2949

Swanson,[1] Frederick J., Sherri L. Johnson,[2] Kai U. Snyder,[3] and Steven A. Acker.[4]
[1]USDA Forest Service, Forestry Sciences Lab, Corvallis, OR 97331, USA; [2]Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR 97331, USA; [3]E&S Environmental, 2162 NW Fillmore Ave, Corvallis, OR 97330, USA; [4]National Park Service, 909 First Ave, Seattle, WA 98104, USA. **Disturbance of Aquatic and Riparian Systems in a Mountain River Network.**

Patterns of disturbance in aquatic and riparian systems in mountain landscapes can be strongly influenced by the structure of stream networks. Network structure determines, in part, the distribution of geomorphic processes and their effectiveness as disturbance agents within stream systems. A 50-year record of debris flows in a Cascade Mountain landscape reveals a concentration of events in a limited set of the first- through third-order channels and a shifting mosaic of linear disturbance patches within the stream and riparian network across that part of the landscape. Channel segments not subjected to recent debris flows may serve as refuges in debris-flow producing floods, and sources of organisms to recolonize severely disturbed patches. Study of a major flood in 1996 on fourth- and fifth-order channels suggests that the widespread, 30-year-old, riparian alder stands experienced highest severity disturbance (removal) where floated wood was moving in a congested manner. These batches of wood were commonly delivered to the larger channel by debris flows from tributaries. Uncongested wood movement (floating individual pieces) tended to topple trees without removing them. Analysis of stem-map data from before and after the flood in a wide valley floor area with extensive alder stands shows a fine-grained pattern of disturbance patches of toppled and removed stems. These patterns reflect changes in channel position, impacts of floated wood, and other processes influenced by channel position. Aquatic habitat was altered directly by channel change and bed turnover, as well as indirectly by alteration of the riparian zone and its influences on the aquatic system. These observations form a basis for defining both deterministic and more stochastic properties of the disturbance regime over this mountain stream network.

Tang, Jianwu, Ming Xu, and Ye Qi. Department of Environmental Science, Policy, and Management, University of California, 135 Giannini Hall Berkeley, CA 94720-3312, USA. **The Impact of Forest Thinning on Soil Respiration.**

Soil respiration is controlled by soil temperature, soil moisture, fine root biomass, microbial biomass, and soil physical and chemical properties. The thinning of forests will change soil temperature and moisture and thus change the soil CO_2 efflux. Using an LI-6400 Soil CO_2 Flux System we measured soil surface CO_2 efflux in an 8-year-old ponderosa pine plantation, 58% of which is covered by trees, in the Sierra Nevada Mountains in California from June 1998 to April 2000 before a pre-commercial thinning, and from April to November 2000 after the thinning. We established two 20 m by 20 m sampling plots and measured soil CO_2 efflux and soil temperatures (10 and 20 cm in depth) and moisture on a 3 by 3 matrix of sampling points in each plot. We found although soil temperature and moisture explain most of the temporal variations in soil CO_2 efflux, they explain only a little part of the spatial variation of soil CO_2 efflux. A thinning intensity of 60% of the trees significantly changed the microclimate in the forest, but the soil CO_2 efflux does not vary significantly before and after the thinning.

IALE

www.west.asu.edu/LEML/iale2001

Alison — Miami U-Oh
Pnw /Fomer study PhD

Memorial Union
Arizona State University
Tempe, Arizona

16th Annual Symposium

of the International Association
of Landscape Ecology-U.S. Chapter

Program Chair:
Dr. Jianguo (Jingle) Wu

Program Coordinator:
Dr. Laura Musacchio

NATIONAL ENDOWMENT FOR THE ARTS

SUPPORTED BY
ARIZONA COMMISSION
ON THE ARTS

EPA United States
Environmental Protection Agency
"...to protect human health and to safeguard the natural environment..."