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Senior Scientist

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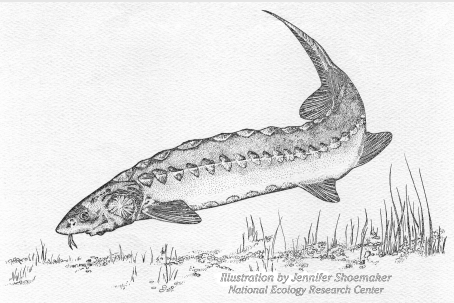
About me

Climate change is altering disturbance regimes, such as wildfire and hypoxia. These changes can be avoided by shifting to use renewable energy and thereby reducing CO_2 emissions from fossil fuels, but the shift to relying on these power sources may also alter habitat used by fish and wildlife. Our conservation research uses ecological models and optimization to understand how alternative future trajectories in energy and climate will shift the portfolio of ecosystem services available to society.



Expertise

renewable energy

ecological statistics

conservation biology

ecological modeling

Professional Experience

2015-present	Senior Scientist, Environmental Sciences Division, ORNL
2003-present	Joint Faculty Associate, University of Tennessee, Ecology & Evolutionary Biology (Conservation Science http://consci.utk.edu), Bredesen Center
1988-2015	Staff scientist Environmental Sciences Division, ORNL

Education

PhD 2000	Ecology & Evolutionary Biology, Univ. Tennessee
MS 1984	Ecology Program, Univ. Tennessee
BA 1979	Franklin Pierce & SUNY-ESF

Research Leadership

2020-2022	Water Risk for the Bulk Power System: Asset to Grid Impacts, DOE Office of Electricity, Grid Modernization
2017-2020	Visualizing Ecosystem Service Portfolios of Agricultural and Forested Biomass Production Systems. DOE Bioenergy Technologies Office
2016-2017	Model-guided conservation planning for fall Chinook salmon in the Middle Snake River. Idaho Power Company
2014-2017	Model-guided conservation planning for white sturgeon in the Middle Snake River. Idaho Power Company
2014-2016	SECURE Water Act Section 9505-2 Environmental Focus. DOE Wind and Waterpower
2009-2016	Forecasting water quality and biodiversity, DOE Bioenergy Technologies Office
2006-2014	Population viability analysis of fall Chinook salmon in the Snake River, Idaho Power Company
2008-2011	Cal Dept Fish & Game San Joaquin River fall-run Chinook salmon production model refinement, California Department of Fish and Game
2006-2010	Population viability analysis of the endangered Shortnose sturgeon in the Ogeechee River, GA, DOD Strategic Environmental Research and Development Program
2009-2010	Spatial modeling of geographic patterns in biodiversity and biofuel production, ORNL Lab Directed Research and Development Program
2000-2007	Population viability analysis of white sturgeon in the Snake River, Idaho Power Company
2005-2006	Testing and improvement of the ORCM Chinook salmon model, California Energy Commission Partnership in Energy Research Program
2001-2003	Conceptual population viability model for pallid sturgeon in the Missouri River, ORNL State Partnership Program

Recent Professional Service & Awards

- Elected Fellow of the American Association for the Advancement of Science, 2019
- President, Water Quality Section & Governing Board, American Fisheries Society, 2019-2021
- Bringing ecosystem services into the equation, Invited presentation,DOE Biotechnologies Office BioRestore Workshop, Argonne, 2019
- Co-organized 'Fire Resilience Can Fish, Wildlife, and Humans Adapt to Shifts in Wildfire Disturbance?', Joint meeting of American Fisheries Society & The Wildlife Society, 2019
- 'Agent-Based Modeling to Design Wildlife-Friendly Renewable Energy Projects' Symposium: Environmental Impact Assessment for Hydropower Regulation, American Fisheries Society, 2019
- Editorial Board River Research & Applications

Peer-reviewed Publications

Journal articles

1. Jager, HI & CC Coutant. In press 2020. Knitting while Australia burns. Nature Climate Change.
2. Jager, HI, ES Parish, MH Langholtz & AW King. 2020. Perennials in flood-prone areas of agricultural landscapes: A climate adaptation strategy. BioScience. doi.org/10.1093/biosci/biaa006.
3. Kusnierz, P, A Todd, & HI Jager. In press 2020. A Call for Collaboration among Water Quality and Fisheries Professionals. Fisheries.
4. McManamay, RA & HI Jager. 2019. Stream Biomes of the World. Encyclopedia of the Worlds Biomes. Lowell Suring, Elsevier. www.sciencedirect.com/science/article/pii/B9780124095489120470.
5. Gorelick, D, LM Baskaran & HI Jager. 2019. Visualizing feedstock siting in biomass production: tradeoffs between economic and water quality objectives. Land Use Policy 104201.
6. Kreig, JFA, I Chaubey, H Ssesane, CM Negri & HI Jager. 2019. Designing Bioenergy Landscapes to Protect Water Quality. Biomass & Bioenergy 128 105327.
7. Jager, HI & L Wickman. 2019. Waterpower: Hydropower & Marine Hydrokinetic. IN Renewable Energy & Wildlife Conservation. Mooreman, Grodsky, & Rupp, eds. Johns Hopkins University Press. 280 pp.
8. Galic, N, CJ Salice, B Birnir, RJF Bruins, V Ducrot, HI Jager, A Kanarek, R Pastorok, R Rebarber, P Thorbek & VE Forbes. 2019. Predicting impacts of chemicals from organisms to ecosystem service delivery: A case study of insecticide impacts on a freshwater lake Science and the Total Environment 682: 426-436.
9. Jager, HI, RA Efroymson & LM Baskaran. 2019. Avoiding conflicts between future freshwater algae production and water scarcity in the United States at the energy-water nexus. Special Issue: Energy-Water Nexus, Water 11(4): 836-851.
10. Chen, H, Z Daib, HI Jager, SD Wullschleger, X Jianming & CW Schadt. 2019. Influences of nitrogen fertilization and climate regime on the above-ground biomass yields of miscanthus and switchgrass: A meta-analysis. Renewable and Sustainable Energy Reviews 108: 303-311.
11. McManamay, RA, JS Perkin & HI Jager. 2019. Finding convergence among divergent conservation objectives in prioritizing barrier removal in streams. Ecosphere 10(2) ecs2.2596.
12. Forbes, V, S Railsback, C Accolla, B Birnir, R Bruins, V Ducrot, N Galic, K Garber, B. Harvey, H Jager, A Kanarek, R Pastorok, R Rebarber, P Thorbek & C Salice. 2019. Predicting impacts of chemicals from organisms to ecosystem service delivery: A case study of endocrine disruptor effects on trout. Science and the Total Environment 649: 949-959.
13. Jager, HI & JFA Kreig. 2018. Designing landscapes for biomass production and wildlife. Global Ecology & Conservation 16 doi.org/10.1016/j.gecco.2018.e00490
14. Wang G, Jager HI, Baskaran LM, & Brandt CC. 2018. Hydrologic and water quality responses to biomass production in the Tennessee river basin. GCB Bioenergy 10: 877-893.
15. Jager, HI, AW King, S Gangrade, A Haines, C DeRolph, BS Naz, & M Ashfaq. 2018. Will future climate change increase the risk of violating minimum flow and maximum temperature thresholds below dams in the Pacific Northwest? Climate Risk Management 21: 69-84.
16. Jager, HI, RA Novello, VH Dale, A Villnas, & KA Rose. 2018. Unnatural hypoxic regimes. Ecosphere 9(9) DOI 10.1002/ecs2.2408
17. Coutant, CC & HI Jager. 2018. In Memoriam Webster Van Winkle, Jr. Fish Population Modeler. Fisheries 43(6): 294-295.
18. Jager, HI & DL DeAngelis. 2018. The confluences of ideas leading to and the flow of ideas emerging from individual-based modeling of riverine fishes. Ecological Modelling 384: 341-352.

19. Dale, VD, HI Jager, AK Wolfe, & RA Efroymson. 2018. Risk and resilience in an uncertain world. Frontiers in Ecology and the Environment (Guest editorial). 16(1): 3-3.

20. Jager, HI & RA Efroymson. 2018. Can biomass production increase the flow of downstream ecosystem goods and services? Special Issue. Biomass and Bioenergy 114: 125-131.

21. Ferguson, J, R Fletcher, BE Reichert, & HI Jager. 2017. Detecting population-environmental interactions with mismatched time series data. Ecology 98(11): 2813-2822

22. Forbes, V. HI Jager & 12 coauthors. 2017. A framework for predicting impacts on ecosystem services from (sub)organismal responses to chemicals. Environmental Toxicology & Chemistry 36(4): 845-859.

23. McManamay RA, Brewer SK, Jager HI, & Troia MJ. 2016. Organizing environmental flow frameworks to meet hydropower mitigation needs. Environmental Management 58(3): 1-21.

24. Jager, HI, MJ Parsley, JJ Cech, Jr., RL McLaughlin, PS Forsythe, RF Elliott, & BM Pracheill. 2016. Reconnecting fragmented sturgeon populations in North American rivers. Fisheries 41(3): 140-148.

25. Jager, HI, RA Efroymson, JJ Opperman, & MR Kelly. 2015. Spatial design principles for sustainable hydropower development in river basins. Renewable and Sustainable Energy Reviews 45: 808-816.

26. Jager, HI, LM Baskaran, PE Schweizer, A Turhollow, CC Brandt, & R Srinivasan. 2015. Forecasting changes in water quality in rivers associated with growing biofuels in the Arkansas-White-Red river drainage, USA. Global Change Biology: Bioenergy 7(4): 774-784.

27. Jager, HI & RA McManamay. 2014. Comment on *Cumulative biophysical impact of small and large hydropower development in Nu River, China* by K Kibler and D Tullos. Water Resources Research 50: 758-759.

28. Jager, HI. 2014. Thinking outside the channel: Timing pulse flows to benefit salmon via indirect pathways. Ecological Modelling 273: 117-127.

29. McManamay, RA, DJ Orth, & HI Jager. 2014. Accounting for variation in species detection in fish community monitoring. Fisheries Management and Ecology 21: 96-112.

30. Ridley, CE, HI Jager, RA. Efroymson, C Kwit, DA. Landis, ZH Leggett, DA Miller,& CM Clark. 2013. Debate: Can bioenergy be produced in a sustainable manner that protects biodiversity and avoids the risk of invaders? Ecological Society of America Bulletin 94(3): 277-290.

31. Jager, HI, DL Peterson, D Farrae, & MS Bevelhimer. 2013. A population model to assess influences on the viability of the shortnose sturgeon (*Acipenser brevirostrum*) population in the Ogeechee River, Georgia. Transactions of the American Fisheries Society 142(3): 731-746.

32. Schweizer P & HI Jager. 2011. Modeling fish diversity in the Arkansas-Red-White River Basin. Transactions of the American Fisheries Society 140(5): 1227-1239.

33. Jager, HI, MS Bevelhimer, RL King, & KA Smith. 2011. Landscape influences on headwater streams on Fort Stewart, Georgia, USA. Environmental Management 4: 795-807.

34. Perkins TA & HI Jager. 2011. A conditional strategy model accounts for spatiotemporal life history variation in Snake River fall Chinook salmon. Transactions of the American Fisheries Society 140(4): 959-972.

35. McBride AC, VH Dale, LM Baskaran, ME Downing, LM Eaton, RA Efroymson, CT Garten Jr, KL Kline, HI Jager, PJ Mulholland, ES Parish, PE Schweizer, & J.M. Storey. 2011. Indicators to support environmental sustainability of bioenergy systems. Ecological Indicators 11(5): 1277-1289.

36. Jager HI, KB Lepla, W Van Winkle, BA James, & SO McAdams. 2010. The elusive minimum viable population size for white sturgeon. Transactions of the American Fisheries Society 139: 1551-1565.

37. Baskaran, LM, HI Jager, PE Schweizer & R Srinivasan. 2010. Progress toward evaluating the sustainability of switchgrass production at a regional scale. American Society of Agricultural and Biological Engineers 53(5): 1547-1556.

38. Jager HI, LM Baskaran, CC Brandt, EB Davis, CA Gunderson & SD Wullschleger. 2010. Empirical geographic modeling of switchgrass yields in the United States. Global Change Biology: Bioenergy 2(5): 248-257.

39. Efroymson RA, HI Jager, VH Dale, J Westerveld. 2009. A framework for developing management goals for species at risk and application to military installations in the United States. Environmental Management 44(6): 1163-1179.

40. McCullough, DA, JM Bartholow, HI Jager and others. 2009. Research in thermal biology: Burning questions for coldwater stream fishes. Reviews in Fisheries Science 17(1): 90-115.

41. Jager HI, KA Rose, & A Vila-Gispert. 2008. Life history correlates and extinction risk of capital-breeding fishes. Hydrobiologia 602: 15-25.

42. Jager HI & BT Smith. 2008. Sustainable Reservoir Operation: Can we generate hydropower and preserve ecosystem values? River Research and Applications 24: 340-352.

43. Jager HI & MS Bevelhimer. 2007. How run-of-river operation affects hydropower generation. Journal of Environmental Management 40: 1004-1015.

44. Jager HI 2006. Chutes and ladders and other games we play with rivers: I. Simulated effects of upstream passage on white sturgeon. Canadian Journal of Fisheries and Aquatic Sciences 63: 165-175.

45. Jager HI 2006. Chutes and ladders and other games we play with rivers: II. Simulated effects of translocation on white sturgeon. Canadian Journal of Fisheries and Aquatic Sciences 63: 176-184.

46. Jager HI, EA Carr & RA Efroymson. 2006. Simulated effects of habitat loss and fragmentation on a solitary, mustelid predator. Ecological Modelling 91: 416-430.

47. Jager HI. 2005. Genetic and demographic implications of aquaculture on white sturgeon (*Acipenser transmonitanus*) conservation. Canadian Journal of Fisheries and Aquatic Sciences. 62(8): 1733-1745 Management, and Protection of Sturgeon, American Fisheries Society Symposium 28, American Fisheries Society, Bethesda, MD.

48. Jager HI, RA Efroymson, K. Sublette & T.A. Ashwood. 2005. Unnatural landscapes in ecology: Generating the spatial distribution of brine spills. Environmetrics 16: 687-698.

49. Jager HI, AW King, NH Schumaker, TL Ashwood & BL Jackson. 2005. Spatial uncertainty analysis of population models. Ecological Modelling 185(1): 13-27.

50. Jager HI & AW King. 2004. Spatial uncertainty and ecological models. Ecosystems 7: 1-7.

51. Sullivan, AB, Jager HI & R Myers. 2003. Modeling white sturgeon movement in a reservoir: The effect of water quality. Ecological Modelling 167(1-2): 97-114.

52. Jager HI & KA Rose. 2003. Designing optimal flow patterns for fall Chinook salmon recruitment in a Central Valley, California river. North American Journal of Fisheries Management 23: 1-21.

53. Jager HI, W Van Winkle, KA Lepla, JB Chandler, P Bates, & TD Counihan. 2002. Factors controlling white sturgeon recruitment in the Snake River. Pages 127–150 IN: W Van Winkle, PJ Anders, DH Secor, & DA Dixon, eds., Biology, Management, and Protection of North American Sturgeon, American Fisheries Society.

54. Jager HI. 2001. Individual variation in life history characteristics can influence population extinction risk. Ecological Modelling 144(1): 59-74.

55. Jager HI & JA Tyler. 2001. Letter to the editor concerning Railsback et al. 1999. Movement rules for individual-based models of stream fish. Ecological Modelling 144(3): 245-248.

56. Jager HI, W Van Winkle, K Lepla, & J Chandler. 2001. A theoretical study of river fragmentation by dams and its effects on white sturgeon populations. Environmental Biology of Fishes 60: 347-361.

57. Jager HI, W Van Winkle, K Lepla, J Chandler, & P Bates. 2000. Population viability analysis of riverine fishes. Special issue of the Journal of Environmental Science and Policy 3: S483-489.

58. Jager HI, WH Hargrove, CC Brandt, AW King, RJ Olsen, JMO. Scurlock, & KA Rose. 2000. Constructive contrasts between modeled and measured climate responses over a regional scale. Ecosystems 3: 396-411.

59. Jager HI, W Van Winkle, & BD Holcomb. 1999. Would hydrologic climate changes in Sierra-Nevada streams influence trout persistence? Transactions of the American Fisheries Society 128: 222-240.

60. Suter, GW II, LW Barnthouse, RA Efroymson, & HI Jager. 1999. Ecological risk assessment in a large river-reservoir 2. fish community. Environmental Toxicology and Chemistry 18(4): 589-598.

61. Van Winkle W, HI Jager, SF Railsback, BD Holcomb, TK Studley, & JE Baldrige. 1998. Individual-based model of sympatric populations of brown and rainbow trout for instream flow assessment: model description and calibration. Ecological Modelling 110: 175-207.

62. Van Winkle W, KA Rose, BJ Shuter, HI Jager, & BD Holcomb. 1997. Effects of climatic temperature change on growth, survival, and reproduction of rainbow trout: predictions from a simulation model. Canadian Journal of Fisheries and Aquatic Sciences 54: 2526-2542.

63. Van Winkle W, CC Coutant, HI Jager, and others. 1997. Uncertainty and instream flow standards: perspectives based on research and assessment experience. Fisheries 21: 21-22.

64. Jager HI, HE Cardwell, MJ Sale, MJ Bevelhimer, CC Coutant & W Van Winkle. 1997. Modelling the linkages between flow management and salmon recruitment in streams. Ecological Modelling 103: 171-191.

65. Cardwell H, HI Jager, & MJ Sale. 1996. Designing instream flows to satisfy fish and human water needs. ASCE Journal of Water Resources Planning and Management 122(5): 356-363.

66. Jager HI, DL DeAngelis, MJ Sale, W VanWinkle, DD Schmoyer, MJ Sabo, DJ Orth, & JA Lukas. 1993. An individual-based model of smallmouth bass reproduction and young-of-year dynamics in streams. Rivers 4: 91-113. <request from author>

67. Jager HI, MJ Sale, & RL Schmoyer. 1990. Regional assessment of water quality in the Southern Blue Ridge Province using cokriging. Water Resources Research 26(7): 1401-1412.

68. Dale, VH, HI Jager, RH Gardner, & AE Rosen. 1988. Using sensitivity and uncertainty analysis to improve predictions of broad-scale forest development. Ecological Modelling 42: 165-178.

69. Jager HI & RH Gardner. 1988. A simulation experiment to investigate food web polarization. Ecological Modelling 41: 101-116.

Book Chapters

70. Jager, HI & LM Wickman. 2019. Chapter 9 Waterpower: Hydropower and marine hydrokinetic energy. Pages 198-225 IN Renewable Energy and Wildlife. Johns Hopkins University Press.

71. Efroymson RA, HI Jager & W Hargrove. 2010. Valuing wildlands. Pages 157-185 In Environmental Risk Assessment and Management from a Landscape Perspective, L Kapustka, W Landis, & A Johnson (editors). John Wiley & Sons.

72. Efroymson, RA, Carlsen TM, Jager, HI, et al. 2004. Pages 261-285 In Toward a Framework for Assessing Risk to Vertebrate Populations from Brine and Petroleum Spills at Exploration and Production Sites, Landscape Ecology and Wildlife Habitat Evaluation, ASTM STP 1458, L. Kapustka et al. (eds.), ASTM International, West Conshohocken, PA.

73. Jager HI, KA Rose & A Vila-Gispert. 2008. Life history correlates and extinction risk of capital breeding fishes. Pages 15-25 In Fish and Diadromy in Europe. Proceedings of the symposium held in 2005, Bordeaux, France, Dufour, Prevost, Rochard, and Williot (eds.). Springer, Amsterdam.

74. Jager HI, MS Bevelhimer, KA Lepla, JB Chandler & W Van Winkle. 2007. Evaluation of Reconnection Options for White Sturgeon in the Snake River Using a Population Viability Model. Pages 319-335 In Proceedings of the Symposium on Anadromous Sturgeons. JF Munro et al., ed., American Fisheries Society Symposium 56, American Fisheries Society, Bethesda, MD.

75. Van Winkle W, BD Holcomb, HI Jager, JA Tyler, SY Whitaker & BJ Shuter. 1995. Regulation of energy acquisition and allocation to respiration, growth, and reproduction: simulation model and example using rainbow trout. IN RC Chambers and EA Trippel, (eds.), Early Life History and Recruitment in Fish Populations, Chapman and Hall.

76. Jager HI & WS Overton. 1993. Explanatory models for ecological response surfaces. Chapter 42, pp. 422-437 IN Goodchild, MF, BO Parks, and LT Steyaert (eds.), Environmental Modeling with GIS. Oxford University Press, NY.

77. Cook, RB & HI Jager. 1991. Upper Midwest: The effects of hydrologic lake type and acidic deposition on lakewater chemistry. Chapter 13 IN D.F. Charles (ed.). Acidic Deposition and Aquatic Ecosystems: Regional Case Studies. Springer-Verlag, New York.

Significant Reports

1. Kao, S.C, M. Ashfaq, BS. Naz, R UrÃŋa-MartÃŋnez, D Rastogi, R Mei, H Jager, NM. Samu, & MJ. Sale. 2016. The Second Assessment of the Effect of Climate Change on Federal Hydropower. ORNL/SR-2015/357.

2. Jager, HI & four coauthors. 2017. Chapter 5 Water Quality Responses to Simulated Management Practices on Agricultural Lands Producing Biomass Feedstocks in Two Tributary Basins of the Mississippi River. 2016 Billion-Ton Report (BT16), Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1. Department of Energy and Oak Ridge National Laboratory.

3. Jager, HI and four coauthors. 2017. Chapter 10 Simulated Response of Avian Biodiversity to Biomass Production. 2016 Billion-Ton Report (BT16), Volume 2: Environmental Sustainability Effects of Select Scenarios from Volume 1. Department of Energy and Oak Ridge National Laboratory.

4. Kaufmann, P.R., A. Herlihy, J. Elwood, M. Sale, & H. Jager. Chemical characteristics of streams in the mid-Atlantic and Southeastern United States (national stream survey: phase 1). Volume 2. Streams sampled, descriptive statistics, and compendium of physical and chemical data. U.S. Environmental Protection Agency, Washington, D.C., EPA/600/3-88/021B.

Awards, Symposia, Professional Service, Invited Presentations, pre-2019

- 'Bayesian network models explore how forest treatments can reduce wildfire risk and benefit ESA-listed salmonids', 2018 Symposium: Understanding Landscape Influences on Stream Habitats & Biological Assemblages
- Co-organized 'Bad Acid: Past and future risk of acidification to aquatic ecosystems', Symposium American Fisheries Society, 2018
- Program Review, USGS Northeast Climate Science Center, French et al. 'Five-Year External Reviews of the Eight Department of Interior Climate Science Centers', 2018
- 'Hydropower & Marine Hydrokinetic energy' Symposium on Renewable Energy and Wildlife, The Wildlife Society meeting, Albuquerque, NM, 2018
- Roundtable, Spatial ecology and big data: Emerging risks, measured responses, National Institute of Mathematical & Biological Synthesis, 2018
- 2015-2017, National Institute of Mathematical & Biological Synthesis Working group, Organisms to Ecosystem Services
- Search committee, University of Tennessee Faculty search, EEB Spatial Ecologist
- Co-organized DOE workshop, *Bioenergy Solutions to Gulf Hypoxia*, Washington DC
- Presentation in Symposium *Inland drivers of Gulf Hypoxia*, American Fisheries Society meeting, Kansas City, KS
- Presentation to Southern Grassroots Biofuels Project Workshop, Tennessee Technical University, Cookeville, TN

- Organized symposium "Shifting Landscapes: Biomass & Biodiversity II", International Association of Landscape Ecologists, Asheville, NC
- Presentation Watershed modeling for the Mississippi River Basin, Federal multi-agency modeling Workgroup
- Presentation Watershed modeling for the Mississippi River Basin, EPA Gulf of Mexico Hypoxia Taskforce
- Mississippi River Basin, Gulf Hypoxia Initiative meeting of the Eastern Tallgrass Prairie and Big Rivers Landscape Conservation Cooperative, Indianapolis, IN
- National Working Forum: Managing Poplar and Willow for Environmental Benefits and the Renewable Fuels Industry, Portland, OR
- Individual-based sturgeon contaminant modeling. EPA Office of Pesticide ProgramsWashington, DC, 2015
- Symposium, Using Science to Promote Sustainable Biofuels Production in the Southeast, National Bioenergy Day webinar, Southeastern Partnership for Integrated Biomass Supply Systems, 2015
- Career panel (Non-academic careers in Statistical Ecology), National Institute for Mathematical & Biological Synthesis, University of Tennessee, Knoxville, 2015
- NSF Scholars, Preparation of Data Driven Mathematical Scientists for the Workforce, East Tennessee State University, 2015
- National Institute of Math. And Biological Synthesis Working group, Modeling Species Interactions, 2013-2015
- Designing Bioenergy Landscapes for Wildlife, Center for Bioenergy Sustainability, ORNL, 2014
- Search committee, Director of NSF National Institute for Mathematical & Biological Synthesis, 2013
- Presentation in Symposium, Model ComplexityAmerican Fisheries Society meeting 2013
- Keynote presentation Spring Runoff Conference, Utah State U., 2013
- Co-organizer, debate on the Sustainability of Biomass Production for Energy, Annual Ecological Society of America, 2012
- Local organizing committeeAnnual Meeting of the Society of Mathematical Biology, Knoxville, TN, 2012
- Columbia Basin Sturgeon Workshop on sturgeon passage, Northwest Power Planning Council, 2012
- Scientific review Alternative San Joaquin River Flow Objectives for Protection of Fish & Wildlife for California EPA, 2011
- Peer review of USEPA Conceptual Models for Biofuel Feedstock Production, 2011
- Center for BioEnergy Sustainability Workshop, Billion Ton Study Sustainability, 2011
- Great Lakes Fishery Trust Workshop, Enhancing Lake Sturgeon Passage at Hydroelectric Facilities, 2011
- NMFS Sturgeon workshop - Recovery measures for Atlantic and Shortnose sturgeon in Alexandria, VA, 2011
- Organized symposium 'Shifting Landscapes: Biomass and Biodiversity', International Association of Landscape Ecologists, Athens, GA, 2010
- EPA-DOE Joint workshop A Watershed Perspective on Bioenergy Sustainability, 2009
- Gulf Sturgeon Modeling Review Panel, NOAA, Cedar Key, Florida, 2009
- NSF Workshop Computational Science for Natural Resource Managers, Keynote presentation 2007

- Distinguished Scientific Achievement (Auerbach) Award, Environmental Sciences Division, ORNL, 2006
- Department of Energy Outstanding Mentor Award, 2006
- San Joaquin River Fall Chinook Salmon Modeling Review, California Dept of Fish & Game, 2006
- Scientific Committee, Fish and Diadromy in Europe, Conference, Bordeaux, France, 2005
- Pallid Sturgeon Review Panel for the US Army Corps of Engineers (2004-2005)
- Everglades Model Review Team for the US Geologic Service, Miami, FL (2002-2003)
- ORNL Technical Publication Award, 2001
- 2002-2004, Ecological Society of America, Southeast Chapter Secretary-Treasurer
- 2001-2002, Associate Editor North American Journal of Fisheries Management
- Panel discussion, Hydropower Relicensing and the Environment, WaterPower, Orlando, FL, 1998