs in logged landscapes. Ecology and Evolutionary Biology Graduate Student Seminar Series [presentation].

Johnson, S. A. 12 September 2012. Reproductive success of understory forest herbs in logged landscapes. Ecology and Evolutionary Biology Graduate Student Seminar Series [presentation].

MENTORSHIP:

Simon Fraser University, Department of Biological Sciences, Burnaby, BC

Co-supervisor NSERC USRA – Hutton Noth & Hanna Jackson April-August 2020

- Project topic: “Forest fire impacts on bumble bee occupancy”

Wildlife Preservation Canada & University of Guelph, Guelph, ON

Field coordinator training & M.Sc. – Hayley Tompkins Sept 2016-Jan 2019

- Project topic: “Using bumble bee colony nest boxes as a method for species-at-risk conservation research in Ontario”

Wildlife Preservation Canada & University of Toronto Scarborough, Guelph, ON

Co-supervisor M.Env.Sc. capstone project – Vickie Do April-June 2017

- Project topic: “Queen bumble bee pollination networks across an urban-rural land use gradient”

York University, Faculty of Environmental Studies, Toronto, ON

M.ES. student field experience – Kate Seemungal September-December 2017

- Project title: “Rearing and researching the declining yellow-banded bumble bee in captivity”

MEDIA INVOLVEMENT:

Interviews and hosting reporting crew for special feature story for Hakai Magazine, now bioGraphic, 27-30 June 2024: [*The plight of the bumble bees.*](#)

Interview for Food Conversations radio segment on 93.7 The Voice of the Shuswap, 8 March

2024: [*Bumble bees.*](#)

Interview for article in The Tyee, 10 March 2023: [*Our once most common bee needs saving. Here's what we can do.*](#)

Photography used to support article in CBC British Columbia, 23 June 2021: [*Certain Canadian bee populations may not be declining at all, says SFU study.*](#)

Photography used to support article in Terrace Standard, 20 April 2021: [*B.C.'s wild bees need messy gardens to survive.*](#)

Interview for article in Montecristo Magazine, 6 October 2020: [*The Vancouver naturalists trying to save our native bees.*](#)

Interview for Lil Dudes Insect Academy Podcast, a podcast for introducing young people to science through entomology by Bradon Coy, 30 August 2020: [*Bumblebees of Canada!*](#)

Interview for Oregon State University Extension Service's PolliNation Podcast, a pollinator health podcast by Andony Melathopoulos, 20 July 2020: [*Native Bee Society of British Columbia connecting bee enthusiasts together.*](#)

Interview for segment on Global News Morning BC, 16 November 2019: [*Helping BC's native bees.*](#)

Featured in Victory Gardens for Bees blog post by Lori Weidenhammer, 17 May 2019: [*Operation bumble bee nest relocation.*](#)

Contribution mentioned in CBC Calgary, 22 April 2019: [*City staff buzz about endangered bee discovery as boulevard preps for another season.*](#)

Interview for article in Entomology Today, 8 February 2019: [*Putting bumble bees in a box might help scientists study their nesting ecology.*](#)

Interview for article in Rocky View Weekly, 11 September 2018: [*Citizen scientists track bee population at Glenbow Ranch.*](#)

Interview for CBC Radio Calgary story by Lucie Edwardson, 17 August 2018: *A group of Albertans are helping track and monitor our bumble bee population, the citizen scientists are participating in a North American-wide study called Bumble Bee Watch.*

Interview for article in CBC Calgary, 17 August 2018: [*Albertans snap photos of bumblebees for North America-wide study.*](#)

Featured question in Sam Droege interview for Oregon State University Extension Service's PolliNation Podcast, a pollinator health podcast by Andony Melathopoulos, 30 July 2018: [*Sam Droege and the Bee School.*](#)

Interview for article in Cochrane Now, 28 June 2018: [*Helping collect data on bumble bees at Glenbow Ranch project.*](#)

Interview for article in Rocky View Weekly, 17 April 2018: [*Glenbow Ranch buzzing about bumblebees.*](#)

Interview for article in The Sudbury Star, 10 April 2018: [*If you see a bumblebee, take a photo.*](#)

Interview for article in Cochrane Now, 5 April 2018: [*Get the buzz on bumblebees and learn how to build your own nest.*](#)

Interview for Oregon State University Extension Service's PolliNation Podcast, a pollinator health podcast by Andony Melathopoulos, 6 November 2017: [*Bumble bee husbandry & citizen science.*](#)

Featured blog post in the Bluecoat Blog, Science North, 30 October 2017: [*Bumble bee nest collecting with Wildlife Preservation Canada.*](#)

Featured article in The Aquila, Issue 10, October 2017: Matt Holder Environmental Education Fund: [*Bumble bee project at Thickson's Woods.*](#)

Interview for article in TVO's "Endangered Ontario" series, 24 July 2017: [*The mystery of the rusty-patched bumblebee.*](#)

Featured [*summary of invited presentation*](#) in the Preserving Biodiversity Series by Morgan Roblin, Escarpment Biosphere Conservancy, 2 May 2017.

EXTRACURRICULAR SERVICE:

- Volunteer and member of the Shuswap Food Action Society, Coldest Night of the Year
- Volunteer and member of the Shuswap Permaculture Guild
- Volunteer and member of the Native Bee Society of BC
- Citizen at Large on the City of Salmon Arm Environmental Advisory Committee (June 2023-December 2025)
- Peer reviewer for: Ecology, Landscape Ecology, Journal of Insect Conservation, Urban Ecosystems, Environmental Evidence
- Founding President of the Native Bee Society of BC (July 2019-February 2022)
- Contributing Canadian bumble bee expert for the Western Bumble Bee Species Status Assessment Expert Elicitation Group, USFWS
- Contributing BC bumble bee expert for the Western Bumble Bee Technical Advisory Committee for the Canadian National Recovery Strategy
- Bumble bee identification contributions at the Beaty Biodiversity Museum
- Founding member of the Alberta Native Bee Council
- Founding member of the Equity, Diversity and Inclusion Committee for the Biology Graduate Caucus, Department of Biological Sciences (2019-2023), Simon Fraser University
 - Member of the special working group to design, fundraise for, and establish the [*Indigenous and Black Graduate Scholarship in Biology*](#)
- Past member of the Equity, Diversity and Inclusion Committee for the Department of Biological Sciences (January-December 2023), Simon Fraser University
- Past member of the Cross Department Racism, Bullying & Harassment Subcommittee (2020-2022), Simon Fraser University
- Departmental Graduate Student Committee Graduate Student Representative for the Department of Biological Sciences (April 2019-April 2021), Simon Fraser University
- Member of the organizing committee for the first annual Department of Biological Sciences Graduate Student Research Showcase (2019), Simon Fraser University
- Volunteer community science expert photograph verifier for Bumble Bee Watch, iNaturalist (>6000 verifications)

- Past volunteer for Calgary Wildlife Rehabilitation Society assisting with animal care, 2.5 years
- Past volunteer for the Nature Conservancy of Canada assisting with habitat restoration
- Amateur wildlife photographer, published
- Amateur birder, recorded over 100 species sightings

SKILLS AND TRAINING

COMPUTER:

- GIS (Google Earth, basic ArcGIS & QGIS, R)
- Word processing (MS Word, basic LaTeX, Overleaf)
- Presentation (PowerPoint, Zoom, MS Teams)
- Statistics and graphing (R, JMP, MS Excel)
- Image processing (Adobe Photoshop & Illustrator, GIMP, ImageJ)
- Bookkeeping (QuickBooks Online, Hubdoc Data Capture)
- Website development and design (Wix, basic WordPress)

HR & ADMINISTRATION:

- Payroll and scheduling (QuickBooks Payroll, complex Gantt charts)
- People management (hiring, firing, leadership & mentorship, team building)
- Design and preparation of compliant HR documentation (job contracts, employee handbook, health & safety policy)
- Financial management (budget forecasting, quarterly reporting, accounts payable/receivable)

CERTIFICATIONS:

- Class 5 Driver's License (held Class 4 license 2015-2016)
- Standard First Aid & CPR/AED Level C Intermediate (valid through November 2027)
- Wilderness First Aid Training (50 hours) & CPR Level A Certification (expired 2022)
- Applied for and obtained British Columbia Park Use Permit for Research, Alberta Parks Research and Collection Permit, Ontario Research Authorization for Provincial Parks and Conservation Reserves, and Parks Canada Research and Collection Permit

RELEVANT COURSEWORK:

- February 2025: Build the Business You Want series: Making Money, Instructors: Tamara Pals, Joshua Marshall, Priya Sachdev
- April 2024: Elements of Truth: Before Reconciliation training, 4 workshops, facilitated by kinSHIFT, a social enterprise of IndigenEYEZ
- Winter 2024: Leadership Essentials Series: Conflict Management, Instructor: Faith Wood, Okanagan College Continuing Studies and Corporate Training
- November 2023: BOMBUSS short courses: Bumblebee rearing, Bumblebee tagging & tracking, Instructors: Alejandra Martínez de Castro-Dubernard, Omar Argüello, August Easton-Calabria, Dr. James Crall, ECOSUR San Cristóbal de las Casas

- Fall 2023: Leadership Essentials Series: Leading Workplace Teams, Goal Setting and Time Management, Instructor: Faith Wood, Okanagan College Continuing Studies and Corporate Training
- January 2020: Landscape genetics distributed graduate seminar, Organizers: Dr. H. Wagner, Dr. M. Murphy, Dr. L. Waits, co-instructed by many other experts
- September 2019: Community ecology and macroecology, Instructors: Dr. David Green & Dr. Nick Dulvy, Simon Fraser University
- February 2019: Effective Teaching Series: Potlatch as Methodology, Simon Fraser University Teaching and Learning Centre
- September 2018: Advanced quantitative methods in biology, Instructor: Dr. L. M'Gonigle, Simon Fraser University
- March 2018: Bumble bee rearing and pathogen detection methodology workshop (2 days), Instructors: Dr. James Strange & Dr. Amber Tripodi, United States Department of Agriculture – Agricultural Research Service
- March 2018: Canadian Bumble Bee Course identification workshop (3 days), Instructor: Dr. C. Sheffield, Royal Saskatchewan Museum
- December 2017: Native pollinator workshop (2 days), Instructor: L. R. Best, Red Deer Beekeepers Association
- April 2016: Native bee identification course for *Bombus* and solitary bees (2 days), Instructor: L. R. Best, University of Calgary
- June 2015: Birding identification courses (Birding by Sound and Intermediate Identification Techniques), City of Calgary
- December 2013: Advanced pollination ecology (NSERC-CANPOLIN International Field Course in Brazil), Instructor: Dr. P. G. Kevan, University of Guelph
- January 2013: Advanced behavioural ecology, Instructor: Dr. K. E. Ruckstuhl, University of Calgary