Northwest Forest Plan

Interagency Regional Monitoring Program

Status and Trends of Aquatic and Riparian Effectiveness Monitoring

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Aquatic and Riparian Effectiveness Monitoring Program

Aquatic Conservation Strategy:

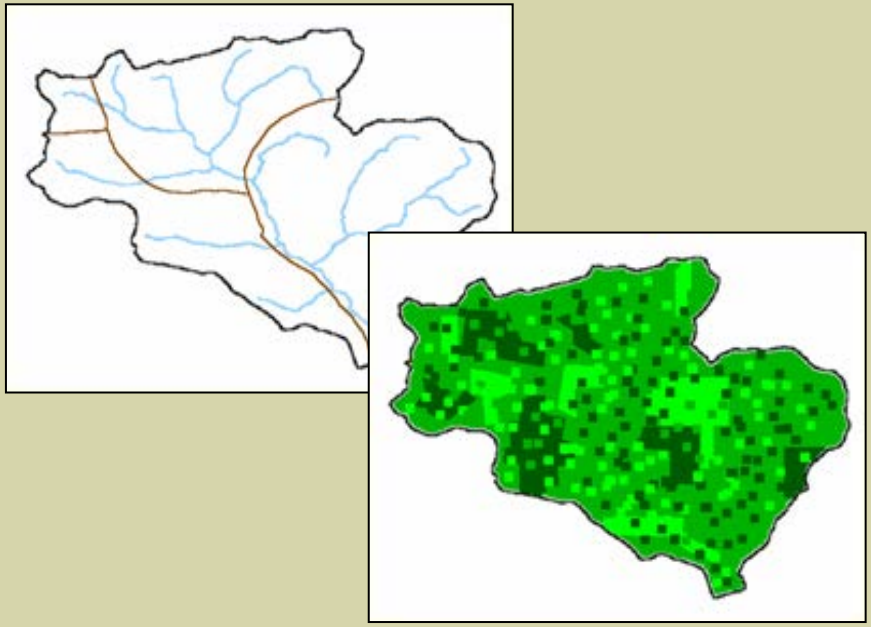
Restore and maintain ecological processes that create and maintain suitable conditions in aquatic ecosystems in the NWFP area through time

- Assess status and trend in riparian and stream condition
- Develop predictive models and refine as sciences evolve and data are collected

Overview

Upslope & Riparian

- Based on GIS & Remote Sensing
- Measured across all agencies
- Calculated 1993 & 2012
- Not calculated yearly



Stream Condition

- Field based began in **2002**
- ~200 watersheds with 8 year rotation
- Rotation 1 = 2002-2009
- Rotation 2 = 2010-2017

20-Year Key Results

Federal lands at NWFP-scale

Upslope & Riparian:

- At the Plan level average scores changed little from 1993 (same as 15 yr)
- At the watershed level 15% increased while 7% declined (15 yr - 10% vs 4%)
  - Declines due to large fires (often in reserve areas)
  - Increases due to maturing vegetation & road decommissioning (predominantly in historically heavily managed matrix lands)

Stream Condition

- Trend not calculated in 15-yr Report (data were not yet available)
- No trend was detected in overall physical habitat status scores
  - Declines associated with more pool tail fines than expected
  - Increases associated with substrate within/above expectations
- Improving trends in macroinvertebrate scores & water temperature

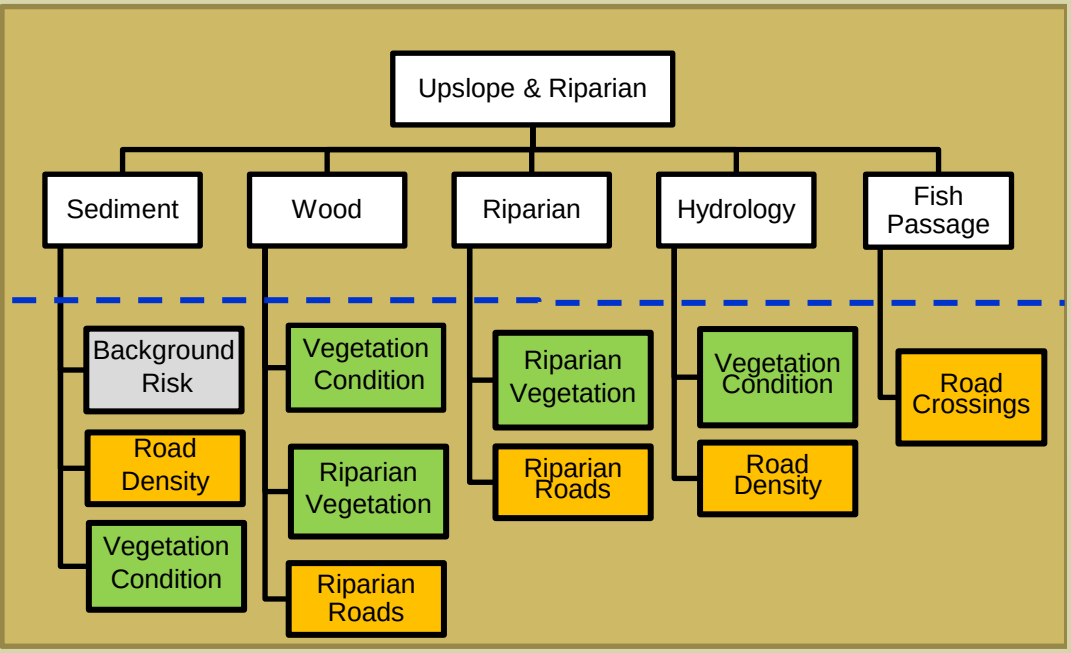
Based on FEMAT, & ACS objectives, detection of trends in condition was not expected for several decades

What's New - Reference Condition

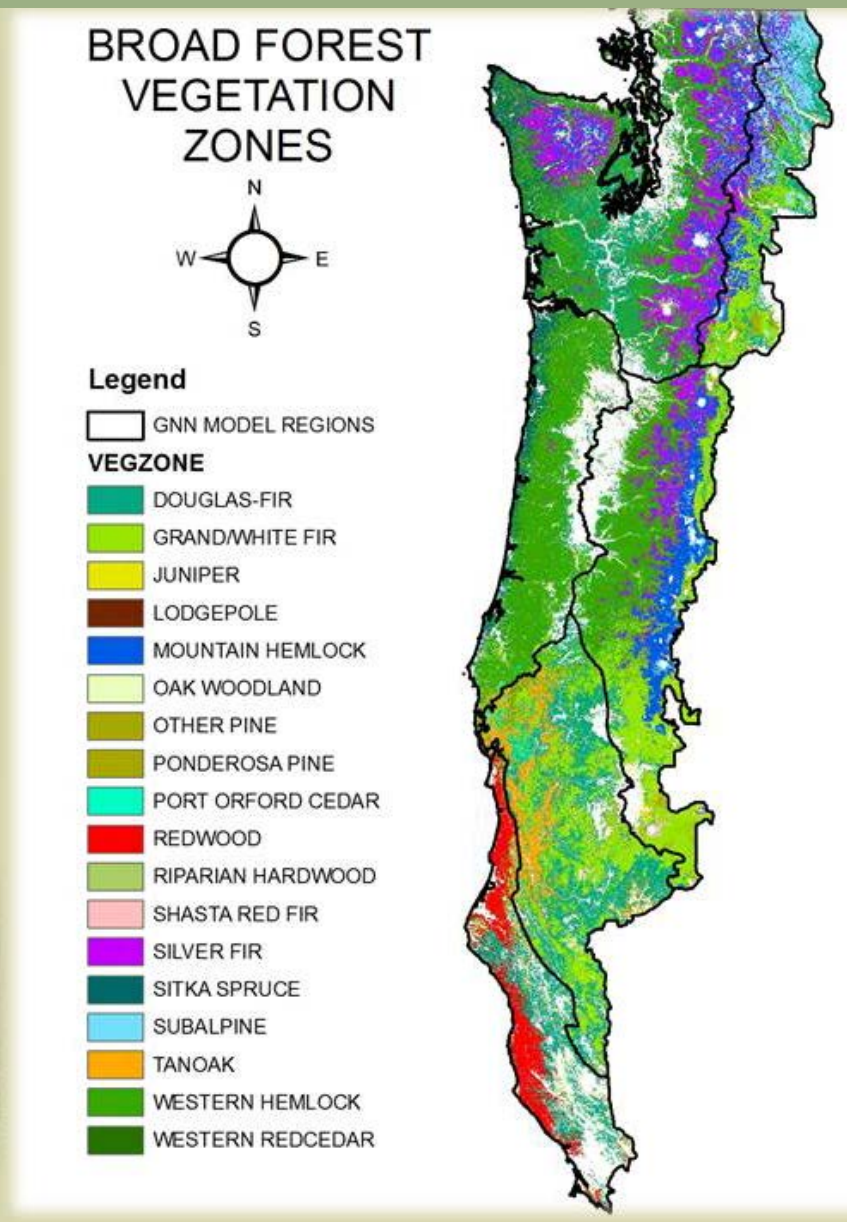
- **More empirical approach – moving away from expert opinion**
- **Quantify reasonable expecations for measured indicators**
- **Few areas exist truly free from human disturbance**
- **Defined areas that are "least disturbed" or "most natural"**
- **Differing from this range is used as evidence of disturbance**

Using this approach, we are asking whether human activity has altered biological, or physical attributes/processes beyond a level observed at reference sites.

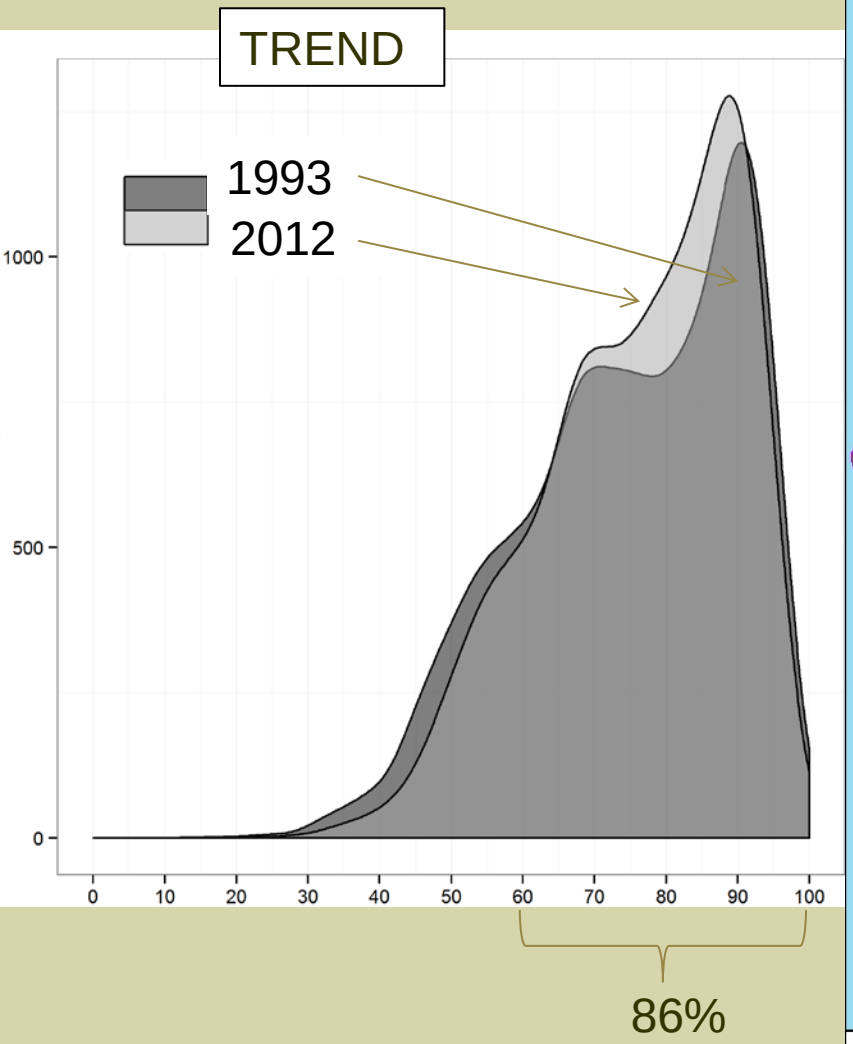
What's New – Upslope & Riparian



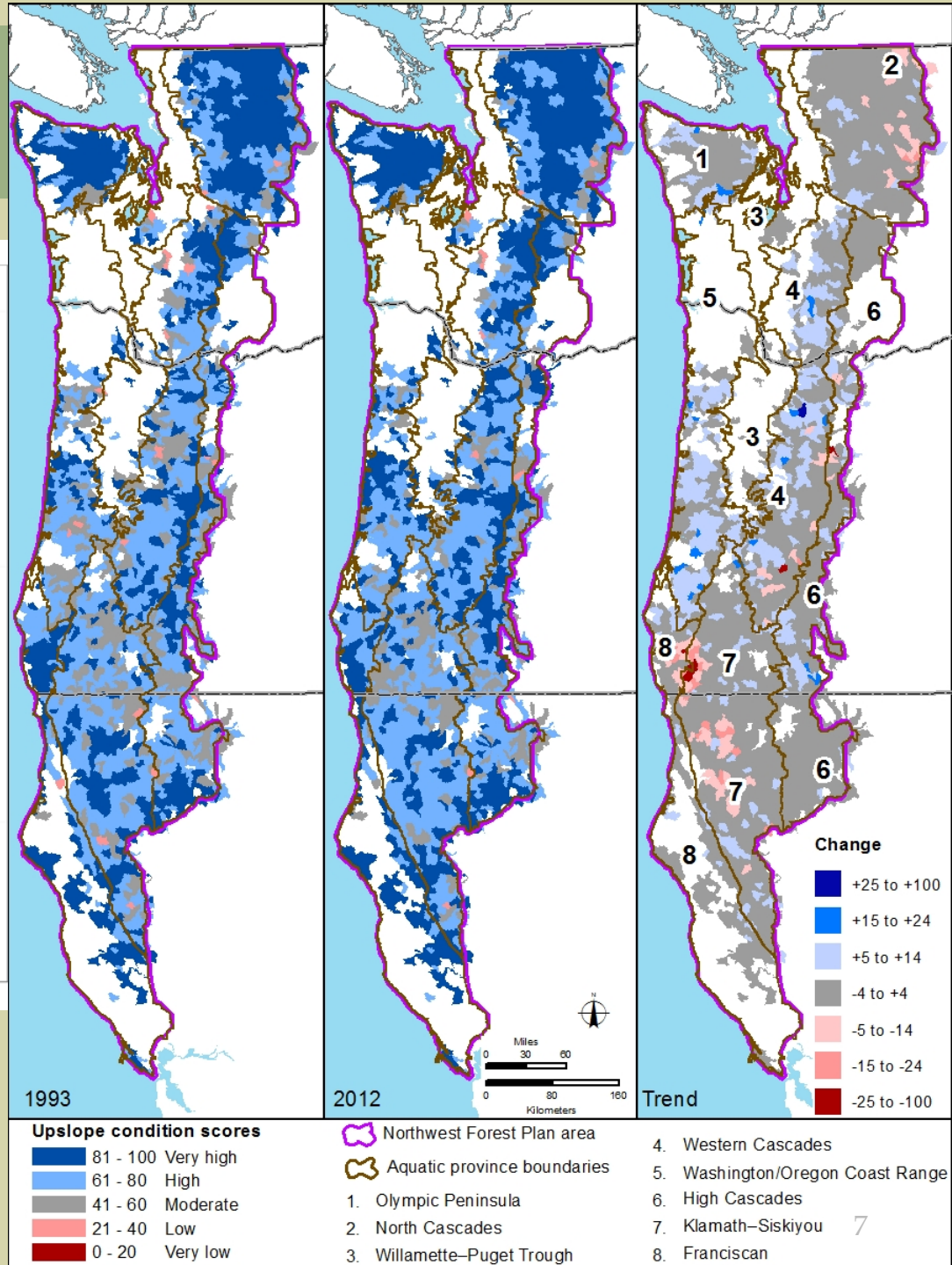
- All watersheds with ≥ 5% federal ownership
- Unified process-based model
- Vegetation evaluation based on vegetation zone reference expectations
- Fish passage refined
- Improved landslide risk / sediment delivery



Upslope & Riparian



15% increased by 5% while
7% decreased a similar amount

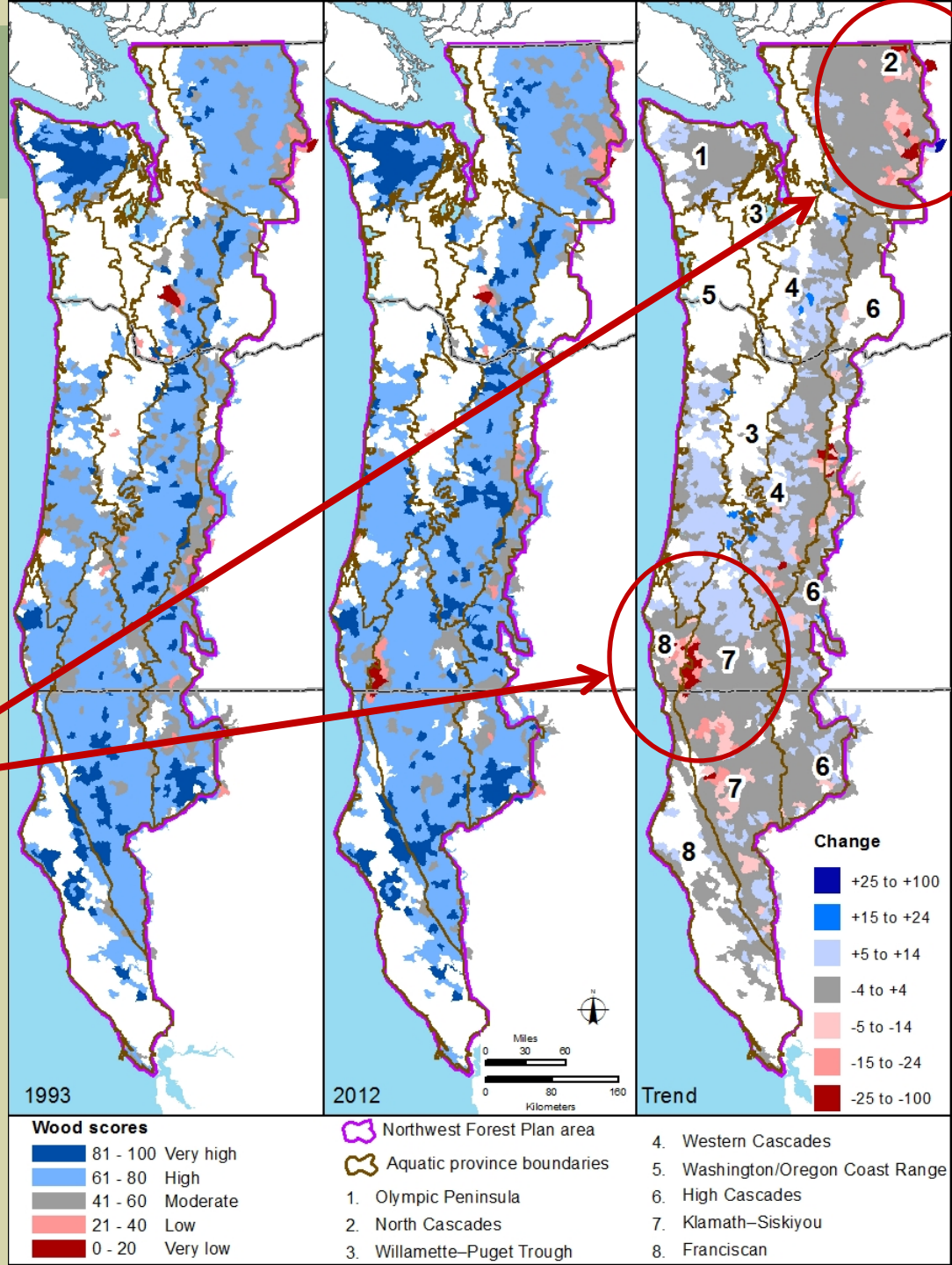


Vegetation Changes

Total canopy cover and tree size

Most obvious negative changes due to wildfires

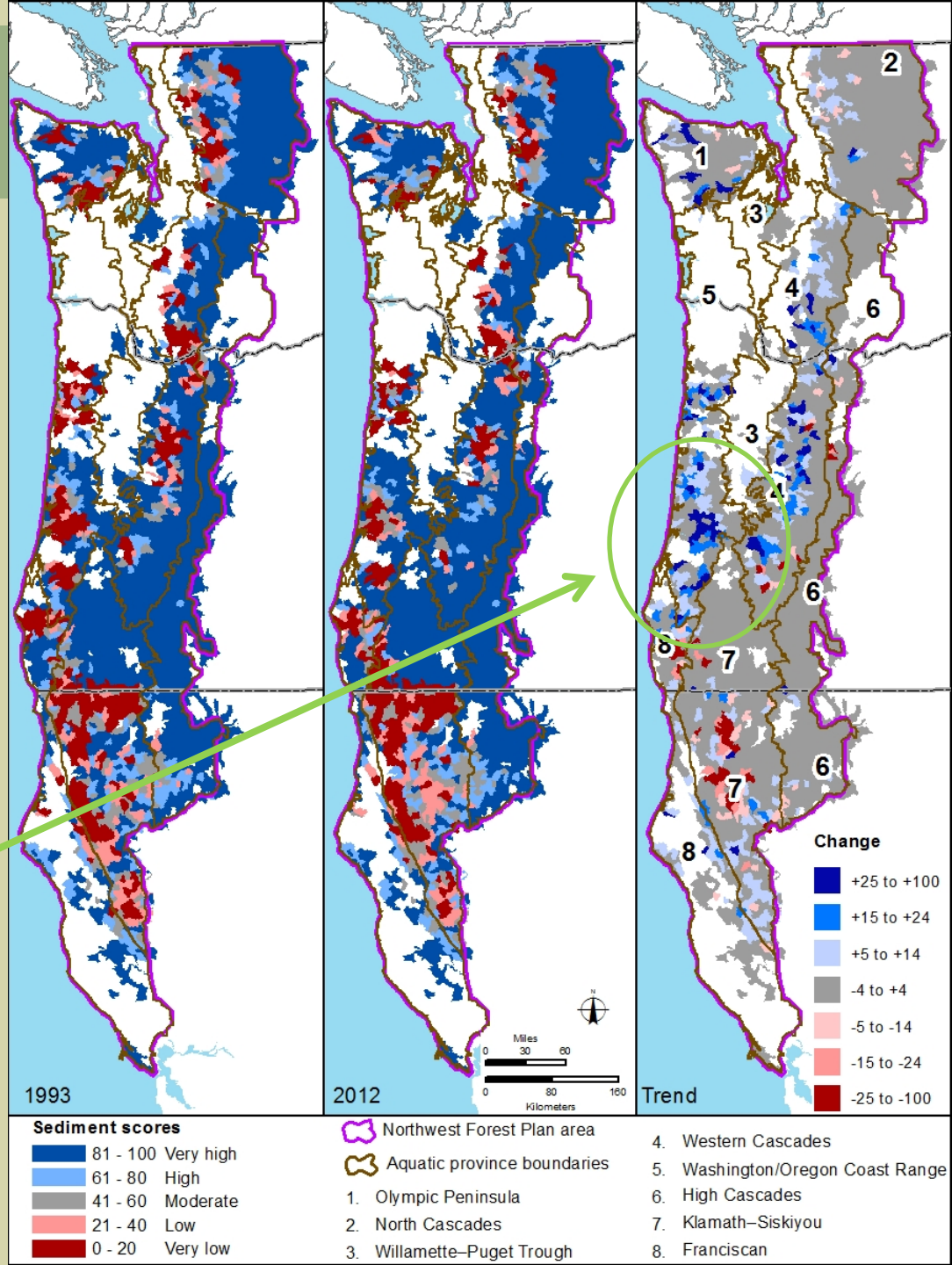
Broad positive shift in maturing vegetation



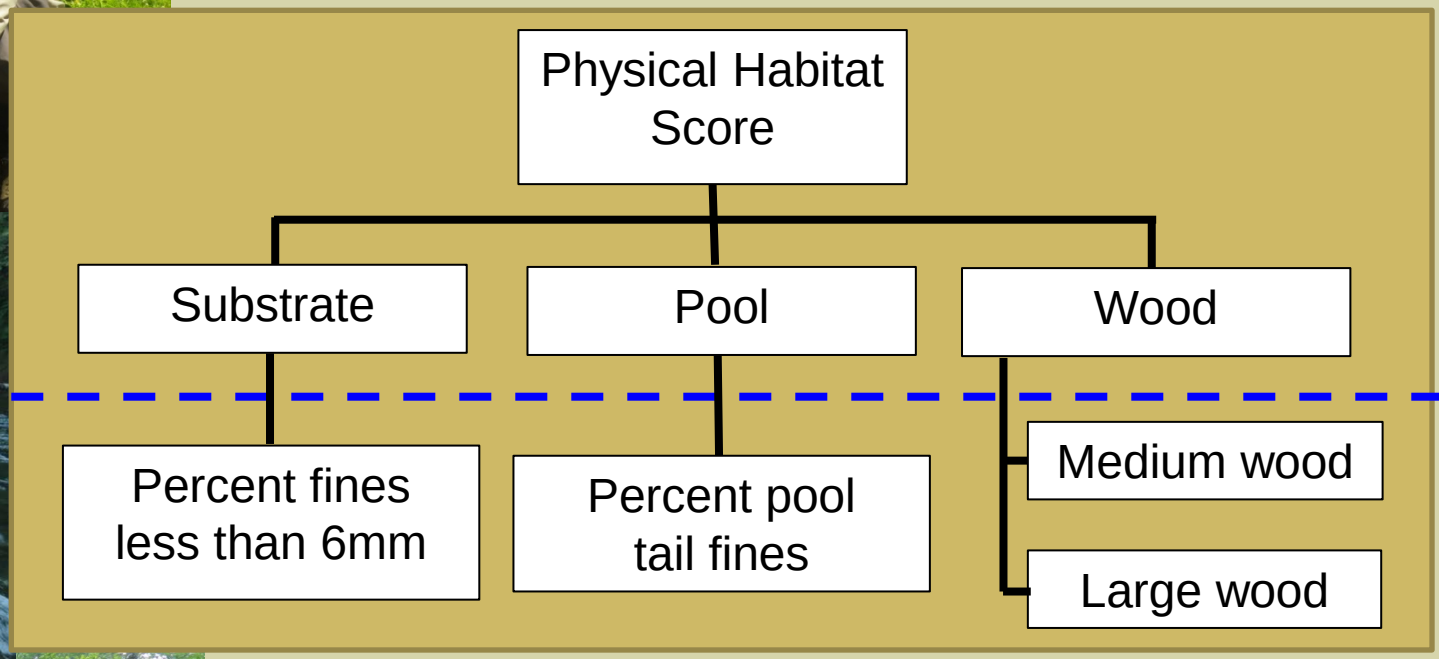
Sediment Changes

Road density and vegetation conditions

Most positive changes generally areas of focused road decommissioning

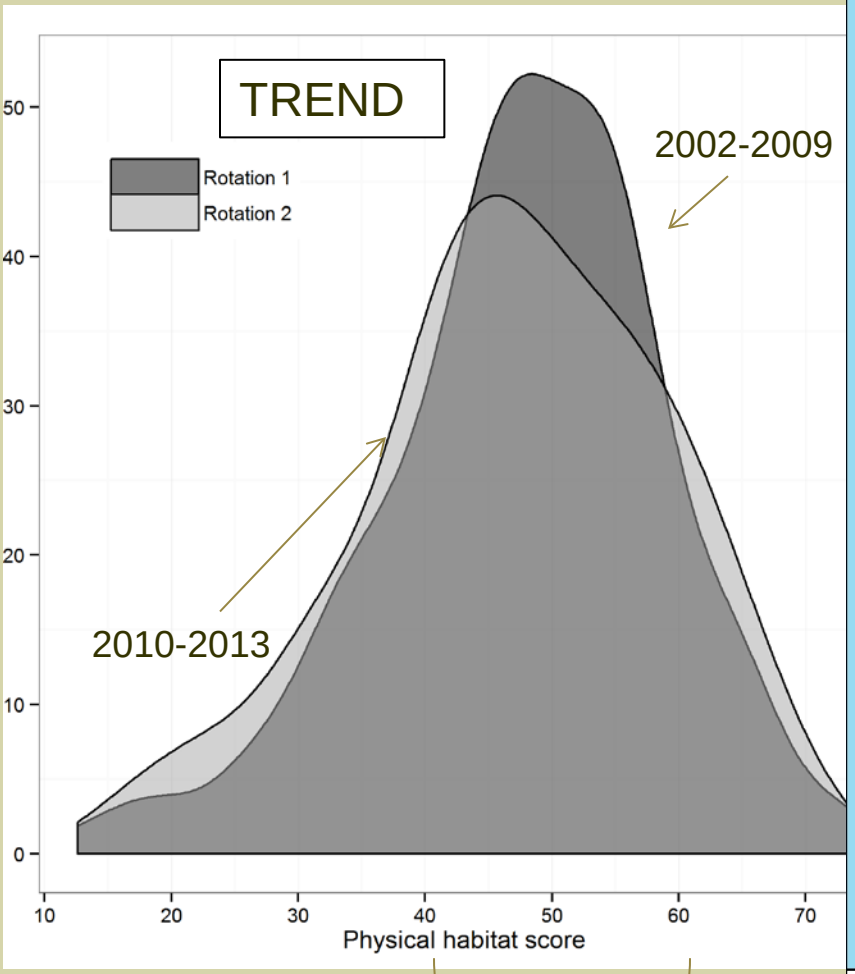


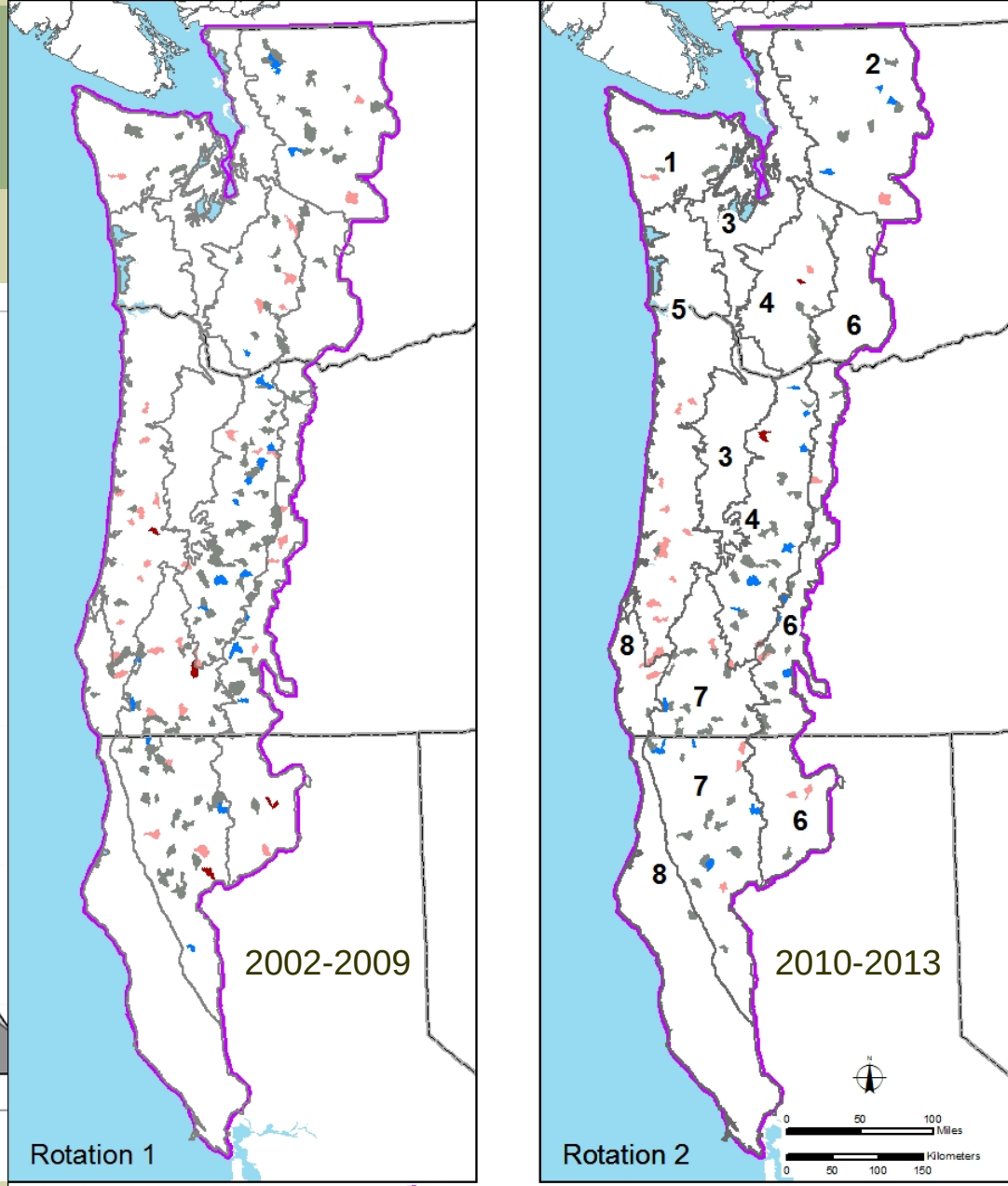
What's New – Stream Condition



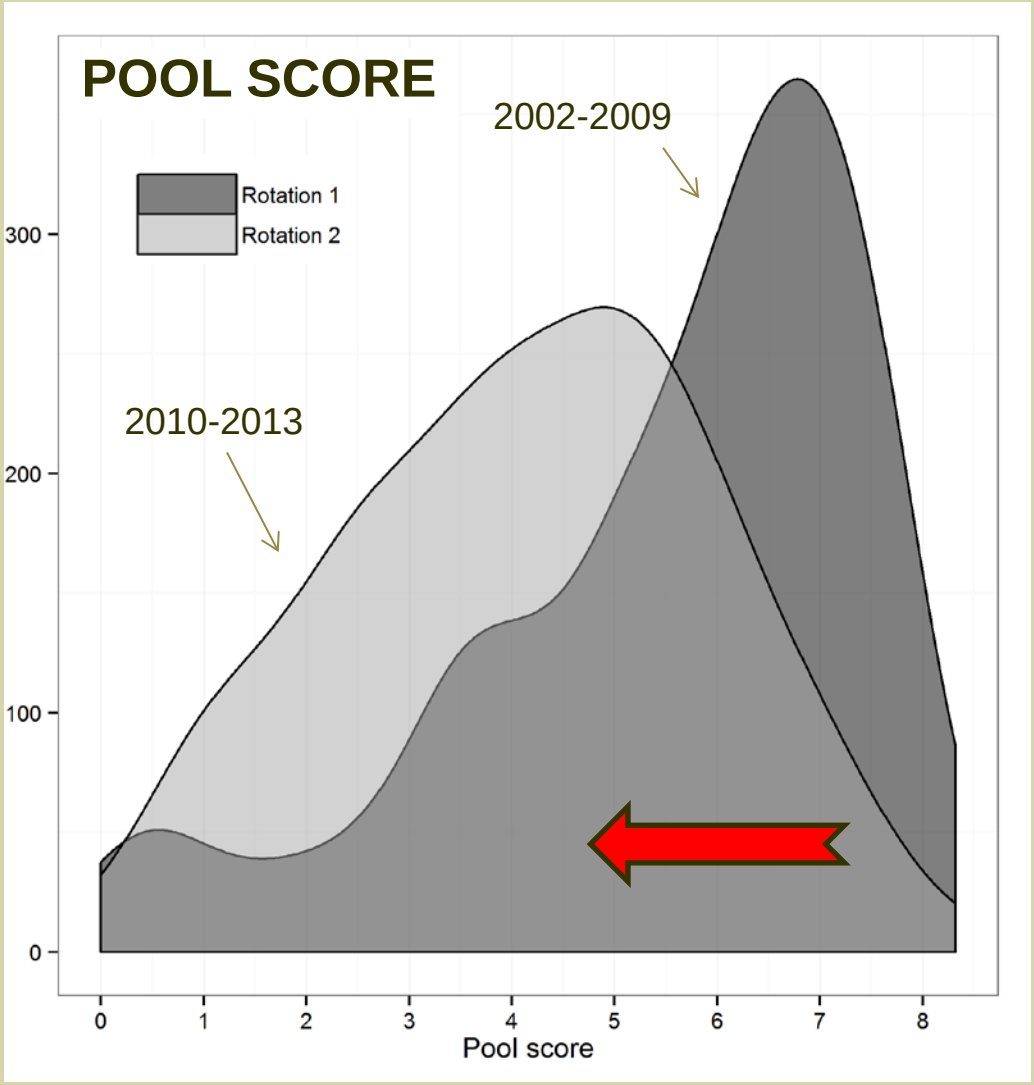
- Unified model (not separate models for each province)
- Include environmental variability directly
- Use reference network to define site level expectations
- Evaluate temperature & macroinvertebrates separately

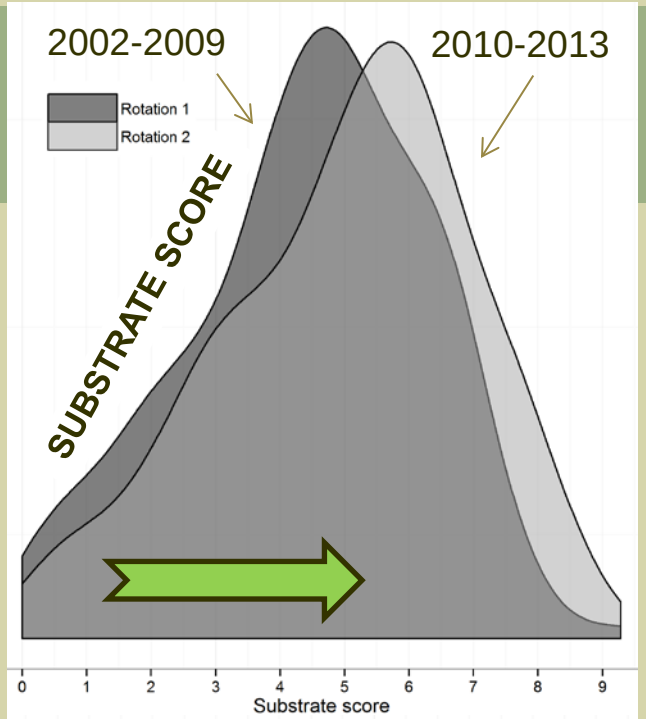
Physical Habitat - Trend

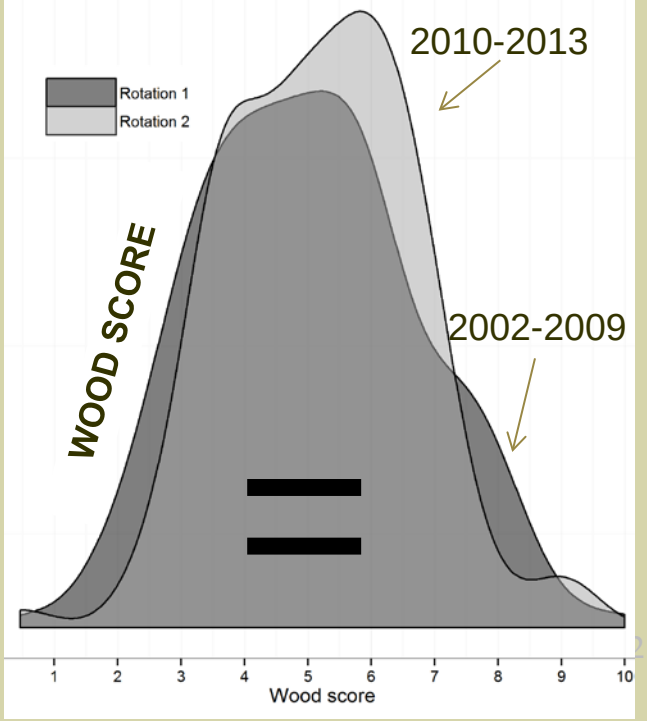




Physical Habitat Metrics



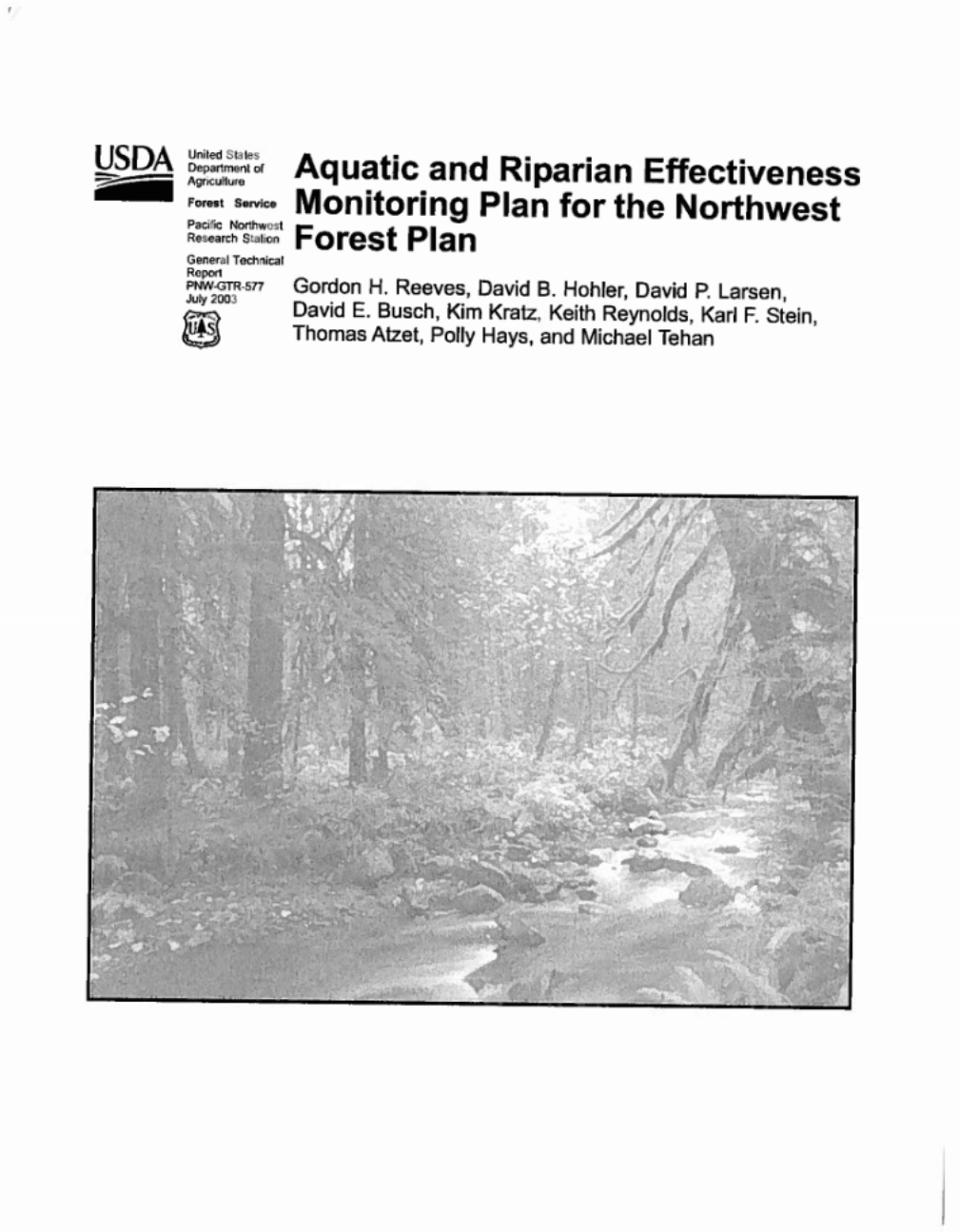




Pool Tails – important spawning habitat

Macroinvertebrates & Water Temperature Trends

NWFP, ACS & FEMAT Expectations



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Similar to LSOG, it is not expected that all watersheds will be in good condition at all points in time or that they stay in that condition indefinitely.

(Page 31)

We expect that it will take three to four or more sampling cycles before shifts in distribution of condition may be observed.

- **Currently halfway through the second stream sampling rotation.**
- **No trend does NOT mean one doesn't exist**
- **Slow change that will be realized through restoring regional process**

Management Considerations

Upslope:

- Roads
  - Road decommissioning cause large changes to score but only over relatively small areas
  - Roads negatively affect all processes in our model
  - Fish passage improvements not tracked well regionally
- Vegetation
  - Small score increases over large areas = gradual growth improves scores cumulatively (matrix land)
  - Fires reduce scores in small areas (reserves)
  - Need to improve understanding on how to evaluate fire

Stream:

- Project level effects unlikely to be seen
- Must wait for ecosystem process to positively change
- Growth of vegetation may have improved both macroinvertebrates and temperature
- Increases in pool tail fines maybe linked to roads. Overall substrate improvements offset decline
- Continue to work towards understanding causal mechanisms

Advances in monitoring – What's next?

In response to needs presented by region and local units:

- Multiple scale reporting
- Consistent empirical approach
- Multi-agency reference network
- AREMP Tools
- Integration monitoring – LUP & HLI
- Exploring data sharing
- Link upslope to stream condition

AREMP has substantial baseline data, and tool necessary to assess change for evolving management across the landscape.

Questions?

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