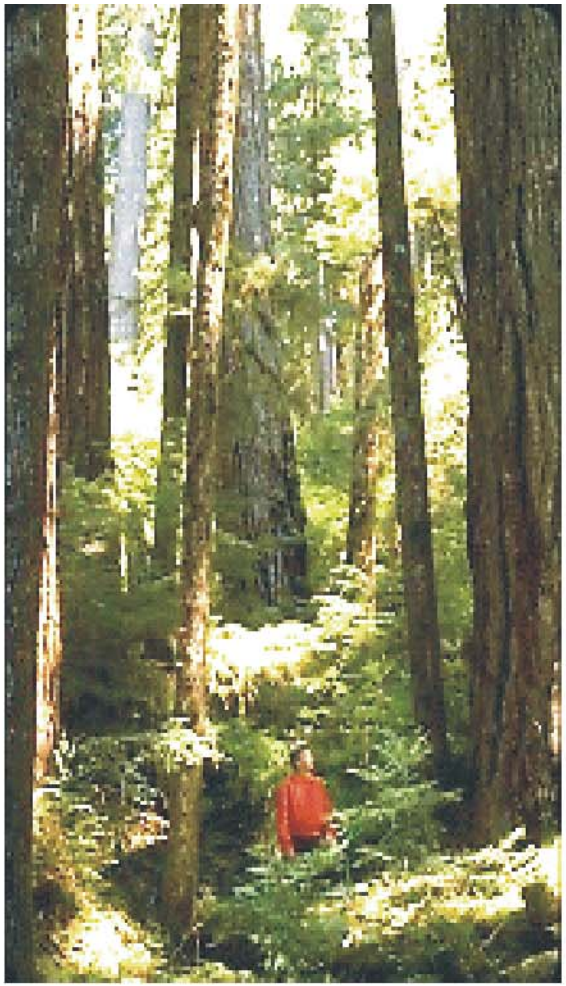
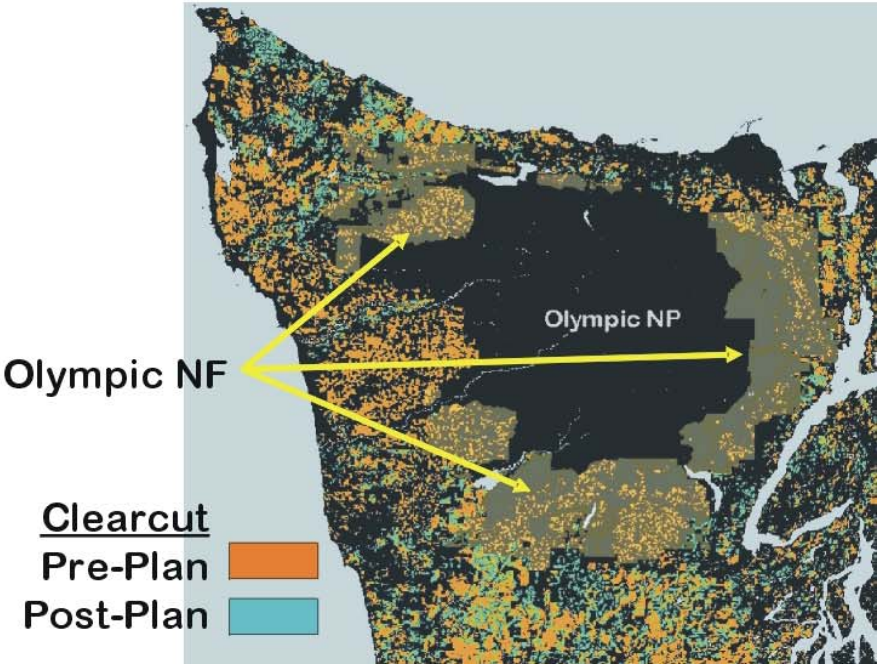


Late-Successional and Old-Growth Forest Monitoring

Status and Trends Overview

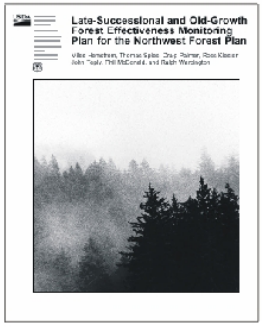

Older Forest Monitoring Questions
How much older forest -- 1994?
Gains & Losses -- 2003?
Compared to Plan expectations?

Post-clearcut landscape on the border of Olympic National Park



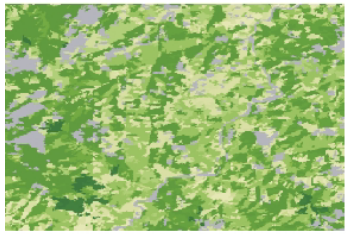
Monitoring Design

PNW General Technical Report 438 (Hemstrom, Spies, et al. 1998)



Older Forest Baseline (1994)

Older Forest Changes (2003)



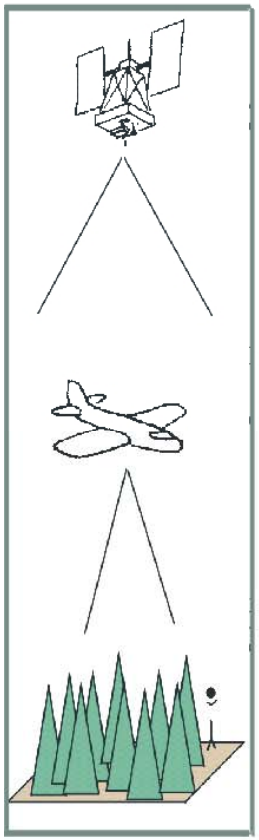
30+”
20-29.9”
10-19.9”

from Time 1	Re-measured acres to Time 2						Time 1
Size class	PF	SS	Sm	Md	Lg	Md&Lg	ac
PF	1,516,766	83,165	14,743	3,746	3,001	6,747	1,621,421
SS	27,487	1,030,608	302,666	6,842	2,269	9,111	1,369,873
Sm	26,920	82,471	2,459,926	425,813	20,860	446,673	3,015,991
Md	6,775	11,715	123,510	1,637,481	224,134	1,861,615	2,033,615
Lg	3,046	12,884	11,269	38,027	1,185,498	1,223,525	1,298,724
Md&Lg	9,821	24,598	134,779	1,755,508	1,407,632	3,163,141	3,332,339
Time 2 ac	1,580,994	1,220,843	2,912,114	2,191,910	1,433,763	3,625,672	9,339,623

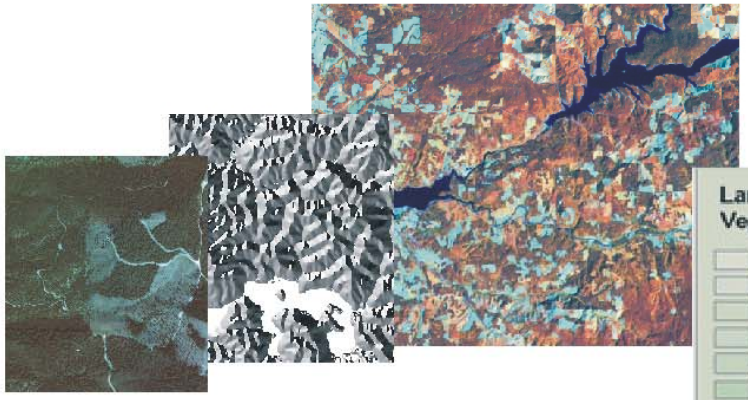
Map-based information

Plot-based information

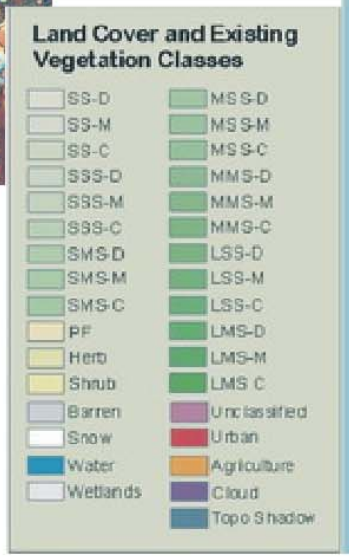
Monitoring Design



Map-based information
IVMP
&
CALVEG



Landsat imagery
(1994-1996)

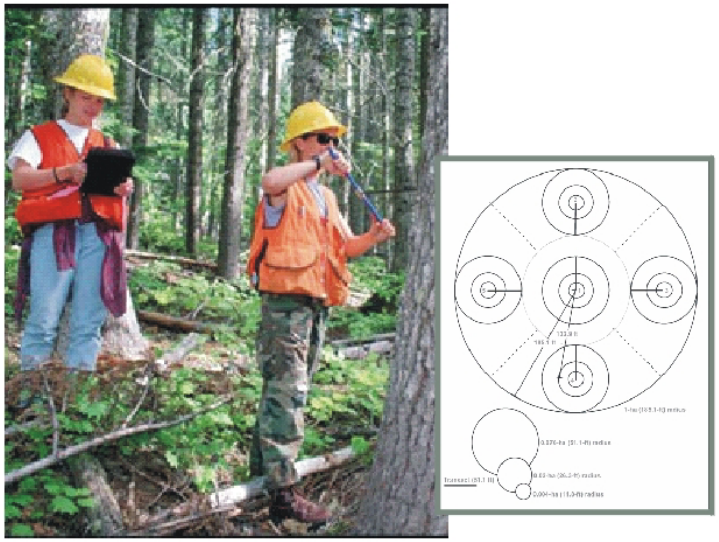


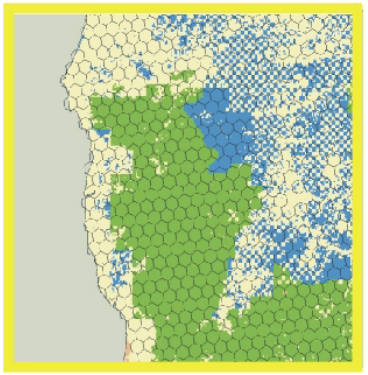
Ref: PNW General Technical Report 438
(Hemstrom, Spies, et al. 1998)

Monitoring Design

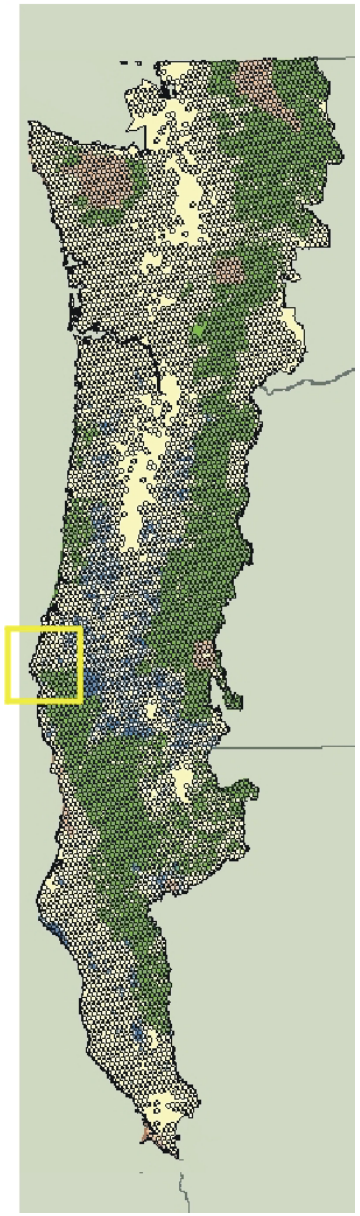
Plot-based information

Current Vegetation Survey (CVS)
Forest Inventory & Analysis (FIA)





8,246 sample plots

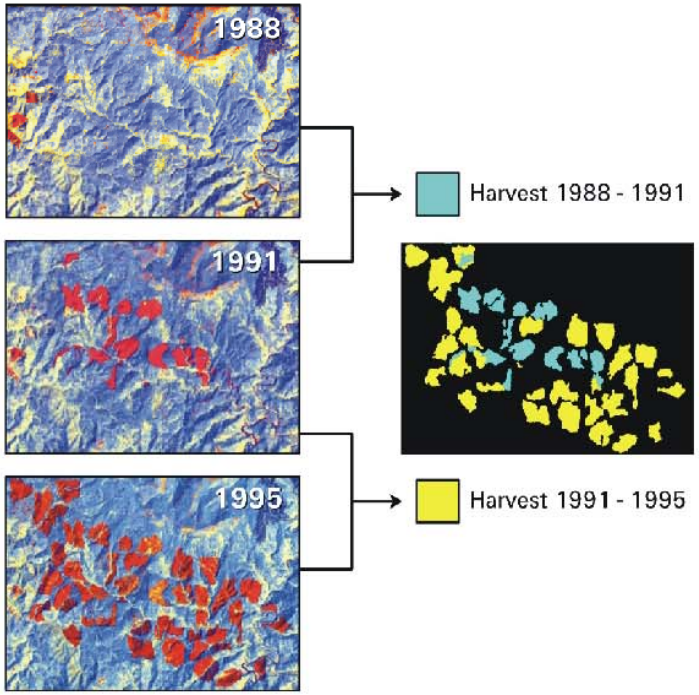


Ref: PNW General Technical Report 438
(Hemstrom, Spies, et al. 1998)

Assessing Changes

Map-based information

Major losses: Map of stand-replacing harvest and fire



Plot-based information

Net Change: Re-measured Plots

Baseline

\+ Gains

\- Losses

Net Change

Older Forest Definitions

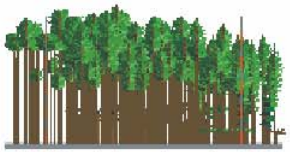
Average Tree Size

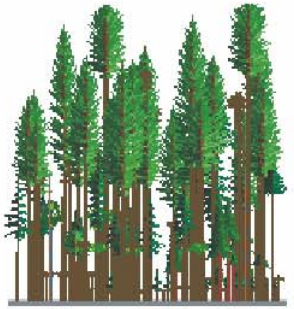
Percent Cover

Life Form

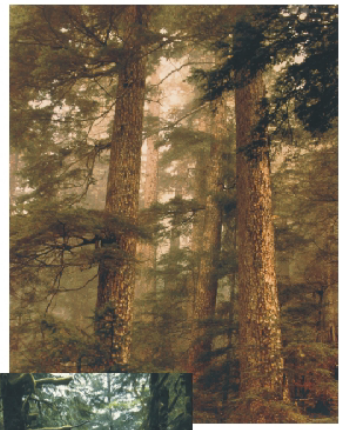
Conifer or Hardwood

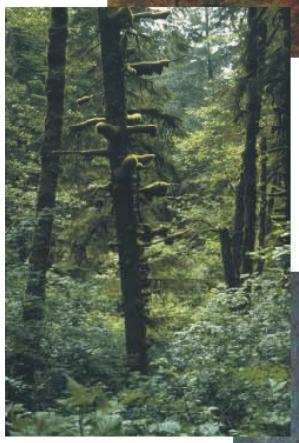
Canopy Structure

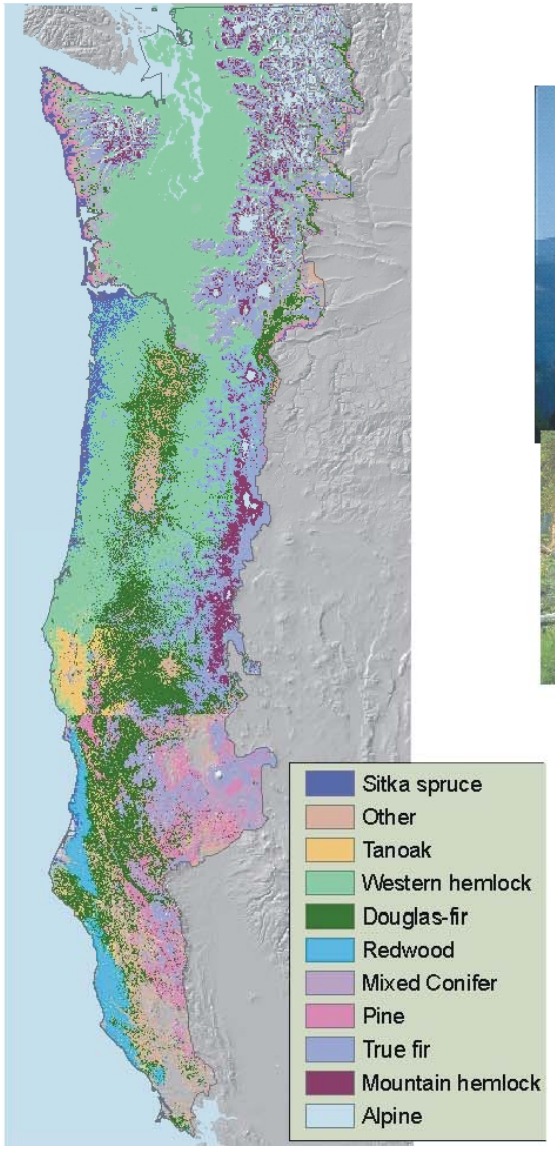


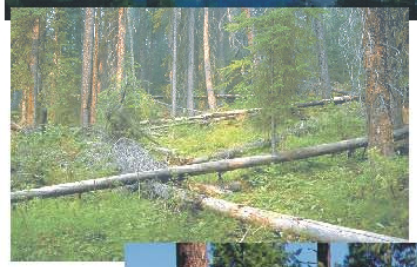


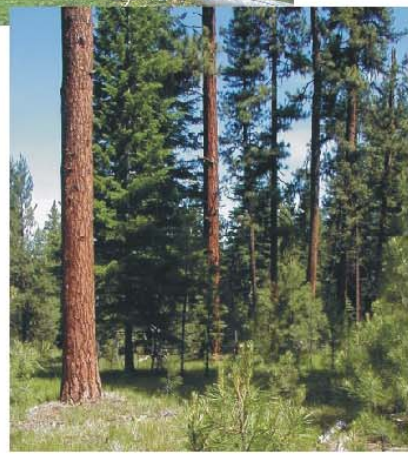
NWFP Vegetation Zones



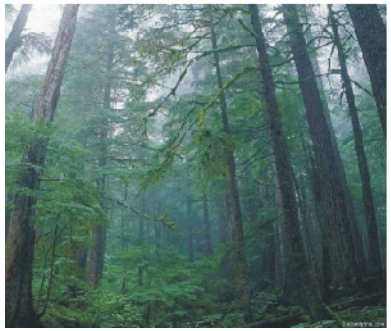




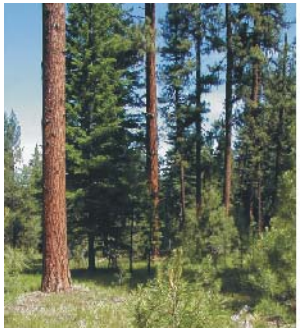




Multiple Older Forest Definitions



Medium and Large (FEMAT benchmark)
(> 20 inches, single- or multi-storied)

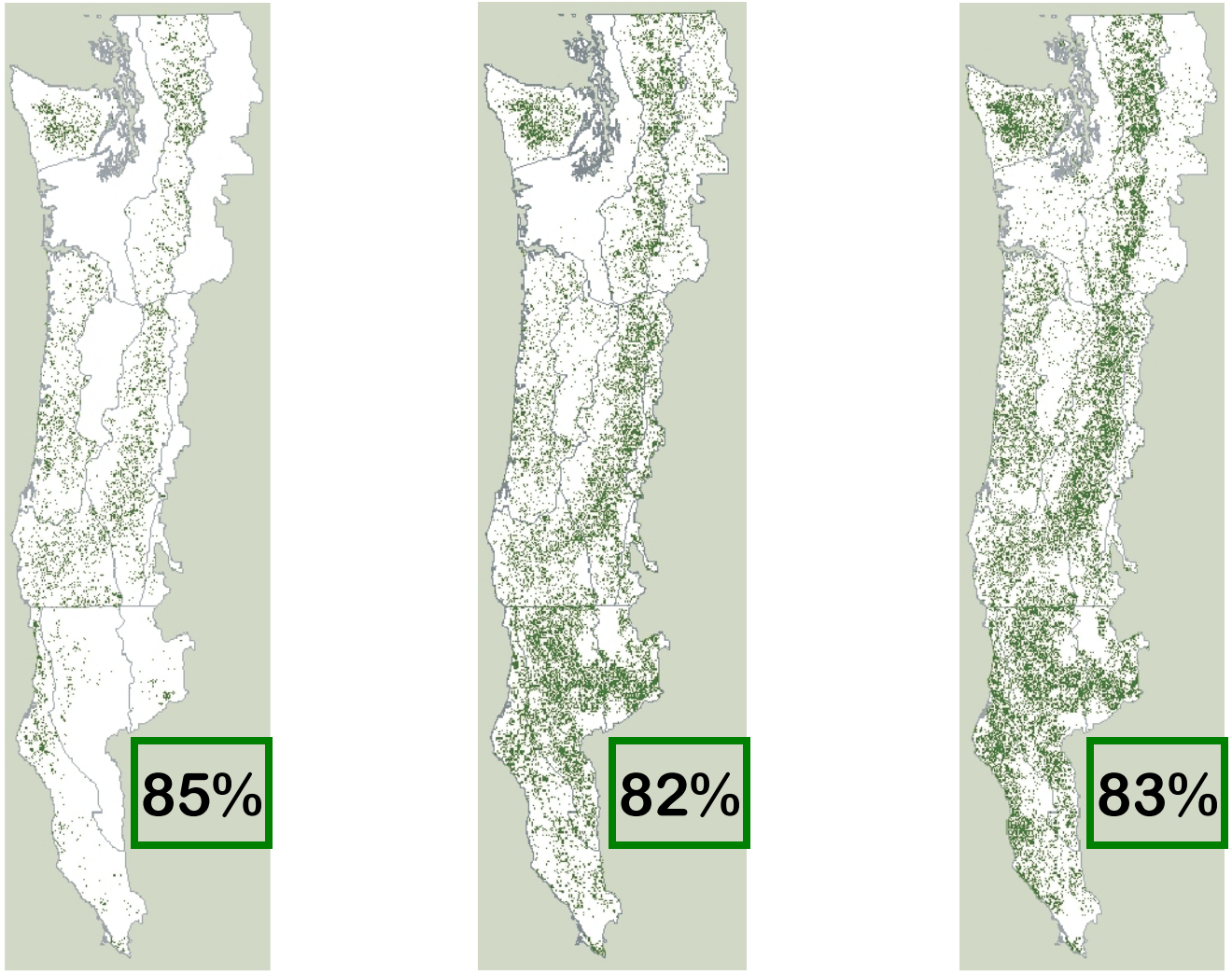


Medium and Large by Potential Natural Vegetation Zone (Ecological)
(size by vegetation series)

Large Multi-storied (Old-Growth)
(> 30 inches, multi-storied)

Older Forest Baseline -- 1994

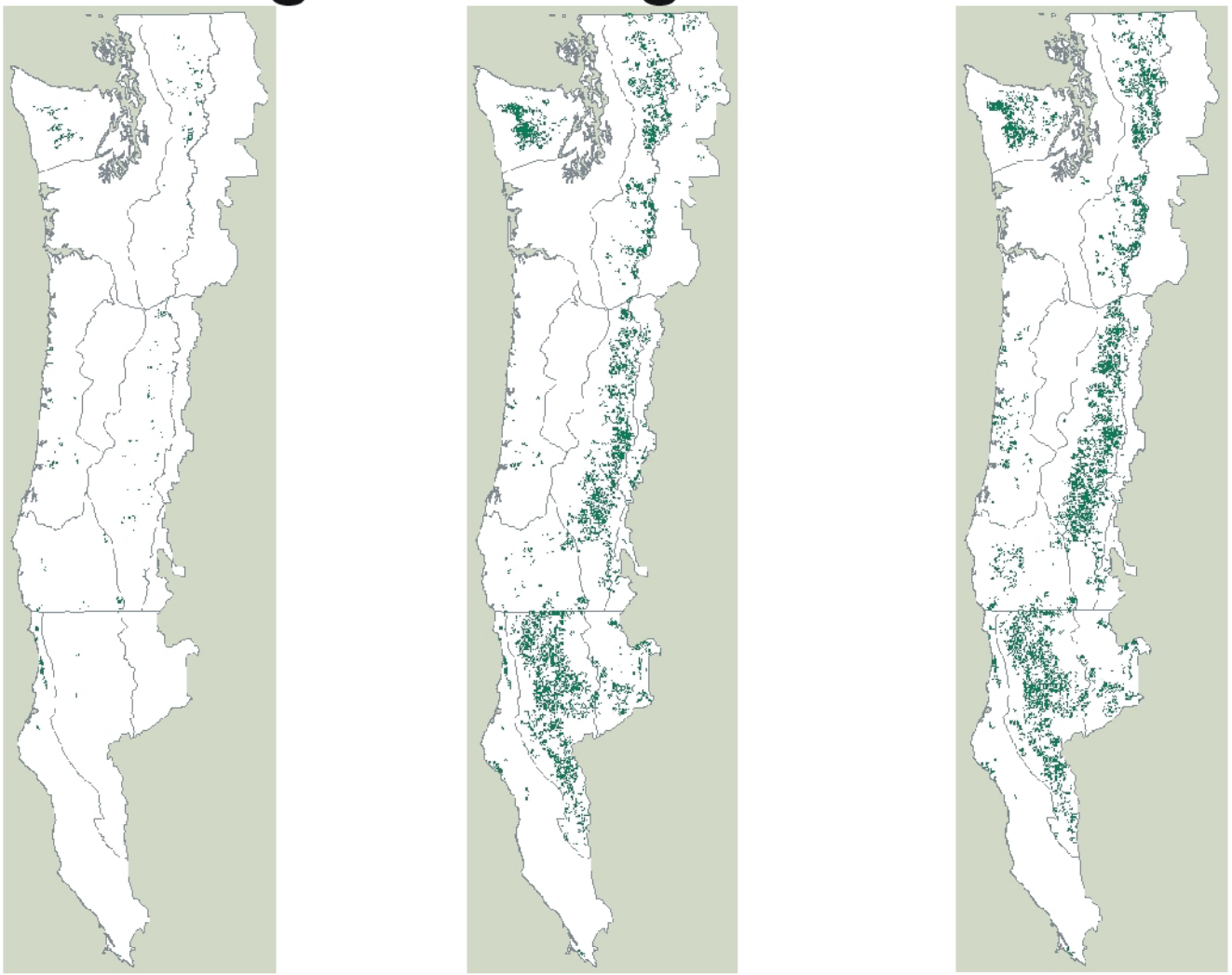
Percent in Reserve Allocations



Percent of Federal Landscape Occupied by Older Forest

Old Growth	Ecological	FEMAT
12%	30%	34%

Degree of Fragmentation



Percent Occupied by Older Forest Blocks > 1,000 acres

Old Growth	Ecological	FEMAT
13% of total	62% of total	65% of total

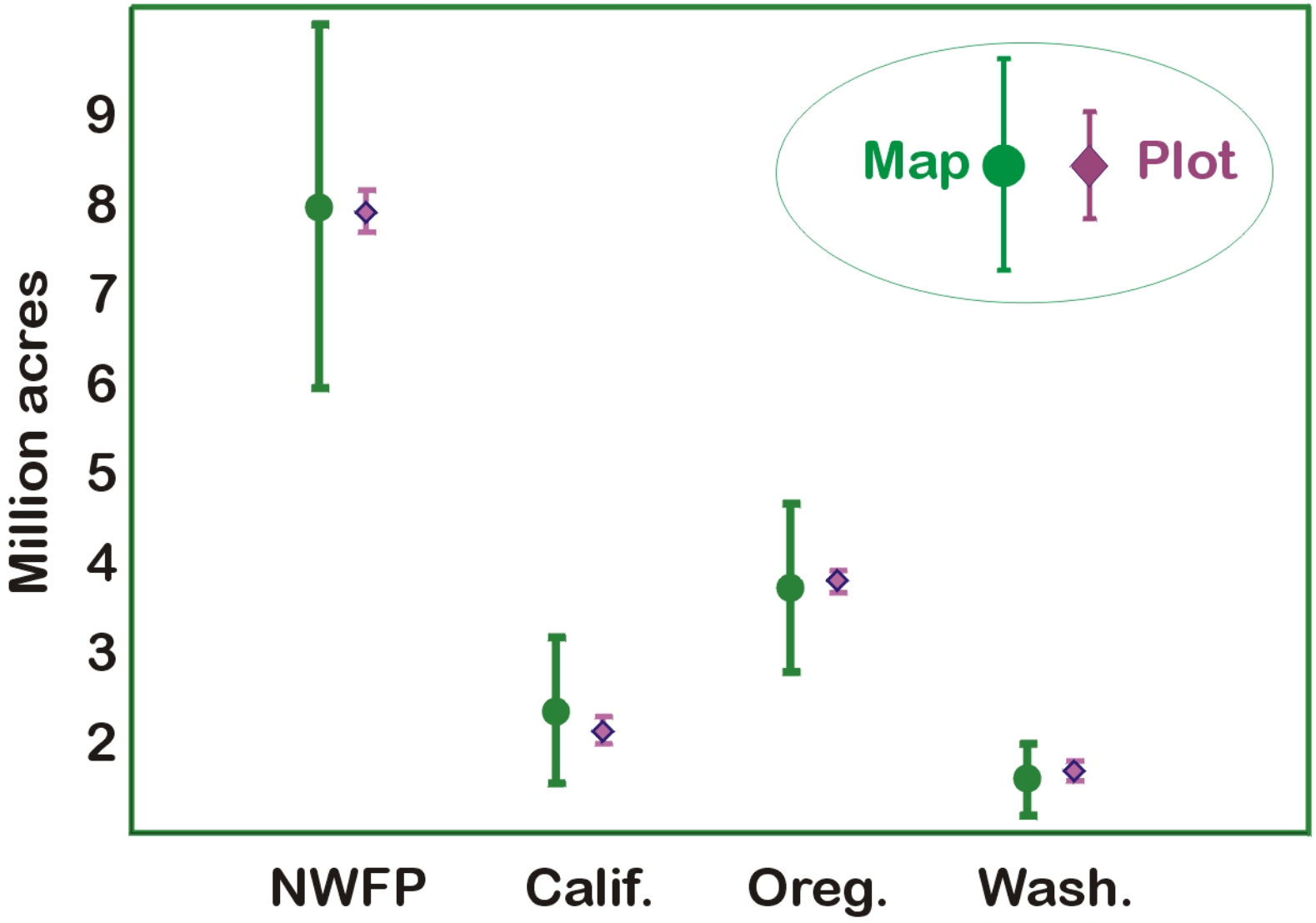
Fire Dynamics

1.7 million acres of older forest are in fire-prone forest types in Klamath Mountains and Eastern Cascades

Interior Douglas-fir; Dry fir (grand fir, white fir, and red fir); Pine types, Dry Mixed conifer; and Tanoak/Douglas-fir

Up to 1 million additional acres are in dry mixed conifer types in the Western Cascades

Map-based vs. Plot-based Estimates



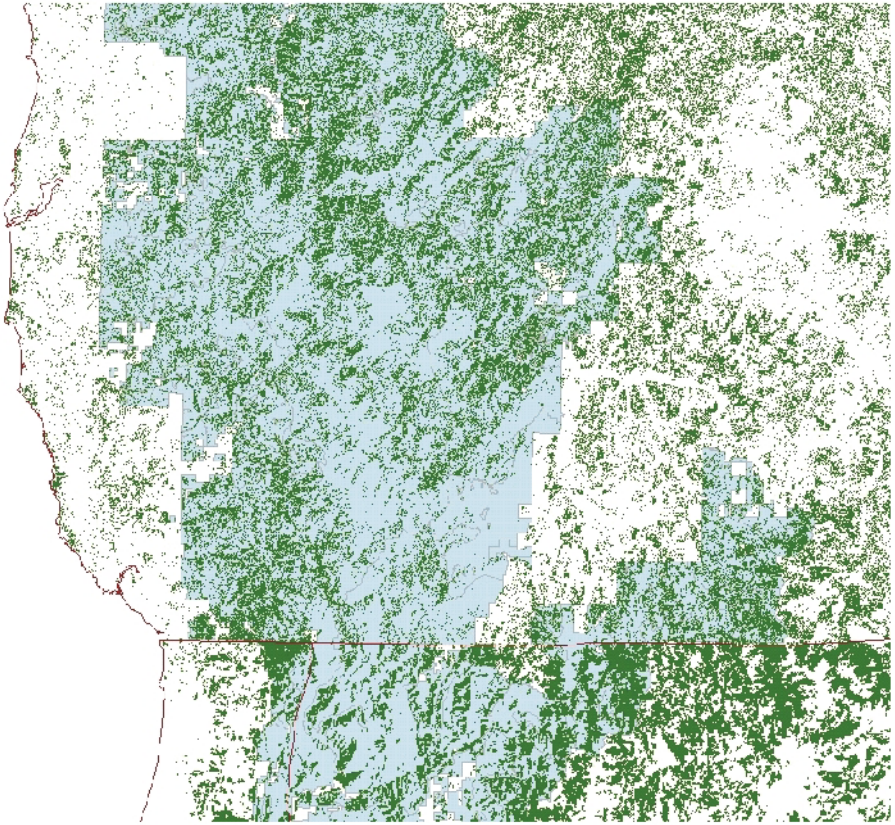
Changes in the first decade (1994-2003)

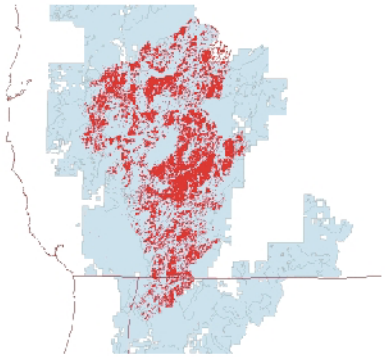
Disturbance Map Results

Stand-replacing Wildfire

101,000 acres burned (1.3 %)

Pre-burn





Biscuit Fire 2002

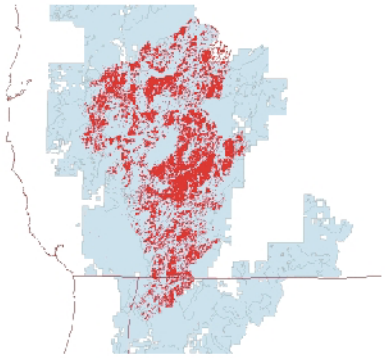
Changes in the first decade (1994-2003)

Disturbance Map Results

Stand-replacing Wildfire

101,000 acres burned (1.3 %)

Post-burn



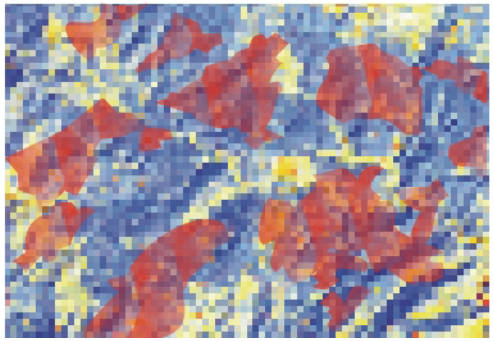
Biscuit Fire 2002

Changes in the first decade (1994-2003)

Disturbance Map Results

Stand-replacing Harvest

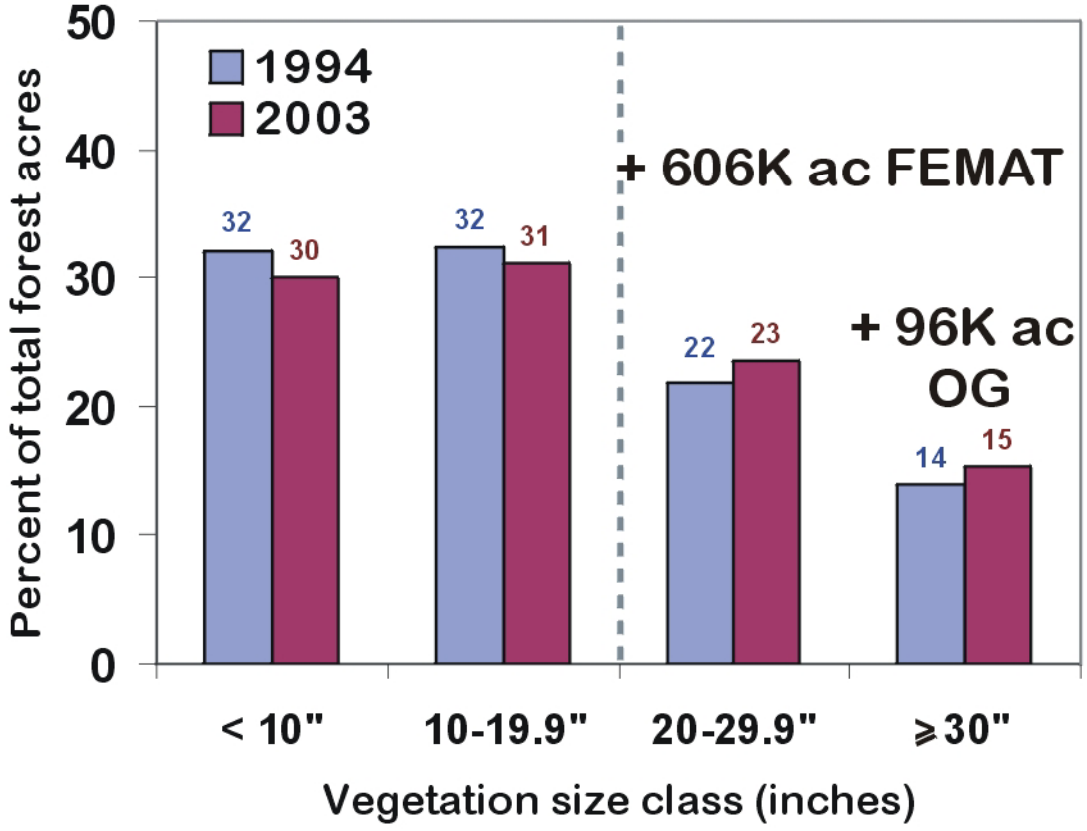
17,000 acres clearcut (0.2 %)



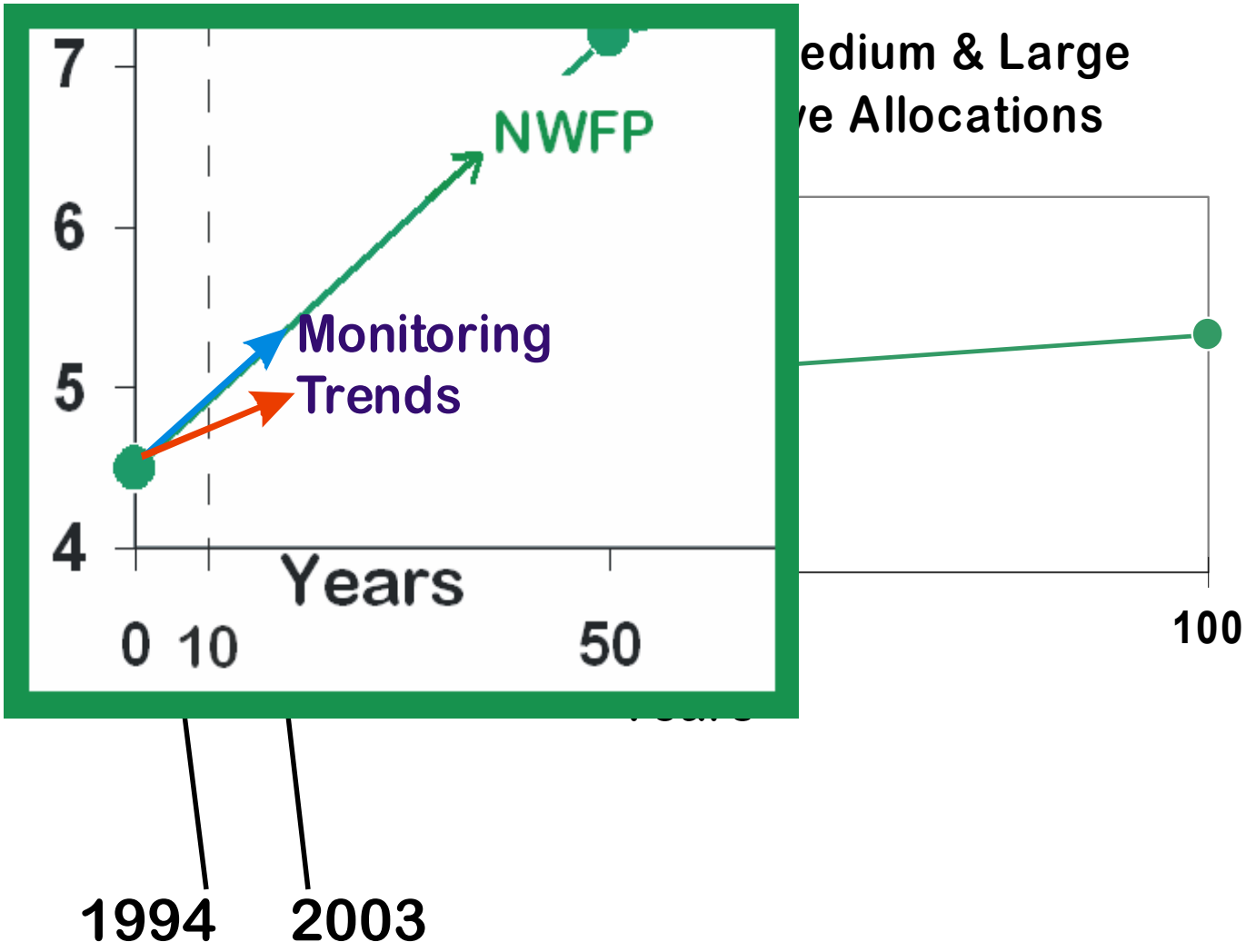
Changes in the first decade (1994-2003)

Re-measured Plot Results

Net projected gain of ~ 606,000 acres older forest



NWFP Expectations



Monitoring Results

	NWFP Expectations	Monitoring Results
BASELINE	35% in 1994	34%
TRENDS		
Loss to Harvest	1% in 10 yrs	0.2%
Loss to Wildfire	0.7% in 10 yrs	1.3%
Recruitment / Net Gain	600K ac in 10 yrs	606K
FUTURE		
Older forest :Total forest	65% (100 yrs out)	34% (10 yrs out)
% in Large blocks	> 80%	65%

Given the present status and observed trends, older forests appear to be developing at a rate and in patterns consistent with long-term Plan assumptions

Late-Successional and Old Growth Forest Monitoring Team

Forest Service, Region 6
Jim Alegria*
Carol Apple
Tom Demeo*
Jack Fetterman

BLM-Oregon
Jim Alegria*
John Cissel
Jeff Nighbert

Forest Service, PNW
Tom Spies*
Karin Fassnacht
Miles Hemstrom*
Warren Cohen*
Sean Healey*
Andy Gray
Karen Waddell

* Report Author

Forest Service, Region 5
Ralph Warbington*
Brian Schwind
Lisa (Levien) Fischer
Hazel Gordon
Kevin Casey

Titan Systems
Julie Browning*
Craig Ducey
KC Kroll
Chris Grob

Reviewers

Janet Ohmann (PNW)
Conghe Song (UNC)
Rudy King (RMRS)
Cindy Miner (PNW)
Debbie Pietrzak (BLM)
John Robinson (R5)
Jerry Franklin (UW)
Tim Max (PNW)
Pat Cunningham (PNW)
Barry Mulder (FWS)
Jack West (R5)
3 anonymous reviewers