

Lysandra Pyle

Ph.D. Rangelands and Wildlife Resources (Candidate) B.Sc. Biology

715 East Parkview Estates NW, T5W 4R1, Edmonton, Alberta, Canada (Current)
3 Thomas Bay, S4X 1Z5, Regina, Saskatchewan, Canada (Permanent)
Cell Phone: 306-551-1108
Pyle@ualberta.ca
Lysandra.Pyle@gmail.com
@GrasslandNerd (Twitter)

Curriculum Vitae

Education

2012-Present: PhD Candidate, Rangelands and Wildlife Resources, University of Alberta, Edmonton, AB. Expected 2017

- **Concentration:** Disturbance ecology of grassland seed banks
- **Thesis Work:**
 - ❖ Seed bank and legume regeneration potential under divergent producer management. Research occurred in the Edmonton area, private landowners were interviewed to identify management practices, management was then linked to rangeland health, plant communities in soil properties, and seed bank composition,
 - ❖ Relationship between plant communities, seed banks, and biological soil crusts along pipelines in dry mixedgrass prairie. Research conducted at the Mattheis Research Ranch,
 - ❖ Mechanistic demography study on recruitment of legume seeds in perennial grasslands.
- **Additional Project:** Supervised and designed an experiment for an NSERC funded summer student looking at the effect of sweet clover (*Melilotus*) invasion on the adjacent plant community and cryptogamic soil crust composition.
- **Upgraded my M.Sc. to a Ph.D. in 2014.**

2007-2011: BSc, Biology Major with a Concentration in Ecology and Environmental Biology, University of Regina, Regina, SK

- Graduated with distinction
- Completed 4 terms of co-operative education internships at Agriculture Agri-Food Canada's Semi-arid Prairie Agricultural Research Centre in rangeland plant ecology.

Scholarships and Awards

Margaret (Peg) Brown Award in Environmental Studies and Wildlife Resources, Fall 2015 (\$1,600)

SM Blair Scholarship, Sept. 2014 to Aug. 2015 (\$13,000 personal and \$2,000 for research)

SM Blair Scholarship, May 2014 to Aug. 2014 (\$13,000 personal and \$2,000 for research)

Government of Alberta Graduate Student Scholarship, February 2014 (\$3,000)
Margaret (Peg) Brown Award in Environmental Studies and Wildlife Resources, Fall 2013 (\$1,600)
University of Alberta Tuition Award, Fall 2012 (\$2,000)
Academic Silver Scholarship, Winter 2008 (\$750)
Centennial Merit Scholarship, Fall 2007 (\$2,000)

Current and Upcoming Projects

Plant Community Data Analyst (Contract), Manitoba Forage and Grassland Association, Selkirk, MB

Present – 2017

- **Manitoba's Rangeland Ecosite Descriptions:** Interprovincial project involving Agriculture and Agri-Food Canada and the Manitoba Forage and Grassland Association to create ecosite descriptions of Manitoba's rangelands so tools for monitoring rangeland health in the province can be developed. My role is to analyze plant community data collected in the Aspen Parkland ecoregion to identify reference communities and their transitions which are often induced by disturbances such as grazing. These ecosites will then be described for field testing in 2017.

Thesis Writing and Publications: Currently writing up thesis chapters, and analysing data. Chapters will be used for future publications; I expect this task of publishing papers from my thesis will follow me into my career.

Peer-Reviewed Papers

Lysandra Pyle, Edward Bork, and Linda Hall. 2016. Linking seed banks of tame, native and invaded parkland pastures to historical and contemporary management practices. *International Rangeland Congress*, Saskatoon, SK, Canada.

Lysandra Pyle, Edward Bork, and Linda Hall. 2016. Dynamics of vegetation, biological soil crusts, and seed banks along pipelines in Southern Alberta's Mixedgrass Prairie. *International Rangeland Congress*, Saskatoon, SK, Canada.

Other Papers (Not Peer-Reviewed)

E. Bork, A. Miller, L. Pyle, L. Hall, and B. Summers. 2014. Legume restoration in pastures following broadleaf weed control. *Beef and Range Report*, University of Alberta, Edmonton, AB, Canada. Prepared for the Roy Berg Kinsella Ranch Field Day.

Presentations at Scientific Conferences

Oral:

Lysandra Pyle, Edward Bork, and Linda Hall. 2016. Linking seed bank composition and spatial variation in vegetation to pipeline disturbance in mixed-grass prairie. *Society for Range Management*, Corpus Christi, TX, USA.

Lysandra Pyle, Edward Bork, and Linda Hall. 2016. Litter and defoliation effects on the population dynamics of contrasting legumes seeded into grasslands of the Parkland and Mixedgrass Prairie. *Society for Range Management*, Corpus Christi, TX, USA.

Lysandra Pyle, Edward Bork, and Linda Hall. 2015. Linking seed bank composition and spatial variation in vegetation to pipeline disturbance in mixed-grass prairie. *Canadian Weed Science Society*, Edmonton, AB, Canada.

Lysandra Pyle, Edward Bork, and Linda Hall. 2015. Linking seed bank composition and plant community change to pipeline disturbance in mixed-grass prairie. *Botany*, Edmonton, AB, Canada.

Lysandra Pyle, Edward Bork, Linda Hall. 2015. Population dynamics of native, invasive, and introduced legume species in Alberta's aspen parkland and mixed-grass prairie when grazing and litter are manipulated. *Society for Range Management*, Sacramento, CA, USA.

Lysandra Pyle, Edward Bork, Linda Hall, Patrick Forsythe, and Bill Summers. 2014. Identifying germinable seed bank composition and the potential for legume recovery in pastures with divergent management using a retrospective producer interview. *Society for Range Management*, Orlando, FL, USA.

Lysandra Pyle, Edward Bork, Linda Hall Patrick Forsythe, and Bill Summers. 2013. Effects of Divergent Management Practices on Germinable Seed Bank Composition and Legume Abundance. *Society for Range Management*, Oklahoma City, OK, USA.

Poster:

Lysandra Pyle, Edward Bork, Linda Hall Patrick Forsythe, and Bill Summers. 2016. Divergent management effects legume seed bank composition and other functional groups in northern temperate pastures. *Society for Range Management*, Corpus Christi, TX, USA.

Lysandra Pyle, Edward Bork, Linda Hall. 2015. Linking seed bank composition to oil and gas pipeline disturbance in southern Alberta's mixed-grass prairie. *Society for Range Management*, Sacramento, CA, USA.

Lysandra Pyle, Edward Bork, Linda Hall Patrick Forsythe, and Bill Summers. 2014. The Influence of Pasture Landscape on Germinable Seed Bank Heterogeneity. *Society for Range Management*, Orlando, FL, USA.

Lysandra Pyle, Edward Bork, Linda Hall Patrick Forsythe, and Bill Summers. 2013. Assessing Disturbance Regimes of Pastures Using Landowner Surveys. *Society for Range Management*, Oklahoma City, OK, USA.

Technical Meetings and Conferences Attended (No Presentation)

International Mountain Section, Society for Range Management. Fall Meetings.
Prairie Conservation and Endangered Species Conference. February 2016.
Foothills Restoration Forum. Meeting and rangeland health workshop in 2016.

Guest Lectures

Plant Science 100: Plants in Our Lives: Winter 2016: *Forage Plants for Animals.*
Plant Science 352: Invasive Alien Plants: Fall 2012: *Weed Ecology* (2 Lectures).

Skills and Abilities

Academic

- **Rangeland Plant Ecologist**, with expertise in rangeland seed banks, rangeland management, botany, weed ecology, grassland ecosystems, etc. (MSc/PhD)
- Scientific writing
- Presenting research to diverse audiences
- Conducting research independently
- Developing research questions and implementing them
- Understanding of experimental design and corresponding statistical techniques to analyse data
- Strengths in multivariate analytical methods for multiple layers of community data
- Teaching and mentoring students in both the classroom and field
- Communication with private landowners

Computer Skills & Software

- Univariate and Multivariate Statistical Analyses in R
- Univariate Statistical Analyses in SAS 9.2
- Skilled with analyzing complex community data appended with environmental and management factors through ordination methods like CCA (Canonical Correspondence Analysis), and NMDS (Non-metric Multidimensional Scaling); as well as perMANOVA (Permutational Multivariate Analysis of Variance), ISA (Indicator Species Analysis), and multivariate regression, etc.
- ArcGIS/ArcMap
- Multivariate Statistics in PC-Ord

Field Skills

Plants

- Plant taxonomy & botany
- Identification of trees, forbs, and grasses. Knowledge of common families, genera, and species native and invasive in Western Canada
- Vegetative identification of tame and native grasses
- Seedling identification of weeds and forbs common in central and southern Alberta's seed bank
- Seed identification
- Estimating plant species composition
- Staging the growth of grasses, legumes, and forbs
- Sampling and preparation of tissues for DNA barcoding

- Understanding of grassland species functional roles, biology, and utilization by wildlife
- These skills are transferable to the flora of other ecosystems

Biological Soil Crusts

- Experience with the identification of lichens and mosses associated with biological soil crust of the Mixedgrass Prairie in southern Alberta

Soils

- Identifying soil type using the *Canadian Soil Classification System*
- Understanding of the pedogenic processes of soil formation
- Sampling soil – for bulk density, seed banks, texturing, etc.
- Use of a penetrometer – to measure soil compaction
- Measuring soil properties: organic matter (loss on ignition method), texture (hydrometer method), electrical conductivity, pH, and proportions of carbon and nitrogen (using a LECO)

Birds

- Bird identification by morphology and bird calls
- Participated in bird banding, and aging and sexing birds based on plumage
- Basic experience using bird survey methods (i.e. point counts)

General Field Skills

- Vegetation and seed bank survey methods (random and stratified-random)
- Assembling and conducting field experiments
- Use of GPS and mapping
- Field Safety
- Willing to work in remote environments with rugged terrain
- Travelling long distances

Rangeland Management

- Rangeland and riparian health assessments
- Ecology of grazing
- Familiarity with Fescue Parkland, Mixedgrass Prairie, Foothills Fescue, Tallgrass Prairie, tame (introduced) grasslands and forested rangelands

Work Experience

Summer 2012 –Summer 2015: Supervising Summer Research Assistants, University of Alberta, Edmonton, AB

- Supervised at least 5 students directly during field seasons
- Managed their workload and taught them skills relevant to aspects of ecological research

September 2012 – Present: Graduate Teaching Assistant, University of Alberta, Edmonton, AB

- ***ENCS 406: Rangeland Plant Communities of Western Canada, Winter 2013, 2014, 2015 & 2016:*** Taught students how to identify 156 native and introduced plants common among Alberta's rangelands from the boreal, alpine, foothills, parkland, and mixedgrass prairie. We also taught students how to key a variety of plants (grasses, forbs, willows, and sedges), which over 4 years of teaching and 7 years in the field, has made this a strength of mine. Duties included: organizing lab material, creating then presenting lectures, and marking. TAing this course also allowed me to connect with students interested in rangeland ecology and mentor them afterward.
- ***ENCS 356: Principles of Rangeland Conservation and Habitat Management, Fall 2013, 2014 & 2015:*** Taught concepts of managing rangelands through a series of exercises (mapping, assessing range condition, calculating grazing capacity, developing a grazing system, etc.) which were synthesized into a management plan for the University of Alberta's Roy Berg Kinsella Research Ranch.
- ***Plant Science 221: Introduction to Plant Science, Fall 2012:*** Taught vascular plant morphology & anatomy, assisted students with lab equipment and experiments, and assisted with marking.

Field Seasons of 2009 through 2011: Rangeland Plant Ecology Research Assistant,
Agriculture and Agri-Food Canada, Swift Current, SK

- **Completed 4 work terms here with the University of Regina's Co-op Internship program for biological sciences.**
- Exposure to studies on: creating forage mixtures for pastures and reclamation with high forage quality (with a focus on incorporating native grass species and legumes), the effects of warming and reduced rainfall on prairie, measuring responses of plant functional groups in seed mixes, legume germination, etc.
- Gained comprehensive knowledge of ecological methods, applications, and theory
- Data collection: plant ID and species compositions, staging legumes and grasses, and biomass sampling
- Working in a herbarium, handling preserved specimens
- Basic supervising and training
- Germination experiments
- Operating a seeder

Volunteering

2012 – Present: Assisting Graduate Students and Advising Undergraduates, University of Alberta, Edmonton, AB

- Assisted with rangeland health assessments across the province of AB for various projects
- Identification of plants from various studies across many ecoregions (primarily vegetative grass ID and seedlings)
- Assisted with netting pollinators
- Assisted with quantifying the disturbance of powerline construction and access mats (colloquially known as rig mats) on Dry Mixedgrass prairie vegetation and biological soil crusts.
- Mentoring and assisting members of the University of Alberta Range Team
- Organizing nature experiences (i.e. plant walks, or lek viewing, etc.)

- Helped dig out prohibited noxious weed flowering rush (*Botomus umbellatus*)
- Overall the line between work, school, play, and unpaid volunteer work is fuzzy

References

Primary Supervisor

Dr. Edward Bork
University of Alberta
Edmonton, AB
Professor and Mattheis Chair
Rangeland Ecology and Management
edward.bork@ualberta.ca

Secondary Supervisor

Dr. Linda Hall
University of Alberta
Edmonton, AB
Environmental Biosafety of Transgenic Crops
Weed Science and Agronomy
linda.hall@ualberta.ca

Past Supervisor

Dr. Michael Schellenberg
Semiarid Prairie Agricultural Research Centre, Agriculture and Agri-Food Canada
Swift Current, SK
Rangeland and Forage Plant Ecologist
mike.schellenberg@agr.gc.ca