



## APPENDIX 1: LIST OF PROGRAM PARTNERS

The research laid out in this document would not have been possible without the tremendous support from our many partners in industry, government, academia, and non-profits.

- Alberta Advance Education and Technology
- Alberta Conservation Association
- Alberta Energy Regulator
- Alberta Sustainable Resource Development
- Alberta Tourism and Parks
- Anadarko-CNR-ACC
- ANC Timber
- Anderson Exploration Ltd.
- Banff National Park
- Blue Ridge Lumber
- BP Canada Energy Company
- Buchanan Lumber/Tolko OSB
- Canfor
- CBC Radio
- Canadian Co-op Wildlife Health Centre
- Canadian Natural Resources Ltd.
- Cedar Mueller
- Canadian Forest Service
- Coal Valley Resources Ltd.
- Coalspur Mines Ltd.
- Conoco
- ConocoPhillips (GP)
- Conservation Biology Institute
- Devon Canada
- DMI
- DMI Services
- Edson Forest Products
- Elk Valley Coal Corp. (CRC)
- EnCana
- Environment Canada
- Fording Coal
- Forest Resources Improvement Association of Alberta (FRIAA)
- Friends of Kananaskis Country
- Gateway Pipeline
- Government of Canada
- Grande Cache Coal Corporation
- Gregg River Resources
- Hinton Fish & Game Association
- Hinton Wood Products (West Fraser)
- Husky Oil
- Inland Cement
- Jasper National Park
- Joss Wind Power Inc.
- Manning Forestry Research Fund
- McGraw-Hill Ryerson Ltd.
- Municipal District of Bighorn
- Millar Western Forest Products Ltd.
- Millennium EMS Solutions Ltd.
- Mountain Equipment Co-op
- Natural Resources Canada
- Natural Resources Service
- Nature Conservancy
- NatureServe Canada
- Nexen
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- Pembina Pipeline
- Petro Canada Oil and Gas
- Prairie Mines & Royalties ULC
- Peregrine Helicopters
- Progress Energy
- PTAC Petroleum Tech Alliance
- Rangeland Conservation Service Ltd.
- Repsol Oil & Gas Canada Inc.
- Rocky Mountain Elk Foundation
- Seven Generations Energy Ltd.
- Shell Canada Energy
- Slave Lake Pulp
- Spray Lake Sawmills
- St'at'imc Government Services
- Stoney Tribal Administration
- Suncor
- Sundance Forest Industries Ltd.
- Sundre Forest Products
- Talisman
- Teck Coal Ltd.
- Trans-Canada PipeLines Ltd.
- University of Alberta



- University of British Columbia
- University of Calgary
- University of Laval
- University of Saskatchewan
- University of Washington
- Waterton Lake National Park
- Weyerhaeuser
- Wild Year Productions Ltd.
- World Wildlife Fund Canada



## APPENDIX 2: LIST OF GRADUATE STUDENTS AND THESES

It would be remiss to create a summary of the work of the fRI Research GBP without acknowledging the many students and supervisors that put in countless hours towards thesis projects. Many of these students also published papers based on their work, and these are listed in the main body of this document. To acknowledge the important contribution of supervisors, they have been included at the end of each citation. In addition, where available, a link to the completed thesis is included. Including this list of theses highlights the amazing job that the program has done in creating long-term relationships within the project, as we see names of multiple MSc students become names of supervisors of their own students. The fRI Research GBP also employed many of the students working with their data. This section also shows the contribution of the program to building up the next generations of scientists.

Charlene Popplewell. 2001. **Habitat structure and fragmentation of grizzly bear managements units and home ranges in the Alberta Yellowhead ecosystem.** *MSc Thesis. Department of Geography, University of Calgary, Calgary, AB.* M Hall-Beyer. <https://prism.ucalgary.ca/handle/1880/41058>

Rebecca Ann Ritson-Bennett. 2003. **Assessing the Effects of a Heli-portable 3D Seismic Survey on Grizzly Bear.** *MGIS Thesis. Department of Geography, University of Calgary, Calgary, AB.* D Bender.

Joan Louise Pereverzoff. 2003. **Development of a rapid assessment technique to identify human disturbance features in a forested landscape.** *MGIS Thesis. Department of Geography, University of Calgary, Calgary, AB.* D Bender.  
[https://friresearch.ca/sites/default/files/null/GBP\\_2003\\_08\\_Rpt\\_DevelopmentofaRapidAssessmentTechniquetoidentifyHumanDisturbanceFeatures.pdf](https://friresearch.ca/sites/default/files/null/GBP_2003_08_Rpt_DevelopmentofaRapidAssessmentTechniquetoidentifyHumanDisturbanceFeatures.pdf)

Barbara L Schwab. 2003. **Graph Theoretic Methods for Examining Landscape Connectivity and Spatial Movement Patterns: Application to the FMF Grizzly Bear Research Project.** *MSc Thesis. Department of Geography, University of Calgary, Calgary, AB.* C Woudsma.  
<https://prism.ucalgary.ca/handle/1880/39956>

Julia Linke. 2003. **Using Landsat TM and IRS imagery to detect seismic cutlines: assessing their effects on landscape structure and on grizzly bear (*Ursus arctos*) landscape use in Alberta.** *MSc Thesis. Department of Geography, University of Calgary, Calgary, AB.* SE Franklin.  
<https://search.proquest.com/docview/305347625>

Scott E Nielsen. 2005. **Habitat ecology, conservation, and projected population viability of grizzly bears (*Ursus arctos* L.) in west-central Alberta, Canada.** *PhD Thesis. Department of Biological Sciences, University of Alberta, Edmonton, AB.* MS Boyce. <https://friresearch.ca/resource/habitat-ecology-conservation-and-projected-population-viability-grizzly-bears-ursus-arctos>

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University of Saskatchewan, Saskatoon, SK. SE Franklin. <https://harvest.usask.ca/handle/10388/etd-04102006-130406>

Alysha D Pape. 2006. **Multiple spatial resolution image change detection for environmental management applications.** *MSc Thesis. Department of Geography, University of Saskatchewan, Saskatoon, SK.* SE Franklin. <https://harvest.usask.ca/handle/10388/etd-12142006-135001>

Adam J McLane. 2007. **Processing discrete-return profiling LiDAR data to estimate canopy closure for the purpose of grizzly bear management in northern Alberta.** *MGIS Thesis. Department of Geography, University of Calgary, Calgary, AB.* G McDermid. [http://people.ucalgary.ca/~mcdermid/Docs/Theses/McLane\\_2007.pdf](http://people.ucalgary.ca/~mcdermid/Docs/Theses/McLane_2007.pdf)

Carrie L Roever. 2007. **Grizzly Bear (*Ursus arctos* L.) selection of roaded habitats in a multi-use landscape.** *MSc Thesis. Department of Biological Sciences, University of Alberta, Edmonton, AB.* MS Boyce. <https://www.bac-lac.gc.ca/eng/services/theses/Pages/item.aspx?idNumber=468093782>

Jason W Hamilton. 2007. **Evaluation of indicators of stress in populations of polar bears (*Ursus maritimus*) and grizzly bears (*Ursus arctos*).** *MSc Thesis. Department of Biology, University of Waterloo, Waterloo, ON.* MM Vijayan. <https://uwspace.uwaterloo.ca/handle/10012/3488>

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- Joseph M Northrup. 2010. **Grizzly bears, roads and human-bear conflicts in southwestern Alberta.** *MSc Thesis. Department of Biological Sciences, University of Alberta, Edmonton, AB.* MS Boyce. [https://era.library.ualberta.ca/items/fa7c1acd-8a5d-4b25-a399-cf460b5572fe/view/b86c6df7-a9ff-479b-9bd5-e784c2deeb5b/Northrup\\_Joseph\\_Fall-202010.pdf](https://era.library.ualberta.ca/items/fa7c1acd-8a5d-4b25-a399-cf460b5572fe/view/b86c6df7-a9ff-479b-9bd5-e784c2deeb5b/Northrup_Joseph_Fall-202010.pdf)
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- Benjamin Peter Stewart. 2011. **Quantifying grizzly bear habitat selection in a human disturbed landscape.** *MSc Thesis. Department of Geography, University of Victoria, Victoria, BC.* TA Nelson. <https://dspace.library.uvic.ca/handle/1828/3540>
- Ruth Carlson. 2011. **Development and application of an antibody-based protein microarray to assess physiological stress in grizzly bears (*Ursus arctos*).** *PhD Thesis. Department of Toxicology, University of Saskatchewan, Saskatoon, SK.* D Janz. <https://harvest.usask.ca/handle/10388/etd-03092011-153759>
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Larissa Mourad Ozeki. 2013. **Evaluation of core temperature measurement and treatment of capture-related hyperthermia in anesthetized brown bears (*Ursus arctos*).** MSc Thesis. Veterinary Medical Sciences Graduate Program, University of Calgary, AB. N Caulkett. <https://prism.ucalgary.ca/handle/11023/585>

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Bryan Macbeth. 2013. **An evaluation of hair cortisol concentration as a potential biomarker of long-term stress in free-ranging grizzly bears (*Ursus arctos*), polar bears (*Ursus maritimus*), and caribou (*Rangifer tarandus* sp.).** PhD Thesis. Department of Veterinary Biomedical Sciences, University of Saskatchewan, Saskatoon, SK. D Janz. <https://harvest.usask.ca/bitstream/handle/10388/ETD-2013-10-1032/MACBETH-DISSERTATION.pdf?sequence=3&isAllowed=y>

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Catherine Denny. 2016. **Spatial heterogeneity of buffaloberry (*Shepherdia canadensis*) in relation to forest canopy patterns and its importance for grizzly bear (*Ursus arctos*) resource selection.** MSc Thesis. Department of Renewable Resources, University of Alberta, Edmonton, AB. SE Nielsen. <https://era.library.ualberta.ca/items/822254ff-33d2-4fae-a701-a2346f1d52ac>

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Adam Erickson. 2017. **A hybrid modeling approach to simulating past-century understory solar irradiation in Alberta, Canada.** *PhD Thesis. Department of Forest Resources Management, University of British Columbia, Vancouver, BC.* NC Coops.

<https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0354540>

Nuria Fandos Esteruelas. 2017. **Short-and long-term physiological effects of capture and handling on free ranging brown bears (*Ursus arctos*).** *PhD Thesis. Faculty of Applied Ecology and Agricultural Sciences, Inland Norway University of Applied Sciences, Koppang, Norway.* J Arnemo.

<https://brage.inn.no/inn-xmlui/handle/11250/2469224?locale-attribute=en>

Mathieu Louis Bourbonnais. 2018. **A Multi-Scale Assessment of Spatial-Temporal Change in the Movement Ecology and Habitat of a Threatened Grizzly Bear (*Ursus arctos*) Population in Alberta, Canada.** *PhD Thesis. Department of Geography, University of Victoria, Victoria, BC.* TA Nelson.

<https://dspace.library.uvic.ca/handle/1828/10012>

Ethan E. Berman. 2019. **Investigating grizzly bear responses to spring snow dynamics through the generation of fine spatial and temporal scale snow cover imagery in Alberta, Canada.** *MSc Thesis. Department of Forest Resources Management, University of British Columbia, Vancouver, BC.* NC Coops.

<https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0376216>

Emily Cicon. 2019. **Surrogacy and Umbrella Relationships of Grizzly Bears and Songbirds is Scale Dependent.** *MSc Thesis. Department of Renewable Resources, University of Alberta, Edmonton, AB.* SE Nielsen.

<https://era.library.ualberta.ca/items/a60dbb7b-6855-441e-a236-824b4e982ce1>

Cameron McClelland. 2020. **Detecting the phenology of important vegetative grizzly bear foods using remote sensing and analysing their relationship to grizzly bear habitat selection.** *MSc Thesis. Department of Forest Resources Management, University of British Columbia, Vancouver, BC.* NC Coops.

<https://open.library.ubc.ca/collections/ubctheses/24/items/1.0389546>

Bethany Parsons. 2020. **Incorporating visual and auditory perception into understanding grizzly bear behavioural responses to roads in Alberta, Canada.** *MSc Thesis. Department of Forest Resources Management, University of British Columbia, Vancouver, BC.* NC Coops.

<https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0390041>

Alejandra Zubiria Perez. 2020. **Evaluating the role of movement behaviour and habitat familiarity on translocated grizzly bear success using an agent-based modelling approach.** *MSc Thesis. Department of Geography, University of Victoria, Victoria, BC.* C Bone.

<https://dspace.library.uvic.ca/handle/1828/12119>



## APPENDIX 3: LIST OF PAPERS IN PREPARATION AND REVIEW

The work of the Grizzly Bear Program is ongoing. This appendix lists some of research that was in progress but not yet published by the end of the program.

Cattet, M., Janz, D., Kapronczai, L., Erlenbach, J., Jansen, H., Nelson, O. L., Robbins, C., & Stenhouse, G. (Under review). **Cortisol levels in blood and hair of unanesthetized grizzly bears (*Ursus arctos*) following intravenous cosyntropin injection.**

Wilson, A., Wismer, D., Stenhouse, G., Coops, N., & Janz, D. (Under review). **Landscape condition influences energetics, reproduction, and stress biomarkers in grizzly bears.**

Perez, A., Bone, C., & Stenhouse, G. B. (Under review). **Simulating impacts of learning and memory in translocated grizzly bears in west-central Alberta.**

Kearney, S. P., Larsen, T., Goodbody, T. R. H., Coops, N. C., & Stenhouse, G. B. (Under review). **Characterizing off-highway road use with remote sensing, social media and crowd-sourced data: an application to grizzly bear (*Ursus arctos*) habitat.**

Perez, A. Z., Bone, C., & Stenhouse, G. (Under review). **Evaluating the role of environmental familiarity and behaviour in the success of wildlife translocation: A grizzly bear case study using agent-based modelling.**

Rickbeil, G., Coops, N., Kearney, S., Berman, E., McClelland, C., Parsons, B., Wilson, A., Goodbody, T., Bourbonnais, M., Nielsen, S., Janz, D., van Manen, F., & Stenhouse, G. (Submitted December 2020). **Geospatial wildlife science by design: a synthesis of novel data and approaches developed by the GrizzlyPAW program.**

McClelland, C. J. R., Denny, C. K., Larsen, T. A., Stenhouse, G. B., & Nielsen, S. E. (Submitted Feb 2021). **Landscape estimates of carrying capacity for grizzly bears using nutritional energy supply for management and conservation planning.**

Stenhouse, G. B., Larsen, T., McClelland, C. J. R., Graham, K., Wilson, A., Wismer, D., Frame, P., & Phoebus, I. (Submitted March 2021). **Response of a Large Carnivore to Translocation into a Novel Environment.**

Zubiria Perez, A., Bone, C., & Stenhouse, G. (Submitted March 2021). **Evaluating the role of environmental familiarity and behaviour in the success of wildlife translocation: A grizzly bear case study using agent-based modelling.**

Wilson, A., Stenhouse, G., Cattet, M., & Janz, D. (In preparation). **Incorporating physiology into long-term monitoring of large carnivores.**

Wilson, A., Stenhouse, G., Coops, N., & Janz, D. (In preparation). **Reproductive biomarkers in serum of grizzly bears and applications for conservation.**

Nielsen, S., Boulanger, J., Larsen, T., Denny, C., & Stenhouse, G. (In preparation). **Population trends in grizzly bears explained by landscape change and food supply.**





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