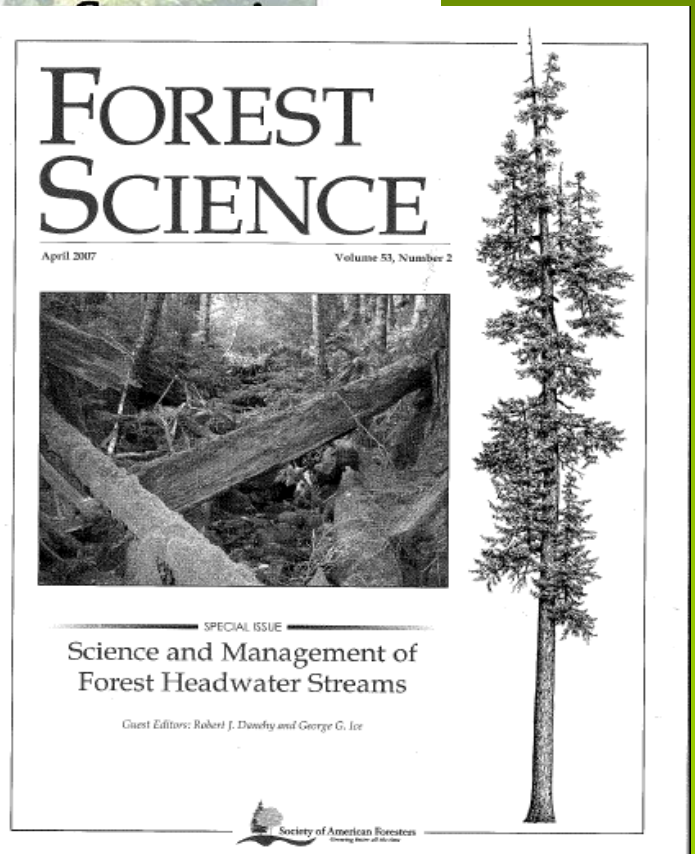
Oregon Headwaters Research Cooperative

2000 - 2010



OHRC Charter

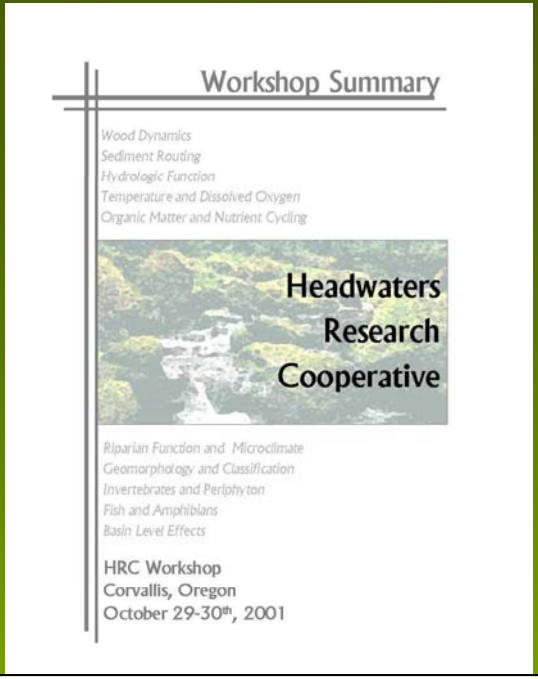
Goal was to sunset in 5 years.

Established a steering committee that would select project using the following criteria:

1. The projects will increase our scientific understanding of physical and biological resources and processes of headwater streams.
2. Strive for consistency with the recommendations from the October 2001 Workshop consistent with addressing critical gaps in knowledge of headwater streams.
3. Consider feasibility within the constraints of OHRC budget and timelines.
4. Focus on applied forest management in Oregon with the context of the greater Pacific Northwest region. Strive for an appropriate balance of east and west Oregon research.

Three Conferences

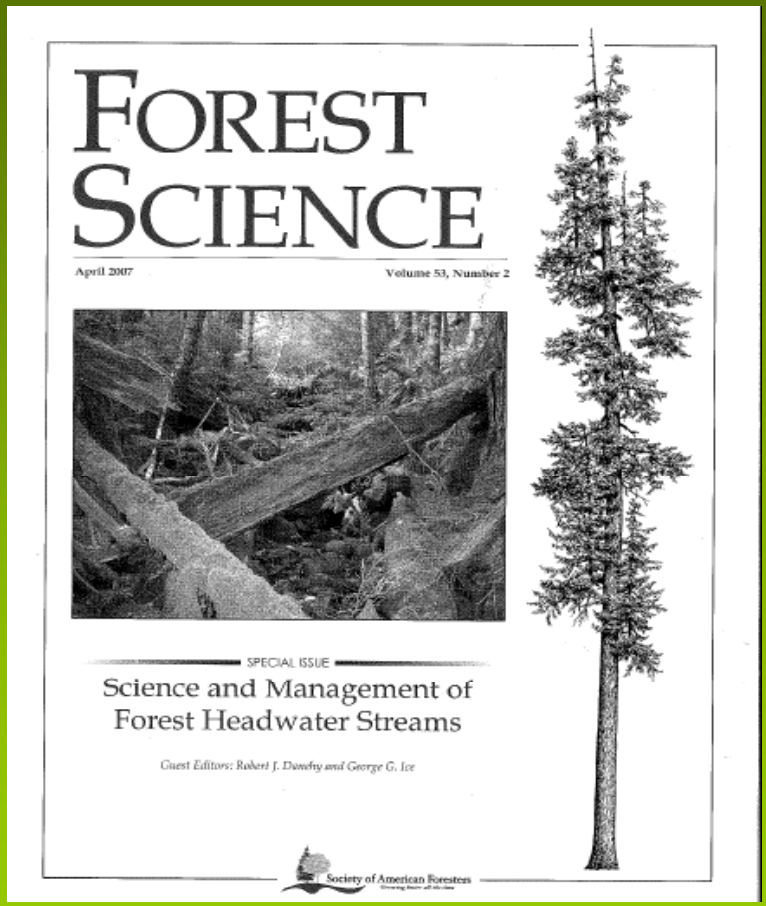
- 2001 Headwater Research Cooperative Workshop
- 2003 Headwater Stream Ecology Workshop
- 2005 Science and Management



Headwater Stream Ecology Workshop
Jointly Sponsored by:
The Oregon Headwaters Research Cooperative and
The Watershed Management Cooperative
January 16, 2003
La Sells Stewart Center
Corvallis, Oregon

Science and Management of Headwater Streams In the Pacific Northwest
Corvallis, Oregon
November 17 and 18, 2005
Sponsored by
The Oregon Headwaters Research Cooperative

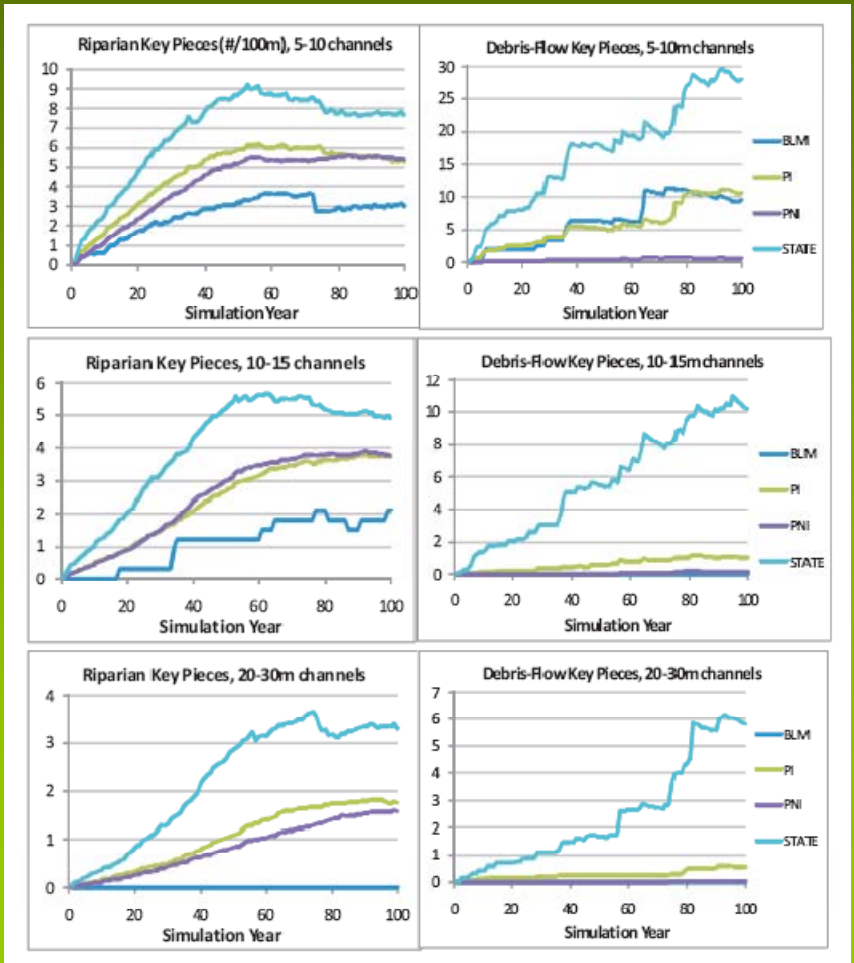
Forest Science Special Issue



- Synthesis Papers
- Watershed studies and water yield and sediment
- Debris flows
- Microclimate
- Periphyton
- Macroinvertebrates
- Amphibians
- Linkages between physical and biological processes

Editors: Bob Danehy and George Ice

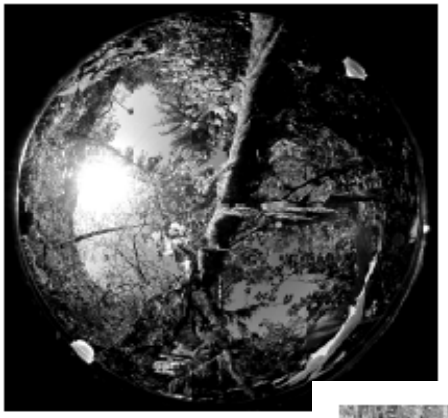
Wood Recruitment and Routing



- Miller and Burnett *(Under Review)*
- Recruitment, transport, and in-channel storage of wood
- Modeled for 2-3 watersheds
- Draft discussion suggests variable inputs from various land management strategies and watershed processes

Headwater Stream Characteristics

- Robison and Runyon *(2006 Final Report on OHRC Website)*
- *Narrow widths, ½ of sites had dry portions during low flow*
- *Canopy Cover:*
  - *80-90% forested*
  - *52% in treated reaches (from understory)*
- *Watershed area not a good predictor of bankfull width (except in CR), 1:24K not good predictor of gradient*
- *Stream Temperature*
  - *Higher temps in treated reaches even with high shade (other factors drive temp patterns)*
  - *Low flow volumes suggest low probability for heat transfer*
- *Fish presence varies from year-to-year*



Forest Management and Invertebrates

Moldenke and Ver Linden *(Forest Science V 53, No. 2)*

- Effect of management on EPT

- Canopy removal increased biomass and density of all guilds except scrapers
- EPT became similar to adjacent clearcut – more substantial differences with elevation than with treatment
- Need to better understand emergent insects as bird diet

Ephemeroptera

Plecoptera

Trichoptera

Forest Management and Microclimate

- Rykken, Chan, and Moldenke *(Forest Science V 53, No. 2)*
- Microclimate gradient evident to:
  - 10 m in treatments
  - 20 m in un-treated
- Buffers and forests had similar microclimate gradients
- Findings suggested 30 m buffers were effective

Stream Macroinvertebrates related to Natural and Forest Management Gradients

Herlihy, Gerth, Li, and Banks *(Freshwater Biology (2005) 50, 905-919)*

- Similarities across Coast Range, Cascades, Klamath

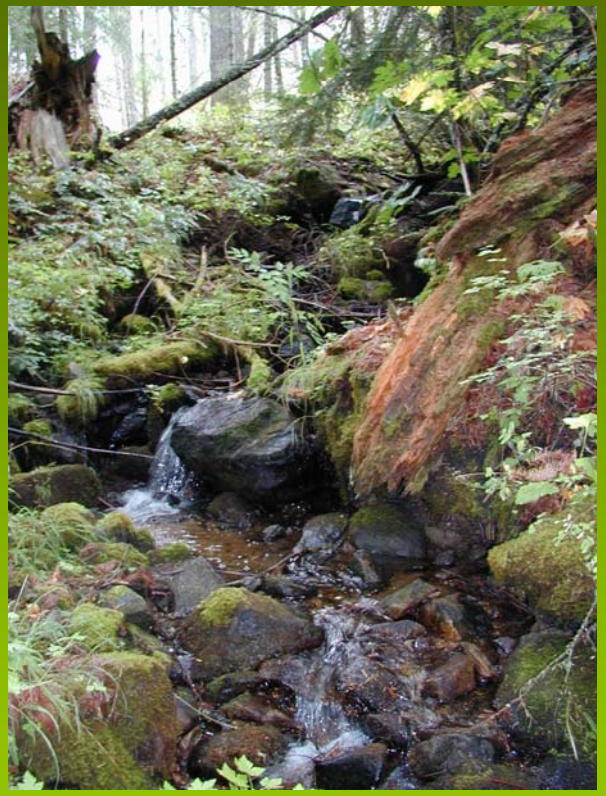
- Ephemeroptera strongly related with coarse substrate and fast water
- No strong relation to logging, fish presence, catchments size, or ecoregion
- IBI not strongly related to harvest history
  - Impaired sites were lower elevation Coast Range with evidence of agricultural activity
  - Percent sand and fine substrate related to impairment level

Emergent Insects: Logging, Flow, and Season

- Banks and Li (*NABS 20O7 (26)4 or* ***JN Am****. Benthol. Soc. 26(4):620–632*)
- More aquatic insects emerged from streams in clearcut catchments than in forested catchments.
- Plecoptera had higher emergence rates from intermittent streams than from perennial streams in spring.
- Functional feeding group composition not affected by harvest condition or flow duration.
- Taxon richness was slightly higher at clearcut than at forested streams, primarily because of the occurrence of rare taxa at clearcut streams.
- Emergent aquatic insect assemblages showed community patterns that varied by season and harvest condition, but little by flow duration
- Differences in assemblages between clearcut and forested streams were associated with conditions created by harvesting.

Plecoptera

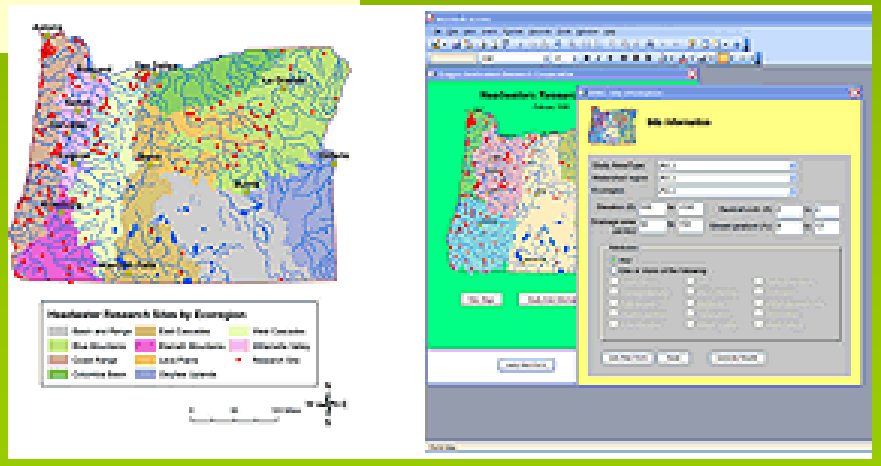
Geo-hydrologic Controls on Stream Temperature



- Tague and Grant *(Water Resources Research 40, WO4303)*
- Summer characteristics and response time to winter recharge are related to the percent of High Cascade geology in the contributing area
- Geology exerts a dominant control on flow regimes and should be considered when interpreting hydrologic behavior

Information Sharing

- Posters and Presentations at Professional Meetings
- Headwaters Research Cooperative Web Site: (http://www.headwatersresearch.org/)
- Interactive Database of Headwater Studies on website



Headwaters Research Cooperative Sunset

- Headwaters Research Cooperative Sunset in Spring 2010
  - Edited Special Issue in Forest Science
  - Supported 8 original research projects
  - Created web-based catalogue of headwaters research projects
  - Hosted 3 professional meetings
  - Created and maintained website
    - Website will be updated one last time and left available indefinitely depending on use.
- We appreciate the support of over the years from our many partners and supporters: Bureau of Land Management, Oregon Department of Fish and Wildlife, Oregon Department of Forestry, Oregon Department of Environmental Quality, Oregon Forest Industries Council, Boise Cascade, Weyerhaeuser, Roseburg Forest Products, Oregon Forest Resources Institute, Plum Creek Timber Company, Forest Capital Partners, and Watershed Research Cooperative