



Trask Watershed Study

December 2007 WRC Update

- Overview - Bob
- Trophic Processes/Nutrients - Sherri
- Fish - Jason
- Hydrology and Sediment – Arne
- Questions/Discussion

Study Objectives

- Response of non-fish streams to harvest
 - 3 treatments
 - ODF – clear-cut with buffer
 - Weyerhaeuser – clear-cut without buffer
 - BLM – thin with buffer (only 1 treatment)
- Downstream response to multiple harvests
 - Assessed at multiple points downstream from a cluster of watershed-scale harvest units
- Physical, chemical and biological responses measured
- Improved understanding of the processes responsible for shaping the biological characteristics and function of stream ecosystems in forested environments

Focus on Small Streams

- Interest in effects of harvest on non-fish streams
 - Potentially expensive
 - Area in fish-bearing buffers (100 ft): 4%-7%
 - Area in non-fish perennial buffers (50 ft): 3%-5%
 - Represent an area of tight coupling of aquatic-terrestrial systems
 - Potential that responses in headwaters will affect downstream reaches
- Question well suited for watershed scale, experimental approach
- Comparable to the Hinkle Cr. focus and compliments Alsea study
- Recent storm may increase regulatory attention to small streams

Study Components/Participating Scientists

- Hydrology and sediment
 - Arne Skaugset, OSU
- Water temperature
 - Maryanne Reiter, Weyerhaeuser; Liz Dent, ODF
- Water chemistry and primary production
 - Sherri Johnson, USFS; Linda Ashkenas, OSU
- Invertebrates
 - David Wooster, OSU; Judy Li, OSU
- Fish
 - Jason Dunham, USGS; Doug Bateman, OSU
- Data management
 - Linda Ashkenas, OSU
- Amphibians
 - Mike Adams , USGS, Nate Chelgren, USGS
- Birds
 - Joan Hagar, USGS, Marcia Humes, ODF

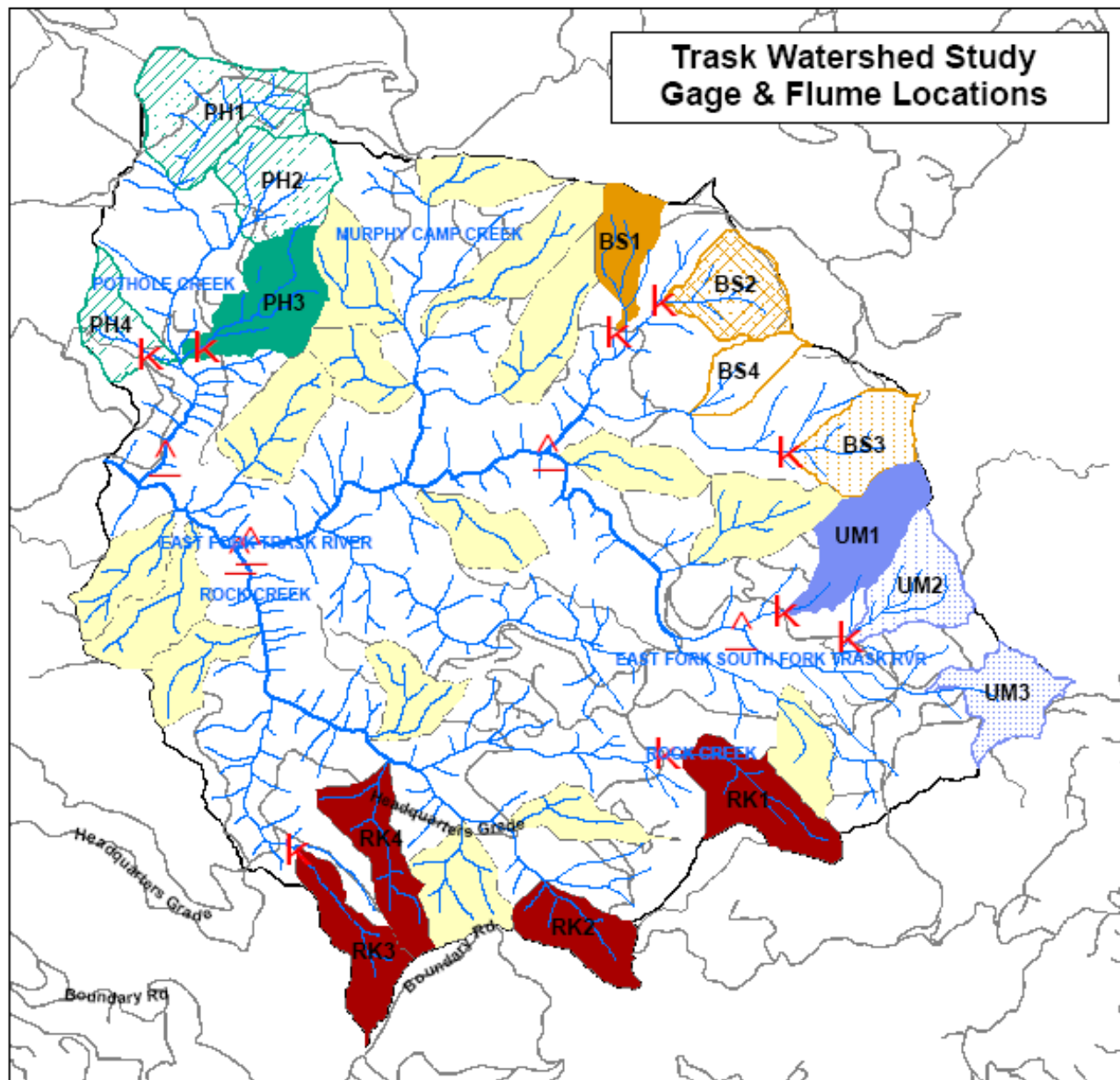
Project Support

- Financial
 - ODF and Weyerhaeuser- \$400k/yr
 - OWEB Grant - \$350k in 2006 (flumes and instrumentation)
 - USGS Grants – \$374k
 - FRL Grant - \$49k
 - Possible EPA funding
- Participating Scientists – in-kind support
 - USFS
 - USGS
 - OSU
 - Weyerhaeuser
- Affiliation with OSU Watershed Research Coop
 - Formal coordination with Hinkle Cr. and Alsea projects

Trask Streams



Trask Watershed Study Gage & Flume Locations



GAGE SITES

Type

Flume

Gage

STREAMS

FPA Class

Large

Medium

Small

SUBSHEDS

Name & Treatment

Bob&Sherri, CC

Bob&Sherri, REF

Bob&Sherri, THIN

Pothole, CCB

Pothole, REF

Rock, REF

UpperMain, CC

UpperMain, REF

Other basins

ROADS

Type

Dirt

Gravel

Paved

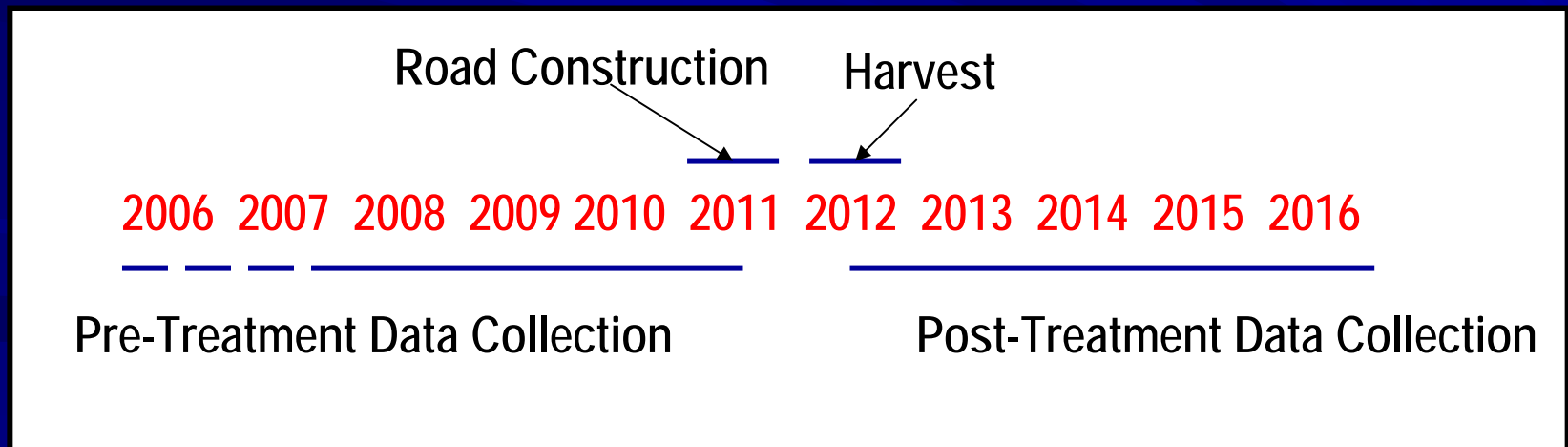
STUDY AREA

2007 Progress

- Obtained OWEB grant
 - Provides support for all 3 WRC projects – but most to Trask
 - Majority of funding for purchase of equipment – some for operational support in 2008
- Infrastructure
 - Five downstream monitoring stations installed (March)
 - Small watershed sites identified – flume and instrument installation this year
 - First year of fish trap operations
- Completed annual nutrient and biological sampling (algae, bugs, fish)
- Summer water temperature recorded at 20+ locations throughout the watershed
- Initiated amphibian sampling
- Received funding for a study of songbird response to harvest
- Finalized plans for treatment of small watersheds with the land managers

Treatments and Timeline

- Held Meetings with land managers several times in 2007
- Reached final agreement on application of treatments in August
- No activity through 2010
- Roads constructed/improved in 2011
- Small watersheds harvested in 2012
- No additional activity until end of study
- No harvest during study along fish streams



Treatment Type

Cluster	Catchment	Treatment	Distance (m) to cluster gage	Area (ha)	Percent of cluster to be treated
Upper Main	UM 1	no harvest	322	44.5	25.47
	UM 2	clearcut	1008	37.6	
	UM 3	clearcut	1489	33.4	
	Whole cluster			278.8	
Bob and Sherri	BS 1	no harvest	1208	26.6	32.43
	BS 2	thinning	1323	39.1	
	BS 3	clearcut	1105	37.8	
	BS 4	clearcut	1912	21.1	
	Whole cluster			302.2	
Pothole	PH 1	cc with buffer	2046	67.2	42.73
	PH 2	cc with buffer	1746	45.1	
	PH 3	no harvest	790	48.5	
	PH 4	cc with buffer	786	26.4	
	Whole cluster			324.6	
Rock Creek	RK 1	no harvest	4034	44.8	0
	RK 2	no harvest	3432	32.4	
	RK 3	no harvest	2303	35.3	
	RK 4	no harvest	2000	38.7	
	Whole cluster			664.2	

Amphibian Study

■ Objectives

- Contrast direct effects (within the experimental and control harvest units) with downstream effects
- Partition effects that primarily impact terrestrial/adult stages from those that impact aquatic stages
- Relate variation in amphibian populations over space and time to variation in environmental conditions potentially affected by harvest (water temperature, fine sediment, gradient, etc.)

■ Approach

- Focus on tailed frogs and giant salamanders
- Sample amphibians at headwater and downstream sites
- Evaluate response to treatment at population level variables (abundance) and individual level (growth, movement, condition and survival)

■ Funded about 50/50 through a FRESC grant and Trask base funding

Songbird Study

■ Study Objectives

- Examine the habitat and resource variables that best explain variation in the density and territory size of selected bird species associated with riparian habitat
- Examine the relationship between the abundance of emergent aquatic insects (prey for riparian-associated bird species) and variables such as primary productivity, sediment and nutrients
- Determine the manner in which bird species abundance and territory size is influenced by different buffer strategies

■ Approach

- Spring bird surveys
- Characterize physical habitat
- Determine availability of aquatic insects (used with other habitat variables in habitat relationship modeling)

■ FRESC funding through 2011 (pre-treatment samples)

■ Are exploring options for securing funding for post-treatment sampling

Next Steps/Challenges

■ 2008 Activities

- Install flumes and monitoring instruments on small watersheds
- Continue collection of TTS data at 5 downstream effects sites
- Collect 2008 biological and chemical stream data
- Complete second year of fish work with weirs and traps
- Initiate bird study; expand amphibian work

■ Future Challenges/Opportunities

- Enhance base funding to cover cost increases over time and to maintain hydrology monitoring sites
- Obtain post-treatment sampling funding for bird study
- EPA study on effects of alder harvest on soil and water chemistry?
- Maintain enough capacity to deal with unusual climatic events

Storm Flows December 2007

