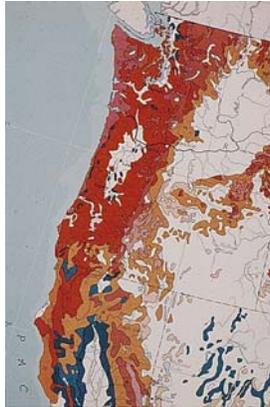
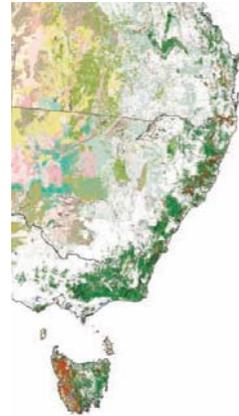


A Comparison of Old-growth Ecology and Conservation in the Pacific Northwest USA and Southeastern Australia

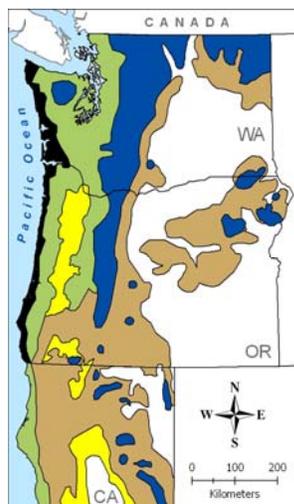


Thomas Spies

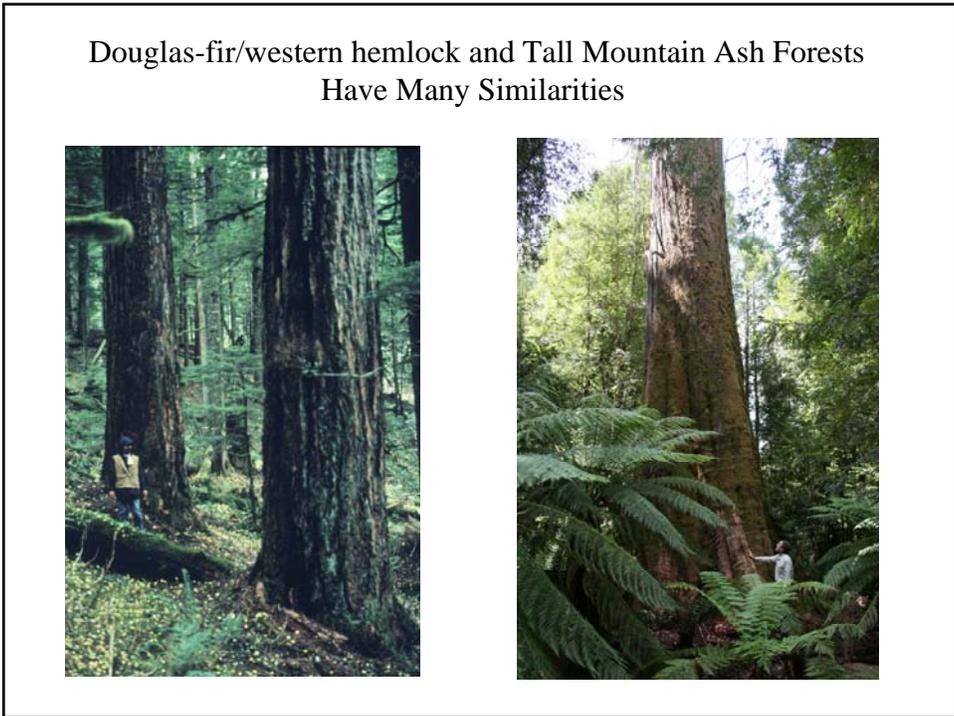
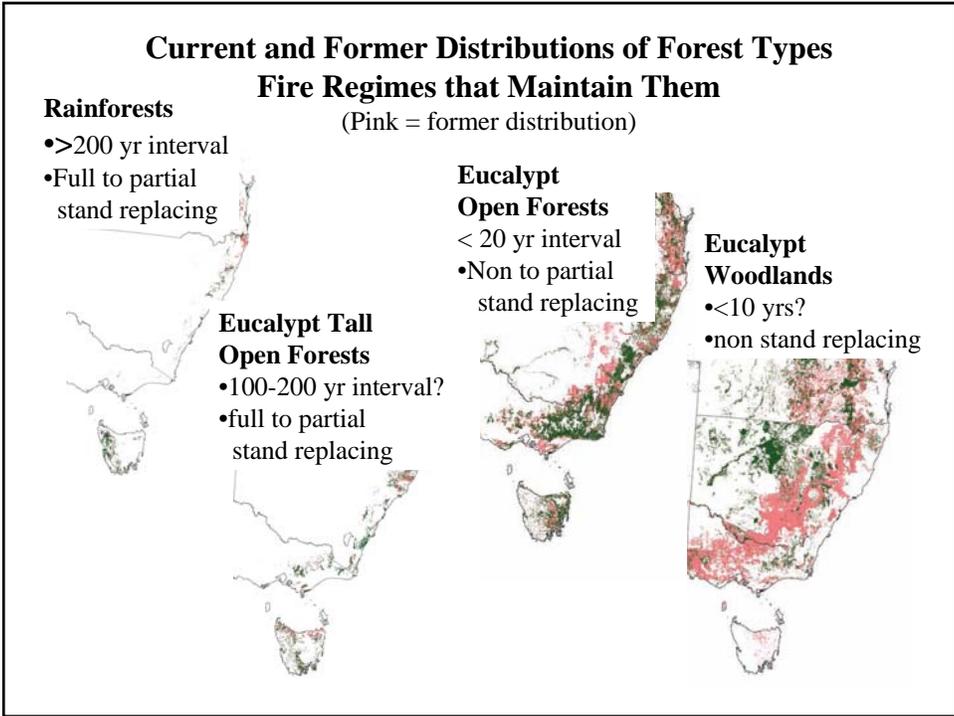
USDA Forest Service
Pacific Northwest
Research Station
Corvallis, Oregon



Diversity of old-growth forests and dynamics In PNW Region



Fire Return Interval and Forest Types	
Long to Very Long (100 - 400+ yrs)	
■ Spruce	} Full to Partial Stand replacement
■ Hemlock/Douglas-fir or Redwood (CA only)	
■ Montane and Subalpine Conifers	
Very Short to Medium (<10 - 100 yrs)	
■ Mixed Conifer or Pine	} Partial stand replacement To non-stand replacement
■ Oak Woodlands	
□ Non-forest	



Decayed live and large dead trees
cavities/hollows

PNW

SEA



Washington

**Large Down and Decayed
Wood**

Source of habitat diversity
for vertebrates, invertebrates,
plants and fungi

Tasmania



Shade tolerant lower canopies in some types

Oregon—Douglas-fir/hemlock



Tasmania—Mixed Forest



Maturing Younger Forests Following Stand Replacement Wildfire

Washington 90 years



Victoria—70 years



Dry Fire-Frequent Old Growth



Ponderosa Pine
Eastern Oregon

Open Eucalypt Forest Tasmania



Different Responses to High Intensity Wildfire in Some Types

2003 Fire Oregon

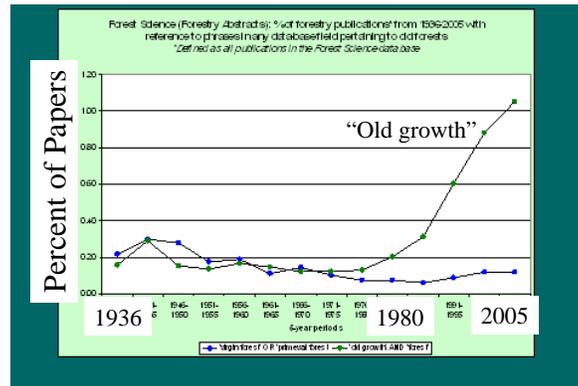


2003 Fire New South Wales



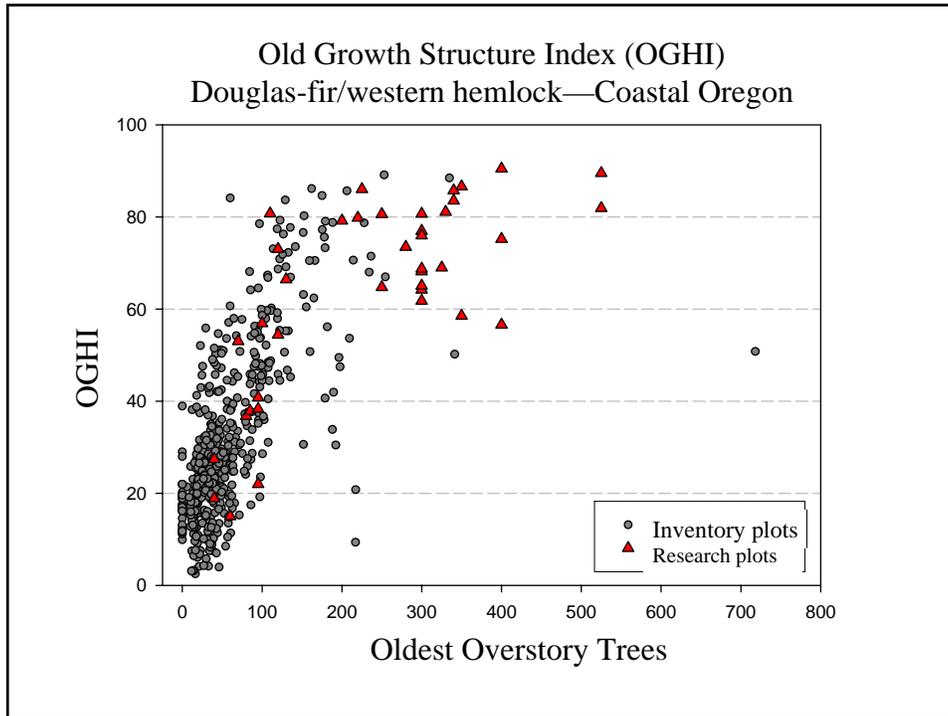
Terminology and Definitions

The rise of the use of “old-growth” in the scientific literature
Compared to “virgin” or “primeval”



Generic USFS Definition

- **Old-growth forests are ecosystems distinguished by old trees and related structural attributes.** Old-growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics, which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition and ecosystem function
- Mapped with remote sensing and inventory plots



Old Growth Forests Australia Regional Forest Agreement

- **Forests that are ecologically mature where the effects of past disturbances are now negligible**
- Photo-interpreted mapping

Old-Growth Species Composition

- Relatively high species richness
- No species have been found that are confined to the old growth *development stage* in both regions
- In PNW species richness and community similarity show little difference between 400+ and 80 year old *natural* Douglas-fir forests



Wedge-tailed eagle

Northern
Spotted
Owl

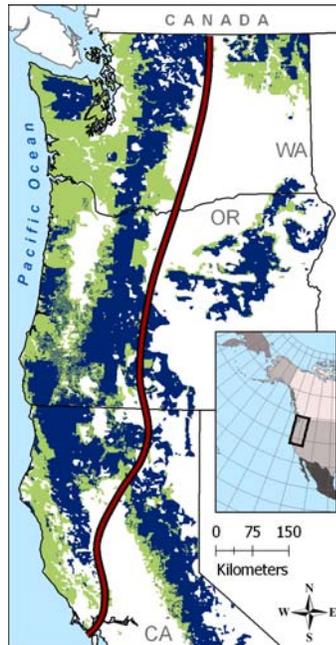


Habitat Selection

- Species respond individually to forest conditions
- Habitat elements not restricted to old growth *as a developmental stage*
 - E.g. large live and dead trees
 - Large, unbroken habitat patches
- Old growth is a “coarse-filter” element
 - will not completely substitute for the habitat of any particular species

Old Growth Conservation and Management

- Reserves—large-strategically place
- Retention under management for timber and ecosystem services
 - Coupe level –new silviculture
 - Landscape level patch retention (e.g. riparian)
- Restoration



PNW Conservation Plans

Federal Lands

- West-side (Northwest Forest Plan-- Ecosystem Mgt)
 - 1-3 million ha out of 10 million ha
 - 80% in reserves
 - Green tree retention
 - Restoration in reserves
 - Monitoring
- East-side
 - No cutting of trees > 50 cm
 - Restoration

State Lands

- Relatively little old growth
- Mostly protected

Private Lands

- Little old growth

Blue = Federal Forests; Green = Other Forest Owners

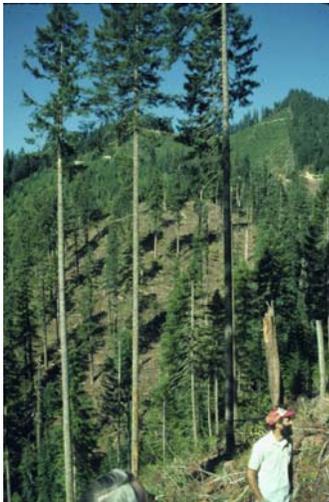
Old Growth Conservation In SE Australia

Regional and Tasmanian Community Forest Agreements



- State Lands
- Approaches vary by State
- No comprehensive survey
- 4.5 million ha OG
- 22% of surveyed area in OG
- 72% in Reserves
- Limited landscape strategy
- Some green tree retention
- No restoration in reserves
- Limited monitoring

Logging in Old Growth using Green Tree Retention



PNW-- Federal Lands

- Sound ecological basis
- Practice has stopped in face of public opposition to logging older forests

Australia

- Sound ecological basis
- Practice is increasing as replacement for clearfelling



Public Opinion About PNW Federal Forests in 1991 and 2004

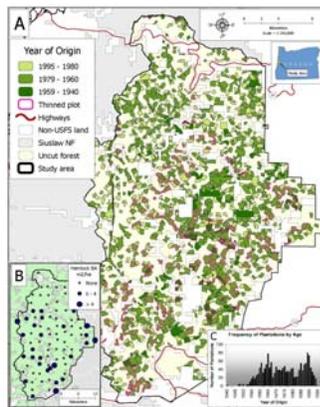
Agreement with Statement:

**“Greater efforts should be made to protect remaining
old-growth forest”**

- 1991 51% (Prior to Ecosystem Management Plan)
- 2004: 59% (After Ecosystem Management Plan)

From Steel

Restoration Issues in PNW Thinning Plantations



Reserves frequently contain
plantations of native conifers



Figure 2. Study area on the Skutumpah National Forest showing (A) the pattern and year of origin of plantations and forest natural forest, (B) patchy distribution of homelock in forest territory plot grid within the study area, and (C) frequency distribution of plantations by year of origin.

Reserves in Fire-prone forests are affected by past fire suppression and high grading of large trees



Courtesy of Norm Johnson



before

Fuel Reduction Fire in New South Wales



after

An New South Wales Perspective on Restoration

“It is time to appreciate that there is much more to forest conservation than relocating State [NSW] forest-national park boundaries...

Embedded within them [reserves] are areas that have been degraded through past policies and practices...

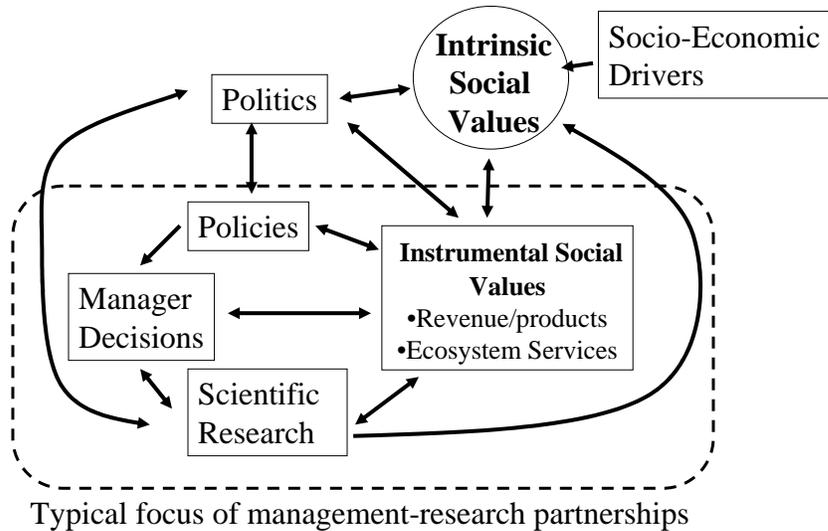
forest restoration is required not only in current state forests but in harvested forests which have been transferred to national park.”

Ross Florence 2005—Australian Forestry

What has been gained by scientifically-based ecosystem management on Federal lands in PNW ?

- Facilitated sea change in management from timber domination to management for ecosystem services-- especially protection of old growth
- Landscape level perspectives
- Need for restoration
- But ecologically based logging of old growth has not been accepted by the interested publics who place high intrinsic value on old growth

The Social System in which Old Growth is Imbedded



Will ecologically based management and old-growth conservation in Australia follow the same path?

Conclusions

- Many similarities in ecological and social characteristics of old growth and the social aspects of the issue
- High ecological diversity of types of old growth in both areas
- Difference in definitional approaches—structure vs absence of disturbance

Conclusions

- Old growth *as a forest class* has limited value for maintaining biodiversity—also need to deal with structural components and individual species needs
- Different degrees to which reserves, alternative silviculture and restoration have been employed
- Rational approaches to ecosystem management on public lands will be constrained by emotional values
- Need to study the old growth issue as a coupled natural-human system