

KARINE PIGEON – PhD, CWB®

Geomatics and Landscape Ecology Lab (GLEL) – Carleton University
IUCN BSG Sloth Bear Expert Team, <http://www.karinepigeon.ca/>

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SUMMARY

Research associate / wildlife scientist specializing in landscape ecology, behavioural ecology, and responses to global change on species ecology, including climate change. Within that umbrella, I have experience in management and conservation, human-wildlife coexistence, and environmental science with a focus on a multi-species approach. I am especially interested in understanding how environmental factors and landscape disturbances influence species behaviour, ecology, and population dynamics.

EDUCATION

UNIVERSITÉ LAVAL

PHD IN BIOLOGY, Québec, QC – 2015
Plasticité comportementale de l'ours grizzli (*Ursus arctos*) dans un contexte de changements climatiques

UNIVERSITY of LETHBRIDGE

BSC IN ENVIRONMENTAL SCIENCE,
Lethbridge, AB – 2005

SELKIRK COLLEGE

RECREATION, FISH, & WILDLIFE TECH.
DIPLOMA, Castlegar, BC – 2002

SCHOLARSHIPS & AWARDS

IBA RESEARCH & CONSERVATION – 2017
SARAH BAKER FUND – Y2Y – 2010
NSERC CGS P AWARD – 2009
FQRNT AWARD – 2009
NSERC CGS M AWARD – 2008
FQRNT AWARD – 2008
ACA GRANT IN BIODIVERSITY – 2008
NSERC USRA AWARD – 2005

SELECTED EXPERIENCE

RESEARCH ASSOCIATE – Current

GEOMATICS AND LANDSCAPE ECOLOGY LAB (GLEL), CARLETON UNIVERSITY, Ottawa, ON
Identify situations when cross-scale extrapolation of animal responses to local factors such as patch size, patch isolation, and edge effects are valid to make inferences about landscape-scale factors (i.e., habitat fragmentation).

WILDLIFE RESEARCHER – Nov 2016 to Current

IUCN BSG SLOTH BEAR EXPERT TEAM & SHELEADS WILDLIFE RESEARCH, Edmonton, AB
Develop and implement research activities to understand habitat preferences and complex ecological interactions between Asiatic black bears and sloth bears, and investigate whether Asiatic black bears could be reducing the viability of sloth bears in edge habitats of Nepal and India.

SENIOR BIOLOGIST – November 2013 to Current

FRI RESEARCH CARIBOU PROGRAM, Hinton, AB
Develop and implement all aspects of research activities towards informing land and resource management towards sustainable caribou populations, including delineating priority areas for on-the-ground restoration within caribou ranges, and towards understanding the use of regenerating landscape features by caribou, other ungulates, their predators, and humans.

PROJECT LEAD – DNA-based Grizzly bear population census – May to Sept 2018

FRI RESEARCH GRIZZLY BEAR PROGRAM, Hinton, AB
Oversee all aspects of the 1st DNA-based grizzly bear population census in the Swanhills area (Bear Management Area 7) of Alberta, Canada within a collaborative partnership with the Government of Alberta and FRI Research staff.

PHD RESEARCHER – January 2009 to April 2015

UNIVERSITÉ LAVAL, Québec, QC
Developed research questions, study designs, secured research funds, and implemented all aspects of a research project focused on investigating the links between environmental conditions and grizzly bear behaviour. Collaborated with stakeholders and designed den-focused resource selection function (RSF) for grizzly bears in Alberta. Supervised students towards completion of undergraduate theses and projects.

TECHNICIAN & RESEARCH ASSISTANT – June 2004 to July 2014

FOOTHILLS RESEARCH INSTITUTE GRIZZLY BEAR PROGRAM, Hinton, AB
Supervised and conducted field work and office duties to collect data on the availability of food resources, habitat selection, and scat analyses of grizzly bears, and for the 1st DNA-based population census of grizzly bears in Alberta (2004).

WORKSHOPS

INTRODUCTION TO REGRESSION MODELS WITH SPATIAL & TEMPORAL CORRELATION – HIGHLAND STATISTICS 2017

HUMAN-BEAR CONFLICT – IUCN BEAR SPECIALIST GROUP – IBA 2017

MODELLING PATTERNS AND DYNAMICS OF SPECIES OCCURRENCE – PROTEUS 2017

SPATIAL ANALYSIS OF ECOLOGICAL DATA USING R – PR STATISTICS 2016

BAYESIAN NETWORK MODELLING – IBA 2016

POPULATION DYNAMICS COMPUTER WORKSHOP – CMI 2016

INTRODUCTION TO GAM MODELS & GAMM – HIGHLAND STATISTICS 2016

EXPLICIT CAPTURE-RECAPTURE IN R – UNIVERSITY OF ALBERTA 2014

INTRODUCTION TO LINEAR MIXED EFFECTS MODELS & GLMM WITH R – HIGHLAND STATISTICS 2013

DATA EXPLORATION, REGRESSION, GLM & GAM WITH R – HIGHLAND STATISTICS 2012

NEW APPROACHES TO STUDIES OF HOME RANGE, HABITAT SELECTION, & SPACE USE – UNIVERSITY OF IDAHO 2012

CLIMATE CHANGE IMPACTS ON WOLVERINE AND GRIZZLY BEARS – STRATEGIES FOR CONSERVATION 2009

INVITED SPEAKER

PRIVATE SEMINAR – FOREST RESOURCE ADVISORY GROUP | Update on the fRI Research Caribou Program 2017

OPEN SEMINAR – TRENT UNIVERSITY | From integrated research to science priorities 2017

PUBLIC PRESENTATION – TOFIELD GUN CLUB | Den selection by grizzly bears on a managed landscape 2017

PUBLIC PRESENTATION – WHISKY JACK CLUB | Staying cool in a warming climate: Denning behaviour and habitat selection of grizzly bears 2016

STUDENT PRESENTATION – LAKEHEAD UNIVERSITY | Overview of the FRI Grizzly Bear Program 2015

PUBLIC PRESENTATION – JNP | Climate Change & Denning behaviour 2011

PUBLIC PRESENTATION – LES GRIMPEURS DE L'EST | Backcountry skiing 2010

PEER-REVIEWED PUBLICATIONS

Pigeon KE, D MacNearney, M Hebblewhite, M Musiani, L Neufeld, J Cranston, GB Stenhouse, F Schmiegelow, and L Finnegan (#####) Density of anthropogenic features explains seasonal behaviour-based functional response in selection of linear features by a social predator. *Scientific Reports*. *Re-submitted*.

Hornseth ML, KE Pigeon, D MacNearney, TA Larsen, G Stenhouse, J Cranston, L Finnegan (2018) Motorized activity on legacy seismic lines: A predictive modeling approach to prioritize restoration efforts. *Environ. Manage.* 62: 595 – 607.

Finnegan L, KE Pigeon, J Cranston, M Hebblewhite, M Musiani, L Neufeld, F Schmiegelow, J Duval, GB Stenhouse (2018) Natural regeneration on seismic lines influences movement behaviour of wolves and grizzly bears. *PLoS One*, 13:e0195480.

Finnegan L, D MacNearney, KE Pigeon (2017) Divergent patterns of understory species growth after seismic line exploration: Implications for caribou habitat restoration. *Forest Ecol Manage.* 409: 634 – 652.

Pigeon KE, E Cardinal, GB Stenhouse, SD Côté (2017) Recognizing the importance of an all-inclusive approach to bear conservation now and into the future. *Oecologia* 185: 347 – 350.

Pigeon KE, GB Stenhouse, SD Côté (2016) Drivers of hibernation: Linking food and weather to denning behaviour of grizzly bears. *Behav Ecol Sociobiol.* 70: 1745 – 1754.

Pigeon KE, E Cardinal, GB Stenhouse, SD Côté (2016) Staying cool in a changing landscape: The influence of maximum daily ambient temperature on grizzly bear habitat selection. *Oecologia*. 181: 1101 – 1116.

Pigeon KE, SD Côté, GB Stenhouse (2016) Assessing den selection and den characteristics of grizzly bears. *J Wildl Manage.* 80: 884 – 893.

Pigeon KE, M Anderson, D MacNearney, J Cranston, G Stenhouse, L Finnegan (2016) Towards the restoration of caribou habitat: Understanding factors associated with human motorized use of legacy seismic lines. *Environ. Manage.* 58: 821 – 832.

MacNearney D, K Pigeon, G Stenhouse, W Nijland, NC Coops, L Finnegan (2016) Heading for the hills? Evaluating spatial distribution of woodland caribou in response to a growing anthropogenic disturbance footprint. *Ecol Evol.* 6: 6484 – 6509.

Jansen H, T Leise, G Stenhouse, K Pigeon, W Kasworm, J Teisberg, T Radant, R Dallman, S Brown, C Robbins (2016) The bear circadian clock doesn't sleep in hibernation. *Front Zool.* 13:42.

Pigeon KE, SE Nielsen, GB Stenhouse, SD Côté (2014) Den selection by grizzly bear on a managed landscape. *J Mammal* 95: 559 – 571.

Pigeon KE, H Jiskoot (2008) Meteorological controls on snowpack formation and dynamics in the southern Canadian Rocky Mountains. *Arct Antarct Alp Res* 40: 716 – 730.

CONFERENCES

Pigeon KE, T McKay, B Nobert, L Finnegan (2018) Death and Disturbance: Predators and landscape features associated with central mountain caribou mortalities. Oral Presentation, North American Caribou Workshop, November 2018, Ottawa, Canada

Finnegan L, B Nobert, D Wismer, T McKay, KE Pigeon, D MacNearney (2018) Caribou Webtools: an interactive web-based GIS application for caribou recovery. Oral Presentation, North American Caribou Workshop, November 2018, Ottawa, Canada

Finnegan L, T McKay, B Nobert, KE Pigeon (2018) Caribou conservation in Alberta through scientific partnership. Invited contribution to 25 Years of conservation science across Yellowstone to Yukon Symposium. Oral Presentation, North American Congress on Conservation Biology, July 2018, Toronto, Canada.

Pigeon KE, D MacNearney, T McKay, L Finnegan (2017) Predator-prey dynamics on linear features: a broadly applicable, non-invasive approach to understand multi-species behavioural responses to anthropogenic landscape features. Oral Presentation, 25th International Conference on Bear Research & Management Nov. 2017, Quito, Ecuador.

Pigeon KE, D MacNearney, G Stenhouse, J Cranston, M Hebblewhite, M Musiani, L Neufeld, L Finnegan (2017) Habitat heterogeneity and functional responses explain seasonal and behaviour-based selection of regenerating seismic lines for a social predator. Oral Presentation, Canadian Society for Ecology and Evolution, May 2017, Victoria, BC, Canada.

AFFILIATIONS

IUCN BSG SLOTH BEAR EXPERT TEAM

INTERNATIONAL ASSOCIATION FOR BEAR
RESEARCH & MANAGEMENT (IBA)

THE WILDLIFE SOCIETY (TWS)

ALPINE CLUB OF CANADA (ACC)

CANADIAN AVALANCHE ASSOCIATION (CAA)

REVIEWER

BEHAVIORAL ECOLOGY AND SOCIOBIOLOGY
| BIOLOGICAL CONSERVATION | JOURNAL OF
MAMMALOLOGY | OECOLOGIA | ECOSCIENCE |
URSUS | MAMMAL REVIEW | BEHAVIORAL
PROCESS | CANADIAN JOURNAL OF
ZOOLOGY | GLOBAL ECOLOGY AND
CONSERVATION | PEERAGE OF SCIENCE

Pigeon KE, D MacNearney, J Cranston, G Stenhouse, L Finnegan (2016) Towards stable caribou populations: Considering resource selection by grizzly bears, wolves, and caribou to prioritize restoration of legacy seismic lines in Alberta, Canada. Oral Presentation, 24th International Conference on Bear Research & Management, Jun. 2016, Anchorage, USA.

Yadav B, KE Pigeon, D Garshelis (2016) Camera trapping for tigers across the Terai-arc landscape of Nepal yields valuable information on occupancy and habitat selection of sloth bears. Oral Presentation, 24th International Conference on Bear Research & Management, Jun. 2016, Anchorage, USA.

Finnegan L, D MacNearney, K Pigeon (2016) Towards caribou habitat recovery: Considering natural regeneration and resource selection by grizzly bears, wolves, and caribou to prioritize restoration of legacy seismic lines. Oral Presentation, 16th North American Caribou Workshop, May 2016, Thunder Bay, ON, Canada.

MacNearney D, B Nobert, KE Pigeon, L Finnegan (2016) Caribou behaviour and calving success in relation to oil and gas development: Are all disturbances created equal? Oral Presentation, ACTWS. Mar. 2016, Drumheller, AB, Canada.

Viejou R, D MacNearney, KE Pigeon, J Cranston, G Stenhouse, L Finnegan (2016) Movement patterns of two species at risk within an industrial landscape. Oral Presentation, ACTWS. Mar. 2016, Drumheller, AB, Canada.

MacNearney D, KE Pigeon, J Cranston, G Stenhouse, L Finnegan (2016) Towards stable caribou populations in Alberta: Considering resource selection by wolves, grizzly bears, and caribou to prioritize restoration of legacy seismic lines. Poster Presentation. CMI. Apr. 2016, Revelstoke, BC, Canada.

Pigeon KE, SD Côté, GB Stenhouse (2015) Climate change and hibernation: Linking food and weather to denning behaviour of grizzly bears. Oral Presentation, ACTWS. Mar. 2015, Edmonton, AB, Canada.

Pigeon KE, SD Côté, GB Stenhouse (2014) Climate change and hibernation: Linking food and weather to denning behaviour of grizzly bears. Oral Presentation, 23rd International Conference on Bear Research & Management, Oct. 2014, Thessaloniki, Greece.

Pigeon KE, E. Cardinal, G Stenhouse, SD Côté (2014) Staying cool in a managed landscape: The influence of ambient temperatures on grizzly bear habitat selection. Oral Presentation, ACTWS, Mar. 2014, Jasper, AB, Canada.

Pigeon KE, E Cardinal, G Stenhouse, SD Côté (2013) Staying cool in a managed landscape: The influence of ambient temperatures on grizzly bear habitat selection. Oral Presentation, 22th international conference on bear research and management, Sept. 2013, Provo, USA.

Pigeon KE, SE Nielsen, G Stenhouse, SD Côté (2012) Factors determining den site selection of grizzly bears at multiple spatial scales in the boreal forest. Oral presentation, Feb. 4th, Alberta Environment and Sustainable Resource Development, Edmonton, AB, Canada.

Pigeon KE, SE Nielsen, G Stenhouse, SD Côté (2012) Den site selection for grizzly bears in the Rocky Mountains and Foothills of Alberta, Canada. Oral Presentation, 21th international conference on bear research and management, Nov. 2012, New Delhi, India.

Pigeon KE, SD Côté, G Stenhouse (2011) Denning behaviour and climate change: linking environmental variables to denning of grizzly bears in the Rocky Mountains and boreal forest of Alberta, Canada. Oral Presentation, 20th international conference on bear research and management, Jul. 2011, Ottawa, ON, Canada.

Pigeon KE, SD Côté, G Stenhouse (2011) Les facteurs déterminant le comportement d'hibernation de l'ours grizzly dans les piedmonts et les montagnes Rocheuses de l'Alberta. Oral Presentation, 36e Colloque Annuel de la Société Québécoise pour l'Étude Biologique du Comportement (SQÉBC), Nov. 2011, Sherbrooke, QC, Canada.

Pigeon KE, G Stenhouse, SD Côté (2007). Climate change and denning behaviour of grizzly bears: A preliminary study. Poster Presentation, 18th international conference on bear research and management, Nov. 2007, Monterrey, Mexico.

VOLUNTEER WORK

PEER-REVIEWED PUBLICATION (ON-GOING)
– Occupancy and habitat selection of sloth bears in the Terai Arc landscape of Nepal.

WISER MENTORSHIP PROGRAM (2018-2019)

UNDERGRADUATE STUDENT PROJECTS:

- ✘ Animal behavior & Climate change
The college of Wooster
- ✘ Thermoregulation & Climate change
Dakota State University
- ✘ Undergraduate thesis supervision (3)
University of Alberta (2016–2017),
Université Laval (2010–2011)

NERD TALKS – Instigation & upkeep of a bi-weekly discussion group in ecology 2015

IBA BROWN BEAR INFORMATION PAGES –
Development & writing 2013–2015

HINTON CLIMBING CLUB

HINTON MOUNTAIN BIKE ASSOCIATION

LES DÉBROUILLARDS – 2012

www.lesdebrouillards.com/quiz/connais-tu-le-grizzli/

JOURNAL CLUB – UNIVERSITÉ LAVAL –
manage weekly discussion 2009–2012

CHAPITRE ÉTUDIANT – TWS – Executive &
founding member 2009 – 2011

CAW RIDGE ALPINE UNGULATE RESEARCH
PROJECT – Capture & handling & behavioural
observations of mountain goat 2008–2010

BC PARKS – RISK ASSESSMENT – Recorder &
database management 2001 – 2002

TECHNICAL REPORTS

Pigeon K, D MacNearney, B Nobert, L Finnegan (2017) Caribou and wolf behaviour in relation to oil and gas development. Final Report prepared for the British Columbia Oil & Gas Research & Innovation Society, BCIP-2016-15.

MacNearney D, K Pigeon, B Nobert, L Finnegan (2017) Investigating the response of caribou and wolves to human activity at well sites in the Chinchaga caribou range. Interim Report prepared for the British Columbia Oil & Gas Research & Innovation Society, BCIP-2016-15.

Pigeon K, D MacNearney, T McKay, L Finnegan (2017) Restoration of seismic cutline in southern mountain and boreal caribou range in west-central and north-western Alberta: Maximising success and targeting areas used by alternate prey. Final Report prepared for the Habitat Stewardship Program for Species at Risk, 2016HSP7488.

MacNearney D, T McKay, K Pigeon, B Nobert, D Vitt, M House, L Finnegan (2017) Identifying high-quality habitat and silviculture practices to aid caribou recovery in west-central Alberta. Year One Final Report prepared for the Alberta Conservation Association and the Sustainable Forestry Initiative.

Finnegan L, D MacNearney, K Pigeon, B Nobert, R Veijou, S Milligan, J Cranston, G Stenhouse (2016) Response of threatened species to linear features and landscape change in a managed forest in west-central Alberta. Final Report prepared for the Sustainable Forestry Initiative, SFI 2013-003.

Finnegan L, D MacNearney, K Pigeon, M Hornseth, J Cranston, R Veijou, G Stenhouse (2016) Analysis and restoration of seismic cutlines in southern mountain and boreal caribou range in west-central Alberta Phase 3. Final Report prepared for the Habitat Stewardship Program for Species at Risk, 2015HSP7195.

Pigeon K, M Hornseth, D MacNearney, L Finnegan (2016) Analysis and improvement of linear features to increase caribou functional habitat in west-central and north-western Alberta. Final report prepared for the Forest Resource Improvement Association of Alberta (FRIP OF-13-006), Alberta Upstream Petroleum Research Fund (15-ERPC-01), and BC Oil and Gas Research and Innovation Society (BC OGRIS 15-04).

MacNearney D, K Pigeon, L Finnegan (2016) Behaviour and calving success of boreal caribou in relation to oil and gas development. Final Report, Petroleum Technology Alliance Canada, Alberta Upstream Petroleum Research Fund (15-ERPC-06) and British Columbia Oil and Gas Research and Innovation Society (2016-15).

Finnegan L, B Macbeth, D MacNearney, K Pigeon, T Larsen, H Schwantje, S Kutz (2016) Caribou mortality and disease prevalence in west-central Alberta. Year one Report, Petroleum Technology Alliance Canada, and Alberta Upstream Research Petroleum Fund.

MacNearney D, M Anderson, K Pigeon, L Finnegan (2015) Analysis and restoration of seismic cutlines in Southern Mountain and Boreal Caribou Range in West-Central Alberta: Phase 2. HSP 6699 Final Report, Environment Canada.

Finnegan L, K Pigeon, J Cranston, G Stenhouse (2014) Analysis and restoration of seismic cutlines in Southern Mountain and Boreal Caribou Range in West-Central Alberta. HSP 6617 Final Report, Environment Canada.

Pigeon K (2012) Den site Selection for Grizzly Bears in the Rocky Mountains and Foothills of Alberta, Canada: A spatially Explicit and Hierarchical Approach. In: Stenhouse G and K Graham (eds). Foothills Research Institute Grizzly Bear Program (FRIGBP) 2011 Annual Report. Hinton, AB.

Pigeon K (2011) Denning Behaviour and Climate Change: Linking Environmental Variables to Denning of Grizzly Bears. In: The Rocky Mountains And Boreal Forest Of Alberta, Canada. In: Stenhouse G and K Graham (eds). FRIGBP 2010 Annual Report. Hinton, AB.

Pigeon K (2010) Denning Behaviour, Thermoregulation, And Environmental Variables. In: Stenhouse G and K Graham (eds). FRIGBP 2009 Annual Report. Hinton, Alberta.

Pigeon K (2009) Denning, Habitat Selection, and Weather. In: Stenhouse G and K Graham (eds). FRIGBP 2008 Annual Report. Hinton, AB.

Hobson D, G Stenhouse, J Cranston, T Larsen, K Pigeon (2008) Program Field Activities 2007. In: Stenhouse G and K Graham (eds). FRIGBP 2007 Annual Report. Hinton, AB.

Larsen T, K Pigeon (2007) The diet of grizzly bears (*Ursus arctos*) in North-Central Alberta, Canada, part of a new food-based model approach to mapping grizzly bear habitat. In: Stenhouse G. and K Graham. Foothills Model Forest Grizzly Bear Research Program (FMFGBRP) 2006 Annual Report. Hinton, AB.