

LYMAN L. McDONALD, Ph.D., *Senior Biometrician*

PRINCIPAL

**EDUCATION**

Ph.D.	Colorado State University, Fort Collins, Colorado	1970	<i>Statistics</i>
M.S.	Oklahoma State University, Oklahoma City, Oklahoma	1964	<i>Mathematics</i>
B.S.	Oklahoma State University, Oklahoma City, Oklahoma	1963	<i>Mathematics</i>

**PROFESSIONAL EXPERIENCE**

2008-Present	<i>Senior Biometrician</i> , Western EcoSystems Technology, Inc., Cheyenne, Wyoming		
1991-2008	<i>President</i> , Western EcoSystems Technology, Inc., Cheyenne, Wyoming		
1991-Present	<i>Adjunct Faculty</i> , Department of Statistics, University of Wyoming, Laramie, Wyoming		
2002-Present	<i>Faculty Affiliate</i> , Department of Statistics, Colorado State University, Fort Collins, Colorado		
1973-1991	<i>Assistant Professor and Professor of Statistics and Zoology</i> , Departments of Statistics and Zoology, University of Wyoming, Laramie, Wyoming		
1987	<i>Visiting Professor of Statistics</i> , University of Otago, Dunedin, New Zealand		
1985	<i>Sabbatical</i> , Denver Wildlife Research Center, U.S. Fish and Wildlife Service		
1981-1985	<i>Statistics Department Chairman</i> , University of Wyoming, Laramie Wyoming..		
1971-1973	<i>Associate Professor of Statistics</i> , Department of Statistics, Kansas State University, Manhattan, Kansas		
1969-1971	<i>Assistant Professor of Statistics and Zoology</i> , Departments of Statistics and Zoology, University of Wyoming, Laramie, Wyoming		

**HONORS**

1998	Fellow of the American Statistical Association for the development and application of statistical methods in fish and wildlife biology and ecology
1999	Twentieth Century Distinguished Service Award, Ninth Lukacs Symposium for Outstanding contribution to the development and direction of cross-disciplinary combination of practicality and scholarship for statistics, ecology, environment, and society in the form of Environmental Statistics.

**SPECIALTY AREAS**

**Professional Summary:** Nationally known biometrician/statistician with 39 years of experience in the application of statistical methods to design, conduct, and analyze field and laboratory studies. Experience conceiving practical, common sense solutions to environmental sampling-monitoring problems that are consistent with feasible field and laboratory methods and giving rise to defensible statistical inferences.

**Project Management:** Experience in project, budget and personnel management. Designed and managed both large and small environmental impact assessments and monitoring programs. Experience in terrestrial and aquatic ecosystems including marine environments. Appointments to regional and national technical advisory and review committees include that Independent Scientific Advisory Board for the Northwest Power Planning Council, the Columbia River Inter-Tribal Fish Commission, and NOAA Fisheries. Dr. McDonald was the lead statistician on the Coastal Habitat Injury Assessment in Prince William Sound, Alaska following the *Exxon Valdez* oil spill in 1989.

**Research:** Author of more than 100 papers in scientific literature and joint author of the book entitled Resource Selection by Animals: Statistical Design and Analysis for Field Studies. His responsibilities on projects have included design and analysis for: Natural Resource Damage Assessments, wildlife surveys, habitat selection by wildlife populations, laboratory and field studies, effects of pesticides on wildlife populations, and bioassay for fresh water and marine organisms. He has also organized and taught workshops on statistical procedures for practicing biologists.

**ADDITIONAL SERVICE**

1966-1996	Journal of Wildlife Management, Associate Editor
1993-present	Journal of Agriculture, Biological and Environmental Statistics; Associate Editor
2000	President, Biometrics Working Group, The Wildlife Society

**ADVISORY COMMITTEES AND NATIONAL PANELS**

2008	Member of Peer Review of Michigan State University's PCB Exposure and Effects Studies in the Floodplain of the Kalamazoo River
2004-2005	Chair of the Program Advisory Panel for the U.S. Fish and Wildlife Service's Middle Rio Grande Endangered Species Act Collaborative Program
1997-2005	Member of the Independent Scientific Review Panel for the Northwest Power Planning Council

- 1996-2005 Member of the Independent Scientific Advisory Board for the Northwest Power Planning Council, the Columbia River Inter-Tribal Fish Commission, and NOAA Fisheries
- 1995 Participant in the Pellston Whoe-Effluent Toxicity Workshop, Society of Environmental Toxicology and Chemistry.
- 1994 Chairman, Peer Review Panel on Environmental Studies, Quality and Remediation for the National Oceanic and Atmospheric Administration, National Sea Grant Program
- 1989-1992 Member of the Statistical Design and Analysis Team for the U.S. Environmental Protection Agency Environmental Monitoring Assessment Program (EMAP)
- 1991 Member of the Wildlife Management Institute Team to review information concerning caribou management relative to further oil development on the North Slope of Alaska including the Arctic National Wildlife Refuge
- 1982-1991 Advisory Team for management of the black-footed ferret, Wyoming Game and Fish Department, Cheyenne, Wyoming

### PUBLICATIONS (last 10 years)

- 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.
- Durner, G. M., D. C. Douglas, R. M. Nielson, S. C. Amstrup, **L. 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.
- Skalski, J.R., R.L. Townsend, **L.L. McDonald**, J.W. Kern, and J.J. Millsbaugh. 2008. Type I errors linked to faulty statistical analyses of endangered subspecies classifications. *Journal of Agricultural, Biological, and Environmental Statistics*. 13: 199-220.
- 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
- Goodrich, J. M., L. L. Kerley, E. N. Smirnov, D. G. Miquelle, **L. L. McDonald**, H. B. Quigley, M. G. Hornocker, and T. L. McDonald. 2008. Survival rates and causes of mortality of Amur tigers on and near the Sikhote-Alin Biosphere Zapovednik. *Journal of Zoology* 276:323-329
- Jones, S. L., C. S. Nations, S. D. Fellows, and **L. L. McDonald**. 2008. Breeding Abundance and Distribution of Long-billed Curlews (*Numenius americanus*) in North American. *Journal of the Waterbird Society* 31: 1-14
- McDonald, L. L.** et al. (15 coauthors). 2007. Research, monitoring and evaluation of fish and wildlife restoration projects in the Columbia River Basin: Lessons learned and suggestions for large-scale monitoring programs. Feature Article in *Fisheries* 32: 582-590.
- Good, R.E., R.M. Nielson, H. Sawyer, and **L.L. McDonald**. 2007. A population estimate for golden eagles in the Western United States. *Journal of Wildlife Management* 71: 395-402.
- Strickland, M.D., and **L.L. McDonald**. 2006. Introduction to the special section on resource selection. *Journal of Wildlife Management* 70: 321-323.
- 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.
- 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.
- McDonald, L.L.**, C.C. Coutant, L.D. Calvin, and R.N. Williams. 2006. Monitoring and evaluation. Chapter 11 in Williams, R.N. (Editor). *Return to the River: Restoring Salmon to the Columbia River*. Elsevier, Inc., San Diego.
- Markov, N.I., N.D. Neifeld, and **L.L. McDonald**. 2005. Analysis of wild boar (*Sus scrofa L., 1758*) distribution in northeast of European Russia: A quantitative approach. *Russian Journal of Theriology* 4: 115-122.
- McDonald, L.L.**, C.C. Coutant, L.D. Calvin, and R.N. Williams. 2005. Monitoring and evaluation. Chapter 11 in Williams, R.N. (Editor). *Return to the River: Restoring Salmon to the Columbia River*. Elsevier, Inc., San Diego.
- McDonald, L.L.** 2004. Sampling rare populations. Chapter 2 in Thompson, W.L. (Editor). *Sampling Rare or Elusive Species: Concepts, Designs, and Techniques for Estimating Population Parameters*. Island Press, Washington.
- McDonald, L.L.** 2003. Review of the book by D.L. Borchers, S.T. Buckland, and W. Zucchini.. 2002. Estimating animal abundance: closed populations. Springer-Verlag, NY. *Ecology* 84: 2517-2518.
- Manly, B.F.J., **L.L. McDonald**, D.L. Thomas, T.L. McDonald, and W.P. Erickson. 2002. *Resource Selection by Animals: Statistical Design and Analysis for Field Studies, Second Edition*. Kluwer Academic Publishers, Dordrecht.
- Peterson, C.H., **L.L. McDonald**, R.H. Green, and W.P. Erickson. 2001 Sampling design begets conclusions: the statistical basis for detection of injury to and recovery of shoreline communities after the 'Exxon Valdez' oil spill. *Marine Ecology Progress Series* 210:255-283.

- McDonald, L.L.**, and B.F.J. Manly. 2001. Modeling wildlife resource selection: Can we do better? Pages 137-145 in T.M. Shenk and A.B. Franklin, Editors. Modeling in natural resource management: Development, interpretation, and application. Island Press, Washington.
- Boyce, M.S., and **L.L. McDonald**. 1999. Relating populations to habitats using resource selection functions. *Trends in Ecology and Evolution*. 14:268-272.
- McDonald, L.L.**, G.W. Garner, and D.G. Robertson. 1999. Comparison of aerial survey procedures for estimating polar bear density: Results of pilot studies in Northern Alaska. In Garner, G.W., S.C. Amstrup, J.L. Laake, B.F.J. Manly, **L.L. McDonald**, and D.G. Robertson, eds. *Marine Mammal Survey and Assessment Methods*. A.A. Balkema, Rotterdam, pp. 37-51.
- Manly, B.F.J., **L.L. McDonald**, and Trent McDonald. 1999. The robustness of mark-recapture methods: A case study for the northern spotted owl. *Journal of Agricultural, Biological, and Environmental Statistics* 4:78-101.

**SCIENTIFIC ORGANIZATION MEMBERSHIPS**

The Wildlife Society

The Biometric Society

American Statistical Association