# MATTHEW B. JONES

National Center for Ecological Analysis and Synthesis E-mail: jones@nceas.ucsb.edu
University of California Santa Barbara
735 State St., Suite 300
Santa Barbara, CA 93101

## EDUCATION

1994 **UNIVERSITY OF FLORIDA**, M.S. Zoology
1989 **DARTMOUTH COLLEGE**, B.A. Biology

## APPOINTMENTS

2007 – present **Director of Informatics Research and Development**
National Center for Ecological Analysis and Synthesis, U. of California Santa Barbara
2000 - 2006 **Informatics Researcher**
National Center for Ecological Analysis and Synthesis, U. of California Santa Barbara
1996 - 2000 **Database and Information Specialist**
National Center for Ecological Analysis and Synthesis, U. of California Santa Barbara
1994 - 1996 **Programmer** Psychology, U. of California Santa Barbara

## PUBLICATIONS

Reichman, O.J., Matthew B. Jones, and Mark P. Schildhauer. 2011. Challenges and Opportunities of Open Data in Ecology. Science 11 February 2011: 703-705. doi:10.1126/science.1197962

Barseghian D., Altintas I., Jones M. B., Crawl D., Potter N., Gallagher J., Cornillon P., Schildhauer M., Borer E. T., Seabloom E.W. Hosseini P. R. 2010. Workflows and extensions to the Kepler scientific workflow system to support environmental sensor data access and analysis. Ecological Informatics 5: 3–8. doi:10.1016/j.ecoinf.2009.08.008

Jones, M. B. and Gries, C. 2010. Advances in environmental information management. Ecological Informatics 5: 1–2. doi:10.1016/j.ecoinf.2010.01.001

Leinfelder B., Tao J., Costa D., Jones M.B., Servilla M., O'Brien M., Burt, C. 2010. A metadata-driven approach to loading and querying heterogeneous scientific data. Ecological Informatics 5: 3–8. doi:10.1016/j.ecoinf.2009.08.006

Berkley C, Bowers S, Jones MB, Madin JS, Schildhauer M. (2009) Improving Data Discovery in Metadata Repositories through Semantic Search. Proceedings of iSEEK'09. IEEE Computer Society.

Borer, Elizabeth, Eric Seabloom, Matthew B. Jones, Mark Schildhauer. 2009. Some simple guidelines for effective data management. Bull Ecol Soc. America vol. 90, issue 2, pp. 205-214.

Ludäscher B., I. Altintas, S. Bowers, J. Cummings, T. Critchlow, E. Deelman, D. D. Roure, J. Freire, C. Goble, M. Jones, S. Klasky, T. McPhillips, N. Podhorszki, C. Silva, I. Taylor, and M. Vouk. 2009. Scientific Process Automation and Workflow Management. *In* A. Shoshani and D. Rotem, editors, Scientific Data Management: Challenges, Technology, and Deployment. Computational Science Series, chapter 13. Chapman & Hall/CRC. ISBN: 1420069802

Urban-Lurain M., Ebert-May D., Momsen J., McFall R., Jones M.B., Leinfelder B., and Sticklen J. 2009. An Assessment Database for Supporting Educational Research. 39th ASEE/IEEE Frontiers in Education Conference. October 18 - 21, 2009, San Antonio, TX. ISSN : 0190-5848. Pp 1-6. doi:10.1109/FIE.2009.5350595

Wang J., I. Altintas, P. R. Hosseini, D. Barseghian, D. Crawl, C. Berkley, M. B. Jones. 2009. Accelerating Parameter Sweep Workflows by Utilizing Ad-hoc Network Computing Resources: an Ecological Example. In Proceedings of IEEE 2009 Third International Workshop on Scientific Workflows (SWF 2009), 2009 Congress on Services (Services 2009).

Barseghian D., Altintas I., and Jones M.B. 2008. Accessing and using sensor data within the Kepler scientific workflow system. Pages 26-32 *in* Gries C. and Jones M.B. 2008 (editors). Proceedings of Environmental Information Management Conference 2008.

Gries C. and Jones M.B. 2008 (editors). Proceedings of Environmental Information Management Conference 2008. 192 pp.

Leinfelder B., Tao J., Costa D., Jones M.B., Servilla M., O'Brien M., and Burt C. 2008. Using metadata for loading and querying heterogeneous scientific data. Pages 90-95 *in* Gries C. and Jones M.B. 2008 (editors). Proceedings of Environmental Information Management Conference 2008.

Madin J. S., Bowers S., Schildhauer M., and Jones M. B. 2008. Advancing ecological research with ontologies. Trends in Ecology and Evolution 23 (3): 159-168. doi:10.1016/j.tree.2007.11.007

Wang J., Altintas I., Berkley C., and Jones M.B. 2008. A High-Level Distributed Execution Framework for Scientific Workflows. 3rd International Workshop on Scientific Workflows and Business Workflow Standards in e-Science (SWBES). Dec 10, 2008. IEEE Computer Society Press.

Jones, M B. 2007. Meta-information systems and ontologies A special feature from ISEI'06. Ecological Informatics 2 (3): 193-194. doi:10.1016/j.ecoinf.2007.09.003

Jones C, Blanchette C, Brooke M, Harris J, Jones M and Schildhauer M. 2007. A metadata-driven framework for generating field data entry interfaces in ecology. Ecological Informatics 2 (3): 270-278. doi:10.1016/j.ecoinf.2007.06.005

Michener, William K., James H. Beach, Matthew B. Jones, Bertram Ludaescher, Deana D. Pennington, Ricardo S. Pereira, Arcot Rajasekar, and Mark Schildhauer. 2007. "A Knowledge Environment for the Biodiversity and Ecological Sciences", Journal of Intelligent Information Systems, 29(1): 111-126. Doi: 10.1007/s10844-006-0034-8

Pennington D, D Higgins, AT Peterson, MB Jones, B Ludaescher, S Bowers. 2007. “Ecological Niche Modeling Using the Kepler Workflow System”, pp 91-108 in Taylor, I.J.; Deelman, E.; Gannon, D.B.; Shields, M. (Eds.), “Workflows for e-Science: Scientific Workflows for Grids”, 530 p., Springer. ISBN: 978-1-84628-519-6.

Jones M B, Schildhauer M, Reichman O J, and Bowers S. 2006. The new bioinformatics: integrating ecological data from the gene to the biosphere. Annual Review of Ecology, Evolution, and Systematics. 2006. 37:519–544.

Ludäscher B., Altintas I., Berkley C., Higgins D., Jaeger-Frank E., Jones M., Lee E., Tao J., Zhao Y. 2006. Scientific Workflow Management and the Kepler System. Special Issue: Workflow in Grid Systems. Concurrency and Computation: Practice & Experience 18(10): 1039-1065.

Berkley, Chad, Shawn Bowers, Matthew B. Jones, Bertram Ludaescher, Mark Schildhauer, Jing Tao. 2005. Incorporating Semantics in Scientific Workflow Authoring. 17th International Conference on Scientific and Statistical Database Management. IEEE Computer Society.

Cushing, Judith, Kristin Vanderbilt, James Brunt, Matt Jones, Amarnath Gupta, Peter McCartney. 2005. NSF Long Term Ecological Research Sites Praxis et Theoria – LTER Information Management & CS Research. 17th International Conference on Scientific and Statistical Database Management. IEEE Computer Society.

Fegraus E, SJ Andelman, MB Jones and M Schildhauer. 2005. Maximizing the Value of Ecological Data with Structured Metadata: An Introduction to Ecological Metadata Language (EML) and Principles for Metadata Creation. Bulletin of the Ecological Society of America. 86(3): 158-168.

Michener, W, Beach J, Bowers, S, Downey L, Jones M B, Ludaescher, B, Pennington D, Rajasekar A, Romanello S, Schildhauer M, Vieglais D, and Zhang J. 2005. Data Integration and Workflow Solutions for Ecology. Lecture Notes in Computer Science 3615: 321-324. doi: 10.1007/11530084_32

Michener, William, OJ Reichman, James Beach, Mathew Jones, Bertram Ludaescher, Arcot Rajasekar, Mark Schildhauer, Shawn Bowers, Deana Pennington, Samantha Romanello. 2005. Creating and Providing Data Management Services for the Biological and Ecological Sciences: Science Environment for Ecological Knowledge. 17th International Conference on Scientific and Statistical Database Management. IEEE Computer Society.

Altintas I, Berkley C, Jaeger E, Jones M, Ludäscher B, Mock S. 2004. Kepler: An Extensible System for Design and Execution of Scientific Workflows. Proceedings of the The Future of Grid Data Environments, Global Grid Forum 10.

Higgins D, Berkley C, and Jones M B. 2002. Managing Heterogeneous Ecological Data sing Morpho. Proceedings of the 14th International Conference on Scientific and Statistical Database Management, July 24-26, 2002. J. Kennedy (ed). ISBN 0-7695-1632-7 ISSN 1099-3371.

McCartney, P. and M. B. Jones. 2002. Using XML-encoded Metadata as a Basis for Advanced Information Systems for Ecological Research. Proceedings of the 6th World Multi-Conference on Systemics, Cybernetics, and Informatics (SCI 2002). Orlando, Florida.

Jones, Matthew B., C. Berkley, J. Bojilova, M. Schildhauer. 2001. Managing Scientific Metadata. IEEE Internet Computing 5 (5): 59-68.

Berkley, C., M. B. Jones, J. Bojilova, and D.Higgins. 2001. Metacat: a Schema-Independent XML Database System. 13th International Conference on Scientific and Statistical Database Management. IEEE Computer Society.

Frondorf, A., M. B. Jones, and S. Stitt. 1999. Linking the FGDC geospatial metadata content standard to the biological/ecological sciences. Proceedings of the Third IEEE Computer Society Metadata Conference. Bethesda, MD. April 6-7, 1999.

Nottrott, R., M. B. Jones, and M. Schildhauer. 1999. Using XML-structured metadata to automate quality assurance processing for ecological data. Proceedings of the Third IEEE Computer Society Metadata Conference. Bethesda, MD. April 6-7, 1999.

Jones, M. B., C. Berkley, J. Bojilova, D. Higgins, C. Jones, R. Nottrott, and M. Schildhauer. 2001. Data Management Software and Standards to Facilitate Ecological Research. Annual Meeting of the Ecological Society of America, Madison, WI.

Jones, Matthew B. 1998. Web-based Data Management. *In* Data and Information Management in the Ecological Sciences: A Resource Guide. *Edited by* Michener, W.K., J.H. Porter and S.G. Stafford. LTER Network Office, University of New Mexico, Albuquerque, New Mexico.

Peart, D.R., N.J. Poage and M.B. Jones. 1992. Winter injury to subalpine red spruce: influence of prior vigor and effects on subsequent growth. Canadian Journal of Forest Research. 22: 888-892.

Jones, M.B., C.L. Folt and S. Guarda. 1991. Characterizing individual, population and community effects of sublethal levels of aquatic toxicants: an experimental case study using Daphnia. Freshwater Biology 26: 35-44.

Peart, D.R., M.B. Jones and P.A. Palmiotto. 1991. Winter injury to red spruce at Mt. Moosilauke, N.H. Canadian Journal of Forest Research 21: 1380-1389.

## GRANTS

EcoTrust

DataONE: Data Observation Network for Earth. (Michener, Hampton, Cook, Frame, Smith, Jones, et al.) 2009. NSF.

Semantic Tools for Ecological Data Management. (Jones, Schildhauer, Madin, O'Brien, Bowers) 2008. NSF.

Creation of an International Virtual Data Center (VDC) for the Biodiversity, Ecological and Environmental Sciences. 2008. (Michener, Jones, et al.) NSF.

SDCI NMI Improvement: Development of Kepler CORE - A Comprehensive, Open, Robust, and Extensive Scientific Workflow Infrastructure (Ludaescher, Altintas, Bowers, Jones, McPhillips, Schildhauer). 2007. NSF 0722079.

A Workshop for Advancing a Unified Model for Observational Data in the Ecological and Environmental Sciences (Schildhauer, Jones, Madin). 2007. NSF DBI-07334849. ($50,000)

RCN: TraitNet - Coordinating Trait-Based Ecological and Revolutionary Research. 2007. Naeem, Bunker, et al. NSF 0639161.

Faculty Institutes for Reforming Science Teaching - FIRST III. 2007. Jones, Schildhauer. Subcontracted from Ebert-May et al. Michigan State University. ($132,651)

Data Management and Analysis Tools Supporting Adaptive Management in South African Parks (Schildhauer, Jones, Reichman). 2006. Andrew W. Mellon Foundation. ($649,431)

Management and Analysis of Environmental Observatory Data using the Kepler Scientific Workflow System. 2006. Jones, Altintas, Baru, Gallagher, and Schildhauer. NSF 0619060, $2.7M.

Enabling the Science Environment for Ecological Knowledge (SEEK). 2002. Reichman, Jones, Schildhauer, et al. (collaborative award with UNM, UCSD, and KU). NSF 0225676 ($2,910,756 for UCSB of $12.05M total).

Webs on the Web: Internet Database, Analysis, and Visualization of Ecological Networks. Martinez, Dunne, Jones, Williams, and Yoon. 2002. NSF 0234980 ($1,443,829).

Production implementation of the Knowledge Network for Biocomplexity. 2003. Reichman, Jones, Schildhauer. Andrew W. Mellon Foundaiton. ($700,000)

Resource Discovery Initiative for Field Stations (RDIFS). 2001. Michener, Jones, McCartney et al. NSF Research Collaboration Network program. NSF 0129792.

Capturing Data in the Field: An Application Framework for Easily Creating Custom Data and Metadata Entry Forms on Handheld and Desktop Computers. 2001. Gaines, Blanchette, C. Jones, M. Jones, and Schildhauer. NSF DBI-0131178 ($887,634).

A Knowledge Network for Biocomplexity: Building and Evaluating a Metadata-based Framework for Integrating Heterogeneous Scientific Data. Reichman, Jones, Brunt, Willig, and Helly. NSF DEB 9980154 ($2,979,276).

Integrating Marine Ecology Data for Scientific Analysis and Resource Management. 1999. Reichman, Jones, and Schilhauer. NSF 9904777 ($882,627).

For other awards, see http://www.nceas.ucsb.edu/ecoinformatics/

## SERVICE AND OUTREACH

- **Chair, Data Services Working Group, National Ecological Observatory Network**
- **Chair, Kepler Leadership Team (2009-2010)**
- **Editorial Board, Ecological Informatics 2006-present**
- **Science Advisory Board, Tropical Ecology, Assessment & Monitoring Network, Conservation International (2006-present)**
- **Chair, Global Biological Information Facility (GBIF) Metadata Implementation Framework Task Group (2009)**
- **Scientific Program Committees**
  - International Workshop on Linked Science 2011
  - International Society for Ecological Informatics 2006, 2008
  - Data Integration in the Life Sciences 2005
  - e-Science 2007
  - Environmental Information Management 2008, 2011 (Chair)
  - Semantic Scientific Knowledge Integration 2008
  - Intelligent Systems for Environmental (Knowledge) Engineering and EcoInformatics 2009
  - SIGMOD, Workflow Approaches for New Data-centric Science (WANDS'10) 2010
  - Scientific and Statistical Database Management Conference (SSDBM) 2011
  - Computing for Citizen Science IEEE eScience Conference December 6-8, 2011
- **NEON Information Technology and Communications Committee**
- **Biological Data Working Group Member, Federal Geographic Data Committee**
  - **Author, Biological Data Profile FGDC metadata standard**
- **Global Biological Information Facility (GBIF) Task Group on Observational Data**
- **Convener, Observations Task Group, Biodiversity Information Standards (TDWG)**

## RECENT SOFTWARE PRODUCTS

**Ecological Metadata Language**, http://knb.ecoinformatics.org/software/eml/ (released versions 1.0, 1.1, 1.2, 1.3, 1.4, 1.4.1, 2.0.0, 2.0.1, 2.1.0)

**Morpho**: Data Management Software for Ecologists, http://knb.ecoinformatics.org/software/morpho/, versions 1.0, 1.1, 1.2, 1.2.1, 1.3, 1.4, 1.5, 1.5.1, 1.6, 1.6.1, 1.7.0, 1.8.0, 1.9.0, 1.9.1

**Metacat**: Metadata Catalog Server, http://knb.ecoinformatics.org/software/metacat/, versions 1.0, 1.1, 1.2, 1.3, 1.4, 1.4.1, 1.5, 1.6, 1.7, 1.8, 1.8.1, 1.9.1, 1.9.2, 1.9.3, 1.9.4

**Kepler**: Scientific Workflow System, http://kepler-project.org/, versions 1.0.0alpha1-9, 1.0.0beta1, 1.0.0beta2, 1.0.0beta3, 1.0.0, 2.0.0, 2.1.0, 2.2.0