



2023/2024

APRIL

MARCH

**ANNUAL
REPORT**

BRAES

Okanagan Institute for Biodiversity,
Resilience, and Ecosystem Services

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THE UNIVERSITY OF BRITISH COLUMBIA

**Okanagan Institute for Biodiversity, Resilience,
and Ecosystem Services (BRAES)**

BRAES as a place of:

RESEARCH

BRAES is committed to producing world-class research that will distinguish UBC Okanagan as a place of excellence in the fields of biodiversity and environmental sustainability. We are continually striving to enhance our research capacity and impact, locally and globally. In doing so, we increase our ability to train, nurture, and empower the next generation of leaders.

LEARNING

BRAES is a place of lifelong learning, creating opportunities for Institute members and the broader community to engage in knowledge sharing activities. In addition, through its dedicated research facilities and organization of scientific activities, BRAES provides an enhanced training environment for undergraduate and graduate students.

ENGAGEMENT

BRAES values community engagement and non-academic partnerships as a means of leveraging the relevance and impact of our work. BRAES members have on-going collaborations with more than 50 government, non-government, community, and international organizations.

INTERNATIONALISM

BRAES aims to be a portal for global engagement, connecting our campus community to the world. Our members currently carry out research on seven continents, with active projects in places such as the Great Barrier Reef, the Galapagos Islands, the Nepalese Himalayas and the savanna rangeland of East Africa.

INNOVATION

Today's environmental challenges are wicked problems, for which no clear solutions exist. By facilitating interdisciplinary collaboration, BRAES creates a place for ideas to incubate, leading to innovative outcomes that respond to the needs and imperatives of today's society.

BRAES

at a Glance

2023-2024



30 faculty and 7 emeritus members

Over 166 students and postdoctoral trainees¹

6000 sq. ft. of dedicated research laboratory space

Numerous affiliated laboratories

\$3.8 million in research funding²

More than 137 scientific publications in 2023-2024²

Partnerships with more than 55 non-academic organisations

¹ Data based on 30 out of 37 BRAES members

² Data based on 36 out of 37 BRAES members

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BRAES Objectives and Directions 2023-2024



- Continuing to provide an enriched graduate training environment for all BRAES faculty members, students, and research staff,
- Continuing to support members' research by managing shared research space through wet and dry lab facilities,
- Onboarding new BRAES faculty members and their students, including safety training/orientations,
- Supporting access to new research spaces on campus,
- Building new partnerships with BC-based partners in the government and non-profit sector,
- Facilitating staff turnover in BRAES, including the Director, Coordinator, and Lab technician positions,
- Re-invigorating the BRAES speaker series and hosting new BRAES-community events.

1. BRAES STRATEGIC DIRECTIONS



1.1 Vision

To advance efforts to understand and restore ecosystems through interdisciplinary research, training, and community engagement.

1.2 Mission

To conduct fundamental and applied research in biodiversity and conservation that has regional and international impact.

To become a leading international centre for the training of highly qualified undergraduate, graduate, and postgraduate personnel. These researchers will be uniquely positioned to bridge disciplinary barriers to inform and guide effective conservation research and management strategies.

To foster strategic partnerships with First Nations, government, industry, and non-governmental organizations and to maintain active engagement with community stakeholders through educational outreach and stewardship activities.

1.3 Links with UBCO Research and Strategic Plans

The 2018 UBC Strategic Plan “Shaping the Next Century” has strong alignment with the core activities of BRAES. For example, the Plan notes that UBC is well positioned to cultivate collaborative efforts, and cites BRAES as an

example that brings together faculty members and students across departments working in ecology, biodiversity, conservation, and environmental sustainability. Further, the Plan prioritizes “Indigenous people and places” and “Sustainability” - both of which are essential to the work of BRAES members.

The Aspire consultation process resulted in a vision of the Okanagan campus a “model of innovative and interdisciplinary programming within the UBC system, and a place that has an impact on communities both local and global”. The BRAES Institute contributes directly to achieving this goal, by bringing together interdisciplinary groups of researchers from the sciences, fine arts, humanities, and social sciences, to tackle issues of both regional and global importance. In addition to our strong contributions to academic inquiry, our members work in close collaboration with our many community partners to ensure that research results are translated into policy and practice. Through its extensive network, BRAES helps to facilitate and foster these connections.

In alignment with UBC’s 2018 Indigenous Strategic Plan, BRAES members are also engaging in research with a number of Indigenous partners.

The BRAES Institute’s commitment to Indigenous engagement and collaborative, interdisciplinary research is well aligned with the priorities of UBC’s Strategic Plan. Through our seminars and networking activities, we foster inclusiveness and interdisciplinary collaboration on the Okanagan Campus. Research within BRAES supports UBC’s mission of engaging communities while having global impact; developing UBC’s reputation as a research leader in ecology, biodiversity, and environmental sustainability.

2. BRAES OPERATIONS



2.1 Governance

The VP Research at UBC Okanagan appoints the Institute Director who is a tenured Associate Professor or higher rank and who is presently a UBC Okanagan faculty member. The BRAES Director reports to the VP Research.

The Director is responsible for the operations of BRAES, including its administrative staff and budget. The Institute has a Steering Committee that consists of the Director (Chair), the Deans of the Faculty of Science (FoS) and the Faculty of Creative and Critical Studies (FCCS), and 3 or 4 faculty Institute members. Faculty steering committee members are elected by the membership for a 3 year period.

The Director supervises the Coordinator who is responsible for the day-to-day Institute activities and for planning, coordination, and communication within the Institute.

2023/24 Steering Committee members:

- Dr. Adam Ford, Institute Director
- Dr. Ed Hornibrook, Dean's delegate - FoS
- Dr. Greg Garrard, Dean's delegate - FCCS
- Dr. Jason Pither
- Dr. Rebecca Tyson
- Dr. Michael Noonan
- Dr. Thuy Dang
- Dr. Tanja Voegel, Institute Coordinator
- Dr. Daniel Rosa, Lab Technician

2.2 Membership

As of March 2024 BRAES has 30 faculty members, 7 emeritus members, and more than 166 other members (post-doctoral researchers, PhD, MSc, and undergraduate students).

In 2023-24, 4 faculty members retired from BRAES, and we welcomed 5 new members, including Drs. Chase Mason, Alon Eisenstein, Tal Avgar, Laura Grieneisen, and Fiona McDonald.

For a detailed list of faculty members please consult Appendix 1.

2.3 Staff and Administration

The Institute has a director who is appointed by the VP Research. Dr. Adam T. Ford (Department of Biology) was appointed Director in July 2023.

BRAES has a part-time coordinator, Dr. Tanja Voegel, who is responsible for planning, coordination, and communication within the BRAES Institute by:

- Organizing BRAES conferences, workshops, training sessions, retreats, and annual general meetings,
- Preparing the Institute's annual activity reports, budgets, and forecasting requirements,
- Maintaining communication among members, including website and newsletters,
- Securing industry and other partners of BRAES for long-term collaborations.

3. BRAES RESEARCH



3.1 Context

BRAES research has focused on identifying and managing species and habitats at risk, understanding and predicting biotic responses to environmental change, and sustaining resources and ecosystem services in natural and managed landscapes.

Our underlying motivation is to increase scientific understanding of ecological systems and to inform management and planning decisions that promote the preservation of biodiversity and ecosystem services in terrestrial, marine, and aquatic systems.

BRAES members work from the genetic to landscape scales and use a wide range of field, laboratory, and quantitative methods. BRAES facilitates multidisciplinary collaboration, leading to innovative research that transcends traditional approaches to ecology and conservation.

3.2 Research Themes

BRAES research falls under six inter-related themes:



Conservation Biology

Conservation biology focuses on the identification and description of habitats necessary to support species at risk, and the development of scientific tools to support the conservation of these habitats. BRAES researchers use a range of tools to examine how species may respond to changing environments, habitat loss, and modified landscapes. The results of this research are applied to address the effectiveness of conservation laws and policies and to inform decision-makers on how best to conserve biodiversity in terrestrial, marine, and freshwater ecosystems.

Landscape and Natural Resource Management

Research under this theme integrates ecology with human impacts on the landscape, searching for the most environmentally sustainable methods to use our natural resources. Projects include studying the impacts of forestry on forest hydrology and biodiversity, ecological restoration following human disturbances, modeling the impacts of land use change on key ecosystem services, advanced agro technology, and land use planning to sustain biodiversity.

Water Conservation and Quality

Water provisioning is a key ecosystem service on which humans depend and which is critical to supporting all terrestrial life-forms. Research in this area focuses on sustaining this ecosystem service by enhancing the quality of the terrestrial and aquatic environments that filter and modulate fresh water supplies. Projects include studies of ecotoxicology in aquatic ecosystems, water quality monitoring, and relationships between land use and water quality and availability.

Computational Ecology

Research in computational ecology combines quantitative methods with data to model and describe population and community dynamics in time and space. Methods range from statistical modeling of diversity and heterogeneity to the development of dynamic models using analytical or simulation-based approaches. These tools can be used to predict the effect of natural or human-caused disturbances on species and ecosystems, or to predict the spatial spread of an invasive species across a landscape, for example. This theme reflects the strong links in BRAES between the mathematical and ecological sciences,

leading to development of innovative methods in environmental modelling and data analysis.

Social-Ecological Systems

This theme lies at the interface between the environment and society. The study of social-ecological systems relates to how humans shape and are reshaped by their natural environments, and includes the study of cultural perceptions of the environment. Research under this theme explores the nature of social-ecological resilience, adaptation of human communities to environmental change, and how cultural representations of nature influence human behavior.

Biodiversity and Ecological Interactions

This theme involves the study of the inter-relationships between biodiversity and ecosystem processes, from genetic to ecosystem and landscape scales. BRAES researchers working under this theme study diverse questions related to community assembly, invasive species, population dynamics, and ecological connectivity, for example. A strong emphasis within this theme is on soil microbiology: understanding the contribution of mycorrhizal fungi and other micro-organisms to soil fertility and nutrient cycling in natural and agro-ecosystems. The fundamental work carried out under this theme provides the scientific foundation for conservation, restoration, and management efforts and for understanding relationships between biodiversity and ecosystems services provisioning.

3.3 Record of Publications, Students, and Research Funding 2023-2024:



¹ Data based on 36 out of 37 BRAES members

² Data based on 30 out of 37 BRAES members

3.4 Space and existing resources

One of the origins of BRAES occurred from a CFI grant in 2004. This funding helped support the construction of the 3rd floor of the Science Building, including about 6000 square feet of BRAES laboratory facilities that are equipped with state-of-the-art instrumentation. More specifically, the facilities include: Molecular Lab, DNA Sequencing Room, Prep Room, Clean Cold Room, Dirty Cold Room, Equipment Room, Dirty Ecology Lab, Microscope Room, Culture Room, Computing/GIS Room, Physiology Lab, and the Radiation Lab.

These facilities are being used by BRAES members to conduct their research and to accomplish the BRAES mission.

3.5 Partnerships

BRAES values partnerships within the University and with government, non-government, community, and international organizations. Partnerships include activities such as joint research projects, funding agreements, student supervision, dissemination, or application of research.

Some of the groups that collaborate with BRAES are listed below:

Within The University of British Columbia:

- Institute for Community Engaged Research—ICER (Okanagan)
- Centre for Environmental Assessment Research (Okanagan)
- BC Regional Innovation Chair in Water Resources and Ecosystem Sustainability (Okanagan)
- Beatty Biodiversity Research Centre (Vancouver)

Research Partnerships with First Nations:

- Okanagan Nation Alliance
- Słatsin First Nations
- Maa-Nulth Treaty Nations
- Esk'etemc
- Skeetchestn Indian Band
- Tšilhqot'in National Government
- T'kemplúps te Secwépemc
- West Moberly First Nations
- Saulteau First Nations
- Ktunaxa First Nations

Government Agencies in Canada:

- Environment and Climate Change Canada
- Canadian Wildlife Service
- Parks Canada
- Agriculture and Agrifoods Canada
- BC Ministry of Water, Land, and Resource Stewardship
- BC Ministry of Forests
- BC Conservation Officer Service
- BC Wildfire Service
- BC Ministry of Transportation
- BC Parks
- Canadian Forest Service
- Natural Resources Canada
- Regional District of Central Okanagan
- City of Kelowna
- District of Lake Country
- BC Ministry of Agriculture
- Fisheries and Oceans Canada

International governmental agencies

- US National Park Service
- US National Forest Service
- Montana Fish, Wildlife and Parks
- US Department of Agriculture
- L'Institut National de la Recherche Agronomique (France)

Not for profit organizations:

- Biodiversity Pathways
- Alberta Biodiversity Monitoring Institute
- Yellowstone to Yukon Conservation Initiative
- MITACS
- Habitat Conservation Trust Foundation
- Braiding Knowledges Canada
- Island Conservation
- Okanagan Basis Water Board (OBWB)
- BC Wildlife Federation
- Conservation Northwest
- Okanagan Collaborative Conservation Program (OCCP)
- Hunters for BC
- South Okanagan Similkameen Conservation Program (SOSCP)
- Nature Trust of BC
- Great Northern Landscape Conservation Cooperative
- British Columbia Institute of Agrology Okanagan Chapter
- Forest Enhancement Society of BC

Private sector:

- Tolko
- Tree Fruit Growers Association
- Dobson Engineering Ltd.
- Summit Environmental
- Summerhill Winery
- Ecoscape Environmental Consultants Ltd.
- Wild Eyes Monitoring Solutions Ltd

3.6 Interdisciplinary Research

BRAES researchers work in a range of environments and locations around the globe. They maintain active affiliations with many partner organizations, including government ministries and NGOs. BRAES is committed to promoting research partnerships and carrying out interdisciplinary research that will directly inform environmental policy and management decisions.

Some featured research groups and laboratories include:

- Biodiversity and Landscape Ecology Research Facility (Dr. Jason Pither)
- Complex Environmental Systems Lab (Dr. Lael Parrott)
- The Quantitative Ecology Lab (Dr. Michael J. Noonan)
- The Wildlife Restoration Ecology Lab (Dr. Adam T. Ford)
- Collaborative + Experimental Ethnography Lab (Dr. Fiona McDonald)



4. BRAES ACTIVITIES

4.1 Biodiversity Research Seminar Series

In January 2016, BRAES began a partnership with the UBC Biodiversity Research Centre for streaming of the Biodiversity Research Series. Every Wednesday at noon the Centre hosts invited biodiversity researchers to speak in the Beaty Auditorium at the UBC Biodiversity Museum. Two speakers were hosted by the BRAES Institute and streamed to the Beaty Auditorium and the general public in 2023-24.

The speakers hosted by BRAES were Dr. Jennifer Bhatnagar, Dept. of Biology, Boston University and Dr. Jennifer Bonnell, Department of History, York University. In addition to the seminar, Dr. Bonnell held a public lecture with a book sale (Stewards of Splendour: A History of Wildlife and People in British Columbia, published by the Royal BC Museum).



4.2 Visiting Erasmus Program Professor

Drs. Robert W. Myslajek and Sabina Nowak, University of Warsaw, Faculty of Biology, Department of Ecology, Poland visited the UBCO campus and gave a presentation: Wolf ecology and conservation in human-dominated landscapes of central Europe. A student lunch was provided to increase student participation.



4.3 Canadian Society for Ecology and Evolution (CSEE) Prep Meeting

The meeting was held in preparation for the CSEE meeting held in Vancouver, to provide an opportunity for the participating students to practice their presentations.



4.4 State of the Okanagan Report

A State of the Okanagan Report has been initiated in collaboration with Steve Mowat (*Naturebytes*), with BRAES acting as one of the key academic partners.

4.5 ʔəl sic snpaʔnwixʷtn (xss)

UBC Okanagan is currently constructing a new building that will be a catalyst for interdisciplinary collaboration and innovation - a place where social sciences, natural sciences, humanities, and creative and professional disciplines converge. At least two teams of BRAES faculty members were invited to join in the XSS facility when it opens (Scheduled for 2026). Under this plan, it will be one of the most exciting developments in BRAES's history since the creation of the 3rd floor of the Science building more than 20 years ago. By co-locating BRAES PIs, we anticipate an even stronger, more cohesive research community that will better serve UBC, the Okanagan landscape, and our research partners.

4.6 BRAES Store

The BRAES Store was initiated by Dr. Daniel Rosa and offers the opportunity for BRAES members to purchase common lab supplies at a discounted price.

4.7 BRAES Coffee Social

The BRAES coffee social takes place weekly and provides an opportunity to network with UBCO colleagues in an informal setting.



4.8 Outreach Activities

Website

The Institute has an active website:

[Home Page](#) | [BRAES UBC Okanagan](#)

A new website is currently under construction.

Newsletter

A newsletter is distributed bi-weekly to all BRAES members. Updated formatting is underway to make this information more accessible. The newsletter provides information on BRAES activities, events, and job opportunities.

4.9 Shared Equipment and Spaces

In partnership with the VPR, Faculty of Science, and members of BRAES, we secured significant funding to repair one of the walk-in coolers on the 3rd floor of science. This shared facility is essential for safely storing biological samples.

4.10 Terms of Reference and Membership Renewal

As part of the regular activities of UBC Institutes, BRAES is undertaking a review of its Terms of Reference (ToR). The ToR sets the expectations for BRAES strategic vision, and procedures such as membership and funding priorities. With a vision for several research groups to move into XSS, new ideas for managing shared spaces are beginning to emerge. Expect the new ToR to be available in late 2024.

5. BRAES CONTACT INFO

For general information or inquiries about BRAES, please visit our website at: [Home Page | BRAES UBC Okanagan](#) or contact:

General inquiries

Email: braes.okanagan@ubc.ca

Or

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Dr. Tanja Voegel

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APPENDIX: BRAES FACULTY MEMBERS

Current members

- Tal Avgar, Biology
- John Braun, Mathematics
- Thu-Thuy Dang, Chemistry
- Sylvie Desjardins, Mathematics
- Michael Deyholos, Biology
- Aleksandra Dulic, Creative Studies
- Alon Eisenstein, Engineering
- Adam Ford, Biology
- Greg Garrard, English
- Robert Godin, Chemistry
- Laura Grieneisen, Biology
- Kevin Hanna, Earth, Environmental and Geographic Sciences
- Miranda Hart, Biology
- Karen Hodges, Biology
- John Janmaat, Economics
- Robert Lalonde, Biology
- Karl Larsen, Thompson Rivers University
- Soheil Mahmoud, Biology
- Chase Mason, Biology
- Fiona McDonald, Community, Culture and Global Studies
- Michael Noonan, Biology
- Susan Murch, Biology
- Lael Parrott, Biology
- Michael Pidwirny, Environmental and Geographic Sciences
- Jason Pither, Biology
- Scott Reid, Biology
- Michael Russello, Biology
- Rebecca Tyson, Biology
- John Wagner, Anthropology
- Adam Wei, Environmental and Geographic Sciences

Emeritus Members

- Sylvia Esterby, Statistics
- Nancy Holmes, Creative Studies
- Louise Nelson, Biology
- Melanie Jones, Biology
- Laura Hooker, Biology
- Dan Durall, Biology
- Ian Walker, Biology

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