



Compiled abstracts

CMI Annual Meeting 2012

May 1, 2012

Prestige Lakeside Resort, Nelson BC

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Climate Change in the West Kootenays—What's coming?

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Climate change is with us, and is having visible effects on forests in the West Kootenay today. Future changes are predicted to be significant in terms of increasing temperatures and reduced moisture—particularly in summer. These changes have the potential to cause significant shifts in the ecosystems we are familiar with today, and in how they currently function.

A recently completed two year integrated Vulnerability Assessment in the West Kootenay region of British Columbia was aimed at exploring these future changes. The main goals of the assessment were to increase knowledge about regional climate change and ecological resilience, and enhance the capacity of forest managers to adapt to the challenges of climate change.

In this talk, we presented results from the work that summarizes:

- a range of potential climate futures for the West Kootenay Region, and
- the potential implications for current ecosystems based on these potential climate futures.

This team-based project has four primary members: Rachel Holt, Greg Utzig, Heather Pinnell, and Cindy Pearce.

Results and information about the project are available at:
www.kootenayresilience.org

Biographical notes

Rachel Holt, P.h.D., R.P.Bio. Rachel is a biologist with a range of experience applying conservation biology principles to land management issues in B.C. As principal of Veridian Ecological Consulting in Nelson, Rachel has worked for a wide variety of clients over the last 12 years, primarily government, ENGOs and First Nations. She has been involved in developing ecosystem based management standards, and also has extensive experience managing larger strategic projects. Recently, Rachel developed a Climate Change Impact Assessment for BC, undertook Condition Analyses on various areas within the province (Cowichan, Haida Gwaii, Central and North Coast), and worked as part of various multi-stakeholder teams to develop land management standards (EBM / FSC).

Gregory Utzig, M.Sc., P.Ag. Greg is a conservation ecologist and land use planning consultant with over 35 years of experience in environmental impact assessment, terrain and vegetation mapping, watershed analysis, habitat inventory and modeling, and a wide range of activities related to forest management and biodiversity protection. At present his focus is on adapting biodiversity conservation measures to the realities of rapid climate change. He has worked with a variety of clients, including government agencies, non-governmental organizations and the forest industry, both in British Columbia and southern Africa. Greg has degrees from the Universities of Wisconsin and British Columbia in Geology and Forest Soils.

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Forest Carbon Management at Selkirk College

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Co-authors:

Ian Parfitt, Jonathan Buttle, Justin Robinson, Suzanne Ector, Peter Schroder, Brian Port, Scott Howard, and Candice Randle, all of Selkirk College.

With the recognition that human activities, most notably carbon emissions, have contributed to climate change, there has been increasing global interest in creating mechanisms to allow valuation on sequestered carbon. In British Columbia, these tools include a revenue neutral carbon tax, and a variety of regulations and targets to promote the reduction of greenhouse gases. Of particular relevance to BC is the ability to create a revenue stream from stored forest carbon due to changes in status quo management practices. Land managers now have the potential to offset other's emissions by selling the title to the additional stored resources they have, or will have, captured on their land base.

However, few people have enough knowledge to get started, and many stakeholders have questions. Who is eligible? How do you measure carbon in a forest? What inventory data do you need? What model do you use to estimate carbon stored over time? Are there local experts you can talk with? To help answer these and other questions, researchers at the Selkirk Geospatial Research Centre have initiated a number of forest carbon management projects and have linked these to a website. The Selkirk College Carbon Portal is a community place where members of the public, researchers, land managers, consultants, and students can share information about forest carbon management. In this site we hope to interactively provide information on carbon economics, decision support tools, and an open case study of developing a forest carbon offset project on our College land base. In this presentation Brendan highlighted the recent work that faculty and students have done in the field and lab to start developing this portal.

Information Portal for Forest Carbon Management Initiatives
<http://fcm.sgrc.selkirk.ca/>

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Mine reclamation in British Columbia: Enhancing biodiversity on drastically disturbed sites

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Effective restoration is an integral part of mine development. Without restoration that returns the ecological goods, services and functions to the disturbed lands, social license is lost and the ability to open new mines is constrained. Biodiversity is an essential part of effective restoration. Biodiversity brings resilience and sustainability. This paper describes some simple, cost-effective techniques that can be used to restore drastically disturbed sites. These are based on the application of natural processes. For instance, establishment of pioneering species such as alder (*Alnus* spp.) initiates successional processes that will build fertile soils on non-fertile sites and facilitate the development of later successional species without the need for costly planting. Similarly, recognition that willows (*Salix* spp.) and poplars (*Populus* spp.) establish in the wet mud at the margins of water allows the creation of sites that develop puddles where the seeds of these species can land, germinate and grow without the need for planting these species. Piles of rock or woody debris can be used to provide perches for birds that then deposit the seeds of fruit species the birds have eaten allowing these fruit-bearing species to grow. The flowers of these species attract insects that then attract insect eating birds, a trophic cascade that starts with a pile of rock or brush. Natural processes can be used to create diverse ecosystems on drastically disturbed sites.

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Identifying potential remaining Western Screech-Owl habitat on Kootenay Lake

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Here in the Kootenays we are privileged to have a small population of Western Screech-Owl known as *Megascops kennicottii macfarlanei*. This subspecies is federally listed as endangered and provincially as red-listed. The project's aim was to map potential areas of Western Screech-Owl habitat around the Kootenay Lake, so that future biologists could use call playback surveys to locate owls. Potentially suitable habitat areas were identified by conducting a ground survey to locate suitable combinations of cottonwoods in the riparian zones with Douglas-fir, western redcedar, and western hemlock trees in the adjacent upland areas. These areas were then analyzed against landownership using a Geographic Information System software program (ArcMap ESRI) The results indicated that there is very little available habitat; approximately 13.6 square kilometres in total; with 69.5% of this falling onto private land.

Nesting habitat does not appear to be readily available and legal protection on private land is difficult to achieve, so public outreach and co-operation is vital for the survival of this species.

This project was carried out under Section 5.5 heading: "Sensitive Habitats for Fish And Wildlife" of the Kootenay Lake Stewardship Plan Scoping Study, and was a combined IEP 251 and IEP 271 applied research project for the Integrated Environmental Planning Technologies Program, 2012, at Selkirk College in Castlegar.

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Adventures in grassland reclamation in the Rocky Mountain Trench

Michelle Heinz

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Clear Sky Meditation and Study Foundation is a newcomer to the Rocky Mountain Trench and local Cranbrook community. A conscious decision in 2006 to learn about the precious ecology of the area, including the importance of wildlife corridors and wildlife, led Clear Sky to approach two local experts to develop and host two workshops. Learning together, they targeted private landowners and local community members in 2010 and 2011. Although their scientific knowledge and funds to hire expertise are small, their interest has led them to want to find ways that they can increase their knowledge and

understandings, and also that of others who share the interest. Clear Sky has found that community outreach is important to continue to offer quality learning opportunities, to provide hands-on education, as well as to magnetize and empower non-experts to participate in discovery and support of the ecological needs of their locale and region.

Currently Clear Sky Center is exploring how they can continue to raise awareness about grasslands restoration and to engage stakeholders (including youth), to undertake initiatives which support and increase the local biodiversity of local flora and fauna. For example, it seems that few people are aware of and appreciate that the Bull River Valley which Clear Sky lies within is a part of the Crown of the Continent. Raising awareness through outreach and programming activities is one way to support all the great ecological work that many organizations have done to date such as the Rocky Mountain Trench Society, East Kootenay Conservation Program, BC Grasslands Conservation Council, The Land Conservancy, Nature Conservancy of Canada, and many more. Clear Sky believes that non-experts have an important role to play in ecology—particularly since non-experts comprise the vast majority of people on the planet. Involving the broader community, we reason, can help trigger a healthy domino effect in our grasslands region; particularly valuable since grasslands comprise less than 1% of BC's land base but are home to more than 30% of its at-risk species. Clear Sky envisages that together we can increase the return on investment of all of our limited time, money, and energy, and bring the joys of community and teamwork to the mix while increasing our education, understanding, and participation.

Michelle Heinz background

Michelle is from New Zealand and moved to the Bull River Valley in 2008. With the CVO and the grasslands project founder, Catherine Pawasarat, Michelle continues to develop ecological educational programs at Clear Sky. Current projects include 3 educational plots on the property:

1. A Grasslands Reclamation Plot created in 2010;
2. A 1 acre Demonstration Agricultural Food Forest incorporating native plants and grasses currently in the design process with approved funding; and
3. A 5-10 acre habitat restoration plot to begin in the winter of 2013.

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Whitebark Pine restoration trial in the south Selkirk Mountains

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Whitebark pine is a keystone species of high elevation forests in British Columbia that is experiencing rapid decline mainly due to white pine blister rust and mountain pine beetle. White pine blister rust is a non-native disease that heavily infects whitebark pine stands, threatening the survival of the species.

In the summer of 2011, a whitebark pine restoration trial was initiated in the West Kootenays of BC. During July and early August, 41 healthy cone-bearing whitebark pine trees were located on seven mountaintops in the Darkwoods conservation property and in the surrounding areas south of Nelson. To protect immature cones from harvest by wildlife, cages were placed over cone bearing branches. In October, when cones were mature, the cages were removed and cones collected. This produced approximately 40,000 seeds, which were split into four sets of 10,000 seeds each. The first set was sent to be grown in a greenhouse and tested for resistance to blister rust. Sets two and three were planted directly in the ground at five restoration sites within Darkwoods and Harrop-Procter Community Forest. Set two was placed under a 48-hour running water soak before being planted while the third was planted without any treatment. The final set will be planted at the same restoration sites in the spring of 2012 after undergoing further stratification this winter. Germination rates and survival of seedlings in the greenhouse can then be compared to the three sets that were directly seeded following the three different stratification methods.

The 2011 field activities were intended to be a pilot project, and will be expanded throughout the West Kootenays in 2012. Depending on the cone crop, seeds will be collected from more healthy trees over a larger geographical area to be screened for blister rust resistance, and used in restoration trials. Due to the patchy distribution of whitebark in the West Kootenays, we are hoping to have help from the public in locating good stands for further investigation. Spring of 2012 will see the launch of a publicity campaign to inform and encourage people who are out hiking, biking, and skiing in the mountains to keep their eyes open for whitebark pine, and report their sightings.

For updates on the 2012 restoration activities you can follow the
West Kootenay Whitebark Restoration blog at

<http://kootenaywhitebark.blogspot.ca/>

Adrian Leslie background

Adrian has been working with whitebark pine in the mountains of BC and Alberta since 2003. During this time, he worked for Parks Canada and Selkirk College on whitebark pine research, and did his undergraduate thesis on collecting and growing whitebark pine seeds for restoration. Last year he completed a M.Sc. on *Armillaria* root rot in managed forests and then established White Bark Consulting to focus on terrestrial ecosystem research and restoration. For this project, he received funding from Columbia Basin Trust and partnered with the Nature Conservancy of Canada, Selkirk College, and Harrop-Procter Community Forest.

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Is collaboration an effective tool for environmental management?

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Resource and environmental managers are increasingly asked to deliver “sustainable” solutions. Collaborative governance is a strategy for government and the public to work together on issues such as resource management. Generally collaborative governance structures occur within a regulatory framework which defines the level of decision authority.

What is collaborative governance? Some definitions:

1. To **make decisions** and **take actions** that affect a broad range of often complex environmental, economic, and social issues.
2. A way for those vested with decision-making authority to work with those affected by the decision.

In fact, public, private, and government do collaborate and these partnerships are successful. Government and industry have collaborated to protect the environment and create new jobs. The public has worked long and hard with government to provide social and cultural benefits.

These partnerships are not new. What is new is that these partnerships are becoming more collaborative. Collaboration is more than just working together, it is also assertive. When well-managed participants feel free to present very different opinions, collaboration is also cooperative. Participants bring technical and expert knowledge as well as local or traditional knowledge, values, and beliefs.

This collective expertise helps to inform the decisions that will be made. The spirit of empowerment is playing a role in how environmental and resource use concerns are governed. I see a shift in the role of these collaborative partnerships towards more responsible and accountable decision-making. Members of the public and other stakeholders are playing a greater role as we move beyond public consultation and towards collaborative governance.

Collaborative governance is best understood by exploring who, why, what, and how these cooperative and assertive problem solving strategies develop.

Why?

- Competing interests
- Multiple providers
- Climate change
- Conservation
- Public awareness

Who?

Government, business, industry, First Nations, stakeholders, other interested parties and concerned citizens.

What?

- Communicate
- Solve problems
- Conserve resources
- Manage resources
- Conduct research
- Educate
- Advise government

How?

- Knowledgeable consultant with expertise in creating buy-in and building a functional stakeholder group
- Regional focus rather than an individual
- Equitable participation
- Flexibility to consider wide range of issues
- Provision of useful tools for public outreach and involvement of stakeholders
- Pooled funding
- Regulatory framework

Challenges to collaborative governance can be:

- Conflict
- Group relationships
- Focus
- Representation
- Decision authority

Benefits to collaborative governance:

- Understand issues & perspectives

- Synergies to solve problems

The future:

When sailing into a contrary wind, we may have to tack several times...

Fortune de Felice 1744

Kathy Porter background

Kathy Porter, Senior Facilitator at Summit Environmental has over thirty years of experience with public processes including stakeholder engagement and participatory research. She had the opportunity to work with Buzz Holling and Carl Walters at the International Institute for Applied Systems Analysis in Austria. Early developers of computer scenario planning tools to inform decision-making, she facilitated some of their early forays into stakeholder engagement. Kathy has worked in the resource sector to guide strategic level planning for community development, environmental management, transportation, and resource use (mining, oil & gas, fisheries). Her experience in collaboration includes facilitating several multi-stakeholder, multi-disciplinary consensus processes. Some examples include: the Terrestrial Ecosystems Management Framework for the Alberta oil sands; the Organic Seafood Certification Guidelines for farm and wild seafood producers; and the Windows of Opportunity to address inner city poverty. Kathy is a Charter Mediator with extensive experience in conflict management and alternative dispute resolution. She has conducted mediations between water users and suppliers, international oil companies and ENGOs, and between labour and management in the seafood industry. She is a graduate of UBC, SFU, and the Justice Institute. She is a member in good standing with the BC Arbitration and Mediation Institute and Mediate BC.

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Posters

A trail system to link Selkirk College to downtown Castlegar

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The City of Castlegar has a definite disconnection between its two business centres. The recently developed official community plan states that Castlegar wants to maintain the downtown district as the “heart” of the city. Development in the south end (“uptown”) is on the increase with the north end “downtown” being slowly cast into the shadow of urban sprawl.

The recent addition of the Millennium Trail in the north end of Castlegar has provided the community with green space that can be enjoyed by residents and visitors alike. The trails and park setting provide numerous recreational opportunities. The central business district is accessed by one main “strip” on Columbia Avenue. This option is noisy, unhealthy due to hydrocarbon emissions and remains busy for the greater portion of the day.

A trail system traversing the west bank of the Columbia River from the community complex toward the existing Zuckenburg Island trail system and eventually connecting to the Millennium walkway would provide not only enjoyable travel between the two business districts, it would stimulate local small business, promote health activity, and expand cultural aspects in the “heart” of downtown Castlegar.

Further plans to develop a foot traffic bridge spanning the east and west banks of the Columbia River would create a much needed link from our celebrated Selkirk Community College to the downtown commercial district in the “heart” of Castlegar.

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Kootenay Lake Partnership

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The Kootenay Lake Partnership is a multi-stakeholder initiative developed to support a productive and healthy Kootenay Lake ecosystem into the future. The project envisions balanced land and water uses that sustain environmental, community, recreational, aboriginal, cultural, traditional, and aesthetic values. The mission of the Partnership is to share information and optimize available resources, in order to develop integrated, collaborative approaches to lake management.

For more information, visit: <http://www.kootenaylakepartnership.com/>

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Revisions to BEC zones

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Contact Deb for more information.

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Identifying potential remaining Western Screech-Owl habitat on Kootenay Lake

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Cal brought along a poster to compliment her talk.

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