

# Abstract Booklet



University of Regina Graduate Students' Association

## 2017 Poster Competition

University  
of Regina

Date of Publication: January 30<sup>th</sup>, 2017

## 2017 Poster Competition

<b>Abstract</b>	<b>Page</b>
<b>Application of Raman Spectroscopy in Apatite Grains from North Qôroq, South Greenland</b> A. Cottrell, I. M. Coulson, and M. Kaliwoda	1
<b>The Depiction of Expert Women in Contemporary Canadian Newspapers</b> A. Kangourimollahajlou	2
<b>The Heat Shock Response of Round Whitefish</b> A. Murillo, L. Manzon, D. Boreham, J. Wilson, C. Somers, and R. Manzon	3
<b><i>Pantoea</i> produces an antibiotic effective against multi-drug resistant <i>Acinetobacter baumannii</i></b> A. N. Williams, and J. Stavriniades	4
<b>Life in the twilight zone: Common Nighthawk activity patterns in the northern boreal forest</b> A. Sidler	5
<b>What's in a line? The influence of valence, faces, and language on pseudoneglect</b> B. Hatin, and L. S. Tottenham	6
<b>Qui est le meilleur? - La diversité et les contributions des pollinisateurs sauvages de cerises sûres (<i>Prunus cerasus</i>) quand ils sont comparés au abeilles à miel (<i>Apis mellifera</i>)</b> C. Bailey	7
<b>Healing from addictions through the voices of the Elders</b> C. LaVallie	8
<b>Iron acquisition genes are associated with human pathogenicity in the bacterial genus <i>Pantoea</i></b> C. Soutar, and J. Stavriniades	9
<b>Moral Agency among Nurses: Culture of Healthcare and Moral Dilemmas</b> E. Fortier	10
<b>Habitat selection by Common Nighthawks in Canada's boreal forest</b> G. Foley	11
<b>Type of Trauma Exposure Influences PTSD Symptom Pattern</b> K. D. Amerongen, D. M. LeBouthillier, H. A. Parkerson, S. C. Horswill, R. N. Carleton, and G. J. G. Asmundson	12
<b>Representing the Non-Human in England's Early Modern Period</b> L. Kozak	13

## 2017 Poster Competition

<b>Thyroid hormones regulate the activity of citrate synthase and cytochrome c oxidase in warm- but not cold-acclimated lake whitefish (<i>C. clupeaformis</i>)</b>	<b>14</b>
M. A. Zak, A. M. Regish, S. D. McCormick, and R. G. Manzon	
<b>Impregnation of Ionic Liquids on Mesoporous Silica as Efficient Sorbents for CO<sub>2</sub> Capture Applications</b>	<b>15</b>
M. Mohamedali, H. Ibrahim, and A. Henni	
<b>The Effects of the Intergenerational Residential School Experience and Negative Racial Stereotyping on Ojibwe Speech Patterns in mid-Northern Ontario Anishnawbek</b>	<b>16</b>
N. J. Owl	
<b>Developing management targets for grassland songbirds in the mixed-grass prairie</b>	<b>17</b>
P. Rose	
<b>Cryptic Taxonomy: <i>Hylaeus</i> Revisions with DNA Barcoding</b>	<b>18</b>
R. Oram, C. Sheffield, and J. Stavriniades	
<b>Evaluation of PET estimation techniques in depicting drought severity using SPEI in the Canadian Prairies</b>	<b>19</b>
S. Gurrupu, D. J. Sauchyn, and K. Hodder	
<b>The Relationship between Intolerance of Uncertainty, Depression, and Generalized Anxiety Symptoms beyond Posttraumatic Stress Symptoms</b>	<b>20</b>
S. Korol, D. M. LeBouthillier, S. Duranceau, G. J. G. Asmundson, and R. N. Carleton	
<b>Highway of Lost Years: BC Government Inaction Leaves Vulnerable Women at Risk in Northern BC</b>	<b>21</b>
T. Wild	

# Application of Raman Spectroscopy in Apatite Grains from North Qôroq, South Greenland

A. Cottrell<sup>a,b</sup>, I. M. Coulson<sup>b</sup>, and M. Kaliwoda<sup>c</sup>

<sup>a</sup>Department of Geology, Faculty of Science, University of Regina

<sup>b</sup>Solid Earth Studies Laboratory, Dept. of Geology, University of Regina

<sup>c</sup>Mineralogy Museum, LMU Munich

### Abstract

Raman Spectroscopy (RS) is the study of the inelastic scattering of light, creating a pattern of bands and peaks that can be used to investigate mineral compositions. RS is particularly useful for fluid inclusion studies as it provides a chemical signature unique to a particular sample. This study investigates the application of RS in apatite crystals from the North Qôroq centre of South Greenland, a Precambrian alkaline igneous complex that underwent extensive metasomatism over time. Samples used include apatite crystals from quartzite (foundered at the northern margin of the intrusion) and nepheline syenite rocks (south of the complex). The igneous complex has been affected by two types of metasomatic fluids responsible for mobilising rare earth elements (REEs); a sodium brine (fluid A) and a Ca-F rich (fluid B) fluid. The results show that RS is a useful tool for identifying fluid chemistry. However, some discrepancies occurred during interpretation and a combination of the analysis of known dominant fluid species, cations and anions were used to resolve this with success. Results specific to the apatite crystals show that RS identified chemical compositions to be representative of fluid A only, suggesting that this was the only fluid extensive enough to reach the outer parts of the complex. Additionally, these results conclude that REEs are preferentially mobilised by fluid B and are concentrated towards the centre of the complex. Further research is needed to conclude if this is localised to the specific areas studied or representative of the entire igneous complex.

# The Depiction of Expert Women in Contemporary Canadian Newspapers

A. Kangourimollahajlou

Department of Sociology and Social Studies, Faculty of Arts, University of Regina

### Abstract

This study focuses on the subject of gender inequality in representation of “expert” women in media. The current literature shows that, mostly, women in media are underrepresented or portrayed as objects or victims and very little of this literature has examined depiction of “expert” women. This research is guided by two main questions: How are “expert” women depicted in contemporary Canadian newspapers? To what extent are women versus men interviewed by media as “experts” in their field? The methodology of the research is discourse analysis and the concrete method is content analysis. The data will be collected from all news pages of the National Post and the Globe and Mail. Content analysis data will be chosen monthly from the first day of each month of the year 2015 for both newspapers. Data for discourse analysis are gathered from all issues in November 2015, since a major event concerning “expert” women in politics occurred in this period of time; Prime Minister Justin Trudeau’s selection of a gender-equal cabinet with cabinet ministers who are primarily considered experts in their respective portfolios.

The pilot project result supports the hypothesis of existence of gender inequality in both national newspapers. It also shows that in five categories of expertise: Politics, Human Sciences, Natural Sciences, Business and Investing and, Art, Culture, Life, male experts are consulted more than female experts.

# The Heat Shock Response of Round Whitefish

A. Murillo, L. Manzon, D. Boreham, J. Wilson, C. Somers, and R. Manzon

Department of Biology, Faculty of Science, University of Regina

### Abstract

Thermal stress can be a consequence of a fish's natural environment or a result of anthropogenic activities such as industrial thermal pollution. The production of heat shock proteins (hsp) is an important and highly conserved cellular response to thermal and other stressors. In this study, we assessed the kinetics of the heat shock response by quantifying changes in gene expression of hsp90 $\alpha$ , hsp70, and hsp47 in embryonic and young of the year (YOY) juvenile round whitefish (*Prosopium cylindraceum*; RWF). RWF embryos and YOY juveniles were subjected to two different heat shock temperatures (+6 and +9° C) for 1 to 4 h. Embryo and YOY juvenile RWF were allowed to recover at control temperatures for 0 to 48 h prior to sampling and quantifying hsp mRNA levels using RT-qPCR. Of the 3 typically inducible hsps, only hsp70 was increased consistently in embryos following heat shock. By comparison, both hsp70 and hsp47 increased in YOY juveniles. Data on the HSR in RWF embryos will be discussed in the context of RWF being exposed to developing in industrial thermal effluents. A better understanding of the impact of thermal fluctuations which can arise from thermal effluents or climate change on key life history stages of a sensitive cold water species may aid in predicting and mediating anthropogenic influences on these and other near-shore spawning fishes.

# ***Pantoea* produces an antibiotic effective against multi-drug resistant *Acinetobacter baumannii***

A. N. Williams, and J. Stavrinides

Department of Biology, Faculty of Science, University of Regina

### **Abstract**

*Acinetobacter baumannii* is a multi-drug resistant bacterium that has become a serious worldwide healthcare concern. The human pathogen is primarily spread within hospital settings, infecting injured or immunocompromised individuals. The objective of this research is to identify and characterize new antibiotics for *A. baumannii*. Members of the bacterial genus *Pantoea* have been found to produce a variety of natural products with antimicrobial properties. From a survey of over 100 strains of *Pantoea*, two *Pantoea agglomerans* strains were identified as having antibiotic activity against *A. baumannii*. To permit further exploration of how the antibiotic is produced at a molecular level, the genes responsible for antibiotic production were identified in the two *Pantoea* strains. To identify the genes, *Pantoea* mutants were created via transposon mutagenesis, which causes random gene interruptions. The mutants were then screened for disrupted antimicrobial activity. The interrupted genes of mutants with altered antibiotic production were amplified with inverse PCR, sequenced, and identified via comparison to DNA sequence databases. Interestingly, the same group of genes required for antibiotic synthesis were found in each strain, suggesting that the same antibiotic is produced by both bacteria. A preliminary survey of the spectrum of activity showed the antibiotic to be effective against other Gram-negative bacteria including *Citrobacter* sp., *Cronobacter* sp., *Enterobacter* sp., *Escherichia coli*, *Erwinia amylovora*, *Klebsiella* sp., and *Pseudomonas aeruginosa*. Overall, this research has identified one antibiotic effective against *A. baumannii* and other Gram-negative pathogens, which will be important for the future fight against multi-drug resistant bacterial infections.

# Life in the twilight zone: Common Nighthawk activity patterns in the northern boreal forest

A. Sidler

Department of Biology, Faculty of Science, University of Regina

### Abstract

Due to steep population declines, Common Nighthawks (*Chordeiles minor*) are listed as Threatened in Canada. Despite the northern boreal forest representing a significant portion of their breeding range, nighthawk populations in these areas remain virtually un-surveyed and thus poorly understood. My study is one of the first to examine activity patterns north of 60° in the boreal forest. Northern latitudes are characterized by a large variation in summer photoperiod, including the absence of a dark-night phase and an extended crepuscular (twilight) period – all of which may significantly impact the activity patterns of these crepuscular birds (active at dawn and dusk). Because of this, current survey protocols, which target populations at southern latitudes, may be ineffective to accurately assess nighthawk numbers in the North. To address this, I deployed remote sound recorders which recorded acoustic data on daily and seasonal activity patterns throughout the summer. Seasonally, nighthawk calling activity increases during the first week of June and remains elevated until the first week of July. Daily calling activity reflects crepuscular period length as nighthawks call actively throughout the night during early summer but constrain their activity to sunset and sunrise in late summer, as nights grow darker. These data suggest that future surveying efforts should follow the Canadian National Nightjar Survey Protocol as recommended sampling times align with peak activity periods of northern populations.

# What's in a line? The influence of valence, faces, and language on pseudoneglect

B. Hatin, and L. S. Tottenham

Department of Psychology, Faculty of Arts, University of Regina

### Abstract

The line bisection task is a simple and effective way to measure leftward and rightward biases in spatial attention. For this task, a horizontal line is presented and participants try to bisect the line as close to centre as possible without using any form of measurement. Pseudoneglect, a leftward line bisection bias, is typically found on this task, and appears to result from right hemisphere dominance for spatial processing. In the present study (n=52) we examined the influence of other lateralised processes (emotion, language, and face processing) on line bisection performance. Line type (face, word, solid), emotional valence (positive, negative, neutral), and hand use (left, right, both) were manipulated. Results indicated that participants displayed pseudoneglect as expected, and that line type and valence interacted to affect the strength of these leftward biases. In general, when the lines were embedded with facial stimuli, the extent of pseudoneglect decreased, and when the lines were embedded with words, the extent of pseudoneglect increased (particularly when positive words were used). These results are opposite to what was predicted based on known hemispheric asymmetries. Alternative explanations for these results are discussed.

# Qui est le meilleur? - La diversité et les contributions des pollinisateurs sauvages de cerises sûres (*Prunus cerasus*) quand ils sont comparés au abeilles à miel (*Apis mellifera*)

C. Bailey

Department of Biology, Faculty of Science, University of Regina

### Abstract

Plus d'un tiers des récoltes mondiales sont dépendantes des animaux pour leur pollinisation, les insectes plus particulièrement. Malgré l'importance de la pollinisation des insectes, des études qui examinent quels pollinisateurs fécondent quelles plantes sont presque absentes. À cause de cela, on suppose que les abeilles à miel (*Apis mellifera*) sont les meilleurs pollinisateurs. Une étude récente fait état que ceci ne serait pas le cas et que les autres pollinisateurs peuvent féconder les fleurs aussi efficacement que les abeilles à miel.

Grâce au développement des cultivars de cerises sûres naines de série «Romance» produite par l'Université de Saskatchewan en 2002, la Saskatchewan produit la plupart des cerises sûres au Canada après l'Ontario. Toutefois, les pollinisateurs sauvages des cerises sûres naines restent inconnus. Comprendre la biologie de cette plante est nécessaire pour en faire la production, incluant l'identification des pollinisateurs sauvages et dans quels habitats ils se développent.

Des observations préliminaires montrent que les mouches (Diptera: en particulier, les familles de Syrphidae et Stratiomyidae) sont les insectes les plus abondants sur les fleurs de cerises sûres naines et les scientifiques ont pu observer qu'elles transportaient du pollen de cerises sûres.

Le but de ma recherche est d'identifier les pollinisateurs sauvages de la cerise sûre naine et d'évaluer leur efficacité comme pollinisateurs. Je vais considérer comment l'habitat du verger et ses environs ont un impact sur le type d'insectes qui visitent les fleurs de cerisier. Mon projet sera le premier qui examinera les pollinisateurs sauvages des cultivars de cerises sûres naines en Saskatchewan.

# Healing from addictions through the voices of the Elders

**C. LaVallie**

**Department of Educational Psychology, Faculty of Education, University of Regina**

### **Abstract**

Elders, oral history, and research studies have identified that the issue of addiction amongst Indigenous people was created through colonization and assimilation practices. Spiritual needs once met through cultural rituals and Indigenous ways of being is thought to have been replaced by addictive stimuli and behaviors. Shame and guilt become predominant underlying feelings for people living and healing from addictions. Current western-based treatments are proving to be of minimal benefit in the healing process specific to spiritual needs. Indigenous ceremonies offer ways for Indigenous people to tap into meeting inherent spiritual needs such as forgiveness and hope in order to strengthen success in healing. A process of decolonization must take place to provide supportive, effective healing ways. Elders have identified that to help people healing from addiction; methods must harmonize both Indigenous and western approaches. The study lays the foundation for future work in addictions by privileging the voices of the elders about healing approaches, while identifying where colonization interfered with Indigenous ways of being. Using Indigenous methodologies, knowledge was constructed that explored Indigenous and western approaches to assist others in healing from addictions. Time was spent identifying intention, attending ceremony, having conversations with Elders, and reflecting on the data. To begin decolonizing addiction work, an understanding of Indigenous methodologies was needed. This poster presentation provides an illustration of the framework for Indigenous methodologies used in this study.

# Iron acquisition genes are associated with human pathogenicity in the bacterial genus *Pantoea*

C. Soutar, and J. Stavriniades

Department of Biology, Faculty of Science, University of Regina

### Abstract

*Pantoea* is a genus of bacteria found living freely in the environment and also in association with plants, animals and humans. Multiple *Pantoea* species are plant pathogens while others are known to cause infections in humans. Iron is an important nutrient for *Pantoea* as well as for many other microorganisms. To aid iron acquisition, many bacterial species produce small molecules, known as siderophores, that have a high affinity for iron. Siderophores are used by various pathogens to facilitate iron acquisition from a host organism. The objective of this research is to determine if siderophore genes are related to human pathogenicity in *Pantoea*. Genomes of various *Pantoea* strains were analyzed using antiSMASH software to identify siderophore biosynthetic gene clusters. BLAST search tool was then used to determine the distribution of gene clusters of interest within *Pantoea* while the program MEGA was used to construct phylogenetic trees based on sequences of genes from those clusters. Biosynthetic gene clusters for two siderophores, desferrioxamine and turnerbactin, were found widely distributed amongst *Pantoea* species. The turnerbactin cluster was identified in six of the nine *Pantoea* species that contained human clinical isolates and three of the four *Pantoea* species that exclusively contained human clinical isolates. The desferrioxamine cluster was ancestral to *Pantoea* but has been lost in many *Pantoea* species that contain human pathogens. Siderophore genes appear to be associated with human pathogenicity in *Pantoea*. These findings indicate that it may be possible to predict bacterial pathogenicity in humans using siderophore genes.

# Moral Agency among Nurses: Culture of Healthcare and Moral Dilemmas

**E. Fortier**

**Department of Kinesiology, Faculty of Kinesiology & Health Studies, University of Regina**

### **Abstract**

The purpose of this research is to explore moral agency among six nurses in healthcare with experience in emergency and/or long term specialties (i.e., oncology). Moral agency is an individual's ability to make moral judgments and take responsibility in the outcomes of decision making. Being a moral agent means understanding moral principles and using them to guide decisions. This is consistent with existential philosophy in which every individual is understood to have free will and is obligated to take responsibility for one's own behaviour. The literature review discusses moral agency in terms of existentialism and its practical application through psychological resilience. Bureaucracy is also discussed as it influences individual moral agency through the culture of an institution. For this qualitative study, five registered nurses and one licensed practical nurse, with five to eighteen years of experience, were recruited using purposive sampling and the snowball sampling technique. Ethical approval was received in February 2016, and interviews with participants were conducted at the University of Regina in March 2016. The data was analyzed using thematic content analysis. A major theme influencing the moral agency of interviewed participants appears to be nurses' resilience in facing daily moral dilemmas in the nursing profession. However, various limitations within the culture of the healthcare system impact moral agency such as; hierarchy vs. taking initiatives, time and workload, and "politics of healthcare". The discussion further delves into the implications of moral agency on patient care, nurses' well-being and turnover within the healthcare system.

# Habitat selection by Common Nighthawks in Canada's boreal forest

**G. Foley**

**Department of Biology, Faculty of Science, University of Regina**

### **Abstract**

The Common Nighthawk is a bird currently listed as threatened under Canada's Species at Risk Act. Although significant populations may exist in Canada's boreal forest, these populations have not been well surveyed and the focus of virtually no research. My project sought to fill this gap in our knowledge. I evaluated whether the habitat created by forest fires affects the presence, feeding, and reproductive habits of nighthawks. My prediction that the bare ground and open space created by fire would promote nesting and feeding by this species was significantly supported. Understanding how these birds use forests after fire will help managers understand where nighthawks are likely to occur in the boreal forest, how this habitat compares to conventional habitats, and how their short- and long-term population will be affected by fires. In addition, nighthawks are known to use gravel roads as a temporary roost site after dark, which can lead to road mortalities. I collected data that show existing patterns in their road use. These data may help avoid unnecessary mortality of a species at risk and explain why they appear to select road roosts. Through this project, Musselwhite Mine has broadened its biodiversity management plans and their workforce has been educated on a species at risk and relevant research on it. Through these efforts, Musselwhite Mine has increased its operation's sustainability and made the mine even more respected and welcomed by the public, by local First Nations, and by the community.

# Type of Trauma Exposure Influences PTSD Symptom Pattern

K. D. Amerongen, D. M. LeBouthillier, H. A. Parkerson, S. C. Horswill, R. N. Carleton, and G. J. G. Asmundson

Department of Psychology, Faculty of Arts, University of Regina

### Abstract

**Background:** Posttraumatic stress disorder (PTSD) can result from traumatic events that are experienced directly (i.e., trauma happened to the individual) or indirectly (e.g., witnessing or learning about a trauma). Research suggests that directly experienced traumas may be associated with an increased number of symptoms relative to indirect traumas, but limited research has comprehensively examined the impact of mechanism of exposure on PTSD symptom profiles.

**Methods:** Participants included 744 trauma-exposed community adults who completed the Traumatic Life Events Questionnaire and reported the mechanism of exposure (i.e., direct or indirect). Participants then completed the PTSD Checklist for DSM-5 (PCL-5) based on the trauma. Profile analysis was used to compare symptom patterns for direct and indirect traumas on the PCL-5 subscales.

**Results:** There was a main effect of exposure,  $\eta^2=.006$ ,  $F(1, 742)=4.809$ ,  $p=.029$ , but no main effect of subscale,  $\eta^2=.002$ ,  $F(3, 2226)=1.216$ ,  $p=.302$ . There was a significant exposure by subscale interaction,  $\eta^2=.013$ ,  $F(3, 2226)=9.661$ ,  $p<.001$ . Direct traumas were associated with greater symptom severity overall, and greater hyperarousal and negative alterations in cognition and mood ( $ps\leq.001$ ). The groups did not differ on reexperiencing or avoidance ( $ps\geq.395$ ).

**Conclusion:** The current results indicate that direct traumas are associated with greater overall PTSD symptom severity, and with a specific symptom pattern characterized by greater hyperarousal and negative alterations in cognition and mood. The results provide additional evidence for PTSD symptom typologies based on mechanism of exposure. Further research is needed; however, the results can inform treatment tailoring for specific PTSD presentations based on mechanism of trauma exposure.

# Representing the Non-Human in England's Early Modern Period

**L. Kozak**

**Interdisciplinary Programs, Fine Arts, University of Regina**

### **Abstract**

My thesis research will investigate the representation of non-human subjects in English literary and visual arts during the early modern period. By focusing on key concepts such as the "mirroring," "interaction," and "proxemics," I aim to demonstrate the moral and ethical implications associated with the representation of animals and my methodology will include discourse analysis. In the visual component of my research, I will analyze the paintings of three prominent English artists: William Hogarth, Thomas Gainsborough, and Joseph Wright of Derby, which will serve as case studies in my research. I will demonstrate how the artists portrayed animals with visual clues that conveyed the acknowledgement of animal consciousness. I will also discuss how animals served as extensions of human identity, therefore, elevating the role and status of animals within early modern English society. In the literature component of my research, I will analyze the case studies of Jonathan Swift's *Gulliver's Travels*, Margaret Cavendish Newcastle's *Blazing World*, and Daniel Defoe's *Robinson Crusoe*, to demonstrate how the authors represented animals as extensions of human identities, which reflected the complex relationship between humans and animals. My research will apply the philosophical theories of animal consciousness put forth by Rene Descartes and David Hume in relation to the analysis of the case studies. My research aims to explore the historical relationship between humans and non-humans within England's early modern arts in an effort to address contemporary issues of animal rights from a historically unique perspective.

## Thyroid hormones regulate the activity of citrate synthase and cytochrome c oxidase in warm- but not cold-acclimated lake whitefish (*C. clupeaformis*)

M. A. Zak, A. M. Regish, S. D. McCormick, and R. G. Manzon

Department of Biology, Faculty of Science, University of Regina

### Abstract

Fish undergo several physiological changes in response to long-term temperature shifts. Many of these changes have been characterized broadly on the organism level, but the cellular mechanisms and the potential influence of hormones remain largely unknown. Here we examine the effect of thyroid hormones on oxidative metabolism in lake whitefish (*Coregonus clupeaformis*) undergoing acclimation above or below thermal optimum. Impacts on oxidative metabolism were assessed by quantifying the activity of citrate synthase and cytochrome c oxidase in fish acclimated above (19 °C) or below (8 °C) thermal optimum in either the presence or absence of exogenous thyroid hormones. Warm acclimation alone decreased citrate synthase activity in liver, but increased citrate synthase activity in red muscle. However, when combined with exogenous thyroid hormone exposure, these effects were reversed. Cytochrome c oxidase activity in red muscle was also increased in response to elevated temperatures, but reduced in the presence of thyroid hormones. Neither citrate synthase nor cytochrome c oxidase activity were affected by cold acclimation in liver or red muscle, regardless of hormone treatment. Collectively, these results indicate that thyroid hormones influence the activity of oxidative enzymes more strongly in warm-acclimated fish than in cold, and suggest they may play a role in mediating metabolic adjustments associated with chronic exposure above thermal optimum.

# Impregnation of Ionic Liquids on Mesoporous Silica as Efficient Sorbents for CO<sub>2</sub> Capture Applications

M. Mohamedali, H. Ibrahim, and A. Henni

Department of Process Systems Engineering, Faculty of Engineering and Applied Science, University of Regina

### Abstract

In this study, we have successfully prepared a novel composite material utilizing ionic liquid 1-Butyl-3-methylimidazolium Acetate (bmimAc) and 1-Ethyl-3-methylimidazolium Acetate (emimAc) encapsulated into the pores of mesoporous silica SBA-15, as efficient sorbents for CO<sub>2</sub> capture. In order to investigate the impacts of the ionic liquid impregnation on the properties of the resultant composite, different bmimAc@SBA-15 and emimAc@SBA-15 samples were prepared with varying ionic liquid loadings. Thermogravimetric analysis (TGA) was performed to quantify the actual loadings of bmimAc and emimAc in order to study the impregnation efficiency. Fourier transform infrared spectroscopy (FTIR) was carried out to confirm the impregnation process by detecting characteristic peaks corresponding to both the ionic liquid and the solid support SBA-15. The porous structure of the as-prepared composites were studied using N<sub>2</sub> adsorption isotherms to measure the decrease in BET surface area due to the incorporation of the ionic liquids inside the pores while the morphology of the impregnated samples were monitored using scanning electron microscopy (SEM). The solubility of CO<sub>2</sub> in bmimAc@SBA-15 and emimAc@SBA-15 composites at different pressures and temperatures was evaluated using intelligent gravimetric analyzer (IGA003). The composite materials exhibited substantially higher CO<sub>2</sub> uptakes and adsorption enthalpy than the bare SBA-15 due to the presence of the reactive acetate ions inside the SBA-15 pores. The excellent performance of these composite materials offers them great potential for the CO<sub>2</sub> capture in large scale.

# The Effects of the Intergenerational Residential School Experience and Negative Racial Stereotyping on Ojibwe Speech Patterns in mid-Northern Ontario Anishnawbek

N. J. Owl

Department of Education, Faculty of Education, University of Regina

### Abstract

Indigenous languages are in a serious state of decline in Canada with only three expected to survive – Inuktitut, Cree, and Ojibwe/Nishnaabemwin (Norris, 1998, 2007). There are micro (internal to a community such as demographics and attitudes) and macro (external to a community such as laws and policies) level factors that contribute to language decline (Grenoble & Whaley, 2006). Historic trauma, particularly the Indian Residential School [IRS] system and negative racial stereotyping, has contributed to Indigenous language loss. In order to better understand this impact, a research questionnaire was developed that focused on: 1) performance assessment in Nishnaabemwin; 2) personal background regarding the IRS system; 3) personal views about negative racist stereotypes; and 4) fluency. One-on-one semi-structured interviews with 11 participants were conducted in the Sagamok Anishnawbek area.

Four key findings are: 1) there is a strong correlation between a lower Nishnaabemwin performance assessment, a longer length of attendance in the IRS system and a negative rating of this experience; 2) intergenerational Nishnaabemwin transmission appears to be the most significant effect of the IRS system as participants consciously and sub-consciously chose to not speak Nishnaabemwin to their children; 3) the day school experience was ranked more negatively than the residential school experience; and 4) all of the participants experienced racism and negative stereotyping in varying degrees that included a negative impact on Nishnaabemwin usage while exhibiting a resilience in overcoming this historic trauma. Other findings include significant Nishnaabemwin internal variation and semantic broadening co-related to attendance in the IRS system. Implications include: 1) examination, at the doctoral level, of the sociolinguistic factors that impact Nishnaabemwin such as lateral violence, spirituality, gender socialization, standardization, mental health, aging, addictions and identity; and 2) development of a holistic Indigenous language education model.

# Developing management targets for grassland songbirds in the mixed-grass prairie

**P. Rose**

**Department of Biology, Faculty of Science, University of Regina**

### **Abstract**

Results-based conservation is a growing initiative on native rangelands in Prairie Canada whereby livestock producers receive funding or incentives if management on their properties creates or enhances habitat used by species of conservation concern. A critical component of the program is developing meaningful management targets that 1) will enhance and maintain suitable habitat for species of conservation concern and 2) producers can measure and manage for to receive funding once they achieve those targets. The objective of this project is to identify habitat characteristics important to grassland songbirds and determine if habitat selection remains constant or shifts as a result of changing grassland conditions created by gradients in soil and moisture. Conservation targets will reflect these relationships between vegetation characteristics and grassland songbird abundance. Emphasis will be placed on grassland songbird species at risk in Canada, including Sprague's pipit, chestnut-collared longspur, Baird's sparrow, and bobolink. This study will also examine potential overlap in songbird habitat requirements to further understand how management directed at one or more species at risk will impact other bird species within the grassland community.

## Cryptic Taxonomy: *Hylaeus* Revisions with DNA Barcoding

R. Oram, C. Sheffield, and J. Stavrinides

Department of Biology, Faculty of Science, University of Regina

### Abstract

The taxonomy of bees has many drawbacks. Due to high variation between species the traditional form of taxonomy can be difficult and time consuming. Along with constant accidental importation of new species to areas and the lack of knowledge in many native bees there are concerns. DNA barcoding can aid in filling the gaps of knowledge on these groups. *Hylaeus* Fabricius (Hymenoptera: Colletidae) are diverse and readily found around the world and are a great group to figure out alternative techniques for bee taxonomy. The genus consists of small black bees, and in most cases, have yellow to white maculations present on their bodies; primarily on the head, thorax and leg regions. Due to nesting behaviors, these bees are susceptible to importation to new areas. There has been no complete taxonomic work done on Canadian *Hylaeus*. Previous works were conducted solely using morphology, including maculations, and the sculpture of the exoskeleton, making them hard to identify. Preliminary DNA work has shown that rework on this genera may be needed. This is the case, where some groups thought to be a single species, may be multiple morphologically similar species (ex. *H. mesillae*). Proposed is that revisions of *Hylaeus* in Canada using DNA-sequencing along with morphology & geography should be made.

# Evaluation of PET estimation techniques in depicting drought severity using SPEI in the Canadian Prairies

S. Gurrapu, D. J. Sauchyn, and K. Hodder

Department of Geography and Environmental Studies, Faculty of Arts, University of Regina

### Abstract

Canadian Prairies is home for majority of the agricultural land in Canada and therefore, any negative impact on the crops will have a significant influence on the agricultural economy of Canada. Increasing economic activity and growing population in this region is increasing the demand for water resources. Several global and regional climate models project increased climate variability in the 21st century and indicate an increase in the likelihood of droughts in this region. Standardized Precipitation Evapotranspiration Index (SPEI) is widely accepted drought index to measure the drought severity. Estimation of potential evapotranspiration (PET) is a critical step as it is based on numerous meteorological parameters. Although Penman-Monteith method is the recommended method for PET estimation, it requires data for numerous variables that are seldom available. Thornthwaite equations are generally adopted to estimate PET when computing SPEI, as it requires minimal data. However, several variants of Penman-Monteith equations exist that are based on relatively fewer variables. Hogg (1997) developed a much simpler variant of Penman-Monteith equation that requires only minimum, maximum and mean temperature. In this study, we compared the drought indices computed using the PET estimated from Thornthwaite (SPEI\_T) and Hogg's (SPEI\_H) equation to understand which of the two PET estimation techniques efficiently capture the evaporative stress in the region. Our results indicate that the drought index associated with Thornthwaite equation (SPEI\_T) depict much drier conditions. Thornthwaite equation over-estimates the evaporative stress as it is based on temperature alone.

# The Relationship between Intolerance of Uncertainty, Depression, and Generalized Anxiety Symptoms beyond Posttraumatic Stress Symptoms

S. Korol, D. M. LeBouthillier, S. Duranceau, G. J. G. Asmundson, and R. N. Carleton

Department of Psychology, Faculty of Arts, University of Regina

## Abstract

Intolerance of uncertainty (IU) is a dispositional characteristic resulting from negative beliefs about uncertainty over future events (i.e., prospective) and behavioral responses to uncertainty (i.e., inhibitory). IU has been independently associated with posttraumatic stress disorder (PTSD), major depressive disorder (MDD), and generalized anxiety disorder (GAD) in several studies; however, relatively less is known about the interrelationship between PTSD, IU and comorbid disorders. Given the high comorbidity between PTSD, mood, and anxiety disorders, and the potential utility of IU as a transdiagnostic treatment target, the present study examined the relationship between IU, MDD, and GAD, after accounting for PTSD symptoms and other relevant covariates.

A total of 338 self-identified trauma-exposed community members completed self-report measures as part of a larger web-based study. Participants completed the IU Scale–Short Form (IUS-12), the Anxiety Sensitivity Index-3 (ASI-3), the Centre for Epidemiological Studies-Depression Scale (CES-D-14), the GAD 7-item scale (GAD-7), and the PTSD Checklist for DSM-5 (PCL-5).

The IUS-12 inhibitory IU subscale score accounted for moderate increases in variance explained for the CES-D-14 total score ( $\Delta R^2 = .06$ ;  $\beta = 0.68$ ) and the GAD-7 total score ( $\Delta R^2 = .07$ ;  $\beta = .37$ ;  $ps < .001$ ); however, the IUS-12 prospective IU subscale score was not significantly associated with CES-D-14 and GAD-7 total scores ( $ps \geq .05$ ).

Inhibitory IU was significantly associated with MDD and GAD symptoms in a trauma-exposed community sample, even after accounting for PTSD symptomatology. The current results suggest that decreasing IU may have added utility within the context of trauma-focused therapies.

# Highway of Lost Years: BC Government Inaction Leaves Vulnerable Women at Risk in Northern BC

T. Wild

Department of Journalism, Faculty of Arts, University of Regina

### Abstract

Missing and murdered women cases in northern BC have been ongoing since 1969 (Pope & Smiley, 2015). The government has responded to the problem with the 2012 BC Inquiry and the 63 recommendations it set out to accomplish. The most urgent recommendation proposed was to create a transit system. The inquiry requested that the transit system “provide a safer travel option connecting the Northern communities, particularly along Highway 16” (Ministry of Justice, 2012). Four years later the area is still without the transit system. The government is working at a very slow pace. There is no clear indication that transit will help the issue. Without clear data to work with there can be no resolve. Action is required.

The investigative documentary I will produce will look at the transportation action plan initiated by the BC Inquiry. I will calculate how many cases of missing and murdered have compiled since government intervention. There are victims that continue to be added to the case load. I will try to answer the following questions: Why isn't there more knowledge and access to murdered and missing cases in northern BC? Why has it taken years after the BC Inquiry recommendations and the 2006 Symposium to start community meetings on transportation solutions? And What evidence shows that the transportation service is a solution to missing and murdered cases? I will use qualitative methodology to present my findings. It's important to stop this tragedy from occurring to other women and their families.