

CURRICULUM VITAE

Mark Hebblewhite

Wildlife Biology Program
Department of Ecosystem and Conservation Sciences
W.A. Franke College of Forestry and Conservation
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CITIZENSHIP

Canadian citizen, British citizen by Naturalization, United States of America citizen since 2015.

EDUCATION

2006. Doctor of Philosophy in Ecology, Department of Biological Sciences, University of Alberta.
January 2006. Dissertation title: Linking predation risk and forage to ungulate population dynamics. Advisor, Dr. E.H. Merrill.
2000. Master's of Science in Wildlife Biology. University of Montana. 2000. Thesis title: Wolf- Elk predator-prey dynamics in Banff National Park. Advisor, Dr. D.H. Pletscher.
1995. Bachelor of Science, Honours, Major in Biological Science in Pure and Applied Ecology.
University of Guelph. 1995. Advisor, Dr. T. Nudds.

ACADEMIC POSITIONS

- 2017 TO PRESENT. Professor in Ungulate Habitat Ecology. Wildlife Biology Program, Department of Ecosystem and Conservation Sciences, University of Montana, Missoula, MT, USA. Effective October 1, 2017.
2015. Visiting Scholar. Yellowstone wolf project, Yellowstone Center for Resources, Yellowstone National Park, Mammoth, Nov 1 – Dec 15, 2015.
2013. Visiting Scientist. Dept. Biodiversity and Molecular Ecology, Research and Innovation Centre Fondazione Edmund Mach, San Michele All'Adige, Trentino, Italy. July 1, 2013 – June 30, 2014.
- 2011 - 2017. Associate Professor in Ungulate Habitat Ecology. Wildlife Biology Program, Department of Ecosystem and Conservation Sciences, University of Montana, Missoula, MT, USA. Effective October 1, 2011. Granted continuous tenure April 2012.
2006. Assistant Professor in Ungulate Habitat Ecology. Wildlife Biology Program, Department of Ecosystem and Conservation Sciences, University of Montana, Missoula, MT, USA. August 1, 2006 to October 1, 2011.
2006. NSERC Post-Doctoral Fellow. Department of Zoology, University of British Columbia, Vancouver, B.C. Migratory ungulate population dynamics. Advisor, Dr. A.R.E. Sinclair. January 2006 – July 2006.

ACADEMIC AWARDS AND SCHOLARSHIPS

Alberta Chapter of the Wildlife Society: Outstanding Article of the Year, Alberta Chapter of the Wildlife Society, 2017. Steenweg et al. (2016).

Alberta Chapter of the Wildlife Society: Outstanding Article of the Year, the Alberta Chapter of the Wildlife Society, 2014. Hervieux et al. (2013).

Wildlife Society Publication Award: Outstanding Article of the Year, The Wildlife Society, 2013. Hurley et al. (2013).

Steve Running Research Award, College of Forestry and Conservation, University of Montana, 2012.

Wildlife Society Publication Award: Outstanding Article of the Year, The Wildlife Society, 2011. Beyer et al. (2010).

Canadian Society of Zoologists T.W.M. Cameron Outstanding PhD Thesis Awardee for 2006, National level award for best PhD thesis.

NSERC Dissertation Prize award nominee for the University of Alberta, 2006.

Martha Piper Graduate Award for Excellence in Scientific Communication, University of Alberta, 2006.

National Science and Engineering Research Council (NSERC) Post-Doctoral Fellowship, (\$80,000), 2005.

Parks Canada National Ecological Integrity Merit Award, Restoration of Ecosystems. In recognition of contribution to ecosystem management, Banff National Park, 2005.

Andrew Stewart Memorial Prize, University of Alberta (\$5,000), 2005.

Canon National Parks Science Scholars Program, Baja Retreat (\$2,500 USD), 2005.

Canon National Parks Science Scholars Program, Vieques, Puerto Rico, Retreat (\$3,000 USD), 2003.

Bill Shostak Wildlife Award, University of Alberta, (\$10,000), 2003.

Canon National Parks Science Scholars Program for the Americas Scholarship, 3 years' full stipend and research funding (\$78,000 USD), 2002.

Poster Presentation Award at the Alberta Chapter of the Wildlife Society, 2003.

Graduate Research Assistantship Scholarship (GRA), 2002-03.

Graduate Teaching Assistantship, University of Alberta (GTA), 2001-02.

George Bright Graduate Excellence Scholarship, University of Montana, 1999.

Graduate Teaching Assistantship, University of Montana, 1998, 1999.

Les Pengelly Memorial Graduate Excellence Scholarship, University of Montana, 1998.

EDUCATIONAL ACTIVITIES**Teaching Experience**

Fall 2007, 2009, 2011; Spring 2015, 2017, 2019, 2021	Course Instructor for WBIO 562 Wildlife Habitat Modelling graduate level course (3 credits) to 15-22 graduate students. Designed lectures and GIS and statistical software-based labs. Overall teaching evaluation 4.2/5.
Spring 2007, 2008, 2009, 2010, 2016, 2017, 2018, 2019, 2020; Fall 2011, 2014	Course Instructor for WILD 370 Wildlife Habitat Conservation and Management (3 credit hours) to ~25 students. Designed syllabus, lectures, and labs, as well as lead 4-6 field trips/year. Overall teaching evaluation 3.8/5 (8 years)
Fall 2014, 2016, 2018, 2020	Course Instructor for WILD 240 – Honors Biostatistics (3 credit hours) to ~18 students/semester. Introductory biostatistics with hands-on R exercises taught in computer lab to the Wildlife Biology Programs top sophomore students. Overall teaching evaluation 3.1/5 (2 years).
Fall 2013	Course Instructor for Introduction to Habitat Modelling in R, a 5-day (36 hour) graduate-level workshop taught at the Foundation Edmund Mach, San Michele Institute, Italy. Eight students.
Ongoing	Guest Lecturer for WILD 291 (3 lectures, Fall 2012), BIOE 340 (Ecology, 2013, 2012, 2011, 2010), NRSM 365 (2012, 2013), WILD 275 (2014), WILD 480 (2016), WILD 180 (2014).
Fall 2012, 2018, 2020	Course Instructor for WILD 541 – 01, Introduction to Research Design in R, a graduate level (1 credit, 2 lab hours/week) accompanying course to WILD 540 (taught by Dr. Lisa Eby) introducing students to using R in wildlife ecology. Teaching evaluation score 4.7/5 (1-year).
Fall 2008, 2010	Course Instructor for WBIO 595 Wildlife Survival Modelling, a graduate level course (3 credits). Teaching evaluation 4.1/5.
Spring 2008	Course Instructor for WBIO 495 Canadian Rockies Wildlife Conservation graduate level course (1 credit) to international students from Pakistan and Bhutan on National park management and wildlife conservation, organized field trip to Banff and Jasper National Parks for spring break.
Spring 2007, 2008, 2009, 2010, 2011	Course Instructor for WILD 275 Wildlife Conservation (2 credit hours) to 55-60 students. Designed syllabus, lectures, and maintained class websites. Overall teaching evaluation 4.3/5 (5 years)
Winter 2003	Co-Instructor (co-taught with Dr. Stan Boutin) for BIOL 633, Graduate student course on predator-prey dynamics, University of Alberta.
2001 & 2002	Graduate Teaching Assistant for two semesters of BIOL 430, experimental ecology, a 4 th year biostatistics course, University of Alberta.

2001	University Teaching Services, attended University of Alberta graduate teaching assistant training courses, 20-hours instruction.
2000	Teaching Assistant for 1 semester of WBIO 370 Wildlife Techniques, and 2 semesters of WBIO 180 Introduction to Natural Resources, U. of Montana.

Mentoring & Training**POST-DOCTORAL FELLOWS**

Name	Year	Research topic	Present Position
1.Dr. Clayton Lamb	2020 – present	Liber Ero Fellowship: Testing indigenous conservation strategies with mountain caribou. Co-advised with Adam Ford, UBC-O.	Ongoing.
2.Dr. Sara Williams	2019 - 2021	Caribou and elk habitat and migration analyses, multispecies occupancy modelling, grizzly-bear conflict risk modelling.	Biometrician, Panthera LLC.
3. Dr. Eliezer Gurarie	2017 – 2019	NASA Arctic Boreal Vulnerability Experiment caribou analyses	Assistant Professor, SUNY-ESF
4. Dr. Wenhong Xiao	2-year appointment 2015 - 2017	Amur tiger habitat and population ecology and conservation in NE China, Funding by Chinese National Academy of Sciences	Research scientist, Chinese Academy of Sciences.
5. Dr. Andrew Jakes	4-year appointment 2015 – 2018	Pronghorn antelope connectivity in the Northern Sagebrush Steppe – The Nature Conservancy MT, Alberta Conservation Association, National Wildlife Federation.	Smithsonian, Great Plans Senior Research Scientist.
6. Dr. Bill Smith	1 year 0.5 FTE appointment 2013/14	Remote sensing applications to global population dynamics of elk and caribou: NASA funded.	Arizona State University, Assistant Professor.
7. Dr. Hugh Robinson	2-year appointment 2007-2009 2-year appointment	Spatial dynamics between fire, caribou, and elk in Jasper National Park Cougar habitat & population modelling in Montana.	Director, Landscape Analysis Lab, Panthera, New York & Wildlife Biology Program Faculty Affiliate

8. Dr. Kathleen Griffin	2009-2011	Spatial meta-analyses of elk calf survival data across the Pacific Northwest.	State-wide Species Conservation Coordinator, Sage Grouse Colorado Division of Parks and Wildlife
	1-year appointment, 2008-2009		

GRADUATE STUDENTS - CURRENT

Student	Degree & Year	Thesis topic
22. Connor Meyer	PhD, in progress	Ya Ha Tinda reproductive ecology of elk in a complex predator-prey system.
21. Scott Waller	MS, in progress	Estimating abundance of tiger prey in the Russian Far East with remote cameras (co-advised with Jedediah Brodie)
20. Tara K. Meyer	PhD, in progress	Long-term elk-wolf dynamics and climate change in the Ya Ha Tinda ecosystem, Banff National Park.
19. Brenna Cassidy	PhD, in progress	Wolf survival and recruitment in Yellowstone National Park (NSF GFRP awardee).
18. Libby Ehlers	PhD, in progress	Nutritional ecology of the Fortymile caribou herd, Alaska.
17. Matt Metz	PhD, in progress	Wolf-prey dynamics in the multiprey system of Yellowstone National Park

GRADUATE STUDENTS - PAST

Student	Degree & Year	Thesis topic	Current Position
16. T.J. Clark	PhD, Spring 2021	Predator-prey dynamics modelling of large mammal predator-prey systems (NSF GFRP awardee; co-advised with Angie Luis).	Post-doctoral researcher, U. Washington.
15. Eric Palm	PhD, Spring 2021	Spatiotemporal variation in movement and resource selection in caribou across the Arctic Boreal of North America.	Post-doctoral researcher, USFS.
14. Hans Martin			Researcher, Speedgoat LLC.

	PhD, Spring 2021.	Long-term predator-prey dynamics in Ya Ha Tinda ecosystem, Banff National Park.	
13. Tshering Tempa	PhD, Spring 2017.	Ecology and conservation of the Bengal Tiger in Bhutan.	Faculty/Tiger Research Center Director, UWICE, Bhutan.
12. Robin Steenweg	PhD, Fall 2016.	Multi-species remote camera occupancy modelling in the Canadian Rockies	Alberta Woodland Caribou Species-at-Risk Biologist
11. Derek Spitz	PhD, Fall 2015.	Partial migration in endangered Sierra Nevada bighorn sheep	Oregon State University – USFS Starkey Postdoctoral Fellow.
10. Mark Hurley	PhD, April 2016.	Linking summer habitat quality to population performance in mule deer	IDFG Wildlife Research Section Chief
9. Wibke Peters	PhD, Fall 2015	Climate change effects on partial migration in Roe Deer in the Italian Alps	Wildlife Research Biologist, Bavarian Ministry of Forests, Munich, Germany.
8. Daniel Eacker	MS, Fall 2015	Top-down and bottom-up drivers of elk calf survival	Research Wildlife Biologist, Alaska Department of Fish and Game.
7. Clay Miller	MS, Spring 2012	Amur Tiger predator-prey dynamics, Russian Far East	Federal Emergency Management Agency (FEMA).
6. Scott Eggeman	MS, Spring 2012	Regulation of partial migration in elk	Wildlife Biologist, MT Fish Wildlife and Parks
5. Nick DeCesare	PhD, Spring 2012	Spatial population viability of caribou in west-central Alberta	Research Biologist, MT Fish Wildlife and Parks.

4. Wibke Peters	MS, Spring 2011	Evaluating moose habitat relationships for caribou recovery	Wildlife Research Biologist, Bavarian Ministry of Forests, Munich, Germany.
3. Lacey Greene	MS, 2010	Restoring habitat for endangered Sierra Nevada Bighorn sheep	CDFG Wildlife Biologist, Sierra Nevada Bighorn Recovery Program
2. Jean Polfus	MS, 2010	Comparing traditional ecological knowledge and resource selection for Northern Mountain Caribou	Liber Ero Post-doctoral Fellow, University of Manitoba.
1. Shawn Cleveland	MS, Spring 2010	Elk ecology and management in the wildland-urban-interface	Assistant Professor SUNY-ESF, PhD student.

UNDERGRADUATE THESIS STUDENTS (*INDICATES PUBLISHED A PAPER FROM THEIR THESIS).

Student	Year	Thesis topic
12. Trevor Weeks	2020	Evaluating top-down and bottom-up drivers of long-term grassland productivity at the Ya Ha Tinda range.
11. Annie Jehle	2019	Wolf pup recruitment in Yellowstone National Park.
10. Mateen Hessami	2019	Monitoring elk calf recruitment and life-history with remote camera's.
9. Jeremy SunderRaj	2018	Sightability of gray wolves in the Northern Range of Yellowstone National Park.
8. Steven Cross	2017	Factors influencing mountain lion kill rates in Colorado, California and Patagonia.
7. Emily Burkholder*	2015	Fence crossing mitigation and effects on white-tailed and mule deer in Central Montana.
6. Ellen Brandell	2015	Wolf-cougar occupancy and competition in the Canadian Rockies (UMCUR 1 st prize award for presentation, Spring 2015).
5. Matthew Morgan-Henderson*	2013	Modeling multi-scale resource selection for bear rubs in northwestern Montana.
4. Michel Kohl*	2008	Elk-weed dynamics in the wildland urban interface (MILES internship recipient, Fall 2008).
3. Scott Eggeman*	2007/ 2008	Influences of climate and density on fluctuating asymmetry in elk in the Greater Yellowstone Ecosystem (MILES Fellowship winter for 2007/08)
2. Brynn Nelson*	2008	Spatial epidemiology of wolves in the Canadian Rockies.

1. Joshua F. Goldberg*	2009, 2010	Mathematical modelling of wolf-elk source-sink dynamics in Banff National Park.
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GRADUATE COMMITTEE SERVICE

- Between Fall 2006 and Fall 2020 I served on ~83 MS and PhD committees at the University of Montana (77), University of Calgary (3), University of Alberta (1), Université Laval (1), and Royal Rhodes University in Victoria (1) in the Wildlife Biology Program, Organismal Biology and Ecology Program, and Environmental Studies programs at the University of Montana.
- I chaired 12 PhD comprehensive exam committees from 2006 – 2020.
- Paoli, Amelie. 2014. Paysage de la peur et effets indirects de la prédation sur la sélection de l'habitat par le wapiti (*Cervus elaphus canadensis*). Diplôme de Master 2, Laboratoire de Biométrie et Biologie Evolutive Equipie Ecologie Evolutive des Populations. Sous la direction de: Christophe Bonenfant & Mark Hebblewhite. Université Claude Bernard Lyon 1, Lyon, France. June 12, 2014. - I co-advised this 1-year MS thesis at Université de Lyon during my sabbatical.
- External PhD examiner at the University of Kwa-Zulu-Natal, South Africa, January 2014. PhD candidate Dr. Julien Fattenbert, "*Spatial Ecology of a Leopard Population Recovering from Overharvest, KwaZulu-Natal, South Africa*"
- External PhD examiner at Yale University, Spring 2014, PhD candidate Dr. Jennifer Miller, "*Examining predation risk as a guide for mitigating large carnivore attacks on wildlife*".
- External PhD examiner at the University of Oslo, Fall 2011, for Dr. Floris van Beest, PhD title "*Factors affecting the spatiotemporal distribution of moose, with a special emphasis on supplementary feeding*".

PROFESSIONAL SERVICE

Professional Appointments

2014 to 2020	Board Member, Yellowstone to Yukon Conservation Initiative. Chairman of the Y2YCI Foundation. Served two 3-year terms.
2014 to 2018	Associate Editor, Ecology and Ecological Monographs.
2014 to 2015	Associate Editor, Journal of Wildlife Management.
2014 to 2017	Associate Editor, Proceedings of the Bhutan Ecological Society
2007 to present	Scientific Advisory Group Member for the Critical Habitat Review for the Boreal Caribou Recovery Plan, Environment Canada, chaired by Dr. Fiona Schmiegelow. • Participated in science review of critical habitat for boreal caribou • Population viability analysis (PVA) team member • Environmental niche modeling (ENM) team member • First Report released April 9, 2009, second report released August 2011. See media coverage and technical reports below. • Participated in the revised calf recruitment and disturbance national meta-analysis in 2016/17. • Participated in reviews of the SK1 population unit report in 2017.

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| 2011 to 2019 | U.S. Fish and Wildlife Service Sierra Nevada Bighorn Sheep Recovery Implementation Team, Science Advisor <ul style="list-style-type: none">• Annual in-person meetings, semi-annual conference call meetings to review the Science guiding the Implementation of the Recovery Plan for the Federally Endangered Sierra Nevada Bighorn Sheep. |
| 2007 to 2011 | Scientific Member of the Alberta Caribou Recovery Team – Research and Monitoring Subcommittee <ul style="list-style-type: none">• Lead development of scientific recommendations to the Alberta Caribou recovery team’s governance board. |
| 2006 to 2012 | Associate Editor, Journal of Applied Ecology, British Ecological Society. Served 6-years as Associate Editor. |
| 2001, summer | Volunteer Consultant, Altai-Sayan Ecoregion Project, World Wildlife Fund, Mongolia. Assisted in design & collection of wildlife data and conducted herder interviews in Western Mongolia. |
| 1997 to 2002 | Board Member of the Banff National Park (BNP) citizens and scientific committees of the Elk management board. |

PROFESSIONAL ACTIVITIES

University Committees & Service

- Faculty Senate, Academic years 2018/19 – 2020/2021.
- Franke College of Forestry and Conservation Dean Search Committee, Spring 2019.
- Crown Reporting Fund Dinner, UM School of Journalism, October, 2017, 2018.
- Ecology Program and Organization Review (EPOR) Committee appointed by President Royce Engstrom, Academic year 2015/16.
- Faculty Evaluation Committee (FEC) Chair Fall 2015, Department of Ecosystem and Conservation Sciences.
- Boone and Crockett Endowed Chair in Wildlife Conservation search committee Chair, Fall / Winter 2015/6.
- Presentation to the UM Board of Regents, College of Forestry and Conservation Campus Tour, November 2014.
- UM Pedagogy project presentation, professional development session “To curve or not to curve: should we adjust our expectations based on student performance?” UM Pedagogy project microtalk, October 2, 2014.
- Fisheries Conservation Genomics search committee Chair, Fall 2014. Successfully hired Dr. Andrew Whiteley.
- Crown Reporting Fund Dinner, UM School of Journalism, November 19, 2014.
- Wildlife Biology Program Director Search committee, Spring 2013.
- Laboratory Animal Research (LAR) Veterinarian Search Committee member, Fall/Spring 2011/2012. Successfully interviewed 12 candidates leading to the successful hire of Dr. Donna Lewis, DVM.
- Quantitative Wildlife Ecologist search committee chair, Fall/Spring 2010/2011. Successfully

interviewed 44 candidates leading to the successful hire of Dr. Paul Lukacs.

- Wildlife Biology Program seminar committee chair, responsible for organizing and scheduling departmental seminar series, 2006 – 2010.
- Wildlife Biology Program website committee, Fall 2009.
- W.A. Franke College of Forestry & Conservation (CFC) Undergraduate Committee, 2006 – 2012.
- Wildlife Biology Program Undergraduate Committee, 2006 – present; Chair 2015 – present.
- W.A. Franke College of Forestry and Conservation Lubrecht Experimental Forest Planning committee, 2006 – 2008.

Professional Memberships

- Member of the American Association for the Advancement of Science, 2015 – present.
- Ecological Society of America member since 2005.
- Society for Conservation Biology member since 1995.
- Wildlife Society member since 1996.

Grant Review Activities

- NSF Population and Community Ecology (PCE) proposal reviewer panellist, Fall 2008 and Spring 2021 - Washington, D.C. Lead reviewer for 15-20 proposals for each NSF funding panel, participating in two 3-day panel review workshop for > 100 proposals.
- NASA Biodiversity and Ecological Forecasting team proposal reviewer panelist, Fall 2020 - Washington, D.C. Lead reviewer for 12 proposals in the panel, participating in a five-day panel review workshop reviewing 50 proposals.
- Ad-hoc reviewer for NSF proposals Fall 2007, 2011 2013, Spring 2014, 2018, 2019, 2020.
- Invited reviewer for ~12 NSERC-Canada Discovery grants 2006 - 2021.
- Reviewer for the Alberta Conservation Associations Biodiversity and Grant Eligible Conservation funding programs, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2019 - reviewing 1-4 proposals/year.
- Reviewer for National Fellowships Committee for Sigma Delta Epsilon, Graduate Women in Science (www.gwis.org<<http://www.gwis.org/>>), May 2013.
- Proposal reviewer for the Norwegian Council review, Sept 2013.
- Proposal reviewer for the Natural Sciences and Engineering Research Council (NSERC) Canada Research Chair (CRC) for Sir Wilfred Laurier University in Northern Wildlife Biology.
- Proposal reviewer for a distinguished research chair for the Natural Resources Institute of Finland, the Luke's Research Professor in the Ecology and Conservation of Large Carnivores. July 2019.
- Reviewer for funding proposal for the Centre for Advanced Study (CAS) at the Norwegian Academy of Science and Letters in Oslo, May 2013.
- French National Research Agency for proposals for "Retour post-doctorants", August 2012, and proposals for "Retour ecologie and population", 2020.
- National Geographic Research Grants invited reviewer, 2012, 2013 and 2018.
- Invited board member of the Montana Rocky Mountain Elk Foundation Project Advisory Committee, 2006 to 2016. Reviewed 50-60 proposals/year allocating ~\$350,000/year for wildlife conservation.

Tenure Review

- Reviewed tenure application files for:
 - 2019; Colorado State University, University of Idaho.
 - 2018; SUNY-ESF, New York; Oregon State University; University of Maryland.
 - 2016; University of Washington; Utah State University.
 - 2015; University of Venezuela Instituto Venezolano de Investigaciones Cientificas
 - 2013; University of Wyoming.
 - 2013; Imperial College London, U.K.

Conference, Symposia and Workshop Organization

- Hebblewhite, M. 2018. Workshop. Climate Change 101: *Modeling wildlife responses to climate and landuse change*. One day invited workshop for 50 attendees of the North American Caribou Workshop, October 29, 2018, Ottawa, Ontario.
- Gurarie, E., Palm, E., Hebblewhite, M. 2018. "[Modern tools for spatial modeling and animal movement analysis](#)" 8-hour workshop presented to the Alaska chapter of the Wildlife Society Meeting in Anchorage, AK, on March 30, 2018 to 50 regional research biologists.
- Lukacs, P., Nowak, J., Hebblewhite, M., Martin, H. 2018. *Integrated population modeling for wildlife management: applications to caribou and elk*. Webinar presented to 43 Alberta Environment Fish and Wildlife Division Biologists and Management Personnel, Alberta Environment and Parks. March 23, 2018. 2.5 hours.
- Moderator for "Has Wolf Reintroduction to Yellowstone Provided Evidence for a Trophic Cascade?" Symposium at the 2017 Ecological Society of America Conference, Portland, OR, August 2017.
- Symposium organizer for "OOS 25- Planning for Serendipity: The Importance of Surprises in Long-Term Ecological Research", 2017 Ecological Society of America Conference, Portland, OR, August 2017.
- Symposium organizer for "Multi-scale camera trapping for landscape-scale conservation", North American Society for Conservation Biology Conference, Missoula, MT, July 2014.
- Plenary moderator and service on the conference organizing committee for the 10th Annual Western States Deer and Elk Workshop, Western Association of Fish and Wildlife Agencies (WAFWA), Missoula, Montana, May 6 – 9, 2013.
- Symposium co-organizer on "Bridging the science-policy gap in implementation of Critical habitat under the ESA and SARA" at the International Society for Conservation Biology conference, July 4- 8, 2010, Edmonton, Alberta, 2010.
- Workshop organizer for the Changbaishan tiger conservation landscape-planning workshop in Changchun, China May 25 - June 1, 2009, World Wildlife Fund/ Wildlife Conservation Society.
- Symposium co-organizer for the Wildlife-fire session at the International Association of Wildland Fire 2008 conference, The 88' fires: Yellowstone and beyond.
- Organized and chaired a symposium with Dr. Stan Boutin and Dr. Evelyn Merrill on 'Synthesizing recent advances in ungulate population dynamics' at the Wildlife Society Conference, Calgary, Alberta, 2004.

Professional Services

Conducted ~25 peer reviews/year for international scientific journals including:

Science, Nature, Science Advances, Nature Ecology and Evolution, Ecology Letters, Journal of Animal Ecology, Ecology, Ecological Applications, Journal of Applied Ecology, Journal of

- Wildlife Management, Canadian Journal of Zoology, Wildlife Biology, Alces, Biological Conservation, Rangifer, Proceedings of the Royal Society – Biological Sciences, Proceedings of the National Academy of Sciences, Ecoscience, Journal of Mammalogy, European Journal of Wildlife Research, Geophysical Research Letters, Trends in Ecology and Evolution
- Participation in a 1-day workshop between Yellowstone to Yukon Conservation Initiative and Vital Ground Foundation focused on Prioritizing conservation actions for Grizzly bear connectivity in the High Divide Region, Missoula, Montana, June 2018.
- Expert Review of Bow Valley Wildlife Corridor delineation for Alberta Environment and Parks, Canmore, Alberta. May 2018.
- Lead and organized a 1-day Aerial aircraft tour of conservation priorities with the Executive Director of Liz Claiborne-Art Ortenberg Foundation within the High Divide region, May 2017.
- External book reviewer for Oregon State University Press, Prospectus for Oregon State University Press Atlas of Wildlife Migration: Wyoming's Ungulates, Matthew Kauffman, Senior Editor, Spring 2017.
- NASA Carbon Cycle and Ecosystems Joint Sciences Workshop graduate student Mentor, April 2015 and April 2018, Maryland.
- Discussion panellist for joint USFWS Russia/US large carnivore coexistence workshop, March 23, 2017, University of Montana featuring Russian Far East Amur tiger reserve park managers and USFWS biologists and managers, University of Montana.
- External reviewer for Yukon Territorial Government Woodland caribou harvest strategies report, July 2015.
- External reviewer for the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) of the DRAFT COSEWIC Status Update for Northern, Central and Mountain caribou units, Jan 2014.
- Served as a scientific member of the Missoula Urban deer-working group, Spring 2013.
- Provided expert written testimony to the USFWS in support of wolf delisting that was used in court in May 2009 as evidence to support the delisting ruling (see reports below).
- Collaborated with Parks Canada caribou recovery team in the development of prescribed fire management guidelines for promoting caribou recovery, 2010.
- Reviewed Alberta Fish and Wildlife ungulate and wolf helicopter capture standard operating procedures and protocols, 2004.
- Reviewed Alberta Ministry of Sustainable Resource Development- Southern Alberta sustainability strategy: wildlife and biodiversity modelling component, 2004.
- Annual presentations on research and wildlife conservation to the Student chapter of the Wildlife Society, University of Alberta, 2003/2004.
- Organized an interagency LANDSAT landcover mapping meeting for a 50,000 km² area surrounding Canadian Rocky Mountain National Parks, partners, 2003.
- Scientific reviewer for Canadian Parks and Wilderness Society's "What's happening in our mountain parks" publication, 1999.

Reviewed 10 endangered species recovery plans for Society for Conservation Biology see <http://www.nceas.ucsb.edu/recovery/index.html>, 1999.

RESEARCH ACTIVITIES

Summary: Since starting at UM in 2006, I have raised >\$9.8 million in research funding from federal (60%; e.g., NASA, NSF, USFS, NPS, BLM), state (18%; e.g., Montana, California, Alberta), industry (8%; Canadian Association of Petroleum Producers) and NGO (12%; e.g., Rocky Mountain Elk Foundation, Safari Club International, Wildlife Conservation Society, The Nature Conservancy) sources.

Research Funding

2022, Alberta Conservation Association, Ya Ha Tinda developing a wild pedigree model for bull elk - Year 2, (PI), \$33,574.

2021, National Science Foundation, Navigating the New Arctic: NNA Research: Fate of the Caribou - Mechanisms and Consequences of Population and Distribution Change in the New Arctic. (Co-PI) Grant #2127271, \$2.2 Million, UM amount \$669,931

2021, National Science Foundation, LTREB Renewal: Mechanisms driving facultative switching in a partially migratory large-herbivore population. (PI). Grant #: 2038704. \$599,508.

2021, Alberta Conservation Association, Ya Ha Tinda developing a wild pedigree model for bull elk, (PI), \$33,574.

2020, Blackfoot Challenge, Spatial hotspot analysis of Grizzly bear conflicts in western Montana.(PI). \$22,500.

2020, Alberta Conservation Association, Bull elk recruitment year 4, (PI). \$10,500.

2020, Safari Club International Northern Alberta Chapter, Bull elk year 4, (PI). \$5,320.

2020, McIntire Stennis USDA, Fortymile Caribou habitat relationships, PI, \$23,908.

2020, Bureau of Land Management – Alaska, Fortymile caribou amendment (PI). \$86,300.

2020, Idaho Department of Fish and Game (IDFG), Predator-prey modeling. (Co-PI), \$46,454.

2020, Alberta Sustainable Resources Development, Alberta Fish and Wildlife Division, Caribou population viability modeling, (PI), \$60,000 CDN

2019, Safari Club International Foundation, Ya Ha Tinda Bull Elk ecology, (PI). \$55,000.

2019, Alberta Conservation Association, Bull elk recruitment, survival and harvest in a partially migratory elk herd – Year 3 (PI), \$25,000.

2019, Alberta Ministers Special License Permit, Bull elk ecology, Alberta Fish and Game Association, (PI). \$22,500.

2019, Yellowstone Forever Foundation, Yellowstone wolf-prey population dynamics, amendment (PI).

\$28,000.

- 2019, NASA Earth and Space Science Fellowships (NESSF). From Animal Movement to Ecosystem Services: Scaling-up to Ecosystem-scale Spatially-Explicit Demographic Models for Caribou, Year 3 (PI, student, Eric Palm), \$45,000.
- 2019, National Science Foundation (NSF), Yellowstone wolf project adult and pup survival and demography, Graduate Research Fellowship Program (PI, student Brenna Cassidy), \$46,000.
- 2019, Bureau of Land Management – Alaska, Fortymile caribou amendment (PI). \$95,000.
- 2018, Jasper Parks Canada. Caribou Integrated Population Viability Modeling (PI), \$22,830.
- 2018, Western Association of Fish and Wildlife Agencies (WAFWA), Pronghorn – sage grouse regional corridor modeling. (PI), \$27,233.
- 2018, Idaho Department of Fish and Game (IDFG), Predator-prey modeling. (Co-PI), \$64,456.
- 2018, Montana Department of Transportation (M-DOT), Pronghorn friendly fence ecology. (Co-PI), \$55,000.
- 2018, Rocky Mountain Elk Foundation (RMEF), Bull elk ecology and population ecology, Ya Ha Tinda. (PI), \$35,942.
- 2018, Yellowstone Forever Foundation, Predator-prey ecology and dynamics in Yellowstone wolf project, (PI). \$42,000.
- 2018, Alberta Conservation Association (ACA). Bull elk recruitment, survival and harvest in a partially migratory elk herd – Year 2 (PI), \$21,000.
- 2018, NASA Earth and Space Science Fellowships (NESSF). From Animal Movement to Ecosystem Services: Scaling-up to Ecosystem-scale Spatially-Explicit Demographic Models for Caribou, Year 2 (PI, student, Eric Palm), \$45,000.
- 2018, Wildlife Conservation Society-Canada (WCS). From lichen cover to ungulate demography: linking forage characteristics to caribou population viability – Year 2. (PI). \$12,600.
- 2017, Safari Club International - Foundation. Bull elk recruitment, survival and harvest in a partially migratory elk herd – Year 1 (PI), \$53,000.
- 2017, Alberta Sustainable Resources Development, Alberta Fish and Wildlife Division, Caribou population viability modeling, \$150,000 CDN.
- 2017, Swedish Government. Population viability modeling for Eurasian Lynx and Wolverine, Scott Mills (PI), \$109,788 (Co-PI).
- 2017, Alberta Conservation Association (ACA). Bull elk recruitment, survival and harvest in a partially migratory elk herd – Year 1 (PI), \$22,545.
- 2017, NASA Earth and Space Science Fellowships (NESSF). From Animal Movement to Ecosystem Services: Scaling-up to Ecosystem-scale Spatially-Explicit Demographic Models for Caribou, (PI, student, Eric Palm), \$45,000.
- 2017, Wildlife Conservation Society-Canada (WCS). From lichen cover to ungulate demography: linking forage characteristics to caribou population viability. (PI). \$10,875.
- 2017, Alberta Conservation Association (ACA). Using pronghorn to design and apply a multi-species approach for conserving connectivity in the northern Great Plains (MT, AB). PI. \$119, 990.

- 2017, United States Forest Service (USFS), Designing multispecies monitoring across landscape scales \$86,000. (PI) Grant Modification.
- 2016, Bureau of Land Management (BLM)- Alaska, Fortymile caribou herd habitat relationships, \$220,000. (PI)
- 2016, United States Forest Service (USFS), Designing multispecies monitoring across landscape scales \$186,000. (PI)
- 2016, National Parks Service (NPS), Measuring bison-habitat relationships in Yellowstone National Park using remote sensing, \$35,000. (PI)
- 2016, National Science Foundation (NSF), DEB-1556248 Long-term research in environmental biology (LTREB): testing for facultative switching between migratory strategies in a partially migratory, long-lived large herbivore population, \$436,000 (PI)
- 2015, National Aeronautics & Space Agency (NASA), Animals on the Move (ANIMOVE), Arctic Boreal Vulnerability Experiment, \$1,600,000. (Co-PI).
- 2015, The Nature Conservancy of Montana, Restoring connectivity for pronghorn in the Northern Steppe in Montana, \$156,000.
- 2015, Alberta Sustainable Resources Development, Alberta Fish and Wildlife Division, Caribou population viability modeling, \$70,000 CDN.
- 2014, Yellowstone National Park Foundation, Spatial wolf-prey dynamics in Yellowstone's Northern Range, \$46,000.
- 2014, Montana Fish Wildlife and Parks, Bitterroot elk calf survival and population modeling, \$13,000.
- 2013, Rocky Mountain Elk Foundation, Bitterroot Elk Project, \$38,000.
- 2013, Alberta Sustainable Resources Development, Alberta Fish and Wildlife Division, Caribou spatial population viability modeling, \$20,000.
- 2012, Parks Canada, Developing a multi-species remote camera monitoring network, \$66,000.
- 2012, Panthera, Remote camera monitoring for mountain lions in the Canadian Rockies, \$10,000.
- 2012, Alberta Biodiversity Monitoring Institute, \$10,000
- 2012, US Forest Service, Northern Region, Evaluating habitat treatments on elk populations in the Southern Bitterroot, \$30,000.
- 2012, Alberta Sustainable Resources Development, Alberta Fish and Wildlife Division, Caribou population viability and spatial predation risk modeling, \$25,000.
- 2011, National Aeronautics & Space Agency (NASA), Global population dynamics and climate change: comparing species level-impacts on two contrasting large mammals, \$778,000. (PI)
- 2011, California Department of Fish and Game, Modeling habitat use, migration and climate for Sierra bighorn recovery, \$519,559. (PI).
- 2011, Mohammed bin Zayed Species Conservation Fund, Amur tiger conservation in the Sikhote-Alin mountains, \$20,000 (PI).
- 2011, Petroleum Technology Alliance of Canada, Understanding the role of predation in woodland caribou declines, \$69,144 (Co-PI).

- 2011, McIntire-Stennis/USDA, The Role of Bottom-up Habitat Changes on Elk Calf Survival: a case study in the Bitterroot Valley, \$106,000 (PI).
- 2011, Rocky Mountain Elk Foundation, Evaluating bottom-up and top-down effects on elk calf survival in the Bitterroot Valley, \$33,680 (PI).
- 2010, Environment Canada, Habitat selection of boreal caribou in Canada, \$20,547, (PI).
- 2010, Montana Fish Wildlife and Parks, Linking resource selection and mortality modeling for population estimation of cougars in Montana, \$146,843 (Co-PI).
- 2010, USDA Forest Service, Monitoring effects of winter recreation on the movements and resource use of Canada lynx on the vail pass recreation area, Colorado, \$ 239,667. (PI)
- 2010, Parks Canada, Long-term population dynamics and the effects of prescribed fire on the winter range of the Ya Ha Tinda elk herd, \$ 11,494 (PI) .
- 2010, Idaho Department of Fish and Game, Linking resource selection to population dynamics of mule deer in Idaho, \$34,296 (PI).
- 2009, USDA Forest Service, Investigating the impact of winter recreation on wolverines on the Payette National Forest, \$100,000 (PI)
- 2009, USDA Forest Service, Understanding lynx movements and habitat suitability, \$113, 709 (PI)
- 2009, Mohammed bin Zayed Species Conservation Fund, Amur Tiger predator-prey conservation, \$25,000 (Co-PI with Dr. Dale Miquelle, WCS)
- 2009, Sierra Nevada Bighorn Sheep Habitat modeling, California Fish and Game, \$89,000 (PI)
- 2008, Modeling Amur Tiger and Leopard habitat, Russian Far East, Wildlife Conservation Society, \$15,000. (PI).
- 2008, Alberta Conservation Association, Moose-caribou-forestry dynamics, \$38,000 (PI)
- 2008, Alberta Conservation Association, Ya Ha Tinda long-term elk monitoring, \$34,000 (Co-PI with Dr. E. Merrill, U of Alberta)
- 2008, Meta-analysis of Mule Deer Fawn Survival, Idaho Department of Fish and Game, \$13,000.
- 2008, Taku River Tlingit First Nation (TRTFN) Atlin Caribou Habitat and Traditional Ecological Knowledge, Round River Conservation Studies and TRTFN, \$37,378 (PI)
- 2008, Endangered Species Recovery Fund (ESRF), Environment Canada & WWF, Moose-caribou relationships & caribou recovery, \$15,000 (PI)
- 2008, Rocky Mountain Elk Foundation, Montana, North Hills wildlife-urban interface elk management, \$20,000 (PI).
- 2008, Rocky Mountain Elk Foundation, Montana. Calf survival meta-analysis in the Pacific Northwest, \$34,000 (PI)
- 2008, Royal Dutch Shell Corporation, Canada. Wolf-caribou dynamics and energy development in the Narraway and Red Willow ranges, \$72,000 (Co-PI with Dr. Marco Musiani, University of Calgary).
- 2008, Parks Canada, Wolf-fire-caribou-beetle dynamics and caribou conservation, \$160,000 (Co-PI with Dr. M.Musiani, U of Calgary)

- 2007, Sierra Nevada Bighorn Sheep Recovery Project, California Fish and Game, \$495,000 (PI)
- 2007, North Hills Urban Elk Project, Rocky Mountain Elk Foundation, \$20,000 (PI)
- 2006, Linear features, forestry, wolves and caribou dynamics project, Petroleum Technology Alliance of Canada (PTAC), \$665,000 (PI, Co-PI Dr. Marco Musiani, U of Calgary)
- 2006, Woodland caribou population persistence modeling, Parks Canada, \$7,000 (PI)
- 2005, Effects of fire and cutblocks on ungulate habitat potential, Alberta Conservation Association (ACA), \$12,500 (PI)
- 2004, Ya Ha Tinda elk herd population dynamics, Foundation for North American Wild Sheep (FNAWS), \$2,500 (Co-PI with Dr. E. Merrill, U of Alberta)
- 2004, Ya Ha Tinda elk and wolf project, Rocky Mountain Elk Foundation-Canada (RMEFC), \$29,860 (Co-PI)
- 2004, Ya Ha Tinda elk herd population dynamics, Alberta Conservation Association (ACA), \$30,000 (Co-PI)
- 2003, GPS elk collar equipment grant, Alberta Cooperative Conservation Research Unit (ACCRU) \$40,000 (Co-PI)
- 2003, Human effects on wolves & elk, Mountain Equipment Co-op (MEC) Environment Fund, \$9,200 (Co-PI)
- 2003, Ya Ha Tinda elk herd population dynamics, Alberta Conservation Association (ACA), \$11,500 (Co-PI)
- 2003, Ya Ha Tinda elk and wolf project, Rocky Mountain Elk Foundation-Canada (RMEFC), \$20,500 (Co-PI)
- 2003, Human impacts on ungulate forage species diversity in the eastern slopes of Alberta. Biodiversity Challenge Grant, ACA partnership, \$13,005 (Co-PI)
- 2002, Training on the job program funding for two research assistants, Alberta Enhanced Career Development, \$14,000 (Co-PI)
- 2002, Effects of the Dogrib fire and post-harvest logging on elk population dynamics, Foothills Model Forest, \$34,000 (Co-PI)
- 2002, Elk trapping grant, Rocky Mountain Elk Foundation-Canada, \$10,000 (Co-PI)
- 2002, Research equipment and field clothing equipment grant, Patagonia Environmental Grants Program, \$3,000 (PI)
- 2001, Elk and wolf GPS collar grant, Canadian Foundation for Innovation (via Dr. Merrill), \$65,000
- 2001-2005, Wolf and elk population dynamics at the Ya Ha Tinda, Parks Canada- Banff National Park, Memorandum of Understanding, \$350,000 over 4-years (Co-PI)
- 1998, Training on the job program funding for three research assistants, Alberta Enhanced Career Development, \$27,000 (Co-PI)
- 1998, Equipment grant for Garmin GPS units. Garmin GPS Ltd, Kansas, USA. \$2,000 (PI)
- 1998, Research equipment and field clothing equipment grant, Patagonia Environmental Grants Program, \$6,000 (PI)
- 1997, Wolf and elk population dynamics near the Town of Banff, Canadian Pacific Foundation Research Grant, \$15,000 (Co-PI).

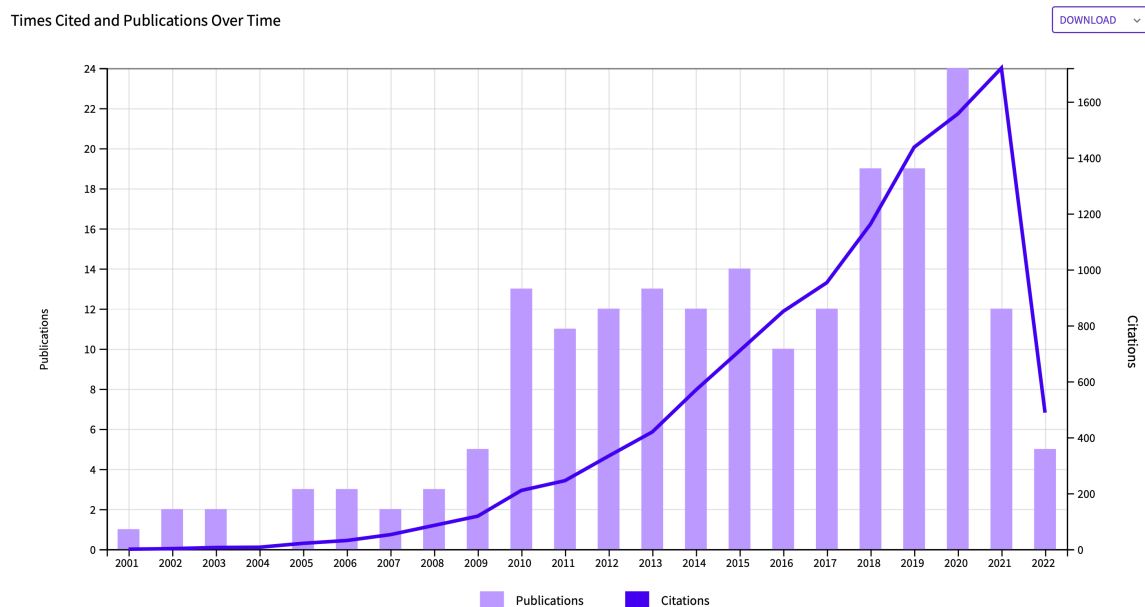
1997, Training on the job program funding for four research assistants, Alberta Enhanced Career Development, \$35,000 (Co-PI)

1997, Wolf-prey ecology in the Bow Valley of Banff National Park, Parks Canada- Banff National Park research contract, \$175,000 (PI)

Publications¹

Summary: Since 2002 my students and I have published ~200 total scientific papers and book chapters (~186 indexed on ISI Web of Science WOS) that have been cited 10,973 times on WOS and ~18,137 times on Google Scholar. My h-index on WOS is 50 and Google Scholar 62 (May 2022). See my [Google Scholar Profile](#) for links to papers.

Figure 1. Summary of number of annual number of papers published and citations/year, April 30, 2022.



In Review

1. Martin, H., M. Hebblewhite, A. Hubbs, R. Corrigan, and E. H. Merrill. 2022. Male Elk Survival, Vulnerability and Antler Size in a Transboundary Partially Migratory Elk Population. *Journal of Wildlife Management*, In Review.
2. Steenweg, R., M. Hebblewhite, J. Whittington, A. C. Burton, N. Heim, J. T. Fisher, A. Ladle, W. Lowe, T. Muhly, J. Paczkowski, and M. Musiani. 2022. Testing umbrella species and food-web properties of large carnivores in the Rocky Mountains. *Biological Conservation*, In Review.
3. Labadie, G., Hebblewhite, M., Fortin, D., et al., 2022. Global change impacts a threatened species through alteration of predator-prey dynamics. *Ecology Letters*, In Review.

In Revision

¹ Underlined names are student and post-doctoral fellow publications, ** are undergraduate thesis papers, ++ denotes publication awards.

4. Tack, J., Jakes, A., Jones, P., Hebblewhite, M., Naugle, D., Doherty, K., Sather, M., Martin, B., Pritchert, R. 2022. Grassland intactness outcompetes focal species as more efficient surrogates in conservation design. *Conservation Biology*, In Revision.
5. Tucker, M. A., ..., M. Hebblewhite, E. H. Merrill, C. Lamb, W. Peters, ..., and T. Mueller. 2022. Changes in human presence during COVID-19 lockdowns altered the spatial behavior of terrestrial mammals. *Science*, In Revision.
6. Hessami, M., Martin, H., Whittington, J., Hebblewhite, M., Steenweg, R., Flowers, M., Merrill, E.H. 2022. Estimating Neonatal Elk Calf Survival with Remote Cameras using Royle-Nichol's Abundance Models. *Wildlife Society Bulletin*, In Revision.
7. Paterson, T. Proffitt, K., DeCesare, N.J., Hebblewhite, M., Gude, J. 2022. Evaluating the summer landscapes of predation risk and forage quality for elk (*Cervus canadensis*). *Oikos*, In Revision
8. Forzely, M., Rotella, J., Proffitt, K., Garrott, R., Jimenez, B., Eacker, D.R., Hebblewhite, M. 2022. Effects of Increasing Mountain Lion Harvest on Annual Elk Calf Survival, *Ecosphere*, In Revision.
9. Williams, S., M. Hebblewhite, H. Martin, J. Killeen, J. Berg, K. M. MacAulay, P. Smolko, and E. H. Merrill. 2021. Predation Risk Drives Long-Term Shifts in Migratory Behavior and Demography in Large Herbivore Population. *Journal of Animal Ecology*, In Revision.

Published Peer Reviewed Publications

10. Martin, H., M. Hebblewhite, and E. H. Merrill. 2022. Large herbivores in a partially migratory population search for the ideal free home. *Ecology*:14. <https://doi.org/10.1002/ecy.3652>
11. Whittington, J., R. Baron, M. Hebblewhite, A. T. Ford, and J. Paczkowski. 2022. Towns and trails drive carnivore connectivity using a step selection approach. *Movement Ecology*, 10: 17.
12. Orndahl, K., L. W. Ehlers, J. Herriges, R. Pernick, M. Hebblewhite, and S. Goetz. 2022. Mapping tundra ecosystem plant functional type cover, height and above-ground biomass in Alaska and northwest Canada using unmanned aerial vehicles. *Arctic Science*, EarlyView, <https://doi.org/10.1139/AS-2021-0044>
13. Cavedon, M., B. vonHoldt, M. Hebblewhite, T. Hegel, E. Heppenheimer, D. Hervieux, S. Mariani, H. Schwantje, R. Steenweg, J. Theoret, M. Watters, and M. Musiani. 2022. Genomic legacy of migration in endangered caribou. *PloS Genetics* 18:e1009974.
14. MacAulay, K. M., E. Spilker, J. Berg, M. Hebblewhite, and E. H. Merrill. 2022. Predicting multi-predator risk to elk (*Cervus canadensis*) using scats: Are migrant elk exposed to different predation risk? *Ecology & Evolution*, 12: 2.
15. Normandeau, J., C. Cassady-St.Clair, S. Kutz, M. Hebblewhite, and E. H. Merrill. 2022. What makes elk tick: winter tick grooming behavior in wild elk (*Cervus canadensis*). *Journal of Mammalogy*, 103: 373 - 382. DOI.10.1093/jmammal/gyab155

2021

16. Hebblewhite, M., Hilty, J.A., Locke, H., Chester, C., Johns, D., Kehm, G., Francis, W.L., 2021. Yellowstone to Yukon Conservation Initiative: Large-Landscape Conservation from Theory to Results in Twenty Years. *Frontiers in Ecology and Environment*, 4: 1-11. 10.1111/csp2.588
17. Palm, E., M. Sutor, K. Joly, J. Herriges, A. Kelly, D. Hervieux, K. Russell, T. Bentzen, N. Larter, and M. Hebblewhite. 2021. Increasing fire frequency and severity will increase habitat loss for a boreal forest indicator species. *Ecological Applications*, 32: e2549.

18. Labadie, G., McLoughlin, P., Hebblewhite, M., Fortin, D. 2021. Insect-mediated apparent competition between mammals in a boreal food web. *Proceedings of the National Academy of Sciences*, 118:30.
19. Brandell, E. E., P. C. Cross, M. E. Craft, D. W. Smith, E. J. Dubovi, M. L. J. Gilbertson, T. Wheeldon, J. A. Stephenson, S. Barber-Meyer, B. L. Borg, M. Sorum, D. R. Stahler, A. Kelly, M. Anderson, H. D. Cluff, D. R. MacNulty, D. E. Watts, G. H. Roffler, H. Schwantje, M. Hebblewhite, K. Beckmen, and P. J. Hudson. 2021. Patterns and processes of pathogen exposure in gray wolves across North America. *Scientific Reports* 11:3722.
20. Corradini, A., W. Peters, L. Pedrotti, M. Hebblewhite, N. Bragalanti, C. Tattoni, M. Cioli, and F. Cagnacci. 2021. Animal movements occurring during temporarily reduced human activity were predicted by connectivity models. *Global Ecology and Conservation*, 32: e10895.
21. Ehlers, L. P. W., G. Coloumbe, J. Herriges, T. Bentzen, M. Sutor, K. Joly, and M. Hebblewhite. 2021. Critical trade-offs in summer foraging of subarctic ungulates. *Ecology and Evolution* 11:17835-17872.
22. Skladanowski, M., E. C. Weidner, J. L. Bowles, and M. Hebblewhite. 2021. Nineteen rocky mountain elk (*Cervus canadensis nelsonii*) killed in an avalanche in the Three Sisters Wilderness. *Northwest Naturalist*, 102: 265-268.
23. Berg, J. E., J. Reimer, P. Smolko, H. Bohm, M. Hebblewhite, and Merrill, E.H. 2021. Mother's movements: shifts in calving area selection by Partially migratory elk. *Journal of Wildlife Management*, 85: 1476-1489.
24. Kauffman, M. J., F. Cagnacci, S. Chamaillé-Jammes, **M. Hebblewhite**, J. G. C. Hopcraft, J. A. Merkle, T. Mueller, A. Myrsetrud, W. Peters, C. Roettger, A. Steingisser, J. E. Meacham, K. Abera, J. Adamczewski, E. O. Aikens, H. Bartlam-Brooks, E. Bennit, J. Berger, C. Boyd, S. D. Côté, L. Debeffe, A. S. Dekrout, N. Dejid, E. Donadio, L. Dziba, W. F. Fagan, C. Fischer, S. Focardi, J. M. Fryxell, R. W. S. Fynn, C. Geremia, B. A. González, A. Gunn, E. Gurarie, M. Heurich, J. A. Hilty, M. A. Hurley, A. Johnson, K. Joly, P. Kaczensky, C. J. Kendall, P. Kochkarev, L. Kolpaschikov, R. Kowalczyk, F. van Langevelde, V. Binbin, A. L. Lobora, A. Loison, T. H. Madiri, D. Mallon, P. Marchand, R. A. Medellin, E. Meisingset, M. E.H., A. D. Middleton, K. L. Monteith, M. D. Morjan, T. M. Morrison, S. Mumme, R. Naidoo, A. J. Novaro, O. J.O., K. A. Olson, Y. Oteng-Yeboah, R. J. A. Ovejero, N. Owen-Smith, A. Paasivaara, C. Packer, D. Panchenko, L. Pedrotti, A. J. Plumptre, C. M. Rolandsen, S. Said, A. Salemgareyev, A. P. Savchenko, P. Savchenko, H. Sawyer, M. Selebatso, M. Skroch, E. J. Solberg, J. A. Stabach, O. Strand, M. J. Sutor, Y. Tachiki, A. M. Trainor, A. Tshipa, M. Z. Virani, C. Vynne, S. Ward, G. Wittemyer, W. Xu, and S. Zuther. 2021. Mapping out a future for ungulate migrations: Limited mapping of migrations hampers conservation. **Science** 372:566 - 569.
25. Suraci, J. P., K. M. Gaynor, M. L. Allen, P. Alexander, J. S. Brashares, S. Cendejas-Zarelli, K. Crooks, L. M. Elbroch, T. Forrester, A. M. Green, J. Haight, N. C. Harris, **M. Hebblewhite**, F. Isbell, B. Johnston, R. Kays, P. E. Lendrum, J. S. Lewis, A. McInturff, W. McShea, T. W. Murphy, M. S. Palmer, A. Parsons, M. A. Parsons, M. E. Pendergast, C. Pekins, L. R. Prugh, K. A. Sager-Fradkin, S. Schuttler, C. H. Sekercioglu, B. Shepherd, L. Whipple, J. Whittington, G. Wittemyer, and C. C. Wilmsers. 2021. Disturbance type and species life history predict mammal responses to humans. *Global Change Biology*, 27: 3708-3731 <https://doi.org/10.1111/gcb.15650>
26. Jakes, A., P. F. Jones, C. Gates, K. Kunkel, S. Olimb, and **M. Hebblewhite**. 2020. Multi-scale assessment of migration habitat for pronghorn. *PLoS One* 15:e0241042.
27. ****Heinle, K.**, Eby, L., Muhlfeld, C.C., Steed, A., Jones, L., D'Angelo, V., Whiteley, A.R., **Hebblewhite, M.** 2020. Influence of water temperature and biotic interactions on the distribution of Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*) under climate change. *Canadian Journal of Fisheries and Aquatic Sciences*, 78: 444-456.

28. Moeller, A., J. Nowak, L. Neufeld, M. Bradley, M. Manseau, P. Wilson, S. McFarlane, P. M. Lukacs, and **M. Hebblewhite**. 2020. Integrating counts, telemetry, and non-invasive DNA data to improve demographic monitoring of an endangered species. *Ecosphere*, 12: e03443.
29. Davidson, S. C., G. Bohrer, E. Gurarie, J. Jennewein, S. LaPoint, P. J. Mahoney, N. T. Boelman, J. Eitel, L. R. Prugh, L. Vierling, L. Grier, A. J. H. Meddens, R. Y. Oliver, R. Kays, R. Wikelski, T. Aarvak, J. T. Ackerman, J. A. Alves, E. Bayne, B. Bedrosian, J. L. Belant, A. B. Berdahl, A. B. Berlin, D. Berteaux, J. Bêty, D. Boiko, T. L. Booms, B. L. Borg, S. Boutin, W. S. Boyd, K. Brides, S. Brown, K. K. Burnham, D. Cabot, M. Casazza, K. Christie, E. H. Craig, e. al, and **M. Hebblewhite**. 2020. Ecological insights from three decades of animal movement tracking across a changing Arctic. *Science* 370:712-715.
30. Nagy-Reis, M., M. Dickie, A. M. Calvert, **M. Hebblewhite**, D. Hervieux, D. R. Seip, S. L. Gilbert, O. Venter, C. DeMars, S. Boutin, and R. Serrouya. 2021. Habitat loss accelerates for the endangered woodland caribou in western Canada. *Conservation Science and Practice*, EarlyView.
31. Williams, S. H., R. Steenweg, T. Hegel, M. Russell, D. Hervieux, and **M. Hebblewhite**. 2021. Habitat loss on seasonal migratory range imperils an endangered ungulate. *Ecological Solutions and Evidence* 2. 1- 12.
32. Normandeau, J., H. Martin, E. H. Merrill, and **M. Hebblewhite**. 2021. Potential case of pseudo-hermaphroditism in Elk (*Cervus canadensis*) in Alberta, Canada. *Canadian Field Naturalist* 134:241-247.

2020

33. Mahoney, P., K. Joly, B. L. Borg, M. S. Sorum, T. Rinaldi, G. Howard, D. Saalfeld, D. Lathan, K. Allicia, B. Mangapine, C. Lambert, L. Neufeld, **M. Hebblewhite**, and N. T. Boelman. 2020. Denning phenology and reproductive success of wolves in response to climate signals. *Global Change Biology* 15:125001.
34. Jennewein, J. S., **M. Hebblewhite**, P. Mahoney, S. Gilbert, A. J. H. Meddens, N. T. Boelman, K. Joly, K. Jones, K. A. Kellie, S. Brainerd, L. A. Vierling, and J. U. H. Eitel. 2020. Behavioral modifications by a large-northern herbivore to mitigate warming conditions. *Movevment Ecology* 8:39.
35. **Hebblewhite, M.**, and J. Whittington. 2020. Wolves Without Borders: Transboundary Survival of Wolves in Banff National Park over Three Decades. *Global Ecology and Conservation* 24:e01293.
36. Clark, T. J., J. S. Horne, **M. Hebblewhite**, and A. D. Luis. 2020. Stochastic predation exposes prey to predator pits and local extinction. *Oikos* 130:300-309.
37. Clark, T. J., and **M. Hebblewhite**. 2020. Predator control may not increase ungulate populations in the future: A formal meta-analysis. *Journal of Applied Ecology* 58:812-824.
38. Proffitt, K., R. Garrott, J. A. Gude, **M. Hebblewhite**, B. Jimenez, J. T. Paterson, and J. Rotella. 2020. Integrated carnivore-ungulate management: a case study in west-central Montana. *Wildlife Monographs* 206:1–28.
39. Pigeon, K. E., G. Stenhouse, **M. Hebblewhite**, M. Musiani, L. Neufeld, J. Cranston, D. MacEarney, and F. Schmiegelow. 2020. The density of anthropogenic features explains seasonal and behavior-based functional responses in selection of linear features by a social predator. *Scientific Reports*, 11: 11437.
<https://doi.org/10.1038/s41598-020-68151-7>
40. Aikens, E.O., Mysterud, A., Merkle, J., Cagnacci, F., Rivrud, I.M., **Hebblewhite, M.**, Hurley, M.A., Peters, W., Bergen, S., De Groeve, J., Dwinell, S.P.H., Gehr, B., Heurich, M., Hewison, M.A., Jarnemo, A., Kjellander, P., Kroschel, M., Licoppe, A., Linnell, J., Merrill, E.H., Middleton, A.D., Morellet, N., Neufeld, L., Ortega, A.C., Parker, K.L., Pedrotti, L., Proffitt, K.M., Said, S., Sawyer, H., Scurlock, B.M., Singer, J., Stent, P., Sustr, P., Szkorupa, T., Monteith, K.L., Kauffman, M.J. 2020. Wave-like patterns of plant phenology determine ungulate migration tactics across northern temperate ecosystems, *Current Biology*, 30: 1- 6.
doi.org/10.1016/j.cub.2020.06.032

41. Merrill, E.H., Killeen, J., Pettit, J., Trottier, M., Martin, H., Berg, J., Bohm, H., Eggeman, S., **Hebblewhite, M.** 2020. Density-dependent foraging behaviors on sympatric winter ranges in a partially migratory elk (*Cervus canadensis*) population. *Frontiers in Ecology and Evolution*, 8: 269. doi: 10.3389/fevo.2020.00269
 42. ****Metz, M.**, SunderRaj, J., Smith, D., Stahler, D., Kohl, M., Cassidy, K., **Hebblewhite, M.** 2020. Accounting for imperfect detection in observational studies: modeling wolf sightability in Yellowstone National Park. *Ecosphere*, 11(6): 031452 10.1002/ecs2.3152. += Undergraduate thesis publication.
 43. Jones, P.F., Jakes, A.F., Eacker, D.R., **Hebblewhite, M.** 2020. Annual pronghorn survival of a partially migratory population. *Journal of Wildlife Management*, 84: 1114-1126, <http://dx.doi.org/10.1002/jwmg.21886>
 44. Normandeau, J., Kutz, S.J., **Hebblewhite, M.**, Merrill, E.H. 2020. Living with liver flukes: does migration matter? *IJP: Parasites and Wildlife*, 12: 76- 84. <https://doi.org/10.1016/j.iippaw.2020.05.002>
 45. Hurley, M., **Hebblewhite, M.**, Gaillard, J.-M. 2020. Competition for Safe Real Estate Rather than Food Drives Density-Dependent Juvenile Survival in a Large Herbivore. *Ecology and Evolution*, 00: 1-12. <https://doi.org/10.1002/ece3.6289>
 46. Palm, E., Aerin, Jacob, Fluker, S., Nesbitt, H., and **Hebblewhite, M.** 2020. Beyond designation: the long road to protecting critical habitat for species at risk. *Conservation Science and Practice*, 2: e219. <https://doi.org/10.1111/csp2.219>
 47. Geremia, C., Merkle, J.A., Eacker, D.R., Wallen, R.L., White, P.J., **Hebblewhite, M.**, Kauffman, M.J. 2020. Reply to Joseph M. Craine: Bison redefine what it means to move to find food. *Proceedings of the National Academy of Sciences*, 117: 9171 – 9172 www.pnas.org/cgi/doi/10.1073/pnas.2000713117
 48. Fortin, D., **Hebblewhite, M.**, McLoughlin, P.D., Allred, B. 2020. When the protection of threatened species depends on the economy of foreign nations. *PLoS One*, 15(3): e0229555. <https://doi.org/10.1371/journal.pone.0229555>
 49. Jones, P.F., Jakes, A.F., Eacker, D.R., Seward, B.C., **Hebblewhite, M.** & Martin, B.H. 2020. Evaluating Responses by Sympatric Ungulates to Fence Modifications across the Northern Great Plains. *Wildlife Society Bulletin, Early View*, Feb 2020, <https://doi.org/10.1002/wsb.1067>.
 50. Spitz, D., **Hebblewhite, M.**, Stephenson, T.D. 2020. Habitat predicts local prevalence of migratory behavior in an alpine ungulate. *Journal of Animal Ecology*, 89: 1032-1044. <https://doi.org/10.1111/1365-2656.13167>
 51. Macander, M. J., E. C. Palm, G. V. Frost, J. D. Herriges, S. J Goetz, P. R. Nelson, C. Roland, K. M. Russell, M. J. Suitor, T. W. Bentzen, K. Joly and **M. Hebblewhite**. 2020. Lichen cover mapping for caribou ranges in interior Alaska and Yukon. *Environmental Research Letters* 15: 055001. <https://doi.org/10.1088/1748-9326/ab6d38>.
- 2019
52. Gurarie, E., **M. Hebblewhite**, K. Joly, A.P. Kelly, J. Adamczewski, S.C. Davidson, T. Davison, A. Gunn, M. Suitor, W.F. Fagan, and N. Boelman. 2019. Tactical departures and strategic arrivals: Divergent effects of climate and weather on caribou spring migrations. *Ecosphere* 10: e02971.
 53. **++Joly, K.**, E. Gurarie, M. S. Sorum, P. Kaczensky, M. D. Cameron, A. F. Jakes, B. L. Borg, D. Nandintsetseg, G. C. Hopcraft, B. Buuveibaatar, P. F. Jones, T. Mueller, C. Walzer, K. A. Olson, J. C. Payne, A. Yadamsuren, and **M. Hebblewhite**. 2019. Who goes the farthest of them all? World's longest terrestrial migrations and movements. *Scientific Reports*, 9: 15333. ++ Ranked 7th downloaded ecology paper in 2019.

54. Oliver, R., Mahoney, P., Gurarie, E., Prugh, L., **Hebblewhite, M.**, Boelman, N. 2019. Behavioral responses to migration conditions are a mechanism for shifting avian phenology, *Environmental Research Letters*, 15: 045003. <https://doi.org/10.1088/1748-9326/ab71a0>
55. Geremia, C., Merkle, J.A., Eacker, D.R., Wallen, R.L., White, P.J., **Hebblewhite, M.**, Kauffman, M.J. 2019. Migrating bison engineer the green wave. *Proceedings of the National Academy of Sciences*, 116: 25707-25713.
56. DeCesare, N., Weckworth, B.V., Walker, A., Bergman, E., Colson, K., Corrigan, R., Harris, R., **Hebblewhite, M.**, Jesmer, B., Newby, J., Smith, J.R., Tether, R.M., Thomas, T., Pilgrim, K.L. & Schwartz, M. 2019. Phylogeography of a range edge subspecies: is there such thing as Shiras moose. *Journal of Mammalogy*, 101: 10-23.
57. Squires, J.R., Olson, L., Heinemeyer, K., **Hebblewhite, M.** & Holbrook, J. 2019. Winter recreation and Canada lynx: reducing conflict through niche partitioning. *Ecosphere*, 10:e02876. [10.1002/ecs2.2876](https://doi.org/10.1002/ecs2.2876).
58. Jones, P., Jakes, A., Sawyer, H., Telander, A., Martin, B., **Hebblewhite, M.** 2019. Fences reduce habitat for a partially migratory ungulate in the Northern Sagebrush Steppe. *Ecosphere*, 10(7):e02782. [10.1002/ecs2.2782](https://doi.org/10.1002/ecs2.2782).
59. Muhly, T., Johnson, C.A., **Hebblewhite, M.**, Neilson, E.W., Fortin, D., Fryxell, J.M., Latham, A.D., Latham, M.C., McLoughlin, P.D., Merrill, E.H., Paquet, P.C., Patterson, B.R., Schmiegelow, F., Scurrah, F., Musiani, M. 2019. Functional responses of wolves to human development across Boreal ecosystems. *Ecology and Evolution*, 10: 1-15, <https://doi.org/10.1002/ece3.5600>
60. **Hebblewhite, M.** 2019. Book Review: Wild Migrations: Atlas of Wyoming's Ungulates. *Journal of Wildlife Management*, 83(7):1628–1629.
61. Berg, J.E., **Hebblewhite, M.**, Cassady St. Clair, C. & Merrill, E.H. 2019. Prevalence and mechanisms of partial migration in ungulates. *Frontiers in Ecology and Evolution*, Front. Ecol. Evol. 7:325., <https://doi.org/10.3389/fevo.2019.00325>
62. Tempa, T., Mills, L.S., **Hebblewhite, M.** 2019. The spatial distribution and population density of Bengal tigers in Bhutan. *Biological Conservation*, 238: 108192, <https://doi.org/10.1016/j.biocon.2019.07.037>.
63. Heinemeyer, K., Squires, J., **Hebblewhite, M.**, Smith, J., Holbrook, J.D. & Copeland, C. 2019. Wolverines in winter: Indirect habitat loss and functional responses to backcountry recreation. *Ecosphere*, 10, e02611.
64. Steenweg, R., **Hebblewhite, M.**, McKelvey, K., Lukacs, P. & Whittington, J. 2019. Species-specific trade-offs in statistical power when monitoring trends in multispecies occupancy. *Ecosphere*, 10, e02639.
65. Cavedon, M., Goublin, C., Heppenheimer, E., von Holdt, B., Mariani, S., **Hebblewhite, M.**, Hegel, T.M., Hervieux, D., Serrouya, R., Steenweg, R., Weckworth, B.V. & Musiani, M. 2019. Genes, environment and balancing selection in behaviorally bimodal populations: the caribou case. *Molecular Ecology*, 28, 1946-1963.
66. Proffitt, K.M., DeVoe, J.D., Barker, K.J., Durham, R., Hayes, T., **Hebblewhite, M.**, Jourdonnais, C., Ramsey, P. & Shamhart, J. 2019. A century of changing fire management alters ungulate forage in a wildfire-dominated landscape. *Forest Ecology and Management*, 44, 1-17.
67. Eacker, D.R., **Hebblewhite, M.**, Steenweg, R., Russell, M., Flasko, A. & Hervieux, D. 2019. Web-based application for estimating threatened woodland caribou population trends. *Wildlife Society Bulletin*, 43, 167-177.
68. Serrouya, R., Seip, D.R., Hervieux, D., McLellan, B., McNay, R.S., Steenweg, R., Heard, D.C., **Hebblewhite, M.**, Gillingham, M.P. & Boutin, S. 2019. Using adaptive management to save endangered species. *Proceedings of the National Academy of Science*, 116, 6181-6186.

69. Tack, J.D., Jakes, A.F., Jones, P.F., Smith, J.T., Newton, R.E., Martin, B.H., **Hebblewhite, M.** & Naugle, D.E. 2019. Beyond protected areas: Private lands and public policy anchor intact pathways for multi-species wildlife migration. *Biological Conservation*, 234, 18-27.
 70. Boelman, N.T., Liston, G.E., Gurarie, E., Meddens, A., Mahoney, P.J., Kirchner, P., Bohrer, G., Brinkman, T.J., Cosgrove, C., Eitel, J., **Hebblewhite, M.**, Kimball, J., Lapoint, S.D., Nolin, A., Hojlund, P.S., Prugh, L.R., Reinking, A. & Vierling, L. 2019. Integrating snow science and wildlife ecology in Arctic-Boreal North America. *Environmental Research Letters*, 14, 010401.
 71. Peters, W., **Hebblewhite, M.**, Mysterud, A., Eacker, D.R., Hewison, M., Focardi, S., Urbano, F., Heurich, M., Jarnemo, A., Kjellander, P., Kroschel, M., Linnell, J.D.C., Morellet, N., Pedrotti, L., Reinecke, H., Sandford, R., Soennichsen, L., Sunde, P. & Cagnacci, F. 2019. Plasticity in migratory behavior of two ungulates with contrasting life histories. *Oikos*, 128, 416-429.
 72. Holbrook, J.D., Olson, L.E., DeCesare, N.J., **Hebblewhite, M.**, Squires, J. & Steenweg, R. 2019. Functional responses in habitat selection: clarifying hypotheses and interpretations. *Ecological Applications*, 29, e01852.
- 2018
73. Xiao, W., **Hebblewhite, M.**, Robinson, H.R., Feng, L., Zhou, B., Mou, P., Wang, T. & Ge, J. 2018. Relationships between humans and ungulate prey shape Amur tiger occurrence in a core protected area along the Sino-Russian border. *Ecology and Evolution*, 8, 11677-11693.
 74. St. Peter, J., Hogland, J., **Hebblewhite, M.**, Hurley, M., Hupp, N. & Proffitt, K.M. 2018. Linking phenological indices from digital cameras in Idaho and Montana to MODIS NDVI. *Remote Sensing*, 10, 1612.
 75. Mahoney, P., Liston, G., LaPoint, S., Gurarie, E., Mangipine, B., Wells, A., Brinkman, T., Eitel, J., **Hebblewhite, M.**, Nolin, A., Boelman, N., Prugh, L. 2018. Navigating snowscapes: scale-dependent responses of mountain sheep to snowpack properties. *Ecological Applications*, 28: 1715-1729.
 76. Burkholder, E.**, Jakes, A., Jones, P., **Hebblewhite, M.**, Bishop, C. 2018. To Jump or not to Jump: Mule Deer and White-tailed Deer Crossing Decisions. *Wildlife Society Bulletin*, 42: 420-429. ** undergraduate research thesis**.
 77. Metz, M., Emlen, D., Stahler, D., MacNulty, D., Smith, D.W., **Hebblewhite, M.** 2018. Predation by a coursing predator shapes the evolutionary traits of ungulate weapons. *Nature Ecology & Evolution*, 2: 1619 – 1625.
 78. Spitz, D., **Hebblewhite, M.**, Stephenson, T.R. 2018. How plastic is migratory behavior? Quantifying altitudinal movement in a partially-migratory alpine ungulate. *Canadian Journal of Zoology*, 96: 1385 - 1394.
 79. Buchanan, G. M., A. E. Beresford, **M. Hebblewhite**, F. J. Escobedo, H. M. de Klerk, P. F. Donald, P. Escribano, L. P. Koh, J. Martinez-Lopez, N. Pettorelli, A. K. Skidmore, Z. Szantoi, K. Tabor, M. Wegmann, and S. Wich. 2018. Free satellite data key to conservation. *Science* 361:139-140. DOI: 10.1126/science. aau2650
 80. Olson, L., J. Squires, E. Roberts, J. S. Ivan, and **M. Hebblewhite**. 2018. Sharing the same slope: spatial and behavioral responses of a threatened mesocarnivore to motorized and non-motorized winter recreation. *Ecology and Evolution* 2018:1-18. DOI: 10.1002/ece3.4382
 81. Weckworth, B., **Hebblewhite, M.**, Mariani, S., Musiani, M. 2018. Lines on a map: conservation units, meta-population dynamics and recovery of woodland caribou in Canada. *Ecosphere*, 9(7): e02323.
 82. Finnegan, L., Pigeon, K., Cranston, J., **Hebblewhite, M.**, Musiani, M., Neufeld, L., Schmiegelow, F., Duval, J. Stenhouse, G. 2018. Natural regeneration on seismic lines influences movement behavior of wolves and grizzly bears. *PLoS One* 13(4): e0195480.

83. Kosterman, M., Squires, J.R., Holbrook, J., **Hebblewhite, M.** 2018. Forest structure provides the income for reproductive success in a southern population of Canada lynx. *Ecological Applications*, 28(4): 1032 – 1043.
84. Jakes, A., Gates, C.C., DeCesare, N.J., Jones, P., Goldberg, J.F., Kunkel, K., **Hebblewhite, M.** 2018. Classifying the migration behaviors of pronghorn on their northern range. *Journal of Wildlife Management*. 82(6); 1229 – 1242. DOI: 10.1002/jwmg.21485.
85. Squires, J., Heinemeyer, K., **Hebblewhite, M.** 2018. A study of shared habitats: tracking forest carnivores and backcountry recreationists. *The Wildlife Professional*, 12.1, 45-49.
86. Jones, P., Jakes, A., Eacker, D., Seward, B., **Hebblewhite, M.**, Martin, B. 2018. Evaluating responses by pronghorn to fence modifications across the northern great plains. *Wildlife Society Bulletin*, 42(2): 225 – 236. DOI: 10.1002/wsb.869
87. Tucker, M. A., K. Bohning-Gaese, W. F. Fagan, J. M. Fryxell, B. Van Moorter, S. C. Alberts, A. H. Ali, A. M. Allen, N. Attias, T. Avgar, H. L. A. Bartlam-Brooks, B. Bayarbaatar, J. L. Belant, A. Bertassoni, D. E. Beyer, L. Bidner, F. M. van Beest, S. Blake, N. Blaum, C. Bracis, D. Brown, P. N. de Bruyn, F. Cagnacci, J. M. Calabrese, C. Camilo-Alves, S. Chamaillé-Jammes, A. Chiaradia, S. C. Davidson, T. Dennis, S. DeStefano, D. Deifenbach, I. Douglas-Hamilton, J. Fennesey, C. Fichtel, W. Fiedler, C. Fischer, I. Fischhoff, C. H. Fleming, A. T. Ford, S. Fritz, B. Gehr, J. R. Goheen, E. Gurarie, **M. Hebblewhite, M.** Heurich, A. J. Hewison, C. Hof, E. Hurme, L. A. Isbell, R. Janssen, F. Jeltsch, P. Kaczensky, A. Kane, P. Kappler, M. Kauffman, R. Kays, D. Kimuyu, F. Koch, B. Kranstauber, S. D. Lapoint, P. Leimgruber, J. D. C. Linnell, P. Lopez-Lopez, A. C. Markham, J. Mattison, E. P. Medici, U. Mellone, E. H. Merrill, G. de Miranda-Mourao, R. G. Morato, N. Morellet, T. A. Morrison, S. L. Diaz-Munoz, A. Mysterud, D. Nandintsetseg, R. Nathan, A. Niamir, J. Odden, R. B. O'Hara, G. R. Olvieria-Santos, K. A. Olson, B. D. Patterson, R. C. de Paula, L. Pedrotti, M. Rimpler, T. L. Rogers, C. M. Rolandsen, C. S. Rosenberry, D. I. Rubenstein, K. Safi, S. Said, N. Sapir, H. Sawyer, N. M. Schmidt, N. Selva, A. Sergiel, E. Shiilegdamba, J. P. Silva, N. J. Singh, E. J. Solberg, O. Spiegel, O. Stran, S. Sundaresan, W. Ullman, U. Voigt, J. Wall, D. Wattles, M. Wikelski, C. C. Wilmers, J. W. Wilson, G. Wittemyer, F. Zieba, T. Zwijac-Kozcia, and T. Mueller. 2018. Moving in the anthropocene: global reductions in terrestrial mammalian movements. *Science*, 359: 466-469.
88. **++Hebblewhite, M.**, Eggeman, S., Bohm, H., Merrill, E.H. 2018. Density-Independent Predation affects migrants and residents equally in a declining partially migratory elk population. *Oikos*, 127: 1304-1318, <https://doi.org/10.1111/oik.05304>. ++ *Alberta Chapter of The Wildlife Society Annual Publication Award*.

2017

89. Lukacs, P.M., **Hebblewhite, M.**, Johnson, B.K., Johnson, H.E., Kauffman, M., Proffitt, K.M., Zager, P., Hersey, K., Holland, A.A., Hurley, M., McCorquodale, S., Middleton, A., Mitchell, M.S., Nordhagen, M., Nowak, J., Walsh, J.J., White, P.J., 2017. Recovering large carnivores reduce juvenile elk recruitment at regional scales amid widespread declines. *Journal of Wildlife Management*, 82(4): 698 – 710. DOI: 10.1002/jwmg.21438.
90. Steenweg, R. **Hebblewhite, M.**, Whittington, J., McKelvey, K., Lukacs, P. 2017. Sampling scales define occupancy and the occupancy-abundance relationship in animals, *Ecology*, Earlyview Online: DOI: 10.1002/ecy.2054
91. Olson, L. E., J. Squires, E. Roberts, A. Miller, J. S. Ivan, and **M. Hebblewhite**. 2017. Modeling large-scale winter recreation terrain selection with implications for recreation management and wildlife. *Applied Geography*, 86: 66-91.

92. Whittington, J., **Hebblewhite, M.**, Chandler, R. 2017. Generalized spatial mark-resight models for efficient density estimation of partially marked populations: an application to grizzly bears in the Rocky Mountains. *Journal of Applied Ecology*, 55: 157 – 168.
 93. **Hebblewhite, M.** & Fortin, D. 2017. Canada fails to protect its caribou. *Science*, 358, 730-730.
 94. Eacker, D.R., Lukacs, P.M., Proffitt, K.M., & **Hebblewhite, M.** 2017. Assessing the importance of demographic parameters for population dynamics using Bayesian integrated population modeling. *Ecological Applications*, 80: 1280-1293.
 95. Spitz, D., **Hebblewhite, M.**, Stephenson, T.R. 2017. MigrateR: extending model-driven methods for classifying and quantifying animal movement behavior. *Ecography*, 40: 788-799.
 96. Jedrzejewska, W., Goldberg, J.F., **Hebblewhite, M.**, Abarca, M., Gamarra, G., Calderon, L.E., Romero, J.F., Viloria, A.L., Carreno, R., Robinson, H.S., Lampo, M., Boede, E., Biganzoli, A., Stachowicz, Velasquez, G. 2017. Density and population structure of the jaguar (*Panthera onca*) in Hato Pinero, Los Llanos, Venezuela: A methodological comparison with long-term monitoring. *Mammal Review*, 62: 9-19.
 97. Ossi, F., Gaillard, J.-M., **Hebblewhite, M.**, Morellet, N., Ranc, N., Sandfort, R., Kroeschel, M., Kjellander, P., Mysterud, A., Linnell, J., Heurich, M., Sonnichsen, L., Sustr, P., Berger, A., Rocca, M., Urbano, F., Cagnacci, F. 2017. Plastic response by a small cervid to ad-libitum supplemental feeding in winter across a wide environmental gradient. *Ecosphere*, 8: e01629
 98. Hurley, M., **Hebblewhite, M.**, Lukacs, P.M., Nowak, J., Gaillard, J.-M., Bonenfant, C., 2017. Regional-scale models for predicting overwinter survival of juvenile ungulates. *Journal of Wildlife Management*. 81: 364-378, 10.1002/jwmg.21211
 99. Peters, W., **Hebblewhite, M.**, Mysterud, A., Spitz, D., Focardi, S., Urbano, F., Morellet, N., Huerich, M., Kjellander, P., Linnell, J.D.C., Cagnacci, F. 2017. Migration across the realized ecological niche in space and time by a large herbivore. *Ecological Monographs*, 87: 297-320, 10.1002/ecm.1250
 100. Gubili, C., S. Mariani, B. V. Weckworth, P. Galpern, A. D. McDevitt, **M. Hebblewhite**, B. Nickel, and M. Musiani. 2017. Environmental and anthropogenic drivers of connectivity patterns: A basis for prioritizing conservation efforts for threatened populations. *Evolutionary Applications* 10:199-211.
 101. Ossi, F., Gaillard, J.-M., **Hebblewhite, M.**, Morellet, N., Ranc, N., Sandfort, R., Kroeschel, M., Kjellander, P., Mysterud, A., Linnell, J., Heurich, M., Sonnichsen, L., Sustr, P., Berger, A., Rocca, M., Urbano, F., Cagnacci, F. 2017. Plastic response by a small cervid to ad-libitum supplemental feeding in winter across a wide environmental gradient. *Ecosphere*, 8(1): e01629
 102. **Hebblewhite, M.** 2017. Billion-dollar boreal woodland caribou and the biodiversity impacts of the global oil and gas industry. *Biological Conservation* 206:102-111.
- 2016
103. Steenweg, R., **Hebblewhite, M.**, Kays, R., Ahumada, J., Fisher, J., Burton, A., Townsend, S., Carbone, C., Rowcliff, M., Whittington, J., Brodie, J., Royle, J.A., Switalski, A., Clevenger, A., Heim, N., Rich, L., 2016. Scaling up camera traps - monitoring the planet's biodiversity with networks of remote sensors. *Frontiers in Ecology and Environment*, 15(1): 26-34.
 104. Ahrestani, F.S., **Hebblewhite, M.**, Smith, B., Running, S.W., Post, E., 2016. Dynamic complexity and stability of herbivore populations at the species distribution scale. *Ecology*, 97: 3184-3194.
 105. Steenweg, R., **Hebblewhite, M.**, Lukacs, P., Whittington, J., Forshner, A., Johnston, B., Shepherd, B., Peterson, D. 2016. Camera-based occupancy monitoring at large scales: power to detect trends in

- grizzly bears across the Canadian Rockies. *Biological Conservation*, 201: 192-200.
106. Roffler, G., Adams, L.G., **Hebblewhite M.** 2016. Social sexual segregation but similar habitat selection in a northern alpine ungulate. *Journal of Mammalogy*, 75: 1-12, DOI:10.1093/jmammal/gyw135
 107. Hauer, R., Locke, H., Dreitz, V., **Hebblewhite, M.**, Lowe, W., Muhlfeld, C., Nelson, C., Proctor, M., Rood, S. 2016. Gravel-bed river floodplains: the ecological nexus of glaciated mountain landscapes. *Science Advances*, 2: e1600026
 108. Eacker, D.R., **Hebblewhite, M.**, Proffitt, K.M., Jimenez, B.S, Mitchell, M.S., & Robinson, H.S. 2016. Annual elk calf survival in a multiple carnivore system. *Journal of Wildlife Management*: 80: 1345-1359, DOI: 10.1002/jwmg.21133
 109. Proffitt, K., **Hebblewhite, M.**, Peters, W., Hupp, N., Shamhart, J. 2016. Linking landscape-scale differences in forage to ungulate nutritional ecology. *Ecological Applications*, 26: 2156 – 2174.
 110. Xiao, W., Feng, L., Mou, P., Miquelle, D.G., **Hebblewhite, M.**, Goldberg, J.F., Robinson, H.S., Zhao, X., Zhou, B., Wang, T., Ge, J. 2016. Estimating abundance and density of Amur tigers along the Sino-Russian border. *Integrative Zoology*, 11: 332-333.
 111. Mancinelli, S., W. Peters, L. Boitani, F. Cagnacci, **Hebblewhite, M.** 2016. Roe deer summer habitat selection at multiple spatio-temporal scales in an Alpine environment, *Hystrix (Italian Journal of Mammalogy)* 26: 132-140.
 112. Steenweg, R., **Hebblewhite, M.**, Gummer, G., Low, B., Hunt, B. 2016. Assessing potential habitat and carrying capacity for reintroduction of plains bison (*Bison bison bison*) into Banff National Park. *PLoS One*. 11(2): e0150065. doi:10.1371/journal.pone.0150065
 113. Eggeman, S., **Hebblewhite, M.**, Bohm, H., Merrill, E.H. 2016. Behavioral Flexibility in Migratory Behavior in a Long-lived Ungulate. *Journal of Animal Ecology*, 85: 785 – 797.
- 2015
114. Goldberg, J.F., T. Tempa, Norbu, N., Hebblewhite, M., Mills, L.S., Wangchuck, T.R., Wangchuk, T. 2015. First estimates of common leopard density in the lower foothills of Bhutan. *PLoS One*, 10 (11): e0140757. doi:10.1371/journal.pone.014075
 115. Proffitt, K. M., J. G. Goldberg, **M. Hebblewhite**, R. Russell, B. Jimenez, H. Robinson, K. Pilgrim, and M. K. Schwartz. 2015. Integrating resource selection and harvest into spatial capture-recapture models for large carnivores. *Ecosphere*, 6: 239.
 116. Guangshun J., Qi, J., Wang, G. , Shi, Q., Darman, Y., **Hebblewhite, M.**, Miquelle, D., Li, Z., Zhang, X., Gu, J., Chang, Y., Zhang, M., Ma, J.. 2015. New hope for the survival of the Amur leopard in China. *Scientific Reports*, 5:15475, DOI: 10.1038/srep15475
 117. Cagnacci, F., S. Focardi, A. Ghisla, B. van Moorter, E. Gurarie, M. Heurich, R. May, T. Nygard, A. Mysterud, J. Linnell, M. Panzacchi, E. H. Merrill, C. M. Rolandsen, and **M. Hebblewhite**. 2015. How many routes lead to migration? Re-establishing the link between definitions, methods and movement ecology. *Journal of Animal Ecology*, 85: 54-68, DOI: 10.1111/1365-2656.12449
 118. Morgan-Henderson, M., **M. Hebblewhite**, Mitchell, M.S., J. Stetz, K. Kendall, and R. Carlson. 2015. Modeling multi-scale resource selection for bear rubs in northwestern Montana and Idaho. *Ursus*, 26: 28-39.
** undergraduate thesis publication**
 119. DeCesare, N.J., **Hebblewhite, M.**, Lukacs, P., Hervieux, D. 2015. Evaluating common sources of censoring and truncation in telemetry-based survival data. *Journal of Wildlife Management*, 80: 138 – 148, DOI:

10.1002/jwmg.991

120. Robinson, H., Ruth, T.K., Gude, J., Choate, D., DeSimone, R., **Hebblewhite, M.**, Kunkel, K., Matchett, R., and Murphy, K. 2015. Linking Resource Selection and Mortality Modeling for Population Estimation of Mountain Lions in Montana. *Ecological Modeling*, 312: 11 – 25.
 121. Peters, W., Cavedon, M., Hebblewhite, M., Pedrotti, L., Mustoni, A., Zibordi, F., Groff, C., Zanin, M., Cagnacci, F., 2015. Resource selection and connectivity reveal conservation challenges for reintroduced brown bears in the Italian Alps. *Biological Conservation*, 186: 123-133.
 122. Berger, J., G. B. Schaller, E. Cheng, A. Kang, M. Krebs, L. Li, and **M. Hebblewhite**. 2015. Legacies of past exploitation and climate affect mammalian sexes differently on the roof of the world. *Scientific Reports*, 5 : 8676 | DOI: 10.1038/srep08676
 123. Hervieux, D., Hebblewhite, M., Stepnisky, D., Bacon, M., Boutin, S., 2015. Addendum: Managing wolves (*Canis lupus*) to recover threatened woodland caribou (*Rangifer tarandus caribou*) in Alberta. *Canadian Journal of Zoology* 93:1,1-3. [dx.doi.org/10.1139/cjz-2015-0012](https://doi.org/10.1139/cjz-2015-0012).
 124. Hervieux, D., **Hebblewhite, M.**, DeCesare, N.J., Russell, M., Smith, K.G., Robertson, S., Boutin, S., 2015. Reply to the comment by Harron on "Widespread declines in woodland caribou (*Rangifer tarandus caribou*) continue in Alberta". *Canadian Journal of Zoology* 93:2, 151-154. [dx.doi.org/10.1139/cjz-2014-0217](https://doi.org/10.1139/cjz-2014-0217)
 125. Ossi, F., Gaillard, J.M., **Hebblewhite, M.**, Cagnacci, F., 2015. Snow sinking depth and forest canopy drive winter resource selection more than supplemental feeding in an alpine population of Roe deer. *European Journal of Wildlife Research*, 61: 111-124.
 126. Latham, A.D., Latham, M.C., Anderson, D.P., Cruz, J., Herries, D., **Hebblewhite, M.** 2015. The GPS craze: six questions to address before deciding to deploy GPS technology on wildlife. *New Zealand Journal of Ecology*. 39: 1-10.
 127. Brodie, J., Giordano, A., Dickson, B.G., **Hebblewhite, M.**, Bernard, H., Mohd-Azlan, J., Anderson, J., Ambu, L., 2015. Evaluating multispecies landscape connectivity in a threatened tropical community. *Conservation Biology* 29: 122-132.
- 2014
128. Hervieux, D., **M. Hebblewhite**, M. M. Bacon, and S. Boutin. 2014. Managing wolves to recover threatened woodland caribou in Alberta. *Canadian Journal of Zoology*, 92: 1029-1037, [10.1139/cjz-2014-0142](https://doi.org/10.1139/cjz-2014-0142)
 129. Semeniuk, C.A.D., Musiani, M., Birkigt, D., **Hebblewhite, M.**, Grindal, S., and Marceau, D.J. 2014. Identifying non-independent anthropogenic risks using a behavioral individual-based model. *Ecological Complexity*, 17: 67-78.
 130. Whittington, J., K. Heuer, B. Hunt, and **M. Hebblewhite**. 2014. Multi-species occupancy using spatially and temporally replicated snow surveys. *Animal Conservation*, 18: 92-101.
 131. Robinson, H., R. DeSimone, C. Hartway, J. A. Gude, M. Thompson, M. S. Mitchell, and **M. Hebblewhite**. 2014. A test of the compensatory mortality hypothesis in mountain lions: a management experiment in west-central Montana. *Journal of Wildlife Management*, 78: 791-807. DOI: [10.1002/jwmg.726](https://doi.org/10.1002/jwmg.726)
 132. Goldberg, J.F., **Hebblewhite, M.**, Bardsley, J. 2014. Consequences of a Refuge for the Predator-Prey Dynamics of a Wolf-Elk system in Banff National Park, Alberta, Canada. *PLoS One* 9(3): e91417.
 133. Hurley, M., **Hebblewhite, M.**, Gaillard, J.M., Dray, S., Taylor, K., Smith, B., Zager, P., and Bonenfant, C. 2014. Functional analysis of NDVI curves reveals overwinter mule deer survival is driven by both spring and fall phenology, not just spring. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 369:

20130196.

134. **Hebblewhite, M.**, D. G. Miquelle, H. Robinson, A. A. Murzin, D. G. Pikunov, and Y. M. Dunishenko. 2014. Including biotic interactions with ungulate prey and humans improves habitat conservation modeling for endangered Amur Tigers in the Russian Far East. *Biological Conservation*, 178: 50-64.
<http://dx.doi.org/10.1016/j.biocon.2014.07.013>
135. Peters, W., **Hebblewhite, M.**, Smith, K. G., Webb, S. M., Webb, N. & Anderson, R. 2014. Moose Population Estimation Using Distance Sampling in West-Central Alberta. *Wildlife Society Bulletin*, 38: 639-649.
136. Ralmer, J., Kellenberg, D., **Hebblewhite, M.**, Sime, C. 2014. Crying wolf: a spatial analysis of wolf locations and depredations on calf weight. *American Journal of Agricultural Economics*, 1 – 26.
137. Ripple, W.J., Estes, J.A., Beschta, R.L., Wilmers, C.C., Ritchie, E.G., **Hebblewhite, M.**, Berger, J., Elmhagen, B., Letnik, M., Nelson, M.P., Schmitz, O.J., Smith, D.W., Wallach, A.D., and Wirsing, A.J. 2014. Ecological effects and conservation status of the world's largest carnivores. *Science*, 343, 1241484, DOI: 10.1126/science.1241484
138. Polfus, J. L., K. Heinemeyer, **M. Hebblewhite**, and Taku River Tlingit First Nation. 2014. Comparing Traditional Ecological Knowledge and Western Science Woodland Caribou Habitat Models. *Journal of Wildlife Management*, In Press DOI: 10.1002/jwmg.643

2013

139. Ahrestani, F.S., **Hebblewhite, M.**, and Post, E.S. 2013. The importance of observation versus process error in analyses of global ungulate populations. *Scientific Reports*, 3: 03125, 3, doi:10.1038/srep03125
140. Hervieux, D., **M. Hebblewhite**, N. J. DeCesare, N. McCutcheon, S. Boutin, M. Russell, and S. Robertson. 2013. Widespread declines in woodland caribou (*Rangifer tarandus caribou*) continue in Alberta. *Canadian Journal of Zoology*, 91: 872 – 882, dx.doi.org/10.1139/cjz-2013-0123.
141. DeCesare, N. J., **M. Hebblewhite**, M. Bradley, D. Hervieux, and M. Musiani. 2013. Linking habitat selection and predation risk to spatial variation in fitness. *Journal of Animal Ecology* 83: 343-352
142. Hebblewhite, M. 2013. Consequences of ratio-dependent wolf predation on elk population dynamics. *Population Ecology*, 55: 511 – 522.
143. Weckworth, B. V., M. Musiani, N. J. DeCesare, A. McDevitt, **M. Hebblewhite**, and S. Mariani. 2013. Preferred habitat and effective population size drive the landscape genetics of an endangered ungulate. *Proceedings of the Royal Society B-Biological Sciences* 280: 20131756.
144. Post, E. S., E. Bhatt, C. Bitz, J. Brodie, T. L. Fulton, **M. Hebblewhite**, J. Kerby, S. Kutz, I. Stirling, and D. A. Walker. 2013. Sea ice as a driver of ecological responses to climate change in the Arctic. *Science* 341: 519 – 524.
145. Latham, A.D.M., Latham, M.C., Knopff, K.H., **Hebblewhite, M.**, Boutin, S. 2013. Wolves, deer, and beaver: implications of prey enrichment and seasonal prey switching for woodland caribou declines. *Ecography*, 36: 001 - 015.
146. Miller, C. S., **M. Hebblewhite**, Y. Petrunenko, I. V. Seryodkin, N. J. DeCesare, J. M. Goodrich, and D. G. Miquelle. 2013. Estimating Amur tiger (*Panthera tigris altaica*) kill rates and consumption rates using GPS collars. *Journal of Mammalogy* 94: 845 – 855.
147. Brodie, J., H. E. Johnson, M. S. Mitchell, P. Zager, K. M. Proffitt, **M. Hebblewhite**, M. Kauffman, B. Johnson, J. Bissonette, C. Bishop, J. A. Gude, J. Herbert, K. Hersey, M. Hurley, P. Lukacs, S.

McCorquodale, E. McIntire, J. Nowak, D. W. Smith, and P. J. White. 2013. Relative influence of human harvest, carnivores, and weather on adult female elk survival across western North America *Journal of Applied Ecology*: 50: 295 - 305.

148. Tempa, T., **M. Hebblewhite**, L. S. Mills, N. Norbu, T. Wangchuk, T. Wangchuk, T. Nidup, P. Dendup, D. Wangchuk, Y. Wangdi, and T. Dorji. 2013. Royal Manas National Park, Bhutan, as a wild felid biodiversity hot spot. *Oryx*: 47: 207 - 210.
149. Muhly, T. B., **M. Hebblewhite**, D. Paton, J. A. Pitt, M. S. Boyce, and M. Musiani. 2013. Humans strengthen bottom-up effects and weaken trophic cascades in a terrestrial food web. *PLoS One* 8:e64311.
150. Johnson, H. E., **M. Hebblewhite**, T. R. Stephenson, D. W. German, B. M. Pierce, and V. C. Bleich. 2013. Evaluating apparent competition in limiting the recovery of an endangered ungulate. *Oecologia*, 171:295–307.

2012

151. DeCesare, N.J. 2012. Separating spatial search and efficiency rates as components of predation risk. *Proceedings of the Royal Society B*, 279: 4626 – 4633.
152. Squires, J. R., N. J. DeCesare, L. E. Olson, J. A. Kolbe, **M. Hebblewhite**, and S. Parks. 2012. Combining resource selection and movement behavior to predict corridors for Canada lynx at their southern range periphery. *Biological Conservation*, 157: 187 - 195
153. Cleveland, S. M., **M. Hebblewhite**, M. Thompson, and R. Henderson. 2012. Linking elk movement and resource selection to hunting pressure in heterogeneous landscapes. *Wildlife Society Bulletin*, 36:658 – 668.
154. Semeniuk, C. A. D., M. Musiani, **M. Hebblewhite**, S. Grindal, and D. J. Marceau. 2012. Incorporating behavioral-ecological strategies in pattern-oriented modeling of caribou habitat use in a highly-industrialized landscape. *Ecological Modeling*, 243: 18 – 32.
155. Peters, W., **Hebblewhite, M.**, DeCesare, N.J., Cagnacci, F., Musiani, M., 2012. Human landscape alteration affects resource partitioning of coexisting moose and threatened caribou. *Ecography*, 35: 001-012.
156. Squires, J.R., DeCesare, N.J., **Hebblewhite, M.**, Berger, J. 2012. Missing Lynx and Trophic Cascades in Food Webs: a Reply to Ripple et al. *Wildlife Society Bulletin*, 36: 567 – 571.
157. Greene, L., **M. Hebblewhite**, and T. R. Stephenson. 2012. Short-term vegetation response to wildfire in the eastern Sierra Nevada: implications for recovering an endangered ungulate. *Journal of Arid Environments*, 87: 118 – 128.
158. Hebblewhite, M., F. Zimmermann, Z. Li, D. G. Miquelle, Z. Minghai, S. Haiyi, F. Morschel, W. Zhigang, S. Lianxi, A. Purekhovsky, and Z. Chunquan. 2012. A Future for Amur Tigers in Northeastern China? Predicting Potential Tiger Habitat and Numbers in the Changbaishan Ecosystem. *Animal Conservation*, 15 :579 – 592.
159. DeCesare, N. J., **M. Hebblewhite**, F. Schmiegelow, D. Hervieux, G. J. McDermid, L. Neufeld, M. Bradley, J. Whittington, K. G. Smith, L. E. Morgantini, M. Wheatley, and M. Musiani. 2012. Transcending scale dependence in identifying habitat with resource selection functions. *Ecological Applications*, 22: 1068-1083.

160. Weckworth, B. V., M. Musiani, A. McDevitt, **M. Hebblewhite**, and S. Mariani. 2012. Reconstruction of caribou evolutionary history in Western North America and its implications for conservation. *Molecular Ecology*, 21: 3610-3624.
 161. Kohl, M., S. M. Cleveland, **M. Hebblewhite**, and R. C. Callaway. 2012. Forage Value of Invasive Species to the Diet of Rocky Mountain Elk. *Rangelands*, 34: 24-28. ** *undergraduate research thesis***
 162. Boutin, S., M. S. Boyce, **M. Hebblewhite**, D. Hervieux, K. H. Knopff, M. C. Latham, D. M. Latham, J. Nagy, D. Seip, and R. Serrouya. 2012. Why are caribou declining in the oil sands? *Frontiers in Ecology and Environment* 10:65-67.
- 2011
163. Nelson, B., **Hebblewhite, M.**, Ezenwa, V., Shury, T., Merrill, E. H., Paquet, P. C., Schmiegelow, F., Seip, D., Skinner, G. & Webb, N. 2011. Seroprevalence of canine parvovirus and distemper in wolves in the Canadian Rocky Mountains. *Journal of Wildlife Diseases*, 48: 68-78. ** *undergraduate research thesis***.
 164. Miller, C. S.*, Petrunenko, Y. K., Goodrich, J. **M.**, **Hebblewhite, M.**, Seryodkin, I. V. & Miquelle, D. G. 2011 Translocation a success, but poaching remains a problem for Amur tigers. *Cat News*, 55: 23-26.
 165. **Hebblewhite, M.** & Merrill, E. H. 2011 Fitness balancing in a partially migratory ungulate through risk-forage trade-offs. *Oikos*, 120: 1860-1870.
 166. **Hebblewhite, M.** 2011. Unreliable Knowledge about Economic Impacts of Large Carnivores on Bovine Calves. *Journal of Wildlife Management*, 75: 1724 – 1730.
 167. Whittington, J., Hebblewhite, M., DeCesare, N. J., Neufeld, L., Bradley, M., Wilmshurst, J. W. & Musiani, M. 2011 Caribou encounters with wolves increases near roads and trails: a time-to-event approach. *Journal of Applied Ecology*, 48: 1535 – 1542.
 168. Robinson, H. S., **Hebblewhite, M.**, DeCesare, N. J., Whittington, J., Neufeld, L., Bradley, M. & Musiani, M. 2011. The effect of fire on spatial separation between wolves and caribou. *Rangifer*, 20: 277 – 294.
 169. DeCesare, N. J., **Hebblewhite, M.**, Bradley, M., Smith, K., Hervieux, D. & Neufeld, L. 2011. Estimating ungulate recruitment and growth rates using age ratios. *Journal of Wildlife Management*, 76: 144-153.
 170. Rogala, J. K., **M. Hebblewhite**, J. Whittington, C. A. White, J. Coleshill, and M. Musiani. 2011. Human Activity Differentially Redistributes Large Mammals in the Canadian Rockies National Parks. *Ecology and Society* 16: 16.
 171. Polfus, J.L., **Hebblewhite, M.**, Heinemeyer, K. 2011. Identifying indirect habitat loss and avoidance of human infrastructure by northern mountain. *Biological Conservation*, 144: 2637-2646.
 172. **Hebblewhite, M.**, Miquelle, D. G., Aramilev, V. V. & Pikonov, D. G. 2011 Recovering the critically endangered Far Eastern Amur Leopard: identifying potential habitat and population size for reintroduction. *Biological Conservation*, 144: 2403-2413.
 173. Vucetich*, J. A., **Hebblewhite, M.**, Smith, D. W. & Peterson, R. O. 2011. Predicting prey population dynamics from kill rate, predation rate and predator-prey ratios in three wolf-ungulate systems. *Journal of Animal Ecology* 80: 1236-1245. * Top downloaded paper in 2012.

174. Griffin, K., **Hebblewhite, M.**, Zager, P., Robinson, H. R., Barber-Meyer, S., Christenson, D., Creel, S., Harris, N., Hurley, M., Jackson, D., Johnson, B., Mech, L. D., Myers, W. L., Raithel, J., Schlegel, M., Smith, B. & White, P. J. 2011. Neonatal mortality of elk driven by climate, predator phenology and predator diversity. *Journal of Animal Ecology* 80: 1246-1257.
 175. DeCesare, N. J., Whittington, J., Robinson, H., **Hebblewhite, M.**, Bradley, M., Neufeld, L. & Musiani, M. 2011. The role of translocation in recovery of woodland caribou populations. *Conservation Biology* 25, 365-373.
 176. Miller, C. M., **Hebblewhite, M.**, Goodrich, J. M. & Miquelle, D. G. 2011. Review of research methodologies for tigers - Telemetry. *Integrative Zoology* 5: 378-389.
 177. *Hurley, M., **Hebblewhite, M.** Unsworth, J., Zager, P., Garton, E., Montgomery, D., Skalski, J. and C. Maycock. 2011. Mule deer demographic response of mule deer to experimental reduction of coyotes and mountain lions in southeastern Idaho. *Wildlife Monographs* 178: 1-33. *2012 TWS Publication of the Year Recipient
 178. Matthiopoulos, J., **Hebblewhite, M.**, Aarts, G. & Fieberg, J. 2011. Generalised functional responses for species distributions. *Ecology* 92: 583-589.
- 2010
179. **Hebblewhite, M.**, Musiani, M. & Mills, L. S. 2010 Restoration of genetic connectivity among Northern Rockies wolf populations. *Molecular Ecology*, 19: 4383-4385.
 180. Muhly, T. B., M. Alexander, M. S. Boyce, R. Creasey, **M. Hebblewhite**, D. Paton, J. A. Pitt, and M. Musiani. 2010. Differential risk effects of wolves on elk and cattle: implications for conservation. *Oikos* 119: 1243-1254.
 181. Robinson, B. G., **M. Hebblewhite**, and E. Merrill. 2010. Are migrant and resident elk (*Cervus elaphus*) exposed to similar forage and predation risk on their sympatric winter range? *Oecologia* 164: 265-275.
 182. Musiani, M., Anwar, M.S., McDermid, G., **Hebblewhite, M.** & Marceau, D. J. 2010. How humans shape wolf behavior in Banff and Kootenay National Parks, Canada. *Ecological Modeling* 221: 2374 – 2387.
 183. Gaillard, J. M., **M. Hebblewhite**, A. Loison, M. Fuller, and R. Powell. 2010. Habitat-performance relationships: finding the right metric at a given spatial scale. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 365: 2255-2265.
 184. *Beyer H.L., Haydon D.T., Morales J.M., Frair J.L., **Hebblewhite M.**, Mitchell M.S. & Matthiopoulos J. 2010. Habitat preference: understanding use versus availability designs. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 365: 2245-2254. * 2010 TWS Publication of the Year Recipient.
 185. Merrill, E. H., Sand, H., Zimmerman, B., McPhee, H., **Hebblewhite, M.**, Webb, N., Wabakkan, P. & Frair, J. L. 2010. Opportunities and challenges for using predator movements to assess kill sites and attack rates. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 365: 2279-2288.
 186. Frair, J. L., Fieberg, J., Cagnacci, F., **Hebblewhite, M.**, Pedrotti, L. & DeCesare, N.J. 2010. Plentiful but problematic: resolving issues of error in analyses using GPS collar data. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 365: 2187-2200.

187. Fieberg, J., Matthiopoulos, J., **Hebblewhite, M.**, Boyce, M. S. & Frair, J. L. 2010. Autocorrelation and studies of habitat selection: problem, red herring, or opportunity? *Philosophical Transactions of the Royal Society B-Biological Sciences*, 365: 2233-2244.

188. **Hebblewhite, M.** & Haydon, D. T. 2010. Distinguishing technology from ecology: a critical review of the use and abuse of GPS collar data in ecology. *Philosophical Transactions of the Royal Society B-Biological Sciences*, 365: 2303-2312.

2009

189. **Hebblewhite, M.**, White, C.A., & Musiani, M. 2009. Revisiting extinction in National Parks: Mountain caribou in Banff. *Conservation Biology*, 24: 341-344.

190. DeCesare, N.J., **Hebblewhite, M.**, Robinson, H., Musiani, M. 2009. Endangered, apparently: the role of apparent competition in endangered species management. *Animal Conservation*, 13: 353-362.

191. **Hebblewhite, M.**, & Merrill, E.H. 2009. Trade-offs between wolf predation risk and forage at multiple spatial scales in a partially migratory ungulate. *Ecology*, 90:3445-3454.

192. Eggeman, S., **Hebblewhite, M.**, Cunningham, J., & Hamlin, K. 2009. Fluctuating asymmetry in elk antlers is unrelated to environmental conditions in the Greater Yellowstone Ecosystem. *Wildlife Biology*, 15: 299-309. ****undergraduate research thesis****

193. Post, E., Brodie, J., Wilmers, C.C., **Hebblewhite, M.**, & Anders, A.D. 2009. Global population dynamics and hotpots of climate change. *Bioscience*, 59: 489-499.

194. McDevitt, A., Mariani, S., **Hebblewhite, M.**, DeCesare, N.J., Morgantini, L., Seip, D., Weckworth, B., Musiani, M. 2009. Survival in the Rockies of an endangered hybrid swarm from diverged caribou (*Rangifer tarandus*) lineages. *Molecular Ecology* 18, 665-679.

195. **Hebblewhite, M.**, Munro, R.H., & Merrill, E.H. 2009. Trophic consequences of post-fire logging in a wolf-ungulate system. *Forest ecology and management*, 257: 1053-1062.

196. **Hebblewhite, M.** 2009. Linking wildlife populations with ecosystem change: state of the art satellite ecology for national park science. *Park Science*, 26: 1-7 (publication of the National Park Service, USA, Peer-reviewed).

<http://www.nature.nps.gov/ParkScience/index.cfm?ArticleID=280&page=7>

2008

197. Webb, N., **Hebblewhite, M.**, & Merrill. 2008. Statistical methods for identifying wolf kill sites from GPS locations. *Journal of Wildlife Management*, 72, 798-806.

198. **Hebblewhite, M.**, McDermid, G., & Merrill, E.H. 2008. A multi-scale test of the intermediate forage maturation hypothesis in a partially migratory montane elk herd. *Ecological Monographs*, 78: 141-166.

199. **Hebblewhite, M.**, & Merrill, E.H. 2008. Modeling wildlife-human relationships for social species using mixed-effects models. *Journal of Applied Ecology*. 45: 834-844.

2007

200. **Hebblewhite, M.**, Whittington, J., Bradley, M., Skinner, G., Dibb, A., White, C.A. 2007. Conditions for caribou persistence in the wolf-elk-caribou systems of the Canadian Rockies. *Rangifer*, 17: 85-97.

201. **Hebblewhite, M.** 2007. Predator-prey management in the national park context: lessons from a transboundary wolf-elk, moose and caribou system. Transactions of the 72nd North American Wildlife Conference, Portland. 348 - 365.
202. **Hebblewhite, M.**, & Merrill, E.H. 2007. Multi-scale wolf predation risk for elk: does migration reduce risk? *Oecologia* 152: 377-387.
203. **Hebblewhite, M.**, Percy, M., & Merrill, E.H. 2007. Are all GPS collars created equal? Correcting habitat-induced bias using three brands in the Central Canadian Rockies. *Journal of Wildlife Management* 71: 2026-2033.

2006

204. Hurford, A., **Hebblewhite, M.**, & Lewis, M.A. 2006. A spatially explicit model for the Allee effect: why wolves recolonize so slowly in Greater Yellowstone. *Theoretical Population Biology* 70: 244-254.
205. Gillies, C.S., **Hebblewhite, M.**, Nielsen, S.E., Krawchuk, M.A., Aldridge, C.L., Frair, J.L., Saher, D.J., Stevens, & C.E., Jerde. 2005. Application of random effects to the study of resource selection by animals. *Journal of Animal Ecology* 75: 885 – 898.
206. **Hebblewhite, M.**, Merrill, E. H., Morgantini, L. E., White, C. A., Allen, J. R., Bruns, E., Thurston, L. & Hurd, T. E. 2006, Is the migratory behavior of montane elk herds in peril? The case of Alberta's Ya Ha Tinda elk herd. *Wildlife Society Bulletin*, 134: 1280-1295.

2005

207. **Hebblewhite, M.**, Merrill, E.H., & McDonald, T.E. 2005. Spatial decomposition of predation risk using resource selection functions: an example in a wolf-elk predator-prey system. *Oikos* 111:101-111.
208. **Hebblewhite, M.**, White, C. A., Nietvelt, C., McKenzie, J. M., Hurd, T. E., Fryxell, J. M., Bayley, S. & Paquet, P. C. 2005 Human activity mediates a trophic cascade caused by wolves. *Ecology* 86: 2135-2144.
209. **Hebblewhite, M.** 2005. Predation by wolves interacts with the North Pacific Oscillation (NPO) on a western North American elk population. *Journal of Animal Ecology* 74: 226-233.

2004

210. **Hebblewhite, M.**, Paquet, P.C., Pletscher, D.H., Lessard, R.J. & Callaghan, C. 2004. Development and application of a ratio-estimator to estimate wolf-killing rates and variance in a multi-prey ecosystem. *Wildlife Society Bulletin* 31: 933-945.

2003

211. **Hebblewhite, M.**, Percy, M., & Serrouya, R. 2003. Black bear survival and demography in the Bow Valley of Banff National Park. *Biological Conservation* 112: 415-425.
212. **Hebblewhite, M.**, Pletscher, D.H., & P.C. Paquet. 2003. Elk population dynamics following wolf recolonization of the Bow Valley of Banff National Park. *Parks Canada Research Links* 11: 10-12.

2002

213. **Hebblewhite, M.**, & Pletscher, D.H. 2002. Effects of elk herding on predation by wolves: linking anti-predator behavior to population dynamics. *Canadian Journal of Zoology* 80: 800-809.
214. **Hebblewhite, M.**, Pletscher, D.H., & P.C. Paquet. 2002. Factors affecting elk population growth rate in areas with and without predation by recolonizing wolves in Banff National Park. *Canadian*

Journal of Zoology 80:789-799.

Books & Book Chapters

215. Metz, M., Hebblewhite, M., Smith, D.W., Stahler, D.R., MacNulty, D.R., Tallian, A., Vucetich, J.A. 2020. The nuts and bolts of wolf-prey relationship sin Yellowstone National Park: what wolves eat and why. Chapter 13 in Smith, D., MacNulty, D., Stahler, D. Yellowstone Wolves: Reintroduction, Ecology, Behavior, and Conservation. University of Chicago Press, In Press.
216. Metz, M., Smith, D.W., Stahler, D.R., MacNulty, D., and Hebblewhite, M. 2020. Predation by wolves on elk in northern Yellowstone and the unfolding story of wolf-elk population dynamics in a multi-prey environment. Chapter 14 in Smith, D., MacNulty, D., Stahler, D. Yellowstone Wolves: Reintroduction, Ecology, Behavior, and Conservation. University of Chicago Press, In Press.
217. Hebblewhite, M. 2017. North American Energy Sprawl and Triage Conservation: A Tale of Two Ecosystems, Pages 39 – 50 in Kisecker, J., and Naugle, D. 2017. Managing our energy footprint, Island Press, San Francisco, CA, USA.
218. Hebblewhite, M., Hurley, M., Lukacs, P., Nowak, J. 2018. Predicting mule deer (*Odocoileus hemionus*) harvest in real-time: Integrating satellite remote-sensing measures of forage quality and climate in Idaho, United States. Pages 194-228 in Buchanan, G., and Leidner, A.K. (editors), Satellite Remote Sensing for Conservation Action: Case Studies of Implementation, Cambridge University Press.
219. Wilmers, C., C. T. Darimont, and **M. Hebblewhite**. 2012. Should large terrestrial predators be restored as a hedge against climate change? in J. F. Brodie, E. Post, and D. Doak, editors. Conserving wildlife populations in a changing climate. University of Chicago Press, Chicago.
220. Mitchell, M. S. and **Hebblewhite, M.** 2012. Carnivore habitat ecology: integrating theory and application for conservation. Pages 218 - 255 in R. A. Powell and L. Boitani, editors. Carnivore Ecology and Conservation: A Handbook of Techniques. Oxford University Press, Oxford, UK.
221. **Hebblewhite, M.** 2011. Effects of Energy Development on Ungulates in Western North America. Pages 71-94 in D. Naugle, editor. Energy Development & Wildlife Conservation in Western North America. Island Press, New York.
222. **Hebblewhite, M.** & Smith, D. W. 2010. Wolf community ecology: ecosystem effects of recovering wolves in Banff and Yellowstone National Parks. Pages 69-120 in The world of wolves: new perspectives on ecology, behavior, and policy (eds M. Musiani, L. Boitaini & P. C. Paquet), University of Calgary Press, Calgary, AB.
223. Duke, D., **Hebblewhite, M.**, Paquet, P.C., & Callaghan, C. 2001. Restoration of a large carnivore corridor in Banff National Park, Alberta. In Large mammal restoration: ecological and sociological challenges in the 21st Century, Edited by Maehr, D.S., Noss, R.F., & Larkin, J.L., Island Press.

Dissertation, Theses

224. Hebblewhite, M. 2006. Linking forage and predation risk to ungulate population dynamics. Dissertation, Environmental Biology and Ecology, University of Alberta, Edmonton, AB. 327pp + appendices.
225. Hebblewhite, M. 2000. Wolf and elk predator-prey dynamics in Banff National Park. Masters of

Science Thesis. Wildlife Biology Program, School of Forestry, University of Montana, Missoula, MT. 130pp.

226. Hebblewhite, M. 1995. Habitat use by sympatric moose and white-tailed deer in Algonquin Provincial Park: implications for the habitat refuge hypothesis. Honors thesis, Department of Zoology, University of Guelph, Guelph, ON. 40pp.

Datasets

227. Hebblewhite M, Merrill E. 2016. Data from: A multi-scale test of the forage maturation hypothesis in a partially migratory ungulate population. Movebank Data Repository. doi:10.5441/001/1.k8s2g5v7
228. Peters W, Hebblewhite M, Mysterud A, Spitz D, Focardi S, Urbano F, Morellet N, Heurich M, Kjellander P, Linnell JDC, Cagnacci F. 2017. Data from: Migration in geographic and ecological space by a large herbivore. Dryad Digital Repository. <http://dx.doi.org/10.5061/dryad.95930>

Software / R packages

229. Royle, A.J., Russell, R., Sutherland, C., Goldberg, J.F. 2014. SCRBayes R Package 0.20. Bayesian analysis of spatial capture-recapture models. R package. URL: <https://sites.google.com/site/spatialcapturecapture/scrbytes-r-package> [Goldberg was a research associate in my lab during development of the SCRBayes R package].
230. Spitz, D., Hebblewhite, M., Spitz, D. 2017. migrateR. <https://github.com/dbspitz>

Other Publications, Reports

231. Heinemeyer, K., Squires, J., Hebblewhite, M., Smith, J.S., Holbrook, J., Copeland, J. 2017. Wolverine-winter recreation research project: investigating the interactions between wolverines and winter recreation. Final report to the USFS and other Project Partners, December 15, 2017. 79pp.
232. Steenweg, R., J. Whittington, M. Hebblewhite. 2015. Canadian Rockies Carnivore Monitoring Project: Examining Trends in Carnivore Populations and their Prey Using Remote Cameras. Final Report. March 31, 2015. University of Montana. 88p.
233. Hebblewhite, M. 2012. Editors choice: Identifying Habitat for Endangered Species: Making Habitat Selection Models More Realistic. Review of Moreau et al. 2012. Multi-level functional responses for wildlife conservation: the case of threatened caribou in managed boreal forests. Journal of Applied Ecology 49(3): 611 - 620, available <http://www.journalofappliedecology.org/view/0/editorschoice493.html>
234. Hebblewhite, M. 2012. Potential bison habitat and population assessment in Banff National Park. Wildlife Biology Program, University of Montana.
235. Schmiegelow, F., V. Crichton, M. Hebblewhite, T. Nudds, G. Racey, J. Ray, J. A. Schaefer, D. Seip, and G. Sutherland. 2012. Submission to Environment Canada and the SARA Public Registry for the Draft Recovery for the Woodland Caribou (*Rangifer tarandus caribou*) Boreal Population, in Canada - Proposed August 2011.
236. Hebblewhite, M. 2010. Editors choice: Challenges in reintroducing carnivores. Review of Devineau et al. Evaluating the lynx reintroduction program in Colorado, Journal of Applied Ecology

- 47(3), available <http://www.journalofappliedecology.org/view/0/editorschoice473.html>
237. McCutcheon, N., Boutin, S., Dzus, E., Hervieux, D., Hebblewhite, M., Morgantini, L., Saxena, A., Sherrington, M., Smith, K., Stepnisky, D., Wallis, C. 2009. Identifying intactness priority zones within woodland caribou ranges. Report endorsed by the Alberta Caribou Research Committee, prepared by Research and Monitoring subcommittee, Edmonton, Alberta.
 238. Zhenxin, L., Zimmerman, F., Hebblewhite, M., Purekhovsky, A., Morcschel, F., Chunquan, Z., Miquelle, D. A 2009. Study on the potential tiger habitat in the Changbaishan area, China. World Wildlife Fund and Wildlife Conservation Society (results of May 2009 workshop in Changchun, China), China Forestry Publishing House, Beijing, PRC, 172 pages (in English and Chinese) http://www.wwfchina.org/english/downloads/Changbai%20Habitat/WWF_Changbai_Tiger_Habitat_Report031110.pdf
 239. Hebblewhite, M. 2009. Declaration of Mark Hebblewhite in the case of Defenders of Wildlife et al v. Ken Salazar, USFWS, et al, Case #. Cv-09-82-M-DWM against delisting of the Northern Rocky Mountain population segment of gray wolves. 28pp.
 240. Environment Canada. 2009. Scientific Review for the Identification of Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, Ottawa: Environment Canada. 72 pp. plus 180 pp Appendices. I was a member of the 18-member Science Advisory Group that drafted the report. Report available from http://www.sararegistry.gc.ca/document/default_e.cfm?documentID=1761
 241. Hebblewhite, M. 2008. A literature review of the effects of energy development on ungulates: implications for eastern Montana. Report prepared for the Montana Department of Fish Wildlife and Parks, Helena, MT, 114p.
 242. Hebblewhite, M., Munro, R. & Merrill, E. H. 2005. Effects of post-fire logging on elk habitat during the first 3 years post-fire: A Case Study of the Dogrib Creek Fire on the Eastern Slopes of Alberta. Department of Biological Sciences, University of Alberta, Edmonton, AB. Prepared for the Foothills Model Forest. 85p.
 243. Hebblewhite, M. 2000. Environmental assessment of the effects of Carrot creek fireguard construction on forest songbirds and amphibian populations. Prepared for Parks Canada, Banff National Park. 65pp.
 244. Hebblewhite, M., Duke, D., & Percy, M. 1995. Bull trout breeding habitat assessment, Bow River watershed. Prepared for Parks Canada, Banff National Park. 45pp.

Invited/Plenary Presentations

1. Hebblewhite, M. 2021. A Critical Review of Recovery under the Species-at-Risk-Act for Woodland Caribou Across Canada. 18th North American Caribou Workshop, Universite Quebec at Rimouski, Quebec, Canada.
2. Hebblewhite, M. 2020. Predator-prey dynamics studies in North America: Implications for the Wolf-Alps European Union EU-Life Project. October 2021, Mercantour National Park, France. Invited speaker to the board of the EU-Life Wolf-Alps project.
3. Hebblewhite, M. 2019. Twenty-five years of Yellowstone to Yukon Conservation Initiative. Invited presentation to the Board of Directors of the Y2YCI, Canmore, Alberta, September 2019.
4. Hebblewhite, M. 2019. Plenary: Twenty Years of the GPS-Infused Movement Revolution: Linking Movement Responses to Humans to Animal Fitness. Gordon Research Conference: Animal Movement as a Link

Between Ecology, Evolution and Behavior, Lucca, Italy.

5. Hebblewhite, M. 2019. Predation by a coursing predator shapes the evolutionary traits of ungulate weapons. Invited talk, Department of Biological Sciences, University of Alberta, Edmonton, January 21, 2019.
6. Hebblewhite, M. 2018. Carnivores, Elk and Fire: Insights from Long-Term Studies in Alberta and Montana. Invited Speaker. British Columbia Wildlife Federation Annual General Meeting, Kamloops, British Columbia.
7. Hebblewhite, M. 2017. The ecological effects of recovering large carnivores in the Northern Rockies. Invited Speaker. University of Wyoming Beatty Biodiversity Center, November 7, 2017.
8. Hebblewhite, M. 2017. Ecology & Management of Partially Migratory Ungulates: Insights from Canada's Longest Running Elk Research Project, the Ya Ha Tinda. Invited speaker. Department of Biology, University of British Columbia – Okanagan, Kelowna, British Columbia, November 3, 2017.
9. Hebblewhite, M. 2017. Conservation science priorities in Western Montana and the Yellowstone to Yukon Region. Presentation to the Board of Directors of Liz Clairborne-Art Ortenberg Foundation, New York City, New York, USA. October 26, 2017.
10. Hebblewhite, M. 2017. Billion-dollar caribou – a case for conservation triage. Montana State University Ecology Seminar Series, Invited Speaker, September 2017.
11. Hebblewhite, M. 2016. Facultative switching between migratory syndromes in large herbivores: ideal free distribution meets migration. Invited Speaker, Norwegian Academy of Sciences, Oslo, Norway, April 2016.
12. Hebblewhite, M. 2017. The Final Frontier? Strategies and Tools for Linking Populations and Habitats. Plenary Speaker. Fifteenth Western States Deer and Elk workshop, Sun Valley, Idaho, USA.
13. Hebblewhite, M. 2016. The challenges of applying theory to the conservation of predator-prey systems and large carnivores. Plenary speaker. Gordon Research Conference, Predator-prey interactions, Ventura, California, January 2016.
14. Hebblewhite, M. 2015. Billion-dollar caribou. Invited Speaker. University of Idaho, College of Natural Resources.
15. Hebblewhite, M. 2015. Predation and environmental variability: population consequences for deer and elk. Plenary speaker. Western States and Provinces Deer and Elk Workshop. May 2015, Canmore, AB, Canada.
16. Hebblewhite, M. 2015. Billion-dollar caribou, collateral wolves, and the continental biodiversity costs of the Keystone XL. Wildlife Biology Program Seminar series, Feb 6, 2015.
17. Hebblewhite, M. 2014. Political Ecology of trophic cascades. Invited Speaker. Utah State University, Logan, UT, Nov 11-12, 2014.
18. Hebblewhite, M. 2014. Plenary: Mammalian community dynamics in the anthropocene: the overriding dominance of humans across scales and the globe. Plenary Speaker. IX Congresso Italiano di Teriologia; Civitella Alfedena (AQ), Abruzzo National Park, Italy: Association Teriologica Italia.
19. Hebblewhite, M. 2013. Large-scale Animal Ecology and Management in North America: Threatened Woodland Caribou & Western Elk Research Cooperative. Invited Speaker at the 5th annual EURODEER meeting, Kalo, Denmark, December 2-5, 2013.
20. Hebblewhite, M. 2013. Carnivore spatial ecology: what we (I) don't know might hurt us? Invited Speaker In Large Carnivores in Terrestrial Ecosystems: Bridging Theory and Natural History to Inform Management. Edited by A. Middleton, and O. J. Schmitz. Yale University. , A symposium convened by the Yale Institute for Biospheric Studies, December 2013.

21. Hebblewhite, M. 2013. Political ecology of recovering wolf populations. Plenary Speaker, Research Advances in Fisheries Wildlife and Ecology Symposium, Oregon State University, Corvallis, OR.
22. Hebblewhite, M. 2010. The ecology, genetics and conservation of partial migration in ungulates. Invited Speaker. Centre for Ecological and Evolutionary Synthesis (CEES), Department of Biology, University of Oslo Oslo, Norway, Nov 10, 2010.
23. Hebblewhite, M. 2010. The Political Ecology of Trophic Cascades: Lessons from the Recolonization of Wolves in the Canadian Rockies. Invited Speaker. Faculty of Applied Ecology and Agricultural Sciences Evenstad, Hedmark University College Evenstad, Norway, Nov 12, 2010.
24. Hebblewhite, M. 2010. Ecology, genetics and conservation of partial migration in ungulates. Plenary speaker at the CanMOVE symposium on Ecology and Evolution of Partial migration, Lunds University, Lund , Sweden, August 31, 2010.
25. Hebblewhite, M. 2010. A critique of ungulate management in the post-wolf recovery era In 24th International Congress for Conservation Biology. Edmonton, Alberta, July 7, 2010.
26. Hebblewhite, M. 2009. Political ecology of wolves. Invited speaker in the Department of Environmental Studies, University of Santa Cruz, Santa Cruz, CA, October 2009.
27. Hebblewhite, M. 2009. The political ecology of trophic cascades. Invited speaker in the College of Forestry and Conservation Fall Seminar series, November 2009.
28. Hebblewhite, M. 2009. Ten-years tracking wolves in the heart of the Canadian Rockies: conservation lessons and wilderness science. Invited guest speaker in the 2009 Wilderness Lecture Series, Wilderness Institute, University of Montana, Missoula, MT.
29. Hebblewhite, M. 2007. Detecting climate-predation interactions in large-scale patterns: potential research approaches with Rangifer and Cervus datasets. Invited presentation to the Department of Arctic Environment, University of Aarhus, Roskilde, Denmark, December 2007.
30. Hebblewhite, M. 2007. Defining Critical habitat across spatial scales for threatened woodland caribou. Invited presentation to the Science Advisory Group for the Critical Habitat Review for Boreal Woodland Caribou recovery, Environment Canada, Toronto, ON.
31. Hebblewhite, M. 2007. Linking elk population dynamics to bottom-up and top-down forces. Invited departmental seminar speaker, Department of Natural Resources, Washington State University, Pullman, WA, Sept 2007.
32. Hebblewhite, M. 2007. Linking forage dynamics and predation risk to ungulate population dynamics. Invited presentation to the Annual meeting of the Canadian Society of Zoologists, Montreal, Quebec, May 2007.
33. Hebblewhite, M. 2007. Predator-prey management in the National Park context: lessons from a transboundary wolf, caribou and elk system. Invited presentation to the Transactions of the North American Wildlife Conference, Portland, OR, March 2007.
34. Hebblewhite, M., Boutin, S., Schmiegelow, F., Stenhouse, G., Frair, J.L., and Gates, G.C. 2007. Postcards from the edge: a review of the effects of oil and gas development on wildlife in Alberta. Invited presentation at the Montana Chapter of the Wildlife Society meetings, Bozeman, MT, Feb 2007.
35. Hebblewhite, M. and Merrill, E.H. 2006. Migratory declines in partially migratory elk populations in the Canadian Rocky Mountains: a result of transboundary management conflict. Invited paper presented in the conservation of migratory ungulates symposium, Society for Conservation Biology

Annual Meeting, San Jose, CA, June 2006.

Selected Conference and Scientific Presentations (Last 5 years only)

1. Hessami, M**, Hebblewhite, M., Nowak, J., Whittington, J., Mitchell, M. 2019. estimating neonate survival for elk in an occupancy framework. Presentation. Wildlife Society conference & American Fisheries joint conference, Reno, Nevada, October 2019.
2. Aikens, E.O., Mysterud, A., Merkle, J., Cagnacci, F., Rivrud, I.M., **Hebblewhite, M.**, Hurley, M.A., Peters, W., Bergen, S., De Groeve, J., Dwinell, S.P.H., Gehr, B., Heurich, M., Hewison, M.A., Jarnemo, A., Kjellander, P., Kroschel, M., Licoppe, A., Linnell, J., Merrill, E.H., Middleton, A.D., Morellet, N., Neufeld, L., Ortega, A.C., Parker, K.L., Pedrotti, L., Proffitt, K.M., Said, S., Sawyer, H., Scurlock, B.M., Singer, J., Stent, P., Sustr, P., Szkorupa, T., Monteith, K.L., Kauffman, M.J. 2019. Presentation. Wildlife Society conference & American Fisheries joint conference, Reno, Nevada, October 2019.
3. Martin, H., Hebblewhite, M., Merrill, E.H. 2019 ideal free migration?? testing for density-dependent migration in partially migratory elk. Presentation. Wildlife Society conference & American Fisheries joint conference, Reno, Nevada, October 2019.
4. Cassidy, B., Hebblewhite, M., Smith, D.W. 2019. estimating detection and survival of gray wolf pups in Yellowstone national park. Poster. Wildlife Society conference & American Fisheries joint conference, Reno, Nevada, October 2019.
5. Olson, L., Squires, J., Roberts, E., Ivan, J., Hebblewhite, M., Miller, D. 2019. Reducing conflict between winter recreation and sensitive species on Colorado's public lands: investigating human and Canada lynx movements through the same spatial lens. Presentation. Wildlife Society conference & American Fisheries joint conference, Reno, Nevada, October 2019.
6. Heinle, K**, Eby, L., Muhlfeld, C., D'Angelo, V., Steed, A., Whiteley, A., Hebblewhite, M. 2019. biotic and abiotic associations with westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) occurrences in the north fork flathead river in British Columbia, Canada and northern Montana, USA under current and future climate scenarios. Presentation. Wildlife Society conference & American Fisheries joint conference, Reno, Nevada, October 2019.
7. Palm, E., M. J. Macander, K. Russell, M. Sutor, and M. Hebblewhite. 2018. From drones to resource selection: using unmanned aerial vehicles to understand the relationship between fire, food availability and woodland caribou. American Geophysical Union (AGU), Washington, D. C.
8. Gurarie, E., M. Hebblewhite, N. T. Boelman, S. C. Davidson, A. P. Kelly, M. Sutor, and K. Joly. 2018. Large-Scale Synchrony and Climate Drivers of Barrenground Caribou Migration across North America. American Geophysical Union (AGU), Washington, D. C.
9. Oliver, R., G. E. Liston, A. Reinking, G. Bohrer, S. C. Davidson, E. Gurarie, M. Hebblewhite, S. D. LaPoint, P. Mahoney, and N. Boelman. 2018. Environmental and ecological drivers of American robin (*Turdus migratorius*) migration and habitat selection. American Geophysical Union (AGU), Washington, D. C.
10. Jennewein, J. S., P. Mahoney, A. J. Meddens, M. Hebblewhite, S. Gilbert, N. T. Boelman, G. Frye, K. Joly, K. K. Jones, T. F. Paragi, K. Seaton, L. A. Vierling, and J. Eitel. 2018. Using remotely-sensed features of habitat structure to assess behavioral thermoregulation of Alaskan moose in response to increasing

temperatures. American Geophysical Union (AGU), Washington, D. C.

11. Mahoney, P., K. Joly, B. L. Borg, M. S. Sorum, H. Golden, T. Rinaldi, D. Saalfeld, D. Latham, B. Mangiapane, C. Koizumi, E. Belanger, M. Hebblewhite, N. Boleman, and L. R. Prugh. 2018. Wolf denning phenology and reproductive success in response to climate signals. American Geophysical Union (AGU), Washington, D. C.
12. Moeller, A., Neufeld, L., Bradley, M., Manseau, M., Wilson, P., McFarlane, S., Lukacs, P. & Hebblewhite, M. 2018. An integrated population model to assess population status and population augmentation scenarios in Jasper National Park. In 17th North American Caribou Workshop (NACW), Ottawa, Ontario.
13. Boutin, S., Serrouya, R., McLellan, B.N., Seip, D., Gillingham, M., Heard, D.C., Hebblewhite, M., Steenweg, R. & Hervieux, D. 2018. Using adaptive management to save woodland caribou. In 17th North American Caribou Workshop (NACW), Ottawa, Ontario.
14. Hebblewhite, M., Batackyi, C. & Burkhart, T. 2018. Mapping Forestry-Related Risk to Mountain Caribou in British Columbia. In 17th North American Caribou Workshop (NACW), Ottawa, Ontario.
15. Gurarie, E., Hebblewhite, M., Joly, K., Kelly, A.P., Adamczewski, J., Fagan, W.F. & Boelman, N.T. 2018. Large-scale synchrony and climate drivers of barren-ground caribou migration across North America. In 17th North American Caribou Workshop (NACW), Ottawa, Ontario.
16. Hebblewhite, M., Eacker, D.R., Steenweg, R., Russell, M., Flaska, A. & Hervieux, D. 2018. Web-based application for threatened woodland caribou population modelling. In 17th North American Caribou Workshop (NACW), Ottawa, Ontario.
17. Cagnacci, F., Peters, W. & Hebblewhite, M. 2018. Plenary Speaker: Movement, migration and ecological plasticity in deer species: facts and consequences in a changing European landscape. In International Deer Biology Congress, Estes Park, Colorado.
18. Jennewein, JS, Mahoney, P, **Hebblewhite, M**, Meddens, AJH, Gilbert, S, Vierling, LA, Boelman, N, Eitel, JUH (2017). Assessing the Utility of Temporally Dynamic Terrain Indices in Alaskan Moose Resource Selection. Poster, 12/2017. American Geophysical Union Fall Meeting, New Orleans, LA.
19. Jennewein, JS, Mahoney, P, **Hebblewhite, M**, Meddens, AJH, Gilbert, S, Vierling, LA, Boelman, N, Eitel, JUH (2018). Assessing the Utility of a Temporally Dynamic Wind Index in Alaskan Moose Resource Selection. Poster, 1/2018. Fourth ABoVE Science Team Meeting. Seattle, WA.
20. Jennewein, JS, Mahoney, P, Meddens, AJH, Gilbert, S, **Hebblewhite, M**, Boelman, N, Brainerd, S, Joly, K, King Jones, K, Paragi, T, Seaton, K, Frye, G, Vierling, LA, Eitel, JUH (2018). Assessing the utility of a spatio-temporally dynamic wind index in Alaskan moose resource selection under thermal stress. Oral presentation, 5/2018, 52nd Annual North American Moose Conference, Spokane, WA.
21. Ehlers, L., **Hebblewhite, M.**, Herriges, J., Suitor, M., Bentzen, T. 2018. Maxed out? Assessing forage quality and biomass for a northern ungulate approaching food-regulated carrying capacity. Poster presented at Alaska Chapter of The Wildlife Society (AK-TWS) Annual Meeting, Anchorage, AK, U.S. March 30, 2018. **** Awarded best student poster presentation.**
22. Ehlers, L., **Hebblewhite, M.**, Herriges, J., Suitor, M., Bentzen, T. 2018. Maxed out? Assessing forage quality and biomass for a northern ungulate approaching food-regulated carrying capacity.

- Poster presented at Alaska Chapter of The Wildlife Society (AK-TWS) Annual Meeting, Anchorage, AK, U.S. March 30, 2018.
23. Palm, E., Macander, M., Nelson, Paradis, D., **Hebblewhite, M.** 2018. Using high-resolution imagery from unmanned aerial vehicles to train and validate fractional lichen cover maps for caribou ranges. Oral presentation at Alaska Chapter of The Wildlife Society (AK-TWS) Annual Meeting, Anchorage, AK, U.S. March 30, 2018.
 24. Gurarie, E., **Hebblewhite, M.**, Bentzen, T., Croft, B., Joly, K., Sutor, M., Boelman, N. 2018. Estimation and analysis of caribou spring migrations from the Bering sea to Hudsons Bay. Oral presentation at Alaska Chapter of The Wildlife Society (AK-TWS) Annual Meeting, Anchorage, AK, U.S. March 30, 2018.
 25. Macander, M., Palm, E., Nelson, **Hebblewhite, M.**, Herriges, J., Verner-Frost, G., Swingley, C.S., Holt, E. 2018. Calibration and validation of fractional lichen cover mapping. Poster, 1/2018. 4th ABoVE Science Team Meeting. Seattle, WA.
 26. Palm, E., Macander, M., Nelson, Paradis, D., **Hebblewhite, M.** 2018. Mapping lichen coverage across caribou herds using high-resolution imagery from consumer unmanned aerial vehicles. Poster, 1/2018. 4th ABoVE Science Team Meeting. Seattle, WA.
 27. Palm, E.C and **M. Hebblewhite**. From resource selection to ecosystem services: ecosystem-scale spatially-explicit demographic models for caribou. Poster presentation by M. Hebblewhite for NASA Ecological Forecasting and Biodiversity Team meeting, Washington D.C., April 24, 2018.
 28. **Hebblewhite, M.**, Merrill, E.H., Eggeman, S., Bohm, H., Berg, J., Kileen, J. 2017. Unexpected flexibility in migratory behavior, its drivers, and population consequences in a large herbivore. Presentation in Symposium on Long-term Research in Environmental Biology, Ecological Society of America Conference, Portland, OR, August 2017.
 29. Mahoney, P., Liston, G., Boelman, N., Gurarie, E., La Point, S., Liston, G., **Hebblewhite, M.**, Jennewein, J., Eitel, J., Prugh, L. Navigating snowscapes: Scale-dependent responses of mountain sheep to snowpack properties. Ecological Society of America Conference, Portland, OR, August 2017.
 30. Metz, M., Emlen, D., Stahler, D., MacNulty, D., Smith, D.W., **Hebblewhite, M.** 2017. Predation by a coursing predator shapes the evolution of ungulate weapons. Ecological Society of America Conference, Portland, OR, August 2017.
 31. Spilker, E., MacAulay, K., Merrill, E., Steenweg, R., **Hebblewhite, M.**, Whittington, J. 2017. Assessing relative abundance and resource selection functions for predicting predation risk in a multi-species predator. Alberta Chapter of The Wildlife Society. Lac la Biche, Alberta.
 32. Killeen, J., Berg, J., Bohm, H., Merrill, E., Eggeman, S., **Hebblewhite, M.** 2017. Changing migration in the Ya Ha Tinda elk population: when, where and why to migrate. Alberta Chapter of The Wildlife Society. Lac la Biche, Alberta.
 33. Steenweg, R., **Hebblewhite, M.**, Whittington, J., Kays, R., Ahumada, J., Fisher, J. T., Burton, C. E., Townsend, S. E., Carbone, C., Rowcliffe, J. M., Brodie, J., J. A. Royle, Switalski, A., Clevenger, A. P., Heim, N., Rich, L. 2017. Testing and expanding umbrella species - how large carnivore occupancy correlates with species diversity and food-web. Alberta Chapter of The Wildlife Society. Lac la Biche, Alberta.
 34. Hessami, M., **Hebblewhite, M.** 2017. Estimating Migratory-Resident Elk Populations and Juvenile Recruitment Using Remote Cameras in the Canadian Rockies. The Wildlife Society; Montana State Chapter Conference. Helena, MT.

35. Hessami, M., **Hebblewhite, M.** 2016. Estimating Migratory-Resident Elk Populations and Juvenile Recruitment Using Remote Cameras in the Canadian Rockies. American Indian College Fund Annual Conference. Denver, CO.
36. Berg, J., **Hebblewhite, M.**, Merrill, E. 2016. Maternal trade-offs in habitat selection across scales influence calf survival. The Wildlife Society. Raleigh, NC.
37. Metz MC, Smith DW, **Hebblewhite M**, Stahler DR. 2016. Temporal variation in wolf predation dynamics in the multi-prey system of northern Yellowstone National Park. PeerJ Preprints 4:e1963v1 <https://doi.org/10.7287/peerj.preprints.1963v1>
38. Whittington, J., R. Steenweg, **M. Hebblewhite**, B. Shepherd, A. Forshner, B. Johnston, D. Petersen. 2015. Multi-scale monitoring of wolverine using remote cameras and snow tracking. Cross boundary wolverine meeting. 24 Jun, Blairemore, AB.
39. Eacker, D.R., Proffitt, K.M., **Hebblewhite, M.**, Jimenez, B., Gude, J., & Thompson, M. 2015. Elk Calf Survival and Elk Population Dynamics in the Southern Bitterroot Valley and Beyond. Deer and Elk Workshop (Canmore, AB, Canada).
40. Steenweg, R. J. Whittington and **M. Hebblewhite**. 2015. Camera-based occupancy monitoring at large scales: power to detect trends in grizzly bears in Canadian Rockies. Alberta Grizzly Bear Science Advisory Committee. 21 April, Edmonton, AB.
41. Steenweg, R. J. Whittington and **M. Hebblewhite**. 2015. Using cameras to detect trends in carnivore populations and their prey using occupancy models. Alberta Chapter of The Wildlife Society. 22 March, Edmonton, AB.
42. Spilker, E.G., E.H. Merrill, J.E. Berg, R. Steenweg, **M. Hebblewhite** and J. Whittington. 2015. Spatial interactions and predation risk in multiple carnivore communities in the Upper Red Deer River of Alberta. Alberta Chapter of The Wildlife Society. 21 March, Edmonton, AB.
43. Metz, M.C., P.M. Lukacs, **M. Hebblewhite**, D.R. Stahler, & D.W. Smith. April 2015. Estimating predation dynamics for wolves in Yellowstone National Park. University of Montana Graduate Student Research Conference, Missoula, MT.
44. Brandell, E., **Hebblewhite, M.**, Steenweg, R., Robinson, H.S., Whittington, J., 2015. Wolf-cougar co-occurrence in the Central Canadian Rocky Mountains, University of Montana Current Undergraduate Research Conference, ***1st place in Natural Sciences***.
45. **Hebblewhite, M.**, Proffitt, K.M., Thompson, M., Jimenez, B., Eacker, D., 2015. Assessing integrated carnivore-ungulate management in the Bitterroot valley, In 53rd Annual Montana Chapter of the Wildlife Society. Helena, MT.
46. Eacker, D., Proffitt, K.M., **Hebblewhite, M.**, Jimenez, B., Gude, J., Thompson, M., 2015. Elk calf survival and elk population dynamics in the southern Bitterroot valley, In 53rd Annual Montana Chapter of the Wildlife Society. Helena, MT.
47. Brandell, E., **Hebblewhite, M.**, Steenweg, R., Robinson, H.S., Whittington, J., 2015. Wolf-cougar co-occurrence in the Central Canadian Rocky Mountains, In 53rd Annual Montana Chapter of the Wildlife Society. Helena, MT.
48. Steenweg, R., J. Whittington, **M. Hebblewhite**. 2014. Remote cameras at large spatial scales: Multi-species interactions and carnivore trend monitoring in the Canadian Rockies. Regional Wildlife Research Symposium. 4 November, Bumthang, Bhutan.
49. Spitz, D., **Hebblewhite, M** and Stephenson, T.R. Understanding the Consequences of Migration:

Quantifying strategy-specific resource selection in a partial migrant, Oral Presentation TWS Annual Meeting Pittsburgh, PA October 27, 2014

50. Whittington, J., Forshner, A., Steenweg, R., **Hebblewhite, M.**, 2014. Multi-scale monitoring of wolverine and lynx using camera traps and snow-track surveys. In 2nd North American Congress for Conservation Biology. Missoula, Montana.
51. Steenweg, R., Whittington, J., **Hebblewhite, M.**, 2014. Power to detect trends in the occupancy of large carnivores using remote cameras in the Canadian Rockies. In 2nd North American Congress for Conservation Biology. Missoula, Montana.
52. Heinemeyer, K., Squires, J.R., **Hebblewhite, M.**, 2014. Wolverine responses to winter recreation in Idaho and Wyoming. In 2nd North American Congress for Conservation Biology. Missoula, Montana.
53. **Hebblewhite, M.**, 2014. The end of innocence: reality check for Boreal and Southern mountain woodland caribou conservation policy in Canada, In 2nd North American Congress for Conservation Biology. Missoula, Montana.
54. DeCesare, N.J., Musiani, M., **Hebblewhite, M.**, 2014. Generating scale-integrated predictions from multi-scale resource selection functions: an example with woodland caribou in Alberta In 2nd North American Congress for Conservation Biology. Missoula, Montana.
55. Eacker, D.R., Proffitt, K.M., **Hebblewhite, M.**, Jimenez, B., Gude, J., Thompson, M. 2014. Compensatory mortality in a multiple carnivore system: consequences for elk calf survival and elk population dynamics in the southern Bitterroot valley. 52nd annual conference of the Montana Chapter of the Wildlife Society, March 4-7, 2014, Bozeman, MT.
56. Proffitt, K.M., Kolbe, J.A., Thompson, M., Jimenez, B., **Hebblewhite, M.**, Goldberg, J.F. 2014. Applying new research methods to inform mountain lion harvest management in western Montana, 52nd annual conference of the Montana Chapter of the Wildlife Society, March 4-7, 2014, Bozeman, MT.
57. Miquelle, D.G., Miller, C., and **Hebblewhite, M.** 2013. Where did we go wrong? Resolving discrepancies between energetic models and carnivore reality. In From Energetics to Macroecology: Carnivore Responses to Environmental Change. Edited by C. Carbone, N. Pettorelli, P. Stephens, R. Kays, and E. B. Nilsen. Zoological Society of London, Regents Park, London.
58. Cagnacci, F., and **Hebblewhite, M.** 2013. Large-scale animal ecology and management: integrating large GPS-telemetry datasets across multiple populations. Workshop In International Union of Game Biologists, Brussels, Belgium, August 26-28, 2013.
59. **Hebblewhite, M.**, Vucetich, J.A., Smith, D.W., and Peterson, R. 2013. Challenges to predicting ungulate population dynamics in three wolf-ungulate systems. In International Union of Game Biologists, Brussels, Belgium, August 26-28, 2013.
60. Hurley, M., Lukacs, P., Scott, M., and **Hebblewhite, M.** 2013. A comprehensive annual monitoring program for ungulates with dynamic life histories. In International Union of Game Biologists, Brussels, Belgium, August 26-28, 2013.
61. Peters, W., Cavedon, M., Mustoni, A., Groff, C., Giovanni, R., **Hebblewhite, M.**, and Cagnacci, F. 2013. Realized habitat selection and space use by brown bears reintroduced to the Italian Alps. In International Union of Game Biologists, Brussels, Belgium, August 26-28, 2013.
62. Swearingen, T., J. Beyer, D.E., J. L. Belant, P. W. Brown, and **M. Hebblewhite**. 2013. Comparison of gender and its effect on tooth wear accuracy on elk in Michigan. In K. M. Proffitt, editor. 10th Western States Deer and Elk Workshop. Western Association of Fish and Wildlife Agencies (WAFWA), Missoula, MT.

63. Eggeman, S., M. Hebblewhite, and E. Merrill. 2013. Should I stay or should I go: Variation in migratory behavior balances fitness in a partially migratory elk population. In K. M. Proffitt, editor. 10th Western States Deer and Elk Workshop. Western Association of Fish and Wildlife Agencies (WAFWA), Missoula, MT.
64. Hebblewhite, M., K. M. Proffitt, B. Jimenez, D. Eacker, C. Jourdonnais, M. Thompson, and J. A. Gude. 2013. Evaluating bottom-up and top-down effects on elk calf survival and recruitment in the Bitterroot valley. In K. M. Proffitt, editor. 10th Western States Deer and Elk Workshop. Western Association of Fish and Wildlife Agencies (WAFWA), Missoula, MT.
65. Musiani, M., B. V. Weckworth, S. Mariani, M. Hebblewhite, N. J. DeCesare, and A. McDevitt. 2013. Managing human influences on contemporary evolution and decline of woodland caribou. Joint meeting of the Alberta Chapter and the Canadian Chapter of the Wildlife Society. Alberta Chapter of the Wildlife Society, Canmore, Alberta.
66. Berg, J., E. H. Merrill, and M. Hebblewhite. 2013. Persistence of the Ya Ha Tinda elk herd. Joint meeting of the Alberta Chapter and the Canadian Chapter of the Wildlife Society. Alberta Chapter of the Wildlife Society, Canmore, Alberta.
67. Hebblewhite, M., N. J. DeCesare, D. Hervieux, M. Bradley, L. Neufeld, J. Whittington, M. Russell, and M. Musiani. 2013. Resource selection, predation risk, and population dynamics of woodland caribou in west-central Alberta. Joint meeting of the Alberta Chapter and the Canadian Chapter of the Wildlife Society. Alberta Chapter of the Wildlife Society, Canmore, Alberta.
68. Steenweg, R., M. Hebblewhite, J. Whittington, B. Johnston, J. Paczkowski, M. Percy, D. Peterson, and B. Shepherd. 2013. On improving multi-species occupancy modeling using remote cameras at large spatial scales in the Canadian Rockies. Joint meeting of the Alberta Chapter and the Canadian Chapter of the Wildlife Society. Alberta Chapter of the Wildlife Society, Canmore, Alberta.
69. Hebblewhite, M., K. M. Proffitt, B. Jimenez, D. Eacker, C. Jourdonnais, M. Thompson, and J. A. Gude. 2013. Evaluating bottom-up and top-down effects on elk calf survival and recruitment in the Bitterroot valley. Paper presented at the MT Chapter of the Wildlife Society. MT Chapter of the Wildlife Society, Whitefish, MT.

Communicating Science to the Public

Science Writing

1. Chester, C., and Hebblewhite, M. 2022. Linking protected areas from Yellowstone to the Yukon shows the value of conserving large landscapes, not just isolated parks and preserves. The Conversation, April 26, 2022. available [here](#).

Opinion-Editorials

1. Boyce, M.S., Hebblewhite, M., Knopff, A. 2018. [Opinion: Preserving the Bighorn protects recreation opportunities](#), Edmonton Journal, Op-Ed page, September 26, 2018.
2. Hebblewhite, M. 2016. [Opinion: Alberta's caribou conservation plan is a visionary first](#)

[step](#). Edmonton Journal, Op-Ed page, October 12, 2016.

Select Public Presentations (2001-present)

1. Hebblewhite, M., H. Locke, J. Hilty, and C. Chester. 2022. Webinar presentation on Evaluating effectiveness of the Yellowstone to Yukon Large-landscape conservation strategy. Webinar sponsored by the Whyte Museum of the Canadian Rockies in Banff, the National Museum for Wildlife Art, and the Yellowstone to Yukon Conservation Initiative. , Presented online.
2. Hebblewhite, M. 2021. The Ya Ha Tinda elk herd: long-term insights into predator-prey ecology and conservation. Bow Valley Naturalists, April 8, 2021. Webinar, recording available [here](#).
3. November 2017, Ecology and Conservation of Mule Deer in Idaho: Management Strategies for Restoring Populations. Public presentation to the BC wildlife federation, Kelowna Chapter, Kelowna, British Columbia, November 3, 2017.
4. November, 2017. Panel discussion following the film “The Last Stand: the vanishing caribou rainforest”, Roxy theater, Missoula, Montana, November 7, 2017.
5. November, 2017. Why Wildlife biology? Presentation to 2 grade 11 Hellgate High School biology students, November 13, 2017.
6. March 2014, Lago Garda hunters conference, Lago Garda, Italy.
7. Nov 2013, Tione de Trento, Trentino Hunters association.
8. Nov 2013, Big and yet fragile: large mammal ecology and conservation in the Canadian Rockies. Invited lecture to the Museo di Scienze Naturali dell’ Alto Adige, Bolzano, Trentino, Italy.
9. November 2012. Carnivore-ungulate management in the 21st century. Montana Natural History Center evening lecture series, Montana Natural History Center, 120 Hickory Street, Missoula, MT.
10. March 2010, Wolf and elk ecology: Implications for the Bitterroot Valley. Invited talk by the Ravalli County Fish and Game club, March 24, 2010, Hamilton, 250 people.
11. Hebblewhite, M. 2009. Panel discussion following Lords of Nature Film hosted by Western Watersheds alliance in Missoula, August 27, 2009, 75 people.
12. May 2008 – Presentation to the Grant Creek community association on elk habituation, 50 people, Grant Creek Inn, Missoula, MT.
13. May 2008 – Presentation to the Society of American Foresters on effects of post-fire logging on wolves and elk, Missoula, MT.
14. Jan 2004 – Presentation to the general public of Sundre, AB., 150 people.
15. Nov 2003 – Invited presentation to the Banff National Park Superintendent’s office on transboundary management issues along Banff National Parks Eastern slopes.
16. Feb 2003 – Presentation to 200 people at the Annual General Meeting of the Friends of the Eastern Slopes Association, Innisfail.
17. Jan 2003 – Presentation to 50 members of the Sundre Fish and Game Association
18. June 2002- Presentation to 50 members of the Panther River Community Association on the Ya Ha Tinda Elk and Wolf Project.
19. April 2002 – Presentation to 480 members of the Rocky Mountain Elk Foundation at the Annual

provincial fundraising banquet on the Ya Ha Tinda Elk and Wolf Project.

20. March 2002 – Presentation to 120 members of the Bow Valley Naturalists on Ecology and Conservation in Western Mongolia.
21. May 2001 - Presentation to the Parks Canada annual public research update series on “What is science? Science in parks and protected areas”.
22. April 2001 – Presentation on “Ecology and conservation of carnivores in the Central Canadian Rockies and implications for recreation and development” to the annual meeting of the Canadian Association of Ski Resort Presidents, Banff, Alberta.

Select Media Communication (2006 to present)

1. Kays, R. 2019. Episode 1: Pluie, the wolf who inspired carnivore recovery across the west. Wild Animals Podcast, <https://naturalsciences.org/research-collections/wild-animals-podcast>
2. Brown, M. 2019. Immediate population management needed to save remaining caribou herds, study shows. Phys.Org, March 12, 2019. <https://phys.org/news/2019-03-population-caribou-herds.html>
3. Bird, H. 2019. Killing wolves won't save caribou herds, experts say. CBC – North, Yellowknife, Northwest Territories, February 27, 2019.
4. Green, H. 2018. Predators & Prey | *SciShow Talk Show*. Interview with Dr. Mark Hebblewhite <https://youtu.be/t-Pkdzkohmg> (42,844 views, 6/24/2019).
5. Ouelett, N. 2019. Fading migrations: historic elk migrations have dwindled sharply over the past 20 years. What does it mean for the future of wild elk and the landscapes that connect summer and winter ranges? *Bugle*, July/August 2019. Page 93 – 105.
6. Brown, M. 2019. Immediate population management needed to save remaining caribou herds, study shows. Phys.Org, March 12, 2019. <https://phys.org/news/2019-03-population-caribou-herds.html>
7. Rosner, H. 2018. [Pulling Canada's Caribou Back from the Brink: First Nations communities are leading the effort to rescue the last remaining caribou herds from extinction](#). In the *Atlantic*. The Atlantic Monthly Group, New York, NY.
8. Robbins, J. (2018) Gray Ghosts, the Last Caribou in the Lower 48 States, Are ‘Functionally Extinct’. In *New York Times*, New York Times, New York, NY, USA. [also picked up in the *Smithsonian*, *CBC*, *Globe and Mail*, *the Guardian*, etc.].
9. Cornwall, W. 2018. Should it be saved? With limited funds for conservation, researchers spar over which species to save – and which to let go. *Science*, September 6, 2018.
10. Economist. 2018. Deer antlers are a dual-use technology. *Economist*, September 6, 2018.
 - News coverage of our Metz et al. Nature Ecology & Evolution paper was also covered by *Science*, *New Scientist*, *New York Times*, *PhysicsOrg*, *Missoulia*, *Bozeman Chronicle*, etc.
11. Gies, E. 2018. Extinction deniers: forestry industry undermines caribou conservation with climate denial tactics, *DeSmog Canada*, June 26, 2018.
12. Lavoie, J. 2018. Seeking science behind BC wolf cull. *DeSmog Canada*, April 5, 2018.
13. Gilchrist, E. 2018. How Canada is driving its endangered species to the brink of extinction. *DeSmogCanada*, January 24, 2018.
14. Schmitt, K. 2018. First bulls collared for elk study in North America’s longest running elk research project. February 1, 2018. *GoHunt*.
 - Reprinted in *Bozeman Chronicle*, *Safari Club International News*.
15. Kassam, A. 2018. Last caribou in lower 48 states all but extinct: ‘the herd is functionally lost’. *Gaurdian*, 19 April 2018.
16. Mitchell, A. 2018. For the love of pronghorns. *Canadian Geographic*, May/June 2018 issue.

17. Dengler, R. 2018. Human activity slashes mammal stomping grounds by up to two-thirds. *Science*, Jan 25, 2018.
 - Other articles covering the Tucker et al. story in *Science* appeared in *Nature*, *New York Times*, *London Times*, *Wall Street Journal*, *Globe and Mail*, *Calgary Herald*, *Scientific American*, etc.
18. Chaney, R. Helping wolverines by tracking humans. *Missoulian*, February 27, 2018.
 - Reprinted in *Spokesman review*, *Bozeman Chronicle*, *Salt Lake Tribune*, etc.
19. Derworiz, C. 2018. Alberta's approach to caribou protection could be 'national test case' of Species at Risk Act, expert says. *Globe and Mail*, March 25, 2018.
20. Meyers, C. 2017. [Montreal-born scientist says forestry sector in denial about disappearing caribou](#). *National Observer*, Nov 9, 2017.
21. McCarthy, S., and Semeniuk, I. 2017. [Provinces haven't stopped boreal caribou's decline, and Ottawa may have to intervene, report says](#). *Globe and Mail*, October 31, 2017.
22. Linnitt, C. 2017. [Disingenuous forest industry campaign tries to undermine protection of endangered caribou](#). *DeSmogCanada*, Oct 23, 2017.
23. Chaney, R. 2017. [Tiger experts from across the globe to learn from Montana biologists](#). *Missoulian*, May 11, 2017.
24. Chaney, R. 2017. [Smile – less-costly method uses remote camera's to count grizzlies](#). *Montana Untamed and Missoulian*, June 29, 2017.
25. Chaney, R. 2017. [Camera traps shed new light on wildlife biology](#). *Missoulian*, February 15, 2017.
26. Chaney, R. 2016. [UM professor's long-term elk study lands major grant](#). *Missoulian*, April 12, 2016.
27. Chaney, R. 2016. [Like a sponge: research lead by UM underscores the importance of gravel-bed rivers to safeguard biodiversity](#). *Missoulian*, June 30, 2016.
28. Holmes, B. 2016. [Wolves or bears? Threatened caribou mothers' catch-22 dilemma](#). *New Scientist*.
29. Ogden, L.E. 2016. What caribou are you? *New Scientist*, December 2016.
30. Duane, D. 2016. " [The Unnatural Kingdom: If technology helps us save the wilderness, will the wilderness still be wild?](#) *New York Times Sunday Review Edition* feature story. March 11, 2016.
31. Ellis, C. 2016. [Boost for caribou on hold](#). *Rocky Mountain Outlook*, January 26, 2016.
32. O'Brien, C. 2015. " [Wildlife biology in the 21st century: Animal research in the Anthropocene means combining a naturalist's field knowledge with a tech wizard's big data skills.](#) " Oct 2015.
33. Groc, I. 2015. " [Airlifting pregnant caribou away from wolves](#) ", *National Geographic*, Sept 3, 2015
34. Ellis, C. 2015. "Marmot ski area expansion may occur despite threat to caribou", *Rocky Mountain Outlook*, *Edmonton Journal*, *Calgary Herald*. August, 2015.
35. Backus, P. 2015. [Habitat in the east fork of Bitterroot better for elk, study shows](#) ", *Missoulian and Ravalli County Republic*, August 2, 2015.
36. Weber, B. 2015. " [Drilling continues on critical Alberta caribou habitat despite recovery deadline](#) ", *Huffington Post*, *Edmonton Journal*, *Calgary Herald*, *Globe and Mail*, April 16, 2015.
37. Woods, E. 2015. [Wolflandia](#). *Outside Magazine*, February 2015.
38. [Over 50](#) news stories in newspaper, print and radio in Nov 2014 – March 2015 focusing on woodland caribou conservation in Canada and wolf control as a recovery strategy; examples
 - "Hundreds of wolves killed to save caribou", *Rocky Mountain Outlook*, Feb 5, 2015;
 - Bekoff, M., "Slaughtering wolves in Canada: a new essay shows just how unscientific, unethical and inhumane these studies are", *Huffington Post*, Feb 18, 2015;
 - Bekoff, M. "Researchers kill 890 wolves to learn about them: there's something very wrong", *Huffington Post*, Dec 8, 2014;
 - "Alberta failing to protect caribou habitat", *DeSmog Canada*, April 2015;

- Marris, E. “Wolf cull will not save threatened caribou”, *Nature*, Jan 20, 2015
<http://www.nature.com/news/wolf-cull-will-not-save-threatened-canadian-caribou-1.16734>
 - “Alberta wolf cull to save caribou just buys time”, *CBC news, Global News, Edmonton Journal, Calgary Herald, Toronto Star, Vancouver Sun*, November 2014;
39. Bittel, J. 2015. Yaks may be climbing higher due to climate change. *National Geographic*, March 4, 2015. <http://news.nationalgeographic.com/news/2015/03/150304-yaks-tibet-climate-change-science-animals-global-warming/>
40. CBC Quirks and Quarks radio story on wolf management and caribou conservation, December 2014.
41. Chaney, R. 2014. UM researchers: wolf depredation costs ranchers \$6,600 per herd sold. *Missoulian*, Jan 24, 2014.
42. National and International press coverage of my Jan 2014 Science paper with over 100 articles including articles in the *Missoulian*, *NPR Montana*, *Billings Gazette*, *Juneau Media*, *La Courrier (Italy)*, *Le Monde (France)*, *Globe and Mail*, *the Gaurdian weekly*, *Huffington post*, *Washington post*, *BBC news*, *Irish times*, *Times of India*. On Jan 9th, 2014, our science paper was the #1 global science news story according to Google News. Some examples:
- Kidston, M. 2014. “UM researchers helping to raise awareness, tolerance towards carnivores”. *Missoulian*, Jan 11, 2014.
 - Kidston, M. 2014. “UM researchers: 17 of 34 largest carnivores at risk”. *Missoulian*, Jan 9, 2014.
 - The *Guardian*, “Carnivore cleansing is damaging ecosystems, scientists warn”, Jan 9, 2014.
 - The *Guardian Weekly*, “How the threat to lions, leopards and wolves endangers us all”, Jan 25, 2014.
 - *Carriere della Sera*, “If predators are in crisis, ecosystems are disrupted”, **Italy**, Jan 13, 2014.
43. Backus, P. 2014. “Study finds twice as many mountain lions as expected in Bitterroot”, Ravalli Republic and *Missoulian*, Jan 10, 2014. Also covered by Helena Independent Record, KPAX-TV Missoula, Kansas City Star, Billings Gazette, Bozeman Chronicle, etc.
44. Thompson, M. 2013. Are Missoula’s elk too tame? A recent study is helping FWP find ways to manage an exploding population in the city’s northern suburbs. *Montana Outdoors*, December 2013.
45. Berg, J., Merrill, E.H., Hebblewhite, M., Boyce, M. 2013. The Ya Ha Tinda elk herd: persistence or doom? *Alberta Outdoorsman*, Fall 2013, pages 16 – 18.
46. Dickson, T. 2013. More fangs in the forest: Montana is home to higher numbers of large carnivores today than anytime since the 19th century. Now what? *Montana Outdoors*, Sept-Oct 2013 issue.
47. Ellis, C. 2013. “Alberta’s caribou numbers in greatest danger, study finds”, *Calgary Herald*, Dec 13, 2013.
48. Ellis, C. 2013. “Woodland Caribou in Danger” *Rocky Mountain Outlook*, Dec 12, 2013.
49. Rocca, D. 2013. [I satellite della NASA per studiare i capriole](#). Pubblicata du L’Adige, August 12, 2013.
50. Backus, P. 2013. Elk calves tagged for survival research in southern Bitterroot. Ravalli Republic and *Missoulian*, June 9, 2013.
51. Backus, P. 2013. Forage research: study looking at vegetation consumed by Bitterroot valley elk herds. Ravalli Republic and *Missoulian*, June 16, 2013.
52. Ellis, C. 2013. “Hidden cameras valuable wildlife tool”, *Canmore leader*, Feb 21, 2013.
53. Chaney, R. 2013. “Montana wildlife experts say elk summer range undervalued”. *Missoulian*, Feb 8, 2013.
54. Backus, P. 2013. “Unusual suspects: mountain lions are greatest year-round threat to elk survival”, *Missoulian*, Dec 20, 2012.

55. Backus, P. 2012. Studying lions: researchers to begin collecting DNA samples in Bitterroot Valley". Missoulain, Dec 18, 2012.
56. Backus, P. "Wildlife officials propose study of Bitterroot's lion population", Missoulain, August 30, 2012.
57. Backus, P. "Numbers look good for East Fork Bitterroot elk herd: lions biggest threat", Missoulain, August 12, 2012.
58. Backus, P. 2012. "Technology boosts study of Bitterroot elk herd", Missoulain, May 7, 2012.
59. Gadbow, D. 2011. Where have all the elk calves gone? A new study searches for answers in the Bitterroot watershed. Montana Outdoors, Sept-Oct 2011.
60. Backus, P. 2011. "Captured elk calves help population study", Missoulain, June 19, 2011.
61. Backus, P. 2011. "Survival study: bitterroot elk calves captured and tagged by game researchers", Ravalli Republic, June 16, 2011.
62. Backus, P. 2011. "Wolf expert shares experiences managing wolves in the Yukon", Ravalli Republic, March 13, 2011.
63. Backus, P. 2011. "Science from above: researchers use helicopter to capture elk for population study", Missoulain February 15, 2011.
64. Backus, P. 2011. "Population decline: bitterroot's collared elk sending GPS data to biologists, Missoulain, February 19, 2011.
65. Backus, P. 2011. "Study begins on survival of elk calves in Bitterroot", Ravalli republic & Missoulain, February 8, 2011.
66. Babcock, M. 2010. "Elk numbers dip, are wolves' culprits?", Great Falls Tribune Outdoors Section, July 29, 2010.
67. Backus, P. 2010. "Wolves and elk – the writing is on the wall" Ravalli Republic, March 24, 2010.
68. Backus, P. 2010. "UM professor: Wolves to stay in Bitterroot and elk on menu", Ravalli Republic and Missoulain, March 23, 2010.
69. Alexander, R. 2010, 'Wolves collared to aid caribou study', Rocky Mountain Outlook, Canmore, Alberta, Canada, Jan 27, 2010.
70. Backus, P. 2010. Sportsman/FWP to host UM wolf expert talk", Ravalli Republic, Hamilton, MT, Feb, 2010.
71. Struzik, E. 2010. "Its like a death watch: Environmentalists say Canada is dithering despite clear evidence showing many species in decline", Edmonton Journal, January 10, 2010.
72. Brown, M. 2009. 'State says wolf hunt worked', Montana Standard, Billings, December 9, 2009.
73. Paige, C. 2009. 'Habits & Habitats: Elk Investigations – an explosion of technology has brought field biology into the space age and challenged some long-held beliefs', Bugle article on use of GPS technology in elk research, Bugle, Sept/Oct 2009.
74. Chaney, R. 2009. "Part of the chain: wolf documentary defends the role they play in ecosystem", Missoulain, August 27, 2009.
75. [Sept 9, 2009 Story by the CBC \(Canadian Broadcasting Corporation\)](#)
76. [Sept 8 2009 CBC Calgary Eyeopener](#) (click to listen)
77. Ellis, C. 2009. Avalanche thins Banff caribou herd: were not sure if they've all been wiped out. Calgary Herald, April 10, 2009.
78. Ellis, C. 2009. Avalanche devastates Banff caribou herd. Rocky Mountain Outlook, April 9, 2009.
79. Mittelstaedt, M. 2009. Environment Canada puts off action to protect woodland caribou habitat. Globe and Mail, April 13, 2009.
80. Rennie, S. 2009. Half Canada's boreal caribou herds in decline: report. Canadian Press, April 8, 2009. (These 2 articles covered report of Scientific review of critical habitat report of which I was an author)

81. Cuthbertson, R. 2009. Migratory instincts protect caribou herds: research aims to preserve species at risk. Calgary Herald, Jan 29, 2009.
82. Gladbow, D. Controversial caribou: research provides tools to conserve their habitat. UM VISION Magazine, Fall 2008, volume 18.
83. Heuer, K. 2008. [Hermits of the big wild](#). Freedom to Roam series, Fall 2008 Patagonia catalogue.
84. Ellis, C. 2008. DNA links Alberta caribou to ice age ancestors: unique caribou herd needs protection researchers say. Calgary Herald, July 31, 2008
85. Ellis, C. 2008. Caribou migration secrets revealed. Rocky Mountain Outlook, June 12, 2008.
86. Metcalf, P. Can wolf hunting help conserve the species? A predator becomes prey. New West Missoula, April 16, 2008.
http://www.newwest.net/main/article/can_wolf_hunting_help_conserve_the_species/
87. Robbins, J. 2007. Report: walking on the wild side of a Montana University. New York Times, article on International wildlife conservation activities in the University of Montana Wildlife Biology Program, May 6, 2007.
88. Habib, L. 2007. Species theses: settling a long-standing debate. Jasper Fitzhugh, May 17, 2007. Article on caribou conservation in the Canadian Rockies.
89. McMillion, S. 2007. Biologist: climate change affecting Montana. Bozeman Daily Chronicle, Feb 9 , 2007. [Coverage of MTTWS conference presentation on energy development].
90. Backus, P. 2006. Growing issues: local herd facing an uncertain future as housing developments make an impact. Missoulain, December 3, 2006
91. Farquhar, B. 2006. Elk face steep learning curve. Casper Star-Tribune, October, 2006.

PROFESSIONAL CERTIFICATIONS

Canadian Firearms Safety course, 1998.

Canadian Association of Zoo and Wildlife Veterinarians (CAZWV) Wildlife Handling and Immobilization certification, 2003.

Adventure Medic Wilderness First Aid certification (80-hours), 2003.

Certified NAUI scuba diver, 1994.

Completed the Alberta ATV safety institute 4x4 training course, 1995