CURRICULUM VITAE

EDWARD O. GARTON

Emeritus Professor of Fish and Wildlife Ecology and Statistics

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EDUCATION

Postdoctoral Fellow, 1976, University of California, Davis. Analysis of Starling Problems in California

Ph.D., Ecology, 1976, University of California, Davis. Dissertation: The Functional Response of White-Crowned Sparrows in Single-Species and Multiple-Species Prey Environments

M.S., Ecology, 1973, University of California, Davis. Thesis: Levels of Mercury, Lead, and Cadmium in Hair and Feather Tissues as Indicators of Exposure to These Heavy Metals: A Brief Survey of Human, Bird, and Animal Populations in Hawaii

B.A., Biology, 1968, Stanford University, Stanford

FIELDS OF SPECIALIZATION:

Population Dynamics and Management of Avian and Mammalian Populations
Experimental Design and Analysis
Modeling and Simulation of Population and Community Processes
Ecology of Large Mammals
Avian Feeding Ecology

PPROFESSIONAL CERTIFICATION:

Certified Wildlife Biologist

EXPERIENCE:

In Educational Institutions Since Receipt of Bachelor's Degree:

Teaching:

University of Idaho, Assistant Professor, 1/77-6/82; Associate Professor, 7/82-7/86; Professor, 7/86-6/11; Emeritus Professor, 7/11-present: WLF 302, Field Ecology; WLF 390, Principles of Fish and Wildlife Ecology; WLF 404, Honors Colloquium; WLF 448, Fish and Wildlife Population Ecology; WLF 541, Advanced Population Biology; WLF 543, Fish and Wildlife Population Analysis; WLF 501/504, Graduate Seminars:

2010, 2011 - Theory of Nature and Nature of Theory
2009 - Wilderness Wildlife Monitoring
2008 - Occupancy Estimation and Modeling: Inferring Patterns and Dynamics of Species Occurrence (with Janet Rachlow)
2007 – Managing Fragmented Populations: The Importance of Spatial Structure
- Information Theoretic Approaches in Fish and Wildlife Research (with Jon Horne)
2006 – Cause and Correlation in Biology: Assessment Using Structural Equation Modelling
2004, 2005 – Scientific Method for Ecological Research

2002, 2003 – The Ecological Detective: Confronting Models with Data
2001 - Ecological Dynamics: Models and Theory with J. Michael Scott
2000 – Spatial Ecology: The Role of Space in Population Dynamics & Interspecific Interactions
1999 – Adaptive Management of Natural Resources
1997, 1998 – Natural Regulation or the Control of Nature: The Greater Yellowstone Ecosystem
1998 – Discordant Harmonies, A New Ecology and Yellowstone National Park, Honors Colloquium.
1996 - Sustainability of Biological Components of Ecosystems
1985 - Competition

Moi University, Kenya, Fulbright Professor, 9/89-5/90: WLM 301, Wildlife Management Techniques; WLM 316, Vertebrate Population Dynamics; WLM 418, Wildlife Management; WLM 426, Advanced Ecology.

University of California, Davis: Population Ecology, Lecturer, 1975; Introduction to Environmental Studies, T.A., 1971, 1974; Introduction to Ecology, T.A., 1972, 1973; Field Methods in Wildlife Biology, Instructor, 1974; Animal Behavior, Instructor, 1972.

Workshops for Professionals and Graduate Students:

2012 New Approaches to Studies of Home Range, Habitat Selection and Space Use, 5-day, University of Idaho, Moscow, ID in January and March and Texas A&M University, Kingsville, Texas
2008 Animal Abundance: Estimating "True" Size of Populations, 5-day, California Dept. of Fish and Game, Bishop, CA.
2007 New Approaches to Studies of Home Range, Habitat Selection and Space Use, 5-day workshop for faculty, post-docs and graduate students, Hedmark University, Evenstad, Norway
New Approaches to Studies of Home Range, Habitat Selection and Space Use, 5-day, California Dept. of Fish and Game, Bishop, CA
New Approaches to Studies of Home Range, Habitat Selection and Space Use, ½ day, with Jon Horne, Cooper Ornithological Society, National Meeting, Moscow, ID
2006 New Approaches to Studies of Home Range, Habitat Selection and Space Use, ½ day, with Jon Horne, TWS National Convention, Anchorage, Alaska
Synoptic Model of Animal Space Use: Simultaneous Analysis of Home Range, Habitat Selection and Inter/inter-specific Relationships, 1-hour presentation, Texas A&M, Kingsville, Texas
Hunting and endangered species? Using the scientific method in hunting and management of Greater Sage-Grouse, 2-hour presentation, Texas A&M, Kingsville, Texas
Wildlife and Fisheries Surveys: Design and Analysis, 5-day, California Dept. of Fish and Game, Bishop, CA
Sampling Biological Populations, 1-hour presentation as part of a workshop for Oregon Chapter of The Wildlife Society, Newport, OR.
Research and Experimental Design, 3-day, for new and former M.S. and Ph.D. students in Environmental Studies, University of Rome, Rome, Italy.
2005 New Approaches to Studies of Home Range, Habitat Selection and Space Use, 2.5 day, taught 2 sessions at University of Idaho and one at Texas A&M Kingsville.
Animal Abundance: Estimating "True" Size of Populations, 2.5 day, taught 2 sessions at University of Idaho.
2004 Wildlife Radio Telemetry: Design and Analysis, 5-day, University of Idaho.
2003 Metapopulations of Animals and Plants: Inventory, Monitoring and Viability Analysis, 5-day, University of Idaho.
Animal Abundance: Estimating "True" Size of Populations, 5-day, University of Idaho.
2002 Wildlife Radio Telemetry: Design and Analysis, 5-day, University of Idaho and Anchorage, AK.
Designing a Monitoring Plan for MIS, ½ day workshop for USDA Forest Service staff as part of a 3-day regional planning effort on Management Indicator Species, Denver, CO.
2001 Metapopulations of Animals and Plants: Inventory, Monitoring and Viability Analysis, 5-day,

University of Idaho.

Wildlife Radio Telemetry: Design and Analysis, 5-day, University of Idaho.

2000 Metapopulations of Animals and Plants: Inventory, Monitoring and Viability Analysis, 5-day, 1 session at University of Idaho, and 1 session for Ontario Ministry of Natural Resources, Thunderbay, Ontario.

Metapopulations, 1-day workshop for USFWS, USFS, Alaska DFG, Juneau, Alaska.

Wildlife and Fisheries Surveys, 5-day, University of Idaho.

1999 Metapopulations, 3-hour workshop, Western Section of American Fisheries Society Meeting, Moscow, ID

Adaptive Management, Elk Habitat Initiative, University of Idaho.

1998 Computer Applications: Aerial Survey, Searching Literature, and Geographic Information Systems, Mini-workshop, Idaho Chapter TWS meeting, Moscow.

Metapopulations, 5-day, Alaska Dept. of Fish and Game, Anchorage, Alaska.

Multivariate Statistical Applications in Fish and Wildlife, University of Idaho

1997 Metapopulations of Animals and Plants: Inventory, Monitoring and Viability Analysis, 5-day, 1 session at University of Idaho, and 1 session for British Columbian Wildlife Branch of Ministry of Natural Resources, Victoria, BC.

Applications of Multivariate Statistical Methods to Fish and Wildlife, 5-day, University of Idaho.

Estimating Snag and Large Tree Densities and Distributions, 3-day, with Lisa Bate and Mike Wisdom for USFS, Walla Walla, WA

1996 Metapopulations of Animals and Plants: Inventory, Monitoring and Viability Analysis, 5-day, University of Idaho.

1995 Statistical Methods and Data Analysis for Fish and Wildlife Biologists, 5-day, Biologists from National Elk Refuge, Montana Fish and Game and USFS, Jackson Hole, WY.

1995 Population Ecology, Metapopulations and Biogeography of Animals, ½ day session, for USFS, CEEM, Continuing Education in Ecosystem Management, University of Idaho.

1994 Animal Population Ecology, ½ day session, USFS, CEEM, University of Idaho.

1993 Sampling Animal Populations, 5-day, Lisbon, Portugal

Wildlife and Fisheries Surveys: Design and Analysis, 5-day, University of Idaho.

1992 Wildlife Population Ecology, 5-day, University of Idaho.

Applications of Multivariate Statistical Methods to Fish and Wildlife, 5-day, Biologists from Idaho Power Co. and Idaho Dept. of Fish and Game, Boise, ID

1991 Multivariate Applications in Fish and Wildlife, 5-day, University of Idaho.

1985 Microcomputer Applications in Fish and Wildlife Biology. 5-day, University of Idaho.

1982 Statistical Methods and Data Analysis for Fish and Wildlife Biologists, 5-day, University of Idaho.

Research:

University of Idaho:

9/2010-6/2011	Cooperative research and consulting with Idaho Dept. of Fish and Game
2/2010-present	Analysis and modeling of space use by ungulates in Alaska
8/2008-present	Greater sage grouse extinction risk
9/2007-present	Spatial dynamics of mountain goats in Cascade Mountains
8/2006-2010	Risk assessment framework for threatened and endangered species on Department of Defense lands
5/2004-2007	Population dynamics and management of Kodiak bears
5/2002-present	Greater sage-grouse population ecology
1/2002-present	Interactions between elk and deer metapopulations in Idaho
9/2001-2005	Landscape models for terrestrial wildlife in Interior Columbia Basin
1/2000-2005	Assessing risk of selenium contamination to bird populations in SE Idaho
6/2000-present	Modeling habitat and populations of elk and neotropical birds on landscapes
5/2000-2009	Lewis woodpecker nesting ecology
4/2000-9/2007	Beach buffer importance for wildlife populations in SE Alaska
7/1998-present	Metapopulation of elk in Idaho
7/1997-9/2000	Diet, nutrition and population dynamics of tule elk at Pt. Reyes Natl. Seashore

1/1996-7/2000	Mule deer fawn survival and habitat selection
4/1995-7/1996	Evaluation of big game harvest surveys.
7/1992-6/2002	Effectiveness monitoring for elk populations
6/1992-12/2010	Monitoring woodpeckers, snags and downed logs on national forests
9/1991-9/2001	Conservation of biological diversity in the Northern Rocky Mountains
11/1991-present	Estimation of minimum viable metapopulations
1/1991-6/1994	Dietary selection of pocket gophers
6/1988-present	Impact of wolf reintroduction on Yellowstone ungulate populations
8/1986-6/1991	Habitat selection of fisher in northern Idaho
9/1985-6/1990	Black bear population management strategies in national parks
9/1985-6/1991	Functional feeding response of coyotes to changing prey abundance.
8/1985-present	Population ecology of trumpeter swans and whooping cranes
8/1983-12/1998	Status and habitat requirements of boreal owls in northern Rocky Mountains
11/1981-present	Aerial census methods for elk, moose, bighorn sheep, pronghorn antelope and mule deer populations.
7/1982-present	Home range analysis methods.
7/1981-6/1985	Baseline data gathering system for Research Natural Areas in Idaho
4/1979-present	Avian predators of the western spruce budworm.
1/1979-6/1982	Bird communities of north rim of Grand Canyon, Grand Canyon National Park
9/1979-6/1982	Resource partitioning between owls of the Idaho Primitive Area.
11/1979-2/1982	Simulation modeling study to develop and validate habitat select stream fish and fish food organisms.
2/1979-8/1979	A preliminary study of peregrine falcons in Yosemite National Park.
4/1977-6/1979	Director of a wildlife resource inventory of BLM lands in northern Idaho
7/1977-4/1980	Dietary selection in gray partridge.
3/1977-12/1977	Effects of Orthene pesticide application in Payette National Forest on bird communities

University of California, Davis:

7/1976-12/1976	Post-doctoral Fellow directing a study of starling populations in California.
10/1974-6/1976	Ph.D. research: Dietary selection in white-crowned sparrows.
6/1974-9/1974	Member of an interdisciplinary team studying the coastal grassland ecosystem in northern California. Responsible for avian and large mammal components.
1/1973-9/1974	Member of a team studying the impact of visitor use on various communities of Yosemite National Park. Responsible for small mammal and avian components.
9/1972-8/1975	Modeling moose-wolf-plant community of Isle Royale National Park.
5/1972-6/1973	Epidemiological investigations of fowl cholera in waterfowl in Sacramento-San Joaquin Delta.
6/1971-5/1973	M.S. research: Exposure of human, bird and mammal populations on Hawaii Island to the heavy metals mercury, lead and cadmium.

Extension and Service:

Serve as consultant to Idaho Department of Fish and Game and Bureau of Land Management on problems in statistical design and analysis and wildlife population analysis. Activities such as project consulting and presentations to department biologists meetings.

Teach workshops on statistical methods and data analysis for fish and wildlife biologists.

Give invited presentations at an average of two national workshops each year.

Administration:

Acting Director of Wilderness Research Center, University of Idaho, 1988.

Acting Department Head, Fish and Wildlife Resources Department, irregularly, in Department Head's absence, 1983-present.

Major Committee Assignments:

1977-78	Research Committee
	Continuing Education Search Committee, Chair
1978-79	Research Committee
	Scholarship Committee
	Committee on Committees
1979-80	Committee on Committees
	Applied Statistics Committee (University-wide)
1980-82	Applied Statistics Committee (University-wide)
	Computer Services Advisory Committee (University-wide)
1990-92	Interdisciplinary Curriculum Committee (FWR)
1990-92	Promotion and Tenure Policy Committee (FWR)
1992	Chair of Fish and Wildlife Department Head Search Committee

Other Professional:

Employment:

6/1968-10/1970	Peace Corps volunteer in Malaysia, tuberculosis control program organizer for the State of Trengganu.
10/1967-6/1968	Assistant curator of Dudley Herbarium, Stanford University.

Consulting:

11/2010-present	Aster Canyon Consulting, design and analysis of winter impact studies of oil and gas development on Wyoming Greater Sage-grouse populations
1/2000-4/2002	Montgomery Watson, assessing selenium impacts of mining on birds in SE Idaho
6/2000-3/2001	Washington Fish and Game Dept., evaluate and redesign harvest surveys
4/2000-4/2001	Colville Confederated Tribes, evaluate wildlife management program
3/1988	USFWS Alaska Maritime NWR, statistical evaluation of seabird monitoring progr.
12/1974-1/1975	Bechtel Corporation, with two associates conducted field surveys for site description for EIR on Rancho Seco Nuclear Power Plant Expansion.

Membership in Professional and Scholarly Organizations:

The Wildlife Society
Ecological Society of America
Sigma Xi

Community and Service:

United Church of Moscow, served as chair and vice chair of board of directors 2 times, currently serve as financial secretary (co-position shared with my wife) and chair of pastoral relations committee.

Advisory Board, Good Samaritan Village, retired.

HONORS AND AWARDS:

2010	Outstanding Research Award, College of Natural Resources, University of Idaho
2007	Einarsen Award, Northwest Section of The Wildlife Society
2005	Alumni Award for Excellence, University of Idaho Alumni Association
2001	Outstanding Wildlifer Award, Idaho Chapter of The Wildlife Society
2001	Outstanding Professional Presentation, 2001 Conference, Idaho Chapter of The Wildlife Society
1989	Fulbright Fellowship to Kenya
1988	Outstanding Teacher Award, Associated Students of University of Idaho
1987	Outstanding Research Award, College of Forestry, Wildlife, and Range Sciences, University of Idaho

PUBLICATIONS:

Refereed Publications (82 published or in press, 5 in review, 4 in prep; 2354 citations, H-factor=28, i10-index=52 on 5/30/12):

Garton, Edward O., John W. Connelly and Kerry P. Reese. 2012. (in prep for resubmission). Density-dependence and sustainability of harvest on sage-grouse. – ***Wildlife Biology***.

Garton, Edward O., Jon S. Horne, Katherine Strickler, Brian Dennis, J. Michael Scott, Kerry Reese, John H. Connelly and Anne Moser. 2012 (in prep). Allee and Ricker Effects on Persistence of Greater Sage Grouse Populations. ***Ecology***.

Ruprecht **,** Joel S., David E. Ausband, Michael S. Mitchell, and Edward O. Garton. 2012. Home alone: attendance rates at pup-rearing sites based on sex, reproductive status, and number of helpers in gray wolf packs. (in prep). ***Animal Behaviour.***

Gilbert, Brian A. and Edward O. Garton. 2012(in prep). Predicting winter elk browse availability in northcentral Idaho using Landsat 7 imagery. ***Journal of Range Management***.

Aycrigg, Jocelyn and Edward O. Garton. 2012 (in review). Linking Metapopulation Structure to Elk Population Management in Idaho: A Genetic Approach. ***Journal of Range Management***.

Wells, Adam, Janet Rachlow, Edward O. Garton, and Clifford Rice. 2012 (In press.). Mapping vegetation communities across home ranges of mountain goats in the North Cascades for conservation and management. ***Applied Vegetation Science***.

Moser, Brian and Edward O. Garton. 2012 (in review). Estimating Resource Utilization Functions: Correcting for Behavior Associated with Central-place Foraging. ***Wildlife Society Bulletin***.

Baumgardt, Jeremy, Goldberg, Caren, Reese, Kerry, Connelly, John, Musil, David, Garton, Edward and Waits, Lissette. 2012 (in review). Estimating population sex ratio using non-invasive genetic samples: sage-grouse as a case study. ***Methods in Ecology Resources***

De Barba, M., EO Garton, P Genovesi, E Randi and LP Waits. 2012. (in review) Demographic and genetic population viability analysis of a small translocated brown bear population and implications for conservation and management. ***Conservation Biology***.

Hayes, Stephen G., David J. Leptich, Edward O. Garton, Michael D. Samuel, James D. Unsworth and R. Kirk Steinhorst. 2012 (in review). Idaho Elk Sightability Models: Using Simulation to Reduce Model Selection Uncertainty. ***Journal of Wildlife Management***.

Garton, Edward O., Jon S. Horne, Jocelyn L. Aycrigg, and John T. Ratti. 2012. Research and Experimental Design. Chapter 1, pp 1-40 *In* Silvy, Nova (ed.). Techniques For Wildlife Investigations and Management. Seventh edition, Vol. I ***Wildlife Research Methods***. The Wildlife Society, Bethesda, MD.

Manning, Jeff and Edward O. Garton. 2012. A sightability model for correcting visibility and availability biases in standardized surveys of breeding burrowing owls in southwest agroecosystem environments. ***Journal of Wildlife Management*** 76(1):65–74; 2012; DOI: 10.1002/jwmg.234

Manning, Jeff and Edward O. Garton. 2011. Modelling historical snow depth surfaces to inform predictions of climate change impacts on snow-dependent and snow-restricted species. ***Methods in Ecology and Evolution***. doi: 10.1111/j.2041-210X.2011.00144.x

Refereed Publications (cont.):

Hurley, Mark A., James W. Unsworth, Peter Zager, Mark Hebblewhite, Edward O. Garton, Debra M. Montgomery, John Skalski and Craig L. Maycock. 2011. Demographic response of mule deer to experimental reduction of coyotes and mountain lions in Southeastern Idaho. **Wildlife Monographs** 178:1-33.; DOI: 10.1002/wmon.4

Garton, Edward O., John W. Connelly, Jon S. Horne, Christian Hagen, Anne Moser and Michael A. Schroeder. 2011. Greater Sage-Grouse Population Dynamics and Probability of Persistence. Pp. 293–382 in S. T. Knick and J. W. Connelly (editors), Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and its Habitats. ***Studies in Avian Biology*** Series (vol. 38), University of California Press, Berkeley, CA. [Note: available at http://sagemap.wr.usgs.gov/Docs/SAB/Chapter16.pdf]

J. W. Connelly, S. T. Knick, C. E. Braun, W. L. Baker, E. A. Beever, T. Christiansen, K. E. Doherty, E. O. Garton, C. A. Hagen, S. E. Hanser, D. H. Johnson, M. Leu, R. F. Miller, D. E. Naugle, S. J. Oyler-McCance, D. A. Pyke, K. P. Reese, M. A. Schroeder, S. J. Stiver, B. L. Walker, and M. J. Wisdom 2011. Conservation of Greater Sage-Grouse: A Synthesis of Current Trends and Future Management. Chapter 26 in Steven Knick and John W. Connelly (eds.) Ecology and Conservation of Greater Sage-Grouse: A Landscape Species and Its Habitats, Carl Marti, Steven Knick and John W. Connelly (eds.) ***Studies in Avian Biology*** pre-release version available at http://sagemap.wr.usgs.gov/Docs/SAB/Connelly_synthesis.pdf

Lewis, Jesse, Janet Rachlow, Jon Horne, Edward O. Garton and Wayne Wakkinen. 2011. Identifying habitat characteristics to predict highway crossing areas for black bears within a human-modified landscape. ***Landscape and Urban Planning*** 101: 99-107.

M De Barba, LP Waits, EO Garton, P Genovesi, E Randi, A Mustoni, and C Groff. 2010. The power of genetic monitoring for studying demography, ecology, and genetics of a reintroduced brown bear population. ***Molecular Ecology*** 19:3938-3951.

Bate, Lisa J., Torolf R. Torgerson, Michael J. Wisdom and Edward O. Garton. 2009. Biased estimation of forest log characteristics using intercept diameters. ***Forest Ecology and Management*** 258: 635-640.

Scott, J. Michael, Jon S. Horne and Edward O. Garton. 2009. Protecting the Hawaii akepa population. ***Nature*** 457:956.

Moser, Brian W. and Edward O. Garton. 2009. Short-term effects of timber harvest and weather on Northern Goshawk reproduction in northern Idaho. ***Raptor Research*** 43:1-10.

Smyser, T.J., A.F. Reeve, and E.O. Garton. 2009. Population productivity and pronghorn nutrition during lactation. ***Pronghorn Workshop Proceedings*** 23:127-144.

Horne, Jon S., Edward O. Garton, and Janet L. Rachlow. 2008. A synoptic model of animal space use: simultaneous analysis of home range, habitat selection, and inter/intra-specific relationships. ***Ecological Modelling*** 214:338-348.

Kissling, Michelle L. and Edward O. Garton. 2008. Forested Buffer Strips and Breeding Bird Communities in Southeast Alaska. ***Journal of Wildlife Management*** 72:674-681.

Falcucci, Alessandra, Luigi Maiorano, Edward O. Garton, and Luigi Boitani. 2008. Conservation potential of the brown bear population of d'Abruzu National Park, Italy. ***Mammalogy*** 96:1502-1511.

Bate, Lisa J., Torolf R. Torgerson, Michael J. Wisdom, Edward O. Garton and Shawn C. Clabough. 2008. Log Sampling Methods for Stand and Landscape Analysis. **Gen. Tech. Rep. PNW-GTR-746**. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 79p.

Refereed Publications (cont.):

Bate, Lisa J., Michael J. Wisdom, Edward O. Garton and Shawn C. Clabough. 2008. SnagPRO: Snag and Tree Sampling Methods for Wildlife. **Gen. Tech. Rep. PNW-GTR-780**. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 88p.

Nielsen-Pincus, Nicole and Edward O. Garton 2007. Responses of cavity-nesting birds to changes in available habitat reveal underlying determinants of nest site selection. ***Northwestern Naturalist*** 88:135-146.

Maiorano, Luigi, Alessandra Falcucci, Edward O. Garton, and Luigi Boitani. 2007. Contribution of the Natura 2000 Network to biodiversity conservation in Italy. ***Conservation Biology*** 21: 1433-1444.

Moser, Brian W. and Edward O. Garton. 2007. Effects of telemetry location error on space-use estimates using a fixed-kernel density estimator. ***Journal of Wildlife Management*** 71: 2421-2426.

Lewis, Jesse S., Janet Rachlow, Edward O. Garton, and Lee A. Vierling. 2007. Effects of habitat on gps collar performance: using data screening to reduce location errors. ***Journal of Applied Ecology*** 44:663-671.

Horne, Jon S., Edward O. Garton, Stephen S. Crone, and Jesse L. Lewis. 2007. Analyzing animal movements using Brownian bridges. ***Ecology*** 88:2354-2363.

Horne, Jon S., Edward O. Garton, and Kimberly A. Sager. 2007. Correcting home range models for sample bias. ***Journal of Wildlife Management*** 71:996-1001.

Garton, Edward O., David D. Musil, Kerry P. Reese, John W. Connelly and Cort L. Anderson. 2007. Sentinel lek-routes: an integrated sampling approach to estimate greater sage-grouse population characteristics. Pages 31-41 in Reese, Kerry P. and R. Terry Bowyer, eds. **Monitoring Populations of Sage-Grouse**: Proceedings of a Symposium at Idaho State University Hosted by University of Idaho and Idaho State University, Pocatello, ID. College of Natural Resources Experiment Station Bulletin 88.

Smyser, T.J., A.F. Reeve, and E.O. Garton. 2007. Evaluation of pronghorn population productivity relative to broad-scale habitat variables in Wyoming (1978-2003). ***Pronghorn Workshop Proceedings*** 22:41-52.

Horne, Jon S. and Edward O. Garton. 2006. Selecting the best home range model: an information theoretic approach. ***Ecology*** 87:1146–1152

Horne, Jon S. and Edward O. Garton. 2006. Likelihood cross-validation vs. least squares cross-validation for choosing the smoothing parameter in kernel home range analysis. ***Journal of Wildlife Management*** 70:641-648.

Kissling, Michelle L. and Edward O. Garton. 2006. Estimating detection probabilities from point count surveys: a combination of distance and double observer sampling. ***Auk*** 123:735-752.

Ratti, John L., Ann M. Moser, Edward O. Garton, and Robyn Miller. 2006. Analysis of selenium levels in bird eggs and assessment of effects on avian reproduction in Southeastern Idaho. ***Journal of Wildlife Management*** 70:572-578.

Garton, Edward O., John T. Ratti, and John H. Giudice. 2005. Research and Experimental Design. Chapter 3 *In* Braun, Clait (ed.). **Techniques For Wildlife Investigations and Management**. The Wildlife Society, Bethesda, MD.

Bishop, Chad J., James W. Unsworth and Edward O. Garton. 2005. Mule deer survival among 3 adjacent populations in Southwest Idaho. ***Journal of Wildlife Management*** 69:311-321

Refereed Publications (cont.):

Reese, Kerry P., John W. Connelly, Edward O. Garton and Michelle L. Commons-Kemner. 2005. Exploitation and greater sage-grouse *Centrocerus urophasianus*: a response to Sedinger and Rotella. ***Wildlife Biology*** 11:377-381.

Bate, Lisa J., Torolf R. Torgersen, Michael J. Wisdom and Edward O. Garton. 2004. Performance of sampling methods to assess log resources for forestry and wildlife management. ***Forest Ecology and Management*** 199:83-102.

Wisdom, Michael J., Norma J. Cimon, Bruce K. Johnson, Edward O. Garton, and Jack Ward Thomas. 2004. Spatial partitioning by mule deer and elk in relation to traffic. ***Transactions of the 69th North American Wildlfe and Natural Resources Conference*** 69: 509-530.

Connelly, John W., Kerry P. Reese, Edward O. Garton and Michelle L. Commons-Kemner. 2003. Response of greater sage-grouse *Centrocerus urophasianus* populations to different levels of exploitation in Idaho, USA. ***Wildlife Biology*** 9(4):335-340.

Svancara, Leona K., Edward O. Garton, Kang-Tsung Chang, J. Michael Scott, Peter Zager and Michael Gratson. 2002. The inherent aggravation of aggregation: An example with elk aerial survey data. ***Journal of Wildlife Management*** 66: 776-787.

Bate, Lisa J., Torolf R. Torgersen, Edward O. Garton, and Michael J. Wisdom. 2002. Accuracy and Efficiency of Methods to Sample Logs for Wildlife Research and Management. pp. 817-822 In Laudenslayer, William F., Jr., Patrick J. Shea, Bradley E. Valentine, C. Phillip Weatherspoon and Thomas E. Lisle (eds.). Proceedings of the Symposium on the Ecology and Management of Dead Wood in Western Forests. **General Technical Report PSW-GTR-181**.Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 949p.

Bate, Lisa J., Edward O. Garton, and Michael J. Wisdom. 2002. Samping Methods for Snags and Large Trees Important to Wildlife. pp. 811-815 In Laudenslayer, William F., Jr., Patrick J. Shea, Bradley E. Valentine, C. Phillip Weatherspoon and Thomas E. Lisle (eds.). Proceedings of the Symposium on the Ecology and Management of Dead Wood in Western Forests. **General Technical Report PSW-GTR-181**. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 949p.

Farris, Kerry L., Edward O. Garton, Patricia J. Heglund, Steve Zack, and Patrick J. Shea. 2002. Woodpecker Foraging and the Successional Decay of Ponderosa Pine. pp. 237-246 In Laudenslayer, William F., Jr., Patrick J. Shea, Bradley E. Valentine, C. Phillip Weatherspoon and Thomas E. Lisle (eds.). Proceedings of the Symposium on the Ecology and Management of Dead Wood in Western Forests. **General Technical Report PSW-GTR-181**. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 949p.

Garton, E.O. 2002. Mapping a Chimera? Pp 663-666 in Scott, J. M., P. J. Heglund, J. B. Hauffler, M. G. Raphael, W. A. Wall and F. B. Samson (eds.). **Predicting Species Occurrence: Issues of Accuracy and Scale**. Island Press, Covelo, CA.

Ratti, John T., Ann M. Rocklage, John H. Giudice, Edward O. Garton, and Daniel P. Golner. 2001. Comparison of avian communities of restored and natural wetlands in North and South Dakota. ***Journal of Wildlife Management*** 65:676-684.

Connor, W. P., A. P. Garcia, A. H. Connor, E. O. Garton, P. A. Groves and J. A. Chandler. 2001. Estimating the Carrying Capacity of the Snake River for Fall Chinook Salmon Redds. ***Northwest Science*** 75:363-371.

Bishop, Chad, E. O. Garton and J. Unsworth. 2001. Bitterbrush and cheatgrass quality on three Southwest Idaho winter ranges. ***Journal of Range Management*** 54:595-602.

Refereed Publications (cont.):

Garton, E. O., Mike Wisdom, Fred Leban, and Bruce K. Johnson. 2001. Experimental design for radiotelemetry studies. Pp. 15-42 In Marzluff, John and Joshua Millspaugh (eds). **Radiotelemetry and Animal Populations**. Academic Press, San Diego, CA.

Leban, Fred, E. O. Garton and Mike Wisdom. 2001. Effect of sample size on the performance of resource selection analyses. Pp 291-307 In Marzluff, John and Joshua Millspaugh (eds). **Radiotelemetry and Animal Populations**. Academic Press, San Diego, CA.

Karl, Jason W., P. J. Heglund, E. O. Garton, J. Michael Scott, N. M. Wright and R. L. Hutto. 2000. Sensitivity of species habitat-relationship model performance to factors of scale. ***Ecological Applications*** 10:1690-1705.

Bate, Lisa, E. O. Garton, M. J. Wisdom. 1999. Estimating snag and large tree densities and distributions on a landscape for wildlife management. **Gen. Tech. Rep. PNW-GTR-425**. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 79p.

Unsworth, J.W., L. Kuck, E.O. Garton, B.R. Butterfield. 1998. Elk habitat selection on the Clearwater National Forest, Idaho. ***Journal of Wildlife Management*** 62: 1255-1263.

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Jones, J.L., and E.O. Garton. 1994. Selection of successional stages by fishers in North-Central Idaho. Pages 377-387 in Buskirk, S.N., A.S. Harvestad, M.G. Raphael, and R.A. Powell (eds.). ***Martens, Sables, and Fishers: Biology and Conservation***. Cornell Univ. Press, Ithaca, New York.

Unsworth, J.W., L. Kuck, M.D. Scott, and E.O. Garton. 1993. Elk mortality in the Clearwater drainage of northcentral Idaho. ***Journal of Wildlife Management*** 57:495-502.

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Hayward, G.D., P.H. Hayward, and E.O. Garton. 1993. Ecology of boreal owls in the northern Rocky Mountains, U.S.A. ***Wildlife Monograph*** 124:1-59.

Samuel, M.D., R.K. Steinhorst, E.O. Garton, and J.W. Unsworth. 1992. Estimation of wildlife population ratios incorporating survey design and visibility bias. ***Journal of Wildlife Management*** 56:718-725.

Scott, J.M., and E.O. Garton. 1991. Population estimate for the Black-Capped Vireo: A commentary. ***Condor*** 93:469-470.

Refereed Publications (cont.):

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Garton, E.O., R.L. Crabtree, B.B. Ackerman, and G. Wright. 1990. The potential impact of a reintroduced wolf population on the northern Yellowstone elk herd. Pages 3-59 to 3-91 in **Wolves for Yellowstone?** A report to the United States Congress. Vol. II: Research and analysis. National Park Service. Yellowstone National Park. 571 pp.

Singer, F.J., W. Schreier, J. Oppenheim, and E.O. Garton. 1989. Drought, fires and large mammals. ***Bioscience*** 39:716-722.

Hayward, G.D., and E.O. Garton. 1988. Resource partitioning among forest owls in the River-of-No-Return Wilderness, Idaho. ***Oecologia*** 75:253-265.

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Samuel, M.D., E.O. Garton, M.W. Schlegel, and R.G. Carson. 1987. Visibility bias during aerial surveys of elk in northcentral Idaho. ***Journal of Wildlife Management*** 51:622-630.

Hayward, G.D., P.H. Hayward, E.O. Garton, and R. Escano. 1987. Revised breeding distribution of the Boreal Owl in the northern Rocky Mountains. ***Condor*** 89:431-432.

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Roeder, K., B. Dennis, and E.O. Garton. 1987. Estimating density from variable circular plot censuses. ***Journal of Wildlife Management*** 50:224-230.

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Stauffer, D.F., E.O. Garton, and R.K. Steinhorst. 1985. A comparison of principal components from real and random data. ***Ecology*** 66(6):1693-1698.

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Samuel, M.D., D.J. Pierce, and E.O. Garton. 1985. Identifying areas of concentrated use within the home range. ***Journal of Animal Ecology*** 54:711-719.

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Takekawa, J.Y., and E.O. Garton. 1984. How much is an evening grosbeak worth? ***Journal of Forestry*** 82(7):426-428.

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Hayward, G.D., and E.O. Garton. 1983. First nesting record for boreal owl in Idaho. ***Condor*** 85:501.

Takekawa, J.Y., E.O. Garton, and L.A. Langelier. 1982. Biological control of forest insect outbreaks: The use of avian predators. *Trans. 47th North American Wildlife and Natural Resources Conference* 47:393-409.

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Longhurst, W.M., G.E. Connolly, B.M. Browning, and E.O. Garton. 1979. Forage interrelationships of deer and sheep in part of Mendocino and Lake Counties, California. ***Hilgardia*** 47:191-247.

Garton, E.O. 1978. The functional response of White-crowned Sparrows in single species prey environments. ***Bull. Ecol. Soc. Am.*** 59(2):76.

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Other Publications:

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Hurley, M. A., J. W. Unsworth, P. Zager, E. O. Garton, and D. M. Montgomery. 2005. Mule deer survival and population response to experimental reduction of coyotes and mountain lions. Proceedings of the 6th Western States and Provinces Deer and Elk Workshop, Reno, Nevada, USA.

Garton, E. O. 2002. A synoptic model of space use: simultaneous analysis of home range and habitat selection for animals monitored by radio telemetry. In Wildlife Radiotelemetry: Design and Analysis. A workshop presented by Dr. Edward O. Garton, July 29-Aug.2, 2002, Anchorage, Alaska.

Leban, F. A. and E. O. Garton. 2000. Program Aerial Survey 2000, Version 1.00, Beta 6.1.4, February 12, 2000.

Bate, Lisa J., E. O. Garton and R. K. Steinhorst. 1995. Audit of Big Game Harvest Survey Program. Report submitted to Idaho Dept. of Fish and Game.

Kelly, B. T., and E. O. Garton. 1993. Program Scat 1.5, software and manual. Department of Wildlife, University of Idaho, Moscow.

Singer, F.J., and E.O. Garton. 1992. Estimating the size of the northern Yellowstone elk herd from fixed-wing aircraft and helicopter surveys. Pp. 118-130 in Varley, J.D., and W.G. Brewster, eds. **Wolves for Yellowstone?** A Report to the United States Congress, Volune IV: Research and Analysis. National Park Service, Yellowstone National Park, Wyoming. 750 pp.

Garton, E.L., R.L. Crabtree, B.B. Ackerman, and G. Wright. 1992. Potential impacts of Yellowstone wolves on Clarks Fork elk herd. Pp. 131-146 in Varley, J.D., and W.G. Brewster, eds. **Wolves for Yellowstone?** A Report to the United States Congress, Volume IV: Research and Analysis. National Park Service, Yellowstone National Park, Wyoming. 750 pp.

Ackerman, B., F. Leban, M. Samuel & E. Garton. 1990. User´s Manual for Program Home range. Forest, Wildlife and Range Experiment Station, Technical Report 15, Univ. Idaho.

Gale, R.S., E.O. Garton, and I.J. Ball. 1987. The history, ecology and management of the Rocky Mountain Population of trumpeter swans. Montana Cooperative Wildlife Research Unit, University of Montana. Missoula, Montana, USA.

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Garton, E.O. 1984. Cost-efficient baseline inventories of research natural areas. Pp. 40-45, in: Johnson, J.L., J.F. Franklin, and R.G. Krebill. Research in natural areas: Baseline monitoring and management. **USDA Forest Service General Technical Report INT-173**. Intermountain Forest and Range Experiment Station, Ogden, Utah. 84 pp.

Samuel, M.D., D.J. Pierce, E.O. Garton, L.J. Nelson, and K.R. Dixon. 1983. User's manual for the program HOMERANGE. **Forest, Wildlife and Range Experiment Station Technical Report 15**. University of Idaho, Moscow, Idaho. 64 pp.

Teipner, C.L., E.O. Garton, and L. Nelson, Jr. 1983. Pocket gophers in forest ecosystems. **USDA Forest Service General Technical Report INT-154**. Intermountain Forest and Range Experiment Station, Ogden, Utah. 53 pp.

Garton, E.O. 1981. Computerized analysis of census data. Pp. 1-16 in Miller, F.L., A. Gunn, and S.R. Heib (ed.). Symposium on census and inventory methods for populations and habitats. Proceedings of a symposium sponsored by the Wildlife Society, April 1980. **Contribution No. 217, Forest, Wildlife and Range Experiment Station, University of Idaho**, Moscow, Idaho. 220 pp.

Demers, D.J., and E.O. Garton. 1980. An evaluation of gray partridge (*Perdix perdix*) aging criteria. Pp. 21-44 in: Peterson, S.R., and L. Nelson, Jr. (ed.). **Proceedings of Perdix II, Gray Partridge Workshop**. March 18-20. Contribution No. 211, Forest, Wildlife and Range Experiment Station, University of Idaho, Moscow, Idaho.

Garton, E.O. 1980. Avian predation on western spruce budworm. Comprehensive progress report to Canada/U.S. Spruce Budworms Program-West. March 31. 73 pp.

Stauffer, D.F., L.A. Kronemann, and E.O. Garton. 1979. Terrestrial wildlife habitat inventory of BLM lands in West-central Idaho. Final report to Bureau of Land Management. May 15. 262 pp.

Ulliman, J.J., E.O. Garton, and J.A. Keay. 1979. Wildlife habitat classification using large-scale aerial photography. Pp. 414-422 in: Frayer, W.E. (ed.). Forest Resource Inventories. Vol. l. Colorado State University, Fort Collins, Colorado. 513 pp.

Wittreich, C.D. and E.O. Garton. 1979. A preliminary study of peregrine falcons in Yosemite National Park. Final report to National Park Service. July 18. 48 pp.

Garton, E.O., B. Hall, and T.C. Foin. 1977. The impact of a campground on the bird communities of a lodgepole pine forest. Pp. 37-43 in: Foin, T.C. (ed.). Visitor impacts on national parks: The Yosemite ecological impact study. Institute of Ecology Publ. No. 10. University of California, Davis.

Garton, E.O., C.W. Bowen, and T.C. Foin. 1977. The impact of visitors on small mammal communities of Yosemite National Park. Pp. 44-50 in: Foin, T.C. (ed.). Visitor impacts on national parks: The Yosemite ecological impact study. Institute of Ecology Publ. No. 10. University of California, Davis.

Garton, E.O. 1977. Analysis of the forest bird population changes associated with use of Orthene insecticide.

Final report to U.S. Fish and Wildlife Service. December 1. 72 pp.

Longhurst, W. M., E. O. Garton, H. F. Heady, and G. E. Connolly. 1976. The California Deer Decline and Possibilities for Restoration. CAL-NEVA WILDLIFE TRANSACTIONS 1976:74-103.

Garton, E.O. 1975. The moose-wolf-plant community of Isle Royale: A realistic simulation model. ***Bull. Ecol. Soc. Amer.*** 56(2):16.

Garton, E.O., and T.C. Foin. 1975. The impact of visitor use on small mammal and bird communities of Yosemite National Park. ***Bull. Ecol. Soc. Amer.*** 56(2):42.

GRADUATE STUDENTS AND THESES(25)/DISSERTATIONS(19) COMPLETED

Jeremy A. Baumgardt, PhD. 2011 Probability of Attendance and Sightability of Greater Sage-Grouse on Leks: Relating Lek-based Indices to Population Abundance.

Manning, Jeff, PhD. 2010 Population Dynamics of Rocky Mountain Elk and Mule Deer: Competition, Habitat Selection, Wolf Predation and Predictions under Climate Change.

Dixon, Rita, PhD. 2010 Status and Conservation of White-Headed Woodpecker (*Picoides albolarvatus*) in the Interior West, USA: A Metapopulation Approach.

Aycrigg, Jocelyn, PhD. 2009 Spatial and Temporal Population Dynamics of an Elk Metapopulation in Idaho: Demography, Genetics, and Environmental Factors.

Kallstrom, Corey L. M.S. 2009 Resource Mapping, GPS Collar Performance Testing, and Adult Doe Mule Deer Winter Resource Selection in Southern British Columbia and North-Central Washington.

Abele, Stephen C., M.S. 2009 Effects of Unburned Forest Edges on Nest Success of Lewis's Woodpecker.

Gilbert, Brian, PhD. 2008 Estimating, Monitoring, and Modeling Elk Population Growth Rates and Densities in Northcentral Idaho at Multiple Spatial and Temporal Scales.

Lawrence J. Van Daele, PhD. 2007 Population Dynamics and Management of Brown Bears on Kodiak Island, Alaska

Brian W. Moser, PhD. 2007 Space Use and Ecology of Goshawks in Northern Idaho

Dina L. Roberts, PhD. 2007 Effects of Tropical Forest Fragmentation on Ecology and Conservation of Migrant and Resident Birds in Lowland Costa Rica

Luigi Maiorano, PhD. 2007 Italian Protected Areas and Their Role in the Conservation of Vertebrates

Alessandra Falcucci, PhD. 2007 Conservation of Large Carnivores in a Human Dominated Landscape: Habitat Models and Potential Distribution

Timothy J. Smyser, M.S. 2005 Response of Pronghorn (*Antilocapra americana*) Populations to Habitat Conditions with Modification to Survey Methods

Jon S. Horne, PhD. 2005 Evaluating Animal Space Use: New Approaches to Estimate Animal Movements, Home Range, and Habitat Selection

Debra M. Montgomery, M.S.	2005	Age Estimation of Rocky Mountain Elk Calves and Proximate Factors Influencing Hunting Mortality of Elk in Idaho
Robyn P. Vasterling, M.S.	2003	Selenium Contamination Effects on Avian Reproductive Success and Population Dynamics in Phosphate-Mining Regions of Southeastern Idaho
Michelle L. Kissling, M.S.	2003	Effects of Forested Buffer Width on Breeding Bird Communities in Coastal Forests of Southeast Alaska with a Comparison of Avian Sampling Techniques
Susan L. Roberts, M.S.	2000	Foraging Ecology of Tule Elk at Tomales Point, Point Reyes National Seashore, California
Leona K. Bomar, M.S.	2000	Broad-Scale Patterns on Elk Recruitment in Idaho: Relationships with Habitat Quality and Effects of Data Aggregation
Kerry L. Hughes, M.S.	2000	The Foraging Ecology of *Picoides* Woodpeckers in Relation to Ponderosa Pine Decay Dynamics
Stephen G. Hayes, PhD.	1999	Application of Landsat 5-Thematic Mapper and GIS Data to Elk Habitat Studies in Northern Idaho
Frederick A. Leban, M.S.	1999	Performance of Five Resource Selection Methods under Differnt Sampling Designs: A Case Study with Elk Radio-telemetry Data
Chad J. Bishop, M.S.	1998	Mule Deer Mortality and Habitat use, and the Nutritional Quality of Bitterbrush and Cheatgrass in Southwest Idaho
Michael J. Wisdom, PhD.	1998	Assessing Life-stage Importance and Resource Selection for Conservation of Selected Vertebrates
Jeff D. Marco, M.S.	1997	Factors Affecting Great Blue Heron Reproduction in Southcentral Washington
Ann M. Rocklage, M.S.	1996	Landscape Ecology, Elevation, and Habitat Association of Breeding Landbirds in West Central Idaho
Lisa J. Bate, M.S.	1995	Monitoring Woodpecker Abundance and Habitat in the Central Oregon Cascades
Rita D. Dixon, M.S.	1995	Ecology of White-Headed Woodpeckers in the Central Oregon Cascades
Jerry W. Deal, M.S.	1994	An Analysis of Breeding Bird Population Trends in the Western United States, 1968-1991
James W. Unsworth, PhD.	1993	Elk Mortality, Habitat Use, and Home Range in the Clearwater Drainage of North-Central Idaho
Moses M. Okello, M.S.	1993	Pocket Gopher (*Thomomys talpoides*) Food Preferences, Habitat Relationships, and Damage Prevention
Jeffrey L. Jones, M.S.	1991	Habitat Use of Fisher in Northcentral Idaho
Brian T. Kelly, M.S.	1991	Carnivore Scat Analysis: An Evaluation of Existing Techniques and the Development of Predictive Models of Prey Consumed
Jeffrey A. Keay, PhD.	1990	Black Bear Population Dynamics in Yosemite National Park

Gregory D. Hayward, PhD.	1989	Habitat Use and Population Biology of Boreal Owls in the Northern Rocky Mountains, USA
Ole J. Johansen, M.S.	1989	Lynx Winter Habitat Selection in Central Troms County, Northern Norway
Bruce B. Ackerman, PhD.	1988	Visibility Bias of Mule Deer Aerial Census Procedures in Southeast Idaho
Michael D. Samuel, PhD.	1984	An Evaluation of Elk Sightability in North Central Idaho with Application to Aerial Census and Herd Composition Counts
Dean F. Stauffer, PhD.	1983	Seasonal Habitat Relationships of ruffed and Blue Grouse in Southeastern Idaho (co-advised with Steve Peterson)
Lisa A. Langelier, M.S.	1983	Habitat Selection of Common Breeding Bird Species in Western Spruce Budworm Outbreak Areas
Gregory D. Hayward, M.S.	1983	Resource Partitioning Among Six Forest Owls in the River of No Return Wilderness, Idaho
Richard D. Greer, M.S.	1982	Avian Community Structure of North Rim, Arizona
John Y. Takekawa, M.S.	1982	The Potential for Biological Control Management of Forest Insects with Avian Predators
Dinah J. Demers, M.S.	1981	Plumage Development and Food Preferences of Captive Gray Partridge

POST-DOCS and VISITING FACULTY AS SABBATICAL REPLACEMENTS

Kerry P. Reese 1983-84 Visiting Assistant Professor

Bruce Ackerman 1988-1989 Post-doctoral Researcher

Greg Hayward 1989-90 Visiting Assistant Professor

Robert Crabtree 1989-90 Post-doctoral Researcher

L. Scott Mills 1993-1995 Visiting Assistant Professor

Jon Horne 1006-2010 Post-doctoral Researcher

Katherine Strickler 2006-2010 Post-doctoral Researcher

Kay Nicholson 2010-2012 Post-doctoral Researcher

GRANTS AND CONTRACTS: Total external competitive grants funded as senior/co-author: $4.7 million plus external competitive grants funded as junior author: $1.1 million

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2011 Modeling caribou movements in relation to oil field infrastructure: developing tools for assessing the effects of human activities on wildlife, $39,000, Alaska Dept. Fish and Game.
New aerial survey models for elk and deer and populatioin viability analysis for metapopulation of bull trout in state of Idaho, $18,966, Idaho Dept. of Fish and Game.

2010 Modeling caribou movements in relation to oil field infrastructure: developing tools for assessing the effects of human activities on wildlife, $69,000, Alaska Dept. Fish and Game.

Alaskan Ungulate Space Use Analysis and Modeling for Northeast and Utility Corridor Management Areas, $93,600, USDI BLM Alaska.

2009 Linking Conservation Actions with Population Viability Models: a Renewed Call for Adaptive Management on Department of Defense Installations, $341,770, SERDP, DOD.
Identifying key habitats and special requirements of mountain goats in the North Cascades. Seattle City Light, $10,000 and US Forest Service, $10,000, Wash. Dept. Fish and Wildlife $10,000.
Sentinel leks: an integrated sampling approach to estimate greater sage-grouse population characteristics, joint project with Kerry Reese, approx. $75,000 including in-kind. Idaho Dept. Fish and Game.

2008 Risk assessment for potential listing of Greater sage grouse under Endangered Species Act with Jon Horne, USFWS, $74,00.
North Cascades mountain goat project, Wash. Dept. Fish and Wildlife, $9,984.
Sentinel leks: an integrated sampling approach to estimate greater sage-grouse population characteristics, joint project with Kerry Reese, approx. $43,000. Idaho Dept. Fish and Game.

2007 Identifying key habitats and special requirements of mountain goats in the North Cascades. Seattle City Light, $40,000.
Sentinel leks: an integrated sampling approach to estimate greater sage-grouse population characteristics, joint project with Kerry Reese, approx. $35,000. Idaho Dept. Fish and Game.

2006 A risk assessment framework for defining scientifically-defensible recovery goals for listed species, Department of Defense, SERDP, $989,414, joint proposal with Mike Scott and Scott Mills (Univ. of Montana).
Sentinel leks: an integrated sampling approach to estimate greater sage-grouse population characteristics, joint proposal with Kerry Reese, approx. $25,000. Idaho Dept. Fish and Game.

2005 Habitat correlates of trend, variation, and persistence in greater sage-grouse populations, USGS, $24,934.
Gunnison sage-grouse population trends, US Fish and Wildlife Service, $12,000.
Competition between Elk, Mule Deer and White-tailed deer, IDFG, PhD project, $10,250.
Aerial surveys and population ecology of pronghorn antelope in SE Idaho, IDFG, MS project, $28,500.
Survival rates and aging criteria for elk calves, IDFG, MS project, $9,250.
Identifying key habitats and spatial requirements: simultaneous analysis of home range and habitat selection, IDFG, PhD project, $10,250.
Population dynamics and management of Kodiak Bears, Kodiak Brown Bear Trust, Anchorage, AL, PhD project, $8,132.

2004 Competition between Elk, Mule Deer and White-tailed deer, IDFG, PhD project, $20,500.
Aerial surveys and population ecology of pronghorn antelope in SE Idaho, IDFG, MS project, $20,500.
Survival rates and aging criteria for elk calves, IDFG, MS project, $18,500.
Elk Metapopulation in Idaho, Rocky Mountain Elk Foundation, PhD project, $17,836.
Identifying key habitats and spatial requirements: simultaneous analysis of home range and habitat selection, IDFG and US Forest Service, $29,000.
Population dynamics and management of Kodiak Bears, Kodiak Brown Bear Trust, Anchorage, AL, $10,924.
CRISSP, junior author with a dozen faculty on proposal for Center for Research on Invasive Species and Small Populations, funded by SBOE, $979,000.

2003 Competition between Elk, Mule Deer and White-tailed deer, IDFG, PhD project, $18,500.
Aerial surveys and population ecology of pronghorn antelope in SE Idaho, IDFG, MS project, $20,500.
Survival rates and aging criteria for elk calves, IDFG, MS project, $18,500.
Elk Metapopulation in Idaho, IDFG, PhD project, $18,500.

2002 Assessing Genetic Measures of Elk Metapopulations for the Idaho, Rocky Mountain Elk Foundation, $14,169.
Modeling Elk Habitat Relationships in the Clearwater Basin, Potlatch Corp, final $19,480 support for PhD project.

Importance of Beach Buffers to Wildlife Populations in SE Alaska, US Fish and Wildlife Service, additional $25,000.
Lewis Woodpecker Nesting Ecology on Boise National Forest, USDA Forest Service, additional $15,500.
Species Assessment for Lewis Woodpecker in Rocky Mountain Region, USDA Forest Service, $11,011.
Effects of beach buffer width to avian communities in Southeast Alaska, US Fish and Wildlife Service, additional $186,000 funded but all dollars to be administered by Juneau Office.
Review impacts and consequences of various harvest strategies and management goals for elk in the state of Washington, Washington Dept. of Fish and Wildlife, additional $12,200, [joint project with Dr. James Peek].
Landscape models of selected vertebrates of conservation concern in Interior Columbia Basin, USDA Forest Service, additional $31,480 [but currently held up by Bush].
Competition between Elk, Mule Deer and White-tailed deer, IDFG, PhD project, $18,500.
Aerial surveys and population ecology of pronghorn antelope in SE Idaho, IDFG, MS project, $20,500.

2001 Estimating Browse Production and Modeling Elk Populations for the Clearwater Elk Habitat Initiative, Rocky Mountain Elk Foundation, $25,000.
Modeling Elk Habitat Relationships in the Clearwater Basin, Potlatch Corp, $19,480 support for student project.
Lewis Woodpecker Nesting Ecology on Boise National Forest, USDA Forest Service, $15,500.
Species Assessment for Lewis Woodpecker in Rocky Mountain Region, USDA Forest Service, $11,011.
Effects of beach buffer width to avian communities in Southeast Alaska, US Fish and Wildlife Service, $206,414 funded but all dollars to be administered by Juneau Office.
Review impacts and consequences of various harvest strategies and management goals for elk in the state of Washington, Washington Dept. of Fish and Wildlife, $48,200, [joint project with Dr. James Peek].
Landscape models of selected vertebrates of conservation concern in Interior Columbia Basin, USDA Forest Service, $51,480.

2000 Estimating Browse Production and Modeling Elk Populations for the Clearwater Elk Habitat Initiative, Rocky Mountain Elk Foundation, $30,000.
Lewis Woodpecker Nesting Ecology on Boise National Forest, USDA Forest Service, $13,600.
Importance of Beach Buffers to Wildlife Populations in SE Alaska, US Fish and Wildlife Service, $40,000.
Estimating Log Density, USDA Forest Service, $24,496.
Metapopulation of Elk in Idaho, Idaho Dept. of Fish and Game, $13,000.

1999 Diet and Nutritional Status of Tule Elk at Point Reyes National Seashore, Rocky Mountain Elk Foundation, $9,000.
Mule Deer Habitat Selection by Fawns, Idaho Dept. of Fish and Game, $12,780.
Avian Relations with Dying and Dead Trees at Blacks Mountain Experimental Forest, USDA Forest Service, $18,500.
Estimating Log Density, USDA Forest Service, $15,000.
Metapopulation of Elk in Idaho, Idaho Dept. of Fish and Game, $13,000.

1998 Diet and Nutritional Status of Tule Elk at Point Reyes National Seashore, Rocky Mountain Elk Foundation, $12,000.
Mule Deer Habitat Selection by Fawns, Idaho Dept. of Fish and Game, $13,000.
Avian Relations with Dying and Dead Trees at Blacks Mountain Experimental Forest, USDA Forest Service, $7,000.
Estimating Log Density, USDA Forest Service, $68,054.
Home Range Program Revision, USDA Forest Service, $45,000.
Metapopulation of Elk in Idaho, Idaho Dept. of Fish and Game, $13,000.

1997 Diet and Nutritional Status of Tule Elk at Point Reyes National Seashore, Rocky Mountain Elk Foundation, $18,000.
Mule Deer Fawn Survival, Idaho Dept. of Fish and Game, $13,000.
Estimating snag density, USDA Forest Service, $15,000.

1996 Population size, survival rates and recruitment of Kootenay Lake white sturgeon, Idaho Dept. of Fish and Game, $5,000.
Estimating snag density, USDA Forest Service, $15,000.

1995 Audit of Telephone Survey of Big Game Harvest Success, Idaho Dept. of Fish and Game, with Kirk Steinhorst (Statistics) and Nick Sanyal (Resource Rec. and Tourism), $20,000.
Mule Deer Fawn Survival, Idaho Dept. of Fish and Game, $13,000.
Population Dynamics and Habitat Selection of Great Blue Herons Along the Columbia River on the Hanford Reservation, Battelle Northwest, $36,000.

1994 Evaluating Population Viability on National Forests, USDA Forest Service, $25,000.

1993 Inventory and Monitoring of Neotropical Birds on the Payette National Forest, USDA Forest Service, with Mike Scott, $62,000.

1992 Monitoring Woodpeckers and Snags on National Forests, USDA Forest Service, $90,000.
Effectiveness Monitoring for Elk Populations, USDA Forest Service, $7,600.
Influence of Habitat Complexity on Trout Population Dynamics, USDA Forest Service, $9,876.
Flying Squirrel Use of Nest Boxes, USDI BLM, $2,000.

1991 Flying Squirrel Use of Nest Boxes, USDI BLM, $5,000.
Carnivore Scat Analysis Program, U.S. Fish and Wildlife Service, $5,000, with Brian Kelly.
Distribution, Spatial Ecology, and Genetic Variation of Sympatric Carnivores in Northeast Mexico, Bob and Bessie Welder Wildlife Foundation, approx. $10,000 per year for 3 years, with Mike Tewes and Philip Tanimoto.

1990 Lion Census Methods for Masai Mara Game Reserve, Kenya, World Wide Fund for Nature, approx. $7,000 per year for 2 years, with Joseph Ogutu.
Wildlife and Fisheries Management Curricula, FAO, $28,000, with Lars Ramberg.

1988 Indicators for Wilderness Wildlife, USDA Forest Service, $15,000.
Wilderness Wildlife, College of Forestry, Wildlife, and Range Sciences (McIntire-Stennis), $7,000.
Remote Sensing Challenge Grant, USDA Forest Service, $23,000.
Taylor Ranch Air Quality, EG&G, $15,000.
Bobcat Population Index, U.S. Fish and Wildlife Service, $5,000.

1987 Coyote Functional Response, USDA, APHIS, $16,085, with Brian Kelly.
Aerial Mule Deer Census, Idaho Department of Fish and Game, $31,050, with Bruce Ackerman.
Aerial Elk Census, Idaho Department of Fish and Game, $5,000.
Boreal Owls, USDA Forest Service, $37,000, with Greg and Pat Hayward.
Boreal Owls, Idaho Department of Fish and Game, $5,300, with Greg and Pat Hayward.
Big Game Habitat Models, USDA Forest Service, $9,500.

1986 Evaluation of Mule Deer Census Procedures, Idaho Department of Fish and Game, $11,000.
Aerial Census of Lochsa Elk Population, Idaho Department of Fish and Game, $5,000.
Distribution of Boreal and Great Gray Owls in Idaho, Idaho Department of Fish and Game, $6,000.
Functional Response of Coyotes to Changing Prey Abundance, U.S. Fish and wildlife Service, $12,303.
Survival Rate and Growth of the Gray's Lake Whooping Crane Population, U.S. Fish and Wildlife Service, $5,250.
The Potential Use of Birds to Prevent Outbreaks of Western Spruce Budworm, College of Forestry, Wildlife and Range Sciences (McIntire-Stennis), $6,000.
Ecology of the Boreal Owl, USDA Forest Service, $22,000, with Greg and Pat Hayward.
Potential of Nest Boxes for Monitoring and Managing Boreal Owl Populations, USDA Forest Service, $15,000, with Greg and Pat Hayward.
Boreal Owl Ecology, Max McGraw Foundation, $800, with Greg and Pat Hayward.

1985 Boreal and Great Gray Owls in Idaho, Idaho Department of Fish and Game, $6,000.

Aerial Census Methods for Elk, Idaho Department of Fish and Game, $7,200.
Mule Deer Aerial Census Methods, Idaho Department of Fish and Game, $18,000.
Trumpeter Swan Population Ecology, Wyoming Game and Fish Department, $2,000.
Big Game Habitat Models, U.S. Forest Service, $9,500.

1984 Home Range Analysis, Idaho Department of Fish and Game, $5,000.
Survey of Boreal and Great Gray Owls in Idaho, Idaho Department of Fish and Game, $6,000.
Mule Deer Aerial Census Methods, Idaho Department of Fish and Game, $18,000.
Aerial Census Methods for Elk, Idaho Department of Fish and Game, $25,485.
Management of Boreal Owls with Nest Boxes, U.S. Forest Service, $10,000.

1983 Status of Boreal Owl in North-Central Idaho, U.S. Forest Service, $45,000.
Development of Aerial Census Methods for Elk, Idaho Department of Fish and Game, $16,000.

1982 Impact of Avian Predation on Western Spruce Budworm, U.S. Forest Service, $60,033.
Development of Aerial Census Methods for Elk, Idaho Department of Fish and Game, $11,555.

1981 Impact of Avian Predation on Western Spruce Budworm, U.S. Forest Service, $50,000.
Management of Avian Predation on Western Spruce Budworm, U.S. Forest Service $15,000.
Develop Baseline Data for Research Natural Area in Boise Basin Experimental Forest, U.S. Forest Service, $15,000.
Stomach Analyses of Avian Predators on Western Spruce Budworm, U.S. Forest Service, $12,667.
Development of Aerial Census Methods for Elk, Idaho Department of Fish and Game, $10,000.

1980 Avian and Mammalian Predation, U.S. Forest Service, $65,707.
Owls of Idaho Primitive Area, University of Idaho Wilderness Research Center, $3,620.

1979 Wildlife Resource Inventory, Bureau of Land Management, $26,640.
Avian Predation, U.S. Forest Service, $18,695.
Yosemite Peregrine Falcons, National Park Service, $4,620.
Fish Habitat-Standing Crop Functions, U.S. Department of Interior, O.W.R.T., $141,340, with R.G. White, J.H. Milligan, M.A. Brusven, and A.E. Bingham.

1978 Wildlife Resource Inventory, Bureau of Land Management, $76,396.

1977 Orthene Study, U.S. Fish and Wildlife Service, $15,830.
Wildlife Resource Inventory, Bureau of Land Management, $48,237.
Dietary Selection, University of Idaho Research Council, $3,000.