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Dr. Spencer is a wildlife conservation biologist with over 30 years of professional experience in biological research and conservation planning. He specializes in the practical application of ecological and conservation science to resources management, design of nature reserves, and recovery of endangered species. He has conducted numerous studies on rare and sensitive mammals, with particular focus on forest carnivores (e.g., martens and fishers) and endangered rodents (e.g., Pacific pocket mouse and Stephens' kangaroo rat). Dr. Spencer also collaborates with other researchers and planners to develop and apply methods for identifying and conserving wildlife movement corridors and maintaining ecological connectivity in the face of habitat loss, fragmentation, and climate change. He has provided scientific guidance for several large-scale habitat connectivity plans, including the South Coast Missing Linkages Project and the California Essential Habitat Connectivity Project. In the past, Dr. Spencer has prepared habitat conservation plans (HCPs), habitat management plans (HMPs), and natural community conservation plans (NCCPs) for numerous sensitive species in California, including the first NCCP plan ever permitted (Poway Subarea NCCP/HCP). Because he has both research and real-world conservation planning experience, Dr. Spencer is often asked to lead science advisory processes to provide guidance for regional conservation and recovery plans, such as the California Desert Renewable Energy Conservation Plan and the Sacramento-San Joaquin Bay Delta Conservation Plan.

EDUCATION

Ph.D., Ecology and Evolutionary Biology, University of Arizona. 1992. Highest Honors.

M.S., Forestry and Resource Management/Wildlife Ecology. University of California, Berkeley. 1981. Honors.

B.S., Biology and Wildlife Management (double major). University of Wisconsin, Stevens Point. 1978. Highest Honors.

RECENT AWARDS

2011 Special Recognition Award, Desert Tortoise Council

2011 Special Contributions Award, Desert Tortoise Preserve Committee

2008 Conservationist of the Year Award, Western Section of The Wildlife Society



SELECT PROJECT EXPERIENCE

Southern Sierra Nevada Fisher Conservation Strategy — Sierra Nevada Conservancy, US Forest Service, and US Fish and Wildlife Service. Dr. Spencer serves as Chair of a Fisher Technical Team (FTT), a multi-agency group of experts that is preparing a conservation assessment (Spencer et al. 2015b), conservation strategy, and decision-support system to guide conservation of an isolated population of the fisher (*Pekania pennantii*) in the southern Sierra Nevada. The fisher is a carnivore associated with dense mature forests that is proposed for listing under both federal and California Endangered Species Acts. Dr. Spencer is guiding development of spatially explicit habitat and population models to project how this small and isolated population is likely to be affected by various management actions, wildfires, and other factors, and using the results to guide how forest management can restore more resilient forest conditions and recover the fisher population.

Science Facilitator and Lead Advisor for Regional Conservation Plans — Numerous Agencies. Served (or serving) as science facilitator and lead science advisor for a wide variety of large-scale HCPs and NCCPs throughout California, including the Desert Renewable Energy Conservation Plan, the Sacramento-San Joaquin Bay Delta Conservation Plan, the Altamont Pass Wind Resource Area Conservation Plan, and NCCP/HCP plans for the counties of Butte, Santa Clara, San Diego, Merced, Yuba, Sutter, and Yolo, and the city of Santa Cruz. These plans cover hundreds of listed and sensitive species in diverse habitats and ecological communities, usually under severe pressures from human development or other threats to biological integrity. The process includes selecting and leading groups of independent science advisors to reach consensus on scientific principles and solutions, reviewing extensive technical information, organizing questions and issues for advisors to address, compiling and editing inputs from the advisors, and usually serving as first author and editor of a science advisory report. The advisory reports serve as foundations for planning ecological reserve systems and developing adaptive management and monitoring plans to sustain biological diversity, native habitats, and the species inhabiting them.

Principle Investigator for California Mammal Species of Special Concern — California Department of Fish and Wildlife. Led a Technical Advisory Committee and other contributors in a comprehensive update of the Mammal Species of Special Concern (MSSC) in California. The team developed and applied a systematic scoring procedure to rank mammal species, subspecies, or distinct population segments for their relative degree of conservation concern within California. They compiled mammal locality data and other pertinent information concerning the status and distribution of nominee taxa, and prepared species accounts for most species on the final list of MSSC. The results are to be used to update the California Department of Fish and Wildlife list of sensitive taxa.

Principle Investigator for California Essential Habitat Connectivity Project California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration. This project was a highly collaborative



effort to identify and characterize areas important to maintaining a functional network of connected wildlands throughout the state of California (Spencer et al. 2010). The project produced three primary products: (1) a statewide Essential Habitat Connectivity Map, (2) a database characterizing areas delineated on the map, and (3) guidance for mitigating the fragmenting effects of roads and for developing and implementing local and regional connectivity plans. The essential connectivity network consists of 850 relatively intact and well-conserved natural landscape blocks larger than 2,000 acres and 192 essential connectivity areas for maintaining wildlife movement and other ecological flows among them. The final report provides detailed guidance for considering ecological connectivity in transportation and land management planning, preparing finer-resolution regional and local connectivity plans and linkage designs, and siting and creating road-crossing improvements for wildlife to improve ecological connectivity and reduce vehicle-wildlife collisions. All products were produced using cutting-edge GIS modeling methods in a highly collaborative, transparent, and repeatable process that could be emulated by other states. The project received the 2011 Exemplary Ecosystem Initiative Award from the Federal Highways Administration.

Lead Scientist for Pacific Fisher Baseline Assessment and Cumulative Effects Analysis in the Sierra Nevada, California – US Forest Service, Region 5. Led a comprehensive compilation and analysis of data on the Pacific fisher (*Martes [Pekania] pennanti*)—which was found to be “warranted but precluded” for endangered species listing in 2004—to assess the species’ historic, current, and future habitat and population status in the Sierra Nevada, and especially to assess the cumulative effects of wildfires, fuels management, timber harvest, and other threats to this isolated population. The project included extensive coordination with state, federal, and local agencies and stakeholder groups (e.g., conservation organizations and timber industry representatives), and facilitation of an independent science advisory body to ensure application of best available science. Cutting-edge spatial-analytical tools were used to forecast changes in fisher habitat and population size under various forest management and fire scenarios, and to forecast resulting effects on population viability. This involved coupling landscape-level models of fire and vegetation dynamics with fisher habitat suitability models and spatially explicit population dynamic models (Spencer et al. 2008, 2011; Sphard et al. 2011, Scheller et al. 2011).

Project Manager/Lead Biologist for Habitat Conservation Plans and Natural Community Conservation Plans – Numerous Agencies. Managed the design, analysis documentation, public involvement, and permitting processes for a variety of regional HCP/NCCPs in California pursuant to the Endangered Species Act and the California NCCP Act, including the following:

- *Poway Subarea HCP/NCCP – City of Poway, California.* The first plan successfully permitted under the NCCP Act of 1991, this wildlife conservation plan was designed to sustain populations of 42 sensitive species in an interconnected habitat network within a 25,000 acre planning area.
- *Multiple Habitat Conservation Program (MHCP) – San Diego Association of Governments (SANDAG).* Managed design and documentation of this HCP/NCCP



covering 7 incorporated cities and over 186 square miles in north San Diego County. Oversaw development and use of a comprehensive GIS database to design a biologically defensible plan that balances conservation and economic concerns. Included a public policy development and coordination component to ensure consensus between all pertinent organizations and agencies, as well as economic and financing analyses for plan implementation.

- *City of Carlsbad Habitat Management Plan (HMP)*. Helped the City of Carlsbad complete a citywide HMP that also serves as a multiple species HCP/NCCP. Met with affected property owners and agencies to negotiate preserve areas within the 25,000-acre planning area; managed biological surveys, GIS analyses, and document preparation. The plan covered nearly 100 sensitive plant and animal species, while preserving reasonable economic growth and private property rights throughout the city.
- *City of Oceanside HCP/NCCP*. Managed preparation of the City's subarea HCP/NCCP, which covered 27,000-acres. Tasks included managing field surveys, GIS database development and analyses, public outreach, and plan documentation.

Framework Monitoring Plan for the Channel Island Fox – US Navy and The Nature Conservancy. Served as project manager, science facilitator, and lead author on a project to review existing monitoring data and methods across all populations of the endangered Channel Island fox (*Urocyon littoralis*) and develop statistically robust monitoring methods to address population status, trends, and threats. Working closely with a panel of experts on fox biology, wildlife monitoring, and statistics, the team developed a statistically robust approach to monitoring population status and threats to the San Clemente Island fox (*U. l. clemente*) that met diverse operational and biological goals of the US Navy, which owns and operates San Clemente Island as a live-fire and special-operations training area. Based on this model, we developed a framework monitoring plan that could also be used on the other 5 islands supporting island fox populations (each island supports a unique subspecies and has different ownerships, management issues, and environmental conditions).

Research on Effects of Fire Severity and Distance from Unburned Edge on Mammalian Community Post-fire Recovery — U.S. Forest Service, Joint Fire Science Program, Riverside Fire Lab. Served as Principle Investigator for a 4-year study of how mammal species and communities recovered following the largest wildfire in California in over 100 years (the October 2003 Cedar Fire in San Diego County). Oversaw a crew of field biologists from the San Diego Natural History Museum that sampled mammal communities and vegetation at numerous plots inside and outside the fire perimeter, at varying distances from the edge and in areas of differing fire intensity (Diffendorfer et al. 2012, Schuette et al. 2014).

Pacific Pocket Mouse Studies Program – Transportation Corridor Agencies, U.S. Fish and Wildlife Service, and California Department of Fish and Game. Served as Principal Investigator for studies designed to further recovery of the critically endangered Pacific pocket mouse (*Perognathus longimembris pacificus*). Tasks included studying



dispersal characteristics and other pertinent biological information on the species; performing detailed field studies of a surrogate subspecies to perfect field methods and design monitoring programs; determining the feasibility of a translocation or reintroduction program for the species, determining baseline measures of genetic diversity within and between extant (using live-captured specimens) and historic (using museum specimens) populations and developing genetic goals for the recovery program; and coordinating ongoing monitoring studies at extant population sites to maximize the value of the monitoring data for both scientific and preserve management goals (Spencer 2005).

Stephens' Kangaroo Rat Studies at the Ramona Airport, San Diego County, California – KEA Environmental. Verified a new population of the endangered Stephens' kangaroo rat in the Santa Maria Valley, Ramona California, by trapping and reconnaissance surveys. Mapped the density and extent of this new, southern-most population, and performed GIS habitat modeling to predict other potential habitat throughout the Santa Maria Valley. Prepared a biological technical report and sections of the Biological Assessment for the Ramona Airport expansion project. Participated in a Section 7 consultation and prepared a Habitat Management Plan for the Stephens' kangaroo rat on the airport property. Prepared and oversaw implementation of a translocation program to salvage kangaroo rats prior to construction, house them in captivity, release them to release sites in improved habitat areas, and monitor success of the translocated population and the overall population in the area for several years.

Basewide Survey for Pacific Pocket Mouse – U.S. Marine Corps Base Camp Pendleton. Managed an intensive field survey to determine the distribution of the endangered Pacific pocket mouse on base. Developed detailed survey protocols in consultation with other mammalogists and the USFWS. Coordinated a team of 15 biologists performing reconnaissance and trapping surveys over all previously unsurveyed habitat for the species on base (over 6,000 acres). Managed development of a GIS database that summarizes all data for the species on base, including results of previous surveys. Analyzed habitat relationships of PPM using GIS and statistical models.

Studies on the Community Ecology of the Chihuahuan Desert – National Science Foundation. Studied the community ecology of desert rodents with Dr. James H. Brown, University of Arizona. Captured, identified, measured, and marked individuals of 15 species of rodents, including three species of kangaroo rats and three species of pocket mice, in over 20,000 trapnights in the Chihuahuan and Sonoran deserts. Trapped, marked, measured, and radio-tracked various species of kangaroo rats with Dr. Peter Waser, Purdue University, for a study of kangaroo rat behavior and ecology. Studied effects of foraging by javelina on native plant species. Performed microhabitat analyses and censuses and intensive foraging studies on wintering sparrow flocks while studying ecological interactions between desert rodents, birds, and ants in the Chihuahuan Desert (Thompson et al. 1991).



Pine Marten Ecology Studies in the Pacific States – U.S. Forest Service. Studied the ecology and behavior of pine martens in the Sierra Nevada and Cascade mountain ranges using trapping, radio-tracking, snow-tracking, smoked track-plate plots, and intensive habitat analyses (Spencer 1981; Spencer 1982; Spencer et al. 1983; Spencer and Zielinski 1983; Zielinski et al. 1983; Spencer 1987).

Studies of Space-use Patterns, Behavior, and Brain Evolution in Heteromyid Rodents – National Science Foundation and National Institute of Health. Researched space use patterns, memory, navigation, and spatial cognition in various species of kangaroo rats, pocket mice, and grasshopper mice (Spencer 1992). Collaborated with Dr. Lucia Jacobs on the evolution of spatial cognition and the hippocampus of the brain in kangaroo rats and pocket mice (Jacobs and Spencer 1991, 1994).

Mount Baker Geothermal Energy Development Biological Resources Assessment – Seattle City Light and Power Company. Led a team that studied the impacts of geothermal energy development on sensitive wildlife in old-growth forests on Mount Baker, Washington. Radio-tracked pine martens and performed trapping and other surveys for various rare carnivore species, including lynx, fisher, and wolverine. Coordinated with biologists studying northern spotted owls and mountain goats.

Assessment of Impacts of Free-roaming House Cats on Native Wildlife Populations at Saguaro National Monument and Tucson Mountain Parks – National Park Service, Western Region. Performed a study involving the impacts of free-roaming house cats on wildlife populations for the design of buffers around nature preserves in Arizona. Radio-tracked 14 free-roaming house cats and analyzed their movements, food habits, home ranges, and behaviors.

Miscellaneous Endangered Species Surveys — numerous clients throughout California, Arizona, and New Mexico. Coordinated and performed field surveys for the California gnatcatcher, coastal cactus wren, least Bell's vireo, southwestern willow flycatcher, desert tortoise, San Joaquin kit fox, and other rare and endangered species throughout the southwestern U.S. Coordinated and performed trapping surveys for the endangered Stephens' kangaroo rat, Pacific pocket mouse, Mojave River vole, and other rare small mammals in southern California.

Kern River Pipeline Desert Tortoise Surveys and Construction Monitoring – Kern River Company. Managed large crews of biologists doing field surveys and construction monitoring for the federally threatened desert tortoise throughout California, Nevada, Utah, and Arizona. Trained field biologists in techniques for surveying and monitoring tortoise populations. Educated construction personnel about mitigation requirements for protecting tortoises during construction of a natural gas pipeline across Utah, Nevada, and California. Relocated tortoises from the impact area under a memorandum of understanding with the USFWS.



PROFESSIONAL REGISTRATIONS AND PERMITS

Society for Conservation Biology
Association for Fire Ecology
American Institute of Biological Sciences
The Wildlife Society
American Society of Mammalogists
Society of American Naturalists
Sigma Xi Honor Society

PUBLICATIONS

- Spencer, W.D., H. Rustigian-Romsos, K. Ferschweiler, and D. Bachelet. 2015a. Simulating effects of climate and vegetation change on distributions of martens and fishers in the Sierra Nevada, California, using Maxent and MC1. Pp. 135-149 In: D. Bachelet and D. Turner, eds. Global vegetation dynamics: concepts and applications in the MCI model. Geographical Monograph 214, First Edition. John Wiley & Sons.
- Spencer, W.D., S.C. Sawyer, H.L. Romsos, W.J. Zielinski, R.A. Sweitzer, C.M. Thompson, K.L. Purcell, D.L. Clifford, L. Cline, H.D. Safford, S.A. Britting, and J.M. Tucker. 2015b. Southern Sierra Nevada fisher conservation assessment. Unpublished report produced by Conservation Biology Institute.
- Zielinski, W.J., K.M. Moriarty, J. Baldwin, T.A. Kirk, K.M. Slauson, H.L. Rustigian-Romsos, and W.D. Spencer. 2015. Effects of season on occupancy and implications for habitat modeling: the Pacific marten *Martes caurina*. *Wildlife Biology* 21:56-67.
- Schuette, P.A., J.E. Diffendorfer, D.H. Deutschman, S. Tremor, and W. Spencer. 2014. Carnivore distributions across chaparral habitats exposed to wildfire and rural housing in southern California. *International Journal of Wildland Fire* 23:591-600.
- Spencer, W.D. 2012. Home ranges and the value of spatial information. *Journal of Mammalogy* 93:929-947.
- Scheller, R.M., W.D. Spencer, H. Rustigian-Romsos, A.D. Syphard, B.C. Ward, and J.R. Strittholt. 2011. Using stochastic simulation to evaluate competing risks of wildfires and fuels management on an isolated forest carnivore. *Landscape Ecology* 26:1491-1504.
- Beier, P., W. Spencer, R. Baldwin, and B. McRae. 2011. Toward best practices for developing regional connectivity maps. *Conservation Biology* 25:879-892.
- Diffendorfer, J., G.M. Fleming, S. Tremor, W. Spencer, and J.L. Beyers. 2012. The role of fire severity, distance from fire perimeter and vegetation on post-fire recovery of small-mammal communities in chaparral. *International Journal of Wildland Fire*. <http://dx.doi.org/10.1071/WF10060>.



- Carroll, C., W. Spencer, and J. Lewis. 2012. Use of habitat and viability models in *Martes* conservation and restoration. Pages 429-450 In: K. Aubry, W. Zielinski, M. Raphael, G. Proulx, and S. Buskirk, eds. *Biology and Conservation of Martens, Sables, and Fishers: A New Synthesis*. Cornell University Press.
- Syphard, A.D., R.M. Scheller, B.C. Ward, W.D. Spencer, and J.R. Strittholt. 2011. Simulating landscape-scale effects of fuels treatments in the Sierra Nevada, California, USA. *International Journal of Wildland Fire* 20:364-383.
- Spencer, W., H. Rustigian-Romsos, J. Strittholt, R. Scheller, W. Zielinski, and R. Truex. 2011. Using occupancy and population models to assess habitat conservation opportunities for an isolated carnivore population. *Biological Conservation* 144:788-803. DOI 10.1016/j.biocon.2010.10.027.
- Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration. February 2010.
- Spencer, W.D., H.L. Rustigian, R.M. Scheller, A. Syphard, J. Strittholt, and B. Ward. 2008. Baseline evaluation of fisher habitat and population status, and effects of fires and fuels management on fishers in the southern Sierra Nevada. Unpublished report prepared for USDA Forest Service, Pacific Southwest Region. June 2008. 133 pp + appendices.
- Beier, P., D.R. Majka, and W.D. Spencer. 2008. Forks in the road: Choices in GIS procedures for designing wildland linkages. *Conservation Biology* 22:836-851.
- Beier, P., K. Penrod, C. Luke, W. Spencer, and C. Cabanero. 2006. South Coast Missing Linkages: restoring connectivity to wildlands in the largest metropolitan area in the United States. Pages 555-586 in: K. Crooks and M. Sanjayan, eds. *Connectivity Conservation*. Cambridge University Press.
- Penrod, K., C.R. Cabanero, P. Beier, C. Luke, W. Spencer, E. Rubin, and C. Paulman. 2008. A linkage design for the Joshua Tree-Twentyone Palms connection. South Coast Wildlands, Fair Oaks, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, E. Rubin, R. Sauvajot, S. Riley, and D. Kamradt. 2006. South Coast Missing Linkages Project: A Linkage Design for the Santa Monica-Sierra Madre Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, and E. Rubin. 2006. South Coast Missing Linkages Project: A Linkage Design for the San Bernardino-San Jacinto Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, and E. Rubin. 2006. South Coast Missing Linkages Project: A Linkage Design for the Palomar-San



- Jacinto/Santa Rosa Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, and E. Rubin. 2006. South Coast Missing Linkages Project: A Linkage Design for the Peninsular-Borrogo Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Spencer, W.D. 2005. Recovery research for the endangered Pacific pocket mouse: An overview of collaborative studies. In B.E. Kus and J.L. Beyers, technical coordinators. Planning for Biodiversity: Bringing Research and Management Together: Proceedings of a Symposium for the South Coast Ecoregion. Gen. Tech. Rep. PSW-GTR-195. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture, Albany, CA: 274pp.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, and E. Rubin. 2005. South Coast Missing Linkages Project: A Linkage Design for the San Bernardino-Granite Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, and E. Rubin. 2005. South Coast Missing Linkages Project: A Linkage Design for the San Bernardino-Little San Bernardino Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, and E. Rubin. 2005. South Coast Missing Linkages Project: A Linkage Design for the Sierra Madre-Castaic Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, E. Rubin, S. Loe, and K. Meyer. 2004. South Coast Missing Linkages Project: A Linkage Design for the San Gabriel-San Bernardino Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Penrod, K., C. Cabañero, P. Beier, C. Luke, W. Spencer, and E. Rubin. 2004. South Coast Missing Linkages Project: A Linkage Design for the San Gabriel-Castaic Connection. South Coast Wildlands, Idyllwild, CA. www.scwildlands.org.
- Luke, C., K. Penrod, C.R. Cabanero, P. Beier, and W. Spencer. 2004. A Linkage Design for the Santa Ana – Palomar Mountain Connection: one of the South Coast's 15 Missing Linkages. Unpublished report. San Diego State University Field Station Programs, San Diego, California. www.fs.sdsu.edu
- Penrod, K., C. Cabanero, C. Luke, P. Beier, W. Spencer, and E. Rubin. 2003. South Coast Missing Linkages Project: A Linkage Design for the Tehachapi Connection. South Coast Wildlands Project, Idyllwild, CA. www.scwildlands.org.
- Swei, A., P.V. Brylski, W.D. Spencer, S.C. Dodd, and J.L. Patton. 2003. Hierarchical genetic structure in fragmented populations of the little pocket mouse (*Perognathus longimembris*). Conservation Genetics 4:501-514.



- Spencer, W.D., M.D. White, and J.A. Stallcup. 2001. On the global and regional ecological significance of southern Orange County: conservation priorities for a biodiversity hotspot. Unpublished peer-reviewed report. Prepared for Endangered Habitats League. 44pp.
- Jacobs, L.F., and W.D. Spencer. 1994. Space-use patterns and the evolution of hippocampal size in rodents. *Brain, Behavior, and Evolution* 44:125-132.
- Spencer, W.D. 1992. Space in the lives of vertebrates: On the ecology and psychology of space use. Ph.D. dissertation. University of Arizona. 131pp.
- Thompson, D.D., J.H. Brown, and W.D. Spencer. 1991. Indirect facilitation of granivorous birds by desert rodents: Experimental evidence from foraging patterns. *Ecology* 72:852-863.
- Jacobs, L.F., and W.D. Spencer. 1991. Patterns of natural spatial behavior predict hippocampal size in kangaroo rats. *Soc. Neurosci. Abstr.*
- Spencer, W.D. 1987. Seasonal rest-site preferences of pine martens in the northern Sierra Nevada. *J. Wildl. Manage.* 51:616-621.
- Spencer, W.D., and R.H. Barrett. 1985. An evaluation of the harmonic mean measure for defining carnivore activity areas. *Acta Zool. Fennica* 171:255-259.
- Spencer, W.D., R.H. Barrett, and W.J. Zielinski. 1983. Marten habitat preferences in the northern Sierra Nevada. *J. Wildl. Manage.* 47:1181-1186.
- Spencer, W.D., and W.J. Zielinski. 1983. Predatory behavior of pine martens. *J. Mammal.* 64:715-717.
- Zielinski, W.J., W.D. Spencer, and R.H. Barrett. 1983. Relationship between food habits and activity patterns of pine martens. *J. Mammal.* 64:387-396.
- Spencer, W.D. 1982. A test of a pine marten habitat suitability index model for the northern Sierra Nevada. *U.S. Dep. Agric. For. Serv. Supp. Rep.* RO-33. 43pp.
- Spencer, W.D. 1981. Pine marten habitat preferences at Sagehen Creek, California. M.S. Thesis, Univ. California, Berkeley. 121pp.
- Spencer, W.D. 1978. Habitat changes on easement properties in the Lower Wisconsin River Wildlife Area. *Interdep. Rep., Wisconsin Dep. Nat. Resource.* 76pp.

SELECT PRESENTATIONS

- California's Desert Renewable Energy Conservation Plan: A case study in use of independent science advice. Invited Keynote Address at annual conference of Northern California Conservation Planning Partners: Habitat Conservation Planning from Tahoe to the Bay. November 2012.
- Planning for ecological connectivity from statewide to local scales. Invited Presentation, Caltrans Biologist Connectivity Training Workshop, Los Angeles, California. October 2011.



Potential effects of large-scale algal biofuels production on wildlife. Invited Presentation to National Academy of Sciences Committee on Sustainable Biofuels Production. August 2011.

Independent science advice for the California Desert Renewable Energy Conservation Plan: Background, Recommendations, and Future Directions. Invited Keynote Address at annual conference of the Desert Tortoise Council, Las Vegas, Nevada. February 2011.

Trends in independent science advice for NCCP/HCPs. Invited presentation at annual conference of the Western Section of The Wildlife Society, Riverside, California. February 2011.

Why mammals use home ranges: The value of spatial information. Invited Special Symposium Presentation, American Society of Mammalogists, Fairbanks, Alaska. June 2009.

Roles for science-based NGOs in wildlife management and conservation. Invited Plenary Talk at annual conference of the Western Section of The Wildlife Society, Redding, California. February 2008.

Managing landscape linkages to conserve desert wildlife during climate change. Invited presentation and panel discussion. The Climate & Deserts Workshop: Adaptive Management of Desert Ecosystems in a Changing Climate. Laughlin, NV, April 2008.

Improving science delivery for regional conservation plans: Lessons from science advisory processes in California. Invited presentation. Society for Conservation Biology, San Jose California, June 2006.

The science advisory process for regional NCCPs and HCPs. Invited presentation, Continuing Legal Education (CLE) workshop on regional conservation planning. San Francisco, California. December 2005.

Bioethical meanderings of a fur trapper to game biologist to ivory tower ecologist to bioslut to NGO conservation scientist convert. Invited talk at Special Session on Ethics in Wildlife Biology, Western Section of The Wildlife Society, February 2003.

Salvage translocation of endangered Stephens' kangaroo rats in a small, satellite population. Society for Conservation Biology, Duluth, Minnesota. 2003.

The role of consultants in conservation science delivery. Invited presentation at Regional Conservation Planning (NCCP/HCP) Workshop. Western Section of the Wildlife Society. Sacramento, California. 2001.

The science component of regional conservation plans. Invited presentation at Regional Conservation Planning (NCCP/HCP) Workshop. Western Section of the Wildlife Society. Sacramento, California. 2001.



- Designing a translocation program to recover the critically endangered Pacific pocket mouse (*Perognathus longimembris pacificus*). American Society of Mammalogists. Missoula, Montana. 2001.
- Status of mammals in near coastal habitats, with emphasis on the endangered Pacific pocket mouse. Invited Symposium Presentation. Planning for Biodiversity: Bringing Research and Management Together. Pomona, California. 2000.
- U.S.-Mexican cooperation in the conservation of rare mammals: Workshop Introduction. International Theriological Congress IV. Acapulco, Mexico. 1997.
- Does the extremely endangered Pacific little pocket mouse exist in Baja, California, Mexico? International Theriological Congress IV. Acapulco, Mexico. 1997.
- Linkage planning under severe constraints: gnatcatchers and the Oceanside stepping-stone hypothesis. Interface Between Ecology and Land Development in California. J.E. Keeley, ed. Southern Calif. Acad. Sci., Los Angeles. 1997.
- Threatened and endangered species of California: a regional overview. CLE International Conference on the Endangered Species Act. San Diego, California. 1995.
- Impacts of free-ranging house cats on wildlife at a suburban-desert interface. Society for Conservation Biology. Guadalajara, Mexico. 1994.
- Resource dispersion, information, and space-use patterns of vertebrates. Animal Behavior Society. Binghamton, New York. 1990.
- Statistical moments for analyses of two-dimensional distributions in ecology. Southwest Association of Biologists. Portal, Arizona. 1988.
- Spatial learning and models of foraging movements. Southwestern Association of Biologists. Flagstaff, Arizona. 1987.
- Multiple central-place foraging in small carnivores. American Society of Mammalogists. Albuquerque, New Mexico. 1987.
- On cognitive maps and the optimal use of home range. Animal Behavior Society. Tucson, Arizona. 1986.
- An evaluation of the harmonic mean measure for defining carnivore activity areas. Invited Paper: International Theriological Congress. Helsinki, Finland. 1982.
- Selection of resting and foraging sites by *Martes americana*. International Theriological Congress. Helsinki, Finland. 1982.
- Rest-site selection by pine martens at Sagehen Creek, California. Western Section of The Wildlife Society. Reno, Nevada. 1981.