Forum Summary
CMI Annual Researchers' Forum & Annual General Meeting

May 13, 2016

United Church Heritage Hall, Kaslo BC

Every year CMI members get together to provide updates on their projects, catch up on each others' news, learn about what's happening in the different parts of our region, and have a few field trips. It's an informal atmosphere and non-CMI members are always welcome. The forum includes our Annual General Meeting for the previous calendar year (in this case, the AGM was for 2015).

This year twenty six people gathered at Kaslo's United Church heritage Hall. We heard eight talks, viewed four posters, and participated in two field trip options. Although our attendance was lower than we expected, the calibre of the talks, posters and field trips was excellent.

Thank you to **Hamill Creek Timber** Homes for sponsoring the coffee break at this gathering!

PHOTO: Carrie Nadeau

Columbia Mountains Institute of Applied Ecology

Box 2568 Revelstoke BC
Phone/ Fax 250-837-9311
office@cmiae.org ~ www.cmiae.org

Table of contents

Posters

Field trips

Oral presentations

1. An introduction to the Columbia Basin Watershed Network Science Advisory Committee

Dr. Tara Clapp, Columbia Basin Watershed Network
cbwn.coordinator@gmail.com

Dr. Tara Lynne Clapp introduced the newly established Science Advisory Committee and its work on a Science Advisors Directory. A brief summary of the history and purposes of the Columbia Basin Watershed Network were presented. An explanation was provided on the new approach taken for 'science advising' to strengthen the relationships and the data in the network, for use in understanding issues and problem-solving.

Biographical notes

Tara brings her expertise in community development and environmental collaboration to the CBWN. Recently, Tara has been working with nonprofit groups in the Basin to help build the ability to reach goals using tools such as strategic planning and organizational good practice. … She was a faculty member at Iowa State University in Community and Regional Planning for 10 years, and served on the Iowa Environmental Council, a statewide environmental network that focuses on water policy. Tara has a Masters in Environmental Design (Planning and Environmental Management) from the University of Calgary, and a PhD in Planning (Environment) from the University of Southern California. Tara and her husband live near Kaslo, and love to be out on the water or out hiking.

2. Understanding and predicting huckleberry patches, grizzly bears most important food in the southeast British Columbia

Dr. Michael Proctor, Birchdale Ecological Ltd.
mproctor@netidea.com

Co-contributors of work presented:
Michel Proctor, Birchdale Ecological Ltd., Kaslo BC
Clayton Lamb, *Department of Biological Sciences, University of Alberta, Edmonton, AB*
Grant MacHutchon, Nelson BC
Wayne Kasworm, US Fish and Wildlife Service, Libby MT
Chris Servheen, US Fish and Wildlife Service, College of Forestry and Conservation, University of Montana, Missoula, MT

Huckleberries (Vaccinium sp.) are grizzly bears' primary hyperphagia food resource in many interior mountain populations of western North America where these berries often fuel the reproductive engine. Huckleberries in our Canada-USA trans-border study region are of particular importance as animal-based resources are limited. However, little is known about huckleberry abundance, distribution, trend, or their influence on the conservation status of many grizzly bear populations. Because grizzly bear population viability is driven by bottom-up (food) and top-down (mortality) forces, we need to better understand the influence of huckleberries in grizzly bear status and management, particularly the interaction between the region's huckleberry crop and forestry activities such as timber harvest and fire suppression.

Our project goal was to predict huckleberry patch presence and distribution and the ecological conditions that foster them across the South Selkirk and Purcell Mountains in the trans-border Canada-USA region. Using 10 years of GPS telemetry from ~60 bears we located huckleberry patches by visiting habitat-use clusters during the huckleberry season. Over 2 years, we found 277 of 375 sites we visited met our criteria of being a huckleberry patch important to bears. We used the ecological characteristics at these sites in a Boosted Regression Tree analysis comparing them to a set of random locations where huckleberry plants were present but not necessarily forming a patch. Ecological conditions that favored huckleberry patches important to bears were characterised by cool, dry sites with low forest canopy cover, well-drained soil with lower proportions of coarse fragments, and an eastward aspect with a mid-range slope in areas with higher precipitation as snow. The Area Under the Receiver Operating Characteristic Curve was 0.86 indicating our model did a good job of predicting our suite of huckleberry patches while not predicting them where they didn't occur. Our identification of important huckleberry patches across 2 mountain ranges will inform land-use management activities to ensure minimal disruption and a measure of habitat security where bears access these important sites. In subsequent analyses, we will assess the role of timber harvest on huckleberry patch presence and make recommendations for post-harvest silvaculture activities that might promote huckleberries on appropriate sites.

Biographical Notes

Michael Proctor has been researching grizzly bear ecology in the Purcell and Selkirk Mountains since 1995. He received a BSc from the University of Brutish Columbia in 1995 and a PhD in grizzly bear ecology from the University of Calgary in 2002. He started the Trans-border Grizzly Bear Project in 2004 and partners with the US Fish & Wildlife Service to research and implement conservation management of grizzly bears in the internationally Threatened South Selkirk and Yahk grizzly bear populations. He uses genetic analyses and GPS radio telemetry to investigate landscape ecology, population fragmentation, inter-population connectivity, habitat use, movement ecology, dispersal, predicting huckleberry patches important to bears, patterns of mortality, bottom up - top down population influences, and the conservation management of small populations. He occasionally works internationally. He is the Vice president of the International Association for Bear Research and Management and a Scientific Advisor to the International Union for Conservation of Nature (IUCN) Bear Specialist Group. He has lived in the Kaslo area on the shores of Kootenay Lake for 30 years.

3. Going, going, gone. Range contraction of the South Monashee Caribou

Harry van Oort., MSc., Cooper Beauchesne and Associates Ltd.
hvanoort@cooperbeauchesne.com

Co-contributors of work presented:
Harry van Oort, Cooper Beauchesne and Associates Ltd., Revelstoke BC
Robin Laubman, Splatsin Development Coorporation, Enderby, BC

Caribou populations are declining throughout North America, but nowhere is this more evident that in the Columbia Mountains. Caribou populations in southeastern BC are a distinct ecotype, distinguished from other woodland caribou by their late winter foraging ecology. In 2005, 18 remnant populations of southern mountain caribou were recognized, and two of these were already extirpated. Since 2005, extirpation has threatened several of the remaining 16 populations, including the South Monashee herd near Revelstoke. The South Monashee caribou range has contracted considerably over time. The shrinking range is mapped and traced with references to historic records from the 1800's through to March, 2016. These records tell a story of rapidly changed world, and reinforce that current perceptions about species distributions are skewed by recent experience. In 2016, we conducted a census of this 'herd' which was observed to consist of one animal. As of 2016, it seems that there are now only 15 viable populations left.

Biographical notes

Harry lives in Revelstoke and works as a wildlife biologist throughout the Columbia Mountains. Prior to 2009, Harry became intimately familiar with the "Big Bend" country north of Revelstoke, while working on the caribou project initiated by Dr. Bruce McLellan, one of the founding members of CMI. To the south one of his favourite projects has been attempting to mitigate reservoir impacts on loons at the Whatshan Reservoir. Currently Harry is employed by Cooper Beauchesne and Associates Ltd. and is immersed in other reservoir related research regarding the productivity of the avian community and habitat utilization of migratory waterfowl and shorebirds in the Kinbasket and Arrow Lakes Reservoirs.

Harry van Oort is currently the Treasurer for the Columbia Mountains Institute of Applied Ecology.

4. Climate change in the Southern Selkirks: Trends and projections

Dr. Mel Reasoner, Climate Resilience Strategies
melreasoner5@gmail.com

The reconstruction of climate history over the last century and the compilation of projections of future climate change are both important to consider for managing built and natural systems in the Southern Selkirks. Over the last century, mean annual temperature based on the average of three climate station records (Creston, Kaslo and Castlegar) has increased by 1.7 ^{o}C, which is slightly less than double the global rate of increase over the same time interval. Warming occurred in all seasons over the last century but was highest in winter. Over the last 50 years, mean annual temperature in the Southern Selkirks has increased at a rate of 2.6 ^{o}C/century, which is a substantial increase over the century-scale trend. The rate of warming during the last 50 years was highest in spring (3.1 ^{o}C/century) followed by summer winter and fall at 2.5, 2.1 and 2.0 ^{o}C/century respectively.

Mean annual precipitation over the last ca. 100 years increased by approximately 43% and much of this increase occurred between ca. 1945 and 1970. Over the last century, winter, spring, summer and autumn precipitation increased at rates of 23, 147, 66 and 55 mm/century respectively. Since ca. 1965, the rate of increase in mean annual precipitation slowed which reflects declining rates of precipitation in both summer and winter. Spring precipitation increased at a rate of 147 mm/century during the last ca. 50 years which was the only statistically robust trend in seasonal precipitation over this interval.

The mean annual temperature in the Southern Selkirks is anticipated to increase by 1.9 ^{o}C above the 1961-1990 baseline. This increase in temperature is expected to occur with an increase in mean annual precipitation of approximately 5%. Mean summer temperature is projected to increase by 2.4 ^{o}C and is expected to be accompanied by a decrease in precipitation of about 8%. Winter, Spring and Fall temperatures are projected to increase between 1.5 and 1.8 ^{o}C with increases in precipitation of 7 % to 9%.

The increase in mean annual temperature represents a shift of more than two standard deviations above the 20th century mean temperature for the region. In other words, the mean annual temperature of the 2050s in the Southern Selkirks will be similar to the warmest 2% of 20th century climate. When compared with the probability distribution of 20th century climate in the region, a shift in mean annual temperature of magnitude is

substantial. However, this projected increase in mean annual temperature is consistent with the observed increase in temperature in the region over the last 50 years.

Biographical notes

Mel Reasoner is an earth scientist with a specialization in researching past climate change in western North America and significant experience with the compilation of regional climate model information and analysis of historical climate timeseries. Mel has been communicating the results of his research and general climate science to a broad range of audiences for more than 20 years.

5. Rethinking ecosections, landscapes and biogeoclimatic classification in the face of climate change

Greg Utzig, P.Ag., Kutenai Nature Investigations Ltd.
g13utzig@telus.net
www.westkootenayresilience.org

Physiography, climate and vegetation patterns have traditionally been used to describe and classify the landscape diversity of British Columbia. In the 1960s Holland's classic "Landforms of British Columbia – A Physiographic Outline" became the standard reference for describing regional landscapes of the province – identifying key features such as mountain ranges, platueas and plains. In the 1960s and 1970s Krajina and his students developed the Biogeoclimatic Ecosystem Classification (BEC) system for BC, which focused on the distribution of climax vegetation and soil development as surrogates for regional climate. In the 1980s Demarchi and others developed the Ecoregional Classication (EC) system that combined elements of both physiography and vegation zonation.

Over the past few decades, most biodiversity conservation work has utilized elements of both BEC and EC systems, especially the biogeoclimatic subzone/variant and ecosection levels of classification respectively. They have played an important role in designing our conservation network as a mechanism for measuring coarse filter ecosystem representation in the Protected Areas Strategy in the 1990s and the design of old growth management areas.

Both BEC and EC implicitly assume that regional climate has been, and will continue to be relatively constant – or at least in equilibrium, varying within definable limits. In the coming decades, as climate disruption continues to proceed, ecosystems will disaggregate and new combinations of species will evolve that are adapted to the emerging climate envelopes. These ecosystem alterations will be the result of various factors such as the unique environmental tolerances of individual species, changing predator/prey relationships and evolving pest/host interactions. Both the BEC system and more detailed classification levels of the EC system will have to be adapted to the changing climate, and associated changes in vegetation patterns.

An alternative for landscape classification is to abandon vegetation, soil development and climate differentiating components of a classification system, and simply rely on "enduring features", physical components of the landscape that are not affected by climate (e.g., bedrock type, landform, slope position, parent material texture). The ***Regional Landscape (RL)*** is proposed as a potential landscape classification unit to

replace BEC subzone/variants and Ecosections. While the distribution of RLs is based on the present distribution of regional climate, the boundaries of individual RLs are mainly defined by enduring features that control climatic variables and associated vegetation zonation, rather than climatic variables and the distribution of vegetation species at any given time. The existence of RLs does not require an assumption of a stable climate or persistent zonal climax vegetation.

Due to the complex physigraphy of BC, regional and local climates are basically the result of complex seasonal interactions between air masses moving across the province and major mountain ranges. Pacific air masses cross from west to east bringing moist air off the Pacific Ocean, while arctic air masses occasionally move south bring cold winter outbreaks, and continental air masses occasionally enter from the east and southeast bringing cold air in the winter and hot dry air in the summer. The classic illustration is the contrast between wet coastal climates and dry rainshadow of the interior plateau and Okanagan valley, both resulting from interactions between Pacific air masses and the Coast Mountains.

Using macro-topography and existing distributions of regional climate as represented by elevational sequences of BEC units, southeastern BC has been mapped into 22 RLs. It is assumed that individual RL areas have relatively unique and homogeneous climates today due to their unique and consistent elevational sequences of BEC units. The topographic features occurring within them and/or surrounding them ensure that interactions with seasonal air masses are relatively consistent year to year.

The implicit assumption is that because the major topographic features have not changed, each RL will still maintain relatively homogeneous climate within its boundary as it responds to climate change, even as the actual climate within each RL changes. Boundaries defined by major mountain ranges (e.g, the spine of the Purcells) will likely be fixed, whereas gradational boundaries, typically on plateaus or across major valley systems may shift somewhat with changing patterns of air masses.

The RL system can be adapted at multiple scales and for multiple end-uses. For broader more regional applications the RLs can be grouped into Subregional and Regional Climatic Regions. For finer units, rather than using BEC units to differentiate elevational bands of climate, it has been proposed to use selected elevation breaks. For southeastern BC, 500m bands have been utilized, as they generally approximate present BEC unit breaks. For finer subdivisions, site level enduring features can be utilized as differentiating characteristics such as bedrock composition, landform, parent material texture, aspect, slope position and seepage presence/absence (similar to the lowest levels of BEC and EC utilize today).

Recently, RLs have been used as analysis units for climate change vulnerability assessments in the West Kootenays. They have also been used for representation analysis associated with climate change conservation planning. By making minor boundary adjustments of RLs and Climate Subregions to match watershed boundaries, RLs have also been adapted to define Hydrologic Regions for assessing past and future trends in streamflow. Development of the RL classification system is ongoing.

Biographical notes

Greg Utzig (M.Sc., P.Ag.) is a conservation ecologist and land use planning consultant based in Nelson, British Columbia. He has over 40 years of experience in environmental impact assessment, watershed analysis, terrain and vegetation mapping, habitat inventory and modeling, and a wide range of activities related to forest management and biodiversity protection. In recent years, Greg's focus has shifted to climate change and conservation planning. With other Kootenay researchers he completed a project in 2012 for the BC Future Forest Ecosystems Scientific Council (FFESC). The report examined potential climate change impacts and forest ecosystem resilience in the West Kootenays. Currently he is promoting climate change awareness and developing a strategic conservation plan for the Kootenays that emphasizes ecosystem resilience to climate change. Whenever he can avoid his computer, he spends his time on Kootenay Lake or in the surrounding mountains.

6. Snow forecasting levels and precipitation in the Columbia Basin with a climate change lens

Dr. Mindy Brugman, Environment and Climate Change Canada, National Coastal and Mountain Meteorological Lab
mindy.brugman@canada.ca

The level where snow accumulates lies below the freezing level, and often determines where the most critical weather impacts occur. For this study, a new snow level algorithm was developed and compared to existing guidance to improve weather forecasts. This new algorithm considers melting snow latent heat transfers, precipitation rate, and the vertical energy available to melt the snow. The snow level used here is defined as the lowest elevation where snow accumulates on the ground or trees, and visibilities are reduced in snow. Snow level validation data was developed for British Columbia, Yukon and Alberta between 2013 to 2016 using a variety of observation types and computations based on the Canadian Meteorological operational forecast models.

Results show that the observed snow level can lie hundreds of metres to about a kilometer or more below the freezing level. This deep isothermal melting layer is often seen in the Columbia Mountains for example, where snow levels during heavy precipitation can begin in light snow mixed with rain near a freezing level at Rogers pass (1300 msl) and quickly drop to the valley bottom near the town of Revelstoke (near 450 msl) as the storm intensifies and snowfall rates increase. The heaviest snowfall rates are often observed near the snow level, and physically that makes sense due to increased instability from the snow melt induced cooling. Weather forecasters have been concerned because the snow level guidance based on freezing level offset is too high, and often needs adjustment especially for major storm events. This snow level forecast is very sensitive to precipitation rate, which differs considerably between numerical models depending on the how hydrometeors are physically modeled.

Transportation corridors and avalanche safety require accurate snow level forecasting, as well as water resource and flood forecasting. Also, wildlife habitat is closely tied to the snow level in mountainous environments, especially for the endangered mountain caribou. In this paper this new algorithm is described, and results shown to demonstrate how this improves snow level forecasts in western Canada. Current climate trends over western Canada are for warming with more intense precipitation. The sensitivity of snow level to temperature and precipitation changes will be examined with a climate change lens.

Biographical notes

Dr. Mindy Brugman is a Senior Research and Development Meteorologist in the Coastal and Mountain Meteorology National Laboratory, Environment and Climate Change Canada (CMML, PSOD-West, MSC-ECCC) in Vancouver, British Columbia. She obtained her BS in Atmospheric Sciences at University of Washington, and PhD in Geological and Planetary Sciences at Cal Tech in Pasadena, California. She has been a visiting professor, Research Scientist, Post Doc and adjunct Professor in Canada, US, Mexico and Switzerland. She has researched and published on water, glaciers, snow, climate, isotopic geochemistry, remote sensing, weather and natural hazard related topics. Her current focus is on addressing federal government mandates, which includes supporting timely and effective weather forecasts. Recent projects include improving snow level forecasting and understanding of major cyclones and heavy precipitation, advancing atmospheric profiling methods, and evaluating processes, trends and fluctuations. Her home is in Revelstoke, where she has been an avid supporter of the Columbia River basin-wide environmental efforts.

7. A preliminary investigation of freshwater mussels in the Canadian Columbia River

Michael Zimmer, MSc., R.P.Bio, Okanagan Nation Alliance
mzimmer@syilx.org

Freshwater mussels are fascinating creatures that play an important role in aquatic ecosystems. They are a food source for many native fishes, such as White Sturgeon (Acipenser transmontanus), shore birds, and mammals such as muskrats and river otters. Mussels are excellent water filters and, because of their longevity, are nature's natural biological controls. Despite their importance, very little information exists related to their distribution, species composition, and life history in the Canadian portion of the Columbia River. In January 2016 we initiated a collaborative, Tri-Nation, Columbia River basin-wide investigation to determine location, species composition, and densities of mussels. Public outreach meetings with community members, conservation groups, and other stakeholders have assisted us with gathering regional information and assisted with sampling site selection. To date, sampling has involved georeferenced shoreline walks in Arrow Lakes Reservoir and along the Columbia River downstream of Hugh Keenleyside Dam. We have identified three species including the Winged Floater (Anodonta nuttaliana), Western/Oregon floater (A. kennerlyi/ oregonensis) and Western Pearlshell (Margaritifera falcata). In 2016, we plan to expand our surveys to include the Kinbasket Reservoir and Kootenay River watershed, and smaller tributaries and headwater lakes, utilizing both bucket and snorkel surveys. As our work continues, we also hope to investigate species-specific mussel linkages with finned-fishes.

Biographical Notes

Michael has been a fisheries biologist for the Okanagan Nation Alliance, in the Columbia Region of the *Syilx* Territory since 2012. Michael has worked in the Kootenay Region of the Columbia River watershed since 1997, and has been involved with fish habitat enhancement projects since 1987. Michael currently focusses on hydro operational impacts on fish habitat and production in the Columbia River. Michael is also involved with transboundary First Nations, Bands and Tribes along the Columbia River working towards restoring salmon access throughout their historic range.

8. New Biogeoclimatic Ecosystem Classiication (BEC) for the South-Central Columbia Mountains: it's done!

Audrey Ehman, Ministry of Forests, Lands and Natural Resource Operations
audrey.ehman@gov.bc.ca

Co-contributors of work presented:
Deb MacKillop, MSc., Ministry of Forests, Lands and Natural Resource Operations
Deb.mackillop@gov.bc.ca

After many years of working on updated biogeoclimatic ecosystem classification and mapping, the first new field guide for southeast BC is finally done. Land Management Handbook 70 is in the final publication stages (layout and proof reading). This guide extends from the Shuswap through the central Monashees, and into the central and southern Selkirk and Purcell Mountains. Three more volumes are planned to cover the remainder of southeast British Columbia. These are partially written with release of the next two expected within a year. Volume 2 will cover the East Kootenay – Rocky Mountain Trench and Volume 3 will address the Boundary - Okanagan Highlands – Southern Monashee. A fourth volume for the North Columbia Mountains will follow.

The field guides include new biogeoclimatic subzones and variants as well as new site series for forested ecosystems. Non-forested ecosystem classification is also addressed, including site units for wetlands, flood ecosystems, grasslands and brushlands, avalanche features, and rock/talus. Release of new BEC will have implications for many management applications including: tree species selection; CDC ecosystems at risk; climate change adaptation tools; wildlife habitat models; forest growth and yield modelling; and many more.

Biographical notes

Audrey Ehman works as a research technician in the FLNR Ecology Program. She has been working on BEC updates since 2007. Audrey is a Professional Articling Agrologist.

Deb MacKillop has been the Research Ecologist for Kootenay Boundary Region since 2007. Her main work focuses are: revising and updating the biogeoclimatic ecosystem classification (BEC) system for southeast BC; climate change adaptation; and old growth forests. She is a Registered Professional Forester.

Posters

9. Kootenay Bank Swallow Survey: Assessing and monitoring regional numbers of a nationally threatened species

Janice Arndt, West Kootenay Naturalists' Association
jarndt@telus.net

The Bank Swallow was designated as threatened by COSEWIC in 2013, due to an estimated 98% decrease in the Canadian population over 40 years. This bird is a member of the aerial insectivore foraging guild which includes several other species-at-risk including Barn Swallow, Black Swift and Common Nighthawk. Human-caused threats to Bank Swallows include reduced prey availability from pesticide use, as well as loss of suitable colony locations and vehicle mortality.

Population estimates gained from targeted surveys can help biologists to investigate causes for species declines and to recommend effective conservation measures. Prior to 2015, no specific monitoring program existed for Bank Swallows in the Kootenay region. Last year, an inventory of nesting colonies was initiated in the Pend d'Oreille Valley to gain a baseline abundance estimate for that area. Eight active colonies contained a total of 1345 burrows.

Volunteer participation is an important component of the Kootenay Bank Swallow Survey. Bank Swallows are well-suited to volunteer-based monitoring due to their concentrating during the breeding season at conspicuous colonies, often situated at road-side cutbanks and other accessibe locations.

Project objectives for 2016 include: repeating counts in the Pend d'Oreille Valley to evaluate year-to-year variation; surveying colonies at additional sites within the West Kootenay region; training volunteers to conduct ongoing monitoring; and compiling reports of swallow colonies from across southeastern British Columbia.

10. Centre for Indigenous Environmental Resources (CIER) Community based monitoring (CBM) software project

Carrie Nadeau, R.P.Bio, Associated Environmental Consultants Inc.
nadeauc@ae.ca

Community-based monitoring initiatives provide the opportunity for First Nations to work collaboratively with industry, government, academia and citizens on monitoring, tracking and responding to issues that are of concern to a community. CBM empowers Indigenous people to incorporate Indigenous Knowledge and western science into a research design and develop culturally relevant data collection techniques, collect data, and have a greater role in local governance and meaningful input into the management of local natural resources. CBM provides communities with the ability to produce easily communicable results, increase the level of environmental education in their community and increase citizen engagement and participation in resource management.

Associated Environmental, in partnership with the Government of the Northwest Territories and CIER, is developing a suite of community-based monitoring software modules (data collection software to record information on water quality, fisheries, and wildlife). CIER will use these software tools to assist communities in the collation of information about their lands and waters, the plant and animal species that live there, and to monitor the condition of lands, waters and species over the long-term. These software modules link to a database, housed by CIER, which are accessible to the community for their own analysis, reporting and monitoring. These tools will help communities collect data within their own backyard and give them the freedom to identify their needs and priorities based on outcomes from their own data collection.

Biographical notes

Carrie Nadeau is a Registered Professional Biologist with 12 years' experience in environmental consulting. Her background includes baseline terrestrial assessments, environmental impact assessments, plant ecology, terrestrial and predictive ecosystem classification, wetland and terrestrial habitat restoration, rare and endangered species habitat restoration, fish and fish habitat inventories and assessments and environmental monitoring. Carrie has provided technical expertise on various aspects of vegetation survey design, inventory methods, ecosystem classification and data analysis. As a result of this background she has an understanding of ecological function in relation to restoration.

11. Managing the risk of disease transmission from domestic sheep to wild sheep through the British Columbia Sheep Separation Program

Jeremy B. Ayotte, British Columbia Sheep Separation Program
jeremy.ayotte@gmail.com

Co-contributors of work presented:
Helen Schwantje, Fish, Wildlife and Habitat Management Branch

The British Columbia Sheep Separation Program is a novel organization working toward minimizing the spread of respiratory disease from domestic sheep and goats to wild sheep. Program membership includes leadership from the BC domestic sheep industry, wild sheep conservation groups, First Nations, Ministry of Forests Lands and Natural Resource Operations, and Ministry of Agriculture. Projects focus is on education and outreach, coordinating innovative farm-specific mitigation to reduce the risk of disease spread, and affecting creation of policy to limit or exclude domestic sheep farms from high-risk areas around wild sheep range. With British Columbia's most recent pneumonia-related die-off likely unfolding in southern British Columbia, the program is acting on the increasing frustration and elevated profile of this issue to find effective long-term solutions.

12. Osprey productivity and nest provisioning in Revelstoke Reach

Catherine Craig, Cooper Beauchesne and Associates
ccraig@cooperbeauchesne.com

Impoundments along the Columbia River have altered the abundance and quality of the wetlands within Revelstoke Reach of the Arrow Lakes Reservoir (ALR). We present preliminary results from nest monitoring of Osprey, a wetland raptor whose breeding productivity was correlated with total June precipitation and the annual maximum elevation of the ALR. In 2014, we also attempted to monitor nestling feeding rates to determine if lower productivity could be caused by reduced foraging efficiency.

Biographical notes

Catherine Craig has been conducting ornithological research in North America for over 10 years and is currently a Wildlife Biologist with Cooper Beauchesne and Associates in Revelstoke, BC. In 2013, Catherine completed a MSc at Acadia University, where her research focused on the nest-site selection and nest survival of Black-backed and American Three-toed Woodpeckers in managed forest landscapes. Prior to that, she spent three years with an endangered species recovery program in California, and has worked on a variety of breeding and migratory bird research projects throughout North and Central America.

Field trips

13. Meadow Creek and Hallerans' Wetland Restoration Project

Hosted by: Hosted by Terry and Michele Halleran, assistance provided by Stu Heard, Marlene Johnston and Peter Jonker

PHOTOS: Eurasian collared dove at Halleran's Wetland by Peter Jonker & Some happy field trippers enjoying a beautiful afternoon at the Hallerans' Wetland by Hailey Ross

This field trip brought people north of Kaslo to Meadow Creek (30min drive), where wetlands are being restored on private property belonging to Terry and Michele Halleran, recently deemed the largest protected wetland on private property in BC. This land is too wet to farm or hay and there are now approximately 26 ponds on 10 hectares. People also visited adjacent lands managed by the Nature Trust of BC. The goal of these protected areas is to improve habitat for a diversity of species including ducks, frogs, toads, salamanders and turtles.

14. New Climate Events and the North Arm Water Monitoring Project

Hosted by: Don Scarlett, North Kootenay Lake Water Monitoring Project and Tara Lynne Clapp, PhD, Columbia Basin Watershed Network

The North Kootenay Lake Water Monitoring Project was established to gauge stream flow and mid- elevation hydrology in order to monitor climate change impacts. Following up on the talk by Dr. Reasoner about climate change impacts, this field trip visited a lower elevation creek flow monitoring site and a recent freshet blowout, within 30 minutes of Kaslo.

Site visits started at Schroeder Creek, a 15 minute drive north of Kaslo. There, one of the many 2013 creek floods affecting property and businesses was seen close up. A short distance further north was a viewpoint that gave a good view across the lake of the 2012 Johnson's Landing (Gar Creek) Slide, which caused four fatalities and extensive property damage. The trip then continued north to Davis Creek, which has an established stream flow monitoring site. There was discussion of current water monitoring objectives, issues and results and climate change issues and trends.