2018 Graduate Student Conference Program

Presented by the Office of Graduate Programs & the Northern BC Graduate Student Society (NBCGSS)

February 21, 22 & 23, 2018
**Wednesday February 21, 2018**

**Music & Poetry Conference Kick-Off featuring Kevin Hutchings**

7:00pm – 11:00pm
Art Space (above Books & Company)
Hosted by NBCGSS

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**Thursday February 22, 2018**

**Registration**

8:00am - 8:45am
Bentley Center

* Light refreshments provided

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**Welcome**

8:45am
Bentley Center

Dr. Ian Hartery – Chair, Physics
Darlene McIntosh - Elder
Dr. Geoff Payne - VP Research & Graduate Programs

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**Session A – Resource Development, Governance & Community Impact**

9:00am | Bentley Center

**Nicholas Parlato - MA Interdisciplinary Studies**

**Title:** Mining the Closed Regime: Western Knowledge Production on Russia’s Informal Political Economy

**Abstract:** The formal hierarchies and functional divisions of Western government structures are paralleled in Vladimir Putin’s Russia as a wide network of informal relations operating across boundaries of private-public, local-national, and legal-illegal. A few established Russian scholars (Ljubchina, Krylov) have noted the degree of success in exposing the logics and culture of this Sistema. But it remains largely unaddressed by Western political and economic scholars, who typically seek to critique it from a normative democratic standpoint, classifying it within the liberal/liberal binary, rather than understanding how Russian political economy works. In light of current international tensions between the US and Russia, the language used by experts and officials in both countries can be correlated to direct and deliberate political agendas, from the nationalistic to the neoliberal. Scholars working within the institutional matrix of the Western Academy are also implicated in this contentious field of politics and knowledge-production. Whether conducting research on Russian national industries, such as oil and gas, grassroots socio-political movements, or geopolitics writ large, we must be conscientious about our potential contributions to domestic and international tensions and harms. How can we hone our language and methodologies to sensitively address the controversial nature of “closed regimes”? Challenging the usefulness of the liberal/liberal binary to understand these political and economic systems from the outside, this presentation will approach and interrogate the epistemological and ethical problems of Western research practices in post-Soviet Russia, with particular reference to the extractive industry complex of Siberia.

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**Nadia Nowak - MNRES**

**Title:** Traditional Governance & Environmental Stewardship: Gathering Knowledge with Saik’uz Whut’enne

**Abstract:** The traditional governance system of Saik’uz Whut’enne is based in a deep relationship with their territory. Saik’uz Whut’enne continue to uphold the values and practices that are rooted in this relationship. However, colonization and land dispossession and degradation have disrupted Saik’uz traditional governance. In recent years, the intensity of resource development has increased, nestling susceptibility to lead, and the unaddressed of the Crowner regulatory system to uphold Indigenous rights and title has reached a critical point. During this same period of time, the Tsilhqot’in decision granted a declaration of an Aboriginal title to the Tsilhqot’in Nation, which re-affirmed the right of Indigenous Nations to manage the land based on their own values and perspectives. Emerging from this context, this research aims to explore the key principles and processes of Saik’uz traditional governance in order to inform a community conversation about the ways that traditional governance may be revitalized to improve environmental stewardship within Saik’uz territory. Informed by Indigenous, Indigenous and decolonizing methodologies, this research has been developed and designed in collaboration with the Saik’uz First Nation and uses qualitative methods including archive and document review and semi-structured interviews.

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**Katie Cornish - MSc Health Sciences**

**Title:** Understanding the mental health and well-being impacts of natural resource extraction and development in resource-dependent communities

**Abstract:** Natural resource extraction refers to the extraction and development of naturally occurring materials from below the earth’s crust. While industry provides economic prosperity to communities, with it comes a variety of negative impacts which are notoriously difficult to manage. Health impacts are no exception. Growing interest in Northwest BC from industry indicates the need to better understand how mental health is impacted by natural resource extraction and development. This research will be conducted in two phases at two contrasting units of analysis. The first is a targeted systematic review on the topic of mental health and well-being utilizing the HIRED database of 2800 articles describing the public health impacts of natural resource extraction and development globally. Inclusion/exclusion criteria will be applied and narrative synthesis will be performed. It is anticipated that less than 1% of items within the HIRED dataset will be included. Findings from phase one will be used to inform phase two which intends to explore the experiences of mental health service providers in Northwest BC through qualitative analysis. Interviews with service providers will be conducted to examine how these individuals provide mental health support to their communities within the context of Northern BC. This presentation will provide an overview of study rationale, design and some preliminary findings from the review.

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**Session B – Species Diversity, Susceptibility & Conservation**

9:00am | Gathering Place

**Mandi Baxter – MSc NRES Biology**

**Title:** Development of eDNA monitoring tools and protocols for assessment of Western Painted Turtles (Chrysemys picta bellii) in British Columbia

**Abstract:** The Western painted turtle (WPT) (Chrysemys picta bellii) along the Pacific coast of British Columbia is endangered due to wetland habitat loss, degraded water quality, and vehicle-related mortalities. As this species can be difficult to detect using traditional methods, the objective of this study is to develop a standardized sampling procedure that reliably detects WPT’s via environmental DNA (eDNA) monitoring. eDNA monitoring detects species from genetic material left behind in the environment. This method is difficult to standardize due to differences in target species and ecosystems. In order to determine an effective monitoring protocol, water processing methods (filtration and precipitation) will be compared and environmental variables and temporal data will be assessed to determine whether seasonal variance has any effect on detection of this species. To better understand the rate that these turtles release DNA into their environment, water samples were collected from reared sliders (Trachemys scripta) and tree swallows (Tachycineta bicolor) in an experimental setting. This illustrated a complex interaction between eDNA accumulation and degradation rates. The eDNA signal persisted longer in the turtle system than the goldfish, which may be correlated to the amount of biological activity within the system. The results from this project will yield baseline data on the minimal concentration required to detect WPT, aiding in the detection of the species, leading to better conservation and management planning of WPT.

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**Isa A. Griebel – MSc NRES Biology**

**Title:** Morphological and physiological benefits of an anti-parasite treatment by within-brood variation in tree swallows (Tachycineta bicolor)

**Abstract:** Individuals can differ in their susceptibility to parasites. Young, nest-bound birds are exposed to a diversity of host-dwelling ectoparasites that typically feed on their blood. Within broods, hatching asynchrony creates size hierarchies that result in morphological and physiological variation among nest mates, and susceptibility to parasites may also vary predictably with this size hierarchy. My objective was to use a broad spectrum, anti-parasite drug, ivermectin (IVM), to treat individual nestling tree swallows (Tachycineta bicolor) and assess how nestling susceptibility to parasites varied both within and among broods. Broods were either assigned as IVM broods, where half of the nestlings received IVM injections and half received control injections of sesame oil, or control broods, where all nestlings received oil injections. I found that the IVM treatment reduced parasite loads for broods as a whole, thereby benefiting all nestlings in IVM broods, both morphologically and physiologically. Variation in size within broods, however, influenced some results: mass near to fledging increased with the relative brood asynchrony, but only under higher parasite loads (i.e., control broods, not IVM broods), and the change of an individual fledging increased with its relative within-brood size, but only under lower parasite loads (i.e., IVM broods, not control broods). By experimentally manipulating nestling parasite loads, I have demonstrated variation in nestling response to an anti-parasite treatment both within and among broods, and future studies should investigate the underlying mechanism for why certain nestlings along the brood size hierarchy are more susceptible to parasites.

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**Cherie Mosher – PhD NRES**

**Title:** Sharp Reduction in Genetic Diversity of the Coastal Tailed Frog (Ascaphus truei): A Phylogeographic Study Using Multiple Methods

**Abstract:** The coastal tailed frog (Ascaphus truei) is used as an indicator species for the health of its habitats in the Coastal and Cascade Mountains of the Pacific Northwest of North America. This ancient species, unique among a sister species to all extant frogs, is associated with cool, fast-flowing, typically non-fish bearing, mountain streams. We compared the within region genetic diversity of populations near the northern extent of the coastal tailed frog’s range (British Columbia, Canada) to four other regions (two in British Columbia and two in Washington). Looks to continued monitoring of the core range in Washington, USA. We used two genetic techniques – a 9-microsatellite loci study and next-generation sequencing
– to explore broad-scale genetic diversification. Sampled regions (n=4) separated into 4 genetic clusters with the two most northern regions, all marker systems being consistent. The allelic richness and heterozygosity reduced substantially as the latitude increased. Through northernmost populations are often characterized by lower genetic variability, we discovered an extreme case of reduction in a large portion of the coastal tallied frog range. This study showed a strong correlation between microsatellites and large-scale genetic diversification. Sampled regions (n=4) separated into 4 genetic clusters with the two most northern regions, all marker systems being consistent. The allelic richness and heterozygosity reduced substantially as the latitude increased. Through northernmost populations are often characterized by lower genetic variability, we discovered an extreme case of reduction in a large portion of the coastal tallied frog range. This study showed a strong correlation between microsatellites and large-scale genetic diversification.

Networking Break
10:15am
Bentley Center
* Light refreshments provided

Grant Writing Workshop
10:30am
Bentley Center
Presenters: Nicole Baillet (Office of Research), Jacqueline Dockray (Office of Research), Barbara Curtis (Graduate Programs)
Faculty Panel: Stephen Dery (ENVS), Hugues Massicotte (FTSI), Benjamin Bryce (HIST), Martha MacLeod (NUPSS/COMH)

Abstract: Writing grant or scholarship applications is both an art and a science. It is important to understand what ‘data’ to include (the science part) and how to write in such a way as to convince the reviewers to give you the money (the art part). Grantmanship, as this combination of skill sets is known, is taught in a way that separates us from our personal lives? Can we talk about pushing boundaries in the academy? Can we talk about pushing boundaries in the academy? Can we talk about pushing boundaries in the academy?

Sahar Ebadzadshaer – MSc NRES
Title: Quantifying the Effect of Volatile Organic Compounds and Fine Particulate Matter Contaminants on the Prince George Air Quality
Abstract: The main objective of this research is to develop proper standard operating procedures (SOPs) for collecting representative air samples, to measure Volatile Organic Compounds (VOC) molecules and particulate matter (PM2.5). The study will be carried out in Prince George neighborhoods. Air pollution and climate change are interlinked [1]. Air pollution and climate change are interlinked [1]. Air pollution and climate change are interlinked [1]. Accordingly, the World Health Organization (WHO), air pollution is currently the leading environmental cause of premature death [2]. The communities of Prince George have been facing different types of air pollution issues for many years. Air pollution is one of the main concerns of the city of Prince George, which is known as the northern capital of British Columbia (BC). Reports of air monitoring since 1994 show the annual average PM2.5 concentration in the Prince George area was one of the highest in the province [3]. Exposure to PM2.5 and VOC are harmful to public health and ecosystems. VOCs daily exist in human's life and are carbon-containing gases and vapors such as gasoline fumes and solvents. These chemicals can enter into the human body through the breathing of air and results in headaches, nausea and damage the liver, kidney, and central nervous system [4]. Furthermore, PM2.5 and VOCs can cause a serious problem in human health such as cancer [4]. Thus, it is important to understand the nature of VOCs and PM2.5 present in the environment that we live in, (i.e., Prince George) and how to reduce and control these air pollutants. One of the tasks of this research is to measure physical and chemical properties of particulate air pollutants in different neighborhoods of the city of Prince George.

Lunch & Learn Keynote Speaker
Noon
Bentley Center
Presenter: Dr. Heather Smith – Director, Center for Teaching, Learning & Technology (UNBC)

Title: Pushing Our Boundaries: Inside/Outside the Academy
Abstract: Let's take some time together to reflect on the idea of 'pushing boundaries'. What does pushing boundaries mean to you? Is there really some sort of inside and outside to the academy? Can we talk about pushing boundaries in the academy in a way that separates us from our personal lives? Is there one generalizable vision of what it means to push boundaries? Why do we do it? What do we do it for? And do we really want to push all boundaries? These are the questions that provide the foundation for what I hope will be an interactive keynote conversation. I'll share with audience some of my experiences with pushing boundaries as a scholar-teacher-human but really what I want us to do is to take the time to reflect on the boundaries which limit us, boundaries which protect us, boundaries which we determine we need to address individually and collectively.

Session C – Air Quality, Climate Change & Weather Modelling
1:30pm | Bentley Center

Rachel Hay – MSc NRES Environmental Science
Title: Preliminary Results from the Sub-grid Parameterization of Snow in the CLASS Model
Abstract: Snow accumulation events in Western Canada result from a diverse range of processes including, but not limited to, large-scale air circulations (e.g., El Niño Southern Oscillation) and mid-latitude cyclones, to surface interactions such as orographic snowfall and lake-effect snow. Redistribution of snow following initial deposition has particular importance for the resultant depth and density of the snowpack, grain size structure and structure. This therefore influences the albedo of the snowpack, which has large scale feedback implications for energy budgets and modelled climate. Despite a thorough understanding of snow processes, redistribution can only occur with high-resolution models that require parameterization for numerous processes contributing to this variation in snow distribution. Sub-grid scale snow (SSS) parameterizations within the Canadian Land Surface Scheme (CLASS) model have enabled better modelling of the heterogeneities of snowpack conditions. Recent SSS parameterizations include land surface features such as slope, aspect, and elevation, to be incorporated into the updated version of the Canadian Regional Climate Model (CRCM). Preliminary results from recent SSS developments will be presented and discussed. Future work may consider the evolution of the snowpack through the seasons and the albedo on surface and turbulent exchange. Continued refinement will resolve the changing snowpack and glacier hydromorphology of western North America in next generation Regional Climate Models.

Abstract: Atmospheric Rivers (ARs) are filamentary structures generally with length >1000 km and width <100 km in the lower atmosphere responsible for most of the horizontal transport of water vapour outside of the tropics. ARs are important phenomena for freshwater recharge in British Columbia (BC) and play a crucial role in the climate of this region. In this study, we examine the variability and trends of landfalling ARs in BC during the latter half of the twentieth century and early twenty-first century. Hourly stepped ARs identified as those integrated water vapour transport (IWT) grid cells that satisfy the selection criteria such as minimum IWT threshold, direction, and geometry. On average, 17% of total days of each year are affected by ARs in BC. ARs are most prevalent in BC during fall months followed by winter months. The annual landfalling ARs frequency show increasing trend of 25.9 daydecade-1 and 5.1daydecade-1 over 1979-2015 and 1948-2015, respectively. Synoptic conditions and oceanic-scale large-scale patterns play significant roles in modulating the frequency of landfalling ARs to BC. A better understanding of annual and seasonal ARs climateology in BC will lead to improved water resources management, seasonal predictability, weather forecasting, natural hazard prevention and community awareness on AR related extreme weather events.
Wendel Swab – MA English
Title: Canada Unveiled: Colonial and Patriarchal Enforcement of Traditional Gender Expectations during the Nipab Debate

Abstract: The debate during the 2015 federal election over whether Muslim women in Canada should be permitted to wear the niqab during citizenship ceremonies shook the idea of Canada as a multicultural and postcolonial nation to the core. One side of this debate takes up the cause of women's rights and the desire to protect Muslim women from patriarchal and colonial power structures, and by critically analyzing media narratives, I will argue that support for the niqab ban at citizenship ceremonies is predicated upon support for patriarchal and colonial power structures that exist within Canada; these power structures have the consequence of subjugating Muslim women and enforcing traditional views of femininity, feminine actions and displays, and female gender roles, thus damaging the feminist project within Canada for all women, not just Muslim women. Muslims within Canada are subject to a neo-Orientalism that has arisen in Western nations, which can be traced back to the colonialism of the so-called Islamic world by the major European powers, as well as the Orientalist perception of the Islamic world. Based on the premise that gender is a socially constructed performative phenomenon, Muslim women who don the hijab, burqa, and loose flowing traditional gowns must then thwart societal attempts to police these women and enforce traditional gender performativity in appearance, gestures, movement, and bodily decoration. Ultimately, the enforcement of these traditional Western gender expectations upon an immigrant culture widely perceived to be “barbaric” or “anti-woman” by the dominant culture is damaging to the feminist cause for both minority immigrant cultures as well as the majority culture.

Janine Luggi – MA First Nations Studies
Title: Experiences of Running: One Dakeh Woman's Message of Transformation & Resilience

Abstract: Running was a traditional role to share messages about transformation. My data includes my personal reflective journals and an interview. I analyzed this data by situating myself and the role of running in my life. I use decolonizing and Indigenous methodologies as a foundation for my research, drawing on my own experiences to express my testimony about transformation. My data includes my personal reflective journals and an interview. I analyzed this data by situating my experiences within the context of my culture. The themes identified include: (1) Space for self-reflection and responding to the world around me, (2) Relationships and encouragement, (3) My connection to something greater, (4) Honour my life enough to love myself, and (5) Creating space to fully express my self. This research fills a gap in Indigenous specific literature because spiritual health is not widely discussed in the physical activity and running literature. This research highlights features of the observed niqab event such as: (1) warm SST anomalies, which appear over the eastern and central Pacific Ocean, (2) at an event onset, wind relate to positive SST anomalies, (3) the peak anomaly occurs in winter (i.e. phase locking to the annual cycle), (4) the oscillation of El Niño is irregular, with a period of 3 to 7 years. The latest well observed extreme El Niño was in 1997/98 that demand billions of dollars for economic damage and human casualties. Moreover, the current 2015/16 extreme El Niño also has historical impacts. Recent work has further demonstrated that occurrence of extreme El Niño could be double under unmitigated climate change (Cai et al., 2014). In the light of their devastating impacts and possible future increased occurrence, understanding of the dynamics, predictability, and teleconnections of these extreme El Niño events is still required and requires effort from the community. The present research is designed to improve El Niño simulation and prediction using hybrid coupled models (HCMs). The goals of this research are to investigate two essential problems in hybrid coupled modelling. The Western Painted Turtle (Chrysemys picta bellii) is endangered due to wetland habitat loss, delayed maturity, and vehicle-related mortalities. As this species is difficult to detect using traditional methods, the focus of this study is to develop a standardized sampling procedure that reliably detects WPTs via environmental DNA (eDNA) monitoring. eDNA monitoring detects species from genetic material left behind in the environment. This method is difficult to standardize due to differences in target species and ecosystems. In order to determine an effective monitoring protocol, water processing methods (filtration and precipitation) will be compared and environmental variables and temporal data will be assessed to determine which factors most influence the effect on detection of this species. To better understand the rate that these turtles release DNA into their environment, water
Title: Piloting an Intergenerational Digital Storytelling Program with Indigenous Elders and Youth

Abstract: Our team piloted an intergenerational digital storytelling program with Indigenous Elders and youth in the Nal’ak’itz First Nation community in Northern BC. In this study, a community-based research approach was utilized which involved a partnership between the Nal’ak’itz Health Centre, the Elder’s Society, the elementary school, and researchers from three Universities. This program took place over one month in Spring 2017, and included 10 workshop sessions. All aspects were co-created with community partners; needs of all parties and also aligned with the BC school curriculum. Grade 6 and 7 Students, Elders, and teachers were interviewed mid-way of the project and at the final community showing. Researcher and community observations were also collected through the project and at the final community showing. The interviews revealed that, while the intergenerational digital storytelling sessions were well received, this workshop must be revised to order to be sustainable and integrated within the school curriculum.

Title: The nesting who lived: predictors of survival during harsh weather events in an aerial insectivore

Abstract: Periods of inclement weather can have devastating effects on aerial insectivorous birds, particularly during brood rearing when sufficient food must be obtained to sustain both young and parents. Here, we examine predictors of survival of whole broods and individual nestlings in tree swallows (Tachycineta bicolor) during an extreme, two-day harsh weather event in central British Columbia, which co-occurred with an experiment reducing nest ectoparasite loads using an anti-parasite drug (ivomec). We found that middle-aged broods and nestlings were less likely to survive than those that were younger or older in age. Survival of broods and individual nestlings was higher when raised by males with bluer plumage, whereas it was lower when female parents had brighter and more UV-reflective plumage. Within broods, smaller nestlings had a lower chance of surviving the harsh weather event than their larger siblings. Nestlings in broods where half of the offspring received ivomec injections had significantly higher chances of surviving than broods that did not receive the drug. Therefore, it is important to identify modifiable risk factors that may increase the likelihood of developing dementia. Alcohol consumption has been well-established to influence the dementia risk, and prospective memory (PM) function has been rising tremendously in recent years due to its non-technical statistical methods will be implemented due to the non-normal distributions seen in the winds speed and wind direction timeseries data. It is envisioned that my research at Quesnel Lake will be able to identify wind ‘seasons’ within the year, discern which synoptic patterns are responsible for intense wind episodes, and begin to examine the spatial variability of the lake-level wind field.

Title: Do Alcohol Consumption Exacerbate Prospective Memory Dysfunction in Dementia?

Abstract: With the aging population, the prevalence and economic burden of dementia is increasing. It is, therefore, important to identify modifiable risk factors that may increase the likelihood of developing dementia. Alcohol consumption has been well-established to influence the dementia risk, and prospective memory (PM) function has been identified as the earliest cognitive indicator of memory decline in those with early stage dementia. This research specifically explores whether alcohol consumption aggravates PM dysfunction in those with dementia. Three research questions will be addressed: (1) Does alcohol consumption exacerbate PM dysfunction in those with dementia? (2) What is the nature and shape of the relationship between alcohol consumption and the likelihood of dementia diagnosis? (3) Does PM performance influence dementia risk? A combination of structural equation modeling, logistic regression, and graphing techniques will be applied to test these hypotheses using baseline data from the Canadian Longitudinal Study on Aging. The anticipated findings are

Title: Kasi Kondo – MSc NRES Environmental Science

Abstract: Chemical Profiling of Modified Natural Zeolite for application of water treatment by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-OES)

Abstract: Natural zeolites and their modified forms can be used as cost-effective adsorbents for water treatment. In order to ensure that modified natural zeolite would not release significant amounts of toxic elements to the water body during water treatment, it is necessary to critically assess its leaching profiles regarding the available trace elements including heavy metal cations. In this project, leachate of a Natural zeolite (clinoptilolite) as well as its magnesium-modified (Mag-zeolite) and ammonium-magnesium-modified (NH4-Mg-zeolite) forms are assessed by using ICP-OES. For further understanding of the chemical profiles, all samples will be analyzed using acid digestion followed by ICP-OES measurement. The leaching solutions are prepared by using magnesium solutions (Mag-zeolite) and ammonium acetate (NH4-CH3CO2) with agitation for 200 rpm for 24 hr at 25 degree C. The leaching test is based on US EPA method 1311. A solution of acetic acid (pH 2.8) is used as an extraction fluid. Zeolite samples are agitated with the extraction fluid at 20 rpm for 2 hours at room temperature, and then the obtained leachate is analyzed with ICP-OES. Acid digestion of modified zeolites will be performed by following US EPA method 3050B. The obtained solution will also be analyzed with ICP-OES to compare the effect of modification process.

Title: Saki Kondo – MSc NRES Environmental Science

Abstract: This is the first study to report on an immuno-stimulatory compound isolated from the water extracts of Royoporus badius (Pers.) De.

Abstract: The use of mushroom metabolites to treat diseases has been rising tremendously in recent years due to its wide medicinal and safety. Despite a long history of mushrooms being used as traditional medicine in Asia, this medicinal field is relatively new to the West, with very limited number of studies performed on the medicinal properties of wild mushrooms in Canada. In this study, the entire fruit body of a BC wild mushroom, Royoporus badius was sequentially fractionated into four extracts, with the water extract (E3) exhibiting strong immuno-stimulatory activity. The water extract E3 was subjected to anion-exchange chromatography using DEAE Sephadex followed by size-exclusion chromatography with Sephacryl 500 for downstream purification. The semi-purified fraction is suggested to be a heat-sensitive polysaccharide-protein mixture that is able to stimulate murine macrophage cells (RAW 264.7) cells at doses as low as 0.05 mg/mL. The bio-active compound is estimated to be 12 kDa and is soluble. Enzyme assays using Proteinase K and amyl-glucosidase suggest that the large molecule requires its protein portion for bioactivity. This is the first study to report on an immuno-stimulatory compound isolated from R. badius native to British Columbia.
as follows: structural equation modeling will demonstrate that the association between PM and dementia is stronger when alcohol consumption is included in the model. Logistic regression will yield an overall positive relationship between alcohol consumption and the likelihood of dementia diagnosis, however, through graphing, it is expected that the shape of this relationship will be J- or U-shaped; and logistic regression will show a negative relationship between PM function and the likelihood of dementia diagnosis.

Sukhpreet Buttar – BSc Biochemistry & Molecular Biology

Title: Evaluation of British Columbian Wild Mushrooms for Immuno-Modulatory Activity

Abstract: Many cultures worldwide have recognized that extracts from certain mushrooms have profound health benefits. The term “mushroom medicine” is now increasingly gaining worldwide recognition, as there are at least 700 species of mushrooms that have been reported to have therapeutic potential. Because of their biological activity for the treatment of cancers, mushrooms have been an area of interest for scientists and pharmaceutical industries and have recently gained attention for their anti-cancer purposes, namely through immuno-modulation. In the present study, the immuno-stimulatory and anti-inflammatory activities of four different species of mushrooms (Pleurotus ostreatus, Porodacées jini, and Bjerkandera adusta) collected from North-Central British Columbia were investigated. To assess for immuno-stimulatory activity, Enzyme-Linked Immuno-Fluorobent tests (EUSA) were performed to measure the production of the cytokine TNF-α in Raw264.7 mouse macrophage cells. To assess for anti-inflammatory activity, the ability to inhibit lipopolysaccharide (LPS)-induced TNF-α was measured. This study was successful in extracting and assessing immuno-stimulatory and anti-inflammatory extracts from BC wild mushrooms.

Networking Break

10:15am
Bentley Center
* Light refreshments provided

Thesis Boot Camp

10:30am
Gathering Place

Presenters: Ian Hartley (PHYS), Michelle Stephen (Graduate Programs), Susie Wilson (Library), Annelise Dowd (Library), Câmara Hartley (Chief Librarian), and Brooke Boswell (McGill Community Health - Graduate Student)

Title: Narratives of Healing from Complex Trauma

Abstract: Complex trauma is a critical area to explore in terms of the emotional, psychological, and social well-being of survivors. This research explored the personal experiences of 12 adult survivors of childhood trauma by interpreting the meanings they attach to their stories of healing. Individual interviews were analyzed following a narrative approach to capture each participant’s perspective and meaning. The themes that emerged from the narratives were organized into ten main categories. Five overarching metathemes occurring across all the participants’ narratives included: Trauma Effects, Establishing Safety, Reclaiming Self, Healing through Relationships, and Healing Journey. The results of this study add important findings that increase understanding of how to address complex trauma in counselling and health care settings in order to restore individual's sense of safety and well-being.

Lorraine Schembri – Med Counselling

Title: How stigma impacts the translation of evidence-based policy: Harm reduction service providers report on how public attitudes impact their work

Abstract: Do public misperceptions hinder evidence-based drug policy? Harm reduction service providers report on how public attitudes impact their work.

Session F - Assessing Environmental Threats

1:30pm | Gathering Place

Lon Kerr – MNRES

Title: Modified Canadian Natural Zeolite: An antibacterial agent for purification of Drinking Water
Abstract: Previous research has shown that modification of natural zeolites with different cations such as silver and zinc can be used to eliminate harmful bacteria from contaminated media. British Columbia has a wealth of natural zeolites that could be potential candidates for the same application. The main objective of this research project is to purify a Canadian natural zeolite (i.e. Clinoptilolite) in order to reduce its unwanted elements such as lead, and then modify it with different cations including zinc and silver to develop an antibacterial agent for water purification purposes. Purifying process happens through different methods including but not limited to washing with saline solutions at high temperature to remove harmful elements such as lead. The purified zeolite are modified through repeated exposure to high concentrations of zinc and silver solutions in order to optimize modification process. Natural zeolite sample, as well as its purified and modified forms are characterized using XRD, SEM-EDS, chemically with ICP and BET techniques. Cation exchange capacity (CEC) of the samples will be determined using ammonium acetate method. Leaching of trace elements from the samples will be studied using EPA approved leaching test. The modified form of British Columbian natural zeolite will be used to study their capacity as anti-bacterial agent for water treatment purposes toward e. coli and coliform.

Kristen Hirsh-Pearson – MSc NRES Forestry

Title: A Review of Mapping Cumulative Threats: The Trends, the Gaps and the Future

Abstract: Cumulative threat mapping quantifies human influence across space and time, highlighting the extent and intensity of anthropogenic pressures while providing a foundation for mitigating environmental threats to natural systems. However, little is known about where cumulative threats have been mapped as well as which specific threats have been studied. Here we review current research mapping cumulative threats, highlighting gaps in the terrestrial, marine, and freshwater realms. We also identify how far along the Pressure – State – Impact framework studies progress, whether maps are static versus dynamic, and classify all threats into unified categories associated with species decline. Our results inform practitioners of areas that have yet to be mapped, on how to categorize threats in order to make them unified and relevant to biodiversity decline, and how to translate threats to identify state and impacts.

S M Nazrul Islam – PhD NRES

Title: Satellite based methane concentration over the region of natural gas development area in B.C., Canada

Abstract: Although British Columbia’s natural gas resource is an economic boon, improper handling during its production, distribution and use can result in increased emissions of methane to the atmosphere. In 2014 it was estimated that 21% of B.C.’s total methane emissions (10,633 kt CO2e) were from mining and upstream oil and gas production, as well as fugitive oil and natural gas sources. In this research, satellite-based methane concentrations (XCH4) will be used to detect positive methane anomalies in spatial maps of regions associated with oil and gas industries. We will compute XCH4 anomalies for the selected target regions by subtracting the monthly mean values of SCIAMACHY and/or GOSAT XCH4 for the respective entire region from the individual satellite observations. By doing so, signals from large-scale seasonal variations and global increases will be filtered out, yielding regional enhancements relative to varying background concentrations. Next, the computed satellite anomalies are averaged over the time periods of 2004-2006 (before the rapid expansion of natural gas extraction) and 2007-2009 (after the rapid expansion). The differences in anomalies between these time periods are used to see the changes in atmospheric methane in Northeast B.C. before and after the rapid development of natural gas. This study is the first step towards methane emission estimation using satellite data.

Closing Remarks

3:00pm
Bentley Center
Trina Johnson – NBCGSS President