

Vitae

Lee E. Benda
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Education

Ph.D., Geological Sciences, University of Washington	1995
M.Sc, Geological Sciences, University of Washington	1988

Employment

President TerrainWorks	2014 -
Research Geomorphologist, Earth Systems Institute	1997 - 2014
Consulting Geologist	1992 – present
Research Associate, Geological Sciences, University of WA	1994 – 1996
Geologist, King County, Washington	1990 - 1992
Geologist, Fisheries Research Institute, UW	1987 – 1989

Affiliations

Licensed Geologist and Engineering Geologist, Washington and California
 American Geophysical Union

Websites:

www.terrainworks.com

Applied Science Experience

Dr. Benda has extensive experience involving analysis of shallow failures, debris flows, dam-break floods, and deep-seated failures using a combination of field work, aerial photograph analysis, and computer simulation modeling. Expertise in fluvial geomorphology includes basin-scale sediment delivery to streams, effects of mass wasting on channel form and process, sediment transport, and formation of stream and river morphology. Dr. Benda also specializes in constructing sediment budgets from hillslope to watershed scales and wood budgets for identifying the relative importance of different recruitment processes and wood transport. Over the last 12 years, Lee has contracted with state and federal governments, private industry, and environmental organizations. Since the early 1990s, Lee has been involved with 32 watershed analyses and watershed assessments.

Appointments:

Oregon State University: Adjunct Faculty (2016 -)
 U.S. EPA Science Advisory Panel (2013-2014). Update to the U.S. Clean Water Act.

Disciplinary Specialties:

Ecosystem Analysis Software Development
Fluvial Geomorphology
Slope Stability
Risk Mitigation

Selected Publications (and see [here](#))

Benda, L. et al. in review. Unpaved road erosion and sediment delivery: assessing existing mitigation effectiveness and optimizing future reductions, including post fire.

Benda, L., et al. 2015. Building virtual watersheds: a global opportunity to strengthen resource management and conservation. **Environmental Management** (Springer). [DOI](#) 10.1007/s00267-015-0634-6.

Barquin, J., Benda, L. et al. 2015. Coupling virtual watersheds with ecosystem service assessment: a 21st century platform to support river research and management. **WIREs Water**. doi: 10.1002/wat2.1106

Benda et al. 2015. Thinning in riparian second growth forests: a model of in-stream wood recruitment for evaluating management and stream restoration alternatives. **Journal of Forest Research** (Springer). DOI 10.1007/s11676-015-0173-2

Flitcroft, R.L., J.A. Falke, G.H. Reeves, P.F. Hessburg, K.M. McNyset and L.E. Benda. 2015. Wildfire may increase habitat quality for spring Chinook salmon in the Wenatchee River subbasin, WA, USA. **Forest Ecology and Management** 359:126-140.

Bidlack, A., L. Benda, T. Miewald, G. Reeves and G. McMahan. 2014. Intrinsic Potential Habitat Modeling for Chinook Salmon in the Copper River Watershed, Alaska. **Transactions of the American Fisheries Society** 14:3. 689-699

Benda, L. and P. Bigelow. 2014. Recruitment, storage transport and function of wood in northern California streams. **Geomorphology** 79:79-97.

Benda, L.E., D.J. Miller, J. Barquin. 2011. Creating a catchment scale perspective for river restoration, **Hydrology and Earth System Science**. 15, 2995-3015.

Benda, L. 2009. Future of Applied Watershed Science at Regional Scales **EOS, Transactions, American Geophysical Union** Volume 90 Number 18 5 May 2009.

Benda, L. 2008. Confluence environments at the scale of river networks. Chapter 13 (pg. 271-300) in **River Confluences, Tributaries, and the Fluvial Network**, Ed. by Rice, S.P., Roy, A.G., and Rhoads, B.L. **Wiley and Sons**.

Miller, D. J., Burnett, K.M and Benda, L. 2007. Factors controlling availability of spawning habitat for salmonids at the basin scale. *in* Salmonid Spawning Habitat in Rivers: Physical Controls, Biological Responses, and Approaches to Remediation. **American Fisheries Society**.

Benda, L., D. J. Miller, K. Andras, P. Bigelow, G. Reeves, and D. Michael. 2007. NetMap: A new tool in support of watershed science and resource management. **Forest Science** 52:206-219.

Bigelow, P., L. Benda, D. J. Miller, and K. M. Burnett. 2007. On debris flows, river networks, and the spatial structure of channel morphology. **Forest Science** 52:220-238.

Benda, L., Hassan, M. and Church, M., and May, C. 2005. Geomorphology of headwaters: transition from hillslopes to channels. **Journal of American Water Resources**, 41(4): 835-851.

Benda, L., Miller, D., Dunne, T., Poff, L., Reeves, G., Pollock, M, and Pess, G. 2004. Network dynamics hypothesis: spatial and temporal organization of physical heterogeneity in rivers. **BioScience**, Vol. 54, No. 5, pp. 413–427.

Benda, L., Andras, K., and Miller, D. 2004. Tributary effects in river networks: role of basin scale, basin shape, network geometry, and disturbance regimes. **Water Resources Research**, Vol. 40, 1-15.

Benda, L., Miller, D., Sias, J., Martin, D., Bilby, R., Veldhuisen, C., Dunne, T. 2003. Wood Recruitment and Wood Budgeting, The Ecology and Management of Wood in World Rivers, Ed. by S. Gregory, K. Boyer, and A. Gurnell. **American Fisheries Society Symposium** 37: 49-73.

Benda, L., Veldhuisen, C., and Black, B. 2003. Tributary confluences, debris flows, and channel morphology, Olympic Peninsula, Washington, **Geological Society of America Bulletin**, 115:1110-1121..

Benda, L., Miller, D., Bigelow, P., and Andras, K. 2003. Effects of post-fire erosion on channel environments, Idaho. **Journal of Forest Ecology and Management**, Special Edition: Fires and Aquatic Ecosystems. V. 178: 105 – 119.

Miller, D., Luce, C., and Benda, L. 2003. Time, Space, and Episodicity in Physical Disturbance in Streams. **Journal of Forest Ecology and Management**, Special Edition: Fires and Aquatic Ecosystems. V. 178: 121-140.

Benda, L. and Sias, J. 2003. A quantitative framework for evaluating the wood budget. **Journal of Forest Ecology and Management**, Elsevier Press. 172:1-16.

Benda, L, Bigelow, P., and Worsley, T. 2002. Recruitment of wood to streams in old growth and second growth redwood forests in northern California. **Canadian Journal of Forest Research**, 32:1460-1477.

Benda, L., Poff, N.L., Tague, C., Palmer, M. A., Pizzuto, J., Copper, Sc., Stanley, E., and Moglen, G. 2002. How to avoid trainwrecks in the use of science in environmental problem solving. **BioScience**, 52:1127-1136.

U. S. F. S. 2002. Landscape Dynamics and Forest Management: Educational CD-ROM. General Technical Report, RMRS-GTR-101CD, **USDA, Rocky Mountain Research Station**; screenplay Benda, L. and Miller, D.

Benda, L. and Dunne, T. 1997. Stochastic forcing of sediment supply to the channel network from landsliding and debris flow, **Water Resources Research**, Vol.. 33, No.12, 2849-2863

Benda, L. and Dunne, T. 1997. Stochastic forcing of sediment routing and storage in channel networks, *Water Resources Research*, Vol. 33, No.12 2865-2880.