



# Wind Wildlife Research Meeting IX

Presented By



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## Speaker and Poster Presenter Biographies

### **Evan Adams**

*Biodiversity Research Institute*

Evan Adams is the Director of the Migratory Bird Program at the Biodiversity Research Institute. He has conducted work on the migratory ecology of songbirds and their relationships to climate, evaluated the bias and efficacy of survey methods designed to quantify migratory animals and created hierarchical models used to describe complex patterns of abundance in migrants. Evan is also a co-Principal Investigator on the Department of Energy Mid-Atlantic Baseline Study.

### **Ed Arnett**

*Theodore Roosevelt Conservation Partnership*

Dr. Ed Arnett is Director of Energy Programs at the Theodore Roosevelt Conservation Partnership and Adjunct Professor in the Department of Natural Resources Management at Texas Tech University. Prior to joining TRCP, Ed was a conservation scientist and Director of Programs at Bat Conservation International, and led the Bats and Wind Energy Cooperative for 8 years. He served on the Federal Advisory Committee for developing recommendations for the US Fish and Wildlife Service's guidelines for wind energy and wildlife, serves on the Association of Fish and Wildlife Agencies' energy and wind energy committees, chaired The Wildlife Society's technical review committee on wind energy impacts on wildlife, and serves as a science advisor for the NWCC and the American Wind and Wildlife Institute.

### **Tina Bartunek**

*Iberdrola Renewables*

Tina Bartunek and Nadine May are co-authors on this poster. Tina Bartunek has been with Iberdrola Renewables since 2008 and three years ago transitioned into the Permitting and Environmental group to implement the wildlife permitting and compliance systems. Tina received her Bachelors of Biological Sciences degree from University of Central Florida in 1995 and worked for ten years in civil engineering and environmental protection. Since 2010, Tina has developed and maintained IR permitting processes to insure that wildlife issues are addressed and incorporated at project initiation and subsequently carried through and complied with in the operational phase. Tina develops, implements and manages IR wildlife operations monitoring and compliance programs, performs training and maintains system materials and tools, at IR fleet of nearly 50 wind plants in North America. Nadine May is a business analyst with Iberdrola Renewables wildlife permitting and compliance group with a focus on designing, implementing and managing the company's wildlife operational monitoring program. Nadine was instrumental in transforming an 'out of the

box' environmental health & safety (EHS) system into IR Compliance Management System, incorporating the Wildlife Monitoring and Management System. Nadine graduated from the University of Rochester in 1990 with a BS in Geology and worked for 15 years with environmental engineering firms where she was a project manager on EHS and Compliance Management system projects for industrial and energy sector clients. In 2005 Nadine started Prisma Consulting LLC and now focuses on delivering compliance management systems to clients exclusively in the hydropower and wind energy sectors.

**Kimberly Bay**

*WEST, Inc.*

Kimberly Bay received her B.S. in Mathematics/Statistics in 2000 and her M.S. in Statistics in 2003, both from the University of Wyoming. She has been a Biometrician with WEST, Inc. since 2001. She currently holds the position of Data and Report Manager, where she coordinates the personnel responsible for the majority of data entry, database management, quality assurance and quality control of data, analysis of data, and compiling the results for reports. She has worked, in coordination with Ecologists and other Biometricians, on over 150 pre-construction studies at proposed Wind Energy developments and over 50 post-construction studies at developed Wind Energy Facilities. This work spans across nearly all 50 states. She is also a proud mother of three children.

**Matt Behum**

*Integral Consulting Inc.*

Dr. Robert Pastorok is an ecologist specializing in ecological risk assessment and modeling to support management of natural resources. He has more than 30 years of experience developing and applying quantitative empirical techniques and ecological models to evaluate and solve environmental issues. Dr. Pastorok has managed or served as technical lead on projects to address siting of industrial, municipal, and commercial facilities, cleanup of chemically contaminated urban-industrial habitats, restoration and conservation of habitat, and management of aquatic and terrestrial ecosystems. Dr. Pastorok has led major multidisciplinary investigations in Puget Sound (Washington), the Willamette River (Oregon), the Hudson River (New York), and the Clark Fork River (Montana). He has managed projects to develop risk management decision frameworks, ecotoxicological methods, risk assessment models, and chemical standards for soil, surface water, sediments, and wetlands. He was instrumental in the development of technical approaches in the USEPA framework for ecological risk assessment, the Washington State Model Toxics Control Act program, the Puget Sound Estuary Program, and the USEPA training program for use of population modeling in ecological risk assessment. Dr. Pastorok was the lead author and editor of the seminal book titled *Ecological Modeling in Risk Assessment: Chemical Effects on Populations, Ecosystems, and Landscapes* (2000, CRC Press). He contributed substantially to two SETAC Pellston workshops and the resulting books (*Uncertainty Analysis in Ecological Risk Assessment* and *Population-Level Ecological Risk Assessment*). Dr. Pastorok is internationally known for his expertise in ecological modeling and risk assessment and has been an invited technical reviewer for prominent journals, industries, and environmental management agencies.

**Victoria Bennett**

*Texas Christian University*

Dr. Tory Bennett is a Senior Research Associate on the wind research initiative and the Department of Biology at TCU, where her research focuses on understanding bat-wind-turbine interactions. She received her M.S. in Biodiversity & Conservation and Ph.D. in Ecology from Leeds University, Leeds, U.K. Dr. Bennett has completed postdoctoral positions at Purdue University and Oregon State University on the effects of recreational disturbance on wildlife and road ecology, respectively. Her areas of expertise include behavioral and landscape ecology, anthropogenic disturbance of wildlife, simulation modeling and conservation biology.

She has field experience in a wide range of habitats across North and Central America, Europe, Africa and Asia and has a tendency to focus her research on things with wings, especially bats.

**Joana Bernardino**

*Bio3, Lda*

Joana Bernardino is a wildlife biologist in the Portuguese company Bio3. Since 2005 she has been responsible for more than 80 EIA or biodiversity monitoring programs, mainly related to impact assessment of renewable energies projects. In 2008 she completed her master's degree in Ecology and Environmental Management, with a thesis about methodologies to assess bird and bat mortality at on-shore wind farms. Author of several papers published in peer-reviewed journals, she has also participated in the development of the recent online platform "Wildlife Fatality Estimator". At the moment she is one of the coordinators of the R&D project "Wind & Biodiversity", led by Bio3 in partnership with the University of Aveiro (Portugal). This 4 years project aims to reconcile wind energy developments and biodiversity by developing integrated and sustainable management solutions/services adapted to wind farms, according to its engineering, performance and ecological context.

**Tim Bowden**

*U.S. Fish and Wildlife Service*

Tim Bowden has over 15 years of experience with bird conservation. Past employment includes 10 years working for the National Park Service as a wildlife biologist where he worked with a variety of species and lead investigations for threatened and endangered species such as the Mexican spotted owl, peregrine falcon, and southwestern willow flycatcher. His work has focused on habitat associations and developing and implementing conservation recommendations. Recently, he began work with the US Fish and Wildlife where he has assisted with a broad scale investigation into migratory pathways along the Great Lakes using a variety of techniques including avian radar and acoustic/ultrasonic monitors. In this capacity he has been involved with all aspects of data collection, analysis, and report preparation. Tim received an MS degree from Montana State University in 2008.

**Sarah Boyden**

*Stantec Consulting, Inc.*

Ms. Boyden is responsible for conducting a wide range of natural resource evaluations, including wildlife population surveys, avian and bat impact evaluations, and habitat studies. For the past eight years Ms. Boyden has conducted extensive avian and bat research at wind power and transmission projects across the northeast. She has most recently been involved in organizing and conducting a four-year research effort studying offshore bat migration along the coast of Maine. Her prior experience has included extensive field studies of Canada lynx in northern forests; work on Atlantic salmon restoration on the White River in Vermont; and fish population surveys in the Colorado, San Juan, and Green Rivers in New Mexico and Utah.

**David Brandes**

*Lafayette College*

David Brandes is an Associate Professor of Civil & Environmental Engineering at Lafayette College, where he specializes in hydrology and hydraulics. He received his PhD in civil engineering (water resources) from Pennsylvania State University in 1998. Previous to Lafayette, he worked as a post-doc at Penn State, and an Environmental Scientist at Los Alamos National Laboratory. He has a MS in environmental systems engineering from Clemson University and a BS in civil (environmental) engineering from University of Maryland. In addition to an active research program in hydrology, Brandes has been developing ecological movement models since 2003, when he proposed a raptor migration model for complex terrain based on a fluid flow analogy. He is the developer of FlightPath, an individually-based simulation program for spatially

explicit prediction of raptor migration pathways based on energy minimization and orographic and thermal uplift velocities. He also has extensive field experience with raptor migration, and is the founder of the Tussey Mountain spring eaglewatch in central Pennsylvania. Brandes works closely with an interdisciplinary team of scientists (including T. Katzner, T. Miller, M. Lanzone, A. Duerr, C. Maisonneuve, J. Tremblay) studying the migration and life cycle of Golden Eagles in eastern North America using satellite telemetry and novel high frequency GSM cellular telemetry, migration count data, and data from winter camera trapping at carcasses. He is also conducting collaborative modeling work with scientists studying Griffon Vulture and wind turbine interactions in southern Spain. Finally, he is co-Investigator (with G. Bohrer and others) on a NASA-funded project to develop tools for analysis of telemetry data by the track annotation method, focusing on topographically-based analyses such as estimation of orographic and thermal uplift velocities over large spatial scales.

### **William Burnidge**

*The Nature Conservancy*

William Burnidge is the Colorado Grasslands Program Director for The Nature Conservancy. He helped establish and co-leads the Colorado Renewables and Conservation Collaborative (CRCC), an effort involving key conservation organizations and wind industry members. The CRCC developed wind-wildlife best management practices for Colorado and a voluntary implementation mechanism for the BMPs through the CO Public Utilities Commission. In addition to his experience with wind energy, Mr. Burnidge manages the 14,000-acre Fox Ranch preserve and leads the Conservancy's eastern Colorado engagement on land conservation, conserving the Ogallala Aquifer, and oil and gas development planning. Prior to joining the Conservancy, Mr. Burnidge worked in ecological consulting in the Midwestern US and ran a forest restoration project in the Lower Mississippi Valley for the US Business Council for Sustainable Development. Mr. Burnidge earned his BS in Wildlife Management and Biology from the University of Wisconsin – Steven Point and his MS and MBA degrees from the University of Michigan.

### **Kylan Frye Christensen**

*HawkWatch International*

Kylan Frye, M.E.M., Conservation Biologist for HawkWatch International. Kylan holds a B.S. in Zoology from The Ohio State University and a Master's of Environmental Management (M.E.M.) and Certificate of Geospatial Analysis from Duke University. At HWI, Kylan has performed geospatial analysis for the DoD Utah Raptor Legacy Project, compiling GIS data for raptor nesting records in Western Utah, creating territories in GIS, nest density and spatial statistics and predictive nested habitat models for Utah raptors using Maxent, R, and ArcGIS. She has developed and executed monitoring protocols and field plans for raptor surveys in the Utah, analyzed field data and created management recommendations for raptor habitat. She has had extensive experience with field assessments, field crew management, GIS analyses and data analysis. Ky additionally has experience with tracking and analyzing federal policies and proposed development projects and how they relate to wildlife and habitat, providing valuable insight to agencies and companies to help avoid adverse affects on wildlife.

### **Brian Cooper**

*ABR, Inc.*

Brian Cooper is a Senior Scientist and Vice President at ABR, Inc.—Environmental Research & Services. He has been using radar and visual techniques to study avian use patterns and flight behavior at wind energy sites in the U.S. and Europe for over 20 years. He has developed radar techniques for studying bird migration and for studying sensitive seabird species including Marbled Murrelets, Hawaiian Petrels, and Newell's Shearwaters and has published several papers on those subjects. Over the past 10 years, Brian has worked with others at ABR to help develop models to predict fatality rates of sensitive seabird species at wind energy

facilities. In addition, he currently is working with a team of government, university, and private entities to develop a set of guidelines for radar studies of marbled murrelets at proposed wind energy facilities.

**Jessica Costa**

*Stantec Consulting, Inc.*

Ms. Costa has worked as a field biologist and project manager for Stantec Consulting since 2007. She has conducted and managed avian radar surveys, acoustic bat surveys, raptor migration surveys, winter raptor surveys, breeding bird surveys, and post-construction bird and bat mortality monitoring. Through her field experience and relationships with wind project developers and regulatory agencies, she has firsthand knowledge of a variety of issues related to birds, bats, and wind energy. She has also been responsible for designing and implementing effective wildlife monitoring strategies for projects in development and operation. Prior to her work at Stantec, Ms. Costa has conducted wildlife surveys, water quality monitoring and sampling, marine mammal handling and rehabilitation, riparian restoration efforts, and has worked on public outreach and fieldwork for endangered piping plover and least tern projects.

**Allison Costello**

*Normandeau Associates*

Ms. Allison Costello is Master's level bat biologist and a professional bat acoustics specialist at Normandeau Associates. Ms. Costello has over nine years of experience in wildlife field studies, including birds, bats, and sea turtles, data management, GIS, analysis, and reporting. She has managed several large bat acoustic monitoring projects for wind energy preconstruction surveys throughout North America. She has analyzed over 30,000 hours of bat calls. Ms. Costello's Master's research included monitoring and recording bat echolocation of the endemic and federally endangered Hawaiian hoary bat and its spatial distribution. Additionally, she is experienced with other bat survey techniques, including habitat assessments, mist netting, presence/absence surveys, and radio telemetry tracking for Indiana bats and other species. She is an active member of many bat-related societies, including the North American Society for Bat Research, Southeastern Bat Diversity Network, Florida Bat Working Group, Midwest Bat Working Group, and New England Bat Working Group.

**Clayton Derby**

*Western EcoSystems Technology, Inc.*

Clayton Derby is Western EcoSystems Technology, Inc.'s (WEST) North Dakota Branch Manager. Clayton has been a wildlife biologist with WEST for over 18 years, and during this time he has been the Project Manager for hundreds of projects throughout the west and Midwest, including many wind energy development projects, several large and involved multi-state natural gas pipeline projects, and numerous other projects. Many of these efforts have included avian use monitoring activities, including monitoring for sandhill and whooping cranes. In addition, Clayton was the Assistant Executive Director to the Platte River Endangered Species Partnership for eight years. As the Assistant Executive Director, one of Mr. Derby's responsibilities was to work with the stakeholders to identify methods and procedures to monitor whooping crane use of the central Platte River.

**David Drake**

*Univ. of Wisconsin-Madison*

David Drake is an extension wildlife specialist and associate professor in the Department of Forest and Wildlife Ecology at the University of Wisconsin-Madison. He completed his Ph. D. in Forestry at North Carolina State University, received a Masters degree in Wildlife and Fisheries Sciences from Texas A&M University, and graduated with a bachelor's degree in Biology from Macalester College in St. Paul, MN. David's research interests include the human impact on wildlife and suburban/urban wildlife management.

**Corey Duberstein**

*Pacific Northwest National Laboratory*

Andrea E. Copping is the research lead for ocean energy development for Pacific Northwest National Laboratory (PNNL), on behalf of the U.S. Department of Energy. Dr. Copping's projects focus on environmental effects from the development of offshore wind, wave and tidal energy installations, and the role that these effects play in technology development and project initiation across the nation. Using risk-based approaches, the offshore wind team lead by Dr. Copping integrates laboratory, field and modeling measurements into a coherent body of evidence to support siting and permitting decisions. Dr. Copping joined PNNL in 2006; previously she was Associate Director of the Washington Sea Grant Program. Dr. Copping is an affiliate faculty member in the School of Marine and Environmental Affairs at the University of Washington, and Associate Editor for the Coastal Management Journal. She earned a Ph.D. in Biological Oceanography from the University of Washington.

**Wallace Erickson**

*WEST, Inc.*

Mr. Wallace P. Erickson is a Sr. Statistician/Senior Manager with WEST since 1991. He has over 21 years of consulting experience related to the design and analysis of environmental and wildlife studies. His primary research interests include habitat selection methodology with applications to GIS and study designs and analysis for detecting impacts from environmental perturbations. He has been lead statistician and/or WEST project manager for baseline studies, environmental permitting, and/or operational monitoring/research at over 75 wind energy projects in 25 states. He is an author/co-author on over 30 professional journal articles, book chapters or peer reviewed proceedings papers, and is co-author of the 2nd edition of the book "Resource Selection by Animals". He has presented over 30 papers/posters at national/regional meetings. His duties with WEST Inc. involve using current state-of-the-art statistical principles in designing ecological studies and analyzing subsequent data. He has recently helped develop models and approaches for modeling collision risk and other impacts of birds with wind facilities, including marbled murrelets, golden eagles and Indiana bats.

**Chris Farmer**

*Tetra Tech EC, Inc*

Dr. Farmer is a senior ecologist in Tetra Tech's Langhorne, Pennsylvania office, where he provides leadership on avian and bat issues related to renewable energy development. In his early career, Dr. Farmer specialized in behavioral ecology, large mammal population ecology, and statistical ecology, receiving his Ph.D. from SUNY College of Environmental Science and Forestry for his work on demographic responses of black-tailed deer and their predators to industrial logging in Alaska. Subsequently, he turned his attention to population and movement ecology of raptors, and served as the senior research biologist at Hawk Mountain Sanctuary. While at Hawk Mountain, he studied raptor migration and breeding ecology, and was the lead analyst for the Raptor Population Index, which provided the first continent-wide population trend assessment of migratory raptors. His work includes Wildlife Surveys, Eagle Conservation Plans, Incidental Take Permits and Bird and Bat Conservation Strategies for wind and other renewable energy facilities. Since publication of the draft Eagle Conservation Plan Guidance in 2011 and the subsequent publication of the Bayesian fatality analysis by the U.S. Fish and Wildlife Service, Dr. Farmer has developed pre-construction fatality estimates for numerous wind farms throughout the U.S., and has developed insight into the assumptions, inner workings, and vulnerabilities of the fatality model that lead to concrete suggestions for energy developers.

**Miguel Ferrer**

*Doñana Biological Station*

Miguel Ferrer Baena is Research Professor for the Spanish National Research Council (CSIC) and currently works in the Doñana Biological Station, where he served as Director from 1996 to 2000. He was Director at Large of the Raptor Research Foundation since 1998 and has been President of the Migres Foundation since 2003. In 2007 he joined the Expert Group on Biodiversity and Climate Change for the Council of Europe, and in 2011 was named Adjunct Professor at Boise State University. Currently, he is the Institutional Coordinator for the CSIC in Andalusia. Miguel has published over 130 papers in scientific journals included on the Scientific Citation Index and authored several books. His research has followed three main lines of work: firstly, he has studied the dynamics of small populations and the conservation of endangered species. A second line of research centres on the applied study of the impact of various different infrastructures such as wind farms, power lines, roads and railways on the environment, and how corrective measures can mitigate their impact. Thirdly, he has studied the effects of global change on species distribution and bird migration.

**Greg Forcey**

*Normandeau Associates*

Dr. Greg Forcey is a senior avian ecologist and project manager with Normandeau Associates. Greg has a BS degree in Wildlife and Fisheries Science from Penn State, a Master's Degree in wildlife and fisheries resources from West Virginia University, and a PhD in zoology from North Dakota State University. Greg's graduate research focused on evaluating avian survey techniques and modeling wetland bird abundance in relation to land use and climate on a landscape scale. At Normandeau, his current research interests include modeling avian and bat collision risks with utilities, understanding temporal changes in bird distributions using existing data sets, and developing spatial tools for modeling avian and bat collisions with wind turbines.

**Robert Gierschick**

*Wildlife Acoustics*

Robert Gierschick Director of Marketing Wildlife Acoustics, Inc. An impassioned marketer with almost 30 years of experience, Robert offers planning and guidance in the areas of marketing strategy and business development. Robert has worked with some of the most recognized companies in the world, including serving in senior marketing roles at Bose Corporation. He ran his own consulting business for over ten years and worked in private and public as well as in start-up environments ranging fleet telematics to 3D animation work for biotech and pharma. Prior to Wildlife Acoustics Robert headed the global marketing efforts for Mimio an education technology company. He has spearheaded global marketing communications work; ranging from ad campaigns, videos and promotions to direct marketing and packaging and global PR strategy. Robert holds a bachelor's degree in marketing from Michigan State University and an MBA with a concentration in corporate entrepreneurship from Babson College where he has also been a guest lecturer.

**Molly Gillespie**

*Iowa State University, Department of Natural Resource Ecology and Management*

Molly K. Gillespie is a M.S. student in the Department of Natural Resource Ecology and Management at Iowa State University. Her research involves assessing the responses of bird and bat communities to wind turbine proximity in Iowa, including the modeling of avian species' densities based upon detection probabilities, the modeling of nest survival of Red-winged Blackbirds, and the analysis of bat activity through hierarchical modeling. She has a strong interest in population biology and the application of statistics to ecological questions.

**Caleb Gordon**

*Normandeau Associates*

Dr. Gordon is a principal ornithologist for Normandeau Associates, and is an internationally recognized leader in the field of offshore wind wildlife interactions. He directs several large research projects to pioneer new offshore wildlife monitoring and risk assessment techniques for BOEM, and chairs the wildlife subcommittee for AWEA's Offshore Wind Workgroup. He has produced numerous presentations and publications, and is consulted by government, industry, and advocacy groups worldwide on offshore wind-wildlife science. He is also a leader in onshore wind-wildlife interaction biology, with extensive experience conducting site-specific risk studies and wind-wildlife research projects in the U.S. and Latin America, including direction of the Shrub-Nesting Passerine Research Collaborative.

**Jeff Gosse**

*U.S. Fish and Wildlife Service*

Jeff Gosse has served as the Regional Energy Coordinator for the U.S. Fish and Wildlife Service's Region 3 (upper Mid-West) for the past 7 years. While he works on many types of energy projects including pipelines and hydropower, his primary focus has been on wind power. Jeff served as part of the national internal Service team that developed the Service's draft Wind Guidelines. He was part of the Service workgroup that worked with the U.S. Corps of Engineers to develop study guidelines for offshore wind development. Jeff was part of the movement that led to the formation of the Great Lakes Wind Collaborative. He is the Service representative to the Collaborative, serves on the Steering Committee, and is a co-chair for the Siting and Wind Atlas workgroup. Jeff heads the Service's large-scale Great Lakes Restoration Initiative project: Wind Power: Making it Wildlife Friendly. Jeff received an M.S. and PhD in Wildlife Science from Utah State University.

**Amanda Hale**

*Texas Christian University*

Dr. Amanda Hale is an Assistant Professor of Biology at TCU and the Research Team Leader – Wind Turbine Impacts on Birds & Bats – on the TCU-Oxford-Nextera Wind Research Initiative. She received her MS in Ecology from Purdue University, W. Lafayette, IN and her PhD in Biology from the University of Miami, Coral Gables, FL. Amanda's areas of expertise include ecology and evolution, genetics, and conservation biology, and she has field experience in a wide range of habitats across North America and Costa Rica. She is a technical advisor to the American Wind Wildlife Institute and a member of several scientific organizations including the American Ornithologist's Union, Animal Behavior Society, and The Wildlife Society.

**Christopher Hansen**

*University of Missouri*

Title: Senior Research Specialist; Association: University of Missouri; Undergrad: BS at Truman State University (Kirksville, MO); Graduate: MS at University of Missouri, Thesis: Occupancy Modeling of Ruffed Grouse in the Black Hills National Forest; Current Project (2.5 years running): Ecology of Greater Sage-grouse in Response to Wind Energy Development in Wyoming

**Cris Hein**

*Bat Conservation International*

Cris Hein is the Bats and Wind Energy Program Coordinator for Bat Conservation International (BCI) and the Program Coordinator for the Bats and Wind Energy Cooperative (BWEC). Cris received his M.S in Biology from Texas State University in 2001, and his Ph.D. in Forestry and Natural Resources from the University of Georgia in 2008. Cris has been studying bat behavior and ecology for 13 years and bats and wind energy issues for 6

years. Prior to working with BCI, Cris was the lead bat biologist for ABR, Inc. Environmental Research and Services.

**Kevin Heist**

*University of Minnesota*

Kevin is a PhD candidate in the Conservation Biology program at the University of Minnesota, minoring in Statistics. Kevin's interest in wind energy began during his undergraduate studies at the University of Colorado, where he wrote a thesis on the economic and environmental policies supporting wind industry growth in Denmark while studying abroad in Copenhagen. Kevin worked in both the information technology and wind energy development industries prior to beginning graduate studies focused on assessing bird and bat fatality impacts using acoustic detectors under advisor Douglas H. Johnson, PhD.

**Jan Olof Helldin**

*Swedish Biodiversity Centre*

Jan Olof Helldin is wildlife biologist and research leader at the Swedish Biodiversity Centre and SLU. His present research deals with effects on biodiversity of various human exploitation enterprises, such as roads, railroads, wind power, and bioenergy. He has a particular interest in positive synergies between production and conservation.

**Lauren Hooton**

*Normandeau Associates*

Lauren Hooton is a bat biologist with Normandeau Associates. She has both a B.S. and M.S. in ecology from the University of Western Ontario. Her graduate work focused on identifying critical stopover sites for migratory bats. Lauren has conducted or contributed to bat research in a variety of environments, including Costa Rica, Belize, and various locations throughout the United States and Canada. Her current research interests at Normandeau include understanding the correlations between bat activity and weather patterns, and using these data to develop predictive models of bat activity at potential wind energy facilities.

**Daniel Houck**

*National Renewable Energy Laboratory*

Dan Houck is a recent graduate of Portland State University with a BS in Mechanical Engineering. Previously, he obtained his BA in Liberal Arts at St. John's College, MD. He completed the work presented here over the summer of 2012 at the National Renewable Energy Laboratory's National Wind Technology Center.

**Shay Howlin**

*WEST, Inc.*

Shay Howlin has 13 years of consulting experience as a biometrician with WEST Inc. Shay has been involved in ecological monitoring studies and analyses, designing and estimating resource selection functions, writing statistical analysis plans, designing databases, and wildlife research. Shay has worked on fatality estimation associated with wind power and take estimation for Habitat Conservation Plan's. Shay has training and experience in many areas of statistics including sampling design, generalized linear models, occupancy estimation, and bootstrap methods. Shay received a B.S. in Wildlife and Fisheries Science from the Pennsylvania State University, and an M.S. in Statistics from Oregon State University. Shay currently lives in Laramie, Wyoming.

**Manuela Huso**

*U.S. Geological Survey*

In April 2011, Manuela Huso joined the USGS Forest and Rangeland Ecosystem Science Center (FRESC) as a Research Statistician addressing statistical issues involved in determining the effects of wind power development on wildlife and habitats. Before coming to the USGS she spent more than 20 years as a statistician at Oregon State University, teaching statistics to students in natural resources and collaborating with faculty and students in the College of Forestry to design research studies, develop appropriate statistical models, analyze data and interpret results. She became interested in wind power in 2003 through a former graduate student who sought her help in understanding the process being used to estimate wildlife fatality at wind farms. Since that time she has been involved in design and analysis of pre-construction studies relating bat activity to meteorological data, as well as post-construction studies to evaluate the efficacy of acoustic deterrent and operational curtailment of turbines in reducing bat fatalities. Her recent research has focused on improving estimators of fatality in order to better assess the effects of wind power generation facilities on wildlife and the potential for mitigation of these effects through deterrent or management techniques.

**Anne Jakle**

*Ruckelshaus Institute, University of Wyoming*

Anne Jakle is the Interim Assistant Director of the Ruckelshaus Institute of Environment and Natural Resources at the University of Wyoming. In this role, she manages research projects and collaborative processes and events on natural resource issues facing Wyoming and the West. Prior to moving to Wyoming, she worked for a variety of resource management and research initiatives. Her past employers include the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy, Rocky Mountain Institute, and World Resources Institute. Jakle also spent time as a Fulbright Scholar in New Zealand, where she earned a Masters in Applied Science in Natural Resource Management from Massey University. She holds a BA in Environmental Studies from Dartmouth College.

**Douglas Johnson**

*U.S. Geological Survey*

Douglas Johnson is a research statistician with the U.S. Geological Survey and an Adjunct Professor at the University of Minnesota. He has been involved in wind-wildlife issues for more than a decade, with activities including field studies of grassland bird avoidance, development of siting tools, and analytic methods. His students address topics such as monitoring low-elevation flight activity of birds and bats, and identifying migration pathways of birds.

**Greg Johnson**

*WEST, Inc.*

Greg Johnson has been an Ecologist and Project Manager for WEST since 1991. He received a B.S. degree in Wildlife Conservation and Management and a M.S. degree in Zoology and Physiology from the University of Wyoming. He has over 25 years of consulting experience in wildlife and ecological studies. He is a Certified Wildlife Biologist through The Wildlife Society, a Professional Wetland Scientist through the Society of Wetland Scientists, and a certified Senior Ecologist through the Ecological Society of America. He is a member of the Ecological Society of America, The Wildlife Society, Society of Wetland Scientists, Wyoming Bird Records Committee, and the National Wind Coordinating Committee Wildlife Working Group. Mr. Johnson has 17 years of experience conducting avian, bat and other wildlife research associated with windpower developments in 18 U.S. states and Alberta, Canada. Research experience includes baseline avian and bat surveys, threatened and endangered species assessments, habitat conservation plans, avian and bat mortality studies, rare plant surveys, and assessing indirect effects to birds and other wildlife. He is the author/coauthor of 30 publications and 38 presentations at scientific meetings on wind power interactions

with birds and bats. He was the lead author of the renewable energy chapter of the 2011 book “Energy Development and Wildlife Conservation in Western North America” edited by David Naugle.

**Dave Johnston**

*H. T. Harvey & Associates*

Dave Johnston is a Senior Wildlife Ecologist at H.T. Harvey & Associates and has worked with California bats since 1992 when he began his Ph.D. thesis on pallid bats at York University under Dr. Brock Fenton. Dr. Johnston has since collaborated with Fenton and others on scientific papers involving the biology of bats in Africa and Central America. Through H. T. Harvey & Associates, Dave has worked on over 50 transportation-related projects involving mitigation measures for bats, and he has also conducted large scale surveys for bats on federal lands for many agencies. Dave taught Mammalogy and Ecosystems of the San Francisco Bay Area as a lecturer at Santa Clara University and is now an Adjunct Professor at San Jose State University. He and his students are investigating the foraging ecology of various bats in California, the impacts to bat populations from urbanization and transportation issues, and swimming behavior in bats. Dr. Johnston and his colleagues at H. T. Harvey & Associates and ABR, Inc. recently completed their 2-year study using marine radar, night vision goggles, acoustic surveying, and daily carcass searches to investigate wind turbine impacts to bats and birds at the Montezuma Hills Wind Energy Area. Dave is currently investigating long-term solar energy impacts to bats and birds at a project with 880,000 solar panels, and he is monitoring long-term mitigation efforts for the Hawaiian hoary bat. Dave teaches workshops on bats through the California Academy of Sciences, The Wildlife Society, and Bat Conservation International. He is the Vice-president of the Western Bat Working Group serves on the scientific advisory committee for San Francisco Bay Bird Observatory, as a peer reviewer for the journal *Mammalia*, and on the Scientific Advisory Committee for the Altamont Pass Wind Energy Resource Area (APWERA) and in other advisory capacities. Dr. Johnston is currently working on a Conservation Plan for Bats of California and has on-going bat projects in Belize and Baja California.

**Nathan Jones**

*Colorado State University*

Nathan Jones is a conservation biologist and landscape ecologist. His research interests include the direct and indirect impacts of energy development on wildlife and finding novel ways to balance the conservation of wildlife with the demands of society. Nathan has worked in the private industry on oil, natural gas, and wind energy projects from the outer banks of North Carolina to the north slope of Alaska. As a consultant, Nathan has strived to improve the quality of scientific inquiry and believes in the value of objectivity over advocacy. Nathan holds a B.A. in Biology from Western State College in Gunnison, Colorado, and an M.S. in Fish, Wildlife, and Conservation Biology from Colorado State University in Fort Collins, Colorado. He is currently working as a Research Biologist with ABR, Inc. in Anchorage, Alaska.

**Todd Katzner**

*West Virginia University*

Dr. Todd Katzner is a Research Assistant Professor in the Division of Forestry and Natural Resources at West Virginia University and a co-founder of the wildlife telemetry company Cellular Tracking Technologies, LLC. His research program focuses on conservation and ecology of birds of prey, especially eagles and vultures, in the United States and in central Asia. Dr. Katzner’s recent research is focused on movement ecology of golden eagles, in the Appalachian Mountains and in southern California. He received his B.A. in Biology from Oberlin College, an M.S. in Zoology and Physiology from the University of Wyoming, and a Ph.D. in Biology from Arizona State University, where he studied the ecology of a community of eagles at the Naurzum National Nature Reserve in north-central Kazakhstan.

**Eric Kershner**

*U.S. Fish and Wildlife Service*

Dr. Kershner is a wildlife biologist for the U.S. Fish and Wildlife Service, Division of Migratory Bird Management. Eric currently works on a variety of issues including assisting Federal Agencies to achieve compliance with Executive Order 13186 and tracking advances with Offshore Wind Energy development. Before coming to Arlington, Virginia, Eric worked in the California/Nevada Regional Migratory Bird office focusing on renewable energy development and local bird conservation issues. Prior to working for the Service, Eric worked for DoD as the Head Wildlife Biologist at Marine Corps Base Camp Pendleton overseeing base resource management and for the Institute for Wildlife Studies leading conservation and recovery efforts for multiple federally listed species in southern California and the Mariana Islands, Micronesia. Eric received his B.S. from Baldwin-Wallace University, M.S. from Eastern Illinois University, and his PhD from the University of Illinois, where he focused his research on the conservation of grassland birds.

**Patrick Kolar**

*Boise State University*

Patrick Kolar is currently a graduate candidate in the Raptor Biology M.S. program at Boise State University. He graduated from Montana State University in 2003 with a B.S. degree in Fisheries and Wildlife Management and subsequently worked on a wide variety of seasonal wildlife research projects for a variety of state and federal agencies, universities, and non-profit organizations. These involved tracking fledgling Ferruginous Hawks in Utah, conducting raptor migration counts in Idaho, tracking and capturing wolverines in Montana and lynx in Colorado, capturing Red Kite and Barn Owls nestlings in Denmark, and studying Spotted and Barred Owls in Washington and Oregon.

**Thomas Koronkiewicz**

*SWCA Environmental Consultants*

Mr. Koronkiewicz has 15 years of experience in avian ecology and habitat studies. As an avian ecologist and riparian habitat specialist, he has developed and managed numerous avian ecology, threatened and endangered species, demography, presence/absence, food base, brood parasitism, habitat, long-term monitoring of marked populations, and migration studies. Mr. Koronkiewicz specializes in developing and managing avian research projects with complex field logistics, covering wide geographic and jurisdictional areas. As a research specialist at Northern Arizona University, he developed and managed avian studies throughout the southwestern U.S. and New World Tropics, with a focus on habitat function related to avian species. He has been conducting endangered Southwestern Willow Flycatcher studies since 1997 and is an expert on the species. Mr. Koronkiewicz is currently an avian ecologist for long-term avian studies in Grand Canyon and along the Virgin, Muddy, White, Bill Williams, Salt, and Gila Rivers and tributaries in Nevada, California, and Arizona. He has led numerous avian surveys, habitat monitoring, and demography/banding field studies, both domestic and international. Mr. Koronkiewicz specializes in threatened, endangered, and protected avian studies, including Southwestern Willow Flycatcher, Yuma Clapper Rail, Yellow-billed Cuckoo, Mexican Spotted Owl, and Golden and Bald Eagle. He has played a key role in development and publishing of avian survey, capture, and color banding techniques. Mr. Koronkiewicz's most recent studies concentrate on the development and implementation of avian pre-construction studies and habitat/listed species assessment studies related to alternative energy development in California, Arizona, and Nevada. Specific wind energy related studies include Golden Eagle occupancy, productivity, home range, movement and telemetry studies; large- and small-bird use studies; and raptor migration studies. Mr. Koronkiewicz is currently involved with the development of several Avian and Bat Protection Plans and Eagle Conservation Plans. Most of his work has been with museums, universities, and federal, state, private, local, and international agencies. Mr. Koronkiewicz is currently serving as a graduate student adviser at Northern Arizona University.

**Karl Kosciuch**

*Tetra Tech*

Dr. Karl Kosciuch is a senior biologist and project manager with over 14 years experience in laboratory and field biology. Karl has worked at the intersection of wind energy and wildlife for approximately 5 years, and has a broad understanding of the major issues in the field. He works actively on wind and solar energy projects with complex permitting and wildlife issues where he designs studies, conducts field work, and meets with agencies and other stakeholders. Karl is involved in several wind projects involving golden eagles, and he has a robust understanding of the current regulations.

**Ronald Larkin**

*Illinois Natural History Survey, University of Illinois*

Ronald P. Larkin, Ph.D., is a wildlife ecologist with the Illinois Natural History Survey, University of Illinois. Ron Larkin does conservation-oriented research on flying animals, including use of radar, bioacoustics, and radio tracking. His laboratory operates a stationary-beam bird- and bat-counting radar and the only tracking radar used for non-classified research in the Western Hemisphere. He has published about 40 papers in refereed scientific journals including prominent review articles on use of radar to observe animals and wind/wildlife interactions. Dr. Larkin is a regular speaker on the topic of wind energy effects on flying wildlife. Research sponsors have included US Army, Navy, and Air Force; FAA, National Science Foundation, US Fish and Wildlife Service, US Department of Agriculture, US Department of Energy, and several conservation NGOs.

**Chad LeBeau**

*University of Wyoming; WEST*

Mr. LeBeau is a biologist with WEST. He is a 2008 graduate of the University of Wyoming with a Bachelor of Science degree in Wildlife and Fisheries Biology Management and Environment and Natural Resources. Mr. LeBeau recently completed a MS degree in Ecosystem Science and Management at the University of Wyoming where he studied the impacts of wind energy development to greater sage-grouse in southeastern Wyoming. He has over five years of experience conducting biological field studies. His work primarily focuses on sagebrush ecosystems where he has studied numerous species. Mr. LeBeau's current research involves sage-grouse habitat selection and demographic responses to wind energy development and identifying golden eagle priority habitats prior to resource development.

**Sherry Liguori**

*APLIC and PacifiCorp*

Sherry Liguori is the Avian Program Manager for PacifiCorp (Pacific Power/Rocky Mountain Power), and is based out of Salt Lake City, UT. She is current Chair of the Avian Power Line Interaction Committee (APLIC) and was the project manager and primary author of Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. She has 18 years of professional experience as an avian biologist, working for the New Jersey Endangered & Nongame Species Program, HawkWatch International, and PacifiCorp. She has a B.S. in Natural Resource Management and Wildlife Biology and a M.S. in Ecology and Evolution, both from Rutgers University.

**Todd Mabee**

*ABR Inc.*

Todd Mabee is a Senior Scientist and Research Coordinator with ABR, Inc.—Environmental Research & Services in Forest Grove, Oregon. He received a B.A. degree in Environmental, Population, and Organismic Biology from the University of Colorado, Boulder and an M.S. degree in Zoology from Colorado State University. His research interests include the study of avian and bat issues at wind projects in the US and

Mexico, nocturnal bird migration in the U.S, the breeding biology of shorebirds, raptor ecology, and the ecology of headwater amphibians in Oregon. Todd has authored 15 peer-reviewed articles on topics including nocturnal bird migration at proposed wind projects, radar ornithology, shorebird ecology, and amphibian ecology.

**Kevin Martin**

*Terra-Gen Power*

Kevin has worked in the field of utility-scale wind development since 2007. His work has taken him throughout the western and central United States in dealing with the species and habitats contained within them. As the Director of Environmental Permitting for Terra-Gen Power Kevin's current work is primarily focused on programmatic take permitting for Golden eagle and take avoidance systems for California condor as they relate to wind energy development in the California desert. Kevin's undergraduate work is in the field of fisheries and wildlife management followed by graduate work in resource economics.

**Cara Meinke**

*WEST, Inc.*

Ms. Meinke is a wildlife biologist with 17 years of experience conducting and coordinating a wide range of ecological studies throughout the United States for private, governmental, and academic institutions. Her work over the past six years has focused on understanding the effects of wind power development on bats and birds and developing effective solutions to avoid, minimize, and mitigate those effects. She is currently developing several Habitat Conservation Plans and Biological Assessments for Indiana bats at multiple wind facilities in the eastern United States. Prior to her focus on wind-wildlife interactions, Ms. Meinke's research focused on diverse topics and focal species, including evaluating impacts to greater sage-grouse and sagebrush-associated species in the Intermountain West for the USGS, investigating the effects of wolf reintroduction on coyote behavior and demographics in Yellowstone National Park, and documenting mountain lion habitat use relative to human activity in Redwood National Park. Ms. Meinke has authored multiple peer-reviewed papers and book chapters. She is a co-author of two chapters in a special monograph in *Studies in Avian Biology* that examines trends in greater sage-grouse populations and relationships among sage-grouse, sagebrush habitats, and land use. Ms. Meinke is passionate about conducting research that furthers scientific understanding about the ecology and management of species of conservation concern.

**Tricia Miller**

*West Virginia University*

Tricia Miller is a Wildlife Biologist at West Virginia University where she studies movement ecology and conservation of eagles with a focus on the small population of eastern North American golden eagles. Her research integrates telemetry and spatial modeling to address conflicts with human development. She received her B.S. in biology from the University of Nevada, Las Vegas, her M.S. and Ph.D. in ecology from The Pennsylvania State University.

**Kevin Mixon**

*Minnesota Department of Natural Resources*

Kevin has been working as a Regional Environmental Assessment Ecologist for the Minnesota Department of Natural Resources (MNDNR) in the Southern Region since 2009. He has a B.S. in Biology, B.A. in Business Administration, and M.S. in Wildlife. He is a member of the Interagency Energy Working Group, MNDNR Wind Team, and MNDNR Transmission Team. Kevin was the primary writer of the MNDNR Wind Guidance Document and is currently working on Avian and Bat Survey Protocols for Large Wind Energy Conversion Systems in Minnesota.

**Mike Morgante**

*Ecology and Environment, Inc.*

Mr. Morgante has coordinated and provided expert support for Ecology & Environment's (E & E) avian field studies, avian risk assessments, and related environmental studies throughout North America for 14 of his 18 years at E & E. Since 2002, he has been involved with avian studies and the evaluation of potential impacts at more than 75 proposed and existing wind projects in the United States, most prominently in the eastern and central United States. Mr. Morgante has prepared the avian and bat studies scope of work (SOW) and field protocol for numerous surveys; led and participated in various surveys for raptors, threatened and endangered (T/E) species, migratory birds, breeding birds, and wintering birds; prepared avian and bat risk assessments; developed protocols for and implemented avian and bat mortality studies; and made numerous presentations to governmental authorities, regulatory agencies, and the public. In addition, Mr. Morgante has also managed the preparation of several environmental impact statements (EISs) for proposed wind projects and a third-party environmental assessment (EA) for an endangered species incidental take permit. He has coordinated or is in the process of coordinating with clients and/or regulatory agencies regarding Bald Eagles on more than a dozen sites, most of which include Bald Eagle-specific field surveys, and several of which are pursuing or considering pursuit of Eagle Conservation Permits (ECPs) and/or Bird and Bat Conservation Strategies (BBCSs). In June 2012, Mr. Morgante was invited to participate in a panel discussion on eagle issues at the American Wind Energy Association annual conference.

**Laura Nagy**

*Tetra Tech*

Dr. Laura Nagy is the Natural Resources Discipline Lead for Tetra Tech specializing in endangered species issues, avian systems, population ecology, and statistical ecology. Dr. Nagy's focus has been providing biological support to the wind industry including addressing eagle management issues, avian and bat protection plans, habitat conservation plans, and section 7 consultations for wind development. Dr. Nagy has also developed experimental study designs to address questions associated with direct and indirect impacts of wind development. In addition to the study of avoidance behavior of whooping cranes, she has investigated breeding productivity of black-capped vireos adjacent to wind farms, bald eagle movement patterns for impact minimization, and has provided guidance on post-construction fatality estimation studies at operational wind farms.

**Chris Nations**

*WEST, Inc.*

Chris Nations is a Research Biometrician at WEST, Inc., where he has worked since 2001. He earned a B.S. degree in Zoology from the University of North Carolina – Chapel Hill, and M.S. degrees in Zoology and Physiology, and Statistics, both from the University of Wyoming. In addition to impact assessments for wind development, Chris has worked on a wide variety of projects including studies of long-billed curlew regional population status, population trends of murrelets in Prince William Sound, and effects of sounds from oil exploration and development on migrating bowhead whales in the Beaufort Sea.

**Ling Ong**

*SWCA Environmental Consultants*

Dr. Ong has more than 10 years' experience with terrestrial and marine ecological studies in the tropics. She has conducted conservation research in tropical forests of Singapore and Malaysia through the Conservation and Behavioural Ecology Laboratory at the National University of Singapore. Her work encompassed point counts, mist-netting, blood work, and behavioral ecology for forest birds. She completed her doctoral studies on parrotfish ecology at the University of Hawai'i. Her research identified the contributions of parrotfish to sand production and bioerosion on the reefs, the effectiveness of Marine Protected Areas in conserving

parrotfish stocks, and the effects of harvesting these fishes on the ecology of the reef. Her experience includes an island-wide census of parrotfish stocks and collection of reproductive data. She is currently involved in the long-term coral reef monitoring within a Marine Protected Area. She also provides peer review of scientific papers and technical papers for refereed journals and government agencies. At SWCA, Dr. Ong provides scientific expertise in the field of wildlife ecology, including technical advice to help clients comply with the Endangered Species Act, and to develop sustainable environmental practices. She has specific expertise with the design and conduct of long-term bird and bat population studies. She has authored three multi-species Habitat Conservation Plans (HCP) which include development of mitigation options with multi-agency cooperation to ensure net conservation benefit to the affected endangered species. She is committed to helping clients achieve their sustainable development objectives, while benefitting the indigenous flora, fauna, and environment of each project area.

**Steve Pelletier**

*Stantec Consulting, Inc.*

Steve Pelletier is a Certified Wildlife Biologist, Professional Wetland Scientist, and Principal Scientist at Stantec Consulting with over 30 years of professional experience. His particular interest is landscape and site level habitat analyses, habitat fragmentation and rare species assessments, and natural resource mitigation. Mr. Pelletier has been directly involved in the design and oversight of various habitat and wildlife surveys at wind farms throughout the US, including over 150 seasons of avian radar and acoustic bat migration studies. He recently completed a three year offshore acoustic bat study in the Gulf of Maine and currently serves as the Principal Investigator of a 3-year DOE-funded offshore research effort being conducted in Atlantic and Great Lakes regions and as the Principal Investigator of a comparative analysis study involving terrestrial and offshore acoustic data sets, funded by the Bureau of Ocean Management.

**Chris Pendlebury**

*Natural Power*

Dr Chris Pendlebury, Principal Offshore Ecologist, Natural Power, works on a combination of offshore, wave/tidal and onshore projects, with nine years of ecological consultancy experience, having previously worked at BTO Scotland. For the offshore wind industry, Chris has managed ecology surveys for eight sites in the UK (including Humber Gateway, Robin Rigg and Rampion for EON), and is/has been involved in writing the ornithology ES for four sites, working towards informing Habitat Regulations Appraisals at three sites, and post-construction monitoring for four sites. For the onshore wind industry, Chris has been involved in a range of services (baseline data collection and analysis, ES chapters, Appropriate Assessment, post-construction monitoring, habitat management plans) for another 50 sites. Chris has also managed the ecological baseline data-collection for two tidal projects in the Pentland Firth, including consultation with SNH regarding survey methodologies and requirements. Chris has also led a project for the Welsh Assembly Government, producing a literature review on the risks of wave and tidal developments to seabirds in Welsh waters, and developing methodologies for ornithological assessment for EIA. Chris has also: represented developers in UK Crown Estate Ornithology Group; and worked on guidance on the use of remote technology for ornithological assessment of offshore wind farms.

**Anna Peterson**

*University of Minnesota*

Over the years, Anna has worked in various teaching and bird-research positions across the country including formative positions as a raptor bander for Hawk Watch International and college faculty member at Teton Science Schools. These positions solidified her passion for bird migration and teaching. Anna is currently a PhD Candidate in the Conservation Biology program at the University of Minnesota studying the fall bird migration along the North Shore of Lake Superior. When not writing her dissertation or birding, Anna can be found canoe racing, trail running, and cross-country skiing.

**Martin Piorkowski**

*Arizona Game and Fish Department*

Martin Piorkowski graduated from The Pennsylvania State University in 2001 with a B.S. in biology and Oklahoma State University in 2006 with a M.S. in zoology. His graduate research at OSU focused on spatial distribution of wind turbine caused fatalities and habitat suitability for breeding grassland birds in proximity to wind energy development. Martin has 9 years of working experience on a variety of wind-energy related projects across the country with organizations including Iowa Department of Natural Resources (2003), Bat Conservation International (2006) and the Cornell Lab of Ornithology (2006-2012). In 2012 he joined the Arizona Game and Fish Department to expand the Department's efforts to investigate renewable energies and wildlife interactions.

**Donald Ronning**

*Lite Enterprises Inc*

Donald Ronning, Pres. and Founder of Lite Enterprises designs and builds a range of optical, electronic, software containing custom algorithms systems for a range of customers. Lite Enterprises offers a customized defect inspection system for the semiconductor industry. His earlier experience includes executive management of production equipment to the semiconductor and display manufacturers. Prior experience included engineering positions involving film and camera manufacturing. He received the BS degree from in Photographic Science (Phi Kappa Phi) from St. Cloud State College, St. Cloud, Minnesota, a BS in Chemistry from South Dakota State College, and Masters of Business Administration (honors) from Boston University.

**Jerry Roppe**

*Iberdrola Renewables*

Jerry Roppe is the Wildlife Operations Compliance Manager at Iberdrola Renewables. He received his Master's degree in wildlife biology at Colorado State University. Jerry has over 25 years working in energy development and operations with mining; thermal, hydro, nuclear, solar, and geothermal generation; transmission and distribution power lines; and wind. He is currently providing technical support and compliance oversight at over 40 wind projects in 23 states for Iberdrola. His involvement in avian issues dates back to his role as one of the founding members of the Avian Power Line Interaction Committee (APLIC).

**Brett Sandercock**

*Kansas State University*

Brett K. Sandercock is a Professor of Wildlife Ecology in the Division of Biology at Kansas State University. Dr. Sandercock has 25 years of field experience working in grassland and arctic ecosystems, has published an edited book on grouse ecology and over 75 peer-reviewed research articles on the population biology and behavioral ecology of wild vertebrates. He is currently Series Editor for Studies in Avian Biology and is an Associate Editor with the Journal of Animal Ecology. He has been recognized for his contributions to ornithology as a Fellow of the American Ornithologists Union and has received awards for undergraduate teaching and graduate mentoring at Kansas State University. Dr. Sandercock directed a 6-year field study of the effects of wind power development on Greater Prairie-Chickens in eastern Kansas.

**Michael Schirmacher**

*Bat Conservation International*

Michael Schirmacher is a Conservation Biologist at Bat Conservation International (BCI). Mr. Schirmacher received his M.S. in 2006 from the University of Georgia. He has studied bats for the past 11 years and has extensive experience using acoustics to study bat activity patterns. Michael is the Field Projects Manager for

BCI's Bats and Wind Energy Program and has led numerous research studies over the past 6-years. He was the field manager for the first US-based operational mitigation study and the first utility-scale test of ultrasonic deterrents. He is the author or co-author on several reports and publications.

**Jon Schubbe**

*HDR Engineering*

Mr. Schubbe has worked as an environmental scientist with HDR Engineering in Minneapolis since 2007. He specializes in a wide array of disciplines including avian consultation and monitoring, endangered species consultation and surveys, wetland delineation reporting, and GIS analysis. Most of his experience has been in support of wind farm and utility development in the Upper Midwest. Jon has participated in projects targeting specific sensitive species, point count surveys designed to provide an index of overall avian use, aerial and ground stick nest surveys to locate nesting locations of sensitive raptors as well as habitat identification and review. Specific projects of interest include northern goshawk monitoring in the Colorado Rockies, piping plover surveys in Central North Dakota and aerial bald eagle stick nest surveys in Central Minnesota. Jon has also developed habitat models to for various sensitive species. Jon's GIS experience includes ArcView™ and various GPS applications. Prior to starting work with HDR Engineering, Mr. Schubbe attended University of Wisconsin – Green Bay as a student-athlete. He graduated in 2006 with a Baccalaureate in Environmental Science with an Ecology Emphasis and a Baccalaureate in Environmental Planning. In his free time Jon enjoys traveling, fishing, mountain biking, bird watching and spending time with his wife, family and friends.

**Lynn Sharp**

*Tetra Tech*

Lynn Sharp is a senior wildlife ecologist and project manager with Tetra Tech Inc. in Portland, Oregon. She has been involved in wind power projects since the 1990s. Lynn has been involved in dozens of wind projects and is working on developing mitigation strategies, conservation plans, and wildlife protection plans. She is also involved in environmental baseline and impact studies of wildlife for wind power and related transmission projects that include addressing issues related to eagles, marbled murrelets, northern spotted owls, and greater sage-grouse.

**Donald Solick**

*WEST, Inc.*

Donald Solick is a bat biologist with 17 years experience conducting research on bats and other wildlife throughout North America and Canada. He received his M.S. in Ecology from the University of Calgary, Alberta, and his B.S. in Wildlife Biology and B.A. in Environmental Studies from The Evergreen State College, Washington. Donald joined Western EcoSystems Technology (WEST), Inc. in 2007. He serves as Assistant Coordinator for the Bat Research Program and Coordinator for Radar Studies. He is responsible for acoustic monitoring surveys (using AnaBat and full-spectrum detectors) to determine bat activity, radar and night-vision surveys to monitor bat (and bird) migration and behavior, mist net surveys to determine presence/probable absence of bat species (including threatened and endangered species), radio-telemetry studies to determine roosting, foraging, and thermoregulatory behavior of bats, and nightly emergence counts of bats at building, mine, and tree roosts. Donald also serves on the board of directors for the Western Bat Working Group, and lives in Fort Collins, Colorado.

**Michelle Sonnenberg**

*WEST, Inc.*

Michelle Sonnenberg is a statistician at WEST Inc. Since joining WEST in 2008, Michelle has worked on numerous pre- and post-construction wind projects evaluating impacts to wildlife. Her current research

interests include fatality estimation study design and methods, eagle risk assessment, and rare event probability estimation. Michelle holds two M.S. degrees from Colorado State University, in Mathematics (1996) and Statistics (2008). She previously presented at the NWCC conference in Lakewood in 2010 and at the AWEA 2012 conference in Atlanta, as well as other professional workshops and meetings.

**Brad Steffen**

*BHE Environmental, Inc.*

With both a Master of Science a Bachelor of Science in Zoology and over 10 years of experience as an ecological and environmental consultant, Mr. Brad Steffen serves as Project Manager and Biologist for BHE Environmental, Inc. Mr. Steffen specializes in the study of Indiana bats (*Myotis sodalis*) and holds a valid US Fish and Wildlife Service Endangered Species Permit. In addition, he holds a Tennessee Wildlife Resources Agency Scientific Collection Permit for Indiana bat and gray bat. He manages and executes multiple projects simultaneously for government and private sector clients. Other certifications and trainings for Mr. Steffen include T&L Contractor Safety, OSHA 10-hour Construction Safety, Vertical Caving, and Fire L-180, I-100, S-130, S-190, S-212 which he is red card certified (Arduous). In the course of his employment, Mr. Steffen has performed wetland, stream, and threatened and endangered species surveys. Recent project completions include leading field teams to conduct bat species inventories; mist net and radio telemetry surveys; programmatic biological assessments to evaluate the effects of forest and fire management programs; Anabat acoustic surveys; invasive species management plans; prairie restorations; surveys for eastern massasauga; and mammal and butterfly inventories. Mr. Steffen often coordinates correspondence and meetings among clients, subcontractors, field crews, and governing agencies. In addition to final report productions, Mr. Steffen is often responsible for data collection, identification, and analyzing. Mr. Steffen's extensive project leading has given him experience in industries such as wind power, oil and gas, pipeline, and electric transmission. Prior to joining BHE, Mr. Steffen completed a Master's thesis on the climatic characteristics of several important bat hibernacula in Illinois after completing a long-term study involving remote data collection, bat surveys, and statistical analyses. He also conducted several investigations involving collection of acoustic data using Anabat ultrasound detectors. Mr. Steffen has published several scientific papers on the ecology of bats.

**Brian Tanis**

*Fort Hays State University*

Brian Tanis is a Graduate Student in the Department of Biological Sciences at Fort Hays State University in Hays, Kansas. Brian is a mammalian evolutionary ecologist interested in interactions at the community and population levels. Brian completed his undergraduate education in 2010 at Susquehanna University, in Selinsgrove, Pennsylvania, receiving a B.S. in Biology and a B.S. in Ecology. His undergraduate thesis explored ecological reconstruction of the paleofauna from a Quaternary cave system in central Pennsylvania. Currently, Brian is completing his Master's thesis exploring the ecological impacts of wind turbines on mammalian mesocarnivores and anticipates graduating in May of 2013.

**Katie Taylor**

*University of Wyoming*

Katie Taylor is currently working on her master's project in the Department of Ecosystems Science and Management at the University of Wyoming. Along with master's adviser Dr. Jeffrey L. Beck, Katie is currently evaluating the impacts of wind energy development on pronghorn on their crucial winter range. She earned her undergraduate degree in biology from Seattle Pacific University in 2009. Since then, Katie has explored various venues of wildlife research working as a field technician for the University of Wyoming, US Geological Survey, private consulting companies, and the Bureau of Land Management. She has worked on wildlife projects involving black-tailed deer, sage-grouse, wolves, raptors and pronghorn.

**Kenton Taylor**

*WEST, Inc.*

Kenton Taylor is a project manager and wildlife biologist for WEST. Kenton received a B.S. in Zoology and Physiology from the University of Wyoming in 2001 and an M.S. in Zoology and Physiology, with a minor in Statistics from the University of Wyoming in 2004. Kenton's graduate studies were focused around waterfowl production on created wetlands in N.E. Wyoming. Kenton has worked for WEST since graduating in 2004. Kenton has experience working on a variety of biological surveys related to wind power projects, pipelines, and highway/pathway construction. One of Kenton's specialty areas includes evaluating the interaction between wind energy developments and golden eagles. Recently, Kenton has been involved in all aspects of the development of Bird and Bat Conservation Strategies and Eagle Conservation Plans related to wind energy developments across the U.S.

**Joel Thompson**

*WEST, Inc.*

Joel Thompson - Wildlife Biologist Joel Thompson joined the WEST staff in 2008 as a Field Biologist then transitioned into his role as a Wildlife Biologist/Project Manager later that year. Joel received his B.S. degree in Wildlife Management from Humboldt State University in 1995 and his M.S. in Wildlife Management from Humboldt State in 2008. Joel's M.S. research focused on estimating fisher density on a managed landscape in northern California. Joel has worked extensively with northern spotted owls and a variety of other sensitive forest species. Prior to joining WEST, he worked primarily on studies assessing the impacts of forest management on species abundance and distribution. In his role with WEST, Joel has primarily managed projects related to assessing the potential impacts on wildlife from wind and solar energy development. Additionally since joining WEST, Joel has been conducting work related to highway development projects, prairie-dog monitoring, and assessing the distribution of Preble's jumping mouse in Wyoming. Joel lives in Cheyenne with his wife Karen, daughter Piper, and son Cooper. He enjoys spending time with his family, especially if it involves being in the great outdoors hunting, fishing, camping, hiking, biking, or boating.

**David Tidhar**

*WEST Inc.*

David Tidhar is a Wildlife Biologist and Project Manager with WEST, Inc. David has over 15 years of experience and has worked principally on wind energy projects in over 15 states during the past 6 years. While much of his work in the field of wind energy and wildlife interactions has centered around direct and indirect effects analysis to birds and bats, David has also led studies assessing the impacts of wind energy to terrestrial animals, including Alleghany woodrat, Blanding's turtle, Canada lynx, and black bear. David has a strong interest in the field of human disturbance, specifically on understanding the behavioral and habitat use responses of wildlife to our activities. This topic sparked his initial interest in wildlife ecology and his MS research at the University of Aberdeen, Scotland (2000) was a study of the behavioral and short-term spatial responses of red deer to recreational disturbance. David is WEST's Northeast and Mid-Atlantic Branch Manager and he lives in Waterbury Vermont with his wife and daughter. Since opening this regional office in 2008, most of David's work has been within the eastern US, however he continues to work in the southwest where he previously worked for the USGS Colorado Plateau Research Center, Arizona Game and Fish Department and WEST.

**Junior A. Tremblay**

*Ministère des Ressources naturelles et de la Faune*

Junior A. Tremblay is biologist at the wildlife department of the government of Québec. He is in charge of research projects concerning birds of prey and he is the provincial coordinator of wind and wildlife issues. His main research is focused on telemetric monitoring of endangered raptors (Bald Eagle, Golden Eagle and

Peregrine Falcon) that breed near wind farm. This research aims to develop mitigation measures for wind farm development. His work aims also to document fatalities of bird and bat at wind projects in Québec.

**Karen Tyrell**

*BHE Environmental*

Karen Tyrell, Ph.D., is a Senior Vice President of BHE Environmental Inc., where her work integrates project planning and predictive impact analyses to evaluate risks to environmental resources, with the goal of resolving conflicts in a manner compatible with both development and conservation goals. Dr. Tyrell specializes in wildlife impact analyses and regulatory permit compliance, and provides a wide range of environmental support studies for the siting and operation of wind energy facilities throughout the US. Dr. Tyrell has designed and implemented projects addressing the needs of commercial developers, as well as federal, state, and municipal government organizations including the Department of Defense, the Department of Energy, the Federal Highways Administration, the US Forest Service, the US Office of Surface Mining, and the US Fish and Wildlife Service. For work supporting major military land use realignments, Dr. Tyrell is proud to have been the Kansas City District's first private-sector recipient of the US Department of the Army's Commander's Award for Public Service for professionalism and staff dedication for providing exceptional service to the Department of Defense, recognized by the US Army Corps of Engineers and the US Fish and Wildlife Service. Currently, Dr. Tyrell serves as Project Manager for the consultant team completing the regional, multi-species Great Plains Wind Energy Habitat Conservation Plan on behalf of AWEA and 18 wind energy companies, in coordination with the US Fish and Wildlife Service and state wildlife agencies throughout the Plan's nine-state region.

Karen received her doctorate from the University of Illinois, subsequently served on the faculty of the University of Tennessee, and has developed impact assessment and environmental compliance training courses for a number of federal and state environmental programs. Dr. Tyrell served on the US Fish and Wildlife Service Indiana Bat Recovery Team, and serves on technical and academic advisory committees addressing environmental effects of utility-grade wind power facilities.

**Karen Voltura**

*DeTect, Inc.*

Dr. Karen Voltura is the Director of Wind Energy Services for DeTect, Inc and coordinates all wind energy projects for the company throughout the U.S. and Europe. She has experience with applied radar technologies for real time bird detection and with techniques for risk assessment and mitigation of wildlife interactions at wind farms. She earned her B.S. from the University of Notre Dame and her PhD from the University of Oklahoma specializing in the behavioral ecology of birds. Before concentrating on the application of avian radar systems to assess and manage bird and bat mortality issues at wind energy sites Karen's focus was aviation safety and the prevention of bird strikes with aircraft for the US Air Force. Her projects included the use of avian radars and extensive work on avian migration and predicting large-scale migratory movements.

**William Warren-Hicks**

*EcoStat/Cardno Entrix*

Dr. Warren-Hicks has been involved in various aspects of wind energy for approximately ten years. He was the lead investigator of a research grant from the California Energy Commission (CEC) to the California Wind Association (CalWEA) entitled Improving Methods for Estimating Fatality of Birds and Bats at Wind Energy Facilities. The findings of this 3-year project are presented in this poster. Dr. Warren-Hicks holds a Ph.D. in environmental statistics from Duke University. His areas of expertise include the following: (1) statistical design and analysis of pre-construction surveys and post-construction monitoring projects, (2) design of pre-construction studies intended to generate site-specific survey error rates, (3) implementation of collision risk

models, including the estimation of total mortality and associated uncertainty, and (4) analysis of monitoring data for birds and bats.

**Theodore Weller**

*USDA Forest Service, Pacific Southwest Research Station*

Ted Weller is an Ecologist with the US Forest Service, Pacific Southwest Research Station in Arcata, California. Ted has worked with bats since 1996 and has published 11 papers on them in the peer-reviewed scientific literature. His research has largely focused on methodological issues and survey effort necessary to describe bat activity and characterize species assemblages and population status at multiple spatial scales. Ted has been involved with issues surrounding bats and wind energy on several fronts since 2005 and has applied multiple echolocation monitoring tools to characterize bat activity levels and develop predictive models of bat activity at wind energy facilities. His other current work focuses on the behavior and ecology of bats migrating to and through the redwood forests of northwest California where he lives.

**Kate Williams**

*Biodiversity Research Institute*

Kate Williams has biology and ecology degrees from Tufts University and the University of Florida, and has conducted field work on numerous taxa in North and Central America. Kate's research has focused on two primary topics: survey techniques and biases, and understanding the impacts of anthropogenic activities on wildlife. She is currently working at the Biodiversity Research Institute as their Wildlife and Renewable Energy Program Director, and is managing or co-managing several terrestrial and offshore baseline wildlife studies related to wind development.

**Jim Woehr**

*Bureau of Ocean Energy Management*

Dr. James Woehr is Avian Biologist for the Dept. of the Interior's Bureau of Ocean Energy Management where he proposes and/or oversees BOEM-funded research relevant to birds and offshore energy development. Jim is a Certified Wildlife Biologist who holds a Ph.D. in Ecology and M.S. in Wildlife Management from the State University of New York College of Environmental Science and Forestry, and a B.S. in Aerospace Engineering from the University of Cincinnati. Before joining BOEM in 2008, Jim worked in industry as Design Engineer with GE, in academia as Assistant Professor of Environmental Science at SUNY College at Plattsburgh, as a Financial Planner/Stockbroker for First Albany Corporation, as Coordinator of Nongame and Endangered Species Programs for Alabama Department of Conservation and Natural Resources, as Senior Scientist for the Wildlife Management Institute, and as a private consultant in environmental science.

**Terry L. Yonker**

*Great Lakes Wind Collaborative*

Terry Yonker lives in Youngstown, New York. He currently serves as Chairman of the Western New York Environmental Alliance, Energy and Climate Change Working Group. He is the Immediate Past Chair and Founding Chair of the Canadian/US Great Lakes Wind Collaborative. He is a graduate of the University of Wisconsin in meteorology and human ecology. He has studied and researched climate change for 50 years starting with Antarctica following the IGY. He has just returned from an expedition to Antarctica to observe first hand the impacts of global climate change on the continent. He has a special interest and expertise in documenting the impacts of climate change in the Great Lakes Basin Ecosystem.

**AWWI Staff**

**Taber Allison**

*American Wind Wildlife Institute*

Taber Allison is an ecologist with special expertise in wind-wildlife impacts. He joined AWWI in December 2010 to direct all research initiatives. Previously, Taber was Vice President for Science, Policy and Climate Change at the Massachusetts Audubon Society, where he led Mass Audubon's environmental evaluation of wind energy and climate change. Taber has served at the National Science Foundation, was Director of the Rocky Mountain Biological Laboratory, and taught at Ohio State University and the University of Colorado. He holds a Ph.D. in Ecology from the University of Minnesota, a Master's in Forest Science from the Yale School of Forestry and Environmental Studies, and a B.A. degree in Biology from Wesleyan University.

**Abby Arnold**

*American Wind Wildlife Institute*

Abby Arnold, who served as AWWI's interim director during its founding, rejoined AWWI as Executive Director in March 2010. Abby is known for designing collaborative processes that bring diverse stakeholders together, elevate the best available science into decision-making processes, and achieve results. As Executive Director, Abby has worked with the AWWI Board of Directors and AWWI partners to establish a Strategic Plan, adopt a five-year national Research Program Plan, implement key program initiatives, and offer a forum for dialogue. As Senior Mediator and Vice President at the Washington DC-based firm of Kearns & West, Abby has been lead facilitator and strategic advisor for the National Wind Coordinating Collaborative, the Department of the Interior's Wind Turbine Guidelines Federal Advisory Committee, and many other regional and national collaborations. Abby holds a Masters in Public Administration from Harvard's Kennedy School of Government and a B.A. in Environmental Planning and Politics from UC Santa Cruz.

**Stacie Sears**

*American Wind Wildlife Institute*

Stacie Sears joined AWWI in May 2011 and brings with her over 12 years experience as a nonprofit and higher education fundraiser. She has held senior fundraising and management positions with Environmental Defense Fund, St. Lawrence University, Middlebury College and Naropa University. In addition, she has volunteered as a Presidential campaign fundraiser and served on several non-profit boards. Stacie is a graduate of St. Lawrence University, from which she received a B.A. in Environmental Studies and Economics.

**Lauren Flinn**

*American Wind Wildlife Institute*

Lauren Flinn joined AWWI in December 2011. She brings experience in facilitation, management and consensus-building from her work at RESOLVE, where she helped facilitate and manage the National Wind Coordinating Collaborative (NWCC). Lauren holds a Master's Degree in Environmental Science and Management from the Bren School at the University of California, Santa Barbara, and a Bachelor's Degree in Biology with a concentration in Environmental Studies from Williams College.

**Trevor Tisler**

*American Wind Wildlife Institute*

Trevor Tisler joined AWWI in March 2012. He brings experience in federal environmental policy research and formulation in environmental justice and wastewater management issues from his work at MDB, Inc. where he supported junior and senior staff with stakeholder meeting facilitation and policy formulation guidance with various offices of the U.S. EPA. Trevor has past experience in international climate policy research and transportation equity research from his past internships at the U.S. Department of State and at the Brookings Institution. Trevor holds a Bachelor's Degree in International Affairs & Geography from the Elliott School of International Affairs at The George Washington University.

