Jerry V. Mead, Systems Ecologist

Current Position

Assistant Scientist and Section leader
Watershed and Systems Ecology Section
Patrick Center for Environmental Research
Academy of Natural Sciences

General Information

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Career Objectives

Build a research and teaching program that provides the knowledge and tools (ex, spatial models and geo-databases) for managing landscapes at multiple spatial and temporal scales. Aquatic Ecology is my focus with extensions to Ecological and Biophysical Economics.

Professional Preparation

Post Doctoral Research Fellow, created a spatial database of all streams in the Delaware River basin and then constructed various spatial models of the stream ecosystem (ex, water temperature and fish growth potential, channel morphology, forest litter inputs to streams). Dept. Earth and Environmental Science, University of Pennsylvania, Philadelphia, Pa. 4/2006 - 8/2008.

Doctorate of Philosophy*, 2007*. SUNY College of Environmental Science and Forestry (SUNY ESF), Syracuse, NY. Dissertation: "An Empirical And Modeling Analysis of the Spatial Structure And Trophic Energy Flow Through A Small Temperate Stream."

Bachelor of Science*, 2000.* SUNY ESF, Syracuse, NY. Senior project: "Aquatic Invertebrate Community Structure in Response to a 1 and 100 Year Frequency Flood in the Catskill mountains, NY".

Relevant Employment History

Instructor, The Delaware River. Students will learn about the history of the basin and how its history influences current management and conservation practices. University of Pennsylvania, Philadelphia, PA 2008.

Research Specialist, *Team Leader,* developed spatial models of the production of young of the year Northern Pike and the survival and density of Muskrats in the upper St. Lawrence River. These models are currently used to develop new water level regulation plans in Lake Ontario and the St. Lawrence River. Thousand Islands Biological Station, SUNY ESF, Syracuse, NY 2004-2005.

Spatial Statistician, mapped toxicity of benthic sediments to benthic invertebrates of the 3rd most polluted lake in the U.S. “Onondaga lake, Syracuse, NY”. Geographic Modeling Services, Syracuse, NY. 2004.

Instructor, Systems Ecology. Students learned how to collect and use field data to build simulation models of ecosystems. Students were introduced to classic literature in systems science. SUNY ESF, Syracuse, NY. 2003.

Instructor, Urban initiative, Field experience in stream ecology for inner city youths. SUNY ESF, Syracuse, NY 2002 – 2003.

Teaching Assistantships. Courses include: Principals of Genetics, Systems Ecology, Geographic modeling, Terrestrial Community Ecology, Urban Ecology, Aquatic Entomology. 1998-2006.

Publications

Huettman, F., **J.V. Mead**, S. Meyers, and S. Mahoney. (In preparation) The North American Model of Wildlife Conservation as an example of building sustainable economic systems. Ecological Economics.

Mead, J.V. (in preparation). Global GDP and climate change, and their impact on water temperature and fish growth potential in the Delaware River basin. Journal of Sustainability.

Connerton, M.J, **J.V. Mead**, C.A.S. Hall, and N.H. Ringler. (In preparation). Special issue: The role of salmon carcasses in algal nutrient limitation in small streams. Proceedings of the Academy of Natural Sciences.

Mead, J.V. (In preparation). Has the U.S. economy bagged the American Sportsperson? Ecological Economics.

Mead, J.V. (In preparation). A Meta-Analysis of Aquatic Invertebrate Bioenergetics. Hydrobiologia.

Mead, J.V. F.N. Scatena, Y. Pan, R.Horwitz, and R. Birdsey. (In preparation). A spatial simulation of water temperature and fish growth potential for streams within the Delaware River Basin. Transactions of the American Fisheries Society.

Mead, J.V. F.N. Scatena, Y. Pan, and R. Birdsey. (In preparation). Riparian forests, channel erosion, and litter based carbon inputs across the Delaware River Basin. Landscape Ecology.

Mead, J.V., F.N.Scatena, R.Birdsey, Y. Pan, and R. Wall. (In press). Developing SWIM: A Stream-lined Wateshed Integration Model for prioritizing stream restoration and conservation. Proceedings from the Global water meeting in WuHan, China 2009.

Horwitz, R.J., **J.V. Mead**, and J.McNair. (In press). Basin wide management of Chautauqua lake. International Journal of Lake Management.

Mead, J.V., M.J. Connerton, C.A.S.Hall, and N.H.Ringler. (Accepted). The effects of riparian forest cover on primary productivity in small temperate steam. Journal of the North American Benthological Society. Submitted for review in February 2008.

Mead, J.V. (In press). The fundamental conflict between economic growth and wildlife conservation and its implications for a post peak-oil future. In “Peak Oil, Economic Growth, and Wildlife Conservation”. J. Edward Gates and Brian Czech, editors. Elsevier publishers. 300 pp. Submitted for review in December 2007.

Toner, J.A., J.M. Farrell, and **J.V. Mead**. (2009, in press). Muskrat house abundance within Upper St. Lawrence river Tributary Wetlands: Evaluation of Responses to Water Level Regulation Plans. Journal of Wetlands.

Cooper, J.E., **J.V. Mead**, J.M Farrell, and R.E. Werner. 2008. Potential impacts of spawning habitat changes on the segregation of pike (*Esox lucius*) and muskellunge (*E. masquinongy*) in the Upper St. Lawrence River. Hydrobiologia 601(1): 41.

Coghlan, S.M., M.J. Connerton, N.H. Ringler, D.J. Stewart, and **J. V. Mead**. 2007. Survival and growth responses of stocked salmonines to multiple environmental gradients in Lake Ontario tributaries. Transactions of the American Fisheries Society 136:56-71.

Farrell, J.M., **J.V. Mead**, and B.A. Murray. 2006. Protracted spawning of Northern pike: simulated effects on survival, growth, and production. Ecology of Freshwater Fish 15:169-179.

Mead, J.V., J.M. Farrell, and B.A. Murray. 2005. A Spatially-explicit Model of Northern pike Reproductive Outcomes under Proposed Upper St. Lawrence River Water Level Management Scenarios. In: Limno-Tech, Inc. Development of an Integrated Ecological Response Model (IERM) for the Lake Ontario - St. Lawrence River Study. Report prepared for the USACE-Institute for Water Resources and the International Joint Commission as a contribution to the IJC LOSL Study.

Mead, J.V., S. M. Coghlan Jr., and P. F. Thompson. 2005. Symposium on economic growth and fish conservation sparks debate: should the American Fisheries Society adopt a position on economic growth? Fisheries 30(11):37-40.

Czech, B., Shawn K. Alam, Paul A. Angermeier, Stephen M. Coghlan, Gordon F. Hartman, Lisi Krall, **Jerry V. Mead**, Tom G. Northcote, Phil Pister, Kelly M. Reed, C. Alwyn Rose, Julie A. Thompson, Patricia F. Thompson. 2005. Economic Growth, Fish Conservation, and the American Fisheries Society: Conclusion to a Forum, Beginning of a Movement? Fisheries 31(1):37-40.

Toner, J.A., J.M. Farrell, and **J.V. Mead**. 2005. Muskrat house abundance within Upper St. Lawrence river Tributary Wetlands: Evaluation of Responses to Water Level Regulation Plans. In: Limno-Tech, Inc. Development of an Integrated Ecological Response Model (IERM) for the Lake Ontario - St. Lawrence River Study. Report prepared for the USACE-Institute for Water Resources and the International Joint Commission as a contribution to the IJC LOSL Study.

Mead, J.V. "Energy Cost of Food Capture". 2004. In: Encyclopedia of Energy, Volume 2. C.J Cleveland. Editor-in-Chief. Elsevier Inc.

Mead, J.V., P.F. Thompson, C.A.S. Hall, P. Rand, and W. Everham. 2003. Systems Ecology laboratory manual. SUNY College of Environmental Science and Forestry, Syracuse, NY.

Select recent presentations

Has the U.S. economy bagged the American sportsperson? 2009. Annual meeting of the Wildlife Society. Monterey, California (invited).

Scenarios of Global Energy Usage and Climate Change: Impacts on Water Temperature and Fish Growth Potential. 2009. Annual meeting of the North American Benthological Society. Grand Rapids, Michigan. (Invited)

An empirical and modeling analysis of the spatial structure and trophic energy flow through a small temperate stream. 2008. Annual meeting of North American Benthological Society. Salt Lake City, Utah.

Ecosystem models as a tool for obtaining a steady state economy. 2007. Annual Wildlife Society meeting. Tucson, AZ. (Invited)

Implications of Peak Oil for Fish Conservation: Will we sink or swim? 2007. U.S. Society of Ecological Economics. Pace University, New York City, N.Y. (Invited)

Riparian forests, channel erosion, and litter based carbon inputs across the Delaware River Basin. 2007. Annual meeting of the North American Benthological Society. Columbia, South Carolina.

Riparian forests, litter based carbon inputs, water quality, and stream channel erosion across the Delaware River Basin. 2007. Environmental Seminar Series. University of Pennsylvania, Philadelphia, NY.

Maximum power, stream geomorphology, and primary productivity: A spatial simulation of periphyton production in a small temperate stream. 2007. Environmental Seminar Series. University of Pennsylvania, Philadelphia, NY.

A Spatial simulation of reproductive outcomes for Northern pike under water level management in the Upper St. Lawrence River. 2006. Annual meeting of the American Fisheries Society. Lake Placid, NY. (Invited)

Synergistic Activities

Member of the North American Benthological Society's Science and Policy committee; 2009-present.

Organized a symposium, "Economic growth and the conservation of benthic ecosystems". 2009 annual meeting of the North American Benthological Society.

Organized a symposium, "Economic growth and wildlife conservation: a collaborative symposium among TWS working groups. The Wildlife Society's 2008 annual meeting.in Miami, Florida.

Planning board member for the joint NY/PA American Fisheries Society Meeting. Meeting theme is, "Energy and fisheries".

Organized a webinar. 2007. Obtaining a steady state economy. Hosted by The Wildllife Society and the University of Pennsylvania.

Chair elect, chair, and past chair for the Working Group for a Steady State Economy, The Wildlife Society; 2007-2009.

Organized a symposium. "Fish conservation and the end of cheap fossil fuels" at the 2006 Annual American Fisheries Society Meeting in Lake Placid, NY.

Grants and Awards

2009	Establishing bench marks of marsh elevation in the Delaware.	$6,000
2009	Validating spatial models of riparian cover & water temperature.	$24,000
2009	Spatial analyses of snail diversity for the entire Island of Jamaica.	$23,000
2009	Ecosystem assessment and potential for reintroduction of native cutthroat trout to a small Colorado stream.	$125,000
2009	Denitrification and sea-level rise in a tidal freshwater marsh	$98,000
2009	Chautauqua lake watershed: pre-implementation study.	$100,000
2009	Legacy sediment, riparian forests, and area compensations in small temperate streams. Private foundation.	$23,000
2006	Graduate research assistantship, SUNY ESF, Syracuse, NY.	$3, 000

2003	Asa Gray Biologist Scholar, Utica College of Univ. of Syracuse	$200
2003	Great lakes research consortium fellowship.	$5000
2002	SUNY-ESF Graduate teaching assistant of the year.	$500
2002	Graduate research assistantship, SUNY ESF, Syracuse, NY.	$24, 500
2001	Best student poster, Great Lake Research Forum	$200
2001	Graduate research assistantship, SUNY ESF, Syracuse, NY	$24, 000
2000	Graduate research assistantship, SUNY ESF, Syracuse, NY	$23, 000

Relevant Skills

In general, I am talented at formalizing our knowledge about the disturbance, development, and dynamics of ecosystems, mainly streams and rivers, using field data, systems analysis, and simulation modeling. The following are a few of the tools that I commonly use in conjunction with computer programming:

- Fluent in several programming languages including Compaq Visual FORTRAN and Visual Basic;
- Skilled at using statistical packages such as SAS, GeoStat, Statistica, ERDAS;
- Experienced and trained in advanced spatial statistics;
- Extremely skilled in geographic modeling and using Geographic Information Systems;
- Trained in and have extensive experience with hydrologic modeling (such as Haith model, HSPF) and hydraulic spatial modeling (such as river2d, RMA2);
- Familiar with (have dissected, reassembled, updated/extended) nearly every existing stream ecosystem model (such as AQUATOX, the Wisconsin fish bioenergetics model, Deep creek stream model, McIntire and Colby's (1978) stream ecosystem model, Runke et als. periphyton production model, and many others).

In addition to my skills in modeling and statistics, I also have much experience as a field scientist measuring and analyzing such things as;

- Stream metabolism using one and two station oxygen techniques and benthic chambers;
- Benthic invertebrates and freshwater fishes;
- Fish eggs using a Forney box and egg traps;
- Periphyton (benthic algae);
- Surveying stream beds and riparian zones, wetlands, and river channels using GPS linked sonar and total stations.

Teaching experience

INSTRUCTOR

Aquatic Ecology (Fall 2008, 2009), Arcadia University, PA.

Delaware River (Spring 2008, 2010), University of Pennsylvania, Philadelphia, PA

Students learned about the history of the basin and how its history influences current management and conservation practices. Overall, a systems approach will be introduced and then used to relate human activities with ecological function and structure. The class included all streams and rivers and emphasize holistic management.

Systems Ecology (2003), SUNY-ESF, Syracuse, NY
Taught graduate-level course while Dr. Charles A. S. Hall was on sabbatical. Course curriculum same as below. Changes made to the course include updates to laboratory manual and design of lectures.

GRADUATE TEACHING ASSISTANTSHIPS

Aquatic Entomology (2006), SUNY-ESF, Syracuse, NY
Served as lead TA and assistant lecturer. I prepared and taught laboratory section of the course and lectured. The course introduced students to the identification, life history, and distribution of macroinvertebrates found in freshwater.

Urban Ecology (2001, 2002), SUNY-ESF, Syracuse, NY
Served as lead TA responsible for preparation of field trip materials, grading exams and assignments, designing and conducting two field trips to study aquatic invertebrate community composition along an urban to rural gradient.

Geographic Modeling (2001, 2002), SUNY-ESF, Syracuse, NY
Responsible for grading and some lecturing for a graduate level course. Curriculum includes fundamentals of geostatistics with emphasis on kriging techniques, integration of Geographic Information Systems and simulation models using computer programming, cell automata dispersion modeling such as forest fire spreading, and environmental gradient analysis.

Principles of Genetics (2000), SUNY-ESF, Syracuse, NY
Responsible for lecturing, grading assignments, and organizing lab exercises for an undergraduate genetics course. Curriculum includes Mendelian and non-Mendelian inheritance, population genetics, artificial selection, bacterial transformation, and restriction endonuclease site mapping.

Systems Ecology (2000), SUNY-ESF, Syracuse, NY
Served as lead TA responsible for organizing weekend field trip during which students measure whole ecosystem and benthic metabolism, along with various physical and biological properties of a small stream. Students then learn how to use field data collected on the trip to model an ecosystem. Additional responsibilities included grading of assignments and exam with some lecturing. Students are introduced to the origins of systems science, classic literature in systems thinking, systems science and the scientific method, simulation modeling, bioenergetics, ecosystem models, ecological economics, and population modeling.

UNDERGRADUATE TEACHING ASSISTANTSHIPS

Terrestrial community ecology (1998), SUNY-ESF, Syracuse, NY
The course introduced students to statistical techniques for analyzing the structure of communities (ex, Bray-Curtis ordination, diversity indices).

Systems Ecology (1998), SUNY-ESF, Syracuse, NY
Assisted instructor and graduate TA with field component of the course and helped students with computer programming and assignments.

Recent affiliations and collaborators

Steven Coghlan (Univ. Maine), Kevin Paul Angermeir (Virginia Tech), Michael Connerton (NY DEC), Brian Czech (Virginia Tech), Thomas Bott (Stroud Water Research Center), John Jackson (Stroud Water Research Center), Timothy Mihuc (SUNY Plattsburg), Donald Hughes (SUNY ESF), Karin Limburg (SUNY ESF), Robert Werner (SUNY ESF), Brent Murry (Central Michigan Univ.), J. Edward Gates (Univ. Maryland), Richard Horwitz (Academy Natural Sciences), Bernard Patten (Univ. Georgia), Jack Webster (Virginia Tech.), Leandro Castello (SUNY ESF), Seth Myers (SUNY ESF), Yude Pan (USDA Forest Service), Richard Birdsey (USDA Forest Service), Rashid Sumaila (Univ. British Columbia), Peter Tydemers (Dalhousie University), Cutler Cleveland (Univ. Boston), Peter Rand (Wild Salmon Federation), John Cooper (Cooper Scientific), John Casselman (Queens Univ., Canada), Carol Collier (Delaware River Basin Commission), Mercy Barbour (Winrock International), Hong Qing Wang (State Univ. of Louisiana), Wei Wui (University of Mississippi), Steven Effluer (Upstate Freshwater Institute, NY), Jae Young Ko (Texas A&M University), Cully Hession (Virginia Tech), Mark Wuenchel (Rutgers University), Kyle Hartman (Univ. of West Virginia), Shane Mahoney (Conservation Force), Robert Hughes (Univ. of Oregon), Falk Huetman (University of Alaska), John Hom (USDA Forest Service).

Memberships to Professional Societies

- North American Benthological Society
- U.S. Society of Ecological Economics
- American Fisheries Society
- The Wildlife Society
- Society of Conservation Biology
- Center for the advancement for Steady State Economy

References

Graduate Advisors
Charles .A.S. Hall, SUNY ESF
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202 Bray Hall, Syracuse, NY
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Post Doctoral Advisor
Fredrick N. Scatena, UPenn
156 Hayden Hall, Philadelphia, PA
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