

A photograph of a forest stream. The water is clear and reflects the surrounding greenery. Large, moss-covered rocks are scattered throughout the stream. The background is a dense forest with various shades of green foliage.

Dynamic Ecology: The Aquatic Perspective

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Dynamic Aspects of the ACS

- “At the heart of this approach (the ACS) is the recognition that fish and other organisms evolved within a **dynamic environment** that has been **constantly influenced and changed** by geomorphic and ecologic disturbance.” FEMAT p. V-29

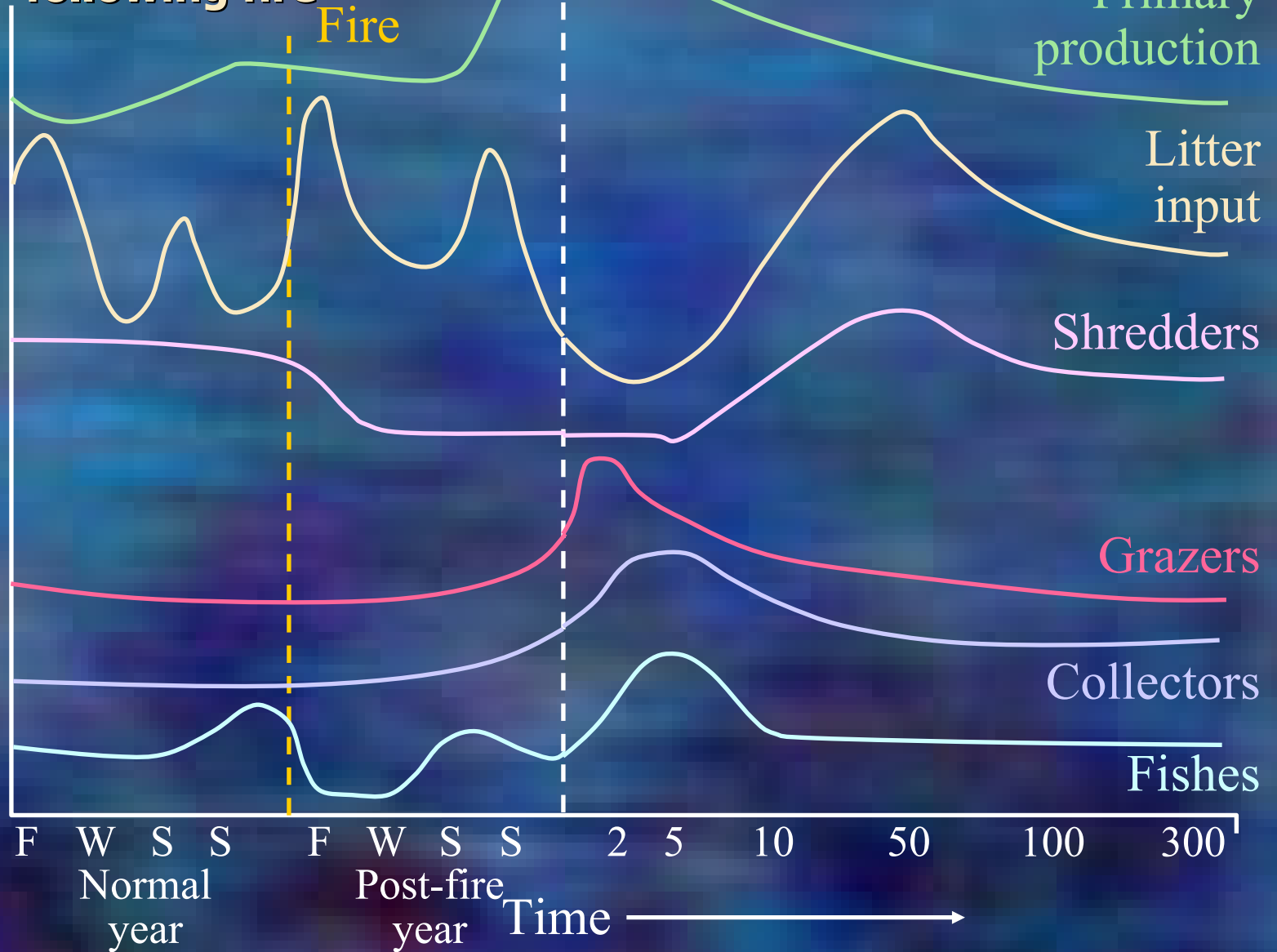
Dynamic Aspects of Aquatic Ecosystems in FEMAT

- “To maintain community viability throughout a large drainage basin, it is necessary to **maintain features of the natural disturbance regime** (i.e., frequency, distribution, and magnitude.” p. V-13

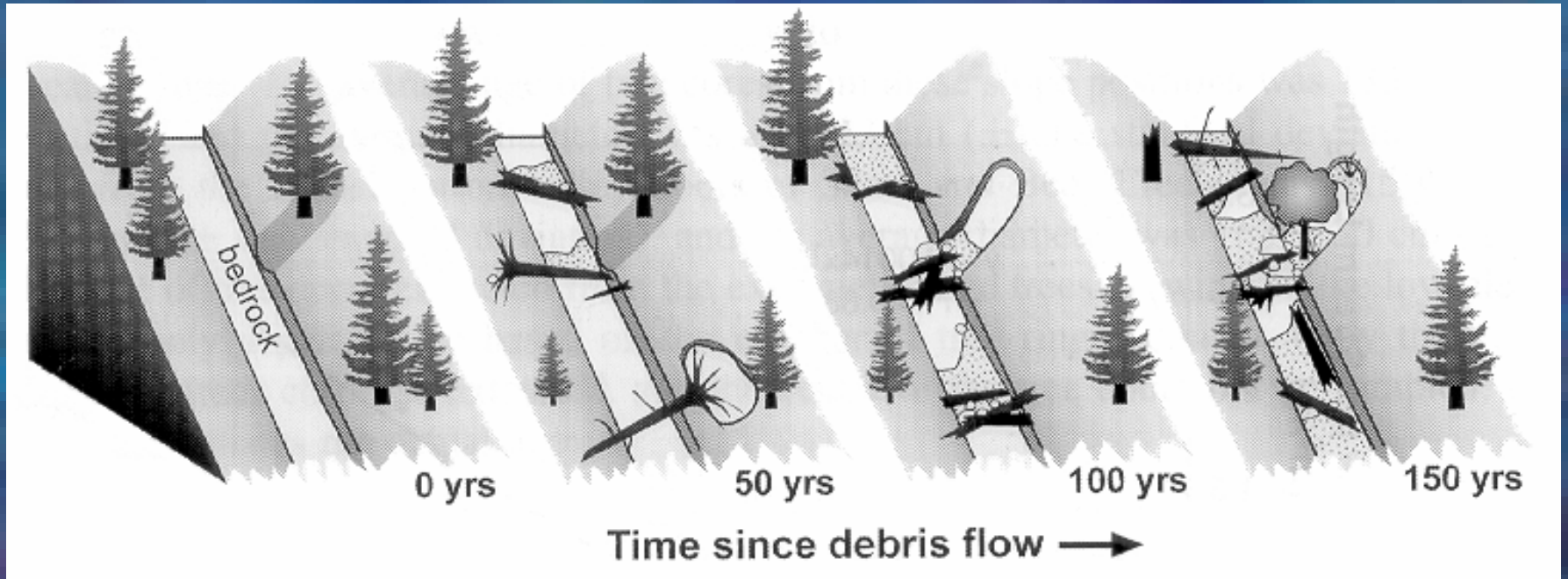
- “Wood enters streams inhabited by fish either directly from the adjacent riparian zone or **from tributaries that may or may not be inhabited by fish, or hillslopes.**” p. V-13



Generalized changes in biological systems following fire



Adapted from: G.W. Minshall et al. 1989



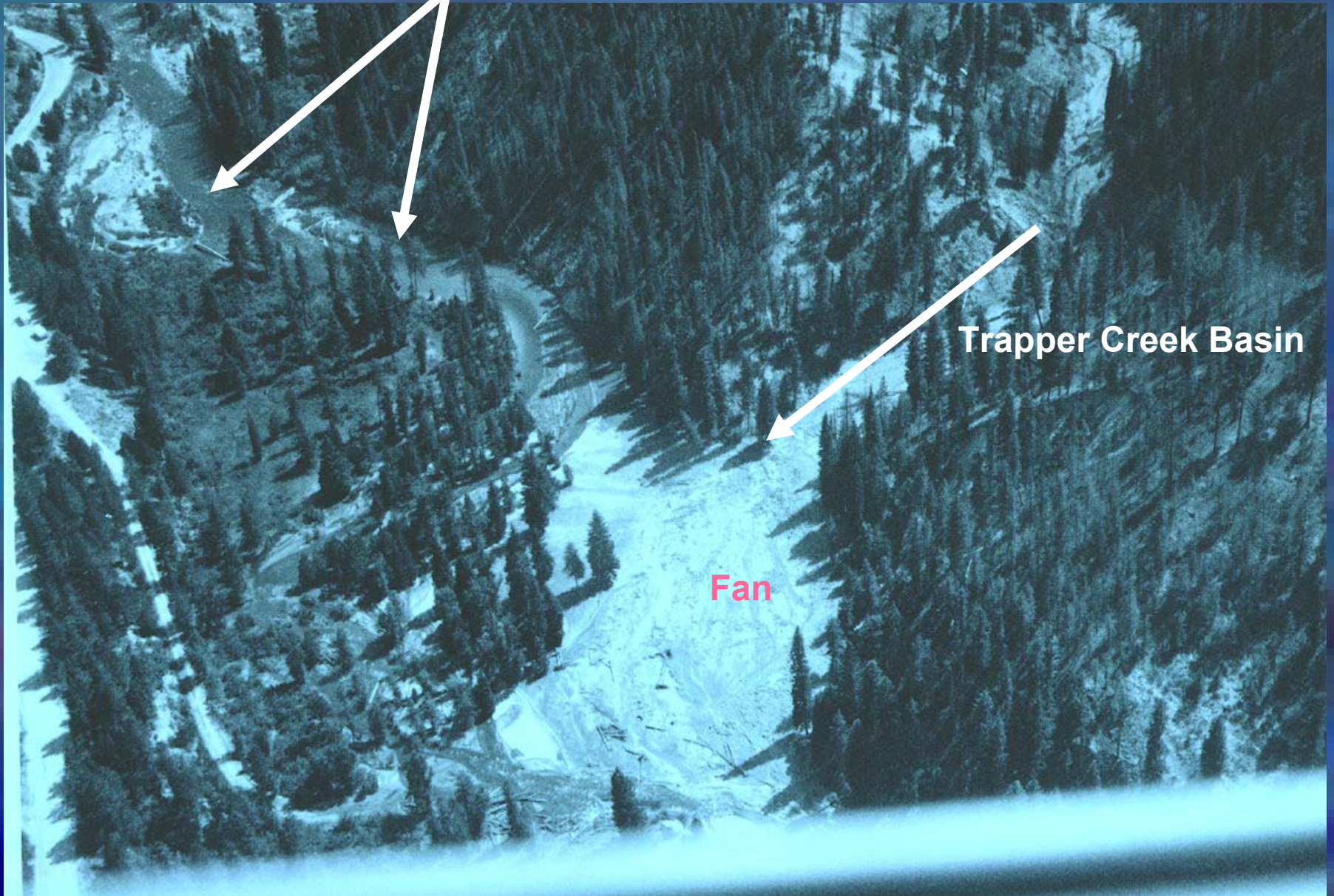
From: May and Gresswell 2003





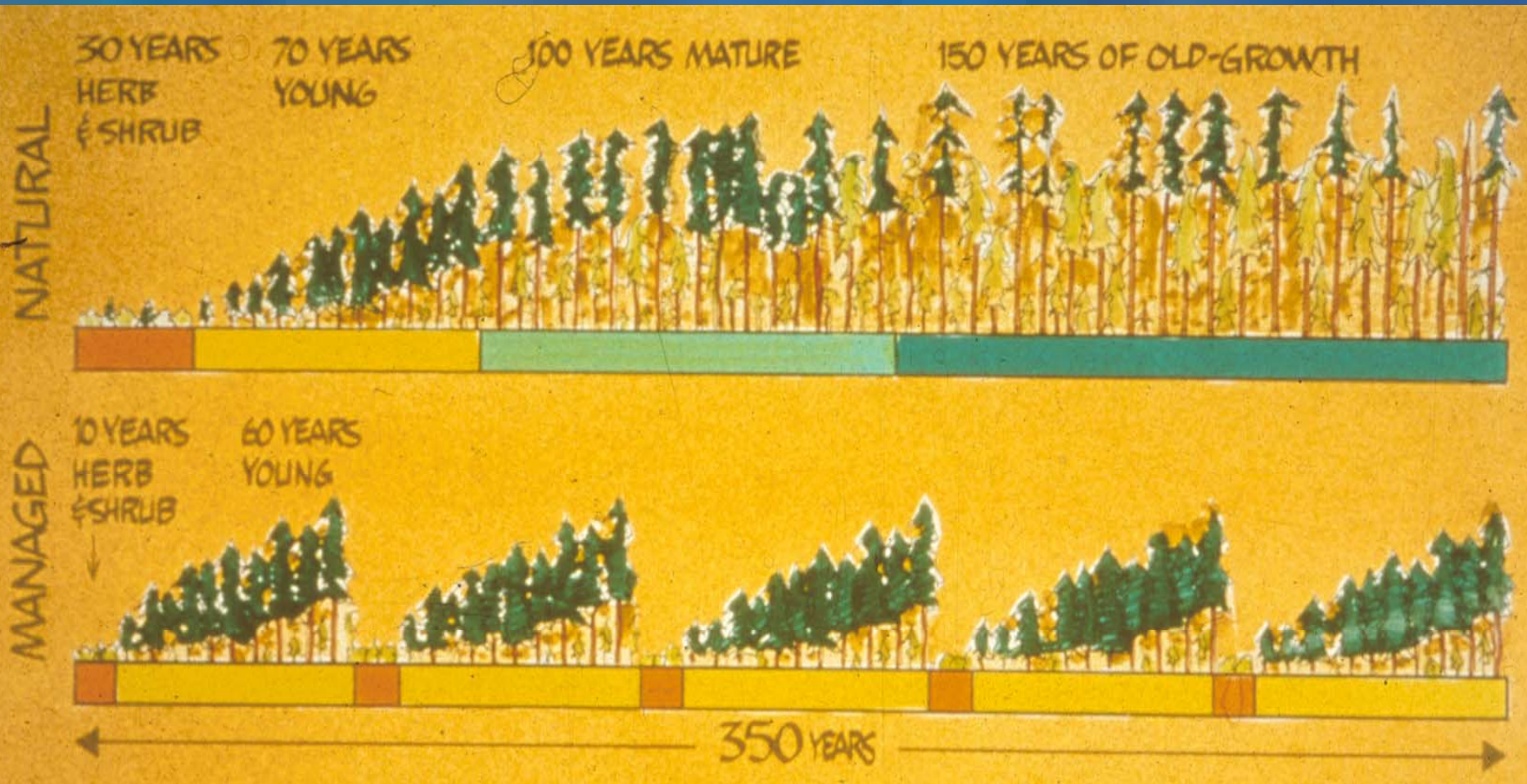


Wide Floodplains



Trapper Creek Basin

Fan

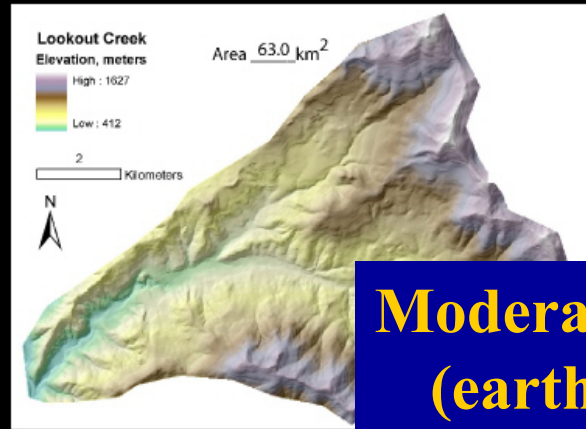


	Natural Disturbance	Human Disturbance
Magnitude	Low/High	Low
Frequency	Low/High	High
Coupling of System		
Legacy		

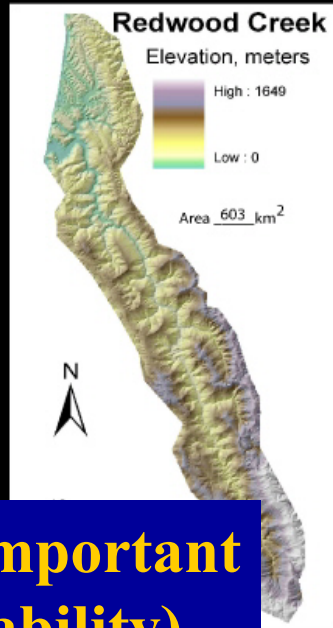
Relevance of Dynamic Events



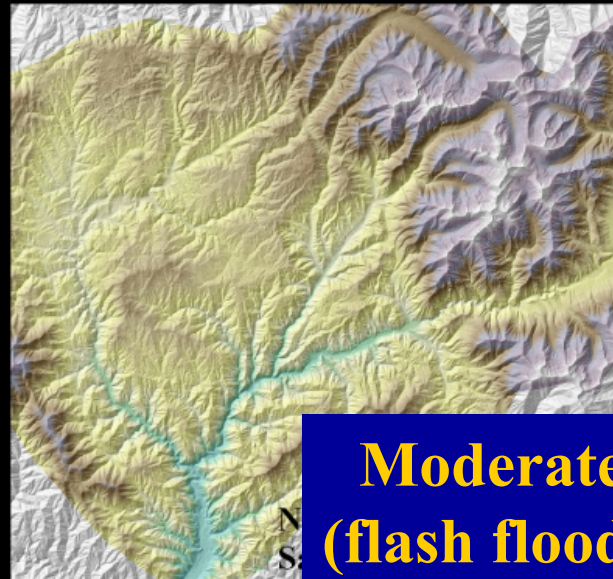
**Very important
(confluences & offsite)**



**Moderately important
(earthflows/slides)**

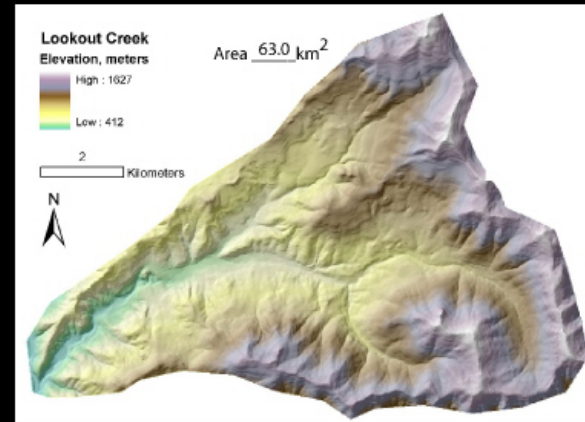
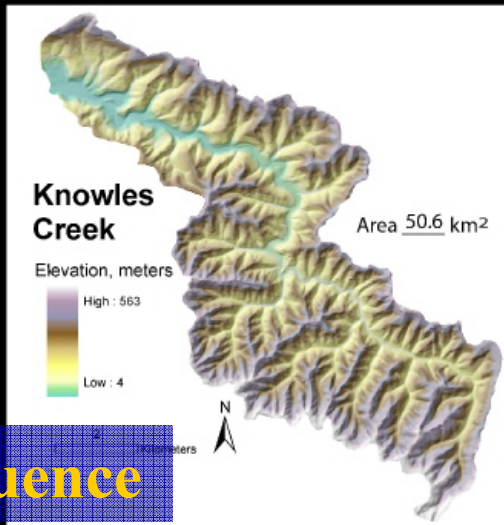


**Little to Very important
(channel instability)**

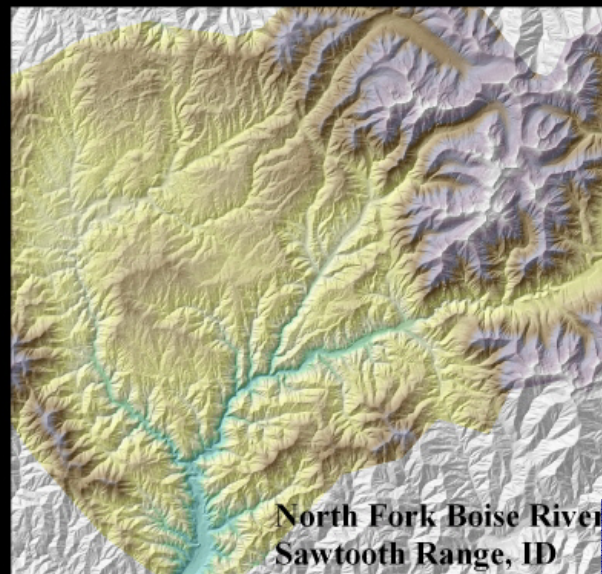
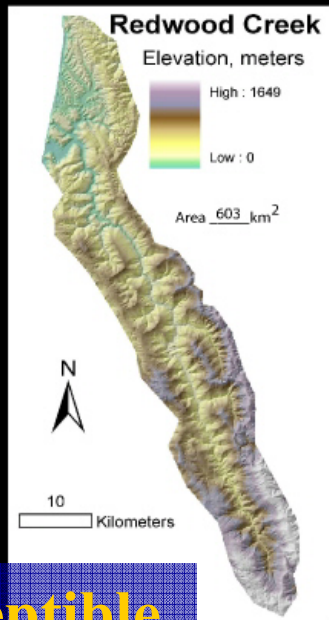


**Moderately important
(flash floods/confluences,
rare)**

Forest Management Implications



Not highly susceptible

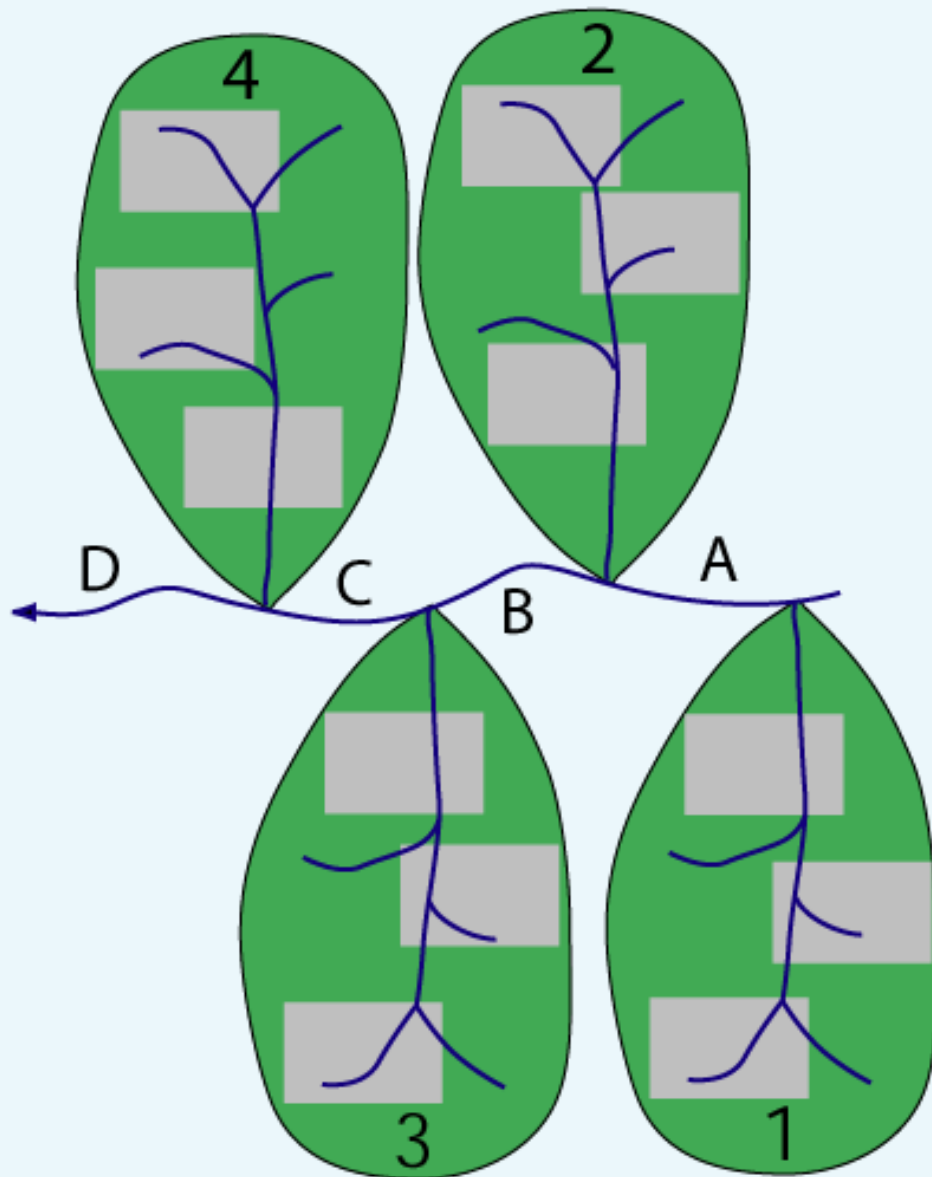


Susceptibility varies

Strong influence

Highly susceptible

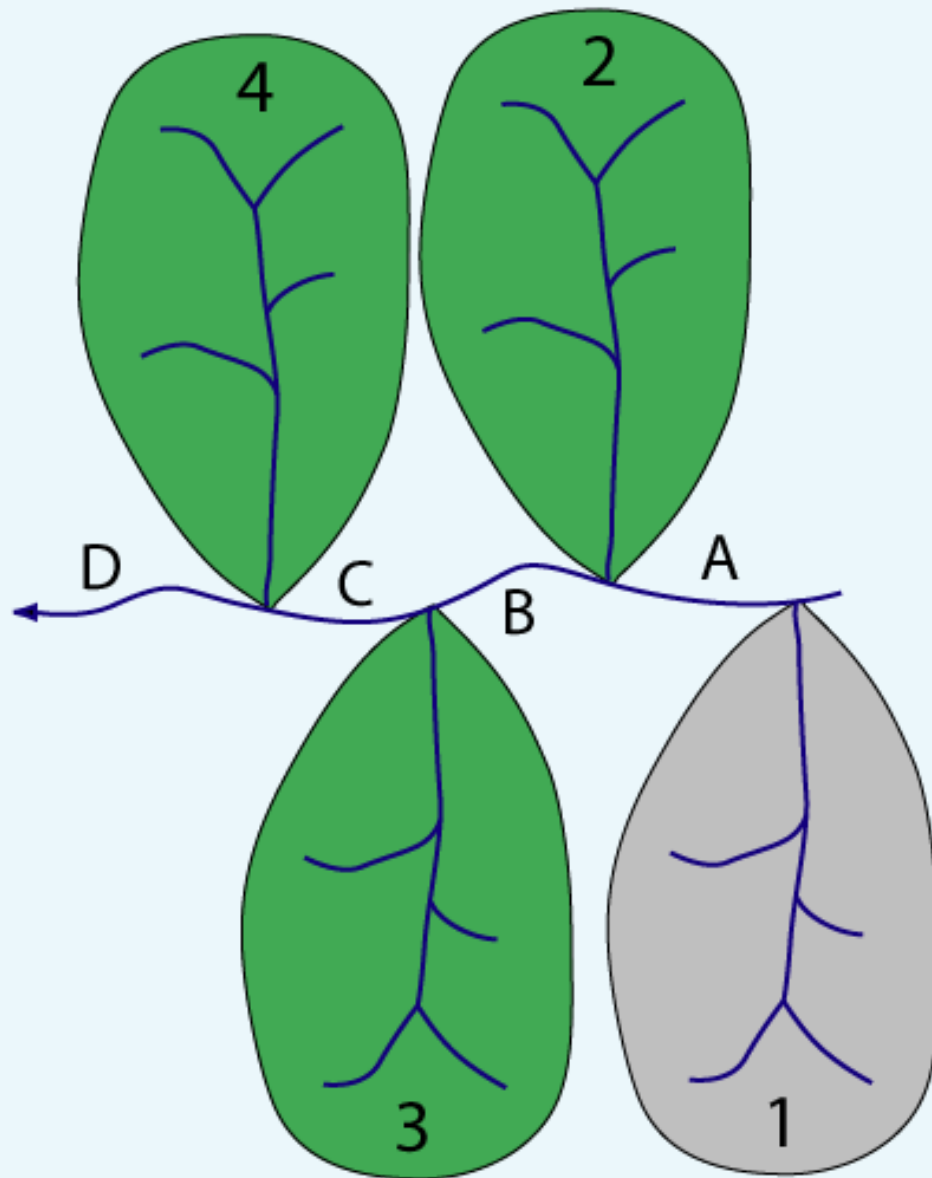
Staggered Setting Scenario



Active Management

25 % of total basin area

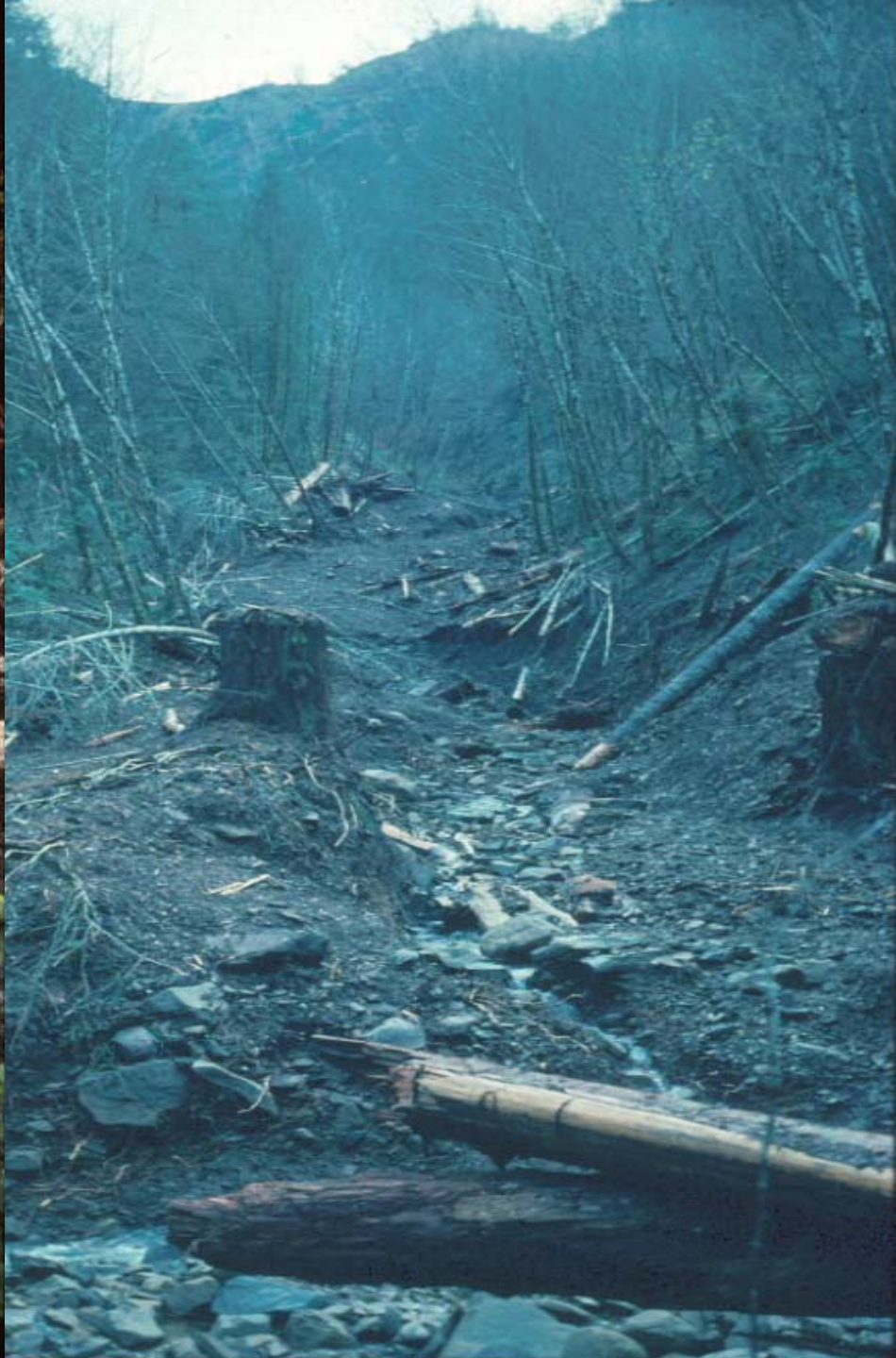
Minimum Fragmentation Scenario



Active Management

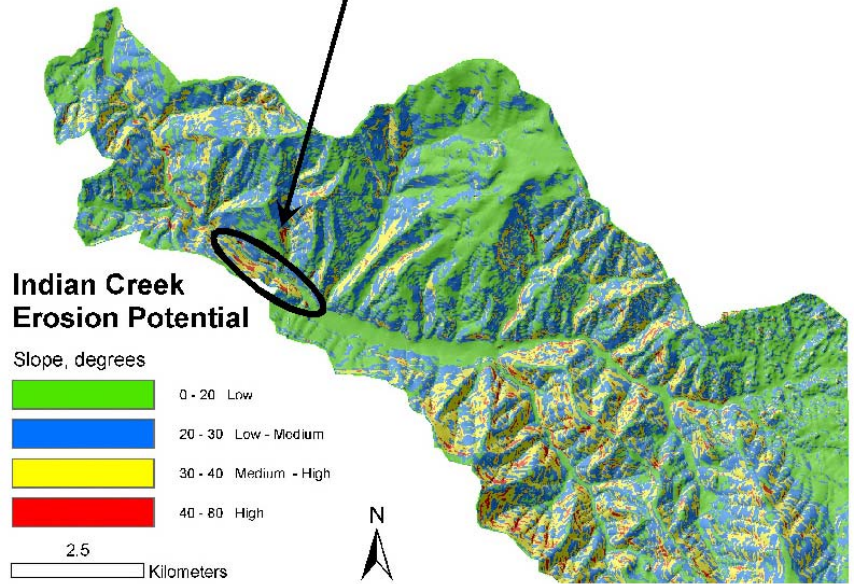
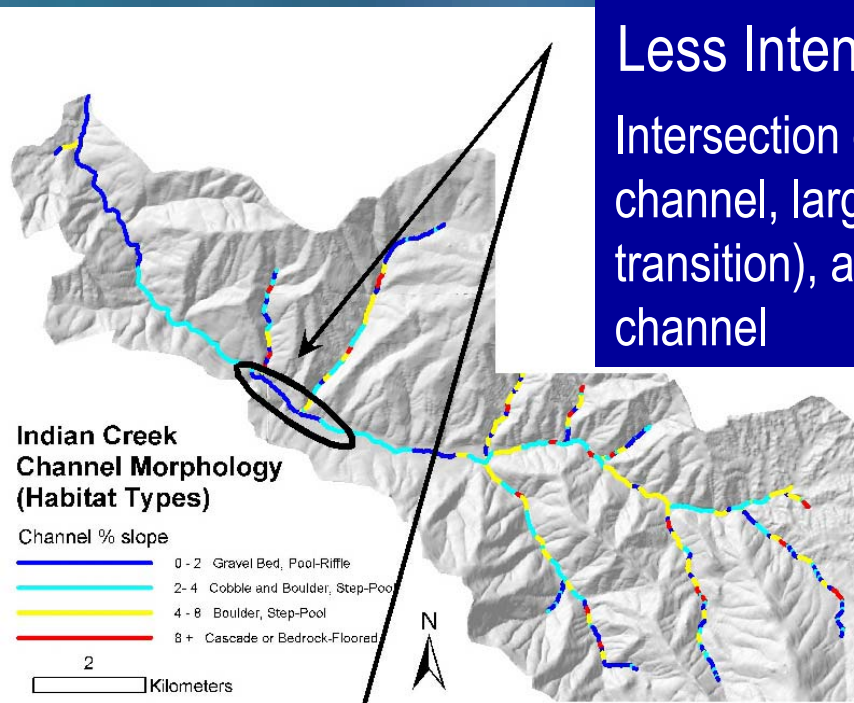
25 % of total basin area

	Natural Disturbance	Human Disturbance
Magnitude	High	Low
Frequency	Low	High
Coupling of System	Maintained	Decoupled
Legacy	Sediment Wood	Sediment

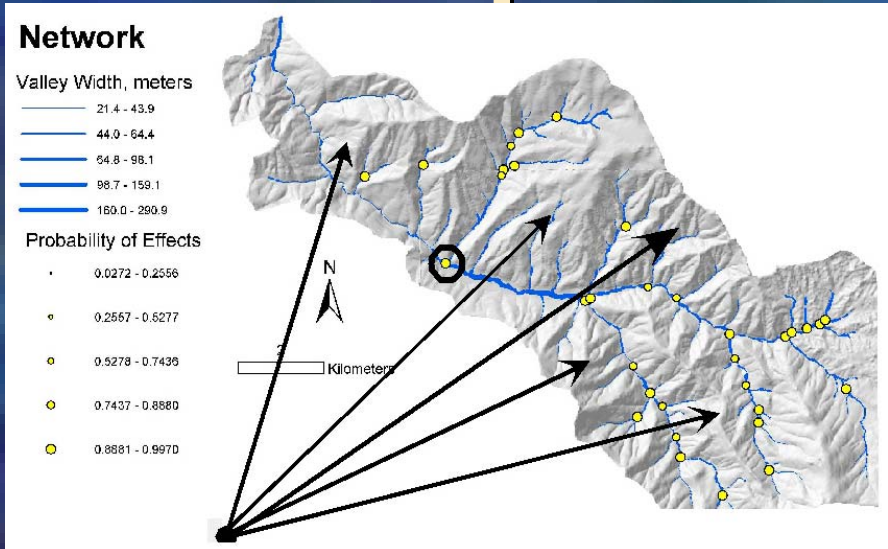


Less Intensive Forestry

Intersection of high-quality fish habitat (low-gradient channel, larger floodplains, junction effect and canyon transition), and steep, erosion-prone slopes adjacent to channel



Timber Harvest Planning: An Example

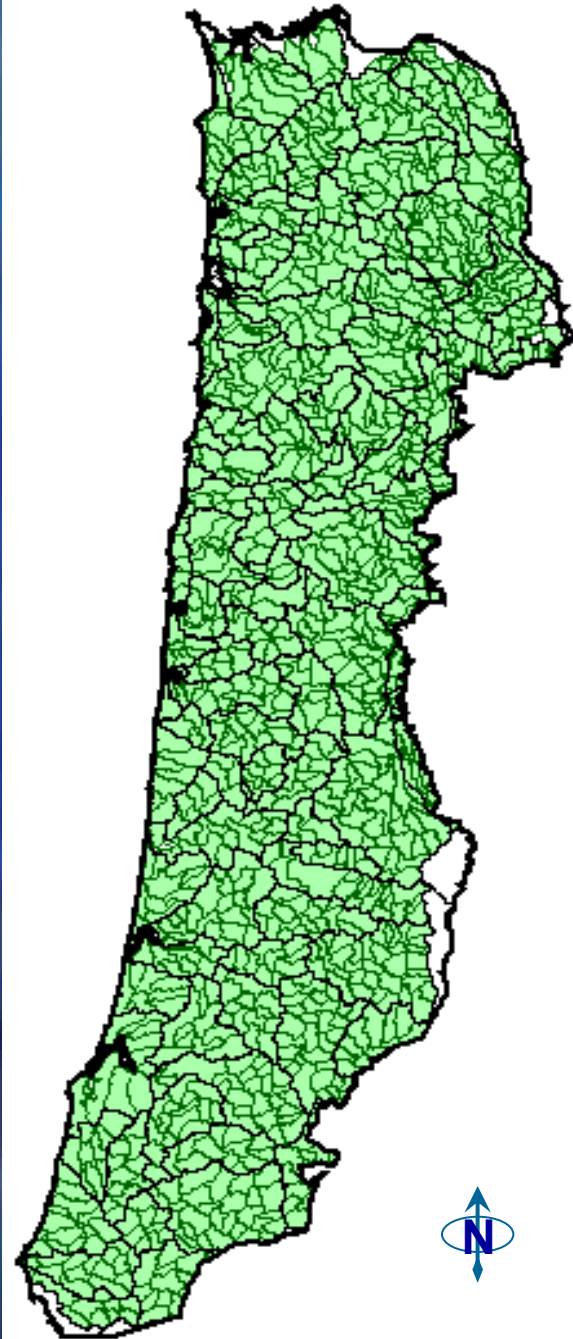


More Intensive Forestry

“The significant problems we face today cannot be solved with the same level of thinking that were at when we created them.”

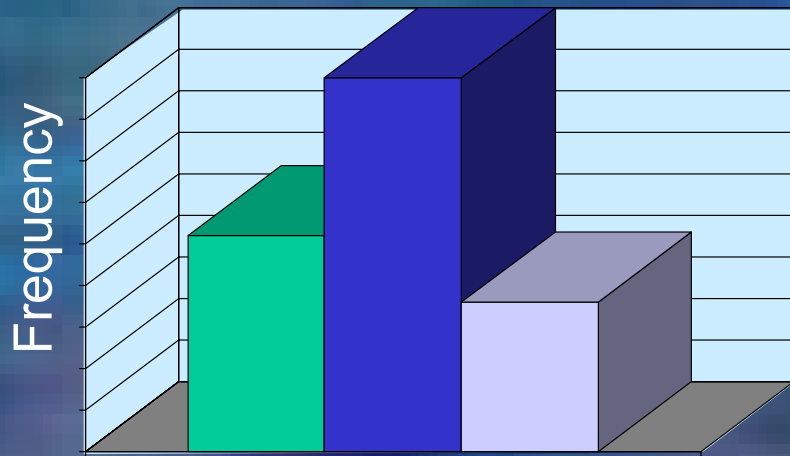
Albert Einstein

The Aquatic View?



Landscape Condition

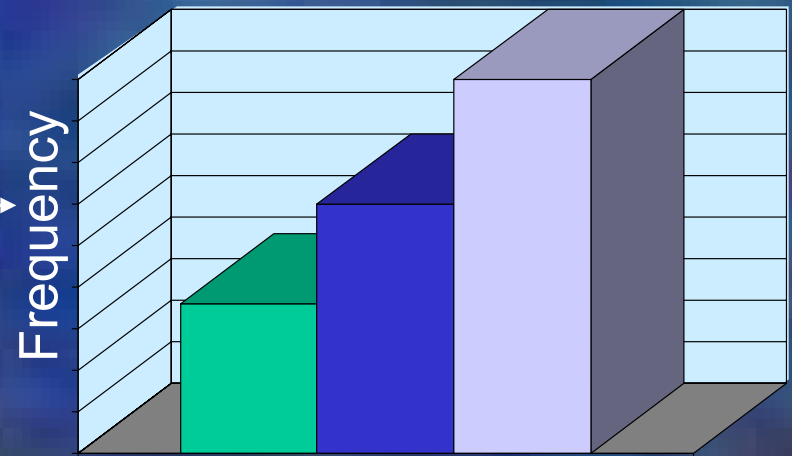
Time 1



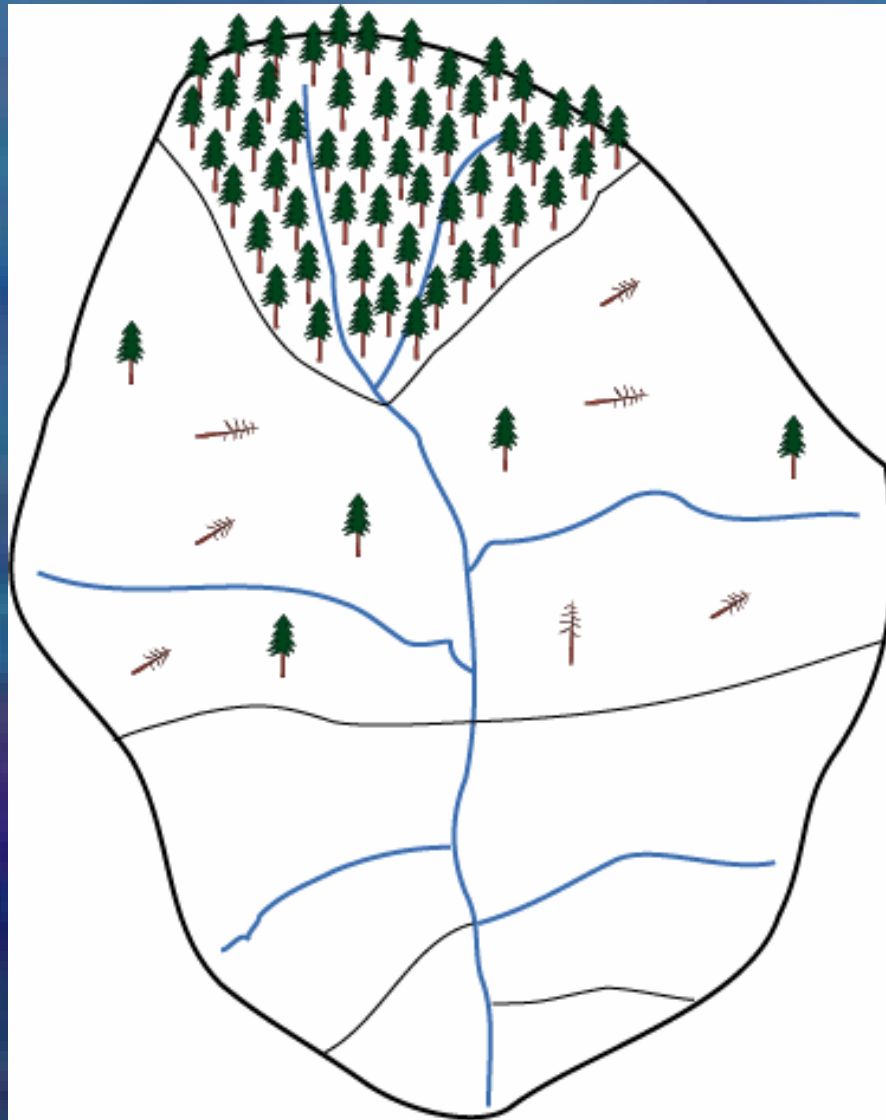
Ecological State



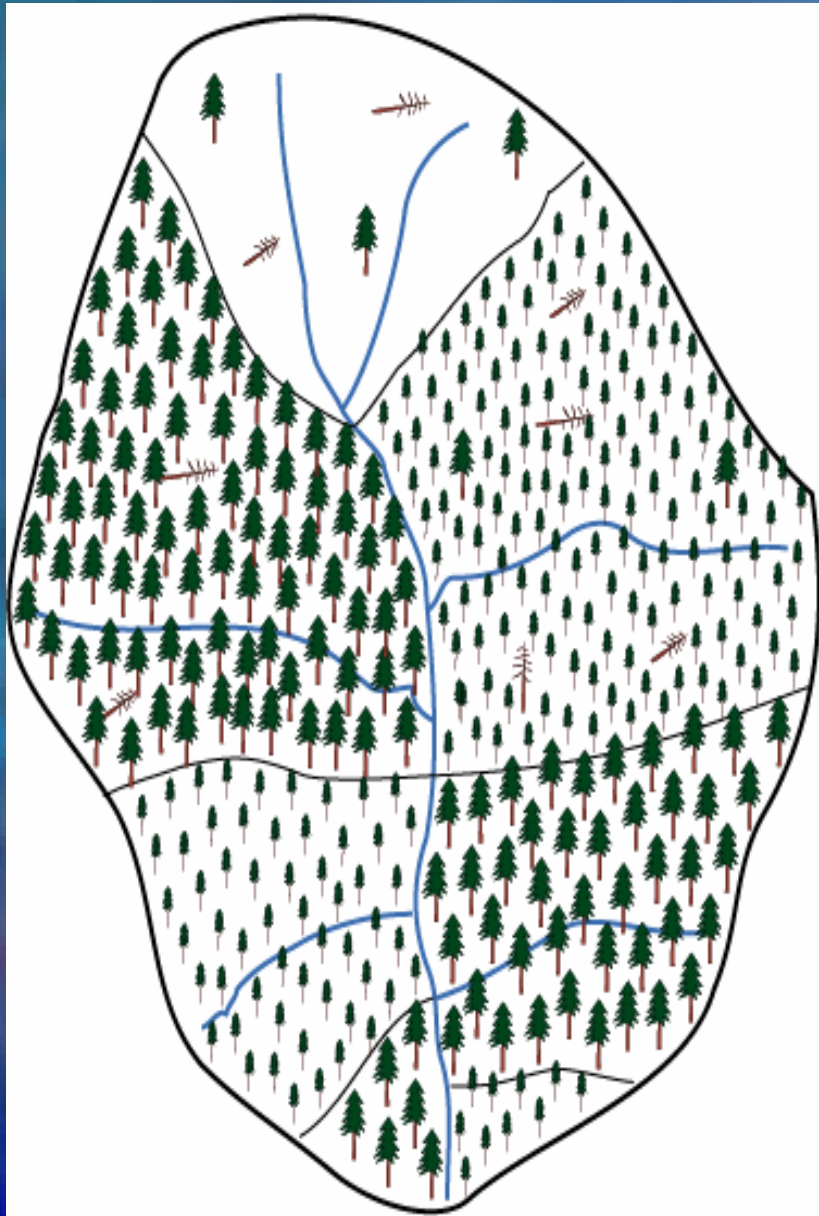
Time 2



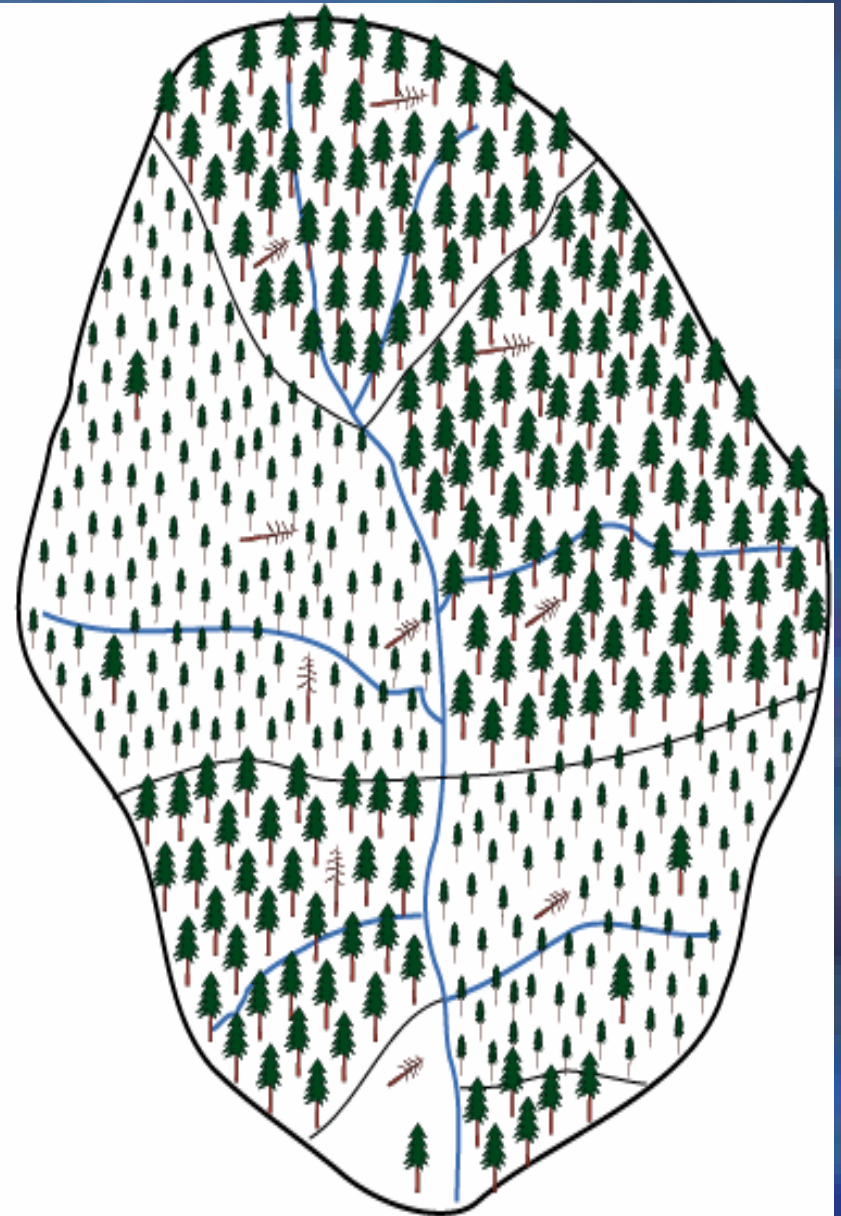
Ecological State



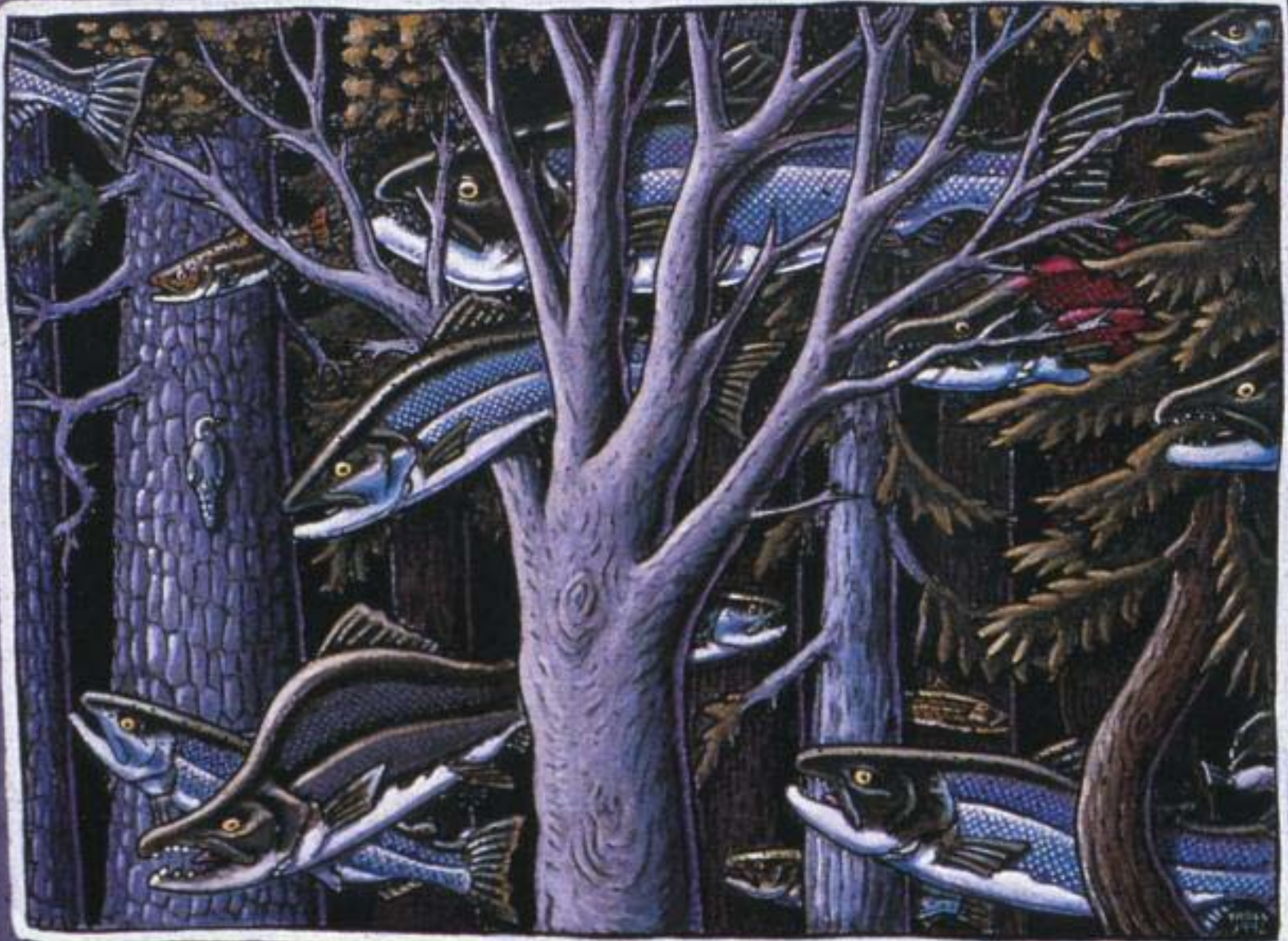
Present



Time 1



Time 2



FISH IN THE TREES

The Oregonian

AM

SOURCE CENTER

FEB. 10, 1996

PORTLAND, OREGON
35 CENTS



WEATHER
Foggy early
Fri. then
mostly sunny
Saturday
High 34,
low 30.
BACK BY
SPORTS



COMPLETE REPORT
Main news section including regional overview, pages A2, A8 through A12; Metro, pages B1, B2; Business Impact, E1



HOW TO COPE When the flood tide turns, it's time to dig in, scrub up and start to return to a normal life at home — with this complete guide / LIVING, D1

THE FLOOD OF '96

WRATH AND AFTERMATH

PORTLAND

■ The Willamette River crests, and OMSI and the harbor wall escape the worst

THE SUBURBS

■ Clackamas and Washington counties see major trouble along the Tualatin River

THE REGION

■ Some Oregon evacuees return, but problems plague Southwest Washington

TODAY'S DEVELOPMENTS

SUBURBS UNDER WATER: Waters from the Tualatin and Willamette rivers...

TAKING FORCED: 22,000 and 7. Three two an Oregon died in...

INDIAN COLUMBIA: to rise Clackamas side a... (text partially obscured)

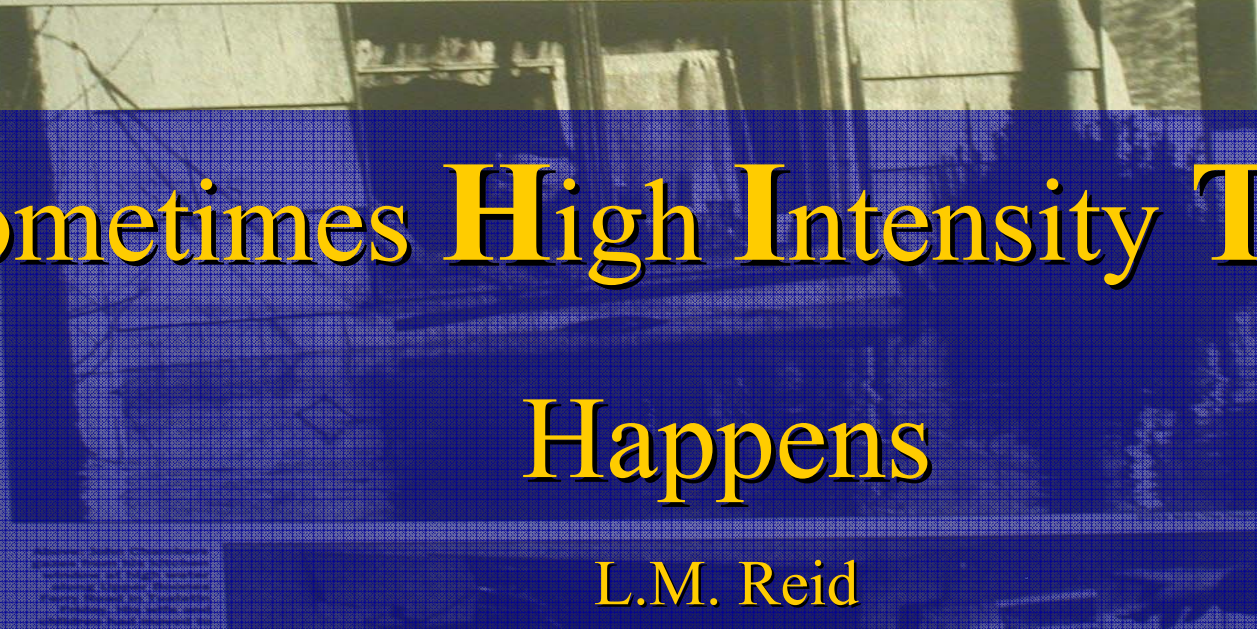
FRIDAY: well cover...

THE FLOOD: in a... (text partially obscured)

SOME HAVE TWO MUCH WATER: Thousands headed to downtown Portland on Friday to gawk at the Willamette River as it crested...

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SOME HAVE TWO MUCH WATER: Thousands headed to downtown Portland on Friday to gawk at the Willamette River as it crested...



Floodwaters may stage slow retreat

By Steven Carter

Sometimes High Intensity Trauma Happens

L.M. Reid

the difficulties will continue into next week.

RIGHT: Lois Pelowski finds a Bible in her mother-in-law's bedroom Friday in Clackamas as her father-in-law (painting) helps find other family possessions. The room was hip-deep in mud and slash timber.



Raging rivers play havoc with water systems

Cities ask residents to cut use and warn of contamination

By Steven Carter

Four days of pouring rain and flood ing left thousands of Oregon residents without drinking water. The floods also pushed Portland off...

NATURAL

30 YEARS
HERB
& SHRUB

70 YEARS
YOUNG

100 YEARS MATURE

150 YEARS OF OLD-GROWTH



Recruitment Flux of Large Woody Debris

