11th PRAIRIE CONSERVATION AND ENDANGERED SPECIES CONFERENCE

Prairie—It's a Happening Place!

February 16-18, 2016

Saskatoon Inn ● Saskatoon, SK

Hosted by:

Saskatchewan
Prairie Conservation Action Plan

Front page design by: Caitlin Mroz
Top-left photo by Caitlin Mroz (Bison in Grasslands National Park)
Top-middle photo by R. McCulloch (Ferruginous Hawks)
Top-right photo by Sarah Vinge-Mazer (Blue-eyed Grass)
Bottom-left photo by Barry Putz (PCAP's Adopt-A-Rancher program)

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ORGANIZING COMMITTEE

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Natasha Wilkie and **Tara Mulhern Davidson (Past Leads)**
Donna Bruce .....Nature Saskatchewan
Kaytlyn Burrows .....Nature Saskatchewan
Katherine Conkin .....Saskatchewan Ministry of Environment
Mae Elsinger .....Agriculture and Agri-Food Canada
Heather Facette .....Parks Canada – Grasslands National Park
Joan Feather .....Saskatoon Nature Society
Branimir Gjetvaj .....Nature Saskatchewan
John Hauer .....Saskatchewan Ministry of Agriculture
Kerry LaForge .....Agriculture and Agri-Food Canada
Sarah Lee .....Environment Canada
Kerry Lowndes .....South Saskatchewan River Watershed Agri-Environmental Group Plan
Jessica Martino .....Canada North Environmental Services Limited
Dave Messmer .....Saskatchewan Ministry of Environment
Candace Neufeld .....Environment Canada
Leah Tallis .....South Saskatchewan River Watershed Agri-Environmental Group Plan
Rachel Turnquist .....Saskatchewan Ministry of Agriculture

Logistics, Registration and Volunteers

Kayla Balderson Burak (Lead) .....Saskatchewan Prairie Conservation Action Plan
Donna Bruce .....Nature Saskatchewan
Branimir Gjetvaj .....Nature Saskatchewan
John Hauer .....Saskatchewan Ministry of Agriculture
Kerry LaForge .....Agriculture and Agri-Food Canada
Dave Messmer .....Saskatchewan Ministry of Environment

Program

Mae Elsinger (Lead) .....Agriculture and Agri-Food Canada
Donna Bruce .....Nature Saskatchewan
Heather Facette .....Parks Canada – Grasslands National Park
Joan Feather .....Saskatoon Nature Society
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John Hauer .....Saskatchewan Ministry of Agriculture
Darcy Henderson .....Canadian Wildlife Service
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Sue Michalsky .....Ranchers Stewardship Alliance Inc.

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Kayla Balderson Burak .....Saskatchewan Prairie Conservation Action Plan
John Hauer .....Saskatchewan Ministry of Agriculture
Kerry Lowndes .....South Saskatchewan River Watershed Agri-Environmental Group Plan

Communication

Kayla Balderson Burak (Lead) .....Saskatchewan Prairie Conservation Action Plan
Renny Grilz .....Society for Range Management
Kerry LaForge .....Agriculture and Agri-Food Canada

Student Liaison

Katherine Conkin .....Saskatchewan Ministry of Environment
Dave Messmer .....Saskatchewan Ministry of Environment

Awards, Banquet, Entertainment & Silent Auction

Sue Michalsky (Lead) .....Ranchers Stewardship Alliance Inc.
Kayla Balderson Burak .....Saskatchewan Prairie Conservation Action Plan
Kaytlyn Burrows .....Nature Saskatchewan
Brandy Downey .....Alberta Environment and Parks
Chris Friesen .....Manitoba Conservation Data Centre
Caitlin Mroz .....Saskatchewan Prairie Conservation Action Plan
Rachel Turnquist .....Saskatchewan Ministry of Agriculture

GENERAL INFORMATION

Registration

The registration desk will be available through regular conference hours should questions or problems arise. Conference committee members will have coloured nametags so that if questions arise, assistance can be found. Upon check-in participants will receive a registration kit which includes a name tag, a registration book with a map of the conference site, a banquet ticket, and an evaluation form. Please wear your name tag at all times as it serves as your admission to all plenary sessions, concurrent sessions and meals.

Trade Show Exhibits

Please take the time to visit the displays of our trade show participants whose support made this conference possible. Exhibits will be located on the Mezzanine in front of the Saskatchewan Ballroom.

Mobile Phones and Smart Phones

For the courtesy of the speakers and your fellow delegates, please turn off mobile communication devices during the conference.

Smoking

The Saskatoon Inn conference levels are smoke-free areas. The designated smoking area is outside the front doors, on the west side of the building.

Meals

Registration includes the Opening Reception on Tuesday evening, refreshments at all breaks, lunches and the banquet on Wednesday evening. A limited number of banquet tickets may be available at the registration desk until Wednesday at 1:00 p.m. Tickets cannot be purchased after that time. If you require a special meal, a sticker has been added to your name tag. Please identify yourself to your server so they are aware of your needs.

Social Events and Entertainment

Tuesday: Attend the opening reception to visit with new and old friends. There will be snacks and a cash bar. There is no formal program at the opening reception.

Wednesday: During the banquet, the Young Professional Stewardship Grant and Prairie Conservation Awards will be presented. The Silent Auction will occur throughout the banquet and close after the Awards. A cash bar is available at the banquet and during the cocktail hour before the banquet. The poster session with cash bar will commence at 4:30 p.m., after the last concurrent session of the day.

Evaluation

Please take a moment to complete the conference evaluation form enclosed in your delegate package and drop it off at the registration desk before you leave. Your feedback is extremely valuable for conference planning and will be an enormous help to the organizers of the 12th PCESC in 2019.

INFORMATION FOR PRESENTERS AND EXHIBITORS

SESSION PRESENTATIONS

Please submit your oral presentations to **pcesc2016@gmail.com** before 11:00 PM on **Friday, February 12**. The presentations will be loaded onto the computers in each concurrent room for you but remember - it is always good practice to bring your own backup! If you do not submit your presentation by this date, you will be responsible for finding the A/V representative to put your presentation on the proper computer **IN ADVANCE** of the concurrent session that you are taking part in.

Please check in with your session moderator in your assigned room no later than 25 minutes before the start of the 1st presentation.

All rooms are equipped with an LCD projector(s), screen, presenter remote with laser pointer, and wireless lapel and podium microphones. All conference computers operate with Microsoft Office Suite 2010 applications (PC, not MAC based).

- Presenters are responsible for ensuring that their presentation material is compatible with conference equipment, and that it is uploaded successfully on the conference PC prior to session start. Use of personal laptops is not permitted.
- An AV volunteer will be available in each room 30 minutes prior to session start to help you load and test your presentation. Presentation files will be saved in daily folders by time slot (e.g. 1-1). All files will be deleted at the end of the conference.
- Please ensure visuals are simple, clear and easily read. Effective slides contain few words, and avoid highly complex figures and tables. Use large font sizes and illustrations for maximum effectiveness.

Please plan to speak for no more than 15 minutes and be prepared to spend another 5 minutes responding to any questions that arise. An additional 5 minutes account for the time needed to find your presentation, introduce you, transition between presenters, and allow audiences to move among presentation rooms. Be aware that moderators are instructed to cut off presentations that go over the allotted time. Limit your presentation to key points that will convey the issue or research question, any methods or plans to address it, the outcomes experienced or expected, and the key take-home messages. Practice to ensure that it flows well and that you are able to cover everything planned in the available time.

POSTER PRESENTATIONS

The Manitoba Room and Mezzanine will be open Tuesday at 7:00 pm. Please have posters set up and ready no later than 9:00 pm Tuesday, or by 8:15 am on Wednesday morning. Push pins will be provided on each poster board. Posters must be removed by the end of the day on Thursday. Any posters that are not removed will be disposed of by conference volunteers.

Each poster must be no more than 3.5 ft (42 inches) high x 3.5 ft (42 inches) wide. There will be two posters on each side of the poster board, so please be neighborly and keep your poster to within those dimensions! Poster boards will be numbered according to the assigned number in this poster session portion of this program. Please make sure that the title of your poster is the same as that of your abstract, and that you include the names of all your contributing authors.

The main text of the poster should be legible from a distance of 2 m (approximately 6.5 feet). Limit your presentation to key points that will convey the issue or research question, any methods or plans to address it, the outcomes experienced or expected, and the key take-home messages. Figures, tables, and photos should only be used support or enhance the poster content.

Posters will be available for viewing all day Wednesday and Thursday. Please ensure that you are present to discuss your poster on Wednesday from 4:30 – 6:00 pm. Do not leave any valuables unattended in the poster room as it will not be locked or supervised at all times during the conference.

TRADE SHOW EXHIBITORS

Trade Show set up will be Tuesday, February 16th from 9:00 am to 7:00 pm on the mezzanine. Please find the table with your business/organization name on it. Please have your tradeshow booth available for viewing during the registration social, starting at 7:00 pm on Tuesday, February 16th. The trade show will also be available for viewing on Wednesday, February 17th from 7:15 am to 6:00 pm and on Thursday, February 18th from 7:15 am – 4:45 pm. While you are welcome to attend the plenary and concurrent sessions, we recommend that you are at your booth during tradeshow viewing times, especially during the breaks. Exhibitors should remove valuables from their booths at night. PCESC will not be responsible for lost or stolen items. Tradeshow booths can be taken down at 4:45 pm on Thursday, February 18th.

YOUNG PROFESSIONAL STEWARDSHIP GRANT

Supporting young professional and aspiring conservationists

The theme of the 11th Prairie Conservation and Endangered Species Conference is "Prairie – It's a Happening Place!" What better way to encourage conservation and stewardship than to offer an opportunity to financially support projects happening on the Prairie landscape in Alberta, Saskatchewan or Manitoba. This is the second PCESC where young professionals or aspiring conservationists have been given the opportunity to apply for funding support for their projects. The *Young Professional Stewardship Grant* looks for innovative proposals that advance the "engagement" of people in conservation in Grassland and Parkland Natural Regions of the Prairie Provinces. Applications were received; judges made their decisions and the winning proposals will be announced during the banquet.

How can you HELP?
Support the SILENT AUCTION!

Funds raised from the Silent Auction on the Wednesday evening of the conference will go directly to assisting these young professionals and aspiring conservationists to achieve success with prairie conservation and endangered species management.

Auction items include: artwork, books, framed pictures, t-shirts, wine, gift cards for MEC, yoga studios and spas, and passes to Manitou Springs Resort & Mineral Spa, Elkhorn Ridge Resort, Elk Horn Resort, Tinhorn Creek Vineyard, a zipline tour, the Regina Symphony Orchestra and the Royal Saskatchewan Museum.

Note:

- Cash, Cheque, VISA and MasterCard will be accepted.
- All funds raised will go directly to the projects.
- We apologize for any omissions in Silent Auction contributors list identified here. A complete list will be made available at the conference.

PROGRAM SCHEDULE

Tuesday, February 16

ROOMS >>	Saskatchewan Ballroom A&B	Canadian Room	Courtyard Room	Manitoba Room and Mezzanine
9:00 AM - 5:00 PM			**Pre-Conference Workshop** Natural Processes for the Restoration of Drastically Disturbed Sites **D. POLSTER**	Trade Exhibit Set-up
5:00 PM - 7:00 PM		**Semi-annual meeting** (open to all) Society for Range Management - Prairie Parkland Chapter		Trade Exhibit Set-up Poster boards arrive
7:00 PM - 9:00 PM	**Opening Reception** Socializing, Finger Foods, Cash Bar **Short Video (on a loop):** Conservation Conversations **SK PCAP**			Registration Trade Exhibits Available to View Poster Set-up

Wednesday, February 17

ROOMS >>	Saskatchewan Ballroom A&B	Manitoba Room and Mezzanine
7:15 AM - 8:15 AM	**Breakfast and Registration (on Mezzanine)**	Registration Poster Set-up Trade Exhibits
8:15 AM - 8:45 AM	**Welcoming Remarks** Introduction **K. BALDERSON BURAK** Greetings from Saskatoon Mayor **DONALD ATCHISON** Remarks from Saskatchewan Minister of Environment **HERB COX**	
8:45 AM - 9:15 AM 9:15 AM - 10:00 AM	**Plenary 1: Setting the Stage for PCESC 2016** **P1-1.** Hearts and Minds - Developing a Prairie Story **L. FITCH and B. GJETVAJ** **P1-2.** Panel Interview Celebrating 30 Years of PCESC: Lessons Learned after 30 Years of Prairie Conservation Actions, and Directions for the Future **D. HENDERSON**, **B. ADAMS**, **L. DELANOY**, and **J. MORGAN**	
10:00 - 10:20	**BREAK**	Posters & Trade Exhibits

PROGRAM SCHEDULE

Wednesday, February 17 (continued)

ROOMS >>	Saskatchewan Ballroom (Partition B)	Canadian Room	Courtyard Room	Manitoba Room and Mezzanine
10:20 AM - 12:00 PM	**Theme 1: Status, Trends, and Issues**			
	Concurrent Session 1: Avian Status and Ecology	**Concurrent Session 2:** Large Scale Trends and Impacts	**Concurrent Session 3:** Bees and Amphibians	
10:20 AM - 10:45 AM	**1-1.** The Status of Grassland Birds in Manitoba: Preliminary Results of the Manitoba Breeding Bird Atlas **C. ARTUSO**	**2-1.** Understanding the Future of Wind Development in Montana and Wyoming **C. HOOD**	**3-1.** Understanding the Effects of Habitat Fragmentation on Grassland Pollination **M. OLYNYK**	
10:45 AM - 11:10 AM	**1-2.** The Influence of Migration Timing on Parental Provisioning Rates and Reproductive Success in a Songbird **A. RITCHIE**	**2-2.** Ceasing of Federal Pastures and a New Model for Public Land Management **R. ASHTON**	**3-2.** The Conservation Status of Bees in the Prairie Provinces – Why Are They at Risk? **C. SHEFFIELD**	
11:10 AM - 11:35 AM	**1-3.** Habitat use and Movement Patterns of Male and Female Snowy Owls (*Bubo scandiacus*) in Winter **A. CHANG**	**2-3.** The Effects of Climate Change on Endangered Plant Species in Manitoba **A. GREENLEY**	**3-3.** Effects of Environmental Variables on the Calling Behavior of Northern Leopard Frogs (*Lithobates pipiens*) **M. SOMMERS**	
11:35 AM - 12:00 PM	**1-4.** Developing Predictive Models of Occurrence for Sprague's Pipit (*Anthus spragueii*) in Alberta **J. LANDRY-DEBOER**	**2-4.** Can Wet Areas Mapping be used to Predict Invasive Species in Dry Mixed Grass Prairie? **L. SCHROEDER**	**3-4.** Distribution of the Great Plains Toad in Prairie Canada **A. DIDIUK**	
ROOMS >>	**Saskatchewan Ballroom A&B**			**Manitoba Room and Mezzanine**
12:00 PM - 1:00 PM	**LUNCH**			Posters & Trade Exhibits
1:00 PM - 1:55 PM 1:55 PM - 2:30 PM	**Plenary 2: Status, Trends and Issues in Conservation and Protection** **P2-1.** Uncommon Common Ground - World Wildlife Fund's Sustainable Ranching Initiative **N. LABBE** **P2-2.** Status and Trends of Prairie and Endangered Species 1986 to 2016 **D. HENDERSON**			
2:30 PM - 2:50 PM	**BREAK**			Posters & Trade Exhibits

PROGRAM SCHEDULE

Wednesday, February 17 (continued)

ROOMS >>	Saskatchewan Ballroom (Partition B)	Canadian Room	Courtyard Room	Manitoba Room and Mezzanine
2:50 PM - 4:30 PM	**Theme 2: Protection and Conservation**			
	Concurrent Session 4: Maps, Models and Mitigation	**Concurrent Session 5:** Conservation and Protection Planning	**Concurrent Session 6:** Successes, Lessons and Opportunities	
2:50 to 3:15	**4-1.** The Status of Biodiversity in the Grassland and Parkland Regions of Alberta **C. COPP**	**5-1.** Guiding Conservation at Scale: WWF's "Plowprint", Sustainable Ranching Initiative, and Grassland Birds **J. NELSON**	**6-1.** Twenty Five Years of Prescribed Management to Conserve Manitoba Tall-grass Prairie Biodiversity – Lessons Learned **C. HAMEL**	
3:15 - 3:40	**4-2.** Modelling Spatial Distributions of the Endemic Plant Species of the Athabasca Sand Dunes of Northern Saskatchewan **U. ATTANAYAKE**	**5-2.** Grassland Conservation Prioritization Model **S. CARLYLE**	**6-2.** Roadside Prairies – Opportunities at 100 km/hr **J. MORGAN**	
3:40 - 4:05	**4-3.** Development of a Habitat Suitability Model for the Threatened Poweshiek Skipperling in Manitoba **R. WESTWOOD**	**5-3.** The Conservation Standards Program: Environmental Data Is Our Currency **K. SCALISE**	**6-3.** Alberta Prairie Conservation Action Plan 2016-2020: Strategies and Outcomes for Future Prairie Conservation Initiatives **K. RAVEN**	
4:05 - 4:30	**4-4.** Migratory Birds and Incidental Take: Mitigation Strategies Used in Industrial Development **J. TRAYLOR**	**5-4.** Meewasin Northeast Swale Master Plan – Protecting a Prized Natural Feature **S. GERSHER**	**6-4.** Mattheis Ranch - A Conservation Triumph **J. BRUNEN**	
4:30 PM - 6:00 PM	**Dedicated Poster Session (Manitoba Room and Mezzanine)** **Social Time and Cash Bar**			
ROOMS >>	**Saskatchewan Ballroom A&B**			
6:00 PM - 9:00 PM 6:00 PM 7:00 PM 7:40 PM 8:00 PM 8:45 PM 9:00 PM	**Banquet, Silent Auction, and Evening Program** Introduction and Meal Awards and Recognition Conservation Caravan video Live Music **GLENN SUTTER** Last Call for Silent Auction Silent Auction Deadline and Last Remarks			

PROGRAM SCHEDULE

Thursday, February 18

ROOMS >>	Saskatchewan Ballroom A&B				Manitoba Room and Mezzanine
7:15 AM - 8:15 AM	**Breakfast and Registration (on Mezzanine)**				Poster & Trade Exhibits
8:15 AM - 8:20 AM	**General Address K. BALDERSON BURAK**				
8:20 AM - 8:35 AM 8:35 AM - 9:00 AM 9:00 AM - 9:25 AM 9:25 AM - 9:35 AM	**Plenary 3: Conservation and Recovery of Prairie and Species** **P3-1.** Federal Programs for Species at Risk Recovery in Prairie Canada **R. BLOOM** **P3-2.** Case Study: Creating Optimal Habitat for Greater Sage Grouse – Multi-Agency/Stakeholder Collaborations **K. WILLIAMSON** **P3-3.** Case Study: On the Ground Recovering Greater Sage Grouse **M. ANDERSON** Questions and Discussion				
9:35 AM - 10:00 AM	**BREAK**				Poster & Trade Exhibits
ROOMS >>	**Saskatchewan Ballroom (Partition A)**	**Saskatchewan Ballroom (Partition B)**	**Canadian Room**	**Courtyard Room**	**Manitoba Room and Mezzanine**
10:00 AM - 12:00 AM	**Theme 3: Restoration and Recovery**				
	Concurrent Session 7: Recovery Strategies I	**Concurrent Session 8:** Recovery Strategies II	**Concurrent Session 9:** Habitat Mitigation and Restoration	**Concurrent Session 10:** Invasive Species	
10:00 AM - 10:25 AM	**7-1.** Redefining Sage-Grouse Knowledge to Aid the Protection, Conservation, and Recovery of a Highly Endangered Species **K. BIRD**	**8-1.** Evaluating the Use of Modified Fence Sites by Pronghorn in Alberta **P. JONES**	**9-1.** Sampling Methodology to Support Regulatory Application and Improve Operational Performance **R. SPARROW**	**10-1.** Invasion of Saskatoon – An Integrated Approach from Meewasin's Resource Management **E. TOMLINSON**	
10:25 AM - 10:50 AM	**7-2.** Post-Release Movements and Habitat Selection of Translocated Greater Sage Grouse in SE Alberta **K. BALDERSON BURAK**	**8-2.** Prairie Dogs, Partnerships and Plague: Striving for the Recovery of Black-Footed Ferrets (*Mustela nigripes*) **H. FACETTE** and **T. STEPHENS**	**9-2.** Soil Bioengineering for Riparian Restoration **D. POLSTER**	**10-2.** Challenges and Learnings Controlling Downy Brome in Native Prairie Disturbances **K. ELLIOT**	

Concurrent Sessions Continue Next Page…

PROGRAM SCHEDULE

Thursday, February 18 (continued)

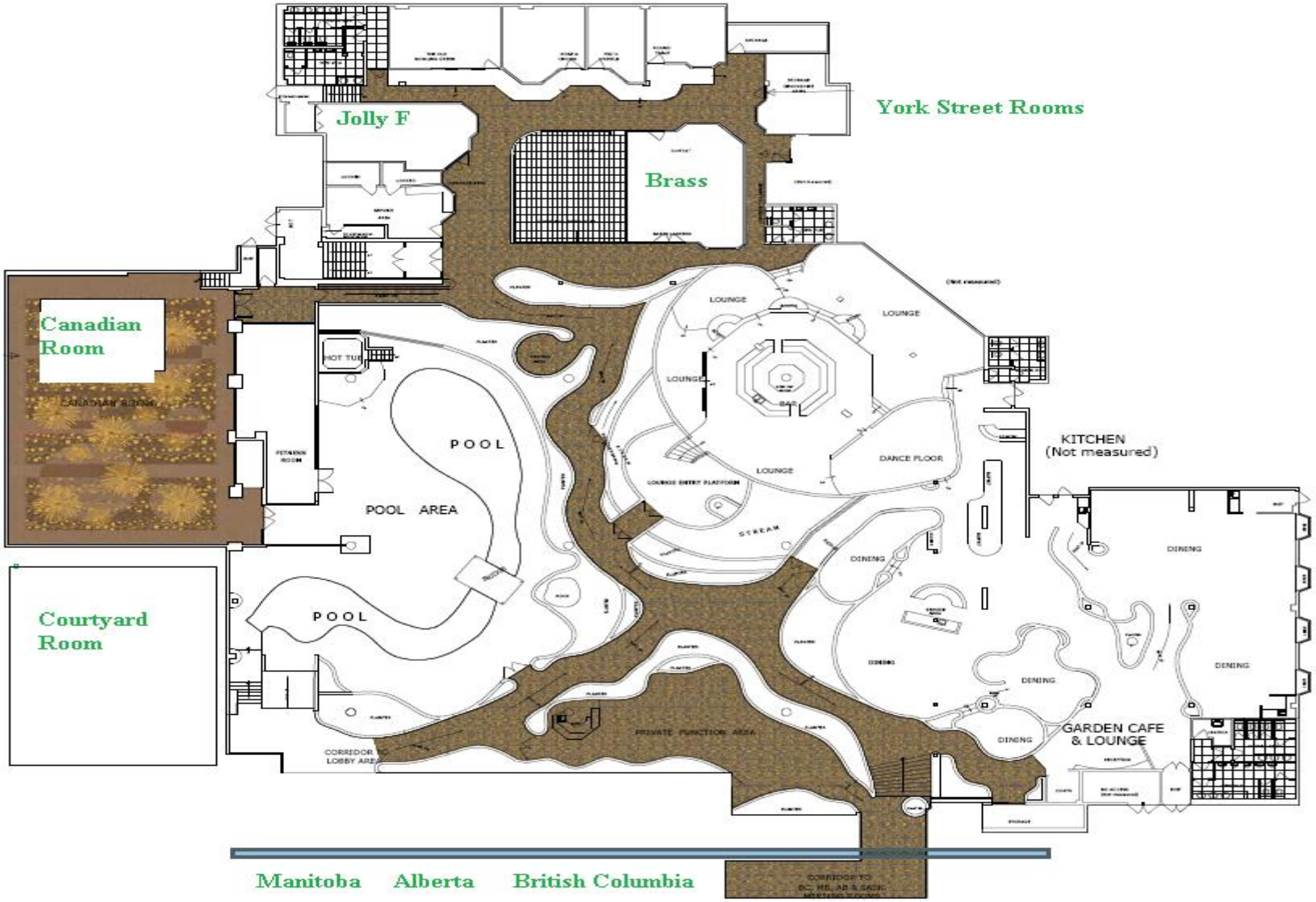
ROOMS >>	Saskatchewan Ballroom (Part A)	Saskatchewan Ballroom (Part B)	Canadian Room	Courtyard Room	Manitoba Room and Mezzanine
10:00 AM - 12:00 AM (continued)	**Theme 3: Restoration and Recovery**				
	Concurrent Session 7: Recovery Strategies I	**Concurrent Session 8:** Recovery Strategies II	**Concurrent Session 9:** Habitat Mitigation and Restoration	**Concurrent Session 10:** Invasive Species	
10:50 AM - 11:15 AM	**7-3.** Really Big Bird Houses: Platforms for Ferruginous Hawks **J. NG**	**8-3.** Using Stepping-Stones and Translocations to Increase Population Viability in the Endangered Ord's Kangaroo Rat **L. BRANDS**	**9-3.** Plant Community Restoration During Bank Stabilization Projects with Southern Alberta **S. TANNAS**	**10-3.** Common Tansy Management Through Goat Browsing **N. MORI**	
11:15 AM - 11:40 AM	**7-4.** Mitigating Impacts to Wetlands: As Easy as Water off a Duck's Back? **J. LEBLANC**	**8-4.** Amphibians on the Move: Translocation as a Mitigation Strategy **J. MARTINO**	**9-4.** "Droughtproofing: Using Beavers to Conserve Valuable Water, for Both Grazing and Wildlife Benefits." **R. GARDNER**	**10-4.** Impacts of Smooth Brome Colonization on Insect Diversity in Fescue Grassland **V. ROSENKRANZ**	
11:40 AM - 12:00 PM		**8-5.** Designing and Implementing a Canadian Toad Translocation Program for BHP Billiton's Jansen Potash Project **C. KIRKHAM** and **R. POLLOCK**	**9-5.** Remarkable Forage Characteristics and Grazing Potential of Purple Prairie Clover and White Prairie Clover on Western Canadian Grasslands **A. IWAASA**		
ROOMS >>	**Saskatchewan Ballroom A&B**				**Manitoba Room and Mezzanine**
12:00 PM - 1:00 PM	**LUNCH**				Poster & Trade Exhibits
1:00 PM - 1:45 PM 1:45 PM - 2:00 PM 2:00 PM - 2:15 PM	**Plenary 4: Connecting and Motivating People to Wonder, Care and Act** **P4-1.** Social Marketing Principles and Practices - Reaching Beyond Awareness and Attitude to Create Action **K. DONNELLY** **P4-2.** Case Study - A Roadmap to the Conservation Caravan **M. ERICKSON** **P4-3.** Case study - Meewasin Valley Educational Programming, Stewardship Activities and Citizen Science Projects **K. LYSAK**				
2:15 PM - 2:35 PM	**BREAK**				

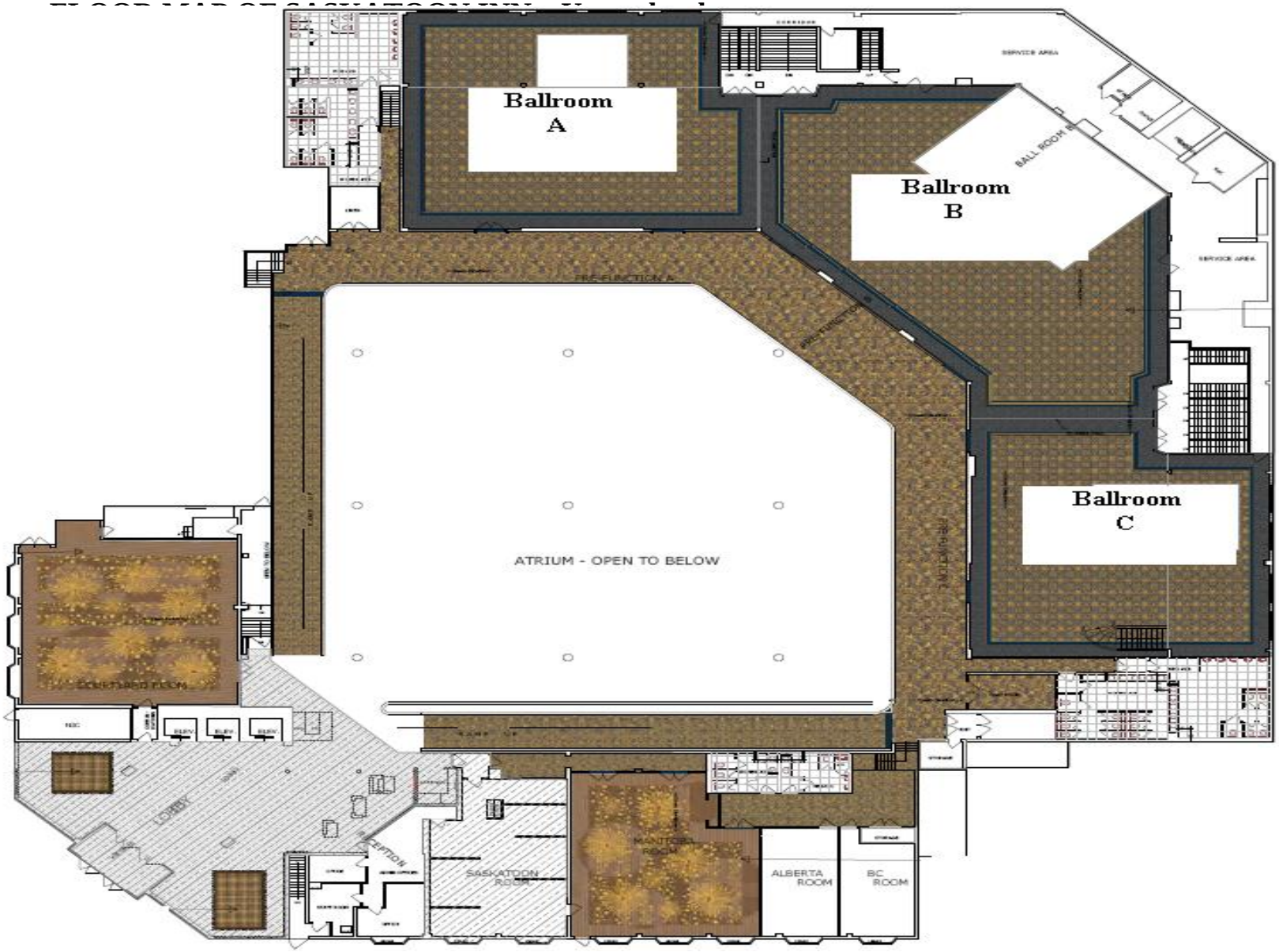
PROGRAM SCHEDULE

Thursday, February 18 (continued)

ROOMS >>	Saskatchewan Ballroom (Partition A)	Saskatchewan Ballroom (Partition B)	Canadian Room	Courtyard Room	Manitoba Room and Mezzanine
2:35 PM - 4:15 PM	**Theme 4: Connecting and Motivating People to Wonder, Care, and Act**				
	Concurrent Session 11: Educating Youth of Today, For Tomorrow	**Concurrent Session 12:** Getting Communities Involved	**Concurrent Session 13:** Stakeholders' Perspectives	**Concurrent Session 14:** Promoting the Prairies	
2:35 PM - 3:00 PM	**11-1.** Learning the Land: A Prairie Conservation Partnership Between Nature Conservancy of Canada and Treaty 4 Education Alliance **J. MCKILLOP** and **S. FULTON**	**12-1.** Grassland Matters: Fostering a Community of Concern in Saskatchewan **L. SCOTT** and **J. HAVELOCK**	**13-1.** Multiple Approaches to Habitat Conservation: Finding the Right Fit Encourages Producers to Manage for Species at Risk Habitat **K. CONNICK TODD**	**14-1.** Introducing Wild About Saskatoon's NatureCity Festival **J. MCVITTIE**	
3:00 PM - 3:25 PM	**11-2.** Adopt a Rancher and Taking Action for Prairie -- Education Programs by PCAP **N. ANDERSON**	**12-2.** The Northeast Swale: Urban Encroachment as We Speak **L. JONES**	**13-2.** Using Results-Based Agreements to Encourage Producers to Make Species at Risk Habitat a High Priority **T. HARRISON**	**14-2.** Social Marketing Campaign in Support of North American Grassland Conservation **S. MICHALSKY**	
3:25 PM - 3:50 PM	**11-3.** Motivating and Mobilizing Youth: Conservation Awareness-Building In Antarctica, the Backyard, and Online **A. KRUG-MACLEOD**	**12-3.** Applying Social Science to Promote Community Engagement in Conserving Purple Martins **G. HVENEGAARD**	**13-3.** The Milk River Integrated Watershed Management Plan – A Community Approach to Maintaining a Watershed for Future Generations **T. ROMANOW**	**14-3.** Photography and Conservation **B. GJETVAJ**	
3:50 PM - 4:15 PM	**11-4.** Children in the Garden: Developing Ecological Understanding **J. MCVITTIE**	**12-4.** Over 50 years of Archaeological Education and Conservation with the SAS **T. PLAYFORD**	**13-4.** Range Management - A Way of Life **D. FREIMARK**	**14-4.** SRM – Prairie Parkland Chapter: A Small Group Making a Positive Splash on the Prairie Landscape **N. MORI**	
ROOMS >>	**Saskatchewan Ballroom A&B**				**Manitoba Room and Mezzanine**
4:15 PM - 4:45 PM	**Closing Ceremony** Summary of PCESC 2016 and Announcement of the 12th PCESC in 2019 **D. HENDERSON** and **K. BALDERSON BURAK** Special Audio-Visual Presentation: Canadian grasslands **B. GJETVAJ**				
4:45 PM	**DONE** (please pick up silent auction items and hand in your evaluations)				Poster & Trade Exhibit Take-Down

FLOOR MAP OF SASKATOON INN – Lower level

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PLENARY SPEAKERS' ABSTRACTS AND BIOGRAPHIES

Plenary #1: Setting the Stage for PCESC 2016

P.1-1 Hearts and Minds - Developing a Prairie Story

Presenters: Lorne Fitch (P.Biol.) and Dr. Branimir Gjetvaj

Abstract: Stories are important- they help us navigate the world, make sense of it, see our place in it and understand the changes in terms of benefits and consequences. We lack a single, cohesive, cogent prairie story. What we have are myths, fanciful, flawed descriptions of frontiers, endless space and boundless opportunity. Myths are things that never were, but always are. They lead us, inexorably, to decisions that further erode the size, integrity and biodiversity of the prairies. We can do better; we need to do better, at telling the story of prairie. Based on a career of interacting with prairie, managing it, and thinking about the issues, this presentation contains thoughts about the story we should be telling, to change the hearts and minds of people about this fragile, superbly interconnected, impressive and holy landscape.

Biography for Lorne Fitch (P.Biol.): Lorne grew up on a mixed farm in the aspen parkland of Alberta. He left the farm but the experience of growing up in semi-wild circumstances never left him. He has been a biologist for over 40 years, working mostly in Alberta but also in other parts of Canada and with some international experience. For his work on conservation he has received an Alberta Emerald Award and has been part of two additional Emerald awards. His work on effectively communicating science has been recognized by The Wildlife Society, the Society for Range Management and the Alberta Society of Professional Biologists. Lorne is a retired Alberta fish and wildlife biologist, the Provincial Riparian Specialist for Alberta Cows and Fish and is an Adjunct Professor with the University of Calgary. Lethbridge is his adopted home because the grasslands are a favored landscape.

Biography for Dr. Branimir Gjetvaj: Branimir is a biologist and internationally published environmental photographer specializing in Western Canadian landscapes. He leads photography workshops and is frequently invited to give public presentations on photography, natural history and conservation biology topics. After moving to Canada from his native Croatia where he worked as the Assistant Curator for Ornithology at the Croatian Museum of Natural History, Branimir received a MSc degree from Dalhousie University and PhD from Queen's. He is currently enrolled in the Master of Sustainable Environmental Management program the University of Saskatchewan. A key focus of his MSEM research is the potential impact of biofuel crop production on grassland habitats in Saskatchewan. Branimir's formal education and interest in photography has led him to use his skills as a vehicle to promote the appreciation and protection of natural environments and cultural legacies. He has participated in numerous nature conservation initiatives and frequently contributes his photographic skills to local environmental organizations. One of Branimir's photography projects culminated in the award-winning book '*The Great Sand Hills: A Prairie Oasis'*. He is currently working on a book about ranching and federal community pastures. Branimir has served volunteer positions on the board of several environmental NGOs and natural history societies in Saskatchewan and Alberta. He is currently Vice-President of Nature Saskatchewan. In 2013, Branimir received Michelle's Prize, jointly award by the Canadian Environmental Law Association and the University of Saskatchewan.

P.1-2 Panel Interview Celebrating 30 Years of PCESC: Lessons Learned after 30 years of Prairie Conservation Actions, and Directions for the Future

Moderator: Dr. Darcy Henderson
Presenters: Barry Adams, MSc. P.Ag. (Alberta), Luc Delanoy (Saskatchewan), John Morgan, M.Sc. (Manitoba - Prairie Habitats Inc.)

Abstract: This panel discussion brings together experts, each with 30 years of experience working in the Canadian Prairies. We will have an entrepreneur, and retirees from a non-governmental agency and provincial government agency. These people worked at different scales (global to local), with different clients (ranchers, urban recreationists and gardeners, resource industries) and represent three different Provinces. As a wave of baby-boomers retire from our field and employment shifts away from public and towards private sector, we want to promote greater knowledge transfer. This panel discussion is intended to stimulate those discussions amongst all participants for the duration of the conference and into the future. To help kick-off those discussions all panel members will be asked the same questions:

1. What did you see that worked for prairie conservation and endangered species in the past 30 years?
2. What did you see that did not work in the past 30 years, and we should avoid in future?
3. What are your hopes for the future of prairie conservation and endangered species recovery?
4. What advice do you have for the next generation of practitioners?

Biography for Barry Adams (M.Sc., P.Ag.): Barry Adams recently retired to private practice after a 38 year career with Alberta Environment and Parks – Rangelands. For 32 years Barry served as the Provincial Rangeland Specialist – Grasslands. A key focus of his work has been to assist ranchers to apply the principles and practices of range management to promote healthy range and a sustainable livestock operation. He has been active in developing new rangeland health tools including range plant community guides for the Grassland Natural Region, the Grassland Vegetation Inventory (GVI), restoration practices for prairie and parkland rangelands, and grazing management strategies for species at risk. Barry is active in the Society for Range Management and lives in Lethbridge with his wife Allison.

Biography for Luc Delanoy: Luc has been married to Susan for 35 years and they have two children and two grandchildren. They met at Kelsey campus of Saskatchewan Polytechnic, both enrolled in the Renewable Resources program from which they graduated in 1978. Luc spent his formative years in a rural setting in southern Saskatchewan where farming, fishing, hunting and trapping with his older brother fostered his lifelong interest in nature. Long Creek, Laurier Community Pasture, the hills of the Missouri Coteau and a spacious award-winning and magical yard in the town of Radville all helped nurture the nature relationship. Luc had the great fortune in furthering this interest in his work life. He started with a summer job with the Department of Northern Saskatchewan in Buffalo Narrows in 1977 which turned out to be one of the most active fire seasons ever recorded in northern Saskatchewan. This short stint was followed up with a second summer of work as a fisheries technician with the Saskatchewan Research Council. This job introduced Luc to some of the finest environmental scientists in the province as part of a team developing environmental baseline for the uranium mines at Cluff and Key Lakes.

Luc then landed his first permanent job in the environmental field as Environmental technician at a uranium mine at Key Lake Saskatchewan. Three years later he began work with Meewasin Valley Authority where again he was exposed to many fine environmental scientists over a span of 32 years until his retirement in April 2015. An abbreviated summary of his work is he spent the first ten years planting trees throughout the valley and the next 22 years knocking them out mainly with fire to promote the fast-disappearing prairie wool.

Biography for John Morgan (M.Sc.): John has an Honours degree in Zoology/Ecology and Masters degree in Natural Resources Management from the University of Manitoba. Born in Ontario, he has lived in Manitoba, Saskatchewan, Alberta and the NWT. He worked as a research biologist in Canada's high Arctic in the '70s and a wildlife habitat biologist on the prairies in the '80's. John initiated the Tall Grass Prairie Inventory in 1986, which led to Manitoba's Tall Grass Prairie Preserve near Vita. With his wife Carol, he began Canada's first prairie restoration company in 1987, Prairie Habitats Inc., in the Interlake near Argyle. They have tried to put ecological theory into practical ideas. They have made a living for 29 years by doing what they love and believe in - restoring prairie. They have developed seed harvesting equipment used for local native seed collection in 41 countries worldwide. John co-wrote the book "*Restoring Canada's Native Prairies*" with colleagues Doug Collicutt and Jackie Thompson. John has received the Friends of Equinox Magazine's Citation for Environmental Achievement, the Government of Canada's 125th Anniversary Medal, the Manitoba Naturalists Society Prairie Crocus Award and the 2013 Prairie Conservation Award for his work in restoring native prairies.

Plenary #2: Status, Trends and Issues in Conservation and Protection

P.2-1 Uncommon Common Ground - World Wildlife Fund's Sustainable Ranching Initiative

Presenter: Nancy Labbe, World Wildlife Fund

Abstract: World Wildlife Fund's Sustainable Ranching Initiative is working to establish a productive dialogue with stakeholders in the beef supply chain. By partnering with ranchers, retailers, regional and national producer groups, consumers, and other conservation organizations, WWF is working to develop a thriving global marketplace for sustainable beef that values intact grasslands, abundant natural resources, and producer livelihoods. The local to global approach is key for WWF. In the Northern Great Plains region, WWF supports the ranching community with capacity-building grants, bird surveys, and outreach support. We're driven by the goal of maintaining intact grasslands the Northern Great Plains by supporting the ranching community and communicating with consumers about the benefits of ranching on this landscape. More broadly, WWF serves as a key representative on the Global, US, and Canadian Roundtables for Sustainable Beef, influencing the future of the sustainable beef market with a reasonable, informed approach.

Biography for Nancy Labbe: Nancy Labbe is a fifth generation cattle rancher from the Sandhills of Nebraska. Her upbringing gave her valuable on-the-ground experience and a deep

understanding of the issues facing ranchers in the Northern Great Plains. Additionally, she has worked in a variety of capacities in the beef production sectors. At WWF, Nancy leads direct engagement with the ranching community in North America with a special focus on the Northern Great Plains region, where sustainable beef production goes hand-in-hand with conserving the iconic grassland ecosystem on which it relies. Through the Sustainable Ranching Initiative, Nancy is working to maintain grasslands for generations by identifying and accelerating the use of more ecologically and economically sustainable land management practices. She also works to influence national and global marketplace efforts on sustainable beef production. Through Nancy's engagement, WWF played a key role in the development of the Canadian and US Roundtables for Sustainable Beef, bringing key stakeholders together to identify opportunities for the future of sustainable beef production.

P.2-2 Status and Trends of Prairie and Endangered Species 1986 to 2016

Presenter: Dr. Darcy C. Henderson, Canadian Wildlife Service

Abstract: It is no secret that native prairie and the habitat needed by native species has declined rapidly over the past century. Factors driving habitat loss have varied over time to include cultivation, drainage, invasive species, or fire suppression. Similarly, species at risk of extinction were initially threatened by hunting and trapping, but times change and now each species is threatened by a unique suite of factors. In spite of the overall state we have many successes that buck the trend; with bison, whooping crane, and black-footed ferret recovery, and the work of many individuals succeeding in improving the quality and quantity of native prairie. I will present some facts as we know them about changes in the past, ranking threats faced by the more than 90 prairie Species At Risk in the coming 10 years, and describing some of the categories of actions underway to protect, conserve, recover and restore. I'll finish by posing questions about the importance of facts (evidence gathered in search or support of truth), myths (widespread retelling of old stories to reinforce a worldview that does not rely on facts), and credibility (being trusted, believed, and convincing) when working to conserve natural places and natural things.

Biography for Darcy Henderson: Darcy's professional career in the Canadian Prairies spans the past 25 years. He received a PhD and MSc from the University of Alberta where he researched invasive species and soil carbon responses to grazing, burning, and cultivation. He also earned a BSc in biology from the University of Saskatchewan, and Diploma in Renewable Resources from Sask Polytechnic. His work history has included a breadth of field work, teaching and planning in fish and wildlife, forestry, parks, rangelands, and First Nations lands, for private industry, NGOs, universities, and provincial and federal agencies. His career at Environment Canada began in 2006 as a grassland ecologist working on plant species at risk recovery planning and grazing and restoration research, and for the past three years he has been Head of Protected Areas and Stewardship for the Prairie and Northern Region. Among the things his team delivers is $7.5 Million in annual funding to organizations, communities and individuals to protect prairie habitat and recover species at risk, to restore wetlands, to build capacity in First Nations, and to engage Canadians more broadly. Other team members are actively managing and restoring federal protected areas, and evaluating the effective protection of critical habitat elsewhere in the Canadian prairies.

Plenary #3: Conservation and Recovery of Prairie and Species

P.3-1 Federal Programs for Species at Risk Recovery in Prairie Canada

Presenter: Robin Bloom, Canadian Wildlife Service

Abstract: This presentation will provide an overview of federal funding programs available to the conservation community to implement conservation measures for species at risk. Examples include new and innovative agreement-based approaches to achieving protection of "critical habitat" for species at risk. The importance of voluntary stewardship activities in the implementation of the federal Species at Risk Act will be discussed and highlighted as an introduction to the session.

Biography for Robin Bloom: Robin has worked for the Canadian Wildlife Service for 14 years. Prior to joining CWS his academic studies in eastern Canada focused on disturbance dynamics of plant communities. This background and his subsequent field experience with grassland songbird and plant surveys have given him an appreciation of prairie habitat dynamics. The field work also provided significant opportunities to meet landowners and land managers. This background and experience are part of his on-going interest in listening and learning about practical challenges of conservation on rangelands and other working landscapes. Robin now works as a funding coordinator in CWS' prairie Stewardship Unit. Robin's specific role is to develop funding relationships with the agricultural sector under Environment Canada's Species at Risk Partnerships on Agricultural Land initiative (SARPAL).

P.3-2 Creating Optimal Habitat for Greater Sage Grouse – Multi-agency/Stakeholder Collaborations

Presenter: Kelly Williamson, Rangeland Consultant

Abstract: A conservation focus has been initiated in the South of the Divide Region of southwest Saskatchewan. The organization leading this focus is a multi-stakeholder group called SODCAP. Part of this focus involves working with producers dealing with lands with Greater Sage Grouse habitat. How are these producers going to be engaged and what tools will be effective? Results based conservation agreements have been identified as being effective tools in the strategy to produce GRSG habitat. This is a brief history and review on the lead up, development and delivery of the results based conservation agreement model. What role can this tool play in a broader land use management strategy?

Biography for Kelly Williamson: Kelly Williamson is a forage, seed and cattle producer from southwest Saskatchewan. With 20 years of experience as a primary producer, combined with a degree in Agriculture, Kelly uses his experience to practice agrology in the province. His consulting focus is on various agri-environmental projects, always looking towards advancing methods of environmentally sound agriculture, today and into the future. He has kept current with involvement with agricultural linked boards including the Saskatchewan Stock Growers Association, Society of Range Management, Pambrun Conservation and Development, Old Wives Watershed Association, South of the Divide Conservation Action Plan, Rural Municipality of Whiska Creek.

P.3-3 Case Study: On the Ground Recovering Greater Sage Grouse

Presenter: Miles Anderson, Rancher

Abstract: Greater Sage Grouse, Silver Sage, and cattle - they live together. What can a land manager do to promote a dwindling population? What do we know about sage grouse and their silver sage habitat? Can land managers, through cattle management, give the sage grouse its' food and shelter through its' four distinct life cycles? These are the types of questions that ranchers are working to answer in sage grouse habitat.

Biography for Miles Anderson: Miles ranches near Fir Mountain, Saskatchewan, presently raising cattle on approximately 25,000 acres that consists of 80% native, 10% tame hay and 10% cultivation. Having Grasslands National Park as a neighbor, there is a considerable amount of research performed in this area and it is in my best interest to do a good job with grazing as there are not many areas that have a non-grazed area of the size of Grasslands National Park surrounding them to be compared to, and that is what brings me here. Being past Chair of the Prairie Conservation Action Plan and Saskatchewan Stock Growers Association has given me experience in advocacy which helps in current life experiences. We have been blessed with Sage grouse habitat and with the support of Environment Canada, Grasslands National Park and Saskatchewan Ministry of Environment we hope to learn what sage-grouse need to thrive, while keeping in mind that there are other species that live here as well.

Plenary #4: Connecting and Motivating People to Wonder, Care and Act

P.4-1 Social Marketing Principles and Practices - Reaching Beyond Awareness and Attitude to Create Action

Presenter: Ken Donnelly, Beyond Attitude Consulting

Abstract: There are 3 main pillars of a successful social marketing campaign that results in fostering changes in behavior. First, the target audience must be made aware of the issue at hand and what ought to be done about it. Second, they must be convinced that this is an important issue to them, and have the attitude that they should take action. Third, and most overlooked, is that they must take the action. Social Marketers often make the assumption that, with the first 2 pillars in place, the third one will automatically follow. That assumption is a pitfall, a pitfall which can be avoided by incorporating a little behavioral science in social marketing.

Biography for Ken Donnelly: Ken Donnelly is the President of Beyond Attitude Consulting, a Canadian-owned firm with clients across Canada and around the world. Ken has been working with government and non-governmental organizations to foster positive individual behaviors for more than 2 decades, primarily in the areas of environment, health, and occupational health and safety. He has more than 20 years of experience in community engagement and strategic planning.

P.4-2 Case Study – A Roadmap to the Conservation Caravan

Presenter: Mara Erikson, M.Sc., Conservation Caravan

Abstract: Raising awareness and encouraging dialogue about an issue is never easy, even when a relationship with the target audience is well-established. Doing the same with a brand-new, unfamiliar demographic poses its own set of challenges. In creating the *Conservation Caravan* to increase understanding about the positive connections between grassland species-at-risk and ranching, we at Operation Grassland Community found ourselves in the second camp; we had a story of environmental stewardship about which we were passionate, and wanted to share it with an audience who likely had no idea who we were. Our main challenge was that of exposure; i.e. how do we get our target audience—those NOT typically associated with the environmental sector—to even *see* this film? By reaching beyond our familiar networks, as well as using a variety of promotional outlets (television, print media, social media, film festivals, open houses), we were successful in fostering genuine interest from a diverse cross-section of viewers. We also sought assistance from those we deemed "primary connectors," well-known individuals in the community who fit our target demographic and could share the film with their own wide networks. Based on valuable feedback from viewers and partners, we determined that future projects would benefit from more aggressive social media marketing. Viewers also expressed interest in having concrete follow-up activities connected to the film's message, in order to keep them interested and involved. Overall, Operation Grassland Community considered the *Conservation Caravan* a success, and can use the lessons learned to better promote future initiatives.

Biography for Mara Erikson (M.Sc.): Mara Erickson received her M.Sc. in Ecology from the University of Alberta, focusing on avian ecology and conservation. She serves as both the Communications Coordinator for Operation Grassland Community and the Extension & Stewardship Coordinator at the North Saskatchewan Watershed Alliance, combining public outreach and habitat/species-at-risk conservation within an environmental stewardship framework.

P.4-3 Case Study – Meewasin Valley Educational Programming, Stewardship Activities and Citizen Science Projects

Presenter: Kenton Lysak, M.Sc., Meewasin Valley Authority

Abstract: Created in 1979, the Meewasin Valley Authority is a conservation agency dedicated to conserving the cultural and natural resources of the South Saskatchewan River Valley. Meewasin's conservation zone includes a variety of unique prairie habitats, including Beaver Creek Conservation Area, the Saskatoon Natural Grasslands and the Meewasin Northeast Swale. In order to promote conservation within the Meewasin river valley, the Public Programs Unit was established to educate the public on the importance of biodiversity and conserving prairie habitats for future generations. Since then, Meewasin has engaged the residents of Saskatoon in taking an active role in local conservations efforts through educational programming, stewardship activities and citizen science projects. Programs include bird banding, measuring light pollution, studying the benefits of grazing, building bat boxes and interpreting the natural

history of the valley. These educational opportunities are designed to reconnect visitors with nature by providing a hands-on learning experience within a natural setting. By promoting stewardship activities and encouraging the public to visit these natural areas we hope to increase support for local conservation efforts in the future.

Biography for Kenton Lysak (M.Sc.): Kenton Lysak is a senior interpreter at Beaver Creek Conservation Area where he is actively involved in developing environmental education and stewardship programs for the Meewasin Valley Authority. He received both his MSc and BSc from the University of Saskatchewan where he specialized in the movement of marine-derived nutrients into terrestrial ecosystems. After working at both the University of Saskatchewan and the National Hydrology Research Centre, Kenton has spent over a decade within the field of environmental education. He has led thousands of students to prairie habitats around Saskatoon, educating them on sustainable practises, ecosystem services, and the importance of conservation. Recently, his work has focused on engaging the public through citizen science projects, including monitoring light pollution through the Saskatoon Dark Sky Initiative and determining local biodiversity at the Meewasin Northeast Swale.

SESSION SPEAKERS' ABSTRACTS

(Presenters in **bold**)

SESSION 1: AVIAN STATUS AND ECOLOGY

1-1. The Status of Grassland Birds in Manitoba: Preliminary Results of the Manitoba Breeding Bird Atlas

Christian Artuso, Bird Studies Canada, Manitoba Program Manager

The Manitoba Breeding Bird Atlas (2010 – 2014) utilized a massive volunteer effort to document the current distribution and relative abundance of all species that breed in the province. Manitoba lies at the northeastern periphery of the greater prairie ecosystem, which is wetter than elsewhere in prairie Canada, and the patterns of occupancy and abundance of grassland birds here differ somewhat from Saskatchewan and Alberta. We summarize the current status of grassland Species At Risk (SAR) in Manitoba, compare with the historical information and discuss the significance of these findings in relation to range-wide conservation measures.

1-2. The Influence of Migration Timing on Parental Provisioning Rates and Reproductive Success in a Songbird

Alicia Ritchie and K.C. Fraser. Dept. of Biological Sciences, University of Manitoba

With the availability of new miniaturized tracking technology, the migration routes of small songbirds can now be determined, providing the opportunity for the first time to examine how the costs of migration may carry over to affect breeding success. We used Purple Martins (*Progne subis*), a long distance migratory species that journeys between North American breeding sites and South American overwintering sites, to determine the effects of migration on breeding productivity. Using light-level geolocators to track migration and Radio Frequency Identification (RFID) technology to track parental nest provisioning rates, we examined whether breeding arrival date predicts the date of first egg and breeding success, measured by clutch size and number of young fledged. We also determined if the costs of migration (rate and distance) had an influence on provisioning rates. This research will help shed new light on how seasonal interactions influence breeding success in a migratory aerial insectivore that is experiencing steep population declines.

1-3. Habitat Use and Movement Patterns of Male and Female Snowy Owls (*Bubo scandiacus*) in Winter

Alexander M. Chang and K.L. Wiebe, University of Saskatchewan

A large number of Snowy Owls (*Bubo scandiacus*) overwinter on the Saskatchewan prairies, but their space use and territorial behaviors are not well known here. Based on their larger size, we hypothesized that females would outcompete males for high quality habitat, causing females to be in higher physical condition, and experience lower winter mortality than males. Sex-biased mortality in winter would affect breeding population demography and this effect could be

stronger in severe winters. Similarly, we hypothesized that adult owls would outcompete hatch-year owls because of their experience with previous winters. Preliminary results show that there are no differences in relative prey abundance in four common land use types in rural Saskatchewan, but small mammal abundance is greater near field edges. We are live trapping owls to analyze patterns of body condition in males and females over the winter to test the prediction that males are in poorer condition than the dominant females. We are also using satellite telemetry to measure and compare home range sizes and movement patterns (e.g. territorial or nomadic) of Snowy Owls by age and sex. Data collection is ongoing and will continue during the 2015-16 winter field season.

1-4. Developing Predictive Models of Occurrence for Sprague's Pipit (*Anthus spragueii*) in Alberta

Julie P.N. Landry-DeBoer, Paul F. Jones, Brad A. Downey, Alberta Conservation Association
Brandy L. Downey, Alberta Environment and Parks
Craig G. DeMaere, Alberta Environment and Parks, Agriculture Centre

Sprague's Pipit (*Anthus spragueii*) (SPPI) have had a large historic population decline across the prairies and are listed as "Threatened" by the Species at Risk Act. Understanding the habitat requirements for SPPI will aid in their future conservation. We used point count data collected by MULTISAR (Multiple Species at Risk) to examined the habitat requirements for SPPI across the mixed grass and dry mixed grass regions of southern Alberta. We used Akaike information criteria to evaluate which of three hypotheses best explained the occurrence of SPPI: 1) Habitat Structure, 2) Habitat Community, or 3) Habitat Disturbance. A suite of a priori models were developed for each hypothesis and consisted of variables determined from vegetation transects, range health assessments and GIS analysis. We discuss the top models for predicting SPPI occurrence and their conservation implications.

SESSION 2: LARGE SCALE TRENDS AND IMPACTS

2-1. Understanding the Future of Wind Development in Montana and Wyoming

Claire Hood and Anne Gage, World Wildlife Fund

Wind energy is growing across the U.S. thanks to technological advances, policy and tax incentives, and competitive prices. Canada is also experiencing a surge in wind energy with 2014 being a record year for new generation. I researched wind energy in Montana and Wyoming to understand its drivers and obstacles, determine impacts to wildlife, and explore how to develop wind through smart landscape-scale planning. My results suggest that wind energy has increased in Montana in the last decade, but the pace of development has lagged behind other states with similar wind potential. This discrepancy can be attributed to a lack of transmission and demand. Alternatively, Wyoming wind development is flourishing, with more than twice the capacity installed in Montana, despite a wind production tax. Wyoming's wind success is connected to its proximity to load centers and successful transmission development. Several variables could alter future wind growth in the Northern Great Plains. The Clean Power Plan likely would require states to decrease coal use and invest in more renewables. Alternatively, federal action on sage-grouse or congressional efforts to limit renewables could stymie industry growth. Upgrades to

the national grid could ensure wind's integration into the power system and increase transmission capacity.

2-2. Ceasing of Federal Pastures and a New Model for Public Land Management

Rick Ashton, Retired Director of Community Pastures and co-lead for the Federal pastures transition.

Will the new stewards of the former federal community pastures be able to protect the integrity of the prairie habitats they have inherited? What options exist that can support them in ensuring these important working landscapes continue to stay healthy to support wildlife, the livestock industry and public uses? These are key questions that have been asked since the 2012 announcement by the federal government to cease operations on all 84 federally managed community pastures. The community pasture model was a very successful model of public land management that balanced environmental, social and economic priorities. Operating for more than 80 years, the pastures became a model for other provinces and around the world in using grazing as a management tool to maintain healthy ecosystems. Ninety percent of the land used for pastures is owned by the provinces and the model emerging for continued use of these lands is cooperative grazing areas under lease. Many interested groups of citizens have expressed concerns about the future of these lands. Is there a collective willingness to work together to conserve these landscapes for future generations? This presentation will lay out the potential scenarios and discuss options whereby a balance of public and private uses can be met while ensuring these important fragments of native prairie are conserved.

2-3. The Effects of Climate Change on Endangered Plant Species in Manitoba

Ashley Greenley and David Greenwood, Brandon University

Shifts in global and local climates are altering species distributions because of unique physiological limits that control growth and reproduction. Changes in plant species habitat, because of a changing climate, are predicted to accelerate extinction globally. Endangered plant species are expected to be the first and most significantly affected because of their low population. Of concern is whether existing populations and conservation areas are adequate to support these plant species under predicted future climate scenarios. The effects of climate change on four endangered plant species in Manitoba will be discussed. ANUCLIM, a climate profile software, has been applied to present-day distribution data from the Manitoba Conservation Data Centre and Global Biodiversity Information Facility to generate climate profiles for these species under recent climate, and to predict how distributions of these plant species may be affected under future climate change scenarios. Combined with other environmental growth restrictions (e.g., soil and land use), the future species distributions will be predicted to determine if current conservation management practices, such as protected areas, will be adequate to provide protection for species survival, or if new policy recommendations will be necessary to prevent species extinction.

2-4. Can Wet Areas Mapping Be Used to Predict Invasive Species in Dry Mixed Grass Prairie?

Lori Schroeder and Ellen Macdonald, University of Alberta
Joyce Gould, Alberta Environment and Parks

Invasive species have been identified as one of the most serious threats to ecosystem health and to the conservation of biodiversity and endangered species. As such, the presence and abundance of invasive species is often used as a metric/indicator of ecosystem health and of critical habitat as defined under Endangered Species legislation. The rate of invasion of non-native species into ecosystems, however, often exceeds our ability to document their presence and, thus, protect vulnerable ecosystems. With less than 50% of Alberta's native grasslands remaining intact, their persistence, along with that of the high proportion of endangered species they contain, is of particular concern. Given the above, Wet Areas Mapping (a LiDar based, digital elevation model of depth to water) has been proposed as a landscape-level tool for predicting patterns of invasion of non-native vascular plant species in grassland ecosystems of Alberta. In summer of 2015, transects were established in the Dry Mixed Grass prairie of southern Alberta in order to test its suitability for predicting invasive species occurrence, and for identifying both rare, and particularly vulnerable communities. Preliminary results indicate that scale may play a key role in the application of Wet Areas Mapping to Dry Mixed Grass prairie conservation.

SESSION 3: BEES AND AMPHIBIANS

3-1. Understanding the Effects of Habitat Fragmentation on Grassland Pollination

Marika Olynyk and Nicola Koper, Natural Resources Institute, University of Manitoba
Richard Westwood, Department of Biology and Department of Environmental Studies, University of Winnipeg

With declines in both wild and domestic bees, and the ongoing loss and fragmentation of grasslands, it is essential to understand how landscape configuration affects pollination. The objective of this study is to determine if edge effects influence insect pollination service in fragmented grasslands. To meet this objective, data was collected in fragmented Manitoba patches. The seed set of phytometers (greenhouse-grown potted plants) was used as a proxy measure for insect pollination service, and we sampled plots for bee and vegetation data. Early results indicate that pollination service is not impacted by either tree or road edges at distances up to 150m, and that other variables were more important to pollination service. At the local level, bee diversity and native flower diversity were positively associated with increased pollination service. At the landscape level, an increasing percentage of crop landcover within 1 km of research sites resulted in reduced pollination service and reduced bee diversity. These results suggest that maintaining insect pollination service requires management for both local and landscape-level factors. The results of this study will contribute to informed management of pollinators, as habitat management for larger wildlife does not necessarily ensure habitat conservation for invertebrates.

3-2. The Conservation Status of Bees in the Prairie Provinces – Why Are They at Risk?

Cory S. Sheffield, Royal Saskatchewan Museum
Jennifer Heron, British Columbia Ministry of Environment, Species Conservation Science Unit

As pollinators, bees (Hymenoptera: Apoidea) are vital members of most terrestrial ecosystems, including in grasslands. The Canadian grasslands contain over 380 bee species – almost half of the species occurring in the country, with ca. 25% of these not occurring within other ecozones in Canada. These patterns of diversity and endemism are, in part, is due to ecological specialization – many bees have specialized relationships with their food plants, their specific nesting substrates, and for cuckoo bees, their host taxa. The Prairies Ecozone has the highest proportion of food plant specialist bee species in Canada. Ecological specialization is also one of the main natural factors putting bees at risk. Here we summarize the diversity and taxonomic gaps of bees in the Canada with focus on the prairie fauna, and summarize the conservation status, trends, and major threats to these important pollinators via our recent efforts of national assessment for all bee species in Canada.

3-3. Effects of Environmental Variables on the Calling Behavior of Northern Leopard Frogs (*Lithobates pipiens)*

Marcus D. Sommers and L.A. Randall, Centre for Conservation Research, Calgary Zoological Society
R.M.R. Barclay, Biological Science, University of Calgary

We investigated the relationship between wind, humidity, ice melt, water temperature and time of day on the breeding call phenology of the northern leopard frog, *Lithobates pipiens* in southern Alberta using automated recording devices. The date of first calling differed at each site but began 7-10 days after the ice melted. No calling was detected at water temperatures below 5°C. At low water temperature (<7.5°C), frogs called slightly more at midday at Bow Gravel and as wind and water temperature increased frogs increasingly called at night. Frogs at Cypress Hills also called more at midday at low and mid-range temperature (<11.5°C). Most calling at Magrath occurred in the morning and there was little effect of water temperature or wind on calling. Magrath was the warmest site so water temperature may be above the threshold for calling at all times of day and this site was relatively calm. Our results suggest that auditory surveys between sunset and midnight are not effective at all sites and presence/absence surveys should include intervals from throughout the day or surveys could result in severe underestimates of occupancy. Furthermore, breeding surveys should be delayed until later in the breeding season at high elevation sites.

3-4. Distribution of the Great Plains Toad in Prairie Canada

Andrew B. Didiuk, John A. Conkin and Eric J. Woodsworth, Environment Canada
J. M. Kyllo, ESRI Canada

The great plains toad (*Anaxyrus cognatus)* is listed as a Schedule 1 Species of Concern by the Species at Risk Act. Available occurrence information indicated the great plains toad was widely

distributed in southeast Alberta but there was very little occurrence information for Saskatchewan or Manitoba. One of the broad strategies for conservation in the management plan for the great plains toad, prepared by Environment Canada, is to determine the distribution of the great plains toad in Canada. This conservation strategy was addressed through implementation of nocturnal calling surveys and larval surveys in the vicinity of the Great Sandhills of southwest Saskatchewan from 2010-2012, and in extreme southeast Saskatchewan and extreme southwest Manitoba from 2013-2015. The distribution and habitat association information obtained for the great plains toad in these two regions are presented and discussed.

SESSION 4: MAPS, MODELS AND MITIGATION

4-1. Can Radarsat-2 Images Be Used for Quantifying Dead Vegetation in Northern Mixed Prairie?

Zhaoqin Li and Xulin Guo, Department of Geography and Planning, University of Saskatchewan

Dead vegetation is an important habitat component for some wildlife, and it can serve as an indicator of habitat status for species who prefer green vegetation. It is also an indicator of occurrence of wild fire, soil erosion, and grazing that are important for prairie conservation and species protection. Therefore, quantitative estimation of dead vegetation is essential for prairie conservation in many regards. Nevertheless, there is no good solution yet to estimate dead vegetation in Canadian mixed prairie grassland using optical remote sensing data. Alternatively, Radar data may be a good candidate, considering their capability to capture difference in structure and water content of dead and green vegetation. The objective of this paper is to investigate the capability of Radarsat-2 data to quantitatively estimate dead vegetation in Grasslands National Park. Data will be used are Radarsat-2 fine quad-pod images and aboveground dead vegetation cover and biomass data collected in the June of 2011 and 2014. Cross-polarized and co-polarized backscatter, and canopy water content etc. will be derived from Radarsat-2 and then correlated with dead vegetation cover or biomass respectively. Results are expected to answer the proposed research question “are Radarsat-2 data useful for dead vegetation estimation in mixed prairie grassland”.

4-2. Modelling Spatial Distributions of the Endemic Plant Species of the Athabasca Sand Dunes of Northern Saskatchewan

Udayanga Attanayake and Eric G. Lamb, Department of Plant Sciences, College of Agriculture and Bio-Resources, University of Saskatchewan

The Athabasca Sand Dunes are a unique ecosystem hosting cluster of nine endemic vascular plant species adapted to an environment of moving sand. While globally rare, these species are locally abundant in a remote are that is difficult to survey. Therefore, this study focused on exploring the possibilities of using geographically limited field survey data to build more precise predictive models using remotely sensed multispectral data (ground reflectance between 0.45-2.35 micrometers) as predictors. The objective is to develop species distribution modeling

(SDM) procedures that best estimate the spatial variations of population sizes of each Athabasca endemic species. The utility of multiple SDM methodologies were assessed using the receiver-operating characteristic (ROC) plot. The resulting ROC values (>0.5) suggest all modelling techniques achieve similar prediction precision for the high-abundance species such as the endemic Athabasca willows. In contrast, differences between modeling methods were apparent for two restricted habitat specialists: *Achillea millefolium* and *Armeria maritima.* These two species are largely restricted to wet inter-dune slacks and gravel pavement habitats respectively. Higher standard errors in the ROC estimates was an indication of modelling instability associated with very limited occurrence data for these less abundant species. The distribution models developed could be applied in COSEWIC status update.

4-3. Development of a Habitat Suitability Model for the Threatened Poweshiek Skipperling in Manitoba

Richard Westwood and Mahsa Hooshmandi, Department Of Biology, University Of Winnipeg

The Poweshiek skipperling (*Oarisma poweshiek*) (Lepidoptera: Hesperiidae) is listed as threatened under the federal *Species at Risk Act* and as endangered under the province of Manitoba's *Endangered Species Act.* Previous studies on skipperlings in Manitoba have focused on adult coarse scale habitat preferences, larval food and adult nectar plant requirements and the influence of soil factors on population densities. We report on the development of a habitat suitability model to predict adult skipperling distribution in the last remaining sites in Canada.

4-4. Migratory Birds and Incidental Take: Mitigation Strategies Used in Industrial Development

Joshua Traylor, Canada North Environmental Services

Population declines are occurring within North American migratory birds. Ubiquitous declines have been documented from aerial insectivores to shorebirds and habitat loss, pollution, climate change, and incidental take have been identified as population drivers. Incidental take is the inadvertent killing, harassment, harming or destruction of birds, nests, and/or eggs. It includes the cumulative mortality from cats, collisions with vehicles and infrastructure, and from development. In Canada, the Migratory Bird Conservation Act (MBCA) is federal legislation that protects birds with regulations around hunting and incidental take. With respect to potential MBCA contraventions via incidental take during development, Environment Canada, industry, and consultants work together to reduce project risk and to reduce risk of incidental take. Mitigation measures include actions of due diligence, species detection surveys, implementation of sensitive timing windows, and setback restrictions. Despite these measures, inherent risk remains with project development and incidental take. Development of standards with respect to setback distances, the use of deterrents, definition of a nest, and project reporting would be valuable. Herein, I summarize scenarios to foster an understanding of project risk and mitigation methods to reduce incidental take and ultimately, aid in migratory bird conservation.

SESSION 5: CONSERVATION AND PROTECTION PLANNING

5-1. Guiding Conservation at Scale: WWF'S "Plowprint," Sustainable Ranching Initiative, and Grassland Birds

Kevin Ellison, **Jeff Nelson**, Anne Gage, and Sarah Olimb, Northern Great Plains Program, World Wildlife Fund-US

To better understand changing habitat patterns across the Prairie Habitat, Prairie Pothole, and Northern Great Plains Joint Venture areas, timely assessments are required to identify losses, prioritize conservation actions, and to evaluate outcomes. WWF has developed a methodology for tracking cumulative cropland conversion, annually, and at fine scale, called the "Plowprint." Using agricultural data, this method identifies all lands tilled or in production since 2008 and we have thus assessed annual changes, 2009-2014. Intact habitat is estimated as land outside the Plowprint, minus permanent water bodies and developed areas. In addition to tracking habitat loss, restored grassland within the Plowprint is monitored to provide a full estimate of this habitat. Starting in 2009, habitat status and loss rate estimates have been developed for each Joint Venture area and for the Northern Great Plains as a whole. Using the Plowprint, conservation efforts are being focused in selected counties and rural municipalities. Starting with the NGPJV, resources are being focused on areas most important to sustaining grassland resources. WWF is also using this information in the design of its Sustainable Ranching Initiative, an effort to maintain ranching and endemic grassland birds in the face of cropland conversion and other threats.

5-2. Grassland Conservation Prioritization Model

Stephen Carlyle and Samantha Smyth, Manitoba Habitat Heritage Corporation

In an era of declining revenues for habitat conservation, especially species at risk conservation in Canada, efforts are required to ensure conservation activities will have maximal benefit to threatened and endangered species. The objective of this study was to develop a spatially-explicit grassland prioritization model within the Eastern Mixed-grass Prairie Priority Area of southwestern Manitoba. An area of 15,510 km^2 was analyzed and 23,200 quarter sections were ranked. Using this ranked list, habitat conservation organizations now have field-level prioritizations for grassland protection and conservation. Thirteen spatially explicit datasets were analyzed to create a tri-metric prioritization scheme. This included the generation of model inputs, at a quarter-section level, to predict 1) number of species to benefit, 2) habitat quality and 3) urgency for action. These data are actively being used by the Manitoba Habitat Heritage Corporation in a pilot project that will offer a wider range of conservation actions to top priority sites. As additional datasets become available, such as Critical Habitat and the completion of the native grassland inventory, this model can be adapted and conservation delivery can be further refined. The results of this work will inform prudent delivery of species at risk conservation programming in southwestern Manitoba.

5-3. Natural Areas and Biodiversity in Saskatoon: Planning for Sustainable Growth

Chris Schulz, City of Saskatoon

The City of Saskatoon has a history of successful stewardship of natural areas, most notably the Meewasin Valley (in partnership with the Meewasin Valley Authority). Conservation of biodiversity and protection of important natural areas are key objectives during the City's planning and development process. Through its range of policies and partnerships, a growing number of natural and naturalized areas have been established within Saskatoon. In 2013, the City created a new policy specifically for wetland protection and mitigation during development. This and other existing policies focus on identifying "important", natural areas, and preserving those discrete elements where possible. The City recognizes that natural areas and wetlands within an urban context need to be capable of retaining a viable level of connectivity and function or else protecting them is not worthwhile. However, current policies do not ensure natural areas are appropriately integrated into larger systems capable of supporting biodiversity in otherwise urban surroundings. The next phase of policy development will focus on rectifying this, achieving a city-wide "ecological network" and supportive development guidelines.

5-4. Meewasin Northeast Swale Master Plan – Protecting a Prized Natural Feature

Sarina Gersher, Alan Otterbein and Nola Stein, Meewasin Valley Authority

The Meewasin Northeast Swale (the Swale) is a channel scar, approximately 5 kilometers in length and 300 hectares, within Saskatoon city limits, but extends approximately 26 kilometers and 2,800 hectares within the R.M. of Corman Park and Aberdeen. This distinctive landscape provides significant ecological services as a diverse, connected network of rare native prairie, riparian areas and wetlands. The Meewasin Northeast Swale Master Plan was developed for the Swale to support and foster Conservation, Education, and passive Recreation. Human activity and urban growth within city limits will have long term impacts on the Swale. The Swale's proximity to new and growing neighborhoods has created a critical window of opportunity. While recognizing that the Swale will change, human encroachment could result in unprecedented and non-reversible impacts to the site. Key ideas guiding the Master Plan include conserving biodiversity (including the accommodation of ongoing resource management), supporting passive recreation activities, accommodating educational programming, interpreting cultural and natural history and supporting a communications plan. This presentation addresses the process of completing the Master Plan and highlights the design features of the site. The Swale is a unique site filled with biodiversity that represents a prairie landscape that is now considered endangered.

SESSION 6: SUCCESSES, LESSONS AND OPPORTUNITIES

6-1.Twenty Five Years of Prescribed Management to Conserve Manitoba Tall-Grass Prairie Biodiversity – Lessons Learned

Cary Hamel, Nature Conservancy of Canada – Manitoba Region

The 4,650 ha Manitoba Tall Grass Prairie Preserve is characterized by tall-grass prairie, wet meadows, forests, and savannah. Since its establishment in 1989, the preserve has been managed to promote the long-term maintenance of biodiversity. A suite of management techniques have been used to promote the maintenance of a diversity of habitats and successional stages, and the rare and endangered species these habitats support. Management techniques include haying, grazing, fire, prairie restoration, invasive species control, and mechanical encroachment control. Management decisions have been informed by the results of periodic species and ecosystem monitoring, assessments of management effectiveness, >20 research studies, a climate-change adaptation process, and feedback from local agricultural partners. Regular assessment and integration of new information has resulted in several changes to management approaches. Current and evolving approaches include the integration of multiple Species at Risk recovery considerations, increasing linkages to local natural-area based economic development, and multi-parcel, multi-year planning that incorporates a recurrent disturbance rotation.

6-2. Roadside Prairies – Opportunities at 100 km/hr

John P. Morgan, Prairie Habitats Inc.

Roadsides on the prairies are ubiquitous, part of nearly everyone's day. Tens of thousands of ha of publicly-owned habitat with native species occur along roads and highways throughout western Canada. Roadsides often are an amazing, undocumented and usually unprotected repository of remnant native plant and animal species. This includes in heavily agricultural, industrial and urban landscapes where native species often virtually have disappeared. This presentation will provide an introduction to the exciting biodiversity, native prairie conservation and restoration opportunities that literally are under our feet and tires. Using examples from Manitoba and other parts of North America, we will explore the brave new world of roadside/highway prairie ecology, and its tremendous potential here in western Canada.

6-3. Alberta Prairie Conservation Action Plan 2016-2020: Strategies and Outcomes for Future Prairie Conservation Initiatives

Karen Raven, Alberta Agriculture and Forestry
Katheryn Taylor, Alberta Prairie Conservation Forum
Ian Dyson, Alberta Environment and Parks
Nolan Ball, Special Areas Board

The 2016-2020 Prairie Conservation Action Plan (PCAP) is the 6th conservation plan developed in Alberta and builds on accomplishments of past action plans and highlights our key strategies, outcomes and approaches for our future work to support prairie conservation in Alberta. We will

showcase our past accomplishments in completing inventories and assessments, sharing of knowledge, and promoting stewardship. We will discuss our collaborative approach to develop the 2016-2020 action plan through engagement and workshops with our membership and through information from reports we helped initiate and fund to help guide our strategic direction. Finally, we will discuss our three primary strategies to achieve our targeted outcomes of maintaining large native prairie and parkland landscapes, conserving connecting corridors for biodiversity, and protecting isolated native habitats, as well as the approaches we have chosen to achieve those outcomes.

6-4. Mattheis Ranch - A Conservation Triumph

Jerry Brunen, Western Sky Land Trust

Western Sky Land Trust recently completed one of Alberta's largest ever conservation easements. This presentation will provide an overview of how a partnership with the University of Alberta guarantees that the Mattheis Ranch, a 5,000 ha research facility and working ranch in the Mixedgrass Prairie of SE Alberta, will be conserved forever, and how it has also provided funding for an endowment that will further strengthen the U of A's Faculty of Agricultural, Life and Environmental Sciences legacy in prairie agriculture, ecological research and education. Mattheis Ranch offers diverse and unique habitats for many prairie species at risk, together with a wide range of other flora and fauna. Notably, this diversity is supported while accommodating other land uses such as cattle production and energy extraction. Located in Newell County and the Eastern Irrigation District, the Mattheis Ranch is a 'living laboratory' that is pivotal in supporting the Rangeland Research Institute (RRI). Its mandate is to provide research, teaching and public outreach in support of increasing the environmental and economic sustainability of Alberta's rangelands. In addition, a broad range of basic and applied questions can be addressed, including the provision of environmental goods and services.

SESSION 7: RECOVERY STRATEGIES I

7-1. Redefining Sage-Grouse Knowledge to Aid the Protection, Conservation, and Recovery of a Highly Endangered Species

Krista L. Bird, Tannas Conservation Services Ltd.

Sage-Grouse have been intensively studied for over 40 years, but many important features of their biology have been left unanswered due to limitations of conventional ecological methods. Genetics has the ability to unearth cryptic behaviors, family structure, and dispersal, all of which contribute to and refine our knowledge of the species and help manage their recovery. The objective of this research was to use Sage-Grouse to examine basic population dynamics using genetics on 2519 individuals from Alberta, Saskatchewan, Montana, and Wyoming. I found high genetic diversity, low differentiation, and long distance dispersal despite natural and anthropogenic fragmentation, peripheral and marginal habitat, and declining numbers. At the lek level, I found hybridization, intraspecific nest parasitism, multiple paternity, a high percentage of the male population breeding, low levels of male kinship, and little inbreeding. All of these

findings contradict conventional Sage-Grouse knowledge and lekking theory, which drive current conservation practices. Understanding population genetics, behavior, and identifying habitat and habitat corridors is essential to effectively manage Sage-Grouse recovery in Canada.

7-2. Post-release Movements and Habitat Selection of Translocated Greater Sage-grouse in SE Alberta

Kayla Balderson Burak, Mark Brigham and Gavin Simpson, University of Regina
Stephen Davis, Canadian Wildlife Service
Joel Nicholson, Alberta Environment and Parks

The current Greater Sage-grouse (*Centrocercus urophasianus*) population in Alberta is estimated to be only 2.1% of that in 1968. As a result of this decline, an international translocation agreement was undertaken between Alberta Environment and Parks and Montana Fish, Wildlife and Parks. During the 2011-2012 breeding seasons, 41 sage-grouse were translocated from healthy populations in Montana and released onto active leks in southeast Alberta. We used a generalized additive model to analyze the post-release movements of nesting and non-nesting hens in 2012. We found that hens that did not initiate nests (n=9) had significantly higher post-release movement rates than those that initiated nests (n=11) and took eight weeks to acclimate to the area. An inhomogeneous Poisson point process (IPPP) model was used to analyze movements of translocated sage-grouse relative to anthropogenic and natural features. The models indicate that translocated sage-grouse are less likely to be found closer to all anthropogenic features that were included in the model. Management recommendations which stem from this work include adoption of methods to increase the probability of hens being inseminated prior to translocation to increase the likelihood of nesting. In addition, this work provides incentive for removing anthropogenic features from key nesting habitat.

7-3. Really Big Bird Houses: Platforms for Ferruginous Hawks

Janet W. Ng and Erin M. Bayne, Department of Biological Sciences, University of Alberta
Troy I. Wellicome, Canadian Wildlife Service, Environment Canada

Ferruginous hawks naturally nest in trees, on the ground, on cliff sides, and more recently, on man-made structures such as artificial nest platforms. In recent decades, wildlife managers, landowners, and other stakeholders have used artificial nest platforms to increase nest availability for hawks. However, despite widespread use, platform nests are rarely evaluated to determine if they provide a benefit to ferruginous hawks. Our research: (1) evaluates whether platforms are a valuable management tool for this species at risk, (2) identifies scenarios where installation of a platform may be beneficial for the species, and (3) determines which landscapes may be suitable for a new platform. From 2010 to 2014, we monitored nest success (n = 1,200 nest attempts) and nest reoccupancy (n = 649 unique nests) of ferruginous hawks nesting in trees and platforms in Alberta and Saskatchewan. We then developed several habitat models to predict habitat suitability for ferruginous hawk home range selection and nest density. We summarize our results as recommendations for beneficial management practices for ferruginous hawk artificial nest platforms.

7-4. Mitigating Impacts to Wetlands: As Easy as Water off a Duck's Back?

Jennifer L. LeBlanc, Canada North Environmental Services

That wetlands have ecological value is well-accepted, and it is generally agreed that conserving such habitats and provided ecosystem services is desirable. In the prairie pothole region, wetlands are impacted by agriculture, infrastructure, and industry development. There are federal and provincial regulations and guidelines in place across Canada (and elsewhere) to avoid, minimize, and offset impacts. However, across the prairie provinces they are at different stages of development, and are enforced to different degrees. There are many ways impacts can be avoided and this is preferred over other mitigation measures; however, there are instances were impact is unavoidable. In addition to avoidance and minimization actions, proponents may be required (or may voluntarily opt) to offset residual wetland impact by creating, restoring, or enhancing other "replacement" wetlands. Regardless of the compensatory mitigation (or offset) measures to be implemented, the first step is identifying wetland area and function. Not all wetlands are created equal – either in form or ecological function. The extent of impact is also not always visible -- factors such as sedimentation, pollutant runoff, or disturbance may be less evident than obvious physical impacts such as infilling. Thus, although guidelines are in place or in development in the Prairie Provinces to help inform and standardize the mitigation process estimating impact to wetlands is not as straightforward as it may seem. The author will discuss approaches, and challenges, to estimating unavoidable development impacts.

SESSION 8: RECOVERY STRATEGIES II

8-1. Evaluating the use of Modified Fence Sites by Pronghorn in Alberta

Paul F. Jones and Blair Seward, Alberta Conservation Association
Andrew Jakes and Mark Hebbelwhite, University of Montana
Brian Martin, The Nature Conservancy

Pronghorn prefer to cross under the bottom wire of a fence and not jump over. If the bottom wire is too low, the fence becomes a barrier and restricts pronghorn movements. There have been a number of modification techniques recommended by wildlife management agencies to facilitate the movement of pronghorn under fences but few have been critically evaluated. Our study tests whether pronghorn will use modified fence sites, monitored with trail cameras, using a Before-After-Control-Impact study design. We tested the use of goat-bars (winter 2012-2013) and clip sites (winter 2013-2014) to determine if they truly do allow for easier passage by pronghorn. We tested if the magnitude in change of successful crossings (mean successful crossings per day after modification / mean successful crossings per day before modification) was significantly different between modified sites and control sites using an F test. We had two types of modified sites, those were the goat-bar or clips were installed and those were the bottom wire at known crossing sites was lowered. We also had two sets of controls were nothing was done to the site between the before and after period; 1) a fence section near the modification site and 2) at known crossing locations where the wire was not lowered (winter 2013-2014 only). We did not see a significant increase in the use of sites modified for pronghorn for either modification technique.

We discuss our interpretation of the results and implications for both techniques to facilitate movement by pronghorn.

8-2. Prairie Dogs, Partnerships and Plague: Striving for the Recovery of Black-footed Ferrets (*Mustela nigripes*)

Heather Facette, Grasslands National Park, Parks Canada
Tara Stephens and Axel Moehrenschlager, Calgary Zoological Society, Centre for Conservation Research

Grasslands National Park and the surrounding area in southwestern Saskatchewan are home to the northern most population of black-tailed prairie dogs (*Cynomys ludovicianus*) and the only prairie dog population in Canada. This area was also once home to the black-footed ferret (*Mustela nigripes*), one of North America's most endangered species. This specialist predator of prairie dogs is an integral component of this grassland ecosystem as these two species have evolved together for millennia. With the generous support and collaborative efforts of many partners, Grasslands National Park became the 19th reintroduction site of the ferret recovery effort in 2009. We report on the past six years of this Canadian recovery effort, including its successes (e.g second generation of wildborn kits) initial challenges (e.g. public support) and how these were overcome, and the factors that led to a collaborative decision in 2012 to temporarily halt ferret releases. Ferret recovery is a long-term commitment that depends on continued collaborations. With the recent confirmation of sylvatic plague (*Yersinia pestis*) and fluctuations in prairie dog abundance, Parks Canada and the Calgary Zoo are working together to overcome these latest challenges to returning ferrets to Canada and restoring the prairie dog ecosystem.

8-3. Using Stepping-Stones and Translocations to Increase Population Viability in the Endangered Ord's Kangaroo Rat

Lia Brands, University of Calgary

Habitat loss and fragmentation can have a negative effect on animals that have limited dispersal abilities, such as the Ord's kangaroo rat (*Dipodomys ordii*). This nocturnal rodent lives in southern Alberta and Saskatchewan. It is endangered due to its small and drastically fluctuating population sizes, restricted distribution, and a decline in its natural habitat: actively eroding sand dunes. My research focused on two conservation tools that have the potential to help stabilize the Alberta kangaroo rat population: stepping stones and translocations. Using mark-recapture data, I assessed the dispersal ability of kangaroo rats in Alberta. I discovered that the distance between habitat patches likely exceeds the dispersal ability of most kangaroo rats. Habitat manipulation, such as the creation of stepping stone habitat patches, can benefit dispersal by decreasing inter-dune distances. I determined a number of potential stepping stone locations that could restore connectivity between isolated habitat patches in a sub-section of the species range, and I prioritized them based on their contribution to the overall dune network functional connectivity. Restoring habitat in these prioritized areas can help facilitate natural dispersal. I also evaluated if translocations could be used in place of natural dispersal to increase rescue and recolonization of isolated habitats. I conducted experimental translocations by releasing kangaroo rats into

artificially constructed burrows. The duration of site occupancy was used as an indicator of success. I determined that translocations could result in successful establishment with evidence of occupancy occurring in seven of the sixteen translocations performed. My findings indicate that together, habitat management and purposeful, informed translocations have the potential to facilitate dispersal, thereby rescuing populations that are in decline, recolonizing habitats that have become extirpated, and ultimately increasing the viability of the kangaroo rat population in Alberta.

8-4. Amphibians on the Move: Translocation as a Mitigation Strategy

Jessica A. Martino, Canada North Environmental Services

Amphibians are declining worldwide; populations on the Prairies are no exception. Loss of habitat via in-fill or wetland drainage due to agriculture and development is a contributing factor to these declines. When it comes to habitat loss and fragmentation, amphibians are more vulnerable than other taxa due to their biology - they have complicated multi-stage life cycles requiring a variety of habitats. Thus, habitat loss in both aquatic and upland habitat may cause population declines and even local extinctions. Additionally, fragmentation may impede dispersal and migration and ultimately limit gene flow. To mitigate the loss of individuals, translocation (i.e., the capture and movement of individuals off site) has become an increasingly common technique and is currently the main strategy used to reduce mortality on projects sites. However translocation is not without controversy - there are risks associated with this practice such as potential injury or mortality during capture/translocation, unknowns about habitat suitability at relocation sites, maintaining connectivity to appropriate habitats and other populations, and disease transmission. Despite these risks, translocation remains an important technique for amphibian conservation in the Prairies. Implementation of standardized protocols based on the best available research, as well as post-translocation monitoring, would be highly beneficial.

8-5. Designing and Implementing a Canadian Toad Translocation Program for BHP Billiton's Jansen Potash Project

Cole Kirkham, **R. Pollock**, and L. Bol, ERM Consultants Canada Ltd.
Holly Heffner and Anthony Lambert, BHP Billiton Canada Inc.

In Saskatchewan, the Canadian toad (*Anaxyrus hemiophrys)* is considered a sensitive species with activity restriction guidelines that aim to protect and conserve the provincial population. As part of the environmental assessment process for the Jansen Potash Project, BHP Billiton committed to translocation of Canadian toads as a mitigation measure where direct disturbance to wetlands could not be avoided during project development. In 2012, tadpoles (n=21), toadlets (n=204), and adults (n=45) were collected, marked (adults only), and translocated to five suitable wetlands outside the development area. During two years of post-translocation monitoring, Canadian toads were detected in two translocation wetlands, including a marked adult and tadpoles, and in two nearby wetlands not previously found occupied. The program was successful in confirming multi-year survival of a translocated individual, observing post-translocation breeding activity within a targeted area, and detecting evidence of successful

breeding (tadpoles) in a translocation wetland. Although a small sample size and only a measure of short-term success, the monitoring suggests that Canadian toad translocation may have the potential to be a successful mitigation or conservation tool. The presentation will describe the detection and translocation methods, interpret the success of the program, and discuss key learnings for future translocation efforts.

SESSION 9: HABITAT MITIGATION AND RESTORATION

9-1. Sampling Methodology to Support Regulatory Application and Improve Operational Performance

Ron Sparrow, Trace Associates

Trace Associates Inc. (Trace) has worked with a mining client in the grassland natural region of Alberta to develop and implement a Reclamation Assessment Protocol. The purpose of the assessment protocol was to provide an overall approach for assessment of reclaimed land (formerly a combination of native prairie and agricultural lands) that will consider stakeholder needs, and meet regulatory requirements for closure and sign-off by regulators. The two main objectives for the assessment protocol were: firstly, to develop site specific, measureable targets that were agreed upon by regulators and supported by stakeholders, which may be applied to confirm sites have met approval requirements; and secondly, to assess the site and evaluate historical reclamation practices, and develop future best management practices. The assessment protocol was developed to provide statistical rigor based on assessment locations, key data collection parameters (vegetation, soils, and landscape), and plot size. The presentation will provide the methodology used, the results obtained, and discuss enhancements to the process. Further discussion will include using the developed methodology in sync with new and evolving systems of remote sensing and vegetation inventories.

9-2. Soil Bioengineering for Riparian Restoration

David F. Polster, Polster Environmental Services Ltd.

Degradation of riparian areas can be traced to a wide variety of causes from urban developments to industrial activities, including farming. Soil bioengineering, where living plant materials are used to perform some engineering function, can be an effective tool in reclaiming damaged riparian areas. Soil bioengineering can be used to treat unstable banks where modified flow regimes or riparian clearing has caused accelerated erosion. Soil bioengineering can be used to treat sites where excessive sediment deposition such as from placer mining has modified flow patterns. Soil bioengineering treatments can be used to trap sediments and to re-establish the functions of riparian vegetation including increasing bank root densities, providing shade, organic matter and insects for aquatic systems. Soil bioengineering treatments are well adapted to implementation by local stewardship groups and can provide an opportunity for low costs riparian restoration. This paper explores the soil bioengineering techniques that can be used to treat degraded riparian areas. A variety of case studies from western Canada are presented.

9-3. Plant Community Restoration During Bank Stabilization Projects with Southern Alberta

Steven Tannas, Tannas Conservation Services

After the flooding in 2013 numerous bank stabilization projects were required to protect critical infrastructure and prevent further shifts within water ways that could cause future damage. However the historical methodology to protect banks of streams and rivers has been to harden them. This in effect results in lost habitat for wildlife, plants, and fish. The use of Bio-engineering, with other soft erosion control techniques and the use of a diverse compliment of native plants can allow hardened features to become softened. Although bio-engineering has become popularized it is typically applied inappropriately or as an afterthought to bank stabilization projects. Within these 9 projects restoration has become the focus and is integrated into the engineering design from day one to ensure the long term success of the ecosystem not just the bank stabilization. These projects represent partnerships between Professional Agrologists and Engineers that have resulted in unique designs for each location taking into account the unique biology of each site and the needs of the environment surrounding the site. To date close to 3km of river banks have been stabilized with the majority of the projects being fully self-compensating for fish habitat.

9-4. Remarkable Forage Characteristics and Grazing Potential of Purple Prairie Clover (*Dalea purpurea* Vent.) and White Prairie Clover (*Dalea candida* Michx.ex Willd) on Western Canadian Grasslands

Alan D. Iwaasa, Y. Wang, E. Birkedal, R. Muri, M. Schellenberg and E. Sottie, Agriculture and Agro-Food Canada

Swift Current and Lethbridge Research Centre with Agriculture and Agri-Food Canada have been evaluating the forage nutritional constituents, animal health and grazing benefits of purple prairie clover (PPC) (2001-2015) and white prairie clover (WPC) (2009-2015) over numerous years. Currently, a number of native prairie plant populations or ecological varieties have been released and are available in Canada and the United States for land reclamation and pasture/forage seeding. Purple and WPC are widely distributed throughout the south and central Prairies and Parklands in Canada and act as warm-season forbs, with much of their growth occurring during July and August. The clovers are tap-rooted, drought-resistant, nitrogen-fixing and grow to a height of 30-55 cm. A presentation will be given outlining the ongoing long term research and results on these remarkable native forbs that contain some of the highest condensed tannins levels that has been identified, and results in improved protein utilization and reduction in *E. coli* 0157:H7 activity in cattle. These prairie clovers have good nutritional constituents and forage characteristics, and grazing preference for the PPC is highest at both vegetative and flowering maturity stages but still grazed at the full seed set stage by cattle. Both clovers also attract a number of different insect pollinators and therefore improve plant and insect biodiversity. Thus, these clovers would be excellent additions to a pasture to improve the forage nutritional profile, extend the grazing season, environmental benefits and increase animal and human health.

SESSION 10: INVASIVE SPECIES

10-1. Invasion of Saskatoon – An Integrated Approach From Meewasin's Resource Management

Eryn Tomlinson and Renny Grilz, Meewasin Valley Authority

As humans encroach on native prairie and natural areas, there is an increase in the number of occurrences of new and existing exotic plant species. These invasive species can out-compete the native species in our prairie; decreasing biodiversity not only of plant species, but of wildlife through loss of habitat and food sources as well. Meewasin Valley Authority is a conservation agency that strives to create public access to natural areas in Saskatoon's river valley through a mandate to conserve, develop, and educate. Throughout the river valley in Saskatoon, Meewasin manages invasive plants through an integrated approach with the use of prescribed burning, grazing (both by ungulates and mechanized means), biocontrols, and chemical application. Using Saskatoon Natural Grasslands as a case study, we will explore what resource management activities we have undertaken on site, what are some of the issues on site (invasive plant species, fragmented landscape, close proximity to housing), and what are the plans to restore the site. We will also discuss what we have learned from Saskatoon Natural Grasslands and how this can be applied to other urban protected areas such as the Northeast Swale.

10-2. Challenges and Learnings Controlling Downy Brome in Native Prairie Disturbances

Kirk Elliott, Trace Associates

Downy brome (*Bromus tectorum*) is the most common plant on the continent, covering over 100 million acres in the United States, and becoming a huge problem in Southern Saskatchewan, Alberta, and British Columbia. This presentation will focus on sites within a small geographic area within the MD of Taber where downy brome (*Bromus tectorum*) has become very prevalent. It is common in roadways and ditches, gravel pits, and oil and gas disturbances in the area. Once a site is disturbed, downy brome is often one of the first weeds to establish and can be extremely difficult to control. Native grassland diversity is significantly reduced once infested with downy brome. Challenges associated with controlling this weed in native prairie disturbances include pressure from landowners, pressure from the client, limited chemical availability, and large disturbances which make hand picking and mechanical control difficult. Trace has attempted several different methods to control downy brome with some success and a lot of challenges.

10-3. Common Tansy Management Through Goat Browsing

Nadia Mori, Saskatchewan Ministry of Agriculture
H.A. (Bart) Lardner, Western Beef Development Centre and University of Saskatchewan

Common tansy (*Tanacetum vulgare*) is a perennial noxious weed of increasing concern in Saskatchewan and neighboring areas. The essential oils of the plant contain thujone, a neurotoxin that can lead to epileptiform convulsions in animals and humans. Rangeland herbicides which control common tansy also remove desirable broadleaf plants. Roguing or cultivation is usually not practical and biological control agents are not available. For large-scale infestations where

herbicide applications are not feasible, goat browsing of tansy may be an economical alternative. Animal health implications due to thujone toxicity associated with common tansy remains a concern and warrants further investigation. A small paddock at the Western Beef Development Center's Pathlow pasture near Melfort, SK was used in a 2-year demonstration trial where an average of 120 meat goats browsed a well-established common tansy infestation. Goat browsing was implemented in early July for periods of up to 10 days. Browsing impact appeared to reduce the vigor of common tansy in about 15 to 20% of the affected area although no significant reduction of total stems was noted. Containment of common tansy requires repeated long-term browsing impact. Future projects should also include a second browsing or a herbicide application on vegetative fall regrowth to increase the impact on common tansy.

10-4. Impacts of Smooth Brome Colonization on Insect Diversity in Fescue Grassland

Vanessa Rosenkranz and Terence McGonigle, Brandon University

Smooth brome, or *Bromus inermis*, is an aggressive invasive grass that effectively out-competes native plant species (Stacy *et al*. 2005; Otfinowski & Kenkel 2008). In fescue grasslands, for example, *B. inermis* may reduce plant diversity by as much as 70% (Otfinowski & Kenkel 2005). Fescue grasslands are an increasingly rare and diverse ecosystem, supporting a variety of bird and ungulate species. Insects provide food resources for grassland birds and fulfill several ecological niches (Litt *et al.* 2014). However, ecosystem theory predicts decreased insect richness and abundance with decreasing plant diversity (Knops *et al.* 1999). Current studies relate *B. inermis* cover to aboveground insect diversity for fescue grassland in Riding Mountain National Park, Manitoba. Insects were collected by means of sweep net and pitfall traps. In Riding Mountain National Park, *Bromus inermis* is a recognized threat to grassland integrity and is actively managed with mowing and herbicide. An additional greenhouse study examines the relationship between the soil seed bank and *B. inermis* cover to determine vegetation recovery following weed control.

SESSION 11: EDUCATING YOUTH OF TODAY, FOR TOMORROW

11-1. Learning the Land: A Prairie Conservation Partnership between Nature Conservancy of Canada and Treaty 4 Education Alliance

Jennifer McKillop and **Scott Fulton**, Nature Conservancy of Canada

The Learning the Land Program is a collaboration between the Nature Conservancy of Canada -- Saskatchewan Region and the Treaty 4 Education Alliance. Supported through the Government of Canada's Aboriginal Fund for Species at Risk, Learning the Land is an environmental education program designed to meet Grade 7 curriculum outcomes that engages First Nations students and communities in environmental education and conservation efforts. It recognizes the incorporation of Elders' and Traditional Knowledge as essential to program success. In year one, we developed the *Learning the Land Native Prairie Species-at-Rick Resource Kit* and associated *Teacher's Manual*. The material focuses on Grade 7 students within Treaty 4 schools discovering the workings of native prairie ecosystems and the changes that have occurred in those

ecosystems, within a context of traditional First Nations culture and knowledge. In year two we are testing and implementing these materials through activities on a seasonal basis, field trips, assignments, and group and project-based activities.

11-2. Adopt a Rancher and Taking Action for Prairie - Education Programs by PCAP

Nicole Anderson, Miller Comprehensive High School, Regina

Adopt a Rancher is a complete unit of study that addresses the topic of Climate and Ecosystems Dynamics and fits both the Grade 10 Science program and the Grade 11 Environmental Science programs. Students complete a case study of an actual ranching operation in Saskatchewan. Classrooms are paired with working ranchers who will provide information about their operations to the students. By using a student guide and online resources and communicating with the adopted rancher, students answer the question "How can ranching protect Saskatchewan's native grasslands while providing economic benefits for Saskatchewan people?" A field trip to the ranch is included in the program. Taking Action for Prairie provides targeted prairie grassland conversation education for middle years students through an interactive, positive group setting. Students in each grade are introduced to the concept of prairie conservation, and then develop and implement their own action project which will make a measurable impact within their community. Students and teachers are encouraged to log action plan progress within their community and share results with other schools via an on-line web portal.

11-3. Motivating and Mobilizing Youth: Conservation Awareness-Building In Antarctica, the Backyard and Online

Alana Krug-MacLeod, Aden Bowman Collegiate Institute
Karen Krug, formerly of Centre for the Environment, Brock University

This paper identifies various routes through which youth from around the world have been motivated to engage with nature and to enlist others in conservation and sustainability activities. Beginning with (auto) biographical details of the main presenter that led her from ordinary ecological interests to an Antarctic expedition to national awards for environmental activism, this paper identifies ten types of activities known to influence youth to wonder, care and act. Avenues described include: specialized outdoor learning programs in schools (ScienceTrek); educational expeditions for youth (Students on Ice); competitions funding youth-initiated conservation projects (Caring for Our Watersheds); service programs promoting volunteerism and adventurous journeys (Duke of Edinburgh Challenge); social media, websites and documentaries deepening awareness and engagement; science, video and photography competitions and showcases fostering observation and/or research (Get to Know, Where Challenge, Virtual Science Fair, Millennium Youth Camp); environmental summits and exposure tours allowing students to connect and collaborate (EF Tours global citizens program); environmental/sustainability clubs combining action and education (SWITCH); trails and zoos facilitating exploration; and on-line volunteer options building expertise while contributing to baseline research (citizen science). How, why and to what extent these avenues successfully foster sustainability will be assessed in relation to observation, experience and literature.

11-4. Children in the Garden: Developing Ecological Understanding

Janet McVittie, University of Saskatchewan
Shannon Dyck

The College of Education has a Prairie Habitat Garden right outside its doors. It is easily accessible for early childhood teachers, teacher candidates, and nearby day cares. Plans are in place to re-design the space with a particular focus on: connecting children to natural areas through play; encouraging learners of all ages to connect, wonder, care, and act; and restoring the native plantings that have been encroached upon by invasive species. Emphasis will also be placed on supporting the College of Education's teacher candidates to learn--through direct observation and interaction in the garden--how children interact with the natural world. The benefits of children exploring natural areas independently and with other children, through an open and unguided atmosphere, have been well documented. For example, children become better at assessing risk, their health and confidence improve, and they sleep better. Time in green space has also been shown to reduce the effects of behavioral conditions, such as ADHD. In this poster presentation, a re-design for this naturalized space will be presented, which deliberately designs the area for imaginative play, contemplative time, physical challenges, creative productions, and "discovering" ecological relationships. The poster will allow observers to add their ideas to enhance the garden as a naturalized play area for early learners.

SESSION 12: GETTING COMMUNITIES INVOLVED

12-1. Grassland Matters: Fostering a Community of Concern in Saskatchewan

Lorne Scott, Joanne Havelock, Jill Vaisey and Katherine Arbuthnott, Public Pastures – Public Interest

In 2012, the Conservative Government in Ottawa decided, without any consultation, to abandon the Prairie Farm Rehabilitation Administration (PFRA), including some 1.8 million acres of grasslands in 62 community pastures in Saskatchewan. In response, a group of rural and urban citizens formed Public Pastures - Public Interest (PPPI)**.** The PFRA pastures contain some of the best managed and largest tracks of grasslands in western Canada, home to over 30 Species at Risk. Grazing is recognized as an important tool in managing grasslands. The lands contain heritage sites from early settlers, Métis and First Nations' peoples; and are and have been integral to rural life. PPPI has lobbied Federal and Provincial Governments to ensure that the pastures remain in Crown ownership to conserve and protect their natural landscapes, biological resources and heritage values. Public education via print materials, photos, social media and events such as speakers, films, an author tour and dinner, musical events, pasture tours and media coverage have conveyed the values and concerns about the grasslands' future, to connect and motivate people and encourage action. PPPI has also engaged in dialogue with ranchers, environmentalists and government about the best ways to manage and conserve these critically important grasslands.

12-2. The Northeast Swale: Urban Encroachment As We Speak

Louise Jones, Northeast Swalewatchers

The Northeast Swale is an ancient river channel that runs northeast from Peturrson's Ravine, beginning on the east side of Saskatoon's Central Avenue. In its entirety, it parallels the South Saskatchewan River northeast and re-enters it a distance of 26 km downstream. It represents one of the largest pieces of unbroken prairie/wetland in the Saskatoon region with patches of rare fescue grassland. There is a rare Marl Bog at Peturrson's Ravine supporting naturally rare plants. The swale is home to several bird species at risk. The Northeast Swalewatchers is a group of concerned citizens including experts in many fields related to the health of the Swale, and many organizations dedicated to conserving and protecting natural species and spaces. Many citizens of Saskatoon share our interest in protecting this jewel in the crown of Saskatoon's natural areas. Having little parcels of land is not the same thing as having continuous wildlife corridors. The one may appear to serve the same function, but it doesn't. For plants and animals to thrive, areas of native prairie no smaller than 225 hectares are required. Urban growth pressures continue, relentlessly, to have a deleterious effect on the natural world and therefore on us, whether we fully realize this or not. Given the preponderance of urban populations in Canada, it is important to engage people in protecting these natural areas within an urban setting. This conference provides a wonderful opportunity to discuss such a timely topic as conserving biodiversity and ecological integrity of natural areas within an urban setting. This is a huge challenge to Saskatoon at this time as we are in a period of rapid growth of suburban neighbourhoods and the associated expansion of our urban boundaries. While our new neighbourhoods are high density, they are still encroaching into surrounding natural areas. The cumulative effects of the neighbourhoods of Evergreen, Aspen Ridge, and, sometime in the future, the proposed UH3 on the Northeast Swale are a case in point.

12-3. Applying Social Science to Promote Community Engagement in Conserving Purple Martins

Glen T. Hvenegaard, University of Alberta

Several groups of birds in Canada have declined significantly in the past few decades, particularly aerial insectivores, which includes the Purple Martin (*Progne subis*). Purple Martins in the prairies are almost fully dependent on human-provided nest boxes for nesting and carefully managed nest boxes can greatly increase the reproductive success of martins. Therefore, a key management challenge is to involve people in purple martin nest box stewardship. The purpose of this presentation is to highlight how social science research can provide guidance for community engagement strategies to support purple martin conservation. First, addressing martin landlord motivations (eg. social interactions, sense of achievement) through networking events and reporting of nesting data can aid in recruiting and retaining landlords. Second, a community-based wildlife festival can recruit new landlords, as well as promote mutual support, education, and even friendly competition among existing martin landlords. Third, understanding how martins serve as a flagship species can generate benefits in the larger community for wildlife conservation and greenspace protection. Last, citizen science projects can generate significant

benefits for participants, support for wildlife conservation, and engagement in community projects.

12-4. Over 50 Years of Archaeological Education and Conservation with the SAS

Tomasin Playford, Saskatchewan Archaeological Society

The Saskatchewan Archaeological Society (SAS) in a non-profit, membership based, voluntary organization that aims to educate people about archaeology and engage people in the protection and conservation of archaeological heritage. Since its inception in 1951, the identification, protection and conservation of archaeological sites in Saskatchewan has been an objective of the society. A review of several SAS education and conservation projects will showcase the similarities between archaeological and biological conservation and will highlight the opportunity for possible future collaboration.

SESSION 13: STAKEHOLDERS' PERSPECTIVES

13-1. Multiple Approaches to Habitat Conservation: Finding the Right Fit Encourages Producers to Manage for Species at Risk Habitat

Krista Connick Todd, South of the Divide Conservation Action Plan (SODCAP)

Over the 2014-15 winter period, SODCAP interviewed 50 ranchers within the Milk River Watershed asking for feedback on how best to deliver species at risk programming in the area. When asked what would be most effective to encourage producers to make species at risk a priority in their management decisions, the results varied. Suggestions included results-based agreements, cost sharing programs for ranch improvements, as well as extension activities. The diversity of opinions and ideas derived from the interviews suggest that a "one size fits all" approach to species at risk stewardship would not fit for ranchers in this area of the province! SODCAP'S goal is to develop a variety of approaches to meet many individuals' needs on their respective operations. Providing an assortment of programming, including basic communication of what individual species specifically require for habitat, will help to conserve and maintain habitat for species at risk. The discussions often shed light on the fact that landowners are proud of the habitat that they provide and are willing to continue to actively manage habitat.

13-2. Range Management - A Way of Life

Dionne Freimark

My name is Dionne Freimark and I am 17 years old. My family and I ranch north of Walsh in southeast Alberta. I was the International Mountain Section-Alberta representative at the 2015 Society for Range Management's High School Youth Forum in Sacramento, CA. I would like to speak at the 2016 Prairie Conservation and Endangered Species Conference representing the youth who do care about the native prairie and are acting to conserve it. I would like to present my perspective as a young rancher on the importance of native prairie, why it should be

important to everyone and how we all depend on it. People need to be informed about the rapidly disappearing native prairie and engage in how they can make a difference.

13-3. The Milk River Integrated Watershed Management Plan – A Community Approach to Maintaining a Watershed for Future Generations

Tim Romanow, Milk River Watershed Council Canada

The MRWCC is a non-profit Watershed Planning and Advisory Council in Alberta, Canada. The Milk River Integrated Watershed Management Plan was completed in May 2014. The plan is not prescriptive, but provides guidance to resource managers, municipalities, landowners, leaseholders, industry, non-profit organizations, provincial and federal governments. Through an extensive process of community and stakeholder engagement; desired outcomes related to surface water supply, water quality, groundwater, riparian areas and wetlands, biodiversity, land use and the economy were determined. The Milk River watershed is fortunate to contain large contiguous tracts of native grassland; and a variety of terrestrial and aquatic species at risk, many at the northern extent or their ranges. High levels of biodiversity are, in part, a product of the high percentage of Public Land found in the watershed and the stewardship actions of landowners and leaseholders. While biodiversity is highly valued in the watershed, it should not be maintained at the expense of basin resident's ability to pursue their livelihood or to maintain economically viable farm and ranch operations; nor should it result in the erosion of private property rights. The IWMP seeks balance for biodiversity and economic stability required to maintain a community to steward our watershed.

13-4. Using Results-Based Agreements to Encourage Producers to Make Species at Risk Habitat a High Priority

Tom Harrison, South of the Divide Conservation Action Plan (SODCAP)

Results-based Agreements have the potential to be a very effective tool for habitat management for species on grazing lands. Results based agreements provide a financial reward to landowners who meet specific habitat targets for a particular species. These agreements acknowledge that each operation is unique, and manages resources in different ways. In areas of critical habitat they can make habitat management an important priority in the landowner's everyday decision making, along with the typical herd health and grass management considerations. These agreements, by providing a financial benefit, encourage producers to consider habitat needs in their management decisions. They may be a good tool in guaranteeing that habitat remains an important priority as land is bought and sold in the future. They are an excellent way of providing producer-initiated learning and discovery on specific habitat needs for critical species. Producers in southwestern Saskatchewan have the reputation for being independent and resourceful; over the years they have conquered many different challenges and found solutions that work for their individual operations. SODCAP Inc feels that these agreements will work well with the independent, innovative attitudes of the producers in our area. Because the agreements are targeted to critical habitat areas they are also a solid use of public funding; targeting specific habitat needs in areas that will most benefit a specific species. Results based agreements are currently being piloted in southwest Saskatchewan.

SESSION 14: PROMOTING THE PRAIRIES

14-1. Introducing Wild about Saskatoon's NatureCity Festival

Janet McVittie, University of Saskatchewan

Now in its fourth year, the NatureCity Festival is a week-long celebration of wildlife and wild places within the City of Saskatoon. Sponsored and coordinated by an informal group of volunteers called Wild about Saskatoon, the Festival brings together 70+ organizations and businesses to offer a varied program of nature-related outings, lectures, concerts, art-making and classroom activities for people of all ages. Our objective is to encourage the residents of Saskatoon to appreciate the special beauty of this place and to value access to nature in their everyday lives, with the ultimate goal of recruiting more voices to advocate for wildness in the city and beyond. A made-in-Saskatoon original, the Festival has already inspired a similar event in Vancouver and has also garnered national attention. This presentation will outline the history, goals, successes and limitations of the NatureCity Festival, as a model that other communities may wish to adopt and adapt.

14-2. Social Marketing Campaign in Support of North American Grassland Conservation

Sue Michalsky, Commission for Environmental Cooperation

The North American Grasslands Alliance (NAGA) – is an alliance of government agencies, ranchers, non-government conservation organizations and other interest groups. The overall vision of NAGA is that North American grasslands are environmentally healthy and productive ecosystems that sustain working landscapes, conserve biodiversity, and support vibrant rural communities. Three tri-national meetings with partners and experts were held to establish NAGA and develop a multi-faceted collective framework to support North American grasslands. The top priority in the framework was the need to engage both rural and urban society to create broad support for grassland conservation. Under that priority, the Commission for Environmental Cooperation agreed to develop and disseminate a grasslands social marketing package by compiling data that supported the design of regional social marketing campaigns. A series of infographics was developed to convey key messages about the value of grasslands to North America, and the importance of ranching to the conservation of North American grasslands.

14-3. Photography and Conservation

Branimir Gjetvaj, Branimir Gjetvaj Photography

Conservation efforts predominantly focus on solving biological problems, but solutions reside with people. The biggest threat to the environment is human apathy; lack of care or action. Vision and emotion is what drives us. If we are going to change people's perceptions and motivate social change, we have to connect with our audiences through emotion. Humans are visual creatures – we use optical clues to help us gain the sense of place and perspective about our surrounding. Throughout history, stories have been the primary vehicle for conveying messages and the transfer of knowledge. Visual language is a cornerstone of storytelling and a

powerful communication tool. It is easy to understand, capable of presenting complex and abstract issues, such as climate change, in a simple and approachable way. To be effective, environmental NGOs have to connect with people, inspire appreciation for nature and convey the importance of living in harmony with the environment. Photography triggers emotional connection and initiates action. Unfortunately, non-profit organizations rarely dedicate sufficient resources for production of high quality visual communication material to achieve desired goals.
The author will present his experiences working in the field of conservation photography, and describe his efforts to deliver visual stories about the environmental and social problems facing our society. He will suggest options for non-profits to strengthen their capacity in visual storytelling. His desire is to increase the capacity of ENGOs to tell their stories in a powerful and timely fashion in order to inspire, educate and engage supporters and the public.

14-4. SRM – Prairie Parkland Chapter: A Small Group Making a Positive Splash on the Prairie Landscape

Nadia Mori, Saskatchewan Ministry of Agriculture and Society for Range Management
Renny W. Grilz, Meewasin Valley Authority and Society for Range Management

Range management is an art and a science. Helping producers and land managers understand the science behind their best management practices is at the heart of the rangeland professional's work tasks. Since its inception in 1987 the Society for Range Management (SRM) Prairie Parkland Chapter (PPC) has helped connect the on-the-ground range manager with the scientific community and public interest. From youth to professional development and networking events, the PPC membership strives to provide leadership for the stewardship of rangelands based on sound ecological principles. Together with the Prairie Conservation Action Plan (PCAP), the SRM-PPC has hosted an annual tour in conjunction with the Native Prairie Appreciation Week (NPAW) for the last 17 years. Over the years the tour has turned a spotlight on many range management principles and practices, offering a point of connection for ranchers, nature enthusiasts and range management professional. Through the support of the PPC, the university undergraduate range team has travelled to the SRM annual meetings to participate in the Undergraduate Range Management Exam. The local chapter has shown long-term support in preparing the students for the exam, travelling with them to the meeting and providing financial support to the team. After 28 years, the PPC continues to provide a forum for producers, students and range management professional to carry on the art and science of range management.

POSTER SESSION

1. Linking Seasonal Trends in Prey Abundance to Nestling Survival in Arctic Peregrine Falcons

Kevin Hawkshaw, A. Franke, and L. Foote, University of Alberta, Department of Renewable Resources

My project investigates the predator-prey phenology of a dense population of Peregrine Falcons near Rankin Inlet, Nunavut. This population has experienced a decline in productivity over the last three decades despite reductions in pesticide load, raising questions about the manner in which climate change may be influencing the population (Franke *et al.* 2010, Anctil *et al.* 2013). Avian predators are predicted to time their breeding coincident with their prey (Lack 1950) such that their chick rearing period is synchronized with peak prey abundance. Climate change has the potential to affect this synchronization because the phenology of species at higher trophic levels is less flexible (Both *et al*. 2009). Mismatched timing of reproduction can result in reduced nestling survival and growth (Hipfner 2008, McKinnon *et al.* 2012). I stratified my study area into nine habitat types and used distance sampling (Buckland *et al.* 2001) to estimate abundance of avian prey and arctic ground squirrel colonies, as well as burrow counts and snap trapping to estimate lemming abundance. I also collected data describing reproductive success and phenology for all Peregrine Falcons. My goal is to investigate the interaction between the timing of seasonal prey abundance and nestling energetic demand in determining survival.

2. Diversity and Abundance of Native Bees in Alberta's Prairies

Monica Kohler, **Jessamyn Manson**, Department of Biological Sciences, University of Alberta
Ashton Sturm and **Cameron Carlyle**, Department of Agricultural, Food, and Nutritional Sciences, University of Alberta

Pollination by native bees supports crop production across the globe and is essential to the success of flowering plants in our native ecosystems. Despite the important economic and ecological roles that bees play, little is known about the composition, distributions, or habitat requirements of native bee communities. To investigate the diversity and abundance of native bees, we surveyed bee communities using pan traps and netting in canola fields and rangelands across the agriculturally productive area of Alberta. We have collected thousands of bee specimens from 5 families and at least 23 genera, including social, solitary, and parasitic bees. Using ordination and regression techniques, we are identifying patterns in the bee communities across regions, sub-regions and site types. The results indicate that bee communities vary at these different landscape scales, with shifts in community composition in different regions of the province, and for certain bees, between rangeland and canola sites. These results represent the first description of broad-scale patterns in Alberta's native bee communities and are contributing to modelling efforts to map the potential value of pollination services by native bees in Alberta.

3. Habitat and Resource Selection of Western Painted Turtles (*Chrysemys picta bellii)* in an Urban Ecosystem

Kelsey Marchand and **Christopher Somers**, Department of Biology, University of Regina
Ray Poulin, Royal Saskatchewan Museum

Reptiles in Saskatchewan live on the edge; the environment is extreme, and the anthropogenic influence on their habitats is extensive. The western painted turtle (*Chrysemys picta bellii*) is one of the most widely distributed subspecies of the painted turtle in North America, reaching the northern limit of its natural range in western Canada. The western painted turtle is not considered at risk of extinction in Saskatchewan; however, populations throughout the western portion of the range are in decline. Despite their status, little is known about the ecology or population biology of western painted turtles in Saskatchewan. One population in southern Saskatchewan resides in Wascana Marsh in Regina. Over the next two years, we are conducting a study on turtles living in this population to begin understanding what habitats and resources are required to survive in this urban environment. The primary goals of the project are to determine population size and demography, home range size, habitat use, and overwintering locations. This will be accomplished through mark-recapture and radio-telemetry tracking, and stable isotopes analyses. Our work will continue to provide information on important aspects of the ecology of western painted turtles in this area of the species range.

4. The Status of Biodiversity in the Prairie and Parkland Natural Regions of Alberta

Katherine Maxcy, **Dave Huggard**, **Tara Narwani**, **Jim Herbers** and **Marie-Claude Roy**, Alberta Biodiversity Monitoring Institute
Shannon White, Alberta Environment and Parks

The Alberta Biodiversity Monitoring Institute (ABMI) reported on the status of human footprint, native habitat, and biodiversity intactness for the Grassland and Parkland Natural Regions (hereafter Prairie Region) in Alberta, and the High Value Landscape (HVL) therein, an area identified for its high biodiversity values. We found:

- Human footprint covered 63.1% of the Prairie Region, an increase of 1.8% between 1999 and 2013. Agriculture footprint covered 55.2% of the area.
- As of 2012, 37% of the Prairie Region was composed of native vegetation. Only 10% of native vegetation in the region was at least 200 m from human footprint.
- The ABMI assessed the status of 197 species in the Prairie Region and found them to be, on average, 53% intact.
- Inside the HVL, human footprint was lower than outside the region. By contrast, native habitat and biodiversity intactness were higher inside the HVL.

Overall, the biggest ecological changes were associated with lower than expected abundance of species that require native prairie habitat, such as the Baird's Sparrow, Sprague's Pipit, and many vascular plant species. Over the next few years, the ABMI will broaden its assessment of biodiversity to include status and trend reporting for lichens and wetlands, and trend analysis for all species groups.

5. Trumpeter Swan Habitat Suitability Modelling

Darren Wiens, EDI Environmental Dynamics Inc.

Environmental Dynamics Inc. (EDI) developed and implemented a habitat suitability mapping program for trumpeter swans (*Cygnus buccinator*) on Crooked Lake, near Fox Creek, Alberta. Trumpeter swans are listed as “at risk” in Alberta, and have recently been downlisted from “threatened” to a “species of special concern" according to the Alberta *Wildlife Act*. The objective of this program was to determine areas of potential high quality trumpeter swan habitat, using aerial photographs, LiDAR, and field data. We created a vegetation mapping base and completed a habitat suitability model based on nesting and foraging potential, as well as adjacency to habitat features and distances to sources of disturbance. The parameters used in the model are transferable between lakes. As such, the model may be applied to other lakes in order to predict and mitigate potential human-caused disturbance (for example, industrial development) in efforts to conserve and protect trumpeter swans. This poster will outline the steps required to produce the model results, as well as show the working example as produced for Crooked Lake, Alberta.

6. The Ecology of Grassland Snakes in the Big Muddy Valley

Tera Edkins and **Chris Somers**, University of Regina
Ray Poulin, Royal Saskatchewan Museum

The grasslands of southern Saskatchewan house a unique community of snakes at their northern range limits. Northern snakes require hibernacula to survive cold northern winters, summering grounds, and movement corridors between these areas. Saskatchewan snakes must also deal with habitat loss, which may alter snake movements, leading to subpopulation isolation and genetic differentiation. My study objective is to explore the ecology and habitat use of northern snakes and the potential changes to movement caused by human land use in the Big Muddy Valley. My research will focus on two species of conservation concern: the Threatened eastern yellow-bellied racer (*Coluber constrictor flaviventris*) and the Data Deficient bullsnake (*Pituophis catenifer sayi*). During summer 2015, I used radio-telemetry to track bullsnakes (n=7) and racers (n=2) in previously unstudied areas of the Big Muddy Valley. Telemetry data will illuminate how snake movement is potentially influenced by habitat type. Mitochondrial DNA will be used to examine genetic structure and gene flow of snake populations around natural and anthropogenic features. The results of examining habitat use patterns of snakes in the Big Muddy Valley may be employed in developing conservation strategies for threatened snakes at their northern range limits.

7. Habitat Selection of Female Moose During the Calving Season Within the Agricultural Landscape of Saskatchewan

Amy L. Wheeler, **Michel P. Laforge** and **Nicole L. Michel**, University of Saskatchewan College of Agriculture and Bioresources - Department of Animal and Poultry Science
Ryan K. Brook, University of Saskatchewan College of Agriculture and Bioresources - Department of Animal and Poultry Science and Indigenous Land Management Institute

The expansion of moose into the agricultural landscape of Saskatchewan has increased human-wildlife conflicts, raising the question of how to best manage them. In order to support decision making, we initiated a study on farmland moose reproductive success. In 2013 and 2014, adult female moose were captured between Saskatoon and Chamberlain, SK and fitted with Global Positioning System (GPS) collars. Daily movement rates and clustering of locations were used to determine the date and location of parturition for 19 moose. The date of parturition was estimated as the date with the lowest movement rate and preceded by a peak in movement rates. Average date of parturition was May 22 (range May 13 - 29). Moose were surveyed on the ground using Very High Frequency (VHF) radio telemetry in both June and September of each year to visually determine the presence and number of calves. Twinning rates were 33% (2013) and 38% (2014). Selection ratios were used to compare the habitat of used parturition sites to available sites within the study area, and a resource selection function was developed to depict the quality of available habitat for female moose with young during the calving season, specifically, 20 days post-parturition.

8. Goodbye Prairie Rose

David Larson

Prairie roses are undergoing a catastrophic decline in abundance: where there were banks of roses, only isolated bushes now exist. The cause - the Rose Stem Girdler (*Agrilus cuprescens),* a beetle native to Europe but introduced into North America. It was first discovered in the southern Canadian prairies in 2000, attacking stems of native Roses. A larvae eats a spiral tunnel under the bark in the cambium layer killing the stem. Leaves of such stems turn prematurely red in the fall, indicating their infestation and death. Each year following infestation there are fewer old stems within rose patches. Roses cope by producing new stems from the perennial rootstock but these are shorter and sparser so where there were once banks of roses, today there are small, spaced stems. Rose banks provide shelter and protection to wildlife and other species of plants. As they decline, predators and grazers enter these sanctuaries changing species composition and vegetation structure. Grazing within the patch converts a bush community to grassland. In a prairie landscape that is largely 2 dimensional, the loss of the vertical dimension provided by shrubs has wide ramifications. Future scenarios and management implications of this outbreak are discussed.

9. Dakota Skipper (*Hesperia dakota*) Habitat Suitability in Southeastern Saskatchewan

Kelsey M. Seidle, **Eric G. Lamb** and **Jean-Michel DeVink,** School of Environment and Sustainability, University of Saskatchewan

The Dakota skipper is a *SARA*-listed *Threatened* butterfly species that is limited to mesic mixed grass prairies within the provinces of Saskatchewan and Manitoba. Dakota skipper populations may be continuing to decline in distribution and abundance due to habitat loss and degradation. There is a current knowledge gap pertaining to habitat suitability and availability. Our objective is to gain a better understanding of the features that define Dakota skipper habitat suitability through vegetation, soils, land use, and thermal units. Surveys conducted in the 2015 field season will help to gain a better understanding of habitat suitability criteria, allow for the development

of a landscape-level model in order to map potential suitable habitat, guide the identification of critical habitat in recovery strategies, and develop land-use management plans. This information will also help to better understand the species' historic range and identify where repopulation may be feasible. This increased knowledge is crucial to construct a recovery plan to help secure Dakota skipper populations.

10. Ornamentals Gone Wild – New Invaders in the Saskatoon River Valley

Eryn Tomlinson and **Renny Grilz**, Meewasin Valley Authority

As humans encroach on native prairie and natural areas, there is an increase in the number of occurrences of new ornamental species escaping yards. These species can out-compete the native species and have the potential to become serious invaders. Meewasin Valley Authority is a conservation agency that strives to create public access to natural areas in Saskatoon's river valley through a mandate to conserve, develop, and educate. Throughout the river valley in Saskatoon, Meewasin manages various protected areas. In the field, Meewasin's Resource Management staff has encountered many new and unique invaders. Some, like Common Tansy and Baby's Breath, have escaped yards a while ago and are now on the noxious weeds list as they run rampant across the city and head into less populated areas via roadways. Others, such as Asparagus, are alarmingly widespread with not much data alerting us to its invasive nature. Further, there are new occurrences of ornamental plants naturalizing that may not be on the radar. Education is the key to prevention in the case of these early invaders. By mapping these occurrences and watching for trends, we can alert homeowners and resource managers to what the next big invader may be.

11. Decline of Mixed-Grass Prairie in Core Grassland Conservation Areas in the Southwestern Manitoba Important Bird Area, 2010-2015

Rebekah Neufeld and **Cary Hamel**, Nature Conservancy of Canada – Manitoba Region.

The status of the three largest native prairie blocks within the Southwestern Manitoba Mixed-Grass Prairie Important Bird Area was examined. These blocks represent some of the last non-fragmented native mixed-grass prairie in extreme southwestern Manitoba and, in combination with adjacent non-native perennial grassland tracts, represent a significant area-sensitive grassland bird conservation opportunity. Orthophoto interpretation and extensive ground-truthing were utilized to document vegetation cover and land management in both 2010 and 2015. Over this five year period, 3% of mapped mixed-grass prairie was converted – two-thirds to annual cropland and one third to permanent forage cover, primarily alfalfa hay mixes. While conversion of non-native perennial grassland occurred, no overall decline was exhibited due to a switch of a roughly equal area of annual cropland to alfalfa hay mixes. Patterns of habitat and land use change and implications for biodiversity conservation are presented.

12. Assessing Status and Trends for Prairie Plant Species at Risk

Sarah Lee, **Candace Neufeld and Darcy Henderson**, Canadian Wildlife Service Prairie and Northern Region

The Federal Species at Risk Act requires periodic reporting on the assessment of population and distribution objectives and whether these objectives are being met. For prairie plant species at risk, assessing the status and trend in population size and distribution can be complicated by factors such as existence of a soil seed bank, annual variations in weather and phenology, and survey methodology. Within the Suffield National Wildlife Area, Alberta we now have five consecutive years of population monitoring data for four prairie plant species at risk: Tiny Cryptantha, Slender Mouse-ear-cress, Smooth Goosefoot, and Small-flowered Sand Verbena. From this data, we attempt to assess the status and trend in population size and distribution against the COSEWIC (Committee on the Status of Endangered Wildlife in Canada) criteria while considering the above factors.

13. Developing Standard Methods for Bioacoustic Data Collection and Processing

Hedwig Lankau, **Erin Bayne**, **Shawn Morrison**, **Dan Farr** and **Alex MacPhail**, Bioacoustic Unit, University of Alberta and Alberta Biodiversity Monitoring Institute, Edmonton, Alberta

Acoustic monitoring using autonomous recording units (ARUs) is fast becoming the most common way of surveying avian and amphibian communities. The benefits of ARUs include collecting large quantities of data that allow us to survey remote locations and rare species more safely and efficiently. While getting more data is always good, it brings challenges in extracting the information from vast numbers of acoustic files. Using common standards and methods is also important when attempting to combine data sets from multiple locations. The *Bioacoustic Unit* is a collaboration between the University of Alberta and the Alberta Biodiversity Monitoring Institute with the goal of finding solutions to the challenges presented by ARU data. Our efforts fall into three main categories: 1) developing standardized field protocols that can easily be implemented by other ARU users; 2) researching efficient and effective ways of extracting species data from the recordings using both human observers and auto-recognition software; and 3) developing a training program for new taxonomists that includes mentorship and training from more experienced staff with respect to species identification and in the effective use of auto-recognition software. Our poster provides examples of solutions we have found to address many of these issues.

14. Assessment of Aquatic Invasive Species That Threaten Native Biodiversity in Prairies

Zhaochang Zhang and **Vladimir Kricsfalusy**, School of Environment and Sustainability, University of Saskatchewan

Over the last decades the introduction of invasive exotic species has been observed in plains and prairies of central North America, causing serious economic and environmental consequences. Impact of aquatic invasive species (AIS) pose a high risk to native biodiversity, particularly in waterways and wetlands in Saskatchewan. The management of AIS is costly and difficult; therefore, conservation agencies and organizations should focus their limited resources, targeting

the species that cause major threats and the areas that are significantly impacted. A multi-spatial scale approach was developed to provide an AIS risk assessment for Saskatchewan. Three spatial scales were selected for this risk assessment: 1) local – Redberry Lake watershed, 2) regional – North Saskatchewan River watershed, and 3) provincial – Saskatchewan. The risk assessment was carried out for 16 AIS, including 7 species recorded in Saskatchewan and 9 species that are likely to enter the province in the near future. These species were assessed, scored, and ranked into impact categories of high, medium and low. The categorization of AIS provides a basis at which conservation agencies and organization, from the local to the provincial level, can focus their attention.

15. Impacts of Urbanization on Native Plant Species Distribution and Abundance in North America

Vladimir Kricsfalusy, School of Environment and Sustainability, University of Saskatchewan
Javier Esparrago, Amec Foster Wheeler Environment & Infrastructure UK Ltd.

The current expansion of urban areas is regarded as one of the major causes of habitat loss and an important threat to biological diversity. Prairie crocus (*Anemone patens* L.) is a perennial herb whose populations can still be found within some urban areas in North America. This allows the study of the factors affecting this species, which can be effectively utilized in land-use planning and habitat management. The aim of this study was to identify differences in the distribution and abundance of *A. patens* between urban and rural populations and explore the forces that drive these differences (Esparrago, Kricsfalusy 2015). It was revealed that urban populations of *A. patens* are significantly smaller and less dense than rural ones. Human population density and proportion of urbanized land were negatively correlated with *A. patens* population size and density. The effect of individual disturbances seems to be less relevant than the urbanization process. It is argued that preservation of sufficiently large natural remnants, grassland management and restoration projects are necessary for the conservation of urban populations of *A. patens.* Practical efforts should be paired with appropriate species-specific research, tailor-made policies and public involvement.

16. Developing Grassland Bird Management Targets for Results-Based Conservation in Mixed-Grass Prairie

Phillip Rose, University of Regina

Results-based conservation is a growing initiative on native rangelands in Prairie Canada whereby livestock producers receive funding if their management creates or enhances habitat for 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 that can be used as conservation targets for grassland songbirds across extensive soil and moisture gradients. The conservation targets will be determined by quantifying relationships between vegetation characteristics and grassland songbird abundance. Conservation targets will emphasize grassland songbird species at risk in Canada, including Sprague's pipit, chestnut-collared longspur, Baird's

sparrow, and bobolink. The assessment of habitat characteristics will be based on the scientific literature and from interviews with ranchers (e.g., cues they use to base their day-to-day grazing management decisions). This will ensure that the habitat features examined are relevant to both grassland songbirds and the livestock producers implementing these management objectives.

17. Testing Non-Invasive Methods for Monitoring Inactive Greater Sage-Grouse Leks in Saskatchewan

Beatriz Prieto and **Jessus Karst**, Saskatchewan Ministry of Environment

An experimental approach was designed and implemented during 2013, 2014 and 2015 by the Fish and Wildlife Branch to develop an appropriate and effective long-term monitoring program for Greater Sage-Grouse in Saskatchewan using non-intrusive and passive surveillance methods for known inactive and historical lek locations. For this purpose, automated recording units (ARUs) and trail cameras were deployed and tested in southwestern Saskatchewan, and the resulting data analyzed in search of a system to automate identification of the species presence.

18. The Conservation Standards Program: Environmental Data Is Our Currency

Karyn Scalise and **Ed Beveridge**, Saskatchewan Ministry of Environment

This poster provides an overview of the Saskatchewan Ministry of Environment's Conservation Standards Program (CSP). The aim of the CSP is to ensure high quality data submissions on all species, especially those considered to be rare and sensitive. Under the CSP, a recent legislative amendment provides the province with the authority to set standards regarding activities regulated through Research Permits, which are typically issued to researchers and to industry/environmental consultants. Researchers will be required to submit information on species in standardized formats. Industry/environmental consultants will now be required to adhere to requirements regarding the use of standardized Species Detection Survey Protocols and Data Submission Templates. Personnel conducting species detection surveys will be phased in to the Ministries Qualified Persons Registry under qualification standards. These requirements will result in a significant increase in the quality and quantity of data on rare and sensitive species into the Saskatchewan Conservation Data Centre that can be used to inform ministry approvals and planning.

19. Public Pastures - Public Interest: Threats to Saskatchewan Grasslands and Actions to Save Them

Joanne Havelock, **Lorne Scott**, **Trevor Herriot**, **Jill Vaisey** and **Katherine Arbuthnott**, Public Pastures – Public Interest

Grasslands are one of the most endangered habitats, with less than 20% of native prairie left in Saskatchewan. The federal government decided in 2012 to close the Prairie Farm Rehabilitation Administration (PFRA) Community Pastures Program and transfer lands to the provinces. In Saskatchewan that is 1.8 million acres of grasslands on 62 pastures, habitat for over 30 species at risk. In response, a group of rural and urban citizens formed Public Pastures – Public Interest.

PPPI has conducted extensive public education to encourage action, linking with people concerned with the pastures' many uses: habitat for species at risk; livestock grazing; preserving heritage sites from early settlers, Métis and First Nations' peoples; Indigenous hunting and gathering; nature-watching; photography; educational tours and scientific research. PPPI has had discussions with ranchers, environmentalists and government about the best ways to protect the grasslands. PPPI has lobbied Federal and Provincial Governments to keep the community pastures in Crown ownership, and has increasing concern for other Crown-owned grasslands. PPPI has facilitated pubic response to commercial development threats to grasslands. New focus points include highlighting grasslands as environmental assets not just "agricultural"; and their contribution to mitigating climate change, ensuring water quality and meeting international environmental commitments.

20. Breeding Bird Atlases in Canada: Informing Conservation Efforts at Multiple Spatial Scales

Andrew Couturier, **Christian Artuso**, **Rob Butler**, **Andrew Coughlan**, **Pete Davidson**, **Christopher Di Corrado**, **Eva Jenkins**, **Denis Lepage**, **Becky Stewart** and **Kiel Drake**, Bird Studies Canada
Phil Taylor, Acadia University

Canada has seen a proliferation of Breeding Bird Atlases since 2001, with seven provinces either in progress or completed, and others due to commence in the years ahead. Indeed, atlases have emerged as a central component of bird conservation efforts in Canada due to the rigorous information they generate; information that is respected and needed by decision and policy makers. Bird Studies Canada has led these developments in partnership with Environment Canada and in collaboration with provincial governments, a variety of non-government organizations, and industry groups. Atlas methods, approaches, and analytical techniques continue to evolve, in part to meet the increasingly sophisticated needs of scientists and decision makers. One component of this evolution in Canada is the addition of quantitative abundance sampling protocols to the atlas framework and the multitude of resulting tools and applications that support improved decision making and conservation planning. Here, we report on these new developments, particularly as they pertain to conservation planning at multiple scales. Examples include: i) development and use of province-wide and regional population estimates for birds, ii) modelling species richness patterns, iii) defining conservation priorities at macro and micro scales, iv) analyzing and demarcating ecological units, v) informing forest management, and vi) identifying bird-habitat associations. Saskatchewan is next jurisdiction to have a Breeding Bird Atlas with the project scheduled to commence spring/summer 2017.

21. Defining Critical Habitat for Greater Short-horned Lizards in Grasslands National Park, Saskatchewan

Krista Ellingson, Environmental Consultant
Scott Nielson, University of Alberta
Shelley Pruss, Parks Canada

Identification of critical habitat for species at risk is an essential component of the protection of rare species under Canada's Species at Risk Act. In this study, we identified important landscape-level habitat characteristics for endangered greater short-horned lizards (*Phrynosoma hernandesi*) at their northern range limit in Grasslands National Park, Saskatchewan, Canada. A total of 650 km of transect surveys were used to analyze habitat selection based on locations where lizards were detected relative to available random locations. A model of landscape-scale habitat selection (resource selection function) was estimated for the Park using 101 lizard locations and 5000 random available locations sampled along 650 km of meander transects. Habitat selection in summer was predicted best by juniper-dune vegetation community, vegetation patchiness, and perhaps paradoxically areas of lower solar radiation. This model was used to define critical habitat for conservation management. This population index provides a baseline for monitoring the success of conservation actions. As new information becomes available for this under-studied species, improvements in the definition of critical habitat should be considered.

22. Focusing on Native Prairie Management as a Way of Preserving Habitat for Multiple Species at Risk

Krista Connick Todd and **Tom Harrison**, South of the Divide Conservation Action Plan (SODCAP)

A significant proportion of the species at risk in Saskatchewan prefer to live on native prairie. Developing a program to manage for multiple species at risk has been difficult in the past, given the variety of specific habitat needs of individual species. One solution for managing multiple species on a working landscape is to simply focus on range health and proper rangeland management. Focusing on range health, rather than individual species needs, and providing hands-on methods for determining health, can make species at risk habitat management a part of the everyday decision making process of Saskatchewan ranchers. Ranch planning, looking at the operation as a whole, can help identify the mosaic of habitats available and reinforce the importance of different habitats and how they overlap. Education on the specific habitat needs of a variety of species, as well as range health fundamentals and health monitoring protocols, is key.

23. Novel Grassland Condition Assessment From a Biodiversity Perspective

Jordan Becker, **Cary Hamel** and **Rebekah Neufeld**, Nature Conservancy of Canada – Manitoba Region.

The Nature Conservancy of Canada (NCC) manages more than 6,475 ha of grassland in Manitoba. Grasslands vary topographically and hydrologically and include several distinct types (e.g., tall-grass prairie, sandhill prairie and perennial non-native). Property-scale conservation planning elucidates biodiversity-linked goals for individual grassland tracts, and management approaches are prescribed to achieve these goals. Grasslands are managed via diverse management regimes depending on proximate and anticipated threats and the desired future condition. Desired condition is linked to conservation-based outcomes including maintenance or recovery of individual species or suites of species, and ecosystem services such as erosion control and pollination. We developed a novel approach to evaluating grassland condition in a manner informative of the effectiveness of management at achieving site-specific, biodiversity-linked goals. Our approach includes the incorporation of effects of land use on community composition, habitat heterogeneity and faunal habitat potential and consideration of grassland contribution to achievement of biodiversity conservation goals. A rapid, in-field grassland condition assessment methodology, examples of in-field assessments, and lessons learned through two years of implementation are presented.

24. The Nature Conservancy of Canada – Conserving Native Habitat Through Science and Planning

Matthew Braun and **Jennifer McKillop**, Nature Conservancy of Canada – Saskatchewan Region

The Nature Conservancy of Canada conserves and manages land while offering conservation programming across the country with the goal of conserving natural heritage. The Saskatchewan Region of NCC works in a diversity of ecosystems from sage grouse habitat in the south to black bear habitat on the edge of the boreal forest and has secured over 30,000 acres of fee simple and 100,000 acres of conservation agreements in Saskatchewan as well as implementing programs aimed at education, awareness and management practices. Using science-based methods, NCC creates adaptive management plans designed to mimic ecosystem processes and disturbances. This requires regular effectiveness monitoring to inform and update management, which generates expertise used in collaboration with partner agencies and fellow land managers. NCC land managers create management plans specific to each property, implement required actions, monitor the results of that management, share those results with the Saskatchewan Conservation Data Centre and others, and advise individuals and groups working in similar areas. Provincial scale strategies include developing a species at risk curriculum with a First Nations focus, participating in a western Canada prescribed burn group, encouraging research on fee simple properties, and participating in the development of regional land management policy.

25. Rare Plant Rescue Goes Dormant in 2015: A Reflection on the Program's Achievements

Melissa Ranalli, Nature Saskatchewan

From 2002 to early 2015, Nature Saskatchewan's Rare Plant Rescue (RPR) program has been working with rural landowners and land managers to conserve plant species at risk and their prairie habitats in southern Saskatchewan – including some of the most pristine native parcels in the province. During this time, RPR has worked with 80 program participants, helping to conserve over 100,000 acres of native prairie habitat through the provision of information and support, landowners' and land managers' voluntary commitment to rare plant conservation, and through RPR's efforts to cultivate respectful, trusting relationships with participants. RPR's field searches for new occurrences and monitoring of known populations, have led to the down-listing of federally-listed plant species at risk and the expansion of species' distributions. RPR has also collaborated with partner organizations on a number of species-at-risk projects, among other important contributions to rare plant conservation. Unfortunately, RPR's important contributions will cease as the program is put on hold in 2015-2016 due to a major funding cut. This poster will highlight RPR's accomplishments over the last 13 years, what the program has meant to its participants, and why it is still very much needed.

26. Assessing Threats and Setting Priorities for Conservation of Plant Species at Risk in Saskatchewan

Vladimir Kricsfalusy, School of Environment and Sustainability, University of Saskatchewan
Nicolas Trevisan, Urban Forestry, City of Toronto

Through the assembly of rare and endangered species lists decision-makers can allot recovery resources, plan reserve systems, restrict development and exploitation, and report on the state of biodiversity. Because the conservation of biodiversity occurs under time and resource constraints, it is necessary to prioritize species most deserving of attention. By using a few meaningful criteria and data from the W.P. Fraser Herbarium at the University of Saskatchewan, we developed priority-setting exercise (Kricsfalusy, Trevisan 2014) based on rather limited resources available in contrast to complex multi-criteria methods that have become the norm in nature conservation. The collected data was quantified to develop priority scores using three key criteria: 1) provincial responsibility in species survival, 2) species local population characteristics, and 3) the anthropogenic threats causing species to be rare. The produced list of rare and endangered vascular plants in Saskatchewan is a first step in identifying species deserving of priority attention. The method was deemed to be highly relevant to conservation managers and decision makers due to its scale adaptability and fairly minimal resource requirements.

27. Control of Absinthe Wormwood and Common Tansy in Pasture Using Wiper Application

Nadia Mori and **John Hauer**, Saskatchewan Ministry of Agriculture
Jodie Horvath, Ducks Unlimited Canada

Removing the perennial, broadleaf, noxious weeds absinth wormwood (*Artemisia absinthium*) and common tansy (*Tanacetum vulgare*) from a perennial forage stand is a desired yet challenging goal. Registered herbicides that control these two weedy species also remove any desirable broadleaf species. Cattle do not graze either plant by choice. Tansy contains alkaloids that are toxic to both humans and livestock and if dairy cattle consume absinth on pasture or in hay, the milk will be tainted. Both species also form dense thickets degrading the wildlife habitat of the range. There are currently no biological control options available for absinth and common tansy. Wiping a concentrated solution of glyphosate herbicide onto the target weeds may be an effective control method. As long as the target plants are at least six inches taller than the desirable forage species, glyphosate can be applied to the target plants without harming the underlying desirable vegetation. Two types of wiping equipment were tested at three demonstration sites across Saskatchewan. Efficacy of control varied based on rigidity and height of the target weed plants, height of the desirable forage sward, and application method. Preliminary results indicate that the rope wick applicator may be somewhat less effective compared to the rotating drum wiper in controlling common tansy and absinth using glyphosate.

28. Effect of Continuous Versus Deferred Rotational Grazing System Upon Purple Prairie Clover (*Dalea purpurea vent.*) Plant Frequency

Alan D. Iwaasa, and **E. Birkedal**, Agriculture and Agri-Food Canada

Recent research has identified Purple Prairie Clover (PPC) (*Dalea purpurea* Vent.) as a beneficial native forb to have in Western Canadian Grasslands. In 2001, class 3-4 crop land was seeded to two native mixes: a simple (S) mix with six wheatgrasses and one forb and a complex (C) mix containing eleven grasses (warm and cool season species), one forb and two shrubs. From 2005-2013 a completely randomized study was initiated using the two native mixes (replication = 2) and two grazing systems: deferred rotational (DRG) and continuous grazing (CG) systems. Each DRG group consisted of four pastures (two S and two C) and there were three groups. Each DRG group started grazing at a different grazing season period (spring, summer or fall) at the start of the study, and over three years (one cycle) all three grazing season periods occurred for each pasture type. One group of four paddocks (two S and two C) were used for the CG. Objectives were to determine if different grazing systems after nine years affected PPC plant population frequency and if PPC plant frequency differed between native pasture mixtures. The PPC plant frequency was determined by the line intercept method. Results found no interaction or native mix effects ($P>0.60$). Grazing system did affect ($P=0.9$) PPC plant frequency with the DRG being higher than CG and the values were 10.5 ± 3.0 and 4.7 ± 0.8 percent, respectively. Therefore it may be possible to increase the proportion of PPC plants in a native pasture by changing the grazing system that allows PPC reseeding which the DRG provides.

29. Excluding Grazers Increases Kentucky Bluegrass Invasion in a Northern Fescue Prairie

Hilary Pinchbeck and **Rafael Otfinowski**, Department of Biology, University of Winnipeg
Peter Sinkins, Western Arctic Field Unit, Parks Canada

Northern fescue prairies, once common in the Aspen Parkland Ecoregion, have become increasingly fragmented, lost to agriculture, resource extraction, and exotic invaders. Despite these pressures, fescue prairies remain important habitats for wildlife and species at risk. Among exotic invaders, Kentucky bluegrass *(Poa pratensis* subsp. *pratensis*) often competes with plains rough fescue (*Festuca hallii*) to reduce the diversity of prairie communities and alter their structure and function. In this experiment, we tested whether grazing by cattle helps restore northern fescue prairies invaded by Kentucky bluegrass. Between 2006 and 2009, we surveyed 23 patches of northern fescue prairie at Batoche National Historic Site, SK, to determine the impact of cattle grazing on Kentucky bluegrass. Using transects, we recorded the frequency of Kentucky bluegrass and used cattle exclosures to examine the impact of grazing on its density. Our results illustrate that Kentucky bluegrass significantly reduced the abundance of plains rough fescue, however, its density declined more in the presence of cattle. Our results demonstrate that grazing by cattle and other methods of active restoration are required to restore the diversity and function of remnant northern fescue prairies.

30. Monarch Butterfly Conservation Through Tall-grass Prairie Habitat Restoration in Manitoba

Julie Sveinson Pelc, **Cary Hamel** and **Tim Teetaert**, Nature Conservancy of Canada - Manitoba Region

In 2011, Nature Conservancy of Canada (NCC) Manitoba initiated a 100 acre (40 hectare) tall-grass prairie restoration at the Manitoba Tall Grass Prairie Preserve in southeastern Manitoba. The intention of the project is to restore important habitat for the Monarch Butterfly (*Danaus plexippus*), which is listed as a species of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) due to the decline in overwintering sites in Mexico, climate functions and the decline in Milkweed (*Asclepias* spp.) – an important plant on which Monarch caterpillars solely feed on. Adult Monarch nectar (i.e. feed) on a variety of flower species. Over 120 locally collected native species were seeded in 2012 and 2014, including Milkweed, Goldenrods (*Solidago* spp. & *Oligoneuron* spp.), Asters (*Aster* spp.), Blazing Stars (*Liatris* spp.), Prairie-clover (*Dalea* spp.), Sunflowers (*Helianthus* spp.), and Northern Bedstraw (*Galium boreale*). Ongoing weed management was needed in 2015 to assist in the success of the restoration. To determine the effectiveness of restoration treatments, we are gathering data from a series of long-term vegetation monitoring plots, as well as comparing Monarch use to a control representing the pre-restoration condition. Building on our lessons learned from this restoration, NCC Manitoba is exploring approaches to identify priority locations to focus tall-grass prairie restoration efforts, create connections between prairie patches (e.g. roadways) and improve existing prairie conditions (e.g. planting prairie flowers – nectar source plants).

31. Discovering Potential to Improve Cover of Dominant Tallgrass Species in Native or Naturalized Pastures in Manitoba

Mae Elsinger and **Don Thompson**, Agriculture and Agri-Food Canada

In 2010 we undertook an experiment on a Kentucky bluegrass invaded pasture in southwest Manitoba to determine how climate warming and/or timing of grazing might modify this community. Three clipping treatments and two warming treatments were applied over multiple years on small plots in an area of the pasture that was excluded from livestock grazing only for the duration of the study. Of the two types of treatments, timing of clipping had the most interesting results on the plant species composition. Big bluestem cover increased with early season clipping (late June to early July) when compared to the late season clipping (early to mid-August). It is theorized that big bluestem, with most active growth in mid-July to mid-August, performs best in pasture when grazing avoids this critical period. It is also theorized that, with its larger size, big bluestem can diminish Kentucky bluegrass cover through competition. This reflects observations on PFRA Community Pastures of big bluestem and switchgrass increasing where large fields have been subdivided into small ones that are grazed briefly in the early part of the grazing season, and then left to rest for a significant amount of time before being grazed again in late summer or fall.

32. Meewasin Northeast Swale: Biodiversity Through Conservation Grazing

Renny Grilz and **Eryn Tomlinson**, Meewasin Valley Authority

Biodiversity is a reflection of the health of our environment. The Meewasin Valley Authority (Meewasin) is responsible for maintaining natural landscapes with high biodiversity throughout the South Saskatchewan River Valley in the vicinity of Saskatoon. Meewasin Northeast Swale (the Swale) is a 300 ha urban remnant prairie north of Silverspring and Evergreen neighbourhoods and adjacent to the developing Aspen Ridge neighbourhood. With support from RBC's Blue Water Project, Meewasin has applied conservation grazing as a means to replicate natural disturbance, like that of the Plains Bison, at the Swale. Meewasin has re-introduced grazing and fire at the Meewasin Northeast Swale with the goal of enhancing biodiversity and re-invigorating the native prairie landscape.

33. European Buckthorn – You Might Already Have It

Eryn Tomlinson and **Renny Grilz**, Meewasin Valley Authority

The relatively unknown invader, European Buckthorn, was brought into Saskatoon to explore its use as a shelterbelt species in the 1930s. Since then, this tree has rapidly expanded to every corner of the city. After decades of control efforts by Meewasin, we are only beginning to understand the extent to which this tree has invaded and how difficult it is to control. With a grant from Environment Canada, Meewasin and the City of Saskatoon plan to undertake an extensive project to (attempt to) eradicate this species from the river valley in Saskatoon. Phased over three years, the plan encompasses physical removal, chemical control, and education of the public of the invasive nature of European Buckthorn (*Rhamnus cathartica*). Using papers

published in cooperation from Meewasin staff, staggering data of previous control efforts and geographic extent, and field data collected this fall; we can begin to map and quantify the work we have done and what we have left to do.

34. Habitat Enhancement for Burrowing Owls: a Summary of 15 Years of Work

Kaytlyn Burrows and **Rebecca Magnus**, Nature Saskatchewan

Nature Saskatchewan's habitat enhancement (HE) program offers 50:50 cost-sharing opportunities for Stewards of Saskatchewan program participants to improve habitat for the Burrowing Owl, Piping Plover, and Sprague's Pipit. Since 2000, Nature Saskatchewan has contributed to 128 HE projects, resulting in 15,337 acres (6,207 hectares) of cropland being seeded back to perennial grass (4 of which were native seeding projects resulting in 343 acres seeded to native grass); and 62.3 miles (100 km) of fence, and 13 watering sites established to protect sensitive areas for prairie species at risk. Burrowing Owl HE sites are monitored annually for species use. Enhanced sites first supported owls in 2007 with 1 nesting pair and 1 single owl using 2 enhanced sites. Every year since, Burrowing Owls have been found nesting at HE sites, supporting the value of HE work. For example, in 2014 Operation Burrowing Owl participants reported 4 pairs and 5 single Burrowing Owls nesting on 6 HE sites; representing a significant proportion of the 30 pairs, 30 singles, and 14 young reported at 23 (HE and non-HE) sites that year. Additionally, through financial assistance and logistical support, the HE program serves to encourage participants to improve their operations in a manner that benefits both themselves, and species at risk.

35. Evaluation of Management Strategies to Maintain Biodiversity of Urban Grasslands

Rong Shen and **Vladimir Kricsfalusy**, School of Environment and Sustainability, University of Saskatchewan

Grazing and burning are commonly used as management strategies to recover and maintain plant community diversity in North America's grasslands. A moderate level of disturbance offer the maximum species diversity, but this may not always lead to a healthy grassland. Undersigned disturbance could lead to loss of native species diversity and increase in exotic invasive species. The Northeast Swale is an ecological corridor in the city of Saskatoon, Saskatchewan. It contains large areas of moist-mixed grassland and possesses high biodiversity. Due to human activities, disturbance regimes in the area have been changed, which resulted in the loss of biodiversity. We analyzed the effectiveness of grazing, burning and combination of these management regimes on species diversity and abundance, floristic quality and structure of plant communities, as well as their impacts on vegetation cover. We compared the differences of indicators between disturbed and undisturbed sites and assessed the links between indicators and current management strategies in the area. Results of this study will be used by Meewasin Valley Authority to identify best management strategies and establish long-term biodiversity monitoring of the area.

36. Improved Biocontrol Success in Manitoba and Saskatchewan

Beverly Dunlop and **Dustin Ostrander**, Agriculture and Agri-food Canada

Invasive weed species impose huge costs on Canadian agriculture, and ecologically, are significant threats to Canadian biodiversity, natural habitats, and ecosystem services (Colautti *et. al*. 2006). In a report commissioned by the Leafy Spurge Stakeholders Group of Manitoba, it has been estimated that losses from leafy spurge in that province to be CAN$ 40 million/year (Rempel 2010). Biocontrol of weeds using insects provides an alternative to conventional herbicides that is self-propagating, has low environmental impact and is cost effective over the large areas requiring treatment. The ecological benefits of biocontrol of weeds using insects include protection of native biodiversity, endangered species, and water quality by the removal of the invasive plant and by the resulting reduction in herbicide use. Direct economic benefits for producers accrue through reduced long-term input costs for herbicides or other weed control measures.

37. Rare Plants and Ranchers - Stewardship Solutions to Species At Risk Conservation

Chet Neufeld, Executive Director, Native Plant Society of Saskatchewan

Rare Plants and Ranchers is a program developed by the Native Plant Society of Saskatchewan aimed at working with ranchers to develop site specific beneficial management plans using an ecosystem-based approach to address threats such as invasive species and habitat loss/degradation for federally-listed plant species at risk (SAR) and their habitats in Saskatchewan. Participating ranchers are interviewed to gather information about SAR and SAR habitat on the land and a comprehensive site assessment is then conducted. From this, a site specific management plan is produced for the rancher containing all information collected as well as recommendations to benefit SAR. Ongoing support (logistical and financial) and monitoring ensure plan implementation and the long-term security of SAR populations. The benefits to this program are an increase in rancher knowledge of SAR, increased SAR stewardship, more effective SAR management and reduction of threats to SAR.

38. Northern Plains Conservation Network - Connecting Conservation

Cheryl Mandich, American Bird Conservancy
Cliff Wallis, Alberta Wilderness Association

The Northern Plains Conservation Network (NPCN) is a collaboration of more than 25 non-profit and tribal organizations working together to conserve and restore the wildlife, habitats, and ecological processes of the Northern Great Plains. Our vision is a sea of grass supporting healthy wildlife populations and human communities. We seek to enable, energize, and inspire participating organizations by linking our efforts in support of this vision.

The NPCN

- **Informs** people about the vision, and about the ecological values and characteristics of the northern Plains;
- **Develops opportunities** for greater participation in key NPCN issues;
- **Accesses and analyzes data** needed for furthering the NPCN vision;
- **Shares approaches and information** about common issues of concern to NPCN participants; and

- **Identifies initiatives** needed to implement the NPCN vision.

Our two current initiatives focus on bison and grassland birds, including Greater Sage Grouse. NPCN has a website with an interactive mapping tool for the Northern Great Plains. We meet twice annually in different venues across the Northern Great Plains and hold webinars on topics related to our initiatives. Participation is open to all who support our vision and mission.

39. Saskatchewan PlantWatch

Lacey Weekes, Nature Saskatchewan

PlantWatch is a citizen-based volunteer monitoring program that enables people of all ages and skill levels to participate in climate change research by watching selected plants bloom in the spring and reporting those dates. Since plants flower largely in response to the amount of warmth they are exposed to, earlier flowering occurs after warmer winters and later flowering occurs after colder winters. Simply by watching flowers bloom, participants help contribute to an understanding of how and why our natural environment is changing. Collection of long-term data helps scientists track biological responses of plants to climate change over many years. PlantWatch participants monitor our changing environment and thus develop a connection to their local ecosystem. Citizen science programs like PlantWatch motivates people to get outdoors, wonder, care, and take action against the many factors causing climate change.

40. Understanding Ranchers' Perceptions of Heterogeneity in The Northern Great Plains

Maggi Sliwinski, **Mark Burbach**, **Larkin Powell** and **Walter Schacht**, School of Natural Resources, University of Nebraska-Lincoln

Theory suggests that most management on private lands is leading to increasingly homogenous grassland landscapes, which is problematic for wildlife, habitat, and ecosystem services. We are studying ranchers' perceptions of management techniques that promote grassland heterogeneity and thus support healthy grassland ecosystems, such as patch-burn grazing or using a wider variety of stocking rates. The intent of my research is to better understand how state, federal, and non-profit organizations may engage with ranchers to support common goals of maintaining both grasslands and the ranching industry through innovative management techniques. To complete this project, we will interview ranchers in three states to explore management techniques and incentives using a qualitative research approach. Findings from the qualitative research will be used to develop a survey that will be sent to ranchers in the Northern Great Plains to gauge interest in and attitudes towards various management options and strategies that enhance heterogeneity, which will help to improve the ecological function of grassland systems. Results from this research will provide information on how to encourage management for heterogeneity on millions of acres of native grasslands in the Great Plains.

41. Connecting Early Learners to Naturalized Areas Through Play

Shannon Dyck
Janet McVittie, Department of Educational Foundations, University of Saskatchewan

The College of Education has a Prairie Habitat Garden right outside its doors. It is easily accessible for early childhood teachers, teacher candidates, and nearby day cares. Plans are in place to re-design the space with a particular focus on: connecting children to natural areas through play; encouraging learners of all ages to connect, wonder, care, and act; and restoring the native plantings that have been encroached upon by invasive species. Emphasis will also be placed on supporting the College of Education's teacher candidates to learn--through direct observation and interaction in the garden--how children interact with the natural world. The benefits of children exploring natural areas independently and with other children, through an open and unguided atmosphere, have been well documented. For example, children become better at assessing risk, their health and confidence improve, and they sleep better. Time in green space has also been shown to reduce the effects of behavioural conditions, such as ADHD. In this poster presentation, a re-design for this naturalized space will be presented, which deliberately designs the area for imaginative play, contemplative time, physical challenges, creative productions, and "discovering" ecological relationships. The poster will allow observers to add their ideas to enhance the garden as a naturalized play area for early learners.

42. Southern Alberta Youth Range Days! – Mentoring Tomorrows Watershed Managers

Tim Romanow and **Mary Lupway**, Milk River Watershed Council Canada – on behalf of the YRD organizational committee

Working Agricultural Landscapes are critical to environmental sustainability. Range Days celebrates our heritage and provides a mentoring environment for youth ages 13 to 18 for fun, and learning in an outdoor setting. The Southern Alberta Youth Range Days Program is an interactive event for youth, and families, interested in learning about a variety of rangeland, watershed, wildlife, and other topics related to natural resource management. Youth from all backgrounds including farm and ranch, acreage or town, are welcome to attend. Competition and advanced participation in collection of data, interpretation of study research, and creative learning has been built into the program over the years. The YRD information and poster presented will highlight lessons learned and potential means to design, organize, and fund field based camps like YRD. 2016 the YRD program will be celebrating 9 years of camps, and the organizational committee has offered to provide mentorship for organizations interested in setting up their own Range Days Camp within the Canadian Prairies Region.

43. Ellis Bird Farm: Biodiversity, Inspiration and Engagement

Myrna Pearman and **Claudia Lipski**, Ellis Bird Farm

Established in 1982 to honour the legacy of pioneer Lacombe-area farmers and conservationists, Charlie and Winnie Ellis, Ellis Bird Farm has grown into a unique and popular education and research site. Using the Ellis homestead farm yard as a foundation, the site has been developed into a world-class and remarkably diverse public NatureScape garden. The site hosts thousands of local school children each year who participate in engaging, hands-on nature exploration. Popular events to celebrate the environment, such as a Bluebird Festival, Bug Jamboree and BioBlitz, are also held each summer. Ellis Bird Farm has pioneered the use of several

technologies, such as closed circuit TVs, webcams and nest cavity cams. These technologies provide a window for onsite and online visitors into the otherwise inaccessible world of beaver lodges and nest cavities. In addition to amassing a huge dataset on Mountain Bluebird productivity, Ellis Bird has also been at the leading edge of Purple Martin and Mountain Bluebird migration tracking research through the use of geolocators and GPS units, and the movements of birds at their nest cavities using RFID technology. The results of this research are shared with visitors through storytelling and other engaging ways.

44. Prairie and Parkland Education for Youth

Jonathon Kornelson, Friends of Birds Hill Provincial Park

Birds Hill Provincial Park (BHPP) is a bio-diverse landscape including native tall grass prairie and aspen-oak parkland nestled in a matrix of agricultural rangelands, aggregate extraction areas and rural residential development. To conserve natural areas within a developed landscape, the public needs to appreciate their value. The goal of this project is to educate young people about the importance of preserving native flora in BHPP. The Prairie Conservation and Endangered Species Conference Young Professional Stewardship Grant allowed Friends of Birds Hill Park (FoBHP) to deliver workshops on plant identification (native and exotic) and host volunteer events to remove invasive plants. These events were well received and led to the delivery of in-class workshops to local schools in the region. This was our organization's first attempt to engage young people. We plan to build on this experience by involving youth in the restoration of prairie patches along a popular trail in the park.

45. McDonald's Canadian Verified Sustainable Beef Pilot Project

Peg Strankman, Where Food Comes From

What is sustainable beef? Every type of beef production system can be sustainable; the important consideration is that all aspects of the beef value chain, from farm to fork, are environmentally sound, socially responsible and economically viable. With the advice and support of stakeholders and experts along the entire beef value chain, McDonald's is running a pilot project to demonstrate and verify the sustainability of the Canadian beef supply. The Canadian Pilot Project is designed to enable Canadian beef producers to demonstrate their commitment to sustainable beef production through a self-assessment process followed by independent 3rd party ranch, feedlot and processor on-site verifications by the uniquely qualified professionals at Where Food Comes From (www.wherefoodcomesfrom.com). The pilot indicators are designed to be outcome-based to enable Canadian beef producers to demonstrate the positive outcomes they achieve. This is in contrast to practice---based indicators that prescribe the practices producers use. The indicators can be viewed at: http://www.vsbpilot.ca/indicators/index.htm.