

JOSEPH M. NORTHRUP

Large Mammal Research Scientist
Wildlife Research and Monitoring Section
Ontario Ministry of Natural Resources and Forestry
DNA Building, Trent University
Joseph.northrup@ontario.ca
(705) 755-1549

APPOINTMENTS

- 2017 – Adjunct professor, Environmental and Life Sciences Graduate Program, Trent University, Peterborough, Ontario, Canada.
- 2016 – 2017 Postdoctoral research associate, Department of Forest Ecosystems and Society, Oregon State University, Corvallis, Oregon, USA.
- 2015 – 2016 Postdoctoral researcher, Colorado Parks and Wildlife and Department of Fish, Wildlife and Conservation Biology, Colorado State University, Fort Collins, Colorado, USA.

EDUCATION

- PhD 2015. Colorado State University, Fish, Wildlife and Conservation Biology.
MSc 2010. University of Alberta, Ecology.
BS 2005. Bates College, Biology.

PEER REVIEWED PUBLICATIONS

*indicates authors contributed equally
Underline indicates supervised student

In press

33. **Northrup, J.M.**, C.R. Anderson Jr., B.D. Gerber & G. Wittemyer. Behavioral plasticity buffers mule deer from demographic effects of energy development on winter range. *Wildlife Monographs*.
32. Betts. M.G., **J.M. Northrup***, J.A. Bailey Guerrero, L.J. Adrean, S.K. Nelson, J.L. Fisher, B.D. Gerber, M. Garcia-Heras, Z. Yang, D.D. Roby & J.W. Rivers. Squeezed by a habitat split: warm ocean conditions and old-forest loss interact to reduce long-term occupancy of a threatened seabird. *Conservation Letters*.

31. Jamieson, A., S.J. Anderson, J. Fuller, S.D. Cote, **J.M. Northrup** & A.B.A. Shafer. Heritability estimates of antler and body traits in white-tailed deer (*Odocoileus virginianus*) from genomic-relatedness matrices. *Journal of Heredity*.

2020

30. Gerber, B.D. & **J.M. Northrup**. Improving spatial predictions of animal resource selection to guide conservation decision making. *Ecology*, 101: e02953.

2019

29. **Northrup, J.M.***, A. Avrin*, C.R. Anderson Jr., E. Brown & G. Wittemyer. On-animal acoustic monitoring provides insight to ungulate foraging behavior. *Journal of Mammalogy*, 100: 1479 – 1489.

28. Wittemyer, G, **J.M. Northrup** & G. Bastille-Rousseau. Behavioral valuation of landscapes using movement data. *Philosophical Transactions of the Royal Society*, 374: 20180046.

27. **Northrup, J.M.**, J.W. Rivers, Z. Yang & M.G. Betts. Synergistic effects of climate and land-use change influence broad-scale population declines. *Global Change Biology*, 25: 1561 – 1575.

26. Phalan, B.T., **J.M. Northrup**, A. Yang, R.L. Deal, J.S. Rousseau, T.A. Spies & M.G. Betts. Success and limitations of an iconic policy: impacts of the Northwest Forest Plan on forest composition and bird populations. *Proceedings of the National Academy of Sciences*, 116: 3322 – 3327.

2018

25. Peterson, M.E., C.R. Anderson, **J.M. Northrup** & P.F. Doherty. Mortality of mule deer fawns in a natural gas development area. *Journal of Wildlife Management*, 82: 1135 – 1148.

24. Bastille-Rousseau, G., I. Douglas-Hamilton, S. Blake, **J.M. Northrup** & G. Wittemyer. Applying network theory to animal movements to identify properties of landscape space use. *Ecological Applications*, 28: 854 – 864.

23. **Northrup, J.M.**, J.W. Rivers, S.K. Nelson, D.D. Roby & M.G. Betts. Assessing the utility of satellite transmitters for identifying nest locations and foraging behavior of the threatened marbled murrelet *Brachyramphus marmoratus*. *Marine Ornithology* 46: 47 – 55.

22. **Northrup, J.M.** & B.D. Gerber. A comment on priors for Bayesian occupancy models. *PLoS One* 13: e0192819. doi.org/10.1371/journal.pone.0192819.

21. Lendrum, P.E., **J.M. Northrup**, C.R. Anderson, G.E. Liston, C.L. Aldridge, K.R. Crooks, & G. Wittemyer. Predation risk across a dynamic landscape: effects of anthropogenic land-use, natural landscape features, and prey distribution. *Landscape Ecology* 33: 157 – 170.
20. Bergman, E., C.R. Anderson, C. Bishop, A. Holland & **J.M. Northrup**. Dissecting sources of variation in herbivore body condition: individual variation versus the effects of time. *Journal of Wildlife Management* 82: 130 – 137.

2017

19. Peterson, M.E., C.R. Anderson, **J.M. Northrup** & P.F. Doherty. Reproductive success of mule deer in a natural gas development area. *Wildlife Biology* 00341 doi: 10.1111/wlb.00341

2016

18. **Northrup, J.M.**, C.R. Anderson, M.B. Hooten & G. Wittemyer. Movement reveals scale dependence in habitat selection of a large ungulate. *Ecological Applications* 26: 2744 – 2755.
17. **Northrup, J.M.**, C.R. Anderson & G. Wittemyer. Environmental dynamics and anthropogenic development alter philopatry and space-use in a North American cervid. *Diversity and Distributions* 22: 547 – 557.
16. Shafer, A.B.A., **J.M. Northrup**, M. Wikelski, G. Wittemyer & J.B.W. Wolf. Forecasting ecological genomics: high-tech animal instrumentation meets high-throughput sequencing. *PLoS Biology* 14: 1002350.

2015

15. **Northrup, J.M.**, C.R. Anderson & G. Wittemyer. Quantifying spatial habitat loss caused by hydrocarbon development through assessing habitat selection patterns of mule deer. *Global Change Biology* 21: 3961 – 3970.
14. Lynch, E., **J.M. Northrup**, M.F. McKenna, C.R. Anderson, L. Angeloni & G. Wittemyer. Landscape and anthropogenic features influence the use of auditory vigilance by mule deer. *Behavioral Ecology* 26: 75 – 82.

2014

13. **Northrup, J.M.**, A.B.A Shafer, C.R. Anderson, D.W. Coltman & G. Wittemyer. Fine-scale genetic correlates to condition and migration in a wild cervid. *Evolutionary Applications* 7: 937 – 948.

12. Wittemyer, G., **J.M. Northrup**, J. Blanc, I. Douglas-Hamilton, P. Omondi & K.P. Burnham. Illegal killing for ivory drives global decline in African elephants. *Proceedings of the National Academy of Sciences* 111: 13117 – 13121.
11. **Northrup, J.M.**, C.R. Anderson & G. Wittemyer. Effects of helicopter capture and handling on movement behavior of mule deer. *Journal of Wildlife Management* 78: 731 – 738.
10. Shafer, A.B.A., S.E. Nielsen, **J.M. Northrup** & G.B. Stenhouse. Linking genotype, ecotype, and phenotype in an intensively managed large carnivore. *Evolutionary Applications* 7: 301 – 312. (cover photo).

2013

9. **Northrup, J.M.**, M.B. Hooten, C.R. Anderson & G. Wittemyer. Practical guidance on characterizing availability in resource selection functions under a use-availability design. *Ecology* 94: 1456 – 1463.
8. **Northrup, J.M.** & G. Wittemyer. Characterising the impacts of emerging energy development on wildlife, with an eye towards mitigation. *Ecology Letters* 16: 112 – 125.

2012

7. Ciuti, S., **J.M. Northrup**, T.B. Muhly, S. Simi, M. Musiani, J.A. Pitt & M.S. Boyce. Effects of humans on behaviour of wildlife exceed those of natural predators in a landscape of fear. *PLoS One*, e50611. doi:10.1371/journal.pone.0050611.
6. **Northrup, J.M.**, J.A. Pitt, T.B. Muhly, G.B. Stenhouse, M. Musiani & M.S. Boyce. Vehicle traffic shapes grizzly bear behaviour on a multiple-use landscape. *Journal of Applied Ecology* 49: 1159 – 1167.
5. **Northrup, J.M.** & M.S. Boyce. Mad cow policy and management of grizzly bear incidents. *Wildlife Society Bulletin* 36: 499 – 505.
4. **Northrup, J.M.**, G.B. Stenhouse & M.S. Boyce. Agricultural lands as ecological traps for grizzly bears. *Animal Conservation* 15: 369 – 377.
3. Shafer, A.B.A.* , **J.M. Northrup***, K.S. White*, M.S. Boyce, S.D. Côté & D.W. Coltman. Habitat selection predicts genetic relatedness in an alpine ungulate. *Ecology* 93: 1317 – 1329. (cover photo; article highlighted in *Bulletin of the Ecological Society of America*. doi:http://dx.doi.org/10.1890/0012-9623-93.2.170).

2011

2. Schwab, C., B. Cristescu, **J.M. Northrup**, G.B. Stenhouse & M. Gänzle. Diet and environment shape fecal bacterial microbiota composition and enteric pathogen load of grizzly bears. *PLoS One* 6, e27905. doi:10.1371/journal.pone.0027905.

2010

1. Boyce, M.S., J.A. Pitt, **J.M. Northrup**, A.T. Morehouse, K.H. Knopff, B. Cristescu & G.B. Stenhouse. Temporal autocorrelation functions for movement rates from global positioning system radiotelemetry data. *Philosophical Transactions of the Royal Society B* 365: 2213 – 2219.

IN REVIEW OR REVISION

2. **Northrup, J.M.**, E. Vander Wal, M. Bonar, M. Laforge, M. Leclerc, C. Prkopenko & B.D. Gerber. Conceptual and Methodological advances in habitat selection modeling: guidelines for ecology and evolution. *Ecological Applications*.
1. Howe, E.J., **J.M. Northrup**, D.E. Potter, D.L. Borchers & H.S. Kuhl. Demographic closure in spatial capture-recapture studies. *Ecology and Evolution*.

BOOK CHAPTERS

1. Boyce, M.S., K. Knopff, **J.M. Northrup**, J.A. Pitt & L.S. Vors. 2012. Harvest models and climate change. *In Wildlife Conservation in a Changing Climate*. Editors: J. Brodie, E. Post, and D. Doak. University of Chicago Press.

BOOK REVIEWS

1. **Northrup, J.M.** Wildlife Habitat Conservation: Concepts, Challenges, and Solutions. Michael L. Morrison and Heather A. Mathewson, editors. 2015. Johns Hopkins University Press, Baltimore, Maryland, USA. 185 pp. \$75.00 hardcover. ISBN: 9781421416106. *Journal of Wildlife Management* 80: 1129 – 1130.

REPORTS

4. **Northrup, J.M.**. 2020. Polar bear research activity in Ontario 2019. Report submitted to the 51st meeting of the Federal-Provincial-Territorial Polar Bear technical Committee.
3. **Northrup, J.M.** & E.J. Howe. 2019. Polar bear research activity in Ontario 2018. Report submitted to the 50th meeting of the Federal-Provincial-Territorial Polar Bear technical Committee.
2. Howe, E.J. & **J.M. Northrup**. 2018. Trends in black bear density on the Bruce Peninsula, Ontario, Canada, 2009 – 2015. Ontario Ministry of Natural Resources and Forestry, Wildlife Research and Monitoring Section Report. Peterborough.

1. Found, R., B. Patterson & **J.M. Northrup**. 2018. 2017 Bancroft/North Hastings Elk Research and Monitoring Report. Ontario Ministry of Natural Resources and Forestry, Wildlife Research and Monitoring Section Report. Peterborough.

GRANTS, AWARDS AND FELLOWSHIPS

GRANTS AWARDED AS PI OR CO-PI

- 2020 - 2021 Colorado Parks and Wildlife (**100,000 USD**): Developing a spatial planning tool for natural gas development on mule deer range.
- 2019 - 2020 Polar Bears International (**6,000 CAD**): Characterizing the denning habitat and movements of polar bears in Southern Hudson Bay.
- 2019 - 2024 Natural Sciences and Engineering Research Council (**140,000 CAD**): Integrating space-use, movement and demographic data to predict the consequences of environmental change on wildlife.
- 2018 Ontario Animal Health Network (**25,000 CAD**): Characterizing the spatial patterns of chronic wasting disease susceptibility in white-tailed deer.
- 2018 Ontario Ministry of Natural Resources and Forestry Climate Change Fund (**12,500 CAD**): Estimating recruitment and abundance in the Southern Hudson Bay polar bear subpopulation.
- 2018 World Wildlife Fund Arctic Species Conservation Fund (**30,000 CAD**): Characterizing the denning habitat and movements of polar bears in Southern Hudson Bay.
- 2018 - 2019 Species at Risk Research Fund for Ontario (**60,000 CAD**): Characterizing the denning habitat and movements of polar bears in Southern Hudson Bay.
- 2014 - 2015 XTO Energy Development and Conservation Research Grant (**88,823 USD**): Long-term monitoring of movements and space-use of mule deer.

GRANTS AWARDED AS CO-INVESTIAGOR

- 2013 - 2014 Safari Club International Conservation Grant (**11,450 USD**): Behavioral response of mule deer to natural gas development.
- 2012 - 2013 Safari Club International Conservation Grant (**11,450 USD**): Behavioral response of mule deer to natural gas development.
- 2011 - 2012 Safari Club International Conservation Grant (**11,450 USD**): Behavioral response of mule deer to natural gas development.
- 2009 - 2010 Alberta Conservation Association Grants Eligible Research Fund Grant (18,500 CAD): Grizzly bear response to road access management.
- 2009 - 2010 World Wildlife Fund Species Conservation Grant (**2,280 CAD**): Grizzly bear response to road access management.

- 2009 - 2010 Alberta Sports, Recreation, Parks and Wildlife Foundation Grant (**5,000 CAD**): Grizzly bear response to road access management.
- 2009 - 2010 Safari Club International Northern Alberta Chapter Legacy Fund Grant (**4,500 CAD**): Grizzly bear response to road access management.
- 2008 - 2009 World Wildlife Fund Endangered Species Recovery Fund Grant (**25,000 CAD**): Grizzly bear response to road access management.
- 2008 - 2009 Alberta Conservation Association Grants Eligible Research Fund Grant (**24,200 CAD**): Grizzly bear response to road access management.
- 2008 - 2009 Safari Club International Northern Alberta Chapter Legacy Fund Grant (**3,500 CAD**): Grizzly bear response to road access management.

SCHOLARSHIPS AND FELLOWSHIPS

- 2014 School of Global Environmental Sustainability Leadership Fellowship
- 2014 Douglas L. Gilbert Memorial Scholarship – 1,650 USD
- 2013 Eugene Decker Fellowship – 5,000 USD
- 2009 The Wildlife Society student travel grant – 500 CAD
- 2009 Faculty of Graduate Studies and Research Professional Development and Travel Grant – 500 CAD
- 2008 J. Gordin Kaplan Graduate Student Award – 500 CAD
- 2008 Department of Biological Sciences Travel Award – 500 CAD

MENTORING

POSTDOCTORAL RESEARCHERS

- 2019- Robby Marrotte; Effects of harvest on wildlife populations.

GRADUATE STUDENTS

- 2020- Grace Bullington, MSc Trent University;
- 2020- Brynn McLellan, MSc Trent University; Environmental and anthropogenic drivers of black bear population dynamics.
- 2019- Tyler Ross, PhD York University; Space-use, movement and denning of polar bears in the Southern Hudson Bay subpopulation.
- 2018- Maegwin Bonar, PhD Trent University; Untangling the physiological, genetic and environmental drivers of animal movement. Funded through NSERC Vanier Graduate Scholarship.

- 2018- Evan Kopsala, MSc Trent University; Black bear population structure and dynamics in Ontario.
- 2018- Helena Rheault, PhD Trent University; The role of memory in the development of movement patterns in wolves. Funded through Ontario Graduate Scholarship.
- 2018- Sarah Haworth, MSc Trent University; Spatial patterns of chronic wasting disease susceptibility in white-tailed deer. Funded through NSERC Canadian Graduate Scholarship.
- 2017-2019 Andre Fetzer, MSc University of Natural Resources and Life Sciences, Vienna; Drivers of elevational migrations in mountain goats

UNDERGRADUATE

- 2020- Shilah LeFeuvre, honours undergraduate thesis
- 2020 Abbygail Satura, summer employment opportunity student
- 2020 Shilah LeFeuvre, summer employment opportunity student
- 2020- Noah Wightman, honours undergraduate thesis
- 2020- Noah Wightman, NSERC USRA student
- 2019-2020 Aidan Jamieson, honours undergraduate thesis
- 2019 Abbygail Satura, summer employment opportunity student
- 2019 Shilah LeFeuvre, summer employment opportunity student
- 2018-2019 Felipe Aguiar, honours undergraduate thesis
- 2018 Felipe Aguiar, summer employment opportunity student
- 2018 Evan Kopsala, summer employment opportunity student
- 2017 - 2018 Sam Geller, Trent University, conservation intern
- 2014 - 2016 Alex Avrin, Colorado State University, honors thesis

TEACHING

- 2019 ENLS-5099H: Applied hierarchical modeling in wildlife ecology. Trent University. Instructor of record.
- 2018 Applied Hierarchical Modeling and Site Occupancy Workshop. Oregon State University. Organized and delivered 3 day workshop.
- 2015 Fish and Wildlife 104-001: Wildlife Ecology and Conservation. Colorado State University. Co-lecturer with full course responsibility.
- 2015 Fish and Wildlife 104-801: Wildlife Ecology and Conservation Online version. Colorado State University. Co-instructor with full course responsibility.
- 2015 AniMove (animal movement and remote sensing for conservation). Smithsonian Conservation Biology Institute. Instructor.

GRADUATE COMMITTEES

- 2019- Rachel Derbyshire: Examiner Ph.D. candidacy exam
- 2018- Laruen Hooton: Examiner Ph.D. candidacy exam
- 2017- Spencer Anderson: M.Sc.
- 2017- Elizabeth Pearce: M.Sc.
- 2017- Laura Scott: M.Sc.
- 2017- Jennifer Baici: Examiner Ph.D. candidacy exam
- 2017- Sarah Haworth: second reader for undergraduate honours thesis

SCIENCE COMMUNICATION, OUTREACH AND SERVICE _____

PROFESSIONAL COMMITTEES

- 2018 – Representative to the Southern Hudson Bay polar bear subpopulation total allowable harvest technical working group
- 2017 – Ontario Representative to Canada’s Federal, Provincial, Territorial Polar Bear Technical Committee
- 2017 – Ontario Representative to the Northeast Black Bear Technical Committee
- 2017 – Canadian Section of the Wildlife Society Awards Committee (chair 2019 – present)

STAKEHOLDER PRESENTATIONS AND OUTREACH

- 2020 Algonquins of Ontario – presentation on current state of science on moose populations on their traditional territory
- 2020 Southern Hudson Bay User-to-User total allowable harvest meeting – presentation on polar bear subpopulation status to meeting of Indigenous communities involved in co-management of polar bears in Southern Hudson Bay Polar Bear Subpopulation
- 2019 Weenusk First Nation Science Fair – helped organize and deliver 3 day science fair to Weenusk First Nation Chief, Council, school and community
- 2019 Northern Ontario Bear Managers Association – Peterborough, Ontario
- 2019 Ontario Big Game Management Advisory Council – Thunder Bay, Ontario
- 2018 Weenusk First Nation Community Presentation – Peawanuck First Nation
- 2018 Weenusk Chief and Council – Peawanuck First Nation
- 2018 Fort Severn Chief and Council – Fort Severn First Nation
- 2015 Bureau of Land Management and Colorado Parks and Wildlife – Meeker, CO
- 2015 Colorado Parks and Wildlife – Newcastle, CO
- 2015 Colorado Parks and Wildlife – Fort Collins, CO
- 2014 Piceance Basin wildlife research stakeholder group – Grand Junction, CO
- 2014 California Council on Science and Technology Committee on Well Stimulation – Teleconference presentation
- 2012 Piceance Basin wildlife research stakeholder group – Grand Junction, CO
- 2011 Piceance Basin wildlife research stakeholder group – Grand Junction, CO
- 2010 Northern Alberta Chapter of Safari Club International – Edmonton, AB

- 2010 Shell Global – Calgary, AB
 2009 Shell Global – Calgary, AB
 2009 Willow Valley Trophy Club – Pincher Creek, AB
 2008 Bears, Wolves and People Community Meeting – Twin Butte, AB
 2008 Beaver Mines Community Meeting – Beaver Mines, AB
 2008 Crowsnest Conservation Society – Blairmore, AB

POPULAR SCIENCE ARTICLES

Northrup, J. M. & M. S. Boyce. 2010. Boneyards and bears. *Alberta Outdoorsman Magazine* April Issue.

Northrup, J. M., B. Cristescu & M. S. Boyce. 2008. Grizzly bears, roads, and industrial development. *Safari Club International Northern Alberta Chapter News Letter*.

OUTREACH TRAINING

- 2014 - 2015 Sustainability Leadership Fellow, School of Global Environmental Sustainability, Colorado State University
 2014 Workshop on communicating science to the public and policy makers

JOURNAL REVIEWS

Advances in Ecology (1), Annals of Applied Statistics (1), Australian Journal of Zoology (2), Behavioral Ecology (1), Biological Conservation (1), Biology Letters (1), Condor (2), Conservation Biology (1), Diversity and Distributions (1), Ecological Applications (2), Ecology (2), Ecology and Evolution (2), Ecology and the Environment (1), Ecography(1), Ecosphere (2), European Journal of Wildlife Research (1), Frontiers in Wildlife Biology (1), Global Change Biology (1), Human Dimensions of Wildlife (2), Journal of Animal Ecology (3), Journal of Applied Ecology (1), Journal of Fish and Wildlife Management (2), Journal of Wildlife Management (4), Mammalian Biology (1), MethodsX (1), Oecologia (1), PeerJ (1), PLoS One (6), Proceedings of the Royal Society of London: B (1), Scientific Reports (1), Wildlife Society Bulletin (4)

ABSTRACT REVIEWS

- Abstract reviewer, 2020 annual meeting of The Wildlife Society
 Abstract reviewer, 2019 annual meeting of The Wildlife Society
 Abstract reviewer, 2018 annual meeting of The Wildlife Society
 Symposium reviewer, 26th International Congress for Conservation Biology

SYMPOSIA ORGANIZED

Northrup, J.M., J. Tigner, C. Burton & G. Wittemyer. Integrating cutting-edge science into regulations and mitigation measures for oil and gas development. The 2nd North American Congress for Conservation Biology Meeting, Missoula, MT. 2014.

INVITED TALKS

Full list of talks and posters at end of C.V. (44 total)

15. **Northrup, J.M.** Spatial ecology of wildlife in human-modified landscapes. Invited seminar to Natural Resources and Environment Department, University of New Hampshire, Durham, New Hampshire, 2020.
14. **Northrup, J.M.** Spatial ecology of wildlife faced with environmental change. Invited seminar to Department of Forest Ecosystems and Society, Oregon State University, Corvallis, Oregon, 2020.
13. **Northrup, J.M.** Polar bears of Southern Hudson Bay: current status and ongoing research and monitoring. Plenary talk at Toronto Zoo polar bear workshop, Ajax, ON, Canada, 2019.
12. **Northrup, J.M.,** D. Potter & E. Howe. Research to inform management of black bear populations in Ontario. Ontario Ministry of Natural Resources and Forestry Science Insights Seminar, Peterborough, ON, Canada, 2019.
11. **Northrup, J.M.** Spatial ecology of wild animals in human-modified landscapes. Ledermann Lecture in Conservation and Natural History, University of Rhode Island, Kingston, RI, USA, 2018.
10. **Northrup, J.M.** Spatial ecology of wildlife in human-modified landscapes. Biology Seminar Series, Trent University, Peterborough, Ontario, 2018.
9. **Northrup, J.M.,** C.R. Anderson, B.D. Gerber & G. Wittemyer. How can animal movement inform conservation and management? A case study with Mule Deer. The Wildlife Society Annual Meeting, Raleigh, North Carolina, 2016.
8. **Northrup, J.M.,** M.B. Hooten, C.R. Anderson & G. Wittemyer. Using movement models to examine behavior-specific habitat selection. The Wildlife Society Annual Meeting, Winnipeg, Manitoba, 2015.
7. **Northrup, J.M.,** C.R. Anderson & G. Wittemyer. Habitat selection and the hierarchy of behavioral scales. Canadian Society for Ecology and Evolution, Saskatoon, 2015.
6. **Northrup, J.M.,** P. Lendrum, C.R. Anderson & G. Wittemyer. Behavioral responses of mule deer to natural gas development: insights for mitigation. The Wildlife Society Annual Meeting, Pittsburgh, PA. 2014.
5. **Northrup, J.M.,** J. Tigner, C. Burton & G. Wittemyer. Integrating cutting-edge science into regulations and mitigation measures for oil and gas development. The 2nd North American Congress for Conservation Biology Meeting, Missoula, MT. 2014.

4. **Northrup, J.M.**, C.R. Anderson & G. Wittemyer. Behavioral response of mule deer to natural gas development: implications for mitigation. The annual conference of the Colorado Chapter of the Wildlife Society, Fort Collins, CO. 2014.
3. **Northrup, J.M.**, Energy development impacts to wildlife. Student Chapter of the Society for Conservation Biology, Fort Collins, CO. 2012.
2. **Northrup, J. M.** Resource selection functions for modeling wildlife-habitat relationships. Alaska Fish & Game, Juneau office, Juneau, AK. 2011.
1. **Northrup, J. M.** & M. S. Boyce. Access management for grizzly bear conservation. International Congress for Conservation Biology. Edmonton, Alberta. 2010.

PROFESSIONAL ORGANIZATIONS _____

2010 -	Society for Conservation Biology
2008 -	The Wildlife Society
2011 - 2016	Colorado Chapter of the Wildlife Society
2013 - 2014	International Association for Society and Natural Resources
2009 - 2012	International Bear Association
2007 - 2010	Alberta Chapter of the Wildlife Society

FULL LIST OF SCIENTIFIC PRESENTATIONS AND POSTERS _____

ORAL PRESENTATIONS

24. **Northrup, J.M.**, A. Derocher, M. Dyck, A. Johnson, N. Lunn, K. Middel, M. Obbard, V. Sahanatien & G. Thiemann. Do the Hudson Bay polar bear subpopulation boundaries contribute to effective harvest management? ArcticNet Annual Scientific Meeting, Ottawa, ON, Canada, 2018.
23. **Northrup, J.M.**, J.W. Rivers, Z. Yan & M.G. Betts. Synergistic effects of climate and land-use change and bird population dynamics. North American Congress for Conservation Biology, Toronto, ON, Canada, 2018.
22. **Northrup, J.M.** Spatial ecology of large mammals in human modified landscapes. Ontario Ministry of Natural Resources, Peterborough, ON, Canada, 2017.
21. **Northrup, J.M.**, J.W. Rivers, S.K. Nelson, D.R. Roby, L.J. Adrean & M.G. Betts. Spatiotemporal patterns of corvid distribution and abundance in Marbled Murrelet nesting habitat. Annual Meeting of the Oregon Chapter of the Wildlife Society, Pendleton, OR, 2017.

20. **Northrup, J.M.**, J.W. Rivers, S.K. Nelson, D.R. Roby, L.J. Adrean & M.G. Betts. Spatiotemporal patterns of corvid distribution and abundance in Marbled Murrelet nesting habitat. Annual Meeting of the Pacific Seabird Group.
19. **Northrup, J.M.**, Assessing and mitigating land-use change impacts to wildlife. Haub School of Environment and Natural Resources Faculty Search Seminar, University of Wyoming, Laramie, WY, 2015.
18. **Northrup, J.M.**, Mule deer behavioral response to natural gas development in the Piceance Basin. Department of Fish, Wildlife and Conservation Biology Seminar Series, Colorado State University, Fort Collins, CO, 2015.
17. Boyce, M.S., S. Ciuti, C. Prokopenko, D. Seidel, H. Thurffjell, T. Avgar, A. Morehouse, **J.M. Northrup** & M. Musiani. Access management can work. The 2nd North American Congress for Conservation Biology Meeting, Missoula, MT. 2014.
16. Wittemyer, G., **Northrup, J.M.**, J. Tigner & C. Burton. Mitigation of energy development impacts. The 2nd North American Congress for Conservation Biology Meeting, Missoula, MT. 2014.
15. **Northrup, J.M.** & G. Wittemyer. Identifying and mitigating impacts to wildlife from emerging energy development. International Symposium on Society and Resource Management, Estes Park, CO. 2013.
14. **Northrup, J.M.**, M.B. Hooten, C.R. Anderson Jr. & G. Wittemyer. Guidance for resource selection functions. Annual conference of the Colorado Chapter of the Wildlife Society, Colorado Springs, CO. 2013.
13. **Northrup, J.M.**, C.R. Anderson Jr. & G. Wittemyer. Impacts of natural gas development on mule deer behavior in the Piceance Basin, Colorado. Annual conference of The Wildlife Society, Portland, OR. 2012.
12. **Northrup, J.M.** & G. Wittemyer. Understanding the impacts of rapid domestic energy development on wildlife systems with an eye towards mitigation. The 1st North American Congress for Conservation Biology Meeting, Oakland, CA. 2012. **Paper presented by G. Wittemyer.**
11. **Northrup, J.M.**, C.R. Anderson Jr. & G. Wittemyer. Mule deer behavioral response to natural gas development in the Piceance Basin, Colorado. Front Range Student Ecology Symposium, Fort Collins, CO. 2012.
10. **Northrup, J.M.**, C.R. Anderson Jr. & G. Wittemyer. Behavioral response of mule deer to energy development in the Piceance Basin. Annual conference of the Colorado Chapter of the Wildlife Society, Fort Collins, CO. 2011.

9. **Northrup, J. M.**, G. B. Stenhouse & M. S. Boyce. Agricultural lands as ecological traps for grizzly bears. Annual conference of The Wildlife Society, Snowbird, UT. 2010.
8. Cristescu, B., **J. M. Northrup**, T. Larsen, G. B. Stenhouse & M. S. Boyce. Human disturbances influence bed-site selection and timing of bedding of grizzly bears. Annual conference of The Wildlife Society, Snowbird, UT. 2010.
7. Boyce, M. S., J. Pitt, **J. M. Northrup**, A. Morehouse, K. H. Knopff, B. Cristescu & G. B. Stenhouse. Autocorrelation patterns determined by ecology and behaviour. 13th International Behavioural Ecology Congress, Perth, Australia. 2010.
6. **Northrup, J. M.**, J. Pitt, T. Muhly, G. B. Stenhouse, M. Musiani & M. S. Boyce. Grizzly bears and road traffic in southwest Alberta. Annual Conference of the Alberta Chapter of The Wildlife Society, Red Deer, AB. 2010.
5. Boyce, M. S., J. Pitt, **J. M. Northrup**, A. Morehouse, K. H. Knopff, B. Cristescu & G. B. Stenhouse. Autocorrelation patterns determined by ecology and behavior. Annual Conference of The Wildlife Society, Monterey, CA. 2009.
4. Boyce, M. S., C. L. Chetkiewicz, B. Cristescu, S. E. Nielsen, **J. M. Northrup**, C. L. Roever & G. B. Stenhouse. Finding harmony between grizzly bears and humans using access management. International Congress for Conservation Biology, Beijing, China. 2009
3. **Northrup, J. M.**, B. Cristescu, G. B. Stenhouse & M. S. Boyce. Grizzly bear movement in human-altered landscapes. 10th annual Western Black Bear Workshop, Reno, NV. 2009.
2. **Northrup, J. M.**, B. Cristescu, G. B. Stenhouse & M. S. Boyce. Multi-scale movement choices of grizzly bears in the Central foothills of Alberta. Annual Alberta Chapter of The Wildlife Society Conference, Edmonton, AB. 2009.
1. Boyce, M. S., A. T. Morehouse, **J. M. Northrup** & J. Pitt. 2008. Autocorrelation characteristics in GPS radiotelemetry data. Invited talk at a conference on the analysis of GPS radiotelemetry data, Trento, Italy. 2008

POSTERS

13. Rivers, J.W., **J.M. Northrup**, M.G. Betts, S.K. Nelson & D. Roby. Evaluating space use and reproductive success of the threatened marbled murrelet in Western Oregon. North American Ornithological Conference, Washington D.C. 2016.
12. **Northrup, J.M.** & G. Wittemyer. Energy development and wildlife: what do we know and how do we mitigate impacts? Colorado State University Natural Gas Symposium, Fort Collins, CO. 2012.

11. Shafer, A.B.A., **J.M. Northrup**, K.S. White, M.S. Boyce, S.D. Cote & D.W. Coltman. Habitat selection predicts genetic relatedness in an alpine ungulate. 13th Congress of the European Society for Evolutionary Biology. Tübingen, Germany. 2011.
10. Cristescu, B., **J.M. Northrup**, G.B. Stenhouse & M.S. Boyce. The influence of landscape characteristics on seasonal movements of female grizzly bears. Poster presented at the Richard E. Peter Biology Conference, Edmonton, AB. 2011.
9. Pitt, J., **J. M. Northrup**, D. Patton, R. Creasey, T. Muhly, M. Musiani & M. S. Boyce. Effects of motorized access closure on elk habitat selection and movement. International Congress for Conservation Biology, Edmonton, AB. 2010.
8. **Northrup, J. M.**, G. B. Stenhouse & M. S. Boyce. Attractive conflict sinks for grizzly bears in southwestern Alberta. Richard E. Peter Biology Conference, Edmonton, AB. 2010.
7. **Northrup, J. M.**, G. B. Stenhouse & M. S. Boyce. Spatial patterns of grizzly bear-human conflict in southwestern Alberta. Annual Conference of the Alberta Chapter of The Wildlife Society, Red Deer, AB. 2010.
6. Cristescu, B., **J. M. Northrup**, M. S. Boyce & G. B. Stenhouse. The influence of landscape characteristics on seasonal movements of female grizzly bears. Annual Conference of the Alberta Chapter of The Wildlife Society, Red Deer, AB. 2010 (awarded best student poster).
5. **Northrup, J. M.**, G. B. Stenhouse & M. S. Boyce. Spatial patterns of grizzly bear-human conflicts in southwestern Alberta. 3rd International Workshop on Bear-People Conflicts. Canmore, AB. 2009.
4. **Northrup, J. M.**, B. Cristescu, G. B. Stenhouse & M. S. Boyce. Grizzly bear movement in human-altered landscapes. Annual Conference of The Wildlife Society, Monterey, CA. 2009.
3. Cristescu, B., **J. M. Northrup**, G. B. Stenhouse & M. S. Boyce. Seasonal habitat selection patterns of grizzly bears. Annual Conference of The Wildlife Society, Monterey, CA. 2009.
2. Cristescu, B., **J. M. Northrup**, G. B. Stenhouse & M. S. Boyce. Seasonal habitat selection patterns of female grizzly bears. Annual meeting of the Alberta Chapter of The Wildlife Society, Edmonton, AB. 2009.
1. **Northrup, J. M.**, M. S. Boyce & G. B. Stenhouse. The effects of roads and road access management on grizzly bear (*Ursus arctos*) habitat use and movement in Southwest Alberta. Annual meeting of the Alberta Chapter of the Wildlife Society, Red Deer, AB. 2008.