

Kim Gerard Mattson

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Education

Ph.D. in Ecology, University of Georgia, 1986. Dissertation on detrital carbon dynamics in forests following harvesting.

B.S. in Biology, University of Minnesota, 1978.

Current Position Environmental Consulting

Sole proprietor of Ecosystem Northwest, a natural resources consulting firm located in Mt. Shasta, California. Ecosystems Northwest was started in 1993 and has employed or subcontracted between 2-12 people performing field surveys of streams, forests, and biology. Ecosystems Northwest also specializes in scientific services such as watershed analyses, research, and forest carbon offset verification services. Clients include federal government, watershed councils, private forest firms, and Indian tribes. A description of qualifications, experience, and types of products are available at the webpage listed above.

Past Scientific Research Experience

1988-1996 **Courtesy Assistant Professor of Forest Science**. Oregon State Univ, Corvallis, OR.

1988-1997 **Research Assistant Professor of Forest Resources**. University of Idaho, Moscow, ID.

1986-1988 **Research Assistant Professor of Biology**. West Virginia University, Morgantown, WV.

Professional memberships

American Geophysical Union member
American Fisheries Society
Ecological Society of America
Soil Science Society
Society of American Foresters.
International Association for Ecology
Northwest Forest Soils
Salmonid Restoration Federation
Council on Forest Engineers

Certifications, training, permits, awards

Certified as soil carbon offset verifier for Climate Action Reserve soil protocol.
Certified as lead verifier for Climate Action Reserve voluntary offset verification.
Certified lead verifier for forest Ca. Cap and Trade Carbon Offset protocol, Ca. Air Res. Board,
Wetlands Delineation Sec 404, California Department of Transportation
Senior ecologist by the Ecological Society of America
Scientific take permits of fish by electroshocking in Oregon streams
Section 7 and Scientific Take Permits for California and Oregon
Survey and Manage Amphibians, Northwest Scientific Association, Olympia WA
California Fish Passage, For the Sake of Salmon, Fortuna, CA
Watershed Restoration, American Fisheries Society, Sun River, OR
Watershed Analyst by Washington Department of Natural Resources
Level II stream surveyor, Region 6 U.S. Forest Service
Partners in Conservation award, US Department of Interior, Washington DC

College Courses Taught

Field Natural History of the Siskiyou, College of the Siskiyou, Weed, CA Spring 2005-09.
Environmental Principles, College of the Siskiyou, Weed, CA. Fall 2006.
Introductory biology, Western Oregon University, Monmouth, OR. Winter 1997.
Introductory biology, West Virginia University, Morgantown, WV. 1986-88.
Introductory biology laboratory, University of Georgia, 1980-84.
Introductory ecology laboratory, University of Georgia, 1984.
General ecology, extension course, University of Georgia, 1983-84.

Peer-reviewed Publications:

- Zhang, J, J. Zhang, K. Mattson, and K Finley. 2020. Effect of silviculture on carbon pools during development of a ponderosa pine plantation. *Forests* 11, 997:
<https://doi.org/10.3390/f11090997>
- Mattson, K.G. and J. Zhang. 2019. Forests in northern Sierra Nevada of California, USA, store large amounts of carbon in different patterns. *Ecosphere* 10(6):e02778.10.1002/ecs2.2778
https://ecosystemsnorthwest.com/wp-content/uploads/2020/01/Mattson-Zhang_2019_ECOSPHERE-California-Forests-C.pdf
- Han, Y., J. Zhang, K.G. Mattson, W. Zhang, and T.A. Weber. 2016. Sample sizes to control error estimates in determining soil bulk density in California forest soils. *Soil Science Society of America Journal* 80(3):756-764.
- Mattson, K.G. and W.T. Swank. 2014. Woody debris decomposition on Watershed 7. Pp 118-133 in: Long-term response of a forest watershed ecosystem: clearcutting in the Southern Appalachians. W.T. Swank and J.B. Webster, eds. Oxford Univ Press, Oxford.
- McDowell NG, JD Marshall, J Qi, K Mattson. 1999. Direct inhibition of maintenance respiration in western hemlock roots exposed to ambient carbon dioxide concentrations. *Tree Physiology* 19:599-605.
- Jumpponen A, H Vare, KG Mattson, R Ohtonen, and J M Trappe. 1999. Characterization of 'safe sites' for pioneers in primary succession on recently deglaciated terrain. *J. of Ecology* 87:98-105.
- Lu S, KG Mattson, J Zaerr, and J Marshall. 1998. Root respiration of Douglas-fir seedlings: Effects of N concentration. *Soil Biol. Biochem.* 30:331-336.
- Jumpponen A, KG Mattson, J Trappe. 1998. Mycorrhizal functioning of *Phialocephala fortinii* with *Pinus contorta* on glacier forefront soil: interactions with soil nitrogen and organic matter. *Mycorrhiza* 7:261-265.
- Qi J, JD Marshall, and KG Mattson. 1997. High soil carbon dioxide concentrations inhibit root respiration of Douglas-fir. *New Phytologist*. 128: 435-442.
- Mattson KG. 1995. CO₂ efflux from coniferous forest soils: comparisons of measurement methods and effects of added nitrogen. In: R. Lal, J. Kimble, E. Levine and B.A. Stewart, eds. *Soils and Global Change*. CRC Press, Boca Raton. Pp: 329-341.
- Nay SM, KG Mattson, and BT Bormann. 1994. Biases of chamber methods for measuring soil CO₂ efflux demonstrated with a laboratory apparatus. *Ecology* 75:2460-2463.
- Entry JA, KG Mattson, and W Emmingham. 1993. Effects of soil nitrogen on mineralization of 2,4-D and atrazine in pasture soils. *Biology and Fertility of Soils* 16:179-182.
- Entry JA, KG Mattson, and MB Adams. 1993. Carbon balance in forest ecosystems: response to nitrogen. In: *Carbon Cycling in Boreal Forests and Sub-Arctic Ecosystems*. TS Vinson and TP Kolchugina, eds. USEPA Office of Research and Development, Washington, D.C. EPA/600R-93/084. Pp:155-166.

- Mattson KG and HC Smith. 1993. Changes in detrital organic matter following forest cutting in West Virginia. *Soil Biology and Biochemistry* 25:1241-1248.
- Mattson KG and WT Swank. 1989. Soil and detrital carbon dynamics following forest cutting in the Southern Appalachians. *Biology and Fertility of Soils* 7:247-253.
- Mattson KG, WT Swank, and JB Waide. 1987. Decomposition of woody debris following clearcutting in the Southern Appalachians. *Canadian Journal of Forest Research* 17:712-721.

Other Written Documents

- Beckmann JJ and KG Mattson. 2012. 2012 investigations of bacterial concentrations in streams associated with cattle grazing in wilderness areas of the Klamath National Forest. Quartz Valley Indian Reservation Environmental Department.
- Sluss R, S Schafer, M Bennett, C Kelley, and K Mattson. 2011. Quartz Valley Indian Reservation water quality and monitoring report 2011. Quartz Valley Indian Reservation Environmental Department.
- Mattson, KG. 2008. Effectiveness monitoring of restoration projects in the Shasta Basin. Prepared on behalf of the Shasta Resource Conservation District for the California Department of Fish and Game. [Effectiveness Monitoring of Restoration Projects in the Shasta Basin, Introduction with table of contents PDF 992k](#)
- Other reports (watershed assessments, stream survey reports) see:
https://ecosystemsnorthwest188.com/?page_id=12

Description of Services of Performed by Dr. Mattson and Ecosystems Northwest

Carbon Verification and Carbon Budgets for Forests

Performed forest carbon offset verifications as Lead Verifier for the California ARB carbon offset program. Through field measurements and modeling, carbon accumulations can be estimated for forests of the Pacific Northwest. Such estimates can help in determining strategies for carbon credits, particularly in soils.

Field Biological Surveys

Performed a variety of sensitive species surveys for State and Federal projects, stream surveys for fish presence and aquatic habitat, and effectiveness monitoring of restoration projects.

Modelling Ecosystem Processes

Several models have been parameterized including Ecosystem Treatment and Diagnosis (EDT), a fish habitat model for rivers, electrofishing depletion models, HEIwest, an elk habitat model. Mattson also has constructed his own forest carbon models.

Data Analyses and Research

Mattson has a Ph.D. in ecology, has performed field research since 1980, and has published in the peer-reviewed literature on topics such as forest ecosystems and watershed processes. Mattson has several years of experience in project design, field management, data management, statistical analyses, and information synthesis.

Professional Review

Copy editing and manuscript review for a variety of documents including CEQA, NEPA, and scientific manuscripts.