

RYAN M. NIELSON, Research Biometrician/Project Manager**EDUCATION**

M.S.	Colorado State University, Fort Collins, Colorado	2001	Statistics
B.S.	University of Oregon, Eugene, Oregon	1996	Environmental Studies

PROFESSIONAL EXPERIENCE

2001-Present	Biometrician, Western EcoSystems Technology, Inc., Cheyenne, WY
2000-2001	Data Analyst, USDA-APHIS-NWRC, 4101 Laporte Avenue, Fort Collins, CO.
1997-1999	Experimental Biology Aide, Oregon Department of Fish and Wildlife – R & D, La Grande, OR.

STATISTICAL TRAINING AND EXPERTISE

Sampling design	Resource/habitat selection	Spatial statistics
Generalized linear (& mixed) models	Multivariate statistics	Mark-recapture
Bootstrap/Monte Carlo Methods	Distance sampling	Bayesian hierarchical modeling

PROFESSIONAL SUMMARY

Mr. Nielson has worked as a biometrician and project manager for WEST since 2001. He has extensive experience in the design and analysis of ecological monitoring programs, population surveys, and resource selection/habitat use by animals. He has developed habitat selection and movement models for brown bears, polar bears, northern spotted owls, moose, elk, deer, caribou, whales, pheasants, and others. Mr. Nielson has experience managing large, long-term projects including before-and-after-control-impact studies and population monitoring programs. In 2008, Mr. Nielson received an Award for Excellence of Service by the U.S. Secretary of the Interior, Dirk Kempthorne, for his polar bear research. He is currently involved in monitoring golden eagles in the western U.S., monitoring the effects of oil and gas development on pronghorn antelope and mule deer in western Wyoming for the BLM and developing habitat suitability models for elk west of the Cascade range in Oregon and Washington.

HONORS

Award for Excellence of Service, presented by Dirk Kempthorne in 2008, U.S. Secretary of the Interior

A SAMPLE OF PEER-REVIEWED PUBLICATIONS

- Amstrup, S. C., G. Weston-York, T. M. McDonald, **R. M. Nielson**, and K. Simac. 2004. Detecting denning polar bears with forward looking infra-red imagery (FLIR). *BioScience* 54: 337-344.
- Bromaghin, J. F., **R. M. Nielson**, and J. J. Hard. *In Press*. A model of Chinook salmon population dynamics incorporating size-selective exploitation and inheritance of polygenic correlated traits. *Natural Resource Modeling*.
- Coe, P. K., B. Johnson, M. J. Wisdom, J. G. Cook, M. Vavra, and **R. M. Nielson**. *In Press*. Validation of elk resource selection models with spatially-independent data. *Journal of Wildlife Management*.
- Durner, G. M., D. C. Douglas, **R. M. Nielson**, S. C. Amstrup, T. L. McDonald, I. Stirling, M. Mauritzen, E. W. Born, Ø. Wiig, E. DeWeaver, M. C. Serreze, S. E. Belikov, M. M. Holland, J. Maslanik, J. Aars, D. A. Bailey, and A. E. Derocher. 2009. Predicting the 21st century distribution of polar bear habitat from general circulation model projections of sea ice. *Ecological Monographs* 79:25 – 58.
- Durner, G. M., S. C. Amstrup, **R. M. Nielson**, and T. L. McDonald. 2004. Using discrete choice modeling to generate resource selection functions for female polar bears in the Beaufort Sea. Pages 107-120 in S. Huzubazar, editor. *Resource Selection Methods and Applications*. Proceedings of the 1st International Conference on Resource Selection, Laramie, Wyoming, January 13-15, 2003. Western EcoSystems Technology, Inc., Cheyenne, Wyoming, USA.
- Engeman, R. M., **R. M. Nielson**, and R. T. Sugihara. 2005. Evaluation of optimized variable area transect sampling using totally enumerated field data sets. *Environmetrics* 16:767-772.
- Erickson, W. P., **R. M. Nielson**, B. Skinner, B. Skinner, and J. Johnson. 2004. Applications of resource selection modeling using unclassified Landsat Thematic Mapper Imagery. Pages 130-140 in S. Huzubazar, editor. *Resource Selection Methods and Applications*. Proceedings of the 1st International Conference on Resource Selection, Laramie, Wyoming, January 13-15, 2003. Western EcoSystems Technology, Inc., Cheyenne, Wyoming, USA.
- Goldstein, M. I., A. J. Poe, L. H. Suring, **R. M. Nielson**, and T. L. McDonald. 2009. Brown bear den habitat and winter recreation in south-central Alaska. *Journal of Wildlife Management* 74:35 – 42.
- Good, R. E., **R. M. Nielson**, H. H. Sawyer, and L. L. McDonald. 2007. A golden eagle population estimate for the western United States. *Journal of Wildlife Management* 71:395 – 402.
- Haskell, S. P., **R. M. Nielson**, W. B. Ballard, M. A. Cronin, and T. L. McDonald. 2006. Dynamic responses of calving caribou to oilfields in northern Alaska. *Arctic* 59:179 – 190.

- Howlin, S., W. P. Erickson, and **R. M. Nielson**. 2004. A validation technique for assessing predictive abilities of resource selection functions. Pages 40-51 in S. Huzubazar, editor. *Resource Selection Methods and Applications*. Proceedings of the 1st International Conference on Resource Selection, Laramie, Wyoming, January 13-15, 2003. Western EcoSystems Technology, Inc., Cheyenne, Wyoming, USA.
- McDonald, T. L., B. F. J. Manly, **R. M. Nielson**, and L. Diller. 2006. Discrete choice modeling in wildlife studies exemplified by Northern spotted owl nighttime habitat selection. *Journal of Wildlife Management* 70: 375 – 383.
- Millsbaugh, J. J., **R. M. Nielson**, L. L. McDonald, J. M. Marzluff, R. A. Gitzen, C. D. Rittenhouse, M. W. Hubbard, and S. L. Sheriff. 2006. Analysis of resource selection using utilization distributions. *Journal of Wildlife Management* 70:384 – 395 .
- Nielson, R. M.**, B. F. J. Manly, L. L. McDonald, H. Sawyer, and T. L. McDonald. 2009. Estimating habitat selection when GPS fix success is less than 100%. *Ecology* 90:2956 – 2962.
- Nielson, R. M.**, L. L. McDonald, J. P. Sullivan, C. Burgess, D. S. Johnson, D. H. Johnson, S. Bucholtz, S. Hyberg, and S. Howlin. 2008. Estimating the response of ring-necked pheasants (*Phasianus colchicus*) to the Conservation Reserve Program. *The Auk* 125:434 – 444.
- Nielson, R. M.**, R. T. Sugihara, T. J. Boardman, and R. M. Engeman. 2004. Optimization of ordered distance sampling. *Environmetrics* 15:119-128.
- Nielson, R. M.**, B. F. J. Manly, and L. L. McDonald. 2004. A preliminary study of the bias and variance when estimating a resource selection function with separate samples of used and available resource units. Pages 28-34 in S. Huzubazar, editor. *Resource Selection Methods and Applications*. Proceedings of the 1st International Conference on Resource Selection, Laramie, Wyoming, January 13-15, 2003. Western EcoSystems Technology, Inc., Cheyenne, Wyoming, USA.
- Sawyer, H., M. J. Kauffman, **R. M. Nielson**, and J. S. Horne. 2009. Identifying and prioritizing ungulate migration routes for landscape-level conservation. *Ecological Applications* 19:2016 – 2025.
- Sawyer, H., M. J. Kauffman, and **R. M. Nielson**. 2009. Influence of wellpad activity on the winter habitat selection patterns of mule deer. *Journal of Wildlife Management* 73:1052 – 1061.
- Sawyer, H., **R. M. Nielson**, F. Lindzey, A. Abraham, and L. Keith. 2007. Habitat selection of Rocky Mountain elk in a non-forest environment. *Journal of Wildlife Management* 71:868 – 874.
- Sawyer, H., **R. M. Nielson**, F. Lindzey, and L. L. McDonald. 2006. Winter habitat selection of mule deer before and during development of a natural gas field. *Journal of Wildlife Management* 70:396 – 403.
- Yazvenko, S. B., T. L. McDonald, S. A. Blokhin, S. R. Johnson, S., K. Meier, H. R. Melton, M. W. Newcomer, **R. M. Nielson**, V. L. Vladimirov, and P. W. Wainwright. 2007. Distribution and abundance of western gray whales during a seismic survey near Sakhalin Island, Russia. *Environmental Monitoring and Assessment* 134:45 – 73.
- Yazvenko, S. B., T. L. McDonald, S. A. Blokhin, S. R. Johnson, H. R. Melton, M. W. Newcomer, **R. M. Nielson**, and P. W. Wainwright. 2007. Feeding of western gray whales during a seismic survey near Sakhalin Island, Russia. *Environmental Monitoring and Assessment* 134:93 – 106.

A SAMPLE OF PRESENTATIONS AND WORKSHOPS

- Resource selection modeling approach to west-side elk habitat models*, by **R. M. Nielson**. A presentation at the workshop on Elk habitat selection in western Oregon and Washington: models for a new century, in Corvallis, OR, April 19 – 20, 2010.
- Estimation of habitat selection by bighorn sheep when GPS fix success is < 100%*, by **R. M. Nielson**, H. Sawyer, and M. Hicks. A presentation at the 16th annual conference in Monterey, CA, September 20 - 24, 2009.
- Estimating habitat selection when GPS fix success is less than 100%*, by **R. M. Nielson**, B. F. J. Manly, L. L. McDonald, H. Sawyer, and T. L. McDonald. A presentation at the 16th annual conference in Monterey, CA, September 20 - 24, 2009.
- Invited Specialist: *Simulation of an Aerial Line Transect Survey for Polar Bears in the Chukchi Sea*, by **R. M. Nielson**, T. J. Evans, M. Borurassa Stahl, G. M. Durner, and D. C. Douglas. A presentation at the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group in Copenhagen, Denmark, June 29 – July 3, 2009.
- Estimating Habitat Selection When GPS Fix Success is Less Than 100%*, by **R. M. Nielson**, B. F. J. Manly, L. L. McDonald, H. Sawyer, and T. L. McDonald. A presentation at the 8th Western States and Provinces Deer and Elk Workshop in Spokane, WA, 2009.
- Regression Modeling for Habitat Selection Using GPS Data*, by **R. M. Nielson**, H. Sawyer, and L. L. McDonald. A 1-day workshop at the 2008 Wildlife Society Conference in Miami, FL. This workshop was sponsored by the Biometrics Working Group of the Wildlife Society.
- Correction for Radio-tracking Detection Bias in Estimation of Resource Selection Functions*, by **R. M. Nielson**, B. F. J. Manly, L. L. McDonald, and H. Sawyer. A presentation at the 2007 Wildlife Society Conference in Tuscon, AZ.
- An Alternative to Kernel Smoothing When Estimating Resource Selection Functions*, by **R. M. Nielson**, H. Sawyer, J. J. Millsbaugh, and A. A. Abraham. A presentation at the 2005 Wildlife Society Meeting in Madison, WI.

SCIENTIFIC ORGANIZATION MEMBERSHIPS

American Statistical Association The Wildlife Society (Biometrics Working Group)

COMPUTER PROGRAMS

BBMM: An R contributed package that fits a Brownian bridge movement model to animal location data. <http://CRAN.R-project.org/package=BBMM>