Contemporary Forest Practices
(why do we do what we do?)

My background on this topic:
• 35 Years of tree growing in Oregon
• Participated in the development of the 94 Stream Rules
• Participated the review of stream rules in 1999-2000
• Along with others, helped establish the Hinkle Creek Watershed Research Project as well as the Watershed Research Co-op

Key ideas to share
• How we grow and harvest west side forests
• A context for regulation
• The beginning of the Watershed Research Co-op
Silviculture in the U.S. takes root

Around 100 years ago

• The end was in sight for cutting virgin stands
• Forestry Schools started springing up
• Little data at first
• Emulation of natural processes
• We have more data now
• It is still important to understand the role of disturbance
Douglas-fir silviculture

Doug-fir

• Native species
• Highly productive, after a somewhat slow start
• High value
• Often a pioneer species
### A Partial List of Forest Fires

<table>
<thead>
<tr>
<th>Year</th>
<th>Fire Name</th>
<th>Acres Burned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1848</td>
<td>Nestucca</td>
<td>290,000</td>
</tr>
<tr>
<td>1849</td>
<td>Siletz</td>
<td>800,000</td>
</tr>
<tr>
<td>1853</td>
<td>Yaquina</td>
<td>482,000</td>
</tr>
<tr>
<td>1865</td>
<td>Silverton</td>
<td>988,000</td>
</tr>
<tr>
<td>1868</td>
<td>Coos Bay</td>
<td>296,000</td>
</tr>
<tr>
<td>1933</td>
<td>Tillamook</td>
<td>240,000</td>
</tr>
<tr>
<td>1936</td>
<td>Bandon</td>
<td>143,000</td>
</tr>
<tr>
<td>1939</td>
<td>Saddle Mountain</td>
<td>190,000</td>
</tr>
<tr>
<td>1945</td>
<td>Wilson River/Salmonberry</td>
<td>33,000</td>
</tr>
<tr>
<td>1951</td>
<td>North Fork/Elkhorn</td>
<td>33,000</td>
</tr>
<tr>
<td>1966</td>
<td>Oxbow</td>
<td>44,000</td>
</tr>
<tr>
<td>1987</td>
<td>Silver</td>
<td>97,000</td>
</tr>
<tr>
<td>2002</td>
<td>Biscuit</td>
<td>499,960</td>
</tr>
<tr>
<td>2013</td>
<td>Numerous</td>
<td>130,000</td>
</tr>
</tbody>
</table>

- By the early 1900s, people had begun to form fire control organizations to fight fires.
- The growing and harvesting of forest tree species was not practicable until forest fires could be more effectively controlled.

Sources:
- Oregon Department of Forestry, "Tillamook Burn to Tillamook Forest," revised August 1993
- USFS, Pacific Southwest Region, Fire & Aviation
The Development of Forest Policy

- **1859** Oregon becomes a state
- **1941** Oregon law requires reforestation after timber harvest.
- **1971** The Oregon Forest Practices Act
- **1989** Northern spotted owl as a threatened species
- **1990s** Listing of Coho salmon
Douglas-fir Silviculture in Pictures

- Tree Seedling Nursery
- Typical Douglas-fir Seedling
- Seedling Planting
- Target Harvest-Age Forest
- Aerial Fertilization Yr 18-35
- Commercial Thinning Yr 22-27
- Target Height 10-13 Feet Yr 5
- Spray for Weed Control Yr 0-2
- Well Established 2 Yr Old Trees
The most fundamental and important forest resource: The Soil

- Grows and supports trees and other desirable vegetation
- Absorbs, cleanses, stores and releases water
- Foundation for roads, buildings, ponds, etc.

Soil is the heart of the land’s capital

The value of that capital depends on the soil’s functions & potentials
Tree Planting
Vegetation Management

• Site preparation prior to planting
• Grass/weed control as needed for a few years
• Both aerial and hand treatment
• Sometimes manual cutting
• Non-native plants can be especially challenging
Vegetation Management

Overtopped Seedling

Free to Grow
Even-aged Management Harvesting

- Clearcutting

- Commercial thinning

Photo by Kelly James
Yarding (Cable)
Yarding (Ground based)
Processing and Loading the Logs
1971 The Oregon Forest Practices Act is the Nation’s first comprehensive forest practice act. Rules set specific standards for:

- Reforestation
- Road construction and maintenance,
- Timber harvesting,
- Chemical application,
- Slash disposal
- Streamside buffer strips

Moring & Lantz 1975
An evolving history...

Major changes in Oregon's Forest Practice Rules:

Stream Protection

1972  1974  1978
1987  1988  1994
200?  201?

January 2002
Oregon Department of Forestry
Forest Practice Administrative Rules and
Forest Practices Act

CHAPTER 625
Forest Practices Administration

This publication includes the text of the Forest Practice Act and the Forest Practice Administrative Rules as they existed on January 1, 2002.

The rules and standards are available on the Oregon Secretary of State's FER site at http://www.sos.oregon.gov/fer/index.shtml. See numerical index. Chapter 625, Division 625-000.
Summary of Forest Practices Regulations

Slide from Paul Adams
Some of the Roles of Riparian Areas

- Shade – temperature protection
- Shelter – Large wood in the stream
- Soil Infiltration - Equipment Restrictions
 divisio 635, Water Protection Rules: Purpose, Goals, Classification and Riparian Management Areas
Riparian Management Area Widths for Streams of Various Sizes and Beneficial Uses

Table 1. Riparian Management Area Widths for Streams of Various Sizes and Beneficial Uses (OAR 629-635-0310)

<table>
<thead>
<tr>
<th></th>
<th>Type F</th>
<th>Type D</th>
<th>Type N</th>
</tr>
</thead>
<tbody>
<tr>
<td>LARGE</td>
<td>100 feet</td>
<td>70 feet</td>
<td>70 feet</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>70 feet</td>
<td>50 feet</td>
<td>50 feet</td>
</tr>
<tr>
<td>SMALL</td>
<td>50 feet</td>
<td>20 feet</td>
<td>Apply specified water quality protection measures, and see OAR 629-640-0200.</td>
</tr>
</tbody>
</table>

(from Forest Practices Rule Guidance, Water Protection Rules November 15, 2007)
OR Forest Practice Rules: Riparian Protection Example

Scenario:
- Medium Type F stream
- Coast Range Region
- Clearcut harvest

Requirements:
- **RMA** = 70 feet (side of operation)
- **Written plan** needed for operations within 100 ft of stream
- **Retain** all trees within 20 ft of stream
- **Retain** all snags & down wood in RMA & stream aquatic area
- **Retain** conifers in RMA, at least 120 sq ft basal area per 1000 ft stream, & at least 30 conifers at least 8" dbh
- **No skid trails** within 35 ft of stream

Slide from Paul Adams
Three-pronged approach to protect water quality and fish habitat on state and private forestland

• A centralized land-use planning process
• Science-based forest protection laws
• Voluntary efforts – to improve habitat and water quality
Why did the Watershed Research Co-op begin?

Forest Practices Advisory Committee (1999-2000)

• Some thought the rules were inadequate. Others thought they were just fine.

• Only 5-6 years since the 94 rules

• Little data
After reviewing the stream rules a few of us began discussing the state of the science

- What did we know?
- What did we not know?
- Review of publications
  - Increases in fish biomass, some studies
  - Lack of temperature data
  - Lack of information on cumulative effects
- These questions would be best answered by using a paired, watershed approach.
Excitement Grew

• Great cooperation
• Great scientists
• Willing landowners
• Generous contributions
• A commitment to finding answers based on data
• Now, we have learned a great deal!
• We are going to learn a lot more
COOPERATORS/FUNDING

- OREGON STATE UNIVERSITY
- OREGON WATERSHED ENHANCEMENT BOARD
- OREGON FOREST INDUSTRIES COUNCIL
- ROSEBURG FOREST PRODUCTS
- PLUM CREEK
- OREGON DEPT OF FORESTRY
- FOREST AND RANGELAND ECOSYSTEM SCIENCE CENTER
- OREGON DEPT OF FISH AND WILDLIFE
- ASSOCIATED OREGON LOGGERS
- DOUGLAS TIMBER OPERATORS
- DOUGLAS COUNTY
- NCASI
- OREGON FOREST RESOURCES INSTITUTE
WHY DO THE RESEARCH?

Putting together 3 large, paired watershed projects:

• Time/energy/dollars
• Tie up private timber
• Potential risk?
  – What if science shows harvesting is detrimental?

• But with science
  – We can more efficiently target limiting factors to improve habitat
  – Better landowner acceptance of regulations based on data
IN SOME EARLIER STUDIES, MORE SUNLIGHT ADDED TO FISH PRODUCTIVITY

Canopy and Habitat Relationships
Central Coast Range
(1983 Hawkins et al.)
While these earlier studies showed higher productivity with canopy opening, there were unanswered questions:

- What was the temperature response to harvest?
- How far would temperature changes be propagated downstream? Cumulative effects?

These 3 paired watershed studies are specifically designed to get at this “cumulative effect”
12 Years Later...

• **Hinkle Creek**
  – The field work at Hinkle Creek is done
  – Analysis and publications continue

• **Alsea**
  – The field work at the Alsea is ongoing
  – Analysis and publications continue

• **Trask**
  – Post-harvest field work is going full speed ahead
  – There have been several publications prior to harvest.
Final Thoughts

• The WRC has added greatly to our knowledge
• The forest practices rules are effective
• Adaptive Management is working
  – The forest sector has shown support for science and science-based protection
  – We will continue to learn and practice adaptive management!