

## **Henriette (Yetta) I. Jager**

Environmental Sciences Division  
Oak Ridge National Laboratory  
P.O. Box 2008, Mail Stop 6036  
Oak Ridge, TN 37831-6036

February 12, 2009

Phone: 865/574-8143  
E-mail: [jagerhi@ornl.gov](mailto:jagerhi@ornl.gov)  
Webpage: <http://www.esd.ornl.gov/~zjj/>

## **Research Areas and Expertise**

- Population thresholds (minimum viable population size and habitat, Allee effects)
- Effects of hydropower on river fishes via flow, temperature, and habitat fragmentation
- Population genetic modeling (management effects on genetic diversity and potential for evolution)
- Regional analysis of environmental effects of energy-related activities (hydropower, biomass crops)
- Ecological statistics (spatial statistics, phylogenetic analysis, path analysis, functional model validation)

## **Education**

PhD (Ecology and Evolutionary Biology) University of Tennessee, Knoxville, 2000  
M.S. (Ecology) University of Tennessee, Knoxville, 1984  
B.A. (Biology) Franklin Pierce College, Rindge, NH, 1979

## **Professional Activities**

**Adjunct Faculty** (2003—present), Ecology & Evolutionary Biology, Univ. Tennessee, Knoxville  
**Research Staff** (1988—present), Oak Ridge National Laboratory, Oak Ridge, TN

**Chinook Modeling Review** (2006) San Joaquin River Fall-run Chinook Salmon Population Model for the California Department of Fish and Game.

**Scientific Committee** (2005) Conference on "Fish and Diadromy in Europe" March, 2005.

**Pallid Sturgeon Review Panel** (2004-present) for the US Army Corps of Engineers

**Ecological Society of America, Southeast Chapter Treasurer/Secretary** (2002—2004)

**Everglades Model Review Team** (2002—2003) for the USGS, Miami.

**Associate Editor** (2001—2002) for the North American Journal of Fisheries Management

## **Awards**

DOE Outstanding Mentor Award (2006)

Scientific Achievement Award, Environmental Sciences Division, Oak Ridge National Laboratory (2006)

ORNL Technical Publication Award (2001) for Jager et al. 2000. "*Constructive contrasts between modeled and measured climate responses over a regional scale*," *Ecosystems* 3: 396-411

## **Invited Presentations**

Keynote speaker, NSF Workshop "*Computational Science for Natural Resource Managers*," Knoxville, TN (2007)

Conference on "Fish and Diadromy in Europe," Bordeaux, France (2005)

WaterPower panel on Hydropower Relicensing and the Environment, Orlando, FL (1998)

## **Grants**

2009-2011. Spatial Modeling of Geographic Patterns in Biodiversity and Biofuel Production, Oak Ridge National Laboratory, Lab Directed Research & Development Program.

2008-2009. CDFG San Joaquin River fall-run Chinook salmon production model refinement, California Department of Fish and Game via California State University at Fresno

- 2006-2010. Population viability analysis of the endangered shortnose sturgeon in the Ogeechee River, GA, SERDP
- 2006-2007. Population viability analysis of fall Chinook salmon in the Snake River, Idaho Power Company
- 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, Oak Ridge National Laboratory State Partnership Program

## **Refereed Publications**

1. McCullough, D.A., J. M. Bartholow, H. I. Jager, R. L. Beschta, E. F. Cheslak, M. L. Deas, J. L. Ebersole, J. S. Foott, S. L. Johnson, W. J. Kimmerer, K. R. Marine, M. G. Mesa, J. H. Petersen, Y. Souchon, K. F. Tiffan, W. A. Wurtsbaugh. 2009. Research in thermal biology: Burning questions for coldwater stream fishes. *Reviews in Fisheries Science* 17(1): 90-115.
2. Jager, H.I., K.A. Rose, and A. Vila-Gispert. 2008. Life history correlates and extinction risk of capital-breeding fishes. *Hydrobiologia* 602: 15-25.
3. Jager, H. I., and B.T. Smith. 2008. Sustainable Reservoir Operation: Can we generate hydropower and preserve ecosystem values? *River Research and Applications* 24: 340-352.
4. Smith, B.T., H.I. Jager, and P. March. 2007. Prospects for Combining Energy and Environmental Objectives in Hydropower Optimization. *WaterPower XI*. 10 pp.
5. Jager, H. I., and M. S. Bevelhimer. 2007. How run-of-river operation affects hydropower generation. *Journal of Environmental Management* 40: 1004-1015.
6. Jager, H.I., M.S. Bevelhimer, K.A. Lepla, J.B. 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*. J.F. Munro et al., ed., American Fisheries Society Symposium 56, American Fisheries Society, Bethesda, MD.
7. Jager, H.I. 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.
8. Jager, H.I. 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.
9. Jager, H.I., E.A. Carr, and R.A. Efroymson. 2006. Simulated effects of habitat loss and fragmentation on a solitary, mustelid predator. *Ecological Modelling* 91: 416-430.
10. Jager, H.I. 2005. Genetic and demographic implications of aquaculture on white sturgeon (*Acipenser transmontanus*) conservation. *Canadian Journal of Fisheries and Aquatic Sciences*. 62(8): 1733-1745
11. Jager, H.I., R.A. Efroymson, K. Sublette, and T.A. Ashwood. 2005. Unnatural landscapes in ecology: Generating the spatial distribution of brine spills. *Environmetrics* 16: 687-698.
12. Jager, H.I., A.W. King, N.H. Schumaker, T.L. Ashwood, and B.L. Jackson. 2005. Spatial uncertainty analysis of population models. *Ecological Modelling* 185(1): 13-27.
13. Jager, H.I. and A.W. King. 2004. Spatial uncertainty and ecological models. *Ecosystems* 7: 1-7.
14. Efroymson, R. A., Carlsen, T. M., Jager, H. I., Kostova, T., Carr, E. A., Hargrove, W. W., Kercher, J., and Ashwood, T. L. 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: Critical Information for Ecological Risk Assessment, Land-Use Management Activities, and Biodiversity Enhancement Practices*, ASTM STP 1458, L. Kapustka et al. (eds.), ASTM International, West Conshohocken, PA.
15. Sullivan, A.B., Jager, H.I. and R. Myers. 2003. Modeling white sturgeon movement in a reservoir: The effect of water quality. *Ecological Modelling* 167(1-2): 97-114.
16. Jager, H.I. and K.A. 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.
17. Jager, H.I., W. Van Winkle, K.A. Lepla, J.B. Chandler, P. Bates, and T.D. Coughlan. 2002. Factors controlling white sturgeon recruitment in the Snake River. Pages 127--150 *IN*: W. Van Winkle, P.J. Anders, D.H. Secor, and D.A. Dixon, eds., *Biology, Management, and Protection of Sturgeon*, American Fisheries Society Symposium 28, American Fisheries Society, Bethesda, MD.
18. Jager, H. I. 2001. Individual variation in life history characteristics can influence population extinction risk. *Ecological Modelling* 144(1): 59-74.

19. Jager, H.I. and J.A. 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.
20. Jager, H. I., W. Van Winkle, K. Lepla, and 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.
21. Jager, H. I., W. Van Winkle, K. Lepla, J. Chandler, and P. Bates. 2000. Population viability analysis of riverine fishes. Special issue of the *Journal of Environmental Science and Policy* 3: S483-489.
22. Jager, H. I.. 2000. Predicting the viability of fish populations in a modified riverine environment, PhD Dissertation. University of Tennessee, Knoxville.
23. Jager, H. I., W. H. Hargrove, C.C. Brandt, A.W. King, R.J. Olsen, J.M.O. Scurlock, K.A. Rose. 2000. Constructive contrasts between modeled and measured climate responses over a regional scale. *Ecosystems* 3: 396-411.
24. Jager, H.I., W. Van Winkle, and B.D. Holcomb. 1999. Would hydrologic climate changes in Sierra-Nevada streams influence trout persistence? *Transactions of the American Fisheries Society* 128: 222-240.
25. Suter, G.W. II, L.W. Barnthouse, R.A. Efroymson, and H.I. Jager. 1999. Ecological risk assessment in a large river-reservoir: 2. fish community. *Environmental Toxicology and Chemistry* 18(4): 589-598.
26. Van Winkle, W., H.I. Jager, S.F. Railsback, B.D. Holcomb, T.K. Studley, and J.E. 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.
27. Van Winkle, W., K. A. Rose, B. J. Shuter, H. I. Jager, and B. D. 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.
28. Van Winkle, W., C.C. Coutant, H.I. Jager, J.S. Mattice, D.J. Orth, R.G. Otto, S.F. Railsback, and M.J. Sale. 1997. Uncertainty and instream flow standards: perspectives based on research and assessment experience. *Fisheries* 21: 21-22.
29. Jager, H.I., H.E. Cardwell, M.J. Sale, M.J. Bevelhimer, C.C. Coutant, and W. Van Winkle. 1997. Modelling the linkages between flow management and salmon recruitment in streams. *Ecological Modelling* 103: 171-191.
30. Cardwell, H., H.I. Jager, and M.J. Sale. 1996. Designing instream flows to satisfy fish and human water needs. *ASCE Journal of Water Resources Planning and Management* 122(5): 356-363.
31. Van Winkle, W., B.D. Holcomb, H.I. Jager, J.A. Tyler, S.Y. Whitaker, and B.J. Shuter. 1995. Regulation of energy acquisition and allocation to respiration, growth, and reproduction: simulation model and example using rainbow trout. *In* R.C. Chambers and E.A. Trippel, (eds.), *Early Life History and Recruitment in Fish Populations*, Chapman and Hall.
32. Jager, H.I., D.L. DeAngelis, M.J. Sale, W. VanWinkle, D.D. Schmoyer, M.J. Sabo, D.J. Orth, and J.A. Lukas. 1993. An individual-based model of smallmouth bass reproduction and young-of-year dynamics in streams. *Rivers* 4: 91-113.
33. Jager, H.I. and W.S. Overton. 1993. Explanatory models for ecological response surfaces. Chapter 42, pp. 422 - 437 *In* Goodchild, M.F., B.O. Parks, and L.T. Steyaert (eds.), *Environmental Modeling with GIS*. Oxford University Press, NY.
34. Cook, R.B. and H.I. 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.
35. Jager, H.I., M.J. Sale, and R.L. Schmoyer. 1990. Regional assessment of water quality in the Southern Blue Ridge Province using cokriging. *Water Resources Research* 26(7):1401-1412.
36. Dale, V.H., H.I. Jager, R.H. Gardner, and A.E. Rosen. 1988. Using sensitivity and uncertainty analysis to improve predictions of broad-scale forest development. *Ecological Modelling* 42:165-178.
37. Jager, H.I. and R.H. Gardner. 1988. A simulation experiment to investigate food web polarization. *Ecological Modelling* 41: 101-116.

#### **Publications In Progress, 2009**

38. Jager, H.I., L.A. Baskaran, C.C. Brandt, and others. Forecasting the effects of future biomass energy landscapes on water quality in rivers of the Midwest, USA.
39. Jager, H.I., M.S. Bevelhimer, D. Peterson. Population viability analysis of the shortnose sturgeon population in the Ogeechee River, Georgia.
40. Efroymson, R.A., H.I. Jager, and W. Hargrove. Accepted 2008. Valuing wildlife. Pages \_\_\_\_ *In* *Environmental Risk Assessment and Management from a Landscape Perspective*, L. Kapustka, W. Landis, and A. Johnson (editors). John Wiley & Sons.
41. H.I. Jager, R.A. Efroymson, L.M. Baskaran, and B. Maxfield. Model-based evaluation of extinction thresholds for a social species, the greater sage grouse (*Cnetrocercus urophasianus*). Submitted to *Ecological Modelling*.

42. Efromyson, R.A., J.B. Loomis, H.I. Jager, and G. Oladosu. Submitted to *Frontiers in Ecology*. Anchoring economic value to ecological relationships.
43. Jager, H.I., J.B. Loomis, R.A. Efromyson. Getting the most out of rivers. To be submitted to *Letters in Ecology*.
44. H.I. Jager, K.B. Lepla, W. VanWinkle, B. James, and S. McAdams. The elusive minimum viable population size for sturgeon. To be submitted to *Canadian Journal of Fisheries and Aquatic Sciences*.
45. H.I. Jager. How breeding frequency influences extinction thresholds. Submitted to *The American Naturalist*.