Contemporary research in the field of ecological forestry: "*From problem design to dissemination*"

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and member of **The Forest Steward Guild**

Outline

- Introduction
- Global opportunities
- Educational efforts
- Research results
- Future challenges

Introduction

New Forestry

Gonzo Forestry

Natural disturbance based

New Perspectives in Forestry

Close-to-nature forestry

Systemic silviculture

Ecosystem Management

Alternative to clearfelling

Ecosystem based management

Continuous cover forestry

Ecological forestry

Naturnaher Waldbau

Variable retention

Retention forestry

Dauerwald

Nature orientated silviculture

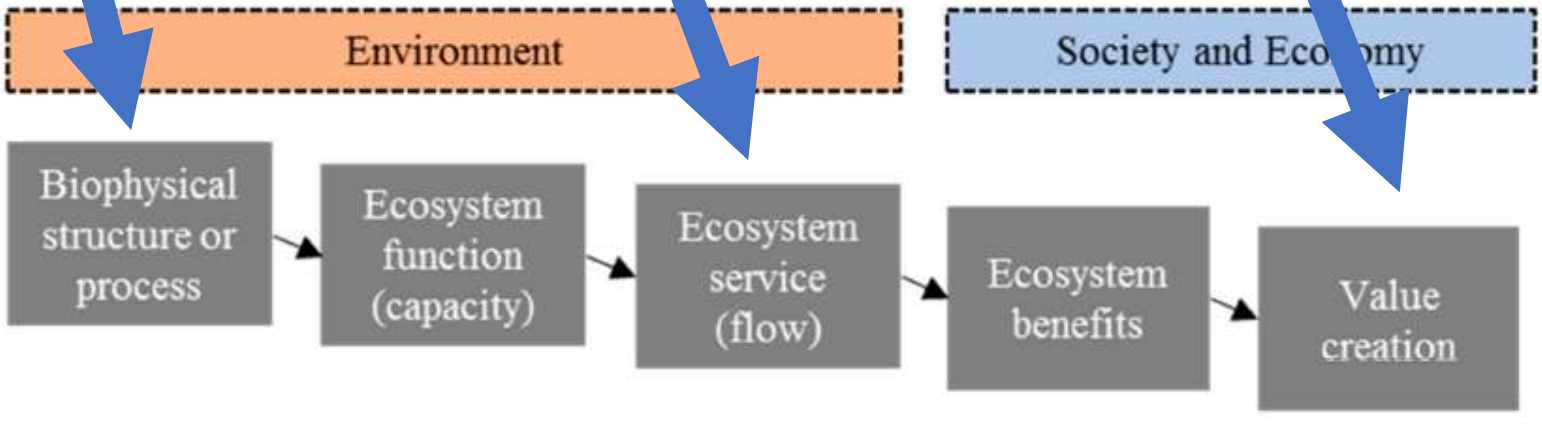
Ökowälder

Silviculture to achieve a more balanced set of objectives = ecosystem services

Introduction

Silviculture

impacts **to provide** **so people obtain**

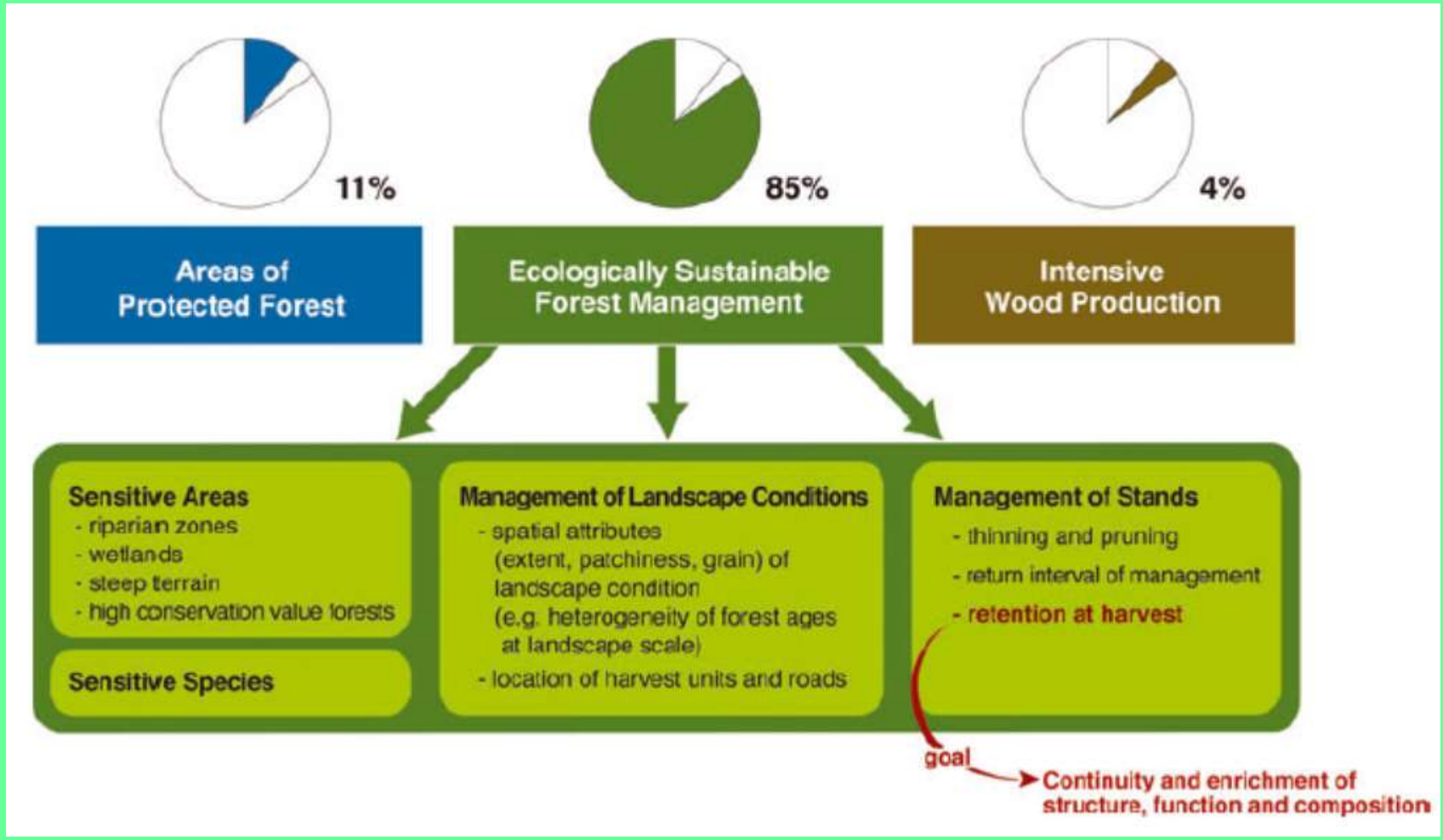


For example...

Provisioning service	Bioretention system	Water retention and infiltration	Water recharge	Water available for use	Willingness to pay for conservation systems
Regulating service	Green filter close to road	Pollutant retention	Air quality	Access to clean air	Physical health

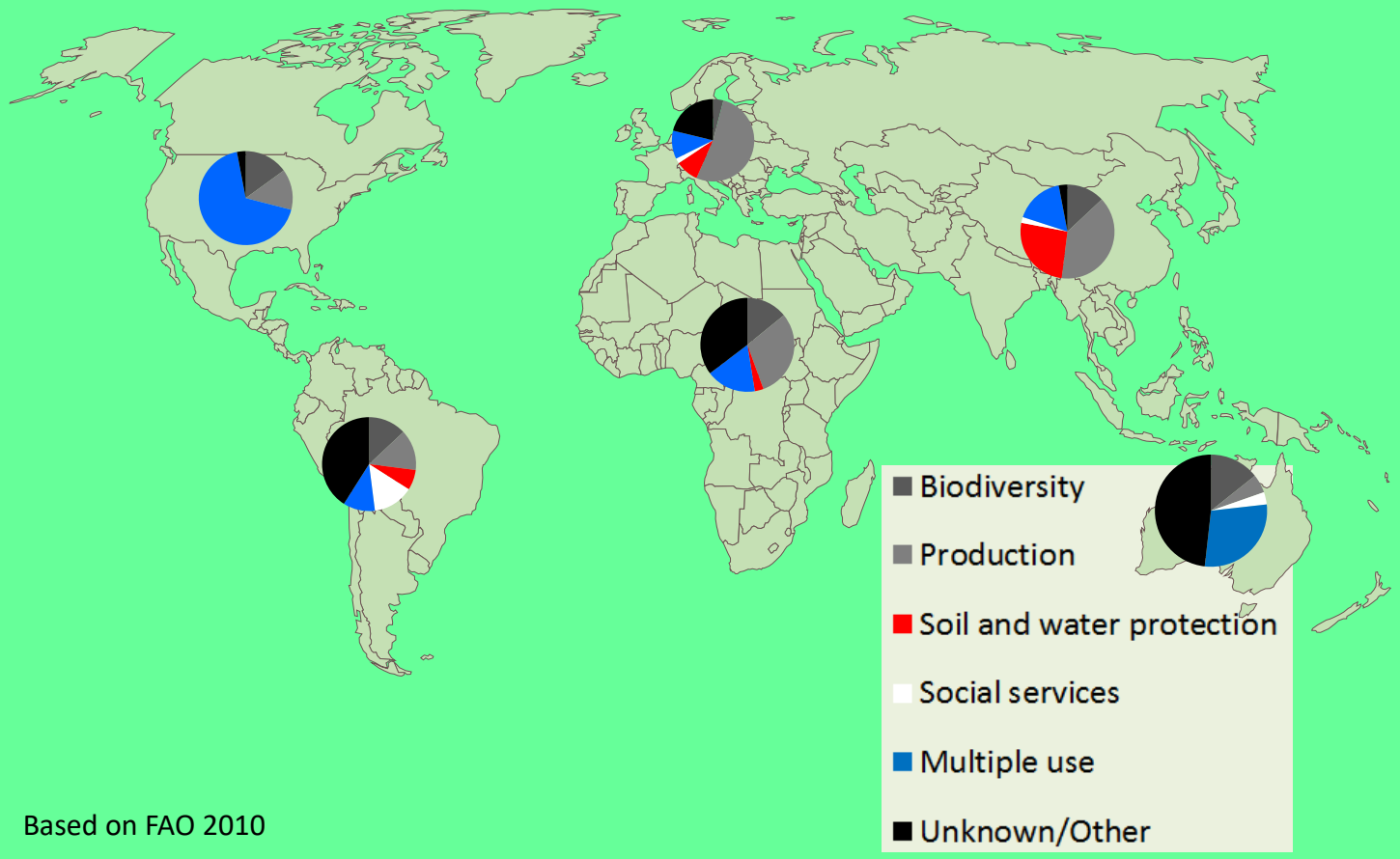
Cascade model of Ecosystem Services (from by Petit-Boix and Apul 2018

Global Opportunities



Lindenmayer et al. 2012 ConsLet

Global Opportunities: Primary Designated Functions



Based on FAO 2010

Global Opportunities: Controversies

Global Opportunities: Controversies

An Oregon university let loggers harvest a 420-year-old tree. The school says that was a mistake.

By Doug Criss, CNN

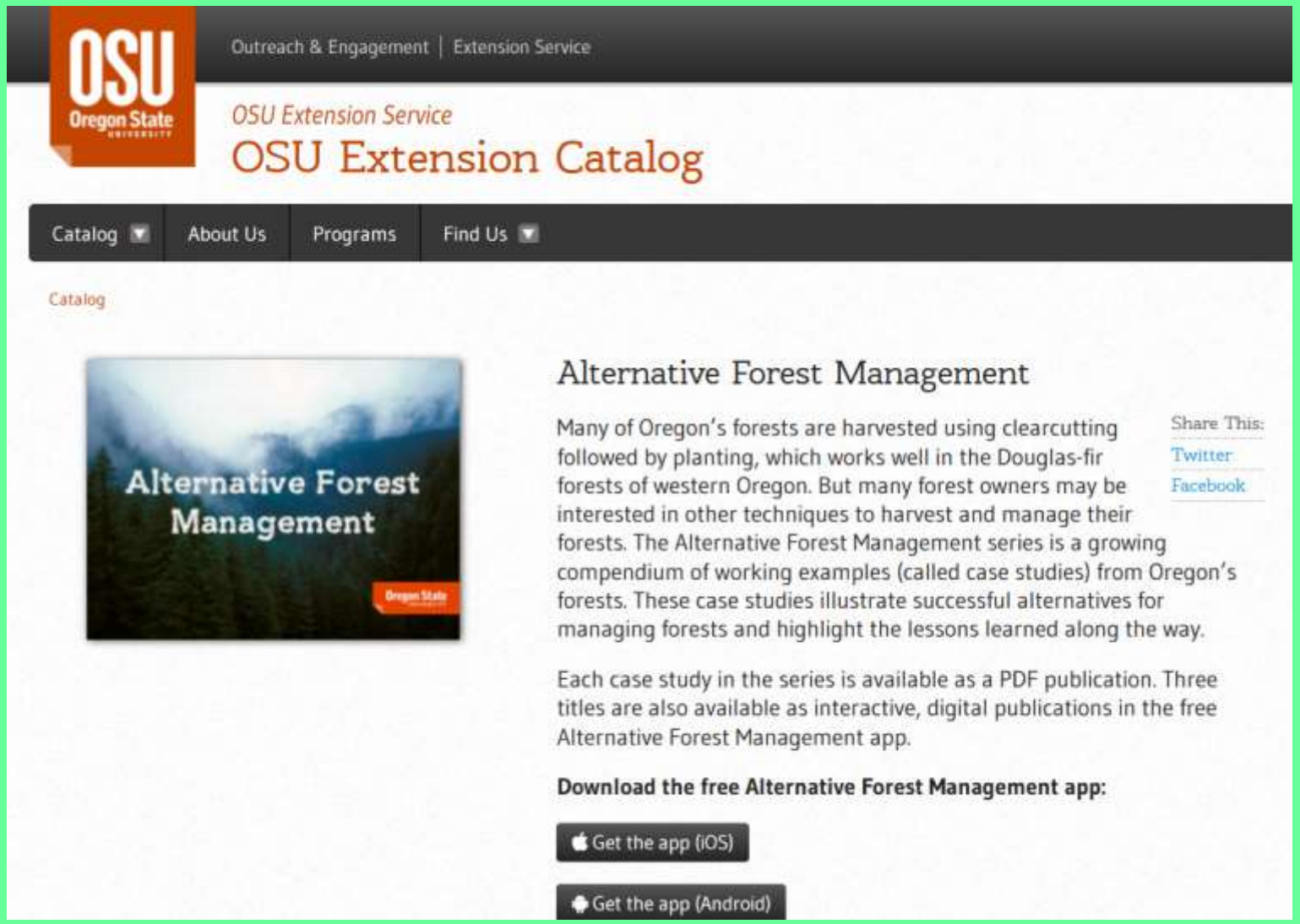
Updated 3:38 PM ET, Tue July 23, 2019

Content by LendingTree

Refinance rates at 2.75% APR. Do you qualify?

Hack your mortgage by refinancing to a 15yr fixed

Educational Efforts



Educational Efforts

Great Lakes Silviculture Library

Home | Explore Case Studies | Submit a Case Study | About the Project | Resources & Links | Contact

Structural Restoration of the Camp 8 Old-Growth Red Pine Stand (UMN-CFC)

Stand Information

State or Province:
Minnesota

Nearest city or town:
Cloquet

Describe the location:
The "Camp 8" stand is located at the University of Minnesota Cloquet forestry Center roughly five miles west of Cloquet, MN on the Brimson Sand Plain landtype association. N½ NW¼ Section 32 T49N R17W.

Landowner:
University of Minnesota

Cover-type:
Pine

Plant community or habitat classification and growth stage:
FDn33a2

Forest Health Threats:
N/A

Estimated year of stand origin:
1813

Additional information about stand origin:
Tree-ring data indicate a fire within the stand in 1813, with a cohort of co-dominate canopy red pine establishing in the 1820s.

Site Index: 60 feet **for species:** red pine

Silviculture System:
Other Silviculture System

http

Educational Efforts

Oregon State University

Calendar Catalog Library Maps Online Services Make a Gift Search this site

College of Forestry

STANDS: Silvicultural Treatment Alternatives Northwest Discussion Site

STANDS provides information about conservation forestry practices that are economically feasible, ecologically sound, and socially acceptable. This site highlights real world examples of forest management efforts that are aimed at achieving a balance of ecological and economic goals. The initial focus is on Western Oregon, but we hope to expand our scope to other forests in the region. This website is work in progress. We are planning to update and increase the number of management examples over time. We are always interested in feedback and suggestions for other sites or other resources that may be of interest forest land owners and managers. Please click on the marker below to learn more.

Main menu

- Home
- Collaborators
- Other Resources
- Contact Us

Alternative Silviculture Sites

- Silviculture Library: Minnesota
- Visual Silviculture Prescription Library: Willamette National Forest

Educational Efforts

Peer to Peer

Who?

Where?

When?

Why?

What happened?

What did we learn?

2014 Google Earth image

Example showing Douglas-fir overlapping Oregon white oaks (compare to next photo)

Canopy gap created by harvesting the Douglas-fir (see previous picture)

Visual Silvicultural Prescription Library

Version 1.0 2015

Additional information for each stand can be found in the companion document: Prescription Library Supplemental.doc Contact Cheryl Friesen for updates to this library (cfriesen@fs.fed.us) or visit the CCAMP Website at http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/

Educational Efforts

PHOTO POINTS – Variable Density Thinning

Stand# 1002894

Photo: Gary Rost, USFS, 2014

Educational Efforts

Forest Stewards Guild
putting the forest first

About Us | Our Work | Membership and Giving | Events | Donate

Forestry with birds in mind

In response declines in songbird populations in New England, Audubon Vermont and Vermont Department of Forests, Parks, and Recreation launched *Foresters for the Birds*, a program that promotes forest stewardship to enhance bird habitat. The success of the program is the integration of silviculture with songbird habitat enhancement. The *Foresters*

Events

- Corvallis Region Demo at McDonald-Dunn Forest, Oregon
- Forestry for Maine Birds workshop

Partners

- Audubon Vermont
- Vermont Dept of Forests, Parks and Recreation
- Maine Audubon
- Maine Forest Service
- Mass Audubon
- Audubon Connecticut
- Audubon North Carolina
- Audubon South Carolina

Educational Efforts

Forest Stewards Guild (FSG) - OSU Student Chapter

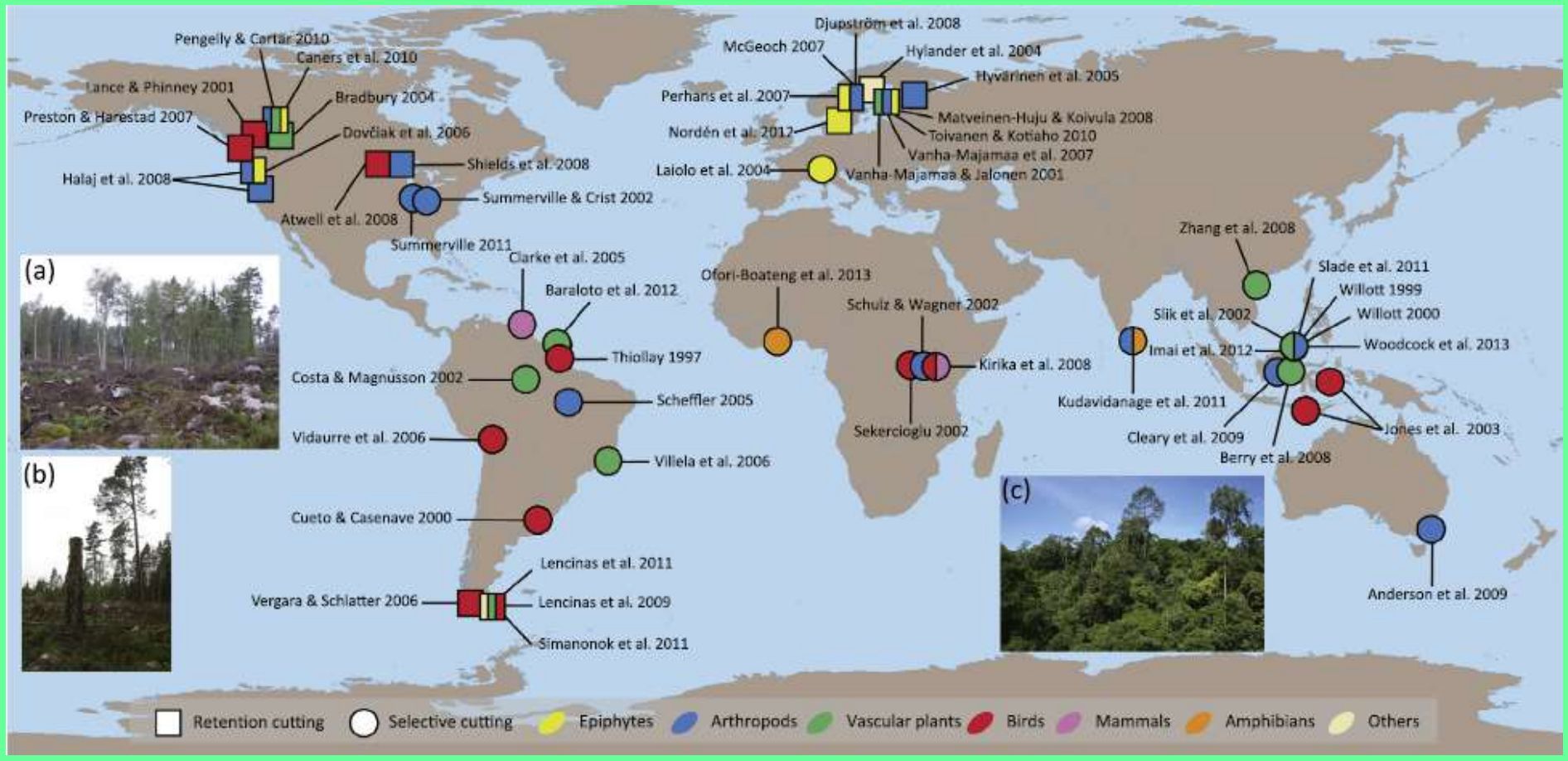
Welcome!

The OSU Student Chapter of the Forest Stewards Guild is the College of Forestry's newest student organization. We're just starting out, and we'd love to have you!

The Forest Stewards Guild is a national organization that focuses on "ecological forestry": responsible forestry

Research Efforts and Results

Biodiversity studies of retention and selective logging harvests

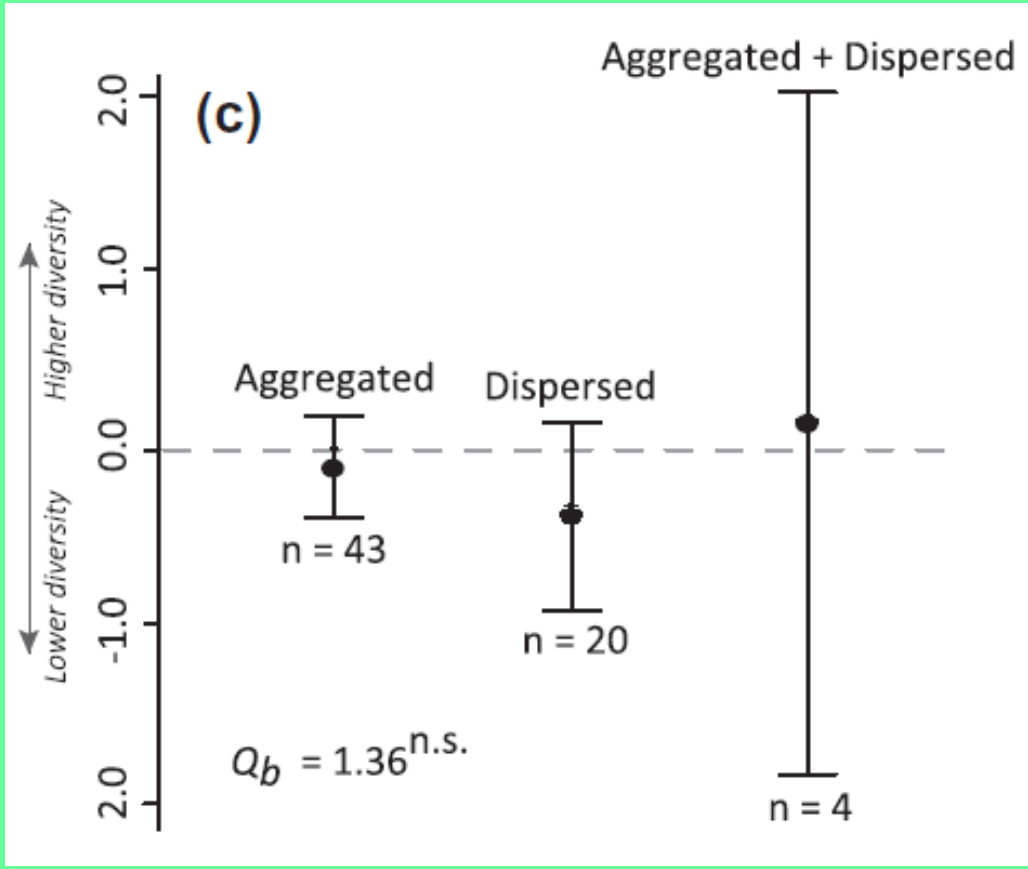


From Mori and Kitagawa 2014

Research Efforts and Results

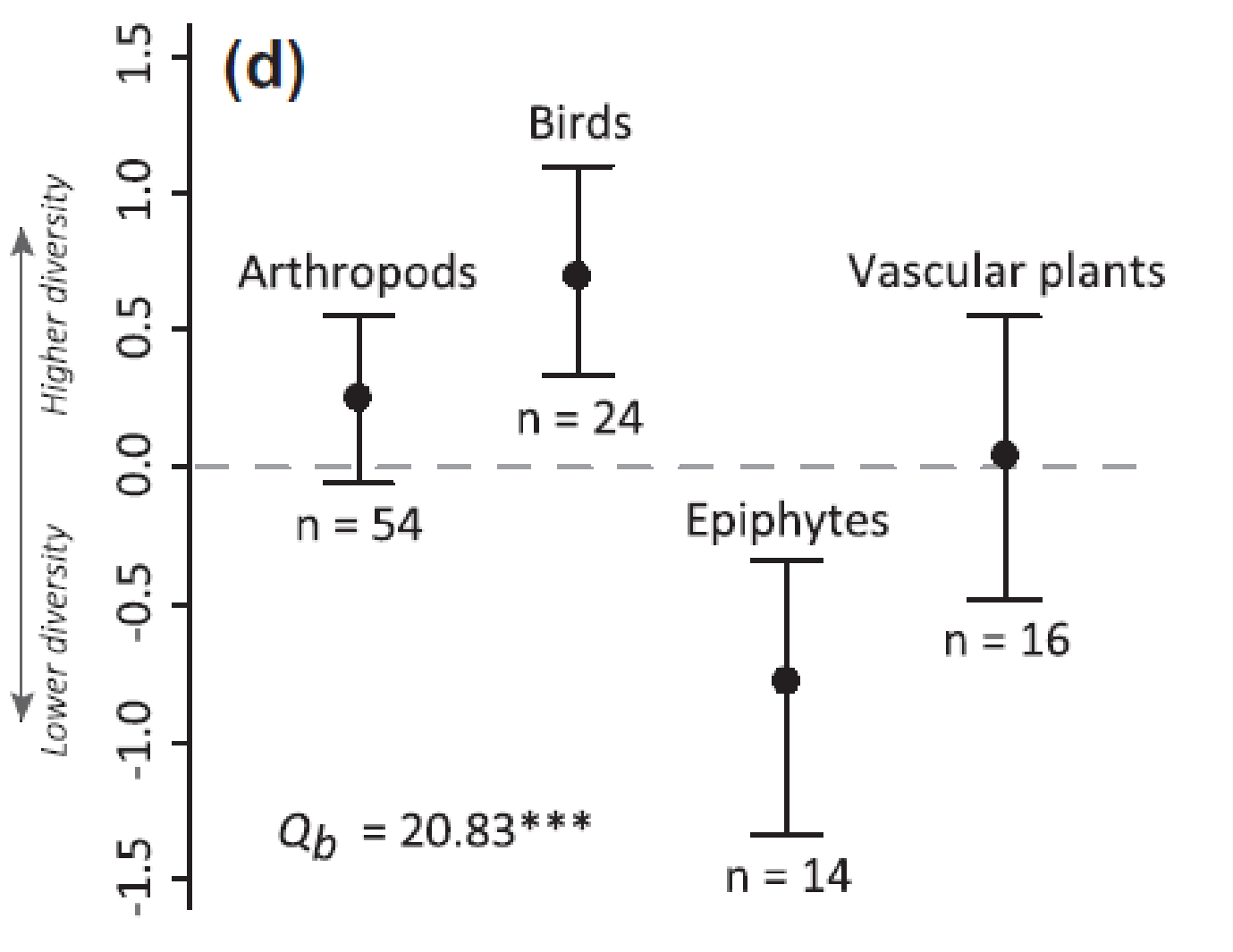
Species richness not influenced by retention type

= flexibility in spatial layout



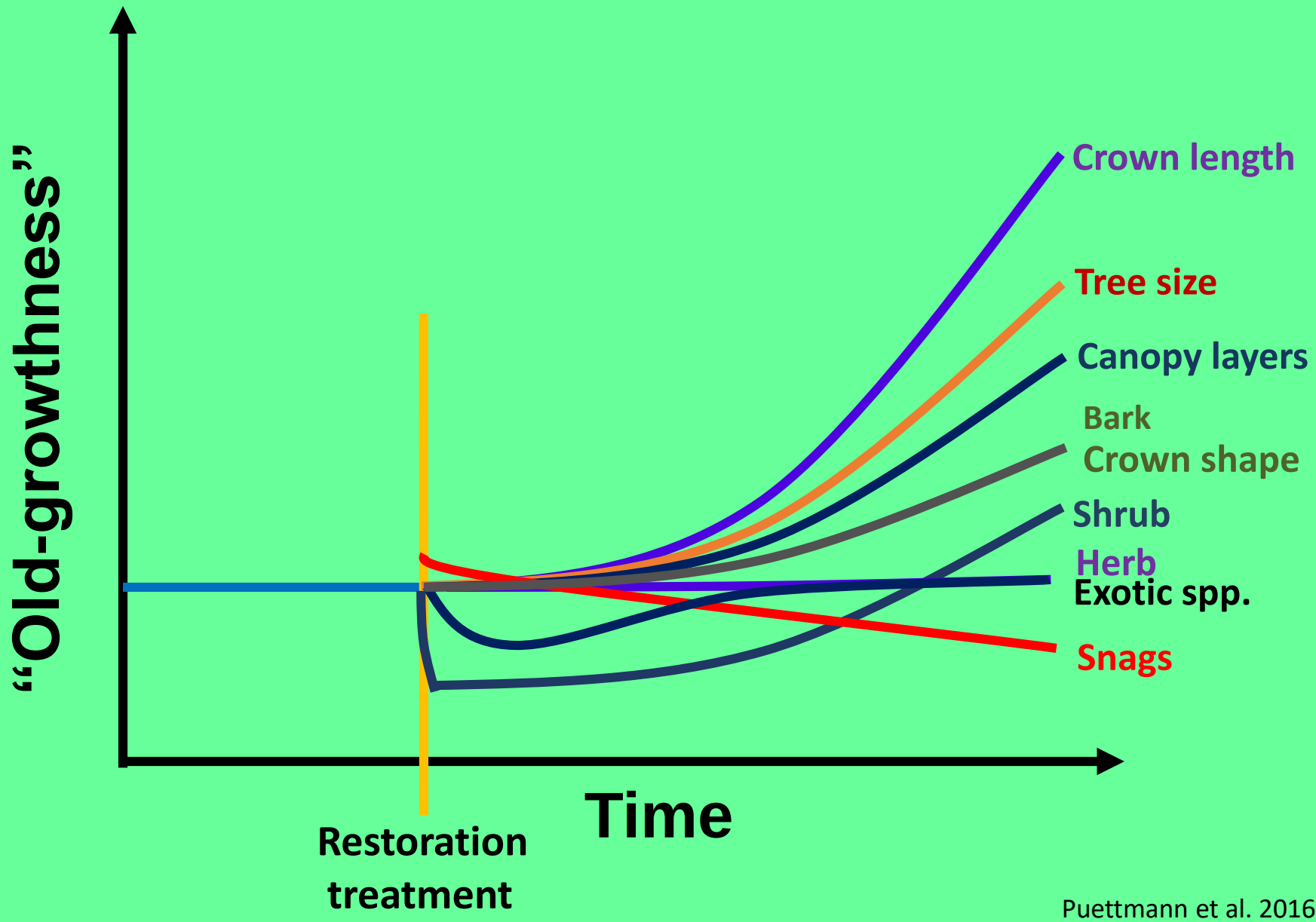
From Mori and Kitagawa 2014

Research Efforts and Results



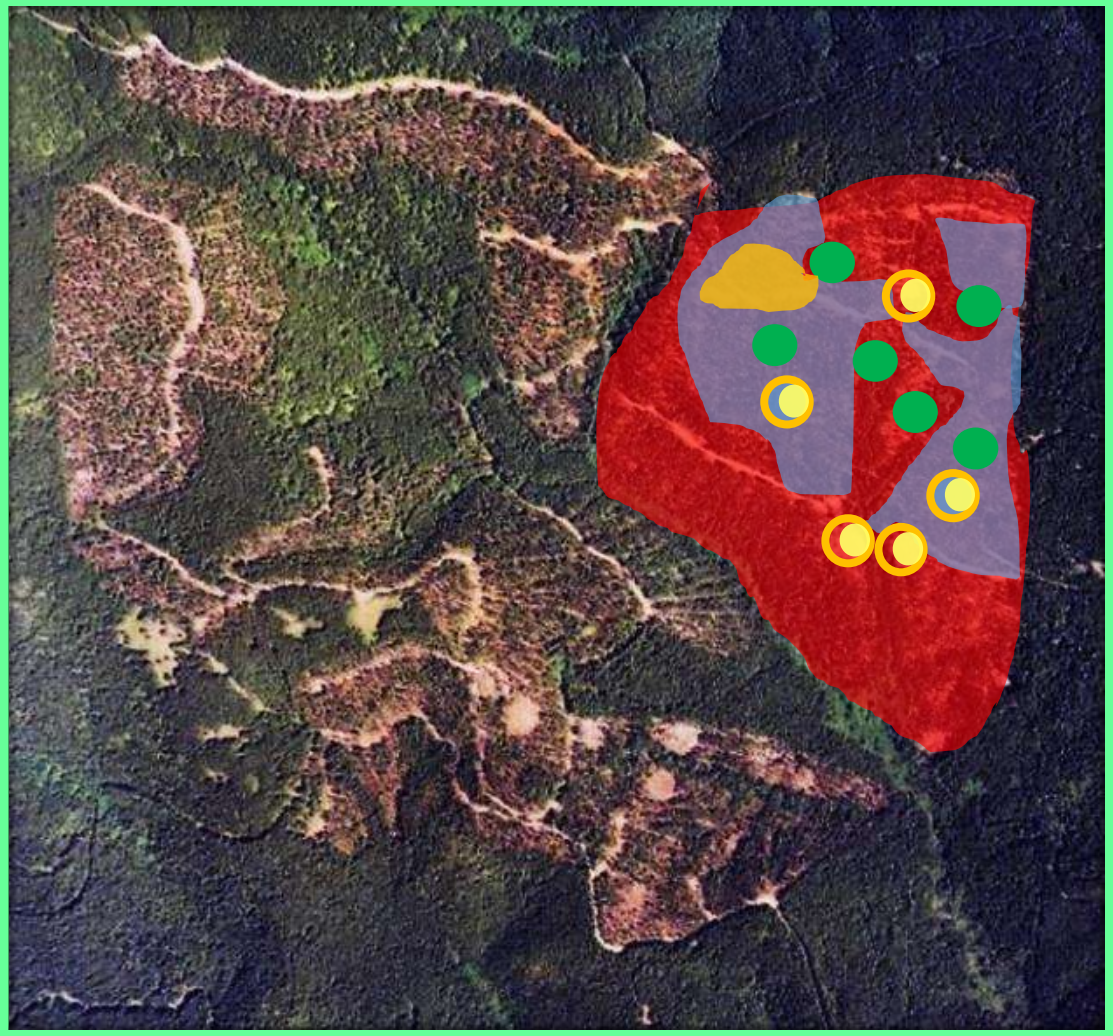
Modified from Mori and Kitagawa 2014

Research Efforts and Results



Puettmann et al. 2016

Research Efforts and Results



Seedling establishment

Seedling/sapling growth
Early successional vegetation

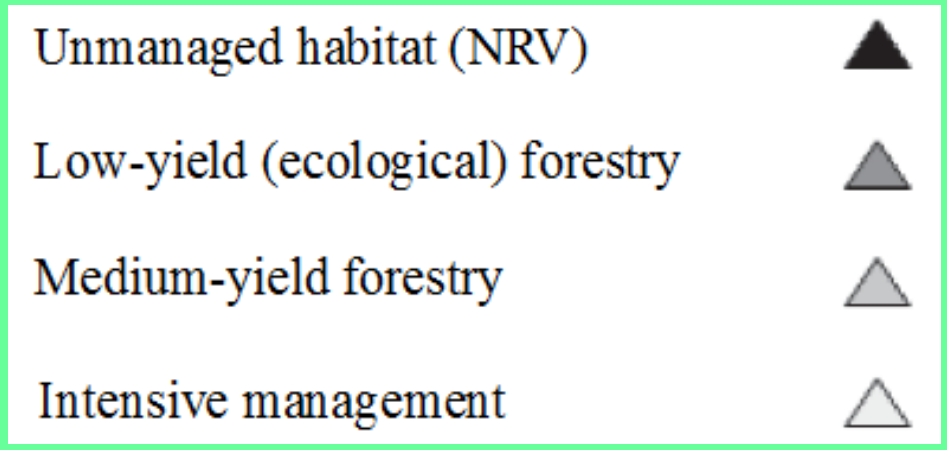
Tree growth

Snags creation

Large tree growth
Large crowns

Future Challenges: Scale

All ES everywhere = land sharing
Spatially segregate ES = land sparing

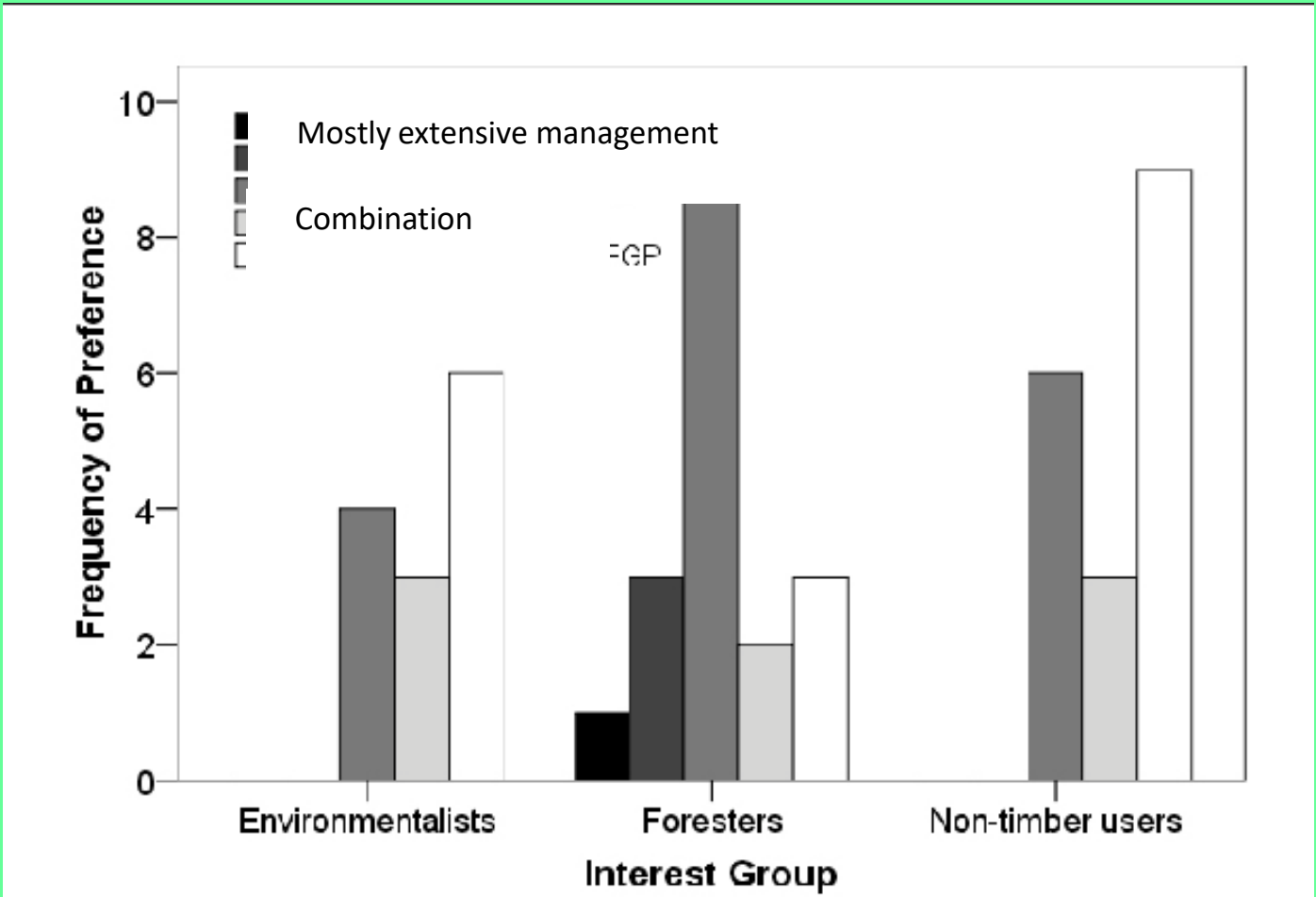


Modified from Betts et al. in prep.

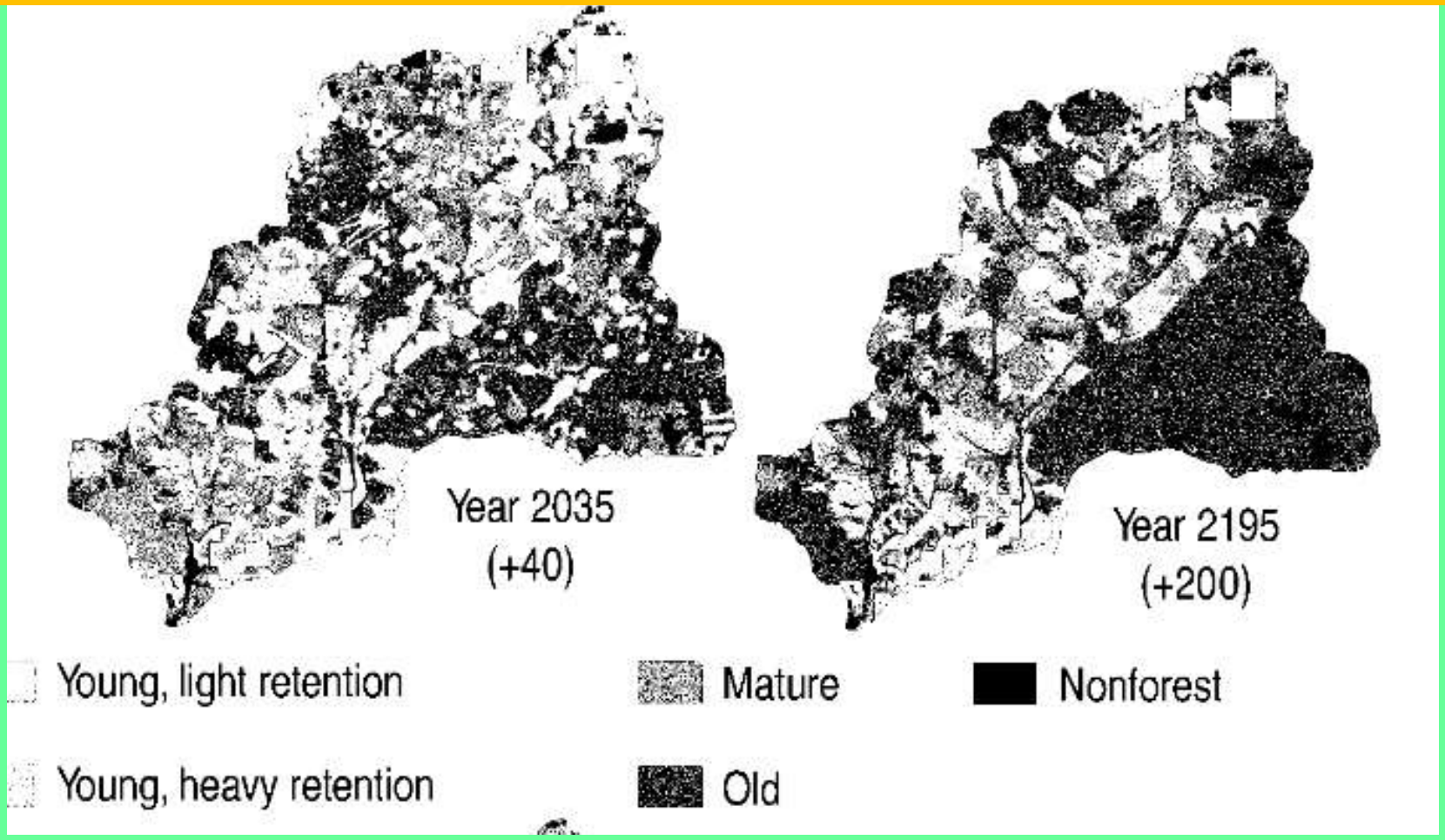
Future Challenges: Scale

TRIAD zoning in Quebec: Experiences and results after 5 years

by Christian Messier[1], Rebecca Tittler[1], Daniel D. Kneeshaw[1], Nancy Gélinas[2], Alain Paquette[1,3], Kati Berninger[1], Héloïse Rheault[1,3], Philippe Meek[4] and Nadyre Beaulieu[3]

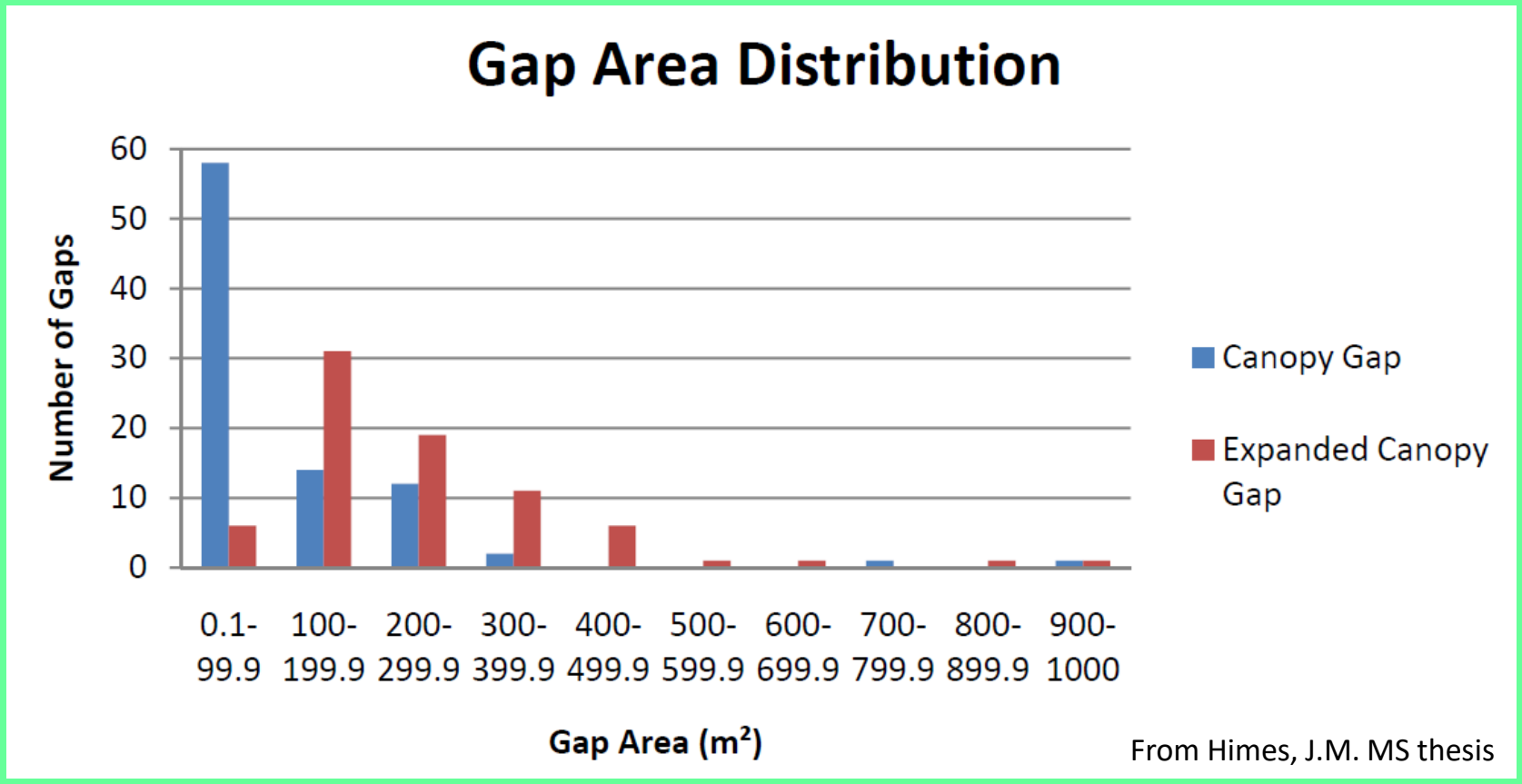


Future Challenges: Nature as blueprint



Cissel et al. 1999

Future Challenges: Nature as blueprint

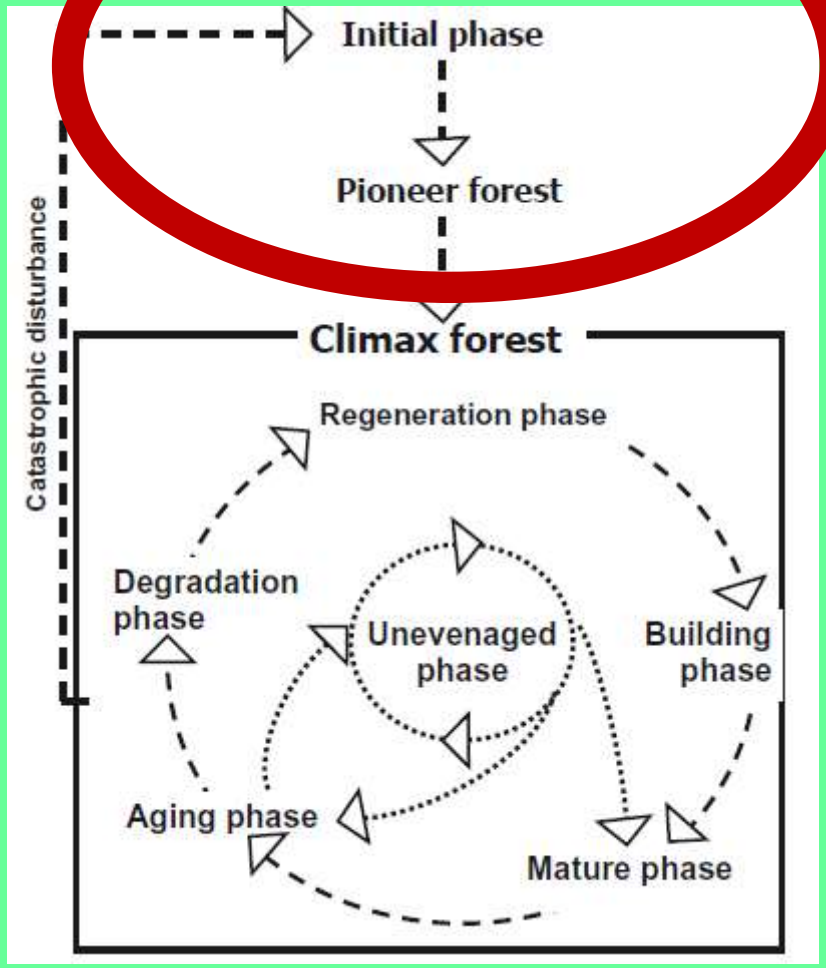


From Himes, J.M. MS thesis

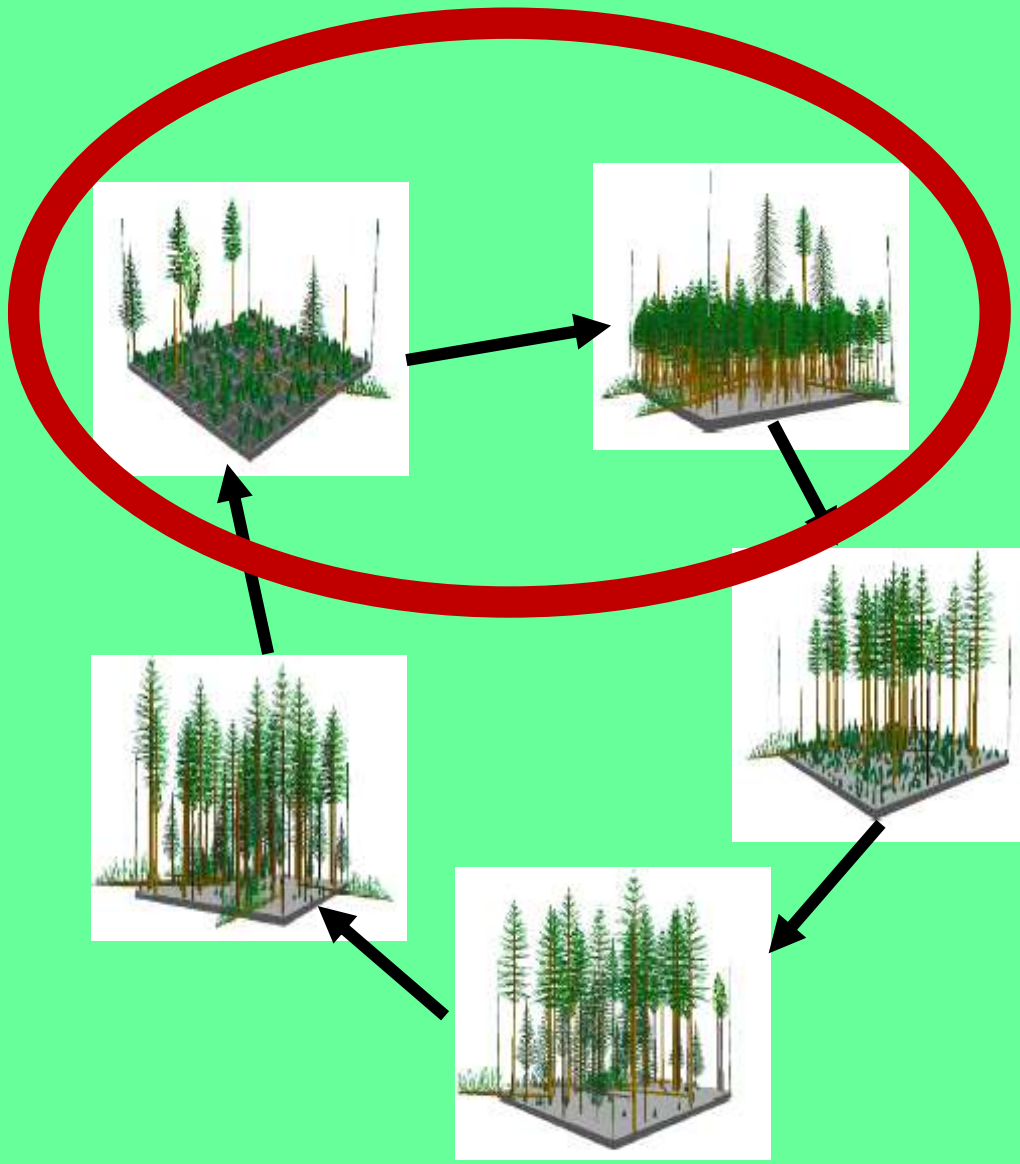
"serious attention to …. natural forest vegetation pattern"

ProSilva website

Future Challenges: Nature as blueprint



From Reif and Walentowski 2008



Modified from Oregon Dept. of Forestry

Future Challenges: Nature as blueprint

The forgotten stage of forest succession: early-successional ecosystems on forest sites

Mark E Swanson[1*], Jerry F Franklin[2], Robert L Beschta[3], Charles M Crisafulli[4], Dominick A DellaSala[5], Richard L Hutto[6], David B Lindenmayer[7], and Frederick J Swanson[8]

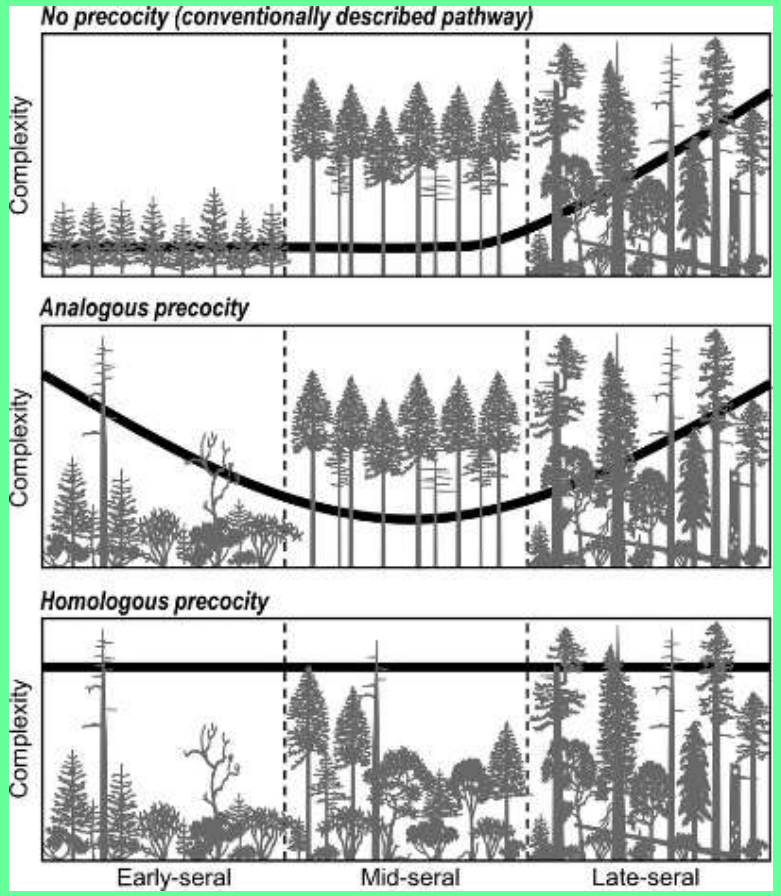
Future Challenges: Nature as blueprint

Journal of Vegetation Science **23** (2012) 576–584

FORUM

Multiple successional pathways and precocity in forest development: can some forests be born complex?

Daniel C. Donato, John L. Campbell & Jerry F. Franklin



- even while maintaining complexity, forests can provide valuable early successional habitat

Future Challenges: Nature as blueprint

Under natural conditions environmental and biological conditions constantly change and ecosystems are "catching up"- with a time delay.

With global change, the speed of environmental and biological changes is accelerating, and the increase in speed is driven by human-caused, not natural conditions.

Future Challenges: Nature as blueprint

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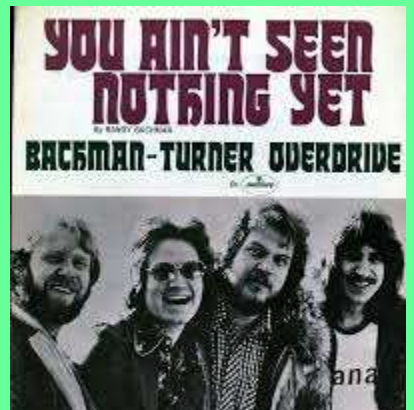
Future Challenges: Nature as blueprint

In a world with an

increased demand for a variety of ecosystem services
+ increased speed of change in environmental and biological conditions
+ surprises
+ less influence of natural trends,

= what is the role of a natural (or close-to-nature) model ?



Topic		Information quality	Half-life of information
Silvics	▪ climate/soil fit ▪ growth potential ▪ response to pests & diseases (current/exotic) ▪ fire and wind disturbances ▪ regeneration mode	++/++ ++/- +/--- +++ +++	++ 0 - + 0
Composition	▪ mono-culture ▪ tree species mixtures ▪ competing vegetation ▪ exotic tree species	+++ +/- ++ +/-	+ -- - -
Structure	• stocking • canopy layers • Spatial variability	+++ +0 +	+ + ++
Landscape context		+	-
ES link		++/--	++

Ecological forestry

- Great global potential,
- Utilization of educational opportunities
- Flexibility to accommodate different natural dynamics
- Emphasize ecosystem services
- Address scale (landscape)
- Benefits in terms of ecosystem services are documented, but variable (space, time)

- ? Role of natural “drivers” in the context of global change ?

Future Challenges: Nature as blueprint

Thanks for your attention !

Questions and Comments?