

NAME Mark S. Boyce

ADDRESS

PHONE

Department of Biological Sciences
University of Alberta
Edmonton, AB T6G 2E9
Canada

Office: (780) 492-0081
Home: (780) 439-3248
Fax: (780) 492-9234
Cell: (780) 913-3474

e-mail: boyce@ualberta.ca

Orcid ID: orcid.org/0000-0001-5811-325X

EDUCATION

1977 Ph.D., Yale University, New Haven, Connecticut.
1975 M.Phil., Yale University, New Haven, Connecticut.
1974 M.S., University of Alaska, Fairbanks.
1972 B.S., Iowa State University, Ames.

ACADEMIC POSITIONS

Professor of Ecology, and Alberta Conservation Association Chair in Fisheries and Wildlife, 1999-present (Endowed Chair renewed 2012 July 1), Department of Biological Sciences, University of Alberta, Edmonton.

Vallier Chair of Ecology, and Wisconsin Distinguished Professor (UW-System), 1993-1999, College of Natural Resources, University of Wisconsin, Stevens Point.

Professor, 1987-1993, Department of Zoology and Physiology, University of Wyoming, Laramie.

Associate Professor, 1981-1987, Department of Zoology and Physiology, University of Wyoming, Laramie.

Visiting Professor, 1984-1985, Department of Mathematics, University of Wyoming, Laramie.

Postdoctoral Research Fellow, 1982-1983, Animal Ecology Research Group, Department of Zoology, University of Oxford.

Assistant Professor, 1977-1981, Department of Zoology and Physiology, University of Wyoming, Laramie.

Instructor, 1976-77, Department of Zoology and Physiology, University of Wyoming, Laramie.

HONORS AND AWARDS

Wilderness and Wildlife Defender's Award, 2019, Alberta Wilderness Association, Nov 23.
C. Hart Merriam Award, 2017, American Society of Mammalogists, June 24.
Special Recognition Team Award (with Evelyn H. Merrill), 2017, Alberta Chapter of The Wildlife Society, March 11.
Miroslaw Romanowski Medal, 2016, Royal Society of Canada, November 18.
ASTech Award, Outstanding Leadership in Alberta Science, 2014, Alberta Science and Technology Leadership Foundation, October.
Fellow, Royal Society of Canada, inducted 2014 November.
President's Award, 2014, Safari Club International, April.
Emerald Award, 2013, Montane Research Program, Province of Alberta, June.
Publication of the Year Award, 2013, Alberta Chapter of The Wildlife Society, March.
TWS Fellow, lifetime award, 2012, The Wildlife Society, Bethesda, Maryland, USA, October.
Best Wildlife Publication Award "Popular Category," 2012, Alberta Chapter of The Wildlife Society, March.
Killam Annual Professorship, 2011-12, University of Alberta.
Publication of the Year Award, 2011, Alberta Chapter of The Wildlife Society.
Award of Merit, 2010, Alberta Trappers Association.
William Rowan Distinguished Service Award, 2008, The Wildlife Society.
International Conservationist of the Year, 2007, Safari Club International Foundation.
Erskine Fellowship, 1999, Canterbury University, Christchurch, New Zealand.
Phi Kappa Phi, 1998, University of Wisconsin-Stevens Point.
University Scholar Award, 1996, University of Wisconsin-Stevens Point.
Chancellor's Merit Award, 1996, University of Wisconsin-Stevens Point.
Faculty Scholar Award, 1994, Sigma Xi-University of Wisconsin-Stevens Point Chapter.
Distinguished Professorship, 1993, 1999 University of Wisconsin System, Madison.
Vallier Chair of Ecology, 1993, University of Wisconsin-Stevens Point.
Outstanding Research Merit Award, 1993, College of Arts and Sciences, Univ. Wyoming.
Fulbright Scholar to India, 1992, U.S. Educational Foundation in India, Bangalore.
Senior Research Fellow, 1991-92, American Institute of Indian Studies, Bangalore.
Kuehn Professorship Award, 1984-85, College of Arts and Sciences, University of Wyoming.
N.A.T.O. Postdoctoral Fellowship, 1982-83, National Science Foundation, Univ. Oxford, UK.
Academy Exchange to Poland, 1982, National Academy of Sciences, Jagiellonian University.
Outstanding Achievement Award, 1974, University of Alaska, Fairbanks.

SABBATICALS

2018, Department of Zoology, University of Oxford, U.K.

2017, Centre of Excellence for Biosecurity Risk Analysis (CEBRA), University of Melbourne, AUSTRALIA.

2010-11, University of Queensland, Brisbane, AUSTRALIA;
Imperial College London, Silwood Park, U.K.

2003-04, University of British Columbia, Vancouver, CANADA.

1991-92, Fulbright Fellow/American Institute of Indian Studies, Centre for Ecological Sciences and Centre for Theoretical Studies, Indian Institute of Science, Bangalore, INDIA.

1982-83, NATO Postdoctoral Fellowship, Department of Zoology, University of Oxford, U.K.

OTHER POSITIONS

1989-1993, Director, UW-National Park Service Research Center, University of Wyoming.

PUBLICATIONS

Books:

- Boyce, M. S., and A. Haney. 1997. *Ecosystem Management: Applications for Sustainable Forest and Wildlife Resources*. Yale University Press, New Haven, Conn. 361pp.
- Thorne, E. T., M. S. Boyce, P. Nicoletti, and T. J. Kreeger (eds.). 1997. *Brucellosis, Bison, elk, and Cattle in the Greater Yellowstone Area: Defining the Problem, Exploring the Solutions*. Wyoming Game and Fish Department, Cheyenne, Wyo. 219pp.
- Keiter, R. B., and M. S. Boyce. 1991. *The Greater Yellowstone Ecosystem: Redefining America's Wilderness Heritage*. Yale University Press, New Haven, Conn. 425pp.
- Boyce, M. S. 1989. *The Jackson Elk Herd: Intensive Wildlife Management in North America*. Cambridge University Press, Cambridge, U.K., 305 pp.
- Boyce, M. S., ed. 1988. *Evolution of Life Histories of Mammals*. Yale Univ. Press, New Haven, Conn., 373 pp.
- Boyce, M. S., and L. D. Hayden-Wing. 1979. *North American Elk: Ecology, Behavior and Management*. Univ. Wyoming, Laramie, 294pp.

Scientific Articles:

- Morehouse, A. T., A. E. Loosen, T. A. Graves, and M. S. Boyce. 2019. The smell of success: Fitness related to rub behavior in grizzly bears. (manuscript under revision).
- Krawchuk, K. E., K. H. Knopff, N. F. Webb, P. J. Jones, M. S. Boyce, and E. H. Merrill. 2019. Is niche separation between wolves (*Canis lupus*) and cougars (*Puma concolor*) realized in the Rocky Mountains of Canada? *Can. J. Zool.* (under revision).
- Beale, M. M., S. L. Widmeyer, and M. S. Boyce. 2019. Landscape configuration on mines facilitates cougar predation on bighorn sheep *J. Wildl. Manage.* (submitted).
- Beale, M. M., N. B. MacCallum, and M. S. Boyce. 2019. Ungulate habitat selection on reclaimed coal mines in west-central Alberta. *Restor. Ecol.* (under revision).
- Scraftford, M. A., and M. S. Boyce. 2019. Wolverine (*Gulo gulo*) space use during extraterritorial and home-range movements. *Can. J. Zool.* (submitted).
- Peek, J., H. Allen, M. Boyce, B. Hahn, M. Hurley, E. Merrill, B. Patterson, R. Peterson, and D. W. Smith. 2019. A moment in time. *The Wildlife Professional* (submitted).

- Nagy-Reis, M., W. F. Jensen, and M. S. Boyce. 2019. Conservation Reserve Program is a key element for managing white-tailed deer populations at multiple spatial scales. *J. Environ. Manage.* (in press, accepted July 2019).
- Mallory, C. D., S. N. Williamson, M. W. Campbell, and M. S. Boyce. 2019. Response of barren-ground caribou to advancing spring phenology. *Biol. Conserv.* (revision submitted).
- Clark, J. D., M. S. Boyce, J. P. Beckmann, B. D. Leopold, A. Loosen, and M. R. Pelton. 2019. American black bear. *Bears of the World*, chapter 11. Cambridge University Press, Cambridge, U.K. (submitted).
- Proctor, M. F., B. N. McLellan, G. B. Stenhouse, G. Mowat, C. T. Lamb, and M. S. Boyce. 2019. The effects of roads and motorized human access on grizzly bear populations in British Columbia and Alberta, Canada. *Ursus* (in press).
- Proctor, M. F., W. Kasworm, J. Teisberg, C. Servheen, T. Radandt, C. Lamb, K. Kendall, R. Mace, D. Paetkau, and M. S. Boyce. 2019. American black bear population fragmentation detected with pedigrees in the trans-border Canada-United States Region. *Ursus* (in press).
- Bowyer, R. T., M. S. Boyce, J. R. Goheen, and J. Rachlow. 2019. Conservation of the world's mammals: status, protected areas, community efforts, and hunting. *J. Mammal.* **100**: 923–941.
- Boyce, M. S., T. Coulson, J. Heffelfinger, and P. Krausman. 2019. Mountain sheep management must use representative data: A reply to Festa-Bianchet (2019). *J. Wildl. Manage.* **83**:9–11, DOI: 10.1002/jwmg.21617.
- Mallory, C. D., and M. S. Boyce. 2019. Prioritization of landscape connectivity for the conservation of Peary caribou. *Ecol. Evol.* **9**:1–17. <https://doi.org/10.1002/ece3.4915>.
- Loosen, A., A. T. Morehouse, and M. S. Boyce. 2019. Land tenure shapes black bear density and abundance on a multi-use landscape. *Ecol. Evol.* **9**:73–89.
- Ladle, A., T. Avgar, M. Wheatley, G. Stenhouse, S. Nielsen, and M. S. Boyce. 2019. Grizzly bear response to spatio-temporally variable human recreational activity. *J. Appl. Ecol.* **56**:375–386. DOI: 10.1111/1365-2664.13277.
- Warbington, C. H., and M. S. Boyce. 2018. Sitatunga in Mayanja River, Uganda. IUCN Species Survival Commission, Antelope Specialist Group, *Gnusletter* **35**(2):13-22.
- Boyce, M. S. 2018. Elk. Pages 20-21 in M. J. Kauffman, J. E. Meacham, H. Sawyer, A. Y. Steingisser, W. J. Rudd, and E. Ostlind. *Wild migrations: Atlas of Wyoming's ungulates*. Oregon State University Press, Corvallis, Ore. 183pp.
- Mawdsley, J. R., J. F. Organ, D. J. Decker, A. B. Forstchen, R. J. Regan, S. J. Riley, M. S. Boyce, J. E. McDonald, Jr., C. Dwyer, and S. P. Mahoney. 2018. Artelle et al. (2018) miss the science underlying North American wildlife management. *Science Adv.* **4**: eaat8281.
- Proctor, M. F., B. N. McLellan, G. B. Stenhouse, G. Mowat, C. T. Lamb, and M. S. Boyce. 2018. Resource Roads and Grizzly Bears in British Columbia, and Alberta. *Canadian Grizzly Bear Management Series*, Resource Road Management. Trans-border Grizzly Bear Project. Kaslo, BC. Canada
<http://transbordergrizzlybearproject.ca/research/publications.html>.
- Boyce, M. S. 2018. Wolves for Yellowstone: dynamics in time and space. *J. Mammal.* **99**:1021–1031. [cover photo]

- Scrafford, M. A., and M. S. Boyce. 2018. Temporal patterns of wolverine (*Gulo gulo luscus*) foraging in the boreal forest. *J. Mammal.* **99**:693–701.
- Morehouse, A., J. Tigner, and M. S. Boyce. 2018. Coexistence with large carnivores supported by a predator-compensation program. *Environ. Manage.* **61**:719–731.
- Scrafford, M. A., T. Avgar, R. Heeres, and M. S. Boyce. 2018. Roads elicit negative movement and habitat-selection responses by wolverines (*Gulo gulo luscus*). *Behav. Ecol.* **29**:534–542.
- Mallory, C. D., M. Campbell, and M. S. Boyce. 2018. Climate influences body condition and synchrony of barren-ground caribou abundance in Arctic Canada. *Polar Biol.* **41**(5):855–864.
- Lamb, C. T., M. Festa-Bianchet, and M. S. Boyce. Invest long term in Canada’s wilderness. 2018. *Science* **359**(6379):1002.
- Ladle, A., R. Steenweg, B. Shepherd, and M. S. Boyce. 2018. The role of human recreation in shaping patterns of grizzly bear-black bear co-occurrence. *PLoS ONE* **13**(2): e0191730.
- Boyce, M. S., and P. Krausman. 2018. Controversies in mountain sheep management. *J. Wildl. Manage.* **82**(1):5–7.
- Mallory, C. D., and M. S. Boyce. 2018. Observed and predicted effects of climate change on Arctic caribou and reindeer. *Envir. Rev.* **26**: 13–25.[Editor’s Choice].
- Boyce, M. S., C. Mallory, A. Morehouse, C. Prokopenko, M. Scrafford, and C. Warbington. 2017. Defining landscapes and scales to model landscape–organism interactions. *Curr. Landsc. Ecol. Reports* **2**:89–95 (doi: 10.1007/s40823-017-0027-z).
- Morehouse, A. T., and M. S. Boyce 2017. Troublemaking carnivores: conflicts with humans in a diverse assemblage of large carnivores. *Ecol. Soc.* **22**(3):4 (doi.org/10.5751/ES-09415-220304).
- Thurfjell, H., S. Ciuti, and M. S. Boyce. 2017. Learning from the mistakes of others: how female elk (*Cervus elaphus*) adjust behaviour with age to avoid hunters. *PLoS ONE* **12**(6): e0178082.
- Paton, D. G., S. Ciuti, M. Quinn, and M. S. Boyce. 2017. Hunting exacerbates the response to human disturbance in large herbivores while migrating through a road network. *Ecosphere* **8**(6):e01841. (doi: 10.1002/ecs2.1841).
- Morehouse, A., and M. S. Boyce. 2017. Male dominance interferes with intercept feeding of grizzly bears. *Ursus* **28**(1):66–80.
- Avgar, T., S. Lele, J. Keim, and M. S. Boyce. 2017. Relative Selection Strength: quantifying effect size in resource- and step-selection inference. *Ecol. Evol.* **7**:5322–5330 (doi: 10.1002/ ece3.3122).
- Roberts, D., V. Bahn, S. Ciuti, M. S. Boyce, J. Elith, G. Guillera-Arroita, S. Hauenstein, J. Lahoz-Monfort, B. Schroder, W. Thuiller, D. Warton, B. Wintle, F. Hartig, and C. Dormann. 2017. Cross-validation strategies for data with temporal, spatial, hierarchical, or phylogenetic structure. *Ecography* **40**:913–929 (doi: 10.1111/ecog.02881).
- Boyce, M. S. 2017. Beaver population ecology and trapline management. *Internat. Trapper* 2017(spring):10–13.
- Erickson, M. E., C. Found-Jackson, and M. S. Boyce. 2017. Habitat associations with counts of declining Western Grebes in Alberta, Canada. *Avian Conserv. Ecol.* **12**(1):12. (doi.org/10.5751/ACE-00980-120112).

- Scrafford, M. A., T. Avgar, B. Abercrombie, and M. S. Boyce. 2017. Wolverine habitat selection in response to anthropogenic disturbance in the western Canadian boreal forest. *For. Ecol. Manage.* **395**:27–36.
- Prokopenko, C., M. S. Boyce, and T. Avgar. 2017. Characterizing wildlife behavioural responses to roads using integrated step selection analysis. *J. Appl. Ecol.* **54**: 470–479 (doi: 10.1111/1365-2664.12768).
- Boyce, M. S., and R. Corrigan. 2017. Moose survey app for population monitoring. *Wildl. Soc. Bull.* **41**(1):125–128 (doi: 10.1002/wsb.732). [cover photo].
- Ladle, A., T. Avgar, M. Wheatley, and M. S. Boyce. 2017. Predictive modeling of ecological patterns along linear-feature networks. *Meth. Ecol. Evol.* **8**:329–338. (doi: 10.1111/2041-210X.12660).
- Gilbert, S. L., K. J. Hundertmark, D. K. Person, M. S. Lindberg, and M. S. Boyce. 2017. Behavioral plasticity in a variable environment: snow depth and habitat interactions drive deer movement in winter. *J. Mammal.* **98**:246–259.
- Prokopenko, C., T. Avgar, and M. S. Boyce. 2017. Extent-dependent habitat selection in a migratory large herbivore: road avoidance across scales. *Landsc. Ecol.* **32**:313–325.
- Christie, K., W. F. Jensen, and M. S. Boyce. 2017. Resource selection by pronghorn in relation to land cover, roads, and oil and gas development in North Dakota. *J. Wildl. Manage.* **81**:154–162. [cover photo].
- Cristescu, B., G. B. Stenhouse, B. Goski, and M. S. Boyce. 2016. Grizzly bear space use and fitness in relation to human habitation and access. *Human Wildl. Interact.* **10**(2):240–257.
- Salari, A., M. Zakaria, and M. S. Boyce. 2016. Habitat use by two tropical waterfowl in central Malaysia. *Wildfowl* **66**:41–59.
- Cristescu, B., G. B. Stenhouse, M. Symbaluk, S. E. Nielsen, and M. S. Boyce. 2016. Wildlife habitat selection on landscapes with industrial disturbance. *Environ. Conserv.* **43**(4):327–336.
- Morehouse, A., T. Graves, N. Mikle, and M. S. Boyce. 2016. Nature vs. nurture: Evidence for social learning of conflict behaviour in grizzly bears. *PLoS ONE* **11**(11): e0165425.
- Webb, S. M., R. B. Anderson, D. L. Manzer, B. Abercrombie, B. Bildson, M. A. Scrafford, and M. S. Boyce. 2016. Distribution of female wolverines relative to snow cover, Alberta, Canada. *J. Wildl. Manage.* **80**(8):1461–1470.
- Benz, R., M. S. Boyce, H. Thurfjell, D. G. Paton, M. Musiani, C. Dormann, and S. Ciuti. 2016. Dispersal ecology informs design of large-scale wildlife corridors. *PLoS ONE* **11**(9): e0162989.
- Morehouse, A., and M. S. Boyce. 2016. Grizzly bears without borders: spatially explicit capture recapture in southwestern Alberta. *J. Wildl. Manage.* **80**(7):1152–1166 [Featured article]
- Boyce, M. S., A. Derocher, and D. L. Garshelis. 2016. *Scientific review of grizzly bear harvest management system in British Columbia*. British Columbia Ministry of Forests, Lands and Natural Resource Operations, Victoria. 56 pp.
- Bacon, M. M., and M. S. Boyce. 2016. Landscape of fear for naïve prey: ungulates flee protected area to avoid a re-established predator. *Can. Wildl. Biol. Manage.* **5**(1):1–9.
- Cristescu, B., G. B. Stenhouse, and M. S. Boyce. 2016. Large omnivore movements in response to surface mining and mine reclamation. *Scientific Reports* **6**:19177, doi: 10.1038/srep19177.

- Avgar, T., J. R. Potts, M. A. Lewis, and M. S. Boyce. 2016. Integrated step selection analysis: bridging the gap between resource selection and animal movement. *Methods Ecol. Evol.* **7**(5):619–630.
- Boyce, M. S., C. J. Johnson, E. H. Merrill, S. E. Nielsen, E. J. Solberg, and B. Van Moorter. 2016. Can habitat selection predict abundance? *J. Anim. Ecol.* **85**:11–20.
- Seidel, D., and M. S. Boyce. 2016. Varied tastes: home range implications of foraging patch selection. *Oikos* **125**:39–49.
- Christie, K., W. F. Jensen, J. H. Schmidt, and M. S. Boyce. 2015. Long-term changes in pronghorn abundance linked to climate and oil development in North Dakota. *Biol. Conserv.* **192**:445–453.
- Ciuti, S., W. Jensen, S. E. Nielsen, and M. S. Boyce. 2015. Predicting mule deer recruitment from climate oscillations for harvest management on the northern Great Plains. *J. Wildl. Manage.* **79**(8):1226–1238.
- Morrison, C. D., M. S. Boyce, and S. E. Nielsen. 2015. Space-use, movement and dispersal of sub-adult cougars in a geographically isolated population. *PeerJ* **3**:e1118; doi: 10.7717/peerj.1118.
- Cristescu, B., G. B. Stenhouse, and M. S. Boyce. 2015. Grizzly bear diet shifting on reclaimed lands. *Global Ecol. & Conserv.* **4**: 207-220.
- Seidel, D., and M. S. Boyce. 2015. Patch-use dynamics by a large herbivore. *Movement Ecol.* **3**:7 doi: 10.1186/s40462-015-0035-8.
- Proctor, M. F., S. E. Nielsen, W. F. Kasworm, C. Servheen, T. G. Radandt, A. G. MacHutchon, and M. S. Boyce. 2015. Grizzly bear connectivity mapping in the Canada-US trans-border region. *J. Wildl. Manage.* **79**:544-558. doi: 10.1002/jwmg.862. Featured paper.
- Cristescu, B., G. B. Stenhouse, and M. S. Boyce. 2015. Predicting multiple behaviors from GPS radiocollar cluster data. *Behav. Ecol.* **26**(2): 452–464. Cover photo.
- Morrison, C., M. S. Boyce, S. E. Nielsen, and M. M. Bacon. 2014. Habitat selection of a re-colonized cougar population in response to seasonal fluctuations of human activity. *J. Wildl. Manage.* **78**(8):1394–1403.
- Knopff, A. A., K. H. Knopff, M. S. Boyce, and C. C. St. Clair. 2014. Flexible habitat selection by cougars in response to anthropogenic development. *Biol. Conserv.* **178**:136–145.
- Ensing, E. P., S. Ciuti, F. A. L. M. de Wijs, D. H. Lentferink, A. ten Hoedt, M. S. Boyce, and R. A. Hut. 2014. GPS based daily activity patterns in European red deer and North American elk (*Cervus elaphus*): indication for a weak circadian clock in ungulates. *PLoS ONE* **9**(9):e106997.
- Privot, M., D. Seidel, S. Kutz, M. Musiani, A. Massolo, M. S. Boyce, and K. Orsel. 2014. What attracts elk onto cattle pasture? Implications for inter-species disease transmission. *Prev. Vet. Med.* **117**(2):326-339.
- Erickson, M. E., C. Found-Jackson, and M. S. Boyce. 2014. Using latent selection difference to model persistence in a declining population. *PLoS ONE* **9**(5): e98126. doi:10.1371/journal.pone.0098126.
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- Salari, A., M. Zakaria, C. C. Nielsen, and M. S. Boyce. 2014. Quantifying tropical wetlands using field surveys, spatial statistics and remote sensing. *Wetlands* **34**:565–574 (doi: 10.1007/s13157-014-0524-3).

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- Knopff, K. H., N. Webb, and M. S. Boyce. 2014. Cougar population status and range expansion in Alberta during 1991-2010. *Wildl. Soc. Bull.* **38**:116–121.
- Thurfjell, H., S. Ciuti, and M. S. Boyce. 2014. Applications of step-selection functions in ecology and conservation. *Movement Ecol.* **2**:4, pp. 1–12 (doi:10.1186/2051-3933-2-4).
- Lele, S. R., E. H. Merrill, J. Keim, and M. S. Boyce. 2013. Selection, choice, use, and occurrence: clarifying concepts in resource selection studies. *J. Anim. Ecol.* **82**:1183–1191.
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- Latham, A. D. M., M. C. Latham, M. S. Boyce, and S. Boutin. 2013. Spatial relationships of sympatric wolves (*Canis lupus*) and coyotes (*C. latrans*) with woodland caribou (*Rangifer tarandus caribou*) during the calving season in a human-modified boreal landscape. *Wildl. Res.* **40**:250–260.
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- Bird, K. L., C. L. Aldridge, J. E. Carpenter, C. A. Paszkowski, M. S. Boyce, and D. W. Coltman. 2013. The secret sex lives of sage-grouse: multiple paternity and intraspecific nest parasitism revealed through genetic analysis. *Behav. Ecol.* **24**:29-38.
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CONTRACTS & GRANTS

Funded Projects as PI

Grant Completed	Amount Awarded	Funding Agency
ICCB 2010 (24th International Congress for Conservation Biology)		
03/03/2011	\$99,289	ICCB Registration account
12/31/2013	\$90,066	Carbon tax project account
02/03/2011	\$234,335	Cash sponsor support (34 sponsors)
02/03/2011	\$191,079	In-kind sponsor support
Human access management in central-western Alberta: implications for grizzly bears		
03/31/2013	\$5,200	Safari Club International NAB – Hunting Heritage Fund

03/31/2013	\$2,000	AB Sports Recreation Parks & Wildlife Foundation
03/31/2013	\$33,050	Alberta Conservation Association
03/31/2013	\$14,000	AB Fish & Game Assoc. - Minister's Special License
04/22/2013	\$10,200	TD Friends of the Environment Foundation
03/31/2014	\$5,000	Safari Club International NAB – Hunting Heritage Fund
03/31/2014	\$35,000	ATPR
03/31/2014	\$3,300	AB Sports Recreation Parks & Wildlife Foundation
03/31/2014	\$25,000	Alberta Conservation Association
06/04/2014	\$10,600	TD Friends of the Environment Foundation
03/31/2015	\$3,650	Safari Club International NAB – Hunting Heritage Fund
03/31/2015	\$30,000	Alberta Conservation Association
03/31/2015	\$10,115	International Assoc. for Bear Research & Management
08/31/2015	\$9,300	AB Fish & Game Assoc. - Minister's Special License
Efficacy of intercept feeding in reducing spring grizzly bear-ranching conflicts		
03/31/2013	\$3,480	Safari Club International NAB – Hunting Heritage Fund
04/22/2013	\$5,000	TD Friends of the Environment Foundation
03/31/2014	\$7,250	International Assoc. for Bear Research & Management
03/31/2014	\$3,000	Safari Club International NAB – Hunting Heritage Fund
06/30/2014	\$4,500	AB Sports Recreation Parks & Wildlife Foundation
03/31/2015	\$6,560	International Assoc. for Bear Research & Management
03/31/2015	\$4,100	Safari Club International NAB – Hunting Heritage Fund
Restoring grizzly bear populations to southern Alberta: Monitoring and conflict resolution		
02/28/2014	\$12,000	Environment Canada - Science Horizons
11/25/2014	\$12,000	Environment Canada - Science Horizons
03/31/2013	\$9,020	AB Conservation Association – Grants in Biodiversity
03/31/2014	\$19,400	Alta Fish & Game Assoc – Minister's Special License
05/31/2014	\$24,393	International Assoc. for Bear Research & Management
06/04/2014	\$5,000	TD Friends of the Environment Foundation
03/31/2015	\$12,500	AB Fish & Game Assoc. - Minister's Special License
05/31/2015	\$26,788	International Assoc. for Bear Research & Management
06/30/2015	\$25,240	Safari Club International Foundation
11/01/2014	\$177,000	Waterton Biosphere Reserve Assoc. c/o Alta Innovates
Grizzly Bear Monitoring Project (GBMP)		
06/2013 - 06/2014	\$25,000	Disney
04/2013 - 03/2014	\$10,000	Nature Conservancy Canada Donations
2014 - 2015	\$70,000	Royal Dutch Shell Waterton Gas Plant
2012 - 2014	\$12,000	Shell Environment
11/2012	\$10,000	CPAWS Donation
Effects of industry on wolverine ecology in the boreal forest of northern Alberta		
03/31/2014	\$3,985	Safari Club International NAB – Hunting Heritage Fund
03/31/2014	\$19,500	Wildlife Conservation Society of Canada
03/31/2014	\$4,893	AB Sports Recreation Parks & Wildlife Foundation
03/31/2014	\$20,000	Alberta Conservation Association
06/04/2014	\$9,845	TD Friends of the Environment Foundation
01/15/2015	\$9,300	Wildlife Conservation Society of Canada
03/31/2015	\$75,000	Alberta Conservation Association
07/31/2015	\$5,000	AB Fish & Game Assoc. - Minister's Special License
07/31/2015	\$4,000	Safari Club International NAB – Hunting Heritage Fund

07/31/2015	\$17,575	The Wolverine Foundation
10/31/2015	\$11,140	TD Friends of the Environment Fund
12/31/2015	\$10,000	Wildlife Conservation Society of Canada
03/31/2016	\$68,138	Alberta Conservation Association
05/31/2016	\$4,000	Safari Club International NAB – Hunting Heritage Fund
07/2013 - 03/2015	\$55,000	Dene Tha First Nations Donation
2014-2016	\$45,000	Husky Oil Operations Ltd. Donation
03/31/2016	\$12,000	TD Friends of the Environment Fund
04/30/2017	\$6,275	The Wolverine Foundation
Access management for wildlife conservation		
05/04/2014	\$834,306	Shell’s Contribution Can/NSERC CRD
05/04/2014	\$699,510	NSERC Collaborative Research & Development Grants
An evaluation of historical mule deer fawn recruitment in North Dakota		
06/30/2014	\$38,892	ND Game & Fish Department
Response by elk to vehicle disturbance on winter range		
12/31/2015	\$3,600	AB Fish & Game Assoc. - Minister’s Special License
12/31/2015	\$3,000	Safari Club International NAB – Hunting Heritage Fund
Analysis of bighorn sheep data from Alberta Environment and Parks		
12/31/2015	\$4,800	Alberta Professional Outfitters Society
A retrospective analysis of Pronghorn fawn recruitment and demographic data in North Dakota		
12/31/2015	\$59,092	ND Game & Fish Department
Hunting for sustainability: Using bear rubs to monitor black bear populations in southwestern Alberta		
03/31/2016	\$4,500	Safari Club International NAB – Hunting Heritage Fund
03/31/2016	\$15,000	AB Fish & Game Assoc. - Minister’s Special License
03/31/2016	\$25,000	Alberta Conservation Association
10/01/2016	\$10,000	Waterton Biosphere Reserve Association
09/30/2016	\$9,500	Alberta Professional Outfitters Society
03/31/2017	\$11,300	Alberta Conservation Association
03/13/2017	\$6,000	International Assoc. for Bear Research & Management
03/31/2017	\$4,150	AB Fish & Game Assoc. - Minister’s Special License
Evaluating the efficacy of predator management and nesting structures for duck management in AB		
06/30/2017	\$30,353	Delta Waterfowl Foundation
03/31/2017	\$7,100	AB Fish & Game Assoc. - Minister’s Special License
03/31/2018	\$15,000	Mitacs
03/31/2018	\$2,500	Safari Club International NAB – Hunting Heritage Fund
03/31/2018	\$3,370	AB Fish & Game Assoc. - Minister’s Special License
Ecology, density, and distribution of sitatunga in central Uganda		
03/31/2016	\$2,500	Safari Club International NAB – Hunting Heritage Fund
07/31/2016	\$24,911	Dallas Safari Club
10/31/2016	\$6,540	Safari Club International - San Diego Chapter
12/23/2017	\$15,000	Mitacs
11/01/2018	\$26,311	Dallas Safari Club
03/31/2019	\$30,985	Safari Club International Foundation
06/30/2017	\$3,000	Safari Club International NAB – Hunting Heritage Fund
03/31/2018	\$3,000	Safari Club International NAB – Hunting Heritage Fund
03/31/2019	\$12,304	Safari Club International West Texas Chapter
03/31/2019	\$5,500	Safari Club International NAB – Hunting Heritage Fund
Cougar project in Cadomin, Alberta		

08/31/2018	\$40,000	Wild Sheep Foundation of Alberta
03/31/2019	\$15,000	AB Conservation Association – Grants in Biodiversity
03/31/2018	\$9,000	Safari Club International NAB – Hunting Heritage Fund
10/31/2018	\$15,000	Mitacs
12/31/2018	\$6,500	Safari Club International Foundation
03/31/2018	\$22,000	AB Fish & Game Assoc. - Minister’s Special License
03/31/2019	\$10,000	Safari Club International NAB – Hunting Heritage Fund
03/31/2019	\$20,000	Alberta Conservation Association
03/31/2019	\$31,000	AB Fish & Game Assoc. - Minister’s Special License
04/30/2019	\$40,000	Wild Sheep Foundation of Alberta
Evaluating alternate elk harvest strategies in SW Alberta		
03/31/2018	\$7,650	Alberta Conservation Association
03/31/2018	\$4,500	Safari Club International NAB – Hunting Heritage Fund
08/31/2018	\$5,650	AB Fish & Game Assoc. - Minister’s Special License
Qamanirjuaq barren-ground caribou habitat use and population ecology		
10/02/2017	\$4,000	World Wildlife Fund - Canada
Evaluating ungulate abundance in Elk Island National Park area, Alberta		
03/31/2019	\$5,000	Safari Club International NAB – Hunting Heritage Fund
Cassiar stone’s sheep habitat study in British Columbia		
03/31/2019	\$5,000	Safari Club International NAB – Hunting Heritage Fund
White-tailed deer and mule deer harvest and demographic data in North Dakota		
06/30/2020	\$130,000 US	North Dakota Game and Fish Department
Wildlife in an Increasingly Variable World		
03/31/2016	\$447,600	NSERC – Discovery Grants Program
Habitats drive population biology		
03/31/2017	\$26,000	NSERC – Discovery Grants Program
Spatial and Temporal Variability Influences on Ecology and Conservation		
03/31/2022	\$220,000	NSERC – Discovery Grants Program
Grazing practices influence on carbon sequestration and storage		
03/31/2021	\$2,623,444	Agric Green-House Gas Program, Can Agr & Agrifoods

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Memberships in professional societies

American Society of Mammalogists (patron life member).
 Canadian Society for Ecology and Evolution.
 Ecological Society of America.
 Gamma Sigma Delta (honorary).
 Phi Kappa Phi (honorary).
 Royal Society of Canada; fellow, 2014.
 Sigma Xi (associate member 1975, full member 1978, Univ. Alberta Chapter 2000).
 Society for Conservation Biology.
 The Wildlife Society (Certified Wildlife Biologist, 2000; Fellow, 2012).
 Wild Sheep Foundation Alberta (life member, 2003).
 Willmore Wilderness Foundation (life member, 2007).

Editor-in-Chief: *Journal of Wildlife Management*, 1995-1997.

Editor: *Ecology* and *Ecological Monographs*, 2001-2006.

Associate Editor: *I.M.A. Journal of Mathematics Applied in Medicine and Biology*, 1983-1994.

Associate Editor: *Journal of Wildlife Management*, 2017-2018.

Editorial Board: *Oecologia Montana*, 1992-present. *Environmental Conservation*, 2007-2010. *Oxford Bibliographies in Ecology*, 2010-present. *Animal Biotelemetry*, 2012-present.

Academic Editor: *PLoS ONE*, 2010-present.

PROFESSIONAL SERVICES (last 5 yrs)

Review committee, World Mountain Ungulate Conference, Bozeman, MT, September 2019.

Review committee on wildlife research for Swedish Environmental Protection Agency, Sigtuna, Sweden, March 2018-April 2019.

Workshop on camera trapping, Alberta Conservation Association & Alberta Environment and Parks, 2019 April 12.

Board of Directors, Wild Sheep Foundation Alberta, elected 2019 March 9.

Session Chair, Movement Ecology Gordon Conference, Italy, March 6, 2019.

Herbivory Session Chair, Ecological Society of America, New Orleans, LA, August 2018.

PLoS ONE Academic Editors Meeting, New Orleans, LA, August 2018.

Student presentations juror, American Society of Mammalogists, Manhattan, KS, June 2018.

Review committee of ecology programs in the Swedish SLU System, Uppsala, Sweden, May 28-June 1, 2018.

Workshop on habitat selection, Department of Evolutionary Ecology, Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany, May 25, 2018.

Workshop on habitat selection, Alberta Conservation Association and Alberta Environment and Parks, Edmonton, April 19, 2018.

Edited a Special Section for the *Journal of Wildlife Management* on Management of Mountain Sheep, January 2018.

Organized symposium on “Uncertainty in ecology and conservation” for the Canadian Society for Ecology and Evolution and Canadian Section of The Wildlife Society. Victoria, British Columbia, 2017 May 8.

Past-president, Canadian Section of The Wildlife Society, July 2016-May 2017.

President, Canadian Section of The Wildlife Society, March 2015-July 2016.

Program Chair, The Wildlife Society Annual Conference, Winnipeg, October 2015.

Organized symposium on “Movement models to resource selection functions” for the Annual Conference of The Wildlife Society, Winnipeg, October 2015.

Organized symposium on “Understanding individuals to conserve populations” for the Annual Conference of the Canadian Society for Ecology and Evolution, 2015 May 24.

Workshop on Resource Selection Functions, Saskatchewan Chapter of The Wildlife Society, Saskatoon, 2015 March 13.

Banting Postdoctoral Fellowships Review Committee, NSERC, 2011-2014.

Board of Directors, North American Section, Society for Conservation Biology, 2009-present.
 Director, Northern Alberta Chapter of the Safari Club International, 2007-present.
 Alberta Conservation Association, Board of Directors, 2002-present.
 Chair, Operation Standards Review Committee, Board of Directors, Alberta Conservation Association, 2002-present.

INVITED PRESENTATIONS (last 5yrs)

- 2019, TBA, Distinguished Martha Kostuch lecture, Calgary, November 23.
 2019, “Human Predation on Migratory Elk in Alberta.” Symposium: *The Interface of Predation and Migration in Aquatic and Terrestrial Ecosystems* American Fisheries Society/The Wildlife Society joint conference, Reno, Nevada, October 3.
 2019, Plenary: “Habitat ecology for mountain sheep in North America.” World Mountain Ungulate Conference, Bozeman, Montana, September 12.
 2019, Plenary address: “Wolves for Yellowstone.” British Columbia Wildlife Federation, Fort St. John, BC, May 10.
 2019, “Wolves for Yellowstone: Dynamics in Time and Space.” Whyte Museum Lecture, Banff, Alberta, March 14.
 2019, “Sustainable harvest management for bighorns in Alberta.” Wild Sheep Foundation Alberta, Red Deer, March 9.
 2019, “Conservation applications of movement ecology.” Gordon Conference, Italy, March 6.
 2019, “Wolves for Yellowstone.” Department Seminar, Natural Resources Ecology and Management, Iowa State University, Ames, February 1.
 2019, “Wolves for Yellowstone.” Research Seminar, Centre for Biodiversity Dynamics, NTNU, Trondheim, Norway, January 28.
 2018, “Uncertainty, seasonality, and unintended consequences: the demographic Hydra Effect.” Symposium on Downscaling, Extreme Events and Stochastic Population Models at the Ecological Society of America Annual Meeting, New Orleans, Louisiana, August 8.
 2018, “Wolves for Yellowstone: Dynamics in Time and Space.” C. Hart Merriam Award Plenary, American Society of Mammalogists Annual Meeting, Manhattan, KS, June 27.
 2018, “Habitat modelling,” Department of Evolutionary Ecology, Leibniz Institute for Zoo and Wildlife Research-IZW, Berlin, Germany, May 25.
 2018, “Canada’s Arctic Wildlife and Climate Change,” RSC Miroslaw Romanowski Medal Lecture, G-7 Research Summit, Arctic Sustainability Summit, Montreal, May 23.
 2018, “Wolf recovery for Yellowstone: dynamics in time and space,” University College Dublin, Dublin, Ireland, March 29.
 2018, “Wolf recovery for Yellowstone: dynamics in time and space,” Dept of Applied Zoology and Wildlife Management, Faculty of Forestry, Technical Univ. in Zvolen, Slovakia.
 2018, “Wolf recovery for Yellowstone: dynamics in time and space,” University of Swansea, Swansea, Wales, Feb 26.
 2018, “Wolf recovery for Yellowstone: Predicting dynamics,” Department of Zoology Seminar, University of Oxford, U.K., Feb 12.
 2017, “Northern wildlife and climate change,” Cutting Edge Seminar Series, McGill University, Montreal, December 14.
 2017, “Controversies on wolf recovery for Yellowstone.” ALES Seminar Series, University of Alberta, December 7.

- 2017, “Predator-prey systems: the wolves in Yellowstone,” Royal Society of Victoria, Melbourne, Australia, September 21.
- 2017, “Topics in non-linear dynamics in population ecology,” Quantitative and Applied Ecology (QAEco), School of Biological Sciences, University of Melbourne, Australia, August 17.
- 2017, “Habitat selection by mammals,” Symposium on Telemetry Methods, International Mammalogical Congress, Perth, Australia, July 11.
- 2017, “Natural selection for life histories in seasonal environments,” Symposium on Ecological and Evolutionary Dynamics in Fluctuating Environments for the Canadian Society for Ecology and Evolution, Victoria, BC, May 8.
- 2016, “Species at risk in Alberta,” Inside Education, Edmonton, September 29.
- 2016, “Neglected but fundamental: 5 understudied topics in population biology,” Distinguished Ecologist Lecture, Colorado State University, April 22.
- 2016, “North America’s Energy Policy,” Distinguished Ecologist Lecture, Colorado State University, April 21.
- 2016, “Compensation and density dependence,” Invited Keynote Presentation. Predator-prey Conference, Columbia Mountains Institute, Revelstoke, BC, April 5.
- 2016, “Neglected but fundamental: 5 understudied topics in population biology,” Mathematical Biology Seminar, University of Alberta, March 7.
- 2015, “Spatial ecology meets population biology,” Invited Symposium Presentation, Canadian Society for Ecology and Evolution, Saskatoon, May 22.
- 2015, “Black bears on the tangled bank,” Invited Symposium Presentation, Canadian Society for Ecology and Evolution, Saskatoon, May 24.
- 2015, “Optimizing cervid harvests in variable environments,” Plenary address, Western States and Provinces Deer and Elk Conference, Canmore, May 13.
- 2015, “Canada’s Energy Policy, The Urgent Need for Science,” Plenary address, Alberta Chapter of The Wildlife Society, Edmonton, March 21.
- 2015, “Estimating resource selection functions in R,” AGM of the Canadian Section of The Wildlife Society, Saskatoon, March 13.
- 2014, “Canada’s Energy Policy: The Urgent Need for Science,” Royal Society of Canada, Quebec City, November 20.
- 2014, “Selection functions: statistics, interpretations, and applications,” Webinar for the Alberta Conservation Association, May 12.
- 2014, “Trophic cascades in Yellowstone,” Plenary Address, Alaska Chapter of The Wildlife Society, Anchorage, April 1.
- 2014, “Workshop on resource selection functions,” Alaska Chapter of The Wildlife Society, Anchorage, March 31.
- 2014, “Does fear reduce effects of ungulates on vegetation?” Gordon Conference on Predator-Prey Interactions, Ventura, California, January 8.
- 2013, “Moving into the digital age: a moose app for citizen science among hunters,” Canadian Section of The Wildlife Society, Symposium on Citizen Science, Canmore, Alberta, March 9.
- 2013, “Selection functions: statistics, interpretations, and applications,” Webinar for the Canadian Section of The Wildlife Society, January 25.
- 2013, “Selection, occupancy, and persistence,” Morrison Lecture, Stanford University, Jan 16.

CONTRIBUTED PAPERS (recent)

- 2016, “Science and bighorn management.” Alberta Chapter of The Wildlife Society, Drumheller (March 5).
- 2015, “Canada’s energy policy: the urgent need for science.” Canadian Section of The Wildlife Society, Saskatoon, Saskatchewan (March 14).
- 2014, “Are terrestrial trophic cascades limited to parks and protected areas?” Alberta Chapter of The Wildlife Society, Jasper, Alberta. (March 8).
- 2014, “Conflicting views on trophic cascades in Yellowstone,” Canadian Section of The Wildlife Society, Universite Laval, Quebec City, Quebec (March 29).

PUBLIC SERVICE/POPULAR PRESENTATIONS (recent)

- 2018, “La exitosa reintroducción del lobo en el Parque Nacional de Yellowstone,” *National Geographic Espana*. (October 29).
- 2018, “Reintroduction of wolves to Yellowstone led to unexpected ecological response,” *Newsweek* (October 17).
- 2018, “Letting nature take its course: Wolves in Yellowstone National Park,” *Science Daily*, (October 16).
- 2018, Media coverage on Yellowstone wolves, CTV, CBC Radio Active, Eurekalert, Flipboard, Phys.Org, Labroots (October 17).
- 2018, “Wolves for Yellowstone,” Pigeon Lake Regional School, Falun, Alberta (October 17).
- 2018, “A Passion for the Science of Wildlife,” *The Wildlife Professional* **12**(4):16-17.
- 2017, “Canada’s energy policy: the urgent need for science,” Mayfield Rotary, Edmonton
- 2016, “Canada’s energy policy: the urgent need for science,” Edmonton South Rotary Club (November 23).
- 2016, “Energy development and species at risk in Canada,” Sunrise Rotary Club, Fort Edmonton (September 30).
- 2016, “Moose app for moose management in Alberta,” Strathcona Rotary Club, Edmonton (September 6).
- 2016, “Bighorn management in Alberta,” Safari Club International, Edmonton (January).
- 2015, “Licenced hunting and trapping in Canada: funding for management and research,” House of Commons Standing Committee on Environment and Sustainable Development, Ottawa (March 31).

COMMITTEES (recent)

- 2019-present, Chair, Conservation Affairs Committee, Alberta Chapter of The Wildlife Society.
- 2019, First Opponent, Doctoral Examination Committee, NTNU, Trondheim, Norway.
- 2018-2019, Search Committee, Chair, Dept. Biological Sciences, Univ. Alberta.
- 2016-2017, Search committee, Fisheries biologist, Dept. Biological Sciences, Univ. Alberta.
- 2015-present. Alberta Game Policy Advisory Council, Alberta Environment & Parks.
- 2014-2015, Alberta Game Management Advisory Group, Alberta Environment & Parks.
- 2015-2016, Grizzly bear harvest policy review, British Columbia Department of Environment.
- 2013-2014, Search Committee for Campus Alberta Innovates Program (CAIP) Chair, University of Alberta.

2012, Chair, Search Committee for Editor-in-Chief, *Conservation Biology*, Society for Conservation Biology.

2007-2019, Conservation Committee, Alberta Chapter The Wildlife Society.