
Collaborative. Interdisciplinary. Inclusive.

Canadian Mountain Network: Better Together

Canadian mountain research



DRAFT PROCEEDINGS

What We Heard:

Canadian Mountain Network Workshop

June 23, 2016

Whitehorse, Yukon



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Workshop Overview

The Canadian Mountain Network (CMN) is a voluntary alliance of numerous partners from universities, colleges, governments, community organizations, First Nations and businesses dedicated to the sustainability of mountain environments and communities across the country and around the world. Established in 2016, the CMN is in the early stages of establishing a forum for collaboratively addressing the diverse challenges facing mountain regions by harnessing existing capacities and seeking new resources.

Over the next 18 months, the CMN will lead the preparation of a national Networks of Centres of Excellence (NCE) proposal. The first step in establishing our Network is to form Initiating Groups across the country in order to understand mountain research needs, to expand network participation, and to create more opportunities for collaboration. Yukon has been a leader in the early planning stages of this initiative, and the Yukon Initiating Group will provide a focal point for future involvement.

A workshop, jointly hosted by the Science Community of Practice (SCOPE) and CMN was held in Whitehorse on June 23, 2016 to share information about, and get early feedback on, the network. The agenda may be found in Appendix A, and a list of workshop participants in Appendix B. Following a series of presentations (Appendix C), breakout group discussions were held in four areas: engagement, benefits to Yukon, research needs, and capacity building. A summary of what we heard during these discussions is found within this report.



What we heard

Engagement:

(Facilitator: Christy Urban)

Who is currently involved in mountain research in Yukon?

- A list of agencies involved in mountain research in Yukon, as brainstormed by participants of this workshop, may be found in Appendix D.
- Consider Appendix D a 'work in progress'.
- How much mountain research in Yukon is being done by people/agencies within the territory vs. outside the territory?
- Yukon should be a "lab" for everyone to learn, we shouldn't keep it to ourselves, but we need to find a balance between community needs and original research ideas coming from Universities themselves.
- Outside researchers need to explain why they are doing research.
- Creating ongoing trust relationships in the long-term with communities is important.

Who is currently benefiting from mountain research in Yukon? Who else needs to benefit?

- Who 'uses' the results of mountain research?
 - Educators
 - Decision-makers in various levels of government, industry etc.
 - Policy-makers
 - Land and natural resource managers and planners
 - Infrastructure planners
 - People who are out on the land (e.g. hunters, trappers, recreationalists)

- It will be important that the research is beneficial for communities and First Nation groups.
- It also has to benefit municipal, mining and transportation sectors
- How do we engage those who benefit from mountain research?
- What forms of engagement are desired?
- What forms of engagement are successful?
- Decision-makers and policy-makers – how do decision-makers want to receive scientific information? How do policy makers communicate their needs for scientific information?
- Need to ensure the following groups benefit from mountain research
 - Public (awareness, transparency)
 - First Nations
 - Students (opportunities)
 - Youth
 - Local residents (training)
 - Guides/outfitters
 - Tourism industry
 - Land use planning processes

Who needs to help shape the direction of network activities in Yukon?

- Needs of the communities
- Yukon College? Can they/should they be a hub for the network in Yukon?
- Yukon First Nation governments
- Renewable Resource Councils as they advise governments on what is happening on the land and have a unique 'first hand' knowledge/early warning system.
- Need to develop a strategy to engage federal agencies.
- YG officials.



Benefits to Yukon:

Facilitator: Aynslie Ogden

What would make this Network important to Yukon?

- Involve Yukoners in a meaningful way.
- Provide contracts, employment and research opportunities for Yukoners.
- Provide opportunities for Yukoners to learn about Yukon's environment, economy, society and cultures.
- Provide local interpretation of research results e.g. museums, roadside signage, etc.
- Recognize the expertise of those who have spent a lifetime on the land (experience-based experts) and bring them into the network.
- Communicate why someone should care about the work of the network - benefits may be hard for members of the public to see.
- Be relevant at the local level - give communities the opportunity to ask questions and set directions.
- Address health and social sciences, not just environmental and natural sciences.
- Work at the interface of two ways of knowing.
- Prevent brain-drain (keep Yukoners in the Yukon) by creating long-term employment.
- Address local science questions.
- Develop local science infrastructure.
- Be policy-relevant.
- Enhanced knowledge of ecosystem and management of cumulative effects.
- Research that advances the Yukon Water Strategy, Yukon Science Strategy and Research Plan, and Yukon Climate Change Strategy and more...

How can this Network be designed to maximize benefits to Yukon?

- Create a central office and regional offices to facilitate coordination. Ensure offices are resourced appropriately.
- Ensure there are regional representatives as well as local community representatives in governance structure.
- Identify a common vision that is focused (not all things to all people) but also ensures there is something for everyone.
- Ensure strong leadership that is sensitive to regional differences.
- Provide incentives for involvement at the community level e.g. training opportunities, funding to support community monitoring, etc.
- Be cost effective – for example, training communities to carry out monitoring activities is more cost effective than sending researchers in from down south.
- Provide funding to support this community engagement.
- Set conditions on research funding that require community engagement to be undertaken, and (non-sensitive) data to be made open and available.
- Provide a home for all kinds of research along the spectrum from basic to applied. For example, the network can provide a forum where the results of basic research to be communicated.
- Ensure there is an annual network-wide science meeting, that is broader than just science (includes policy makers, resource managers, etc.)
- Ensure there are regular regional workshops that are carried out in community-relevant ways (e.g. travelling potlatch, attend GA's to get feedback on research directions).
- Ensure the capacity being built in Yukon is the capacity that is needed and wanted.
- Develop travelling exhibits (as was done with IPY).



- Facilitate local and regional connections to international mountain forums.
- Build capacity outside traditional training of HQP.
- Engage local experts (not just PhD's) to participate on graduate student committees.
- Support, enable and facilitate connections between communities and researchers.
- Provide training in science communication (e.g. Laurentian University graduate diploma)
- Train local people to "speak science" to locals.
- Require every CMN project to have at least one local partner.
- Require principle investigators to be proactive in community engagement, and to train their students to do the same.
- Ensure youth are involved.
- Promote knowledge co-production.
- Provide opportunities for citizen science, and facilitate citizen science connections with other mountain regions.
- Create a strong web presence, central place for disseminating information.
- Create an 'ask an expert' web forum that has both scientists and local experts.
- Support interdisciplinarity.
- Learn from the ArcticNet experience.
- Acknowledge that there has been a history of poor community-researcher relationships in the North and ensure there are local benefits alongside meaningful and effective participation.
- Ensure collaboration at the proposal design stage.
- Create an early-career and student association that is open to people outside academia.
- Develop training tools and require researchers to include extension and outreach as an integral part of each project – don't leave these activities to a separate KE/KT group within a network.
- Work to improve trust and rebuild trust.
- Ensure results are communicated and visible.

- This network needs to have something in common across the Yukon and in other jurisdictions so that it is comparable. However, it needs to have flexibility to be tailored to individual locations.
- Strong communication of results to communities.

In 15 years, what would you want this Network to achieve?

- Strong link between science and policy/management of natural resources.
- Baseline data is increased.
- Data is more accessible.
- Data products are generated for different levels of access and to suit various interests (GY map viewers are a good example).
- Management of data is improved (including within various levels of government).
- Coordination is enhanced.
- More papers of Yukon origin are published.
- Community involvement, pride and buy-in to research are increased.
- Connections are made between Yukon communities and the rest of Canada.
- Science is more accessible (what SCOPE is trying to achieve is a good example).
- Comparisons are made between social and ecological systems across a north-south transect.
- Appreciation for the value of life in the mountains is increased.
- Mountain culture is celebrated.
- Awareness of career opportunities amongst youth is increased.
- A shared understanding of mountain environments for people in all walks of life (alpinists, trappers, scientists, land managers, etc.) is developed.
- New science curriculum, including on the land units and experiential science, is advanced.



- Mentorship opportunities, including scientists visiting classrooms, are increased.
- Policy that guides future development and sustainability of mountain landscapes and systems is developed.
- Training opportunities for local people who don't have any formal education are provided.
- Training opportunities for academics to expose them to local and traditional ways-of-knowing are provided.
- Health and well-being of mountain communities and people is increased (this should be a primary goal of the network)
- Scientific capacity and credibility of local Yukon science community is increased.
- Recognition of the expertise and contributions of local experts is increased.
- Opportunities for local experts to lead projects from the Yukon are provided.

Research needs:

Facilitator: Dave Hik (NOTE: CONTENT FOR THIS SECTION IS STILL TO COME)

What solutions to complex challenges should this network be designed to address?

- Lake, pond and wetland changes in hydrology and biogeochemical cycling in mountain areas.
- Permafrost change in mountain areas.
- Cumulative effects are perplexing for many jurisdictions and it would be helpful to identify approaches for understanding cumulative effects and to integrate with a best management practice/approach to collecting monitoring data in light of this.
- How natural resources have changed and will continue to change into the future. What can we expect? And, how can we adaptively manage? For example, how has the hydrology changed throughout time in mountainous areas

and how can we expect it to change into the future? How will this affect the nature?

What research needs have been identified in Yukon through collaborative, participatory processes?

- At the 2016 Yukon Water Forum, individuals expressed the need to better understand surface and groundwater interactions.

What codes of conduct/best practices for research should be adopted by the Network?

What infrastructure is needed to support research activities in Yukon (short, medium and long term)?

Capacity building:

Facilitator: Sam Darling

What does capacity building mean in a Yukon context?

- Partnership building. Training/developing both people in communities and people within Yukon government to facilitate better science. Scientists may be able to come in and share space with government officials, helping develop better partnerships and ultimately a better understanding of what each other is doing.
- Working with youth to train and develop youth.



- Exploiting links between local stories and science.
- Lots of HQP in the Yukon (e.g. see SCOPe 2014 member survey); however, given the small population and labour force demands for HQP, our HQP are under-utilized.
- Need to look into IPY reporting on HQP - they reported on all community collaborators. Is this a meaningful measure?
- Discussion of what is an indicator of successful capacity building. For example, do the measures used by IPY accurately measure to what extent capacity was built through their program? The number of degrees produced is not an accurate measure of capacity building in the Yukon context.

What capacity is needed to be developed?

- Need to identify the capacity being built vs. the capacity that is needed in the communities
- Lots of HQP in Yukon - CMN could be an avenue to sustainable development by creating and/or fostering the job market for HQP.
- Capacity development is needed to support planning (e.g. land use and/or wildlife management), as well as to support the implementation of these plans. Each of these stages has different needs for capacity building that the Network could help develop.
- Research funding applications should look for ways to support implementation of plans and implementation plans should look for ways to involve and engage the research community as there could be mutual benefits.
- Focus research directions towards employability of students vs. research for research's sake
- Research assistants should have a basic proficiency, provide training for community members to fill that role
- Look at industry partnerships that are funded – e.g. science/mining, science/tourism
- Need something like a “knowledge broker” - a group that connects the academic community

with the local community. The role of the broker would be to maintain relationships and linkages between communities and researchers, and to help with research permitting at a community level, to support the research licence application process in Yukon. Could this be the function of CMN? And/or is there an existing position at the Yukon Research Centre that does this function?

How can the Network contribute to developing this capacity?

- Project lifespan - sustainability beyond the research project, e.g. training for people to take the project further after the researchers have left community, e.g. water strategy development with community member who is interested in getting environmental science degree, make sure that there is someone in the community is able to implement water strategy.
- Training or facilitators for researchers and for community members - science communication - mutual education
- CMN could be an avenue to sustainable development by creating and/or fostering the job market for HQP.
- CAUTION: want to ensure that the CMN does not redirect capacity that currently exists in communities for economic development etc. to the network. Need to provide additional support for community positions.

How can the network train and prepare graduate students for employment outside academia? Would you consider this type of training a valuable service?

- Train students to be a knowledge translator, able to communicate the value of science



- Ensure students are working on applicable research questions
- Increase partnerships, outreach and engagement
- Provide training to students on how their work can lead to reciprocal benefits for researcher and community
- Provide training to students on how their work can lead to reciprocal transfer of science and traditional knowledge
- Instill within students the importance and value of mutual education between researchers and for community members
- Other grad student training needs:
 - Connection to the job market and larger opportunities
 - Development of skills that are transferrable to the workplace
 - Mentorship and/or internship program that facilitates partnerships and/or placements with Governments/NGOs/ Industry etc.

traditional knowledge within academic context). This could be a distinguishing feature of CMN. This is an opportunity to influence the current system.

- Provide training for community members to fill the role of research assistants. Training should focus on those areas that all research assistants need basic proficiency in field safety, wilderness first aid, bear awareness, off road vehicle use, ATV use, helicopter safety, etc.
- HQP should include essential field personnel - Technicians , pilots, mountain guides, wilderness first aid, as well as science professionals/ practitioners needed by the labour market and not just be limited to Tri-council definition
- Discussion - Do we teach the researcher to work in the field or do we hire local expertise to help the researcher? Which builds more capacity?
- Could look to Antarctica as a model – there is support available for the training of operationally important personnel

HQP is defined by Tri-Councils as individuals with university degrees at the bachelor's level and above. For the Yukon how would you redefine this?

- Current definition does not recognize First Nation values (need a way to acknowledge



Appendix A: Workshop Agenda

Welcome	Welcome and Roundtable introductions	Aynsle Ogden, Science Advisor, Government of Yukon
Presentation	Why a Canadian Mountain Network?	Dave Hik, Science Director, Canadian Mountain Network
Presentation	Building a research network: lessons learned from the past 15 years of northern research	Aynsle Ogden
Presentation	Information needed from CMN Initiating Groups	Christy Urban, Executive Director, Canadian Mountain Network
Presentation	Community engagement	Sam Darling, McGill University
Breakout group discussions	Yukon Initiating Group	Facilitators: Aynsle Ogden, Sam Darling, Christy Urban, Dave Hik
Presentation	How to stay involved	Christy and Aynsle



Appendix B: Workshop Participant List

<i>Name</i>	<i>Position</i>	<i>Organization</i>
Bronwyn Benkert	Manager, Northern Climate ExChange	Yukon Research Centre
Ellen Bielawski	Professor	Yukon College/UofA
Marc Boulerice		City of Whitehorse
Margaret Campbell	Wildlife Biologist	Canadian Wildlife Service
Sam Darling	PhD Student	McGill University
Michelle Dawson-Beattie	Project Coordinator	Yukon First Nation Chamber of Commerce
Albert Drapeau	Executive Director	Yukon First Nation Chamber of Commerce
Katrine Frese	Instructor/Coordinator, Climate Change Policy	Yukon College
Megan Grabowski	Researcher	Yukon Research Centre
Tamoko Hagio	Director	Alpine Club of Canada, Yukon Section
Greg Hare	Senior Projects Archaeologist	Government of Yukon
Mitchell Heynen	GIS/Environmental Tech	Access Consulting
Dave Hik	Professor	University of Alberta
Jocelyn Joe Strack	Consultant	Subarctic Research and Strategy
Jill Johnstone	Professor	University of Saskatchewan
Tyler Kuhn	Biologist - Information Specialist	Government of Yukon
James MacDonald	Director, Natural Resources	CYFN
Lisa Mahon	Wildlife Biologist	Canadian Wildlife Service
Aynslie Ogden	Senior Science Advisor	Government of Yukon
Don Reid	Conservation Zoologist	Wildlife Conservation Society
Fiona Schmiegelow	Professor	University of Alberta
Sian Williams	Station Manager, Kluane Lake Research Station	Arctic Institute of North America
Christy Urban	Executive Director, Mountain Studies and Research Initiative	University of Alberta
Maxine White	Director	Yukon Invasive Species Council



Appendix C: Who is involved in mountain research in Yukon?

Aboriginal governments and organizations and public advisory bodies established under the Umbrella Final Agreement

Council of Yukon First Nations	http://cyfn.ca/
Fish and Wildlife Enhancement Trust	http://yfwet.ca/
Renewable Resource Councils	http://yfwmb.ca/renewable-resource-councils/
Yukon First Nation Chamber of Commerce	http://www.yfncc.ca/
Yukon First Nation Governments	https://www.aadnc-aandc.gc.ca/eng/1100100028350/1100100028351 http://mappingtheway.ca/
Yukon Fish and Wildlife Board	http://yfwmb.ca/
Yukon River Inter-Tribal Watershed Council	http://www.yritwc.org/
Yukon Salmon Committee	http://www.yssc.ca/

Academia

UAlberta North	https://www.ualberta.ca/arctic/north
Arctic Institute of North America	http://arctic.ucalgary.ca/
Centre for Northern Innovation in Mining, Yukon College	https://www.yukoncollege.yk.ca/programs/pages/about_cni_m
Cold Climate Innovation, Yukon College	https://www.yukoncollege.yk.ca/research/projects/cold_climate_innovation
Northern Environmental and Conservation Sciences Program (Joint UofA- Yukon College Degree)	https://www.yukoncollege.yk.ca/programs/info/environmental_and_conservation_sciences
Resources and Sustainable Development in the Arctic (ReSDA), Yukon College	http://yukonresearch.yukoncollege.yk.ca/resda/
*Various Universities	The Arctic Institute of North America has archived the listing of all permitted research projects in the Yukon in their Arctic Science and Technology Information System (ASTIS) database. Click on "Search" button, select "G0811 - Yukon" in Geographic Code.
Yukon Research Centre, Yukon College	https://www.yukoncollege.yk.ca/research/pages/about_us

* Various departments and faculties including agriculture, glaciology, meteorology, ecology, conservation biology, natural resource development and management, planning, hydrology, geography, oil and gas, energy, etc.)



Industry and Industry Associations

Dana Naye Ventures	http://www.dananaye.yk.net/
Dechenla Lodge	http://www.dechenla.com/
Edmonton Northern Partnership	http://www.edmontonnorthernpartnership.ca/
Northwestel	http://www.nwtel.ca/
Tourism Industry Association of Yukon	http://www.tiayukon.com/
Yukon Agriculture Association	http://www.yukonag.ca/
Yukon Chamber of Commerce	http://www.yukonchamber.com/
Yukon Chamber of Mines	http://www.yukonminers.ca/
Yukon Energy Corporation	https://www.yukonenergy.ca/
Yukon Fish and Game Association	http://yukonfga.ca/
Yukon Outfitters Association	http://www.yukonoutfitters.net/
Yukon Trappers Association	http://yukonfga.ca/support/yukon-trappers-association/
Yukon Wood Products Association	http://www.yukonwoodproducts.org/

Non-Government Organizations

Alpine Club of Canada (ACC) Yukon Section	http://www.accyukon.ca/
Canadian Network of Northern Research Operators	http://cnro.ca/
CPAWS Yukon	http://www.cpawsyukon.org/
Ducks Unlimited	http://www.ducks.ca/places/yukon-northwest-territories/
Klondike Snowmobile Association	http://ksa.yk.ca/
Yukon Conservation Society	http://yukonconservation.org/
Various Health and Social Service NGOs	http://www.ykhealthguide.org/community/whitehorse_services/
Various Yukon Museums and First Nation Cultural Centres	http://www.yukonmuseums.ca/
Wildlife Conservation Society Yukon	http://canada.wcs.org/
Yukon Avalanche Association	http://www.yukonavalanche.ca/
Yukon Bird Club	http://yukonbirds.ca/
Yukon Heritage Resources Board	http://www.yhrb.ca/
Yukon Historical and Museums Association	http://heritageyukon.ca/
Yukon Invasive Species Council	http://www.yukoninvasives.com/



Municipalities

Association of Yukon Communities	http://www.ayc-yk.ca/
City of Whitehorse	http://www.city.whitehorse.yk.ca/

Public Education

Edmonton Public Schools	https://www.epsb.ca/
Science Adventures, Yukon College	https://www.yukoncollege.yk.ca/research/pages/science_adventures
Yukon Schools	http://www.yesnet.yk.ca/schools/
Yukon Experiential Learning School Programs (on the land, field trips)	http://jjewell.yukonschools.ca/

Territorial government

Department of Community Services	http://www.community.gov.yk.ca/
Department of Economic Development	http://www.economicdevelopment.gov.yk.ca/
Department of Education	http://www.education.gov.yk.ca/
Department of Environment	http://www.env.gov.yk.ca/
Department of Energy, Mines and Resources	http://www.emr.gov.yk.ca/
Department of Health and Social Services	http://www.hss.gov.yk.ca/
Department of Highways and Public Works	http://www.hpw.gov.yk.ca/
Department of Tourism and Culture	http://www.tc.gov.yk.ca/
Office of the Science Advisor	http://www.eco.gov.yk.ca/science/index.html
Science Community of Practice	http://www.eco.gov.yk.ca/science/scope.html
Yukon Geological Survey	http://www.geology.gov.yk.ca/

Federal government

Canadian Northern Economic Development Agency (CANNOR)	http://www.cannor.gc.ca/eng/1351104567432/1351104589057
Department of Environment and Climate Change Canada	https://www.ec.gc.ca/cc/
Department of Natural Resources Canada e.g. Geo-Mapping for Energy and Minerals Program, Polar Continental Shelf Program	http://www.nrcan.gc.ca/home
Department of Fisheries and Oceans	http://www.dfo-mpo.gc.ca/index-eng.htm



Department of Indigenous Affairs and Northern Development Canada	https://www.aadnc-aandc.gc.ca/eng/1100100010002/1100100010021
Health Canada	http://www.hc-sc.gc.ca/index-eng.php
Polar Knowledge Canada	https://www.canada.ca/en/polar-knowledge.html

International

Alaska Department of Fish and Game	http://www.adfg.alaska.gov/index.cfm?adfg=home.main
NASA Arctic Boreal Vulnerability Experiment (ABOVE)	http://above.nasa.gov/
Northern Boreal Landscape Conservation Cooperative (US Fish and Wildlife Service)	http://nwblcc.org/
US Array	http://www.usarray.org/Alaska
US Geological Survey	https://www.usgs.gov/

Individuals

Elders	Recreationalists	Local science practitioners	Wilderness tourism operators
Farmers	Tourists	Local researchers	Youth
Outfitters	Trappers	Small business owners	Etc.

