



# UNIVERSITY OF NORTHERN BRITISH COLUMBIA

## MEMORANDUM

**To:** Dr. Kathy Lewis, Vice President Research  
Dr. Dan Ryan, Chair, Senate Committee on Academic Affairs

**From:** Dr. Art Fredeen

**Date:** May 12, 2020

**Re:** NRESi's 2019-2020 Annual Report

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Dear Drs. Lewis and Ryan,

As per UNBC's Policy and Procedures for Centres and Research Institutes, please find attached the 2019-2020 Annual Report for the Natural Resources and Environmental Studies Institute (NRESi) covering the 2019-2020 fiscal year and NRESi's workplan of activities for 2020-2021. Both have been reviewed and discussed by its members at their 2020 Annual General Meeting.

On behalf of NRESi, I would like to thank you for your ongoing support. NRESi was focused on continuing the activities and initiatives that its members and the community have come to expect, as well as exploring and expanding possible research and project opportunities for NRESi and its members. We've been focused on providing value to members, to UNBC, and the broader community, in a number of different ways. This will be explained in detail in the accompanying 2019-2020 Annual Report. NRESi continues to work towards the goals and objectives described in its five-year Strategic Plan, while also being flexible to new opportunities and ideas as they arise, as described in the 2020-2021 workplan of activities.

NRESi had another productive year in terms of activities delivered. However, there were a couple of interruptions to planned activities in 2019-20. The job action in the fall of 2019 resulted in the cancellation of two planned colloquium presentations and rescheduling of two others. In addition, the COVID19 pandemic in the late winter/early spring also resulted in cancellation of two colloquium presentations as well as the cancellation of two of our externally-funded presentations.

We have had more successful extramural grants funded. However, in the long term, we are facing future deficits without consistent base funding support from UNBC. We are continuing to explore opportunities for long-term financial planning and sustainability, the continuance of ongoing activities, as well as the addition of new projects and

initiatives to further support the work of NRESi's members, UNBC, and its community partners.

Enclosures: NRESi Annual Report 2019-2020

cc: NRESi Steering Committee Members

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# Natural Resources & Environmental Studies Institute

## 2019-2020 Annual Report

### Overview of the NRESi

The Natural Resources & Environmental Studies Institute (NRESi) at UNBC works to promote and implement integrative and multidisciplinary research to address problems inherent to natural resource systems and human uses of the environment, with a particular focus on northern regions and solutions-based approaches.

NRESi is an association of researchers from the UNBC faculty and external community that work and have interest in themes related to natural resources and the environment. This association of members have committed to learning from each other and seeing the value in collaborative initiatives that take an interdisciplinary approach. It is recognized that many, if not most themes related to this broad research area cannot be viewed or understood in isolation. Every research theme takes place in a complex world that surrounds and interacts with it, factoring into planning, management, monitoring, and policy. The NRESi provides a critical venue and network to link together otherwise distinct researchers, research themes and topics for a broader understanding.

NRESi works towards its objectives of knowledge sharing and identification of collaborative research opportunities in a number of different ways. The most recognizable and well-known is our signature NRESi Colloquium series lectures, as well as other special lectures and events that NRESi hosts. These events provide networking opportunities between participating NRESi members and the community. In addition, through the guidance of NRESi's Steering Committee and the activities of its staff, NRESi works to support its members by identifying and pursuing possible project opportunities on behalf of its members. NRESi also has an important communications role to a range of audiences, including: within its membership, UNBC, the broader the natural resource and environment community, and the general public.

#### *Our Mission*

The mission of NRESi is to bring together members of the university and broader research community members to promote and facilitate integrative research and dialogue on natural resource and environmental issues. From here, it is recognized that issues arise in northern BC and beyond that NRESi members, together with the community and partners, have the ability through expertise and experience to address and look for solutions. NRESi has an important role in helping to coordinate and be a venue for important dialogues and research projects that address natural and anthropogenic changes, and assists in sharing research results that can inform and influence policy and management approaches and decisions.

An important role of the NRESi is in creating linkages between researchers. This includes creating opportunities for interaction and communication among UNBC and other university faculty, graduate students, and associated researchers and research centers. It also recognizes the importance of making knowledge sharing and project participation open to the public, creating dialogues, and building linkages across a wide range of perspectives and expertise.

As a result of this integration across expertise, information can be developed for local communities to address local issues. Research findings can also be disseminated through NRESi's channels to allow for information to be shared with other areas facing similar issues or management and planning concerns. This has taken the form of presentations and extension, through NRESi's three publication series and/or sharing current and new knowledge through events and activities, as well as the NRESi newsletter that others may find useful in their own work. NRESi continues to engage its members in discussions about how they would like NRESi to support their work, as well as the research needs of the broader community for mutual benefit that NRESi could help address. NRESi annual and special lectures as well as colloquium speakers and special events such as the NRES M.Sc. student poster sessions provide critical venues for sharing of NRESi member research and activities.

#### *Governance*

The NRESi is overseen by a Director, selected for a 3-year term. Dr. Art Fredeen is the current director, serving in the 1<sup>st</sup> year of his appointment. In addition to a Director, NRESi is supported by a Research Manager who moves forward the day-to-day activities and needs of NRESi and its members, new NRESi initiatives, project development, and communications. Alan Wiensczyk continued his role as NRESi Research Manager on a part-time basis for the j2019-2020 fiscal year.

The Director and Research Manager work closely with an internal Steering Committee. This group includes: four individuals elected to 2-year terms by the membership of the Institute, one member representing the Pacific Institute for Climate Solutions, and another representing the NRES Graduate Program. See Table 1. The intent of this group is to reflect the perspectives of NRESi's members, provide guidance to support the work and activities of NRESi, and ensure that the Institute functions in accordance with its vision statement and purpose.

**Table 1.** Steering Committee membership during 2019-2020 fiscal year.

<b>Name</b>	<b>Role</b>	<b>Term</b>
Art Fredeen	Director	1 July 2019 - June 30, 2022
Che Elkin	Elected Member	1 May 2016 – 30 April 2020
Steve Helle	Elected Member	1 July 2016 – 30 June 2020
Scott Green	Elected Member	1 July 2018 – 30 June 2020
Lisa Wood	Elected Member	1 July 2018 – 30 June 2020
Hugues Massicotte	NRES Grad Program Rep	No Fixed Term (retiring July 2020)
Stephen Dery	NRES Grad Program Rep	No Fixed Term

Michelle Connolly	PICS Representative	No Fixed Term (on leave October 2019-2020)
Alan Wiensczyk	Research Manager	1 November, 2015 - 31 March 2021

During the 2013-2014 fiscal year, a framework was developed to consolidate the previous Management Committee and Advisory Committee into one group, the NRESi Advisory Panel. This new committee was presented and discussed at the 2014 Annual General Meeting and approved by the membership as an appropriate way to gather external insight and advice to NRESi's Steering Committee and membership. During the 2016/17 fiscal year, four of the five representatives plus an alternate attended the inaugural meeting of the committee held in June 2016. In 2018/19 one Advisory Committee member retired and two others changed employers. There was no activity with this group in 2019/20. The membership of this group and its role/function will be revisited in 2020/21. Members of the Advisory Panel will include the following individuals and representatives:

- Ex Officio members – Vice-President (Research) as Advisory Panel Chair, NRESi Director, Vice-President (External Relations), NRESi Research Manager
- Appointed members – One Steering Committee representative, five members external to the university community

**Table 2.** Appointed Advisory Committee members

Name	Affiliation
Melanie Karjala	BC Oil and Gas Commission
Vacant	College of New Caledonia
Trevor McConkey	Takla Nation Environmental Operations Manager
John Rex	BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
Luke Gleeson	Tsay Keh Dene Nation
Mike Tillson (alternate)	Tsay Keh Dene Nation (Chu Cho Environmental)

- Advice, support, and/or involvement from other UNBC representatives – Dean of CSAM, Dean of CASHS, Dean of Graduate Programs, Chair of NRES Graduate Committee, Directors of other Research Institutes

### *Membership*

NRESi has three types of memberships. They are: (a) Full Members for UNBC tenured faculty, (b) Associate Members for non-tenured faculty and research associates at UNBC faculty and researchers external to the UNBC community, and, (c) Lifetime Members who have received recognition through NRESi's Lifetime Achievement or Community Advancement awards for lifetime membership spanning beyond their UNBC employee status. It was decided at NRESi's 2014 Annual General Meeting to adjust the existing membership process. Any new applications

for Associate Members, which have 3-year terms, renewable from their membership anniversary date to the date of the NRESi's next Annual General Meeting plus 3 years. Existing Associate Member renewals are reviewed prior to NRESi's Annual General Meeting and those that have expired during the previous 12-month period will be notified and given the opportunity to renew for another 3-year term.

An overview of NRESi's current membership, the membership category that each belongs to, and the most recent date of renewal as applicable is listed below (Table 2). There are currently 70 NRESi members (Table 2). Membership activity during the reporting period included the renewal of 2 Associate members and the addition of 2 full members and the removal of 1 associate member and 3 full members (retired/moved). Four members also retired but currently remain as Institute members. Information about NRESi's members can be found on its website, such as their research interests (<http://www.unbc.ca/nres-institute/institute-members>) and contact details (<http://www.unbc.ca/nres-institute/members>).

**Table 3:** Summary of NRESi's current membership, membership type, and the most recent membership expiry dates for Associate Members

Beckett, Douglas	Associate Member: March 2021	Li, Jianbing (Jason)	Full
Bryan, Heather	Full	Lindgren, Staffan	Lifetime Member
Burton, Philip	Full	Maher, Patrick	Associate Member – April 2021
Child, Kenneth	Associate Member: March 2021	Martins, Eduardo	Full
Connell, David	Full	Massicotte, Hugues	Full
Connolly, Michelle	Associate Member: November 2022	McGill, Bill	Full
Costello, Allan	Associate Member: March 2020	Meletis, Zoe	Full
Coxson, Darwyn	Full	Menounos, Brian	Full
Crowley, Shannon	Associate Member: May 2021	Mullins, Philip	Full
Dawson, Russ	Full	Murray, Brent	Full
Déry, Stephen	Full	Nolin, Catherine	Full
Egger, Keith	Full (retired)	Opio, Chris	Full
Elkin, Che	Full	Otter, Ken	Full
Erasmus, Daniel	Full	Owens, Philip	Full
Fondahl, Gail	Full	Parker, Katherine	Full (retired)
Fredeen, Art	Full	Pearce, Tristan	Full
French, Todd	Associate Member: June 2021	Petticrew, Ellen	Full
Gantner, Nikolaus	Associate Member: April 2021	Poirier, Lisa	Full
Gerwing, Travis	Associate Member: June 2020	Rea, Roy	Full
Gillingham, Mike	Lifetime Member	Robert, Jeanne	Associate Member: April 2022
Green, Scott	Full	Rutherford, Mike	Full
Haeussler, Sybille	Associate Member: April 2022	Ryan, Dan	Full
Halseth, Greg	Full	Sanborn, Paul	Full
Hanlon, Neil	Full	Shrimpton, Mark	Full
Hartley, Ian	Full	Shultis, John	Full
Hawley, Alex	Lifetime Member	Sui, Jueyi	Full
Heard, Doug	Associate Member: April 2022	Summerville, Tracy	Full (retired)
Helle, Steve	Full	Tang, Youmin	Full
Hodder, Dexter	Associate Member: June 2021	Thring, Ron	Full
Huber, Dezene	Full	Ul Islam, Siraj	Associate Member: April 2021
Jackson, Peter	Full	Venter, Oscar	Full
Johnson, Chris	Full	Wheate, Roger	Full
Lautensach, Alex	Full	Whitcombe, Todd	Full
Lavallee, Loraine	Full	Wood, Lisa	Full
Lewis, Kathy	Full	Wright, Pam	Full

## Report on Activities for 2018-2019

*Background:* In 2011-2012, NRESi’s Steering Committee undertook a Strategic Planning process in order to identify the longer-term requirements and a sustainable model for the resourcing of NRESi. At the same time, increased overhead contributions from the NRESi project on Biodiversity Monitoring and Assessment Program (BMAP), under the leadership of Dr. Mike Gillingham, has provided for a period of financial stability. This has allowed NRESi to hire a part-time (21 hours per week) dedicated Research Manager and work towards growth in activities and operations.

The below is a summary of NRESi’s 2019-2020 initiatives, projects, and activities:

### *General Activities*

- In May 2019, the Institute received a request from the Office of Research to prepare a self-assessment report as part of UNBC’s review of each of the three major Research Institutes at UNBC. The purpose of the review is to evaluate the effectiveness and achievements of each Research Institute against its own mandate and mission and alignment with the UNBC mandate and mission. Following the guidelines provided by the Office of Research, the NRESi prepared and submitted the report to the Office of Research in October, 2019. A Review Panel assembled by the Office of Research, which included internal staff and faculty members and an external reviewer reviewed the report, and then met with the NRESi Director and Research Manager in early March 2020 to discuss the self-assessment report. As of the time of this report preparation we are still awaiting the Review Panel’s written response to our report and the direction for further actions.
- The Institute hosted 17 colloquia as part of the weekly NRESi Colloquium Series and which were organized by NRESi Research manager Al Wiensczyk. Job action in the fall of 2019 and the COVID19 pandemic in late winter/early spring of 2020 resulted in the cancellation of 4 and 2 colloquium presentations, respectively. Two of the cancelled presentations from the fall were rescheduled to the winter session. One colloquium presentation in the winter semester was held completely online using the BlueJeans system and was attended by 44 people. Most of the colloquium presentations have been posted to the NRESi UNBC Video archive (<https://video.unbc.ca/channel/NRESI/>). A listing of past presentations and their abstracts can be found on NRESi’s website (<http://www.unbc.ca/nres-institute/colloquium-series>).

**Table 4.** List of Colloquium Presentations including special presentations

Date	Name	Co-sponsor(s)
Sept 13, 2019	Dr. Chris Johnson (UNBC) “Theory to practice: Application of the declining- and small-population paradigms to the rapid decline and hoped-for recovery of caribou across Canada.”	

Sept 20, 2019	Dr. Emma Burak (Lancaster University, UK) "The impact of small root traits on soil reinforcement and erosion mitigation."	
Sept 27, 2019	Drs. Stephen Dery, Margot Parkes, Phil Owens and Ellen Petticrew (UNBC) "Integrated Watershed Research in the Nechako."	
Oct 4, 2019	Dr. Scott Green (UNBC) "A Tale of Two (Conflicting) Stories – Legacies of Western scientific resource management constrain Xáxli'p of St'at'imc Nation Land Management Values and Practices."	
Oct 11, 2019	Honorable Mike Morris (MLA) "The Cumulative Effects of Resource Development on Biodiversity."	
Oct 18, 2019	Dr. Jeff Werner (BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development) "The abundance of scarcity: landscape change, protein limitation, and moose population dynamics in north-central BC."	
Oct 25, 2019	Dr. Tristan Pearce (UNBC) "Polar bear co-management and the politics of climate change in the Canadian Arctic."	
Nov 1, 2019	Dr. Kristen Waring (Northern Arizona University) "Using interdisciplinary research across scales to manage for healthy species and forests."	
Nov 8, 2019	Dr. Jack Putz (University of Florida)	(Cancelled) Doug Little speaker
Nov 15, 2019	Rosemary Wardley (National Geographic)	(Cancelled) Inspiring Women Among Us
Nov 22, 2019	Dr. Erin Baerwald (UNBC)	(Rescheduled)
Nov 29, 2019	Dr. Heather Bryan (UNBC)	(Rescheduled)
Dec 10, 2019 Mackenzie, BC	Brian Paterson (Zonal Ecosystem and Wildlife Consultants Ltd.) "A summary of bat research in Northeastern British Columbia."	Fish and Wildlife Compensation Program – Peace Region
Jan 17, 2020	NRES Graduate Student Poster Session	(Rescheduled from the fall)
Jan 24, 2020	Dr. Nicola Koper (University of Manitoba) "Effects of oil and gas development, and anthropogenic noise, on grassland songbirds."	UNBC Student Chapter of the Wildlife Society
Jan 31, 2020	James Steidle (Steidle Woodworking; Stop the Spray BC) "Amazing world of Aspen."	
Feb 7, 2020	Dr. Svein Vagle (Fisheries and Oceans Canada) "The Marine Environmental Quality Program: Helping the endangered Southern Resident Killer Whales to survive."	
Feb 14, 2020	Dr. Erin Baerwald (UNBC) "Bats and wind energy: declines and expansions."	
Feb 28, 2020	Dr. Heather Bryan (UNBC) "Uncovering environmental determinants of wildlife health: insights from conservation physiology and disease ecology."	



March 6, 2020	Nicole Botton - "Glyphosate persistence in tissues of native BC forest plants, and associated influence on available nutrients." Jacob Bradshaw - "Seeing the Forest for the Fauna: Influence of Forest Harvesting on Predator-prey Relationships Among Mountain Caribou, Sympatric Ungulates, and Predators." Megan Gordon - "Achieving a Just Transition for Forestry Workers, Families, and Communities in Northern British Columbia." (Master's Students - UNBC)	Canadian Institute of Forestry – Cariboo Section
March 12, 2020	Dr. Nathan Gillett (University of Victoria) "Canada's Changing Climate Report."	CMOS
March 13, 2020	Ben Schonewille (EDI Environmental Dynamics) "Community Led Salmon Research and Restoration Projects in the Yukon River Watershed"	
March 20, 2020	Dr. David Atkinson (University of Victoria) "Northern Weather and Climate: Impacts on End Users"	(Cancelled) Polar Day
March 27, 2020	Dr. Caren Dymond (BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development) "Climate change impacts in British Columbia's forests: What can we do about them?"	Online only
April 2, 2020	Dan Kraus (Nature Conservancy of Canada) "Dammed if we don't: Exploring opportunities to restore connectivity in rivers and streams and why it matters."	(Cancelled) Fish and Wildlife Compensation Program – Peace Region
April 3, 2020	Dan Kraus (Nature Conservancy of Canada) "Ours to save: The distribution, status and conservation needs of Canada's nationally endemic species."	
April 10, 2020 Fort St John	Rich Weir (BC Ministry of Environment) "A tale of two populations: Why are fishers in the Peace different from 200 km away?"	(Cancelled) Fish and Wildlife Compensation Program – Peace Region

- Of the 19 colloquium presentations that took place, many were special events and/or co-hosted with NRESi together with other groups on campus:
  - Each year, in partnership with the Peace Fish & Wildlife Compensation Program (PFWCP), NRESi organizes a special lecture during the colloquium that includes a presentation by a guest lecturer on a theme related to the PFWCP preceded by a reception/dinner to provide further networking opportunities. This year we had one event which was held in Mackenzie. The two planned events for Fort St John, and Prince George were cancelled due to the COVID19 pandemic (more details below).
  - Other groups partnering on NRESi colloquium presentations this past year included the UNBC Fish and Wildlife Student Chapter of The Wildlife Society, the

Canadian Meteorological and Oceanographic Society (CMOS), and the Canadian Institute of Forestry – Cariboo Section.

- The majority of NRESi colloquium presentations as well as a number of special presentations are now housed in the NRESi video archive (<https://video.unbc.ca/channel/NRESI/>).
- All presentations were made available to those not able to attend in person through the LiveStream system. There was one talk that was not available due to technical difficulties beyond our control. However, that talk was still recorded and made available in the video archive. Blue Jeans was used to broadcast the remote Fish and Wildlife Compensation Program held in Mackenzie and was also used to broadcast one of the Friday colloquium presentations that was done online only due to the COVID19 pandemic.
- NRESi once again organized the annual Undergraduate Thesis Presentation Day for NRES and associated program students. Students completing a fourth-year thesis project are required to present their project and results. This year's event was held on April 23<sup>rd</sup> and April 27<sup>th</sup>. Nine students presented on the 23<sup>rd</sup> and one student presented on the 27<sup>th</sup>. Because of the COVID19 pandemic presentations were made online using the Zoom conferencing software package, which the university has now adopted to replace BlueJeans.

### *Communications*

NRESi continues to provide a means of internal communication between its members, as well as providing linkages where possible with external researchers and members of the community. This takes a number of different forms:

- NRESi event announcements and updates are distributed through a managed NRESi distribution list and to UNBC college mailing lists. NRESi also has a members-only list, where communications relevant specifically to the membership can be distributed. Event announcements are also posted to UNBC's public events listings, the NRESi website and the NRESi Facebook page.
- NRESi maintains a website, to provide information to the public about NRESi and its members, as well as an information platform for the public. The process to update NRESi's website began in the 2015-16 year, by revising text to reflect the work and focus of NRESi. This work continued in the 2019-2020 fiscal year, by adding website features, making revisions, and refining its structure to make it more user-friendly and visually appealing.
- In previous years, all NRESi lectures are recorded and posted to the NRESi Youtube channel ([https://www.youtube.com/channel/UC6WIRhriAQ2Yf3\\_Yu-3fy6A](https://www.youtube.com/channel/UC6WIRhriAQ2Yf3_Yu-3fy6A)). In 2018-19 the University Communications department has created a UNBC video archive with an NRESi channel (<https://video.unbc.ca/channel/NRESI/>). All 2016-20 presentations have been uploaded to this new video archive and the work has been completed migrating the older presentations from the NRESi Youtube channel to the new archive.

- NRESi has created two social media accounts to share information and updates. They are: (a) Twitter ([https://twitter.com/UNBC\\_NRESi](https://twitter.com/UNBC_NRESi)) and (b) Facebook (<https://www.facebook.com/unbcnresi?ref=hl>).
- NRESi's weekly newsletter continued in 2019-2020, being posted to NRESi's broad network distribution list every second Friday. Each edition includes: 'NRESi Notes' which provides updates or special announcements for members and the community, event announcements and information, recent NRESi member publications, sharing of travel or conferences details attended by members, links to NRESi members in the media and other UNBC media releases of relevance to the NRESi audience, NRES graduate student defense details and events of interest, as well as other UNBC or community events and news items of interest to the network. NRESi members are invited to contribute information, announcements, and news, as well as stories and photos that might be of interest to others in the NRESi community.
- NRESi also has an enclosed bulletin board on the 2<sup>nd</sup> floor of Building 8 that contains photographs and contact information for all NRESi members. This bulletin board was updated in 2019-20, renewing and improving member pictures and information, adding new members and removing pictures of those who are no longer members. This information provides a highly accessible way for all UNBC visitors and community members to identify and contact NRESi members. It is frequently used by students, members, UNBC employees and faculty, as well as persons external to the campus.

### *Research*

The NRESi links a community of researchers, with varied backgrounds and research interests, empowering them to pursue their disciplinary research in a variety of multi/interdisciplinary contexts. Many of the research initiatives undertaken by Institute members are collaborative efforts with other Institute members. Individual members of the Institute have disciplinary and multi/interdisciplinary expertise in the natural, physical, environmental, and social sciences; NRESi works to capitalize on this by providing projects and networking opportunities for knowledge sharing and finding new linkages. Scoping of NRESi members and their research opportunities is carried out when building new NRESi projects, further connecting multiple researchers and their interests. This will be explored and expanded if possible, in the 2020-2021 fiscal year as we continue to explore and identify new funding opportunities and project partners. We also remain keen to respond, where possible, to redirections of opportunities from our Research and Development offices.

In 2019, an NRESi member submitted a proposal to the Fish and Wildlife Compensation Program – Peace Region to investigate the spatial ecology of juvenile and adult Arctic grayling and their interactions with bull trout in the Parsnip River and its tributaries. A third year of this project was funded and will be delivered in 2020-21. The project funding additionally will help in cost recovery for core NRESi salary expenditures.

### *Cumulative Impacts Research Consortium*

The NRESi continued to participate in the tri-institute partnership-created Cumulative Impacts Research Consortium (CIRC) which was established in 2015 as a platform for research and

community dialogue on the cumulative impacts of resource development. The CIRC is a formal expression of collaboration between UNBC's three research institutes: The Community Development Institute (CDI), the Health Research Institute (HRI) and the Natural Resources and Environmental Studies Institute. The CIRC is a research and community outreach initiative based at UNBC dedicated to enhancing an understanding of the positive and negative cumulative impacts of resource development across northern BC. Our research aims to integrate environment, community, and health values and perspectives, and account for diverse forms of knowledge and information. Informed by our community outreach and engagement, the CIRC seeks to enhance on the ground capacity to respond to issues related to cumulative impacts.

Over the last year, CIRC has continued to reach out to communities in northern British Columbia to expand our understanding of the cumulative impacts of resource development across northern BC, respond to knowledge and capacity gaps with original research, and build our capacity to act as a regional hub of cumulative impacts information and resources. As we move forward, we will also continue to seek feedback and take leadership from the communities we work with to better understand the ways in which our research and outreach activities can best support local capacity to address the cumulative impacts of resource development. We wish to thank everyone who contributed to this initiative over the past year and look forward to continuing to build a solutions-oriented research and community dialogue for the benefit of northern British Columbia and beyond.

Key highlights from the past year include:

1. A change in CIRC staff. In September 2019, Dr. Marieka Sax (Research Lead) stepped away from her position to pursue postdoctoral research opportunities. This research activity was stimulated by CIRC projects.
2. CIRC leads participated in Research Week 2020 with a Panel and Discussion presentation on the CIRC featuring Drs. Margot Parkes, Greg Halseth, Art Fredeen, and Tristan Pearce, and Ms. Aita Bezzola (research associate). Art Fredeen remains the NRESi lead on CIRC.
3. Continuing to advance a suite of research projects that have emerged in response to concerns and issues voiced by communities in northern BC. More information about these projects, including relevant updates and project descriptions, can be found on the CIRC website (<http://www.unbc.ca/cumulative-impacts/research>).

#### *Peace Fish and Wildlife Compensation Program Lectures*

For the past number of years, NRESi has partnered with the Peace Fish and Wildlife Compensation Program to put on a lecture that has themes related to the natural resources around the Peace region and Williston Reservoir. One presentation was successfully delivered this year in Mackenzie. Two other presentations planned for early April in Prince George and Fort St John had to be cancelled due to the COVID19 pandemic. Brian Paterson (Zonal Ecosystem and Wildlife Consultants Ltd.) presented information on his Fish and Wildlife Compensation Program-funded project on Studying Endangered Bats in our Peace Region to an

audience of 20 at the Mackenzie Recreation Centre on December 10, 2019. In addition, 20 people tuned in to the talk remotely through the Blue Jeans system.

### *NRESi Awards*

In past years, NRESi has recognized members who have made valuable research contributions over their career with the Distinguished Fellow award.

1. Distinguished Scholar - a NRESi member who has achieved any or a combination of the described criteria over the past 12 months (it is possible to receive this award more than once over a career).
2. Lifetime Achievement – a NRESi member who has achieved a combination criteria over the course of their career (both as NRESi members and, if appropriate, in previous positions/activities) and recipients are given a lifetime membership to NRESi.
3. Community Advancement Award – an individual or organization from the broader community who has demonstrated achievement of any or a combination of the described criteria through their research and/or service and recipients or an identified representative from the recipient organization is given a lifetime membership to NRESi

Further information, nomination guidelines, and criteria can be found on NRESi's website (<http://www.unbc.ca/nres-institute/special-events-activities>).

This year, the NRESi presented one award in the Lifetime Achievement Award category. The Distinguish Scholar and Community Advancement Awards were not presented this year.

In 2019-2020, we will be awarding one Lifetime Achievement award. The recipient of this award is currently confidential as it has yet to be awarded given the COVID-19 situation.

### *Scholarship Funds*

NRESi members continue to support two scholarship funds, respectively in memory of the contributions by the late Susan Stevenson (former Research Associate) and Dr. Joselito (Lito) Arocena (former Full member). The 2019-20 recipient for the Susan Stevenson scholarship was Erin Hall, who is conducting research on the stand and ecosystem dynamics of the Tweedsmuir-Entiako caribou herd's low-elevation pine winter range and potential stand management options to promote habitat recovery. The recipient of the Dr. Joselito Arocena Memorial Undergraduate Thesis Prize for 2019-20 was Lauren Runge, the recipient of the Dr. Joselito Arocena Memorial Graduate Prize for 2019-20 was Ian Curtis, and the recipient of the Dr. Joselito Arocena Memorial Scholarship for 2019-20 was Twani Drinnan.

## *Publication Series*

Dr. Art Fredeen has been the Editor for the NRESi publications series since their inception. In the past, NRESi had two publication series that NRESi members and NRES graduate students could contribute to:

1. **NRESi Occasional Papers** are peer-reviewed publications of papers and symposia material sponsored or produced by members of the Institute. They provide an outlet for position, idea, concept, and opinion oriented papers.
2. **NRESi Research Extension Notes** are peer-reviewed publications of the research findings of NRESi members and of graduate students in the NRES Graduate Program. This series is intended to provide an outlet through which Institute members can make their research findings available to a non-technical audience. It is especially intended to be a less onerous and more collegial way for NRES graduate students to publish their thesis findings. For many, this is their first foray into publishing, and it's focus on 'extension' of research into the public domain aligned well with the principles of the NRES Graduate program and the NRESi core values and objectives.

In 2014-2015, it was identified that there are times where Research project and Technical reports, which are generally not broadly available, have useful information and results that should be made available. To provide a venue to make this data accessible, NRESi created the Technical Report Series.

3. **NRESi Technical Reports** are comprehensive, but non peer-reviewed final reports of research projects. They can contain results relevant to the region and the broader research community. This publication series creates an opportunity for NRESi members to make their research project results, that would otherwise not be published or made available, either in part or in whole.

More information about the publication series and guidelines can be found on NRESi's website (<http://www.unbc.ca/nres-institute/publication-series>). In addition, the NRESi worked with UNBC's library to make the articles available to a wider network, by posting all publications to UNBC's online databases making all publications fully searchable and available to all researchers.

There were no publications submitted and published in 2019-20, but we are currently supporting the publication (in progress) of 2 Technical Reports.

Each year, NRESi also presents an award for a Research Extension Note written by a NRES graduate student. No Research Extension Notes were submitted in 2019-20. Much has changed in the publishing world since these in-house NRESi publications were created. We will be examining and reviewing all aspects of our publications in the coming months to see what can be done to increase and improve their functionality and utility.

## Budget Report

Revenues for the 2019-2020 fiscal year were derived from redirection of overhead from NRESi members, and from cost recovery of research manager salary from project grants, including Peace Fish and Wildlife Compensation Fund projects.

NRESi provided financial contributions to a number of events and activities throughout the year that it organized or help to organize:

- Annual Lecture, NRESi member and special invitation dinner and poster session, travel for a special lecturer, reception, and compensation for webcasting
- Undergraduate thesis presentation day and refreshment costs
- Graduate Icebreaker presentation, poster session, and travel for a special lecturer
- Special guest lecture presentations
- Colloquium series – assistance for travel for a presenter who participated in NRESi’s colloquium series, advertising costs, compensation for allowing Livestreaming.

**Table 5.** NRESi operating budget: Summary for FY 2019-2020 and Projected Expenses for FY 2020/2021.

	<b>Actual 2019-2020</b>	<b>Projected 2020-2021</b>
<b>Opening Balance</b>	<b>\$101,104</b>	<b>\$ 52,478</b>
<b>Revenue</b>		
Research Grant Overhead	\$ 0	\$ 0
Salary Recovery (FWCP)	\$ 5,500	\$5,500
<i>Transfers in (NRESi Endowment)</i>	\$ 0	\$ 9,000
Transfer in (Office of Research)		\$ 10,000
<b>Total Revenue</b>	<b>\$ 5,500</b>	<b>\$ 24,500</b>
<b>Expenditures</b>		
Salaries	\$ 52,415	\$ 54,000
Event Expenses	\$ 1,532	\$ 2,000
Supplies-Office	\$ 179	\$ 300
<b>Total Expenditures</b>	<b>\$ 54,126</b>	<b>\$ 56,300</b>
<b>Closing Balance</b>	<b>\$ 52,478</b>	<b>\$ 20,678</b>

\*correction of accounting error made with respect to FWCP salary recovery.

Our 2019/2020 year-end operating fund closing balance was \$49,978, although upon review an accounting mistake of \$2,500 was found related to the salary recovery from the Fish and Wildlife Compensation Program. The net result was that the operating fund closing balance should be \$52,478. Operating fund expenditures in 2019-20 exceeded revenues by \$48,626

(Table 5). Proposed expenditures for 2020/2021 will be similar, drawing down the operating fund reserve by ca. \$50,800, mainly for salary expenditures.

Revenue for the institute derives mainly from the reallocation of research overhead by members, which totaled \$ 0 in 2019/2020. UNBC has decided to transition the funding model for the institutes away from dependence on research overhead allocations. This is currently under development and is part of the Institute Review process described earlier in this report.

NRESi has three endowment funds: (a) NRESi Endowment, (b) Northwood Endowment, and, (c) Linnea Fund. The largest endowment fund is the NRESi endowment. Given the current funds held in the NRESi operating account in 2019/2020, no contribution was taken from the NRESi endowment fund in the past year, allowing this fund to grow. This year, the NRESi endowment fund earned only \$542 in interest and paid out \$3,549 in management fees (Table 6).

Our second largest endowment fund is the Northwood endowment, which is used to fund the NRESi Annual Lecture series and other special events consistent with the original intent of the endowment. In years when the return on the endowment has been low (or even negative), NRESi's operating budget has been used to fund such activities in order to maintain an adequate balance in the endowment. This year, the Northwood endowment earned \$1,879 in interest (Table 7).

The Linnea fund is presently inactive. It should be noted that the Linnaea Fund permits the spending of the principle to fund activities, while the Northwood and NRESi Endowments funds are traditional endowments, in which only a portion of the earnings can be used.

**Table 6.** NRESi Endowment Fund: Summary for FY 2019-2020 and Projected Change for FY 2020/2021.

	<b>Actual 2019-2020</b>	<b>Projected 2020-2021</b>
<b>Opening Balance</b>	\$ 352,404	\$ 366,948
<b>Revenue</b>		
Donations	\$ 650	\$ 500
Interest	\$ 17,443	\$ 17,500
<b>Expenses (Overhead)</b>	\$ 3,549	\$ 3,695
<b>Closing Balance</b>	\$ 366,948	\$ 381,253



**Table 7.** Northwood Endowment Fund: Summary for FY 2019-2020 and Projected Change for FY 2020/2021.

	<b>Actual 2019-2020</b>	<b>Projected 2020-2021</b>
<b>Opening Balance</b>	\$ 139,090	\$ 146,257
<b>Revenue</b>		
Interest	\$ 8,574	\$ 9,000
<b>Expenses</b>		
Overhead	\$1,407	\$ 1,462
Events		\$ 3,000
<b>Closing Balance</b>	\$ 146,257	\$ 150,795

**Table 8.** Linnaea Fund (34164): year-end budget statement for FY 2019-2020.

Opening Balance (April 2019)	\$ 350
Revenue: Interest	\$ 3
Total Revenues (FY 19-20)	\$ 3
Expenditure (overhead)	\$ 3
Total Expenditures	\$ 3
Year End Balance (March 2020)	\$ 350

**Table 9.** Summary of NRESi Fund totals and change during FY 2019-2020.

NRESi Funds	2019-2020 FY End	Change during FY
Operating	\$ 52,478	- \$ 48,626
Northwood	\$ 146,257	\$ 7,167
NRESi Fund	\$ 366,948	\$ 14,544
Linnaea Fund	\$ 350	\$ 0
<b>Total:</b>	<b>\$ 566,042</b>	<b>-\$ 26,915</b>



## Natural Resources & Environmental Studies Institute

### 2020-2021 Workplan

This workplan describes how NRESi's 2020-2021 activities will build on the momentum of the previous fiscal year and further the objectives of NRESi through engagement, identification of new project opportunities, funders and partners, as well as providing networking across members and the community. Further to this, it will also describe how NRESi will work with other research institutes and organizations at UNBC and its partners on some key initiatives.

The focus of activities for the new year are described under five broad headings, which includes a purpose, description, and desired outcomes for each. A proposed 2019-2020 budget is shown in Table 5 above.

### Project Descriptions

#### A. Partnerships & Project Development

**Purpose:** To develop partnerships and project opportunities to support the research goals of NRESi members and address the issues of UNBC's community through solutions-based approaches and projects.

#### *Description of Activities:*

NRESi will continue working to identify project and funding opportunities on behalf of its members and NRESi more broadly, working together with the Development Office and the Office of Research. Planned area of investigation in 2019/2020 include working to explore further opportunities for research collaboration with the B.C. Hydro Fish and Wildlife Compensation Program.

Information and suggestions collected from NRESi members through the membership survey will assist in developing additional project themes. Opportunities to engage with the other UNBC research institutes, in addition to the cumulative impacts work currently underway, will be considered.

### B. Service to NRESi Members and UNBC

Purpose: To maintain service delivery and networking between NRESi members and other UNBC departments for knowledge sharing, celebrating successes, building on each other's strengths, and reducing duplication of efforts where possible.

#### *Description of Activities:*

NRESi will continue to celebrate the achievements of its members and those in the natural resources research community. This will continue to be achieved in a number of ways. One example is providing NRESi's weekly newsletter as a venue for sharing new publications, awards NRESi members have received, conference presentations and other announcements.

NRESi also has its awards program that is presented each fall. The awards include: (a) Lifetime Achievement for career accomplishments, (b) Distinguished Scholar for project related accomplishments, and, (c) Community Advancement for individuals and organizations outside of NRESi's membership, but part of its network and making valuable contributions to natural resource research.

NRESi will continue to build opportunities for supporting its members' research and expertise. This includes investigating how to best make the expertise of NRESi members readily available to other members, potential partners and the broader community. It could also mean further accessibility of NRESi member data and information, such as continuing to explore tools for data sharing.

### C. NRESi Special Projects & Events

Purpose: To engage NRESi members, UNBC, and the broader community in events and activities on relevant topics of interest, providing the opportunity for sharing knowledge and a forum for discussion.

#### *Description of Activities:*

One of the main roles and functions of NRESi is to create opportunities for sharing knowledge, as well as networking across its membership and the broader research and natural resource community. A number of NRESi venues exist for this, including the weekly colloquium lecture series, the NRES Graduate Student Icebreaker, Annual Lecture and poster session, as well as others events and activities that include NRESi members and NRES graduate students. It also actively works to identify opportunities for relevant topics of discussion and projects that NRESi members can engage in, to feed their expertise into dialogues where experience and knowledge are valuable contributions. NRESi will continue to identify areas where it can support knowledge sharing, organize events for dialogue and discussion, and provide promotion within its membership and broader network of activities to create an ongoing culture of learning from each other.

NRESi received conditional approval of its proposal to extend its ongoing relationship with the Peace Fish and Wildlife Compensation Program for a lecture series in 2019-2020. This year

NRESi will be organizing three lectures, one in Prince George during the usual spring timeslot, plus two additional presentations in the fall and winter in a northeastern BC community.

NRESi received approval for year three of a four-year proposal to the Peace Fish and Wildlife Compensation Program to investigate the spatial ecology of juvenile and adult Arctic grayling and their interactions with bull trout in the Parsnip River and its tributaries.

The achieved goals for 2019 (Year 2):

- 1) Tagged a total of 87 fish (62 Arctic grayling and 25 bull trout).
- 2) Deployed 26 additional acoustic receivers in the Parsnip River watershed and two additional receivers in the lower Pack River. Expansion of the telemetry array in 2019 focused on the Hominka and Missinka Rivers.
- 3) Deployed 39 new water temperature loggers in the Parsnip watershed. Two new water temperature loggers were deployed in the lower Pack River.
- 4) A total of 94 samples (adipose fin, muscle, invertebrates, plants, particulate organic matter) were obtained for stable isotope analysis of carbon ( $\delta^{13}\text{C}$ ) and nitrogen ( $\delta^{15}\text{N}$ ).
- 5) Engaged in six outreach activities presenting project objectives and preliminary results to local stakeholders and First Nations communities in the project area.

Planned goals for 2020 (Year 3):

- 1) Download existing temperature data loggers and expand the temperature monitoring network to include higher elevation areas in the Colbourne Creek, Reynolds Creek and Misinchinka River.
- 2) Download existing acoustic receivers and replace any that may be lost or damaged.
- 3) Continue tagging Arctic grayling and bull trout by distributing tags among the four main tributaries that are being monitored (Anzac, Table, Hominka and Missinka Rivers).
- 4) Deploy additional sentinel tags throughout the watershed and collect data on river geomorphology at receiver deployment sites for the development of a predictive model of detection efficiency.
- 5) Continue the collection of samples for stable isotope analysis from all main tributaries (Anzac, Table, Hominka and Missinka Rivers) and expand the collection to include terrestrial insects.

#### D. Communications

Purpose: To facilitate communication within the membership, to UNBC and external stakeholders, governments, communities, and other partners.

##### *Description of Activities:*

NRESi uses a number of different venues to share information across its network. This includes external communications efforts, such as through the bi-weekly newsletter, social media feeds, posters in UNBC hallways about upcoming events, as well as through email announcements. NRESi also works to provide information about opportunities to its membership list and engaging researchers where possible to do so.

NRESi is in the process of updating its website; the content itself has been revised, with further plans for this year to streamline its structure and make it more user-friendly. In cooperation with the UNBC Communications and IT departments, NRESi is also creating a new video archive website for its past colloquium presentations and special lectures. This new site will have a search function where videos can be queried based on topic, keywords (in the title, abstract), date and presenter. NRESi will be continuing to post information about upcoming events to UNBC's Events webpage, to create broader distribution of activities.

Finally, one of our primary ways of sharing research is through our three NRESi publication series. As mentioned earlier, and in response to some comments during the external review, we will be taking a look at all aspects of these series to make sure that they are meeting the needs of members, and achieving the goals expected of extension products. Dr. Fredeen is also thinking about succession planning for the publications going forward, e.g. surveying members for interest in taking over the Editorial positions for the series.

*Desired Outcomes:*

- NRESi's weekly newsletter and current social media sites, and other communications tools used to provide a venue to share information to wide audiences and allow for networking within the research, natural resource, and environmental studies community, as well as an opportunity to create a dialogue where possible on current issues, activities and opportunities that could be built upon
- Improvements to NRESi's web presence by making updates to allow information to be streamlined, found easier and in a more interactive fashion
- Improved production, profile, promotion, impact, and/or use of NRESi publications. Many aspects and challenges here, so all of these aspects will likely take time, and perhaps a new Editor-in-chief.