

A background image of a dense forest with tall evergreen trees, partially obscured by a thick layer of fog or mist, creating a serene and atmospheric scene.

# *Options for Managing Riparian Reserves on Federal Lands: New Perspectives*

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# Objectives of ACS



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

# ESA listed fish species and ESUs

Before NWFP

3

Chinook  
salmon

Suckers



Since NWFP

30

Chinook  
salmon

Coho  
salmon

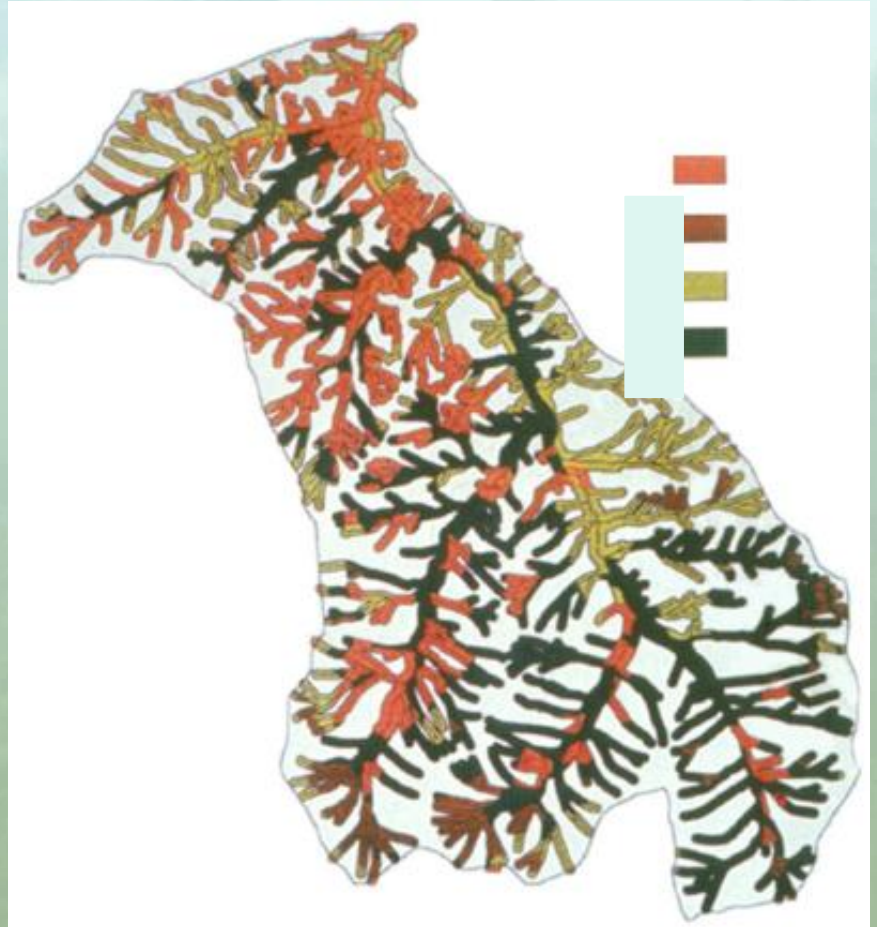
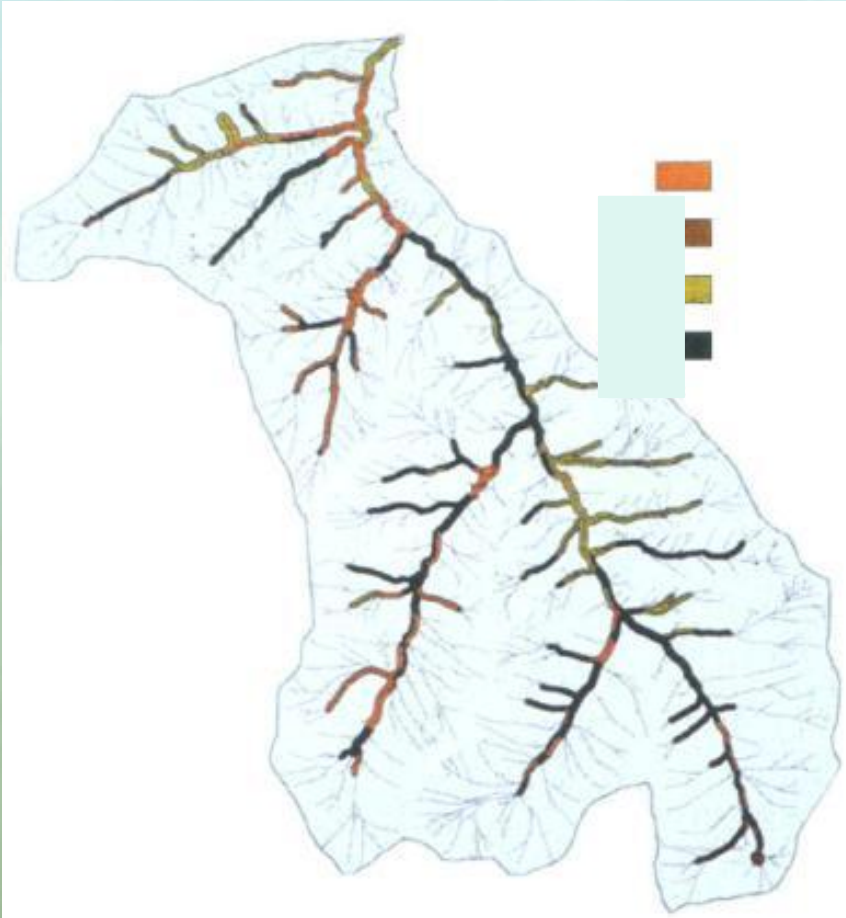
Bull trout

Steelhead





# Riparian Buffers Pre- and Post-NWFP



# Assessment of ACS in First Decade

## 💧 Expectations modest

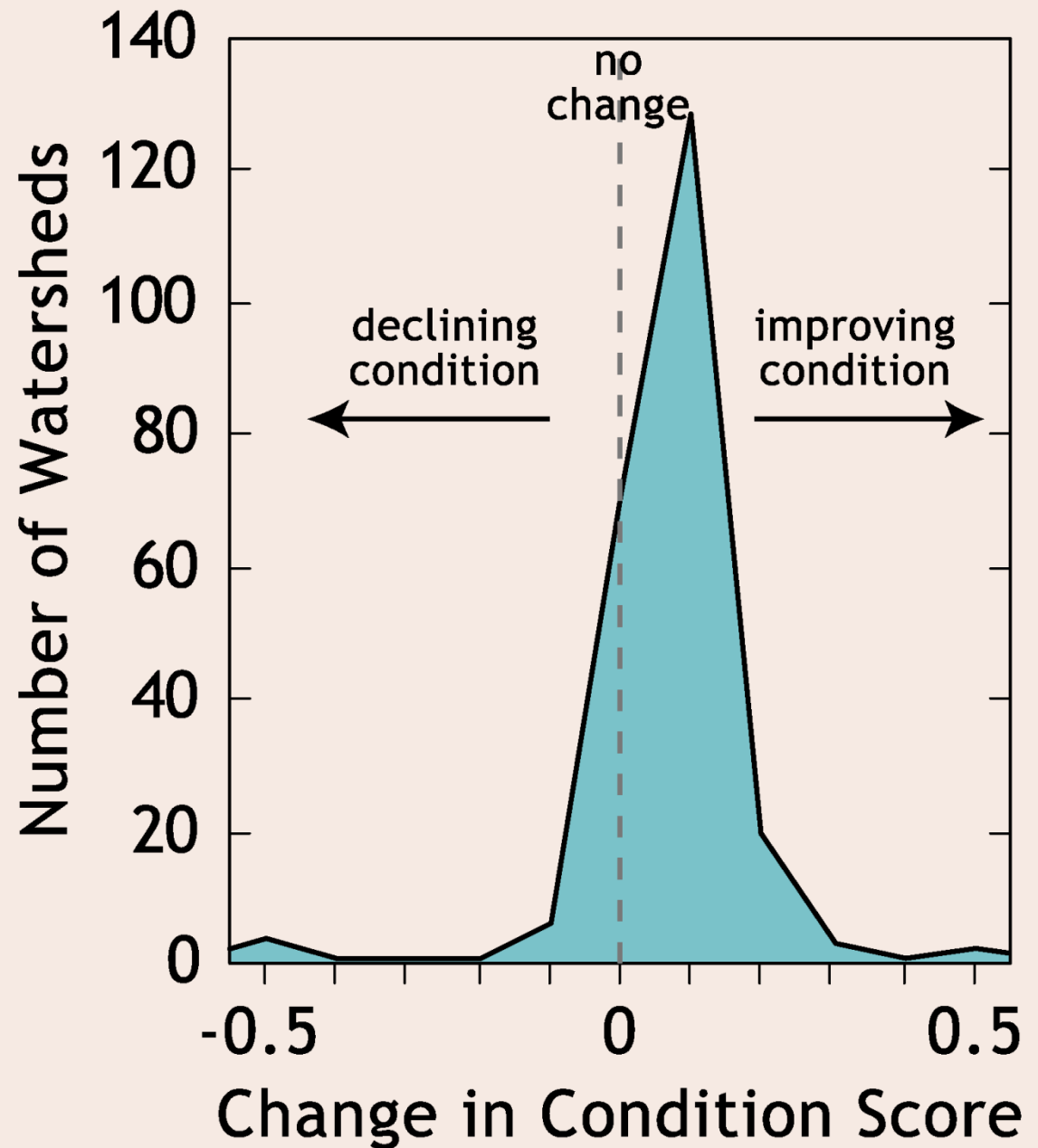
- Extensive degradation and extended recovery time
- Agency inertia

## 💧 Expectations generally met

- Small improvements in condition of watersheds
- Watershed Restoration had limited impacts
- Watershed Analyses completed
- Limited activity in Riparian Reserves

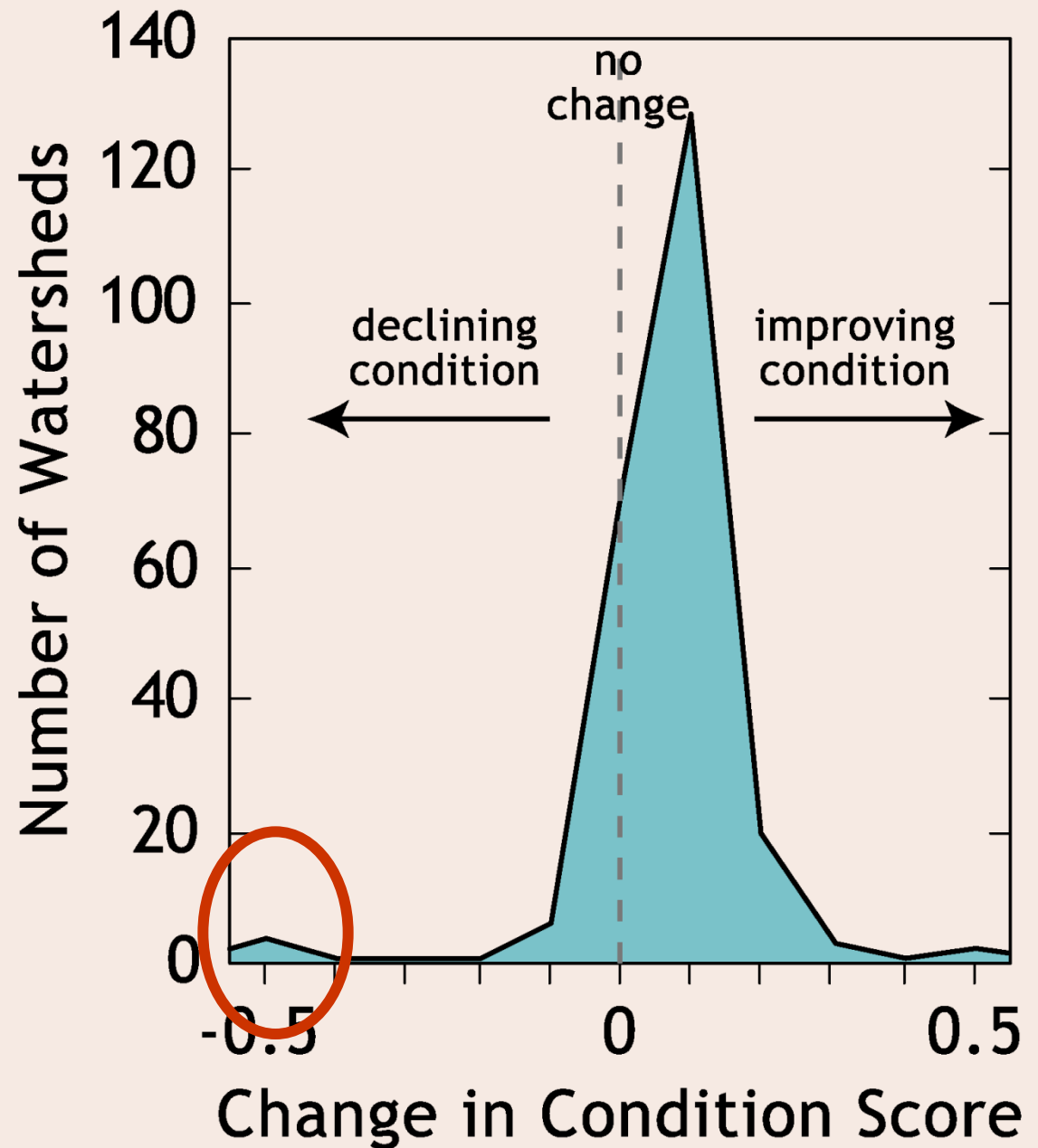
# Watershed Condition

From Gallo et al. 2005



# Watershed Condition

From Gallo et al. 2005



# ACS Assessment (con't)

## 💧 New Science

- Supports ACS framework
- Provides opportunities for exploration of new policies and approaches to management



# Assessment of ACS in First Decade

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# New Science

## 💧 Importance of headwater streams

- Sources of food/nutrients for fish-bearing streams (Kittrey et al. 2002; Wipfli & Gregorovich 2002; Gomi et al. 2002)
- Sources of sediment: (e.g., Benda & Dunne 1997)
- Sources of wood (e.g., Reeves et al. 2003; Benda et al. 2002, 2003)
- Amphibian biodiversity 'hot spots' (e.g., Kelsey & West 1998)
- Amphibian dispersal Olson et al. 2007; Olson & Burnett, 2009)

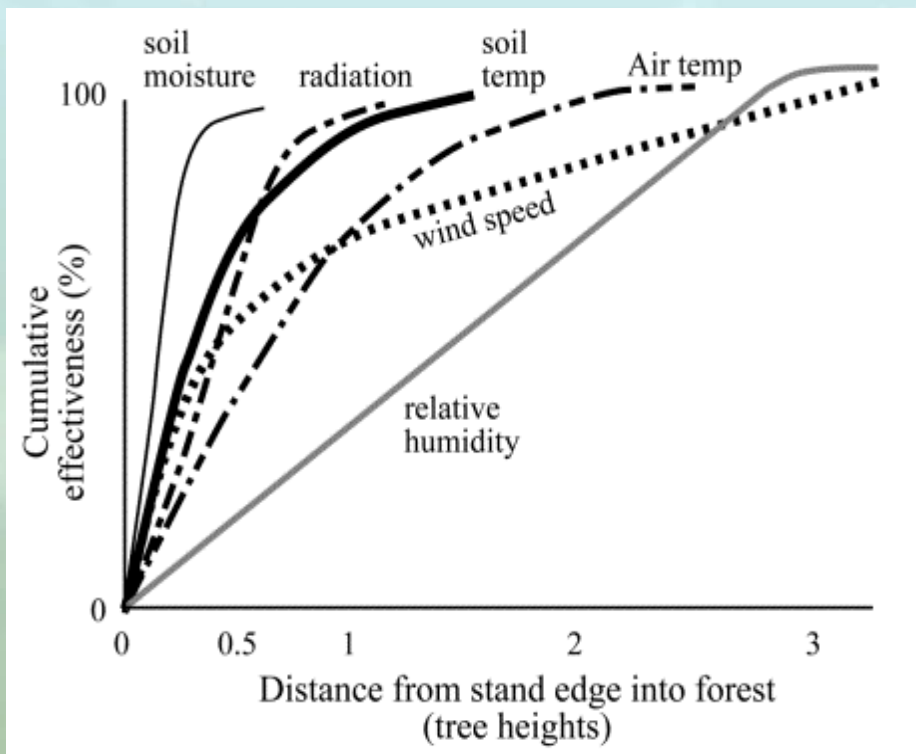
## 💧 Microclimatic processes (including humidity)

- Anderson et al. (2007)

## 💧 Stream wood augmentation

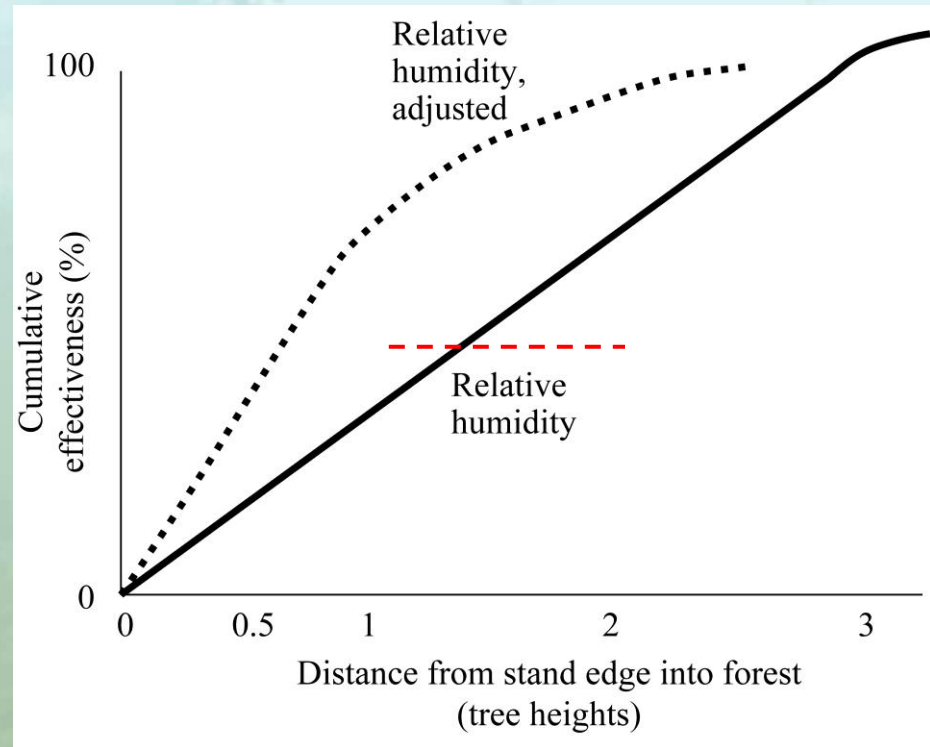
- Benda and Reeves unpublished

# Maintaining riparian ecological functions



Scientific interpretation as of NWFP

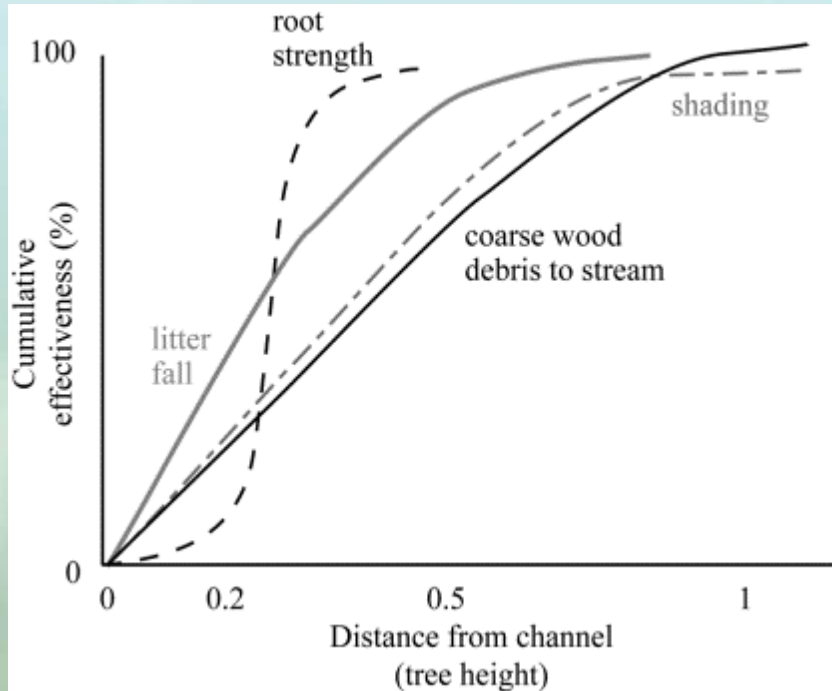
FEMAT (1993)



Research since the NWFP

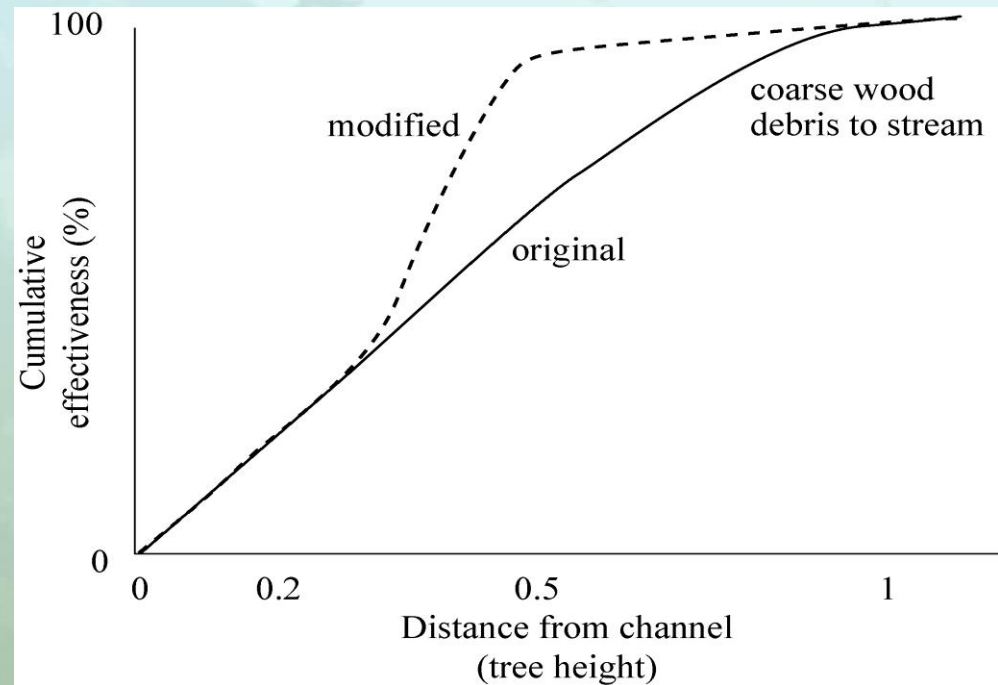
Anderson et al. (2007)  
As interpreted by Reeves et al 2013

# Maintaining riparian ecological functions



Scientific interpretation as of  
NWFP

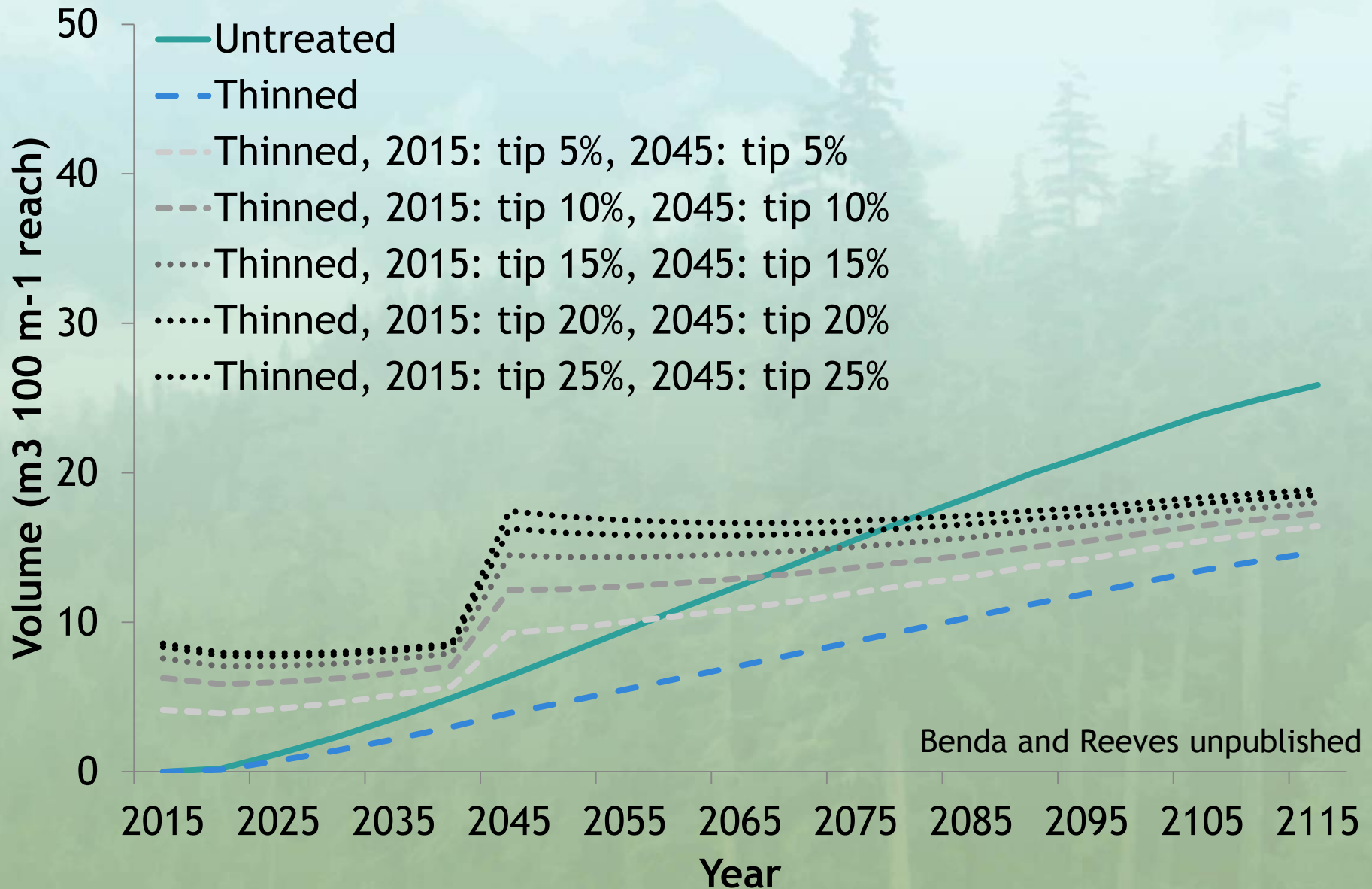
FEMAT (1993)



Research findings since the NWFP

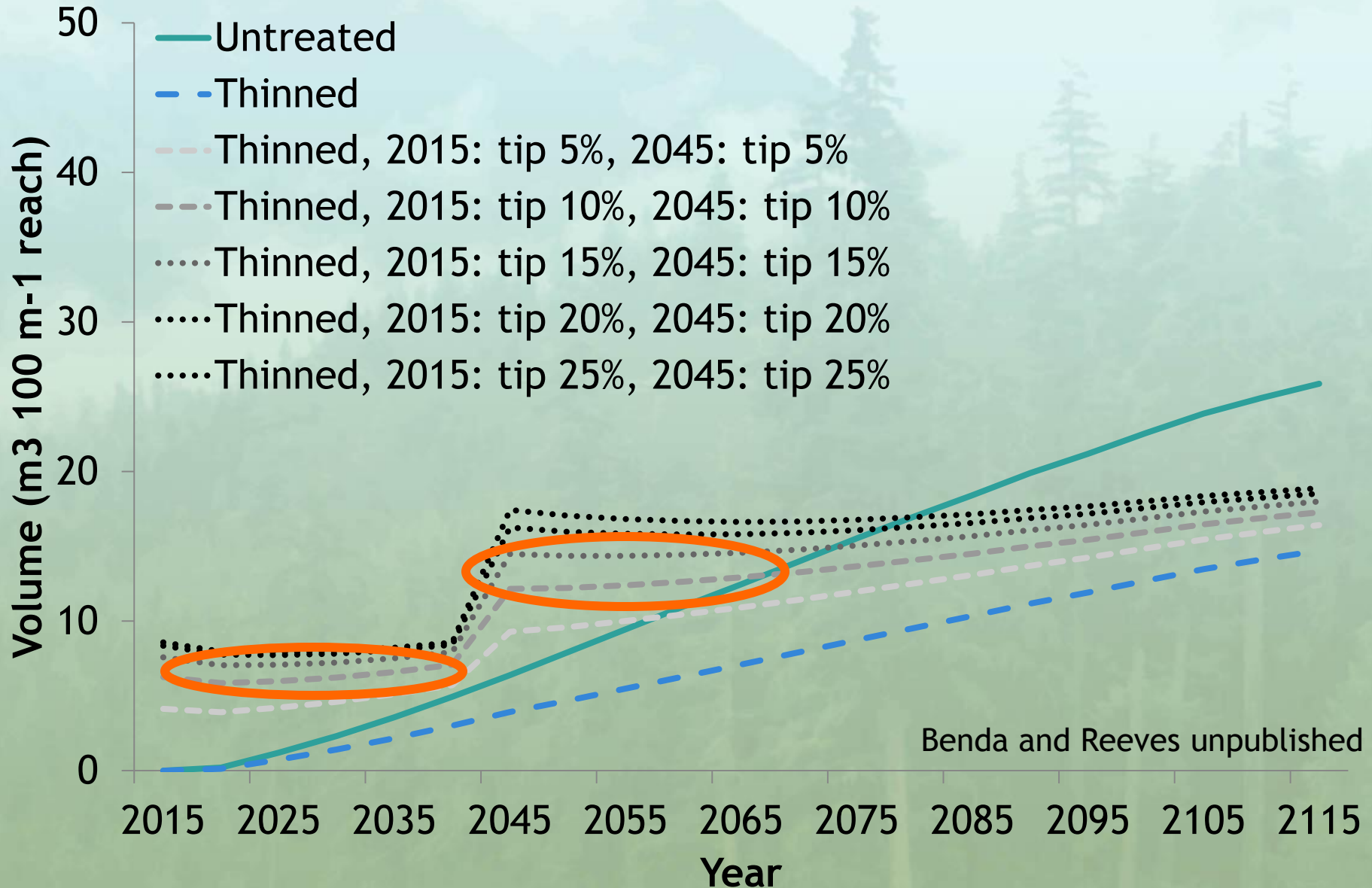
Reeves et al. 2013

# Cumulative wood volume with decay (m<sup>3</sup> 100 m<sup>-1</sup> reach)



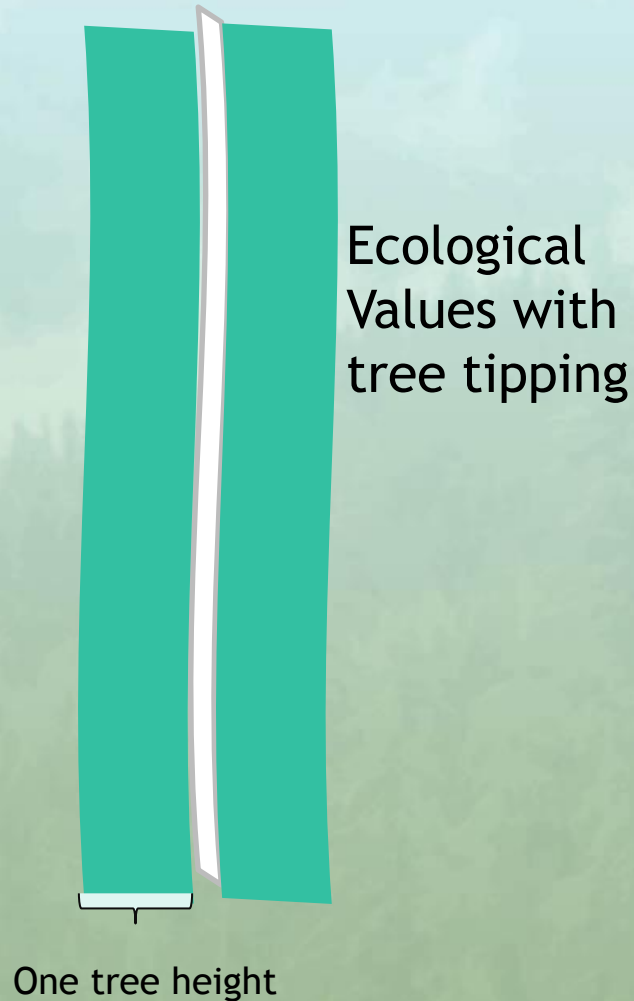


# Cumulative wood volume with decay (m<sup>3</sup> 100 m<sup>-1</sup> reach)

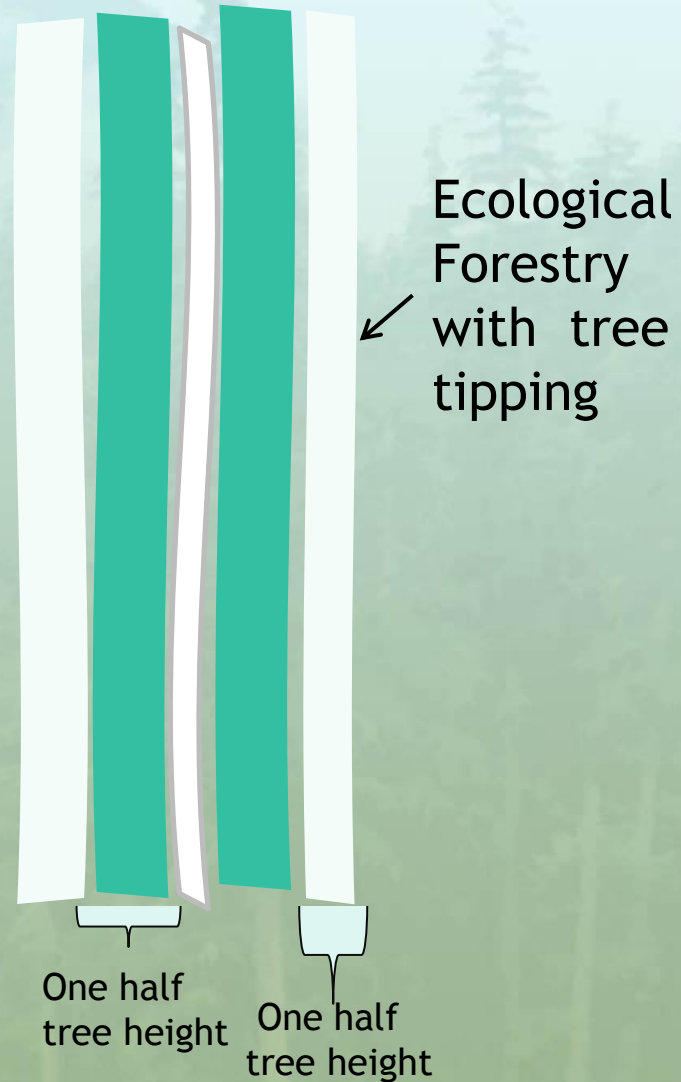


# Option A Buffer Widths

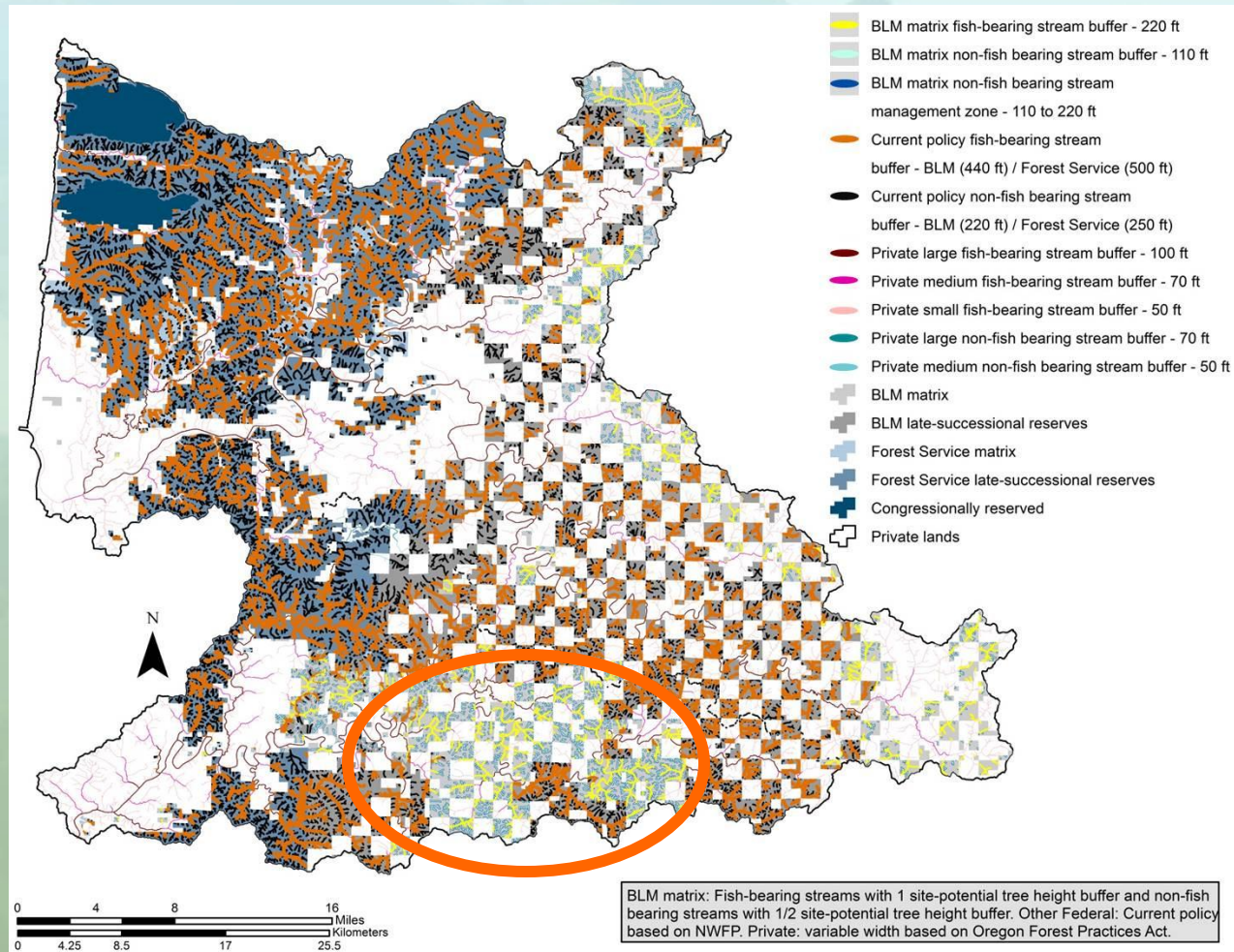
## Fish Bearing



## Non-fish Bearing



# Riparian Areas of BLM under Option A, Forest Service, and Private Lands



		Option A		
	Northwest Forest Plan interim Riparian Reserves	Managed Solely for Ecological Goals	Managed for Ecological Goals & Timber	Returned to Landbase
Percent of Riparian Reserves in Matrix	100.	54.6	25.0	20.5
Percent of Riparian Reserves in the BLM landbase	100.	84.0	9.0	7.0

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# Components of the ACS

- **Watershed Analysis**
- **Riparian Reserves**
- Watershed Restoration
- Key Watersheds

# Intrinsic Potential: Oregon Coastal Province

Steelhead



$N$   $IP \geq 0.75$   
 $N$   $IP < 0.75$



Coho

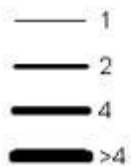




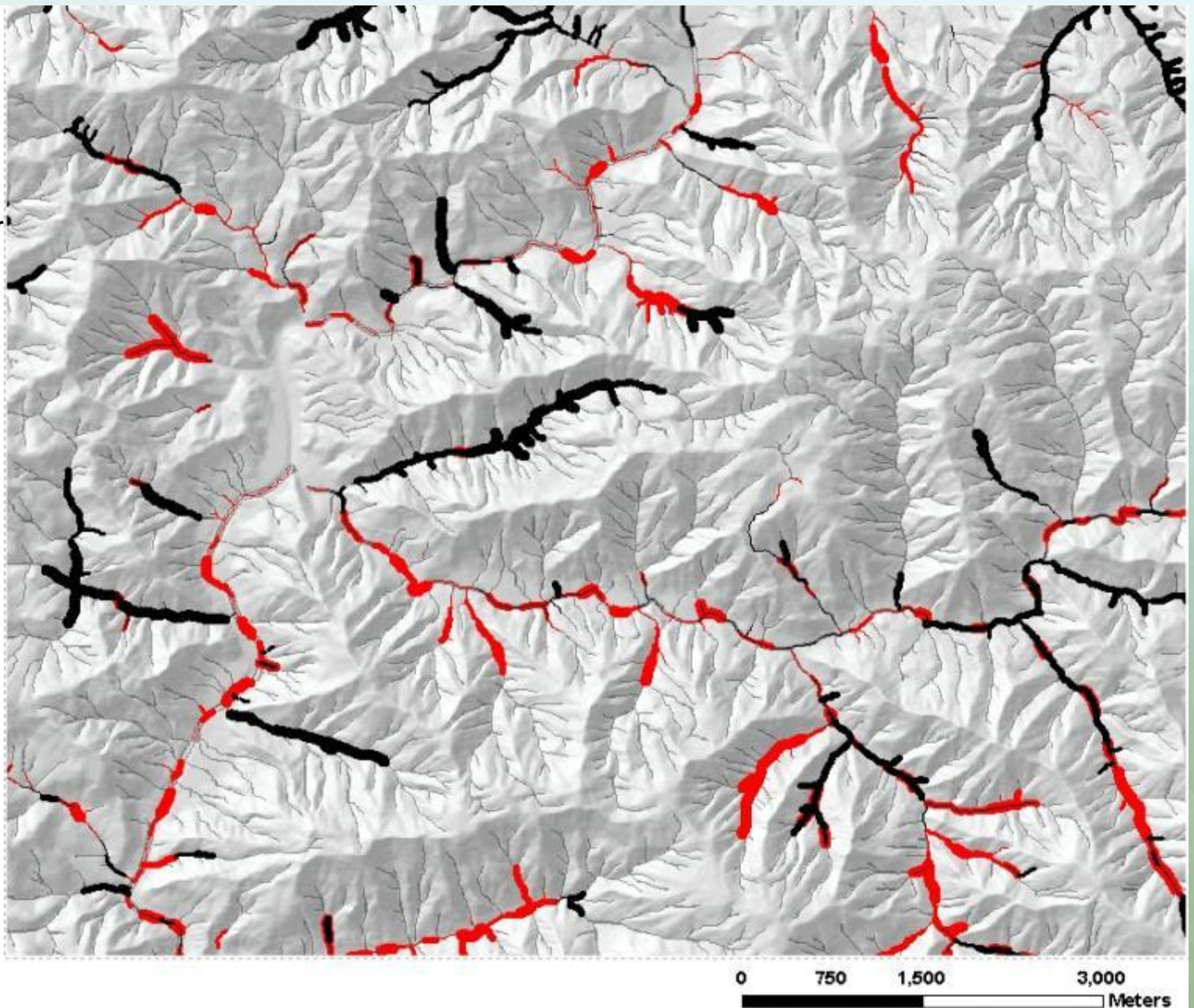
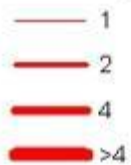
## LWD Input

0.2-0.5 m diameter  
pieces/mile/yr

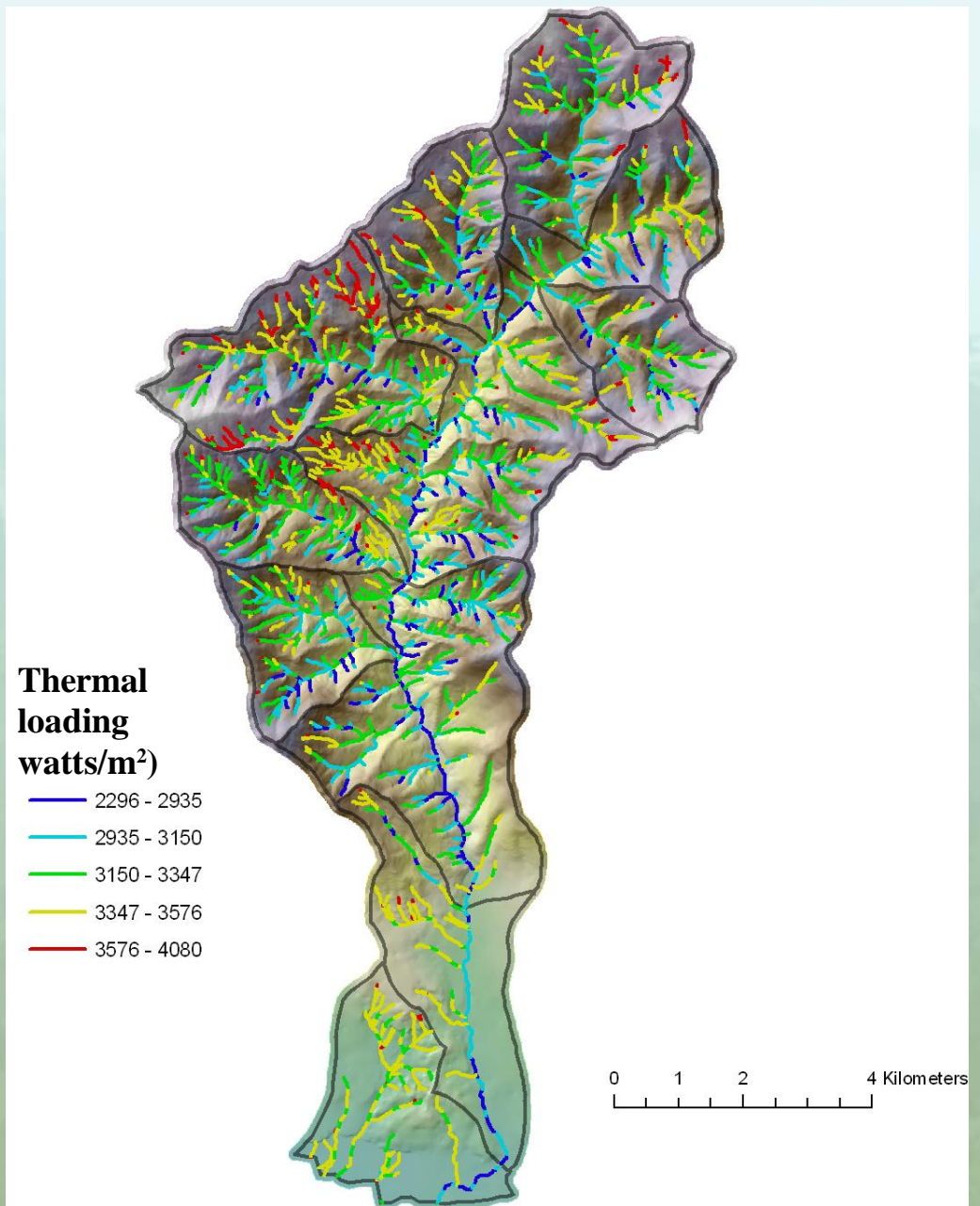
RIPARIAN\_1



DEBRIS\_F\_1

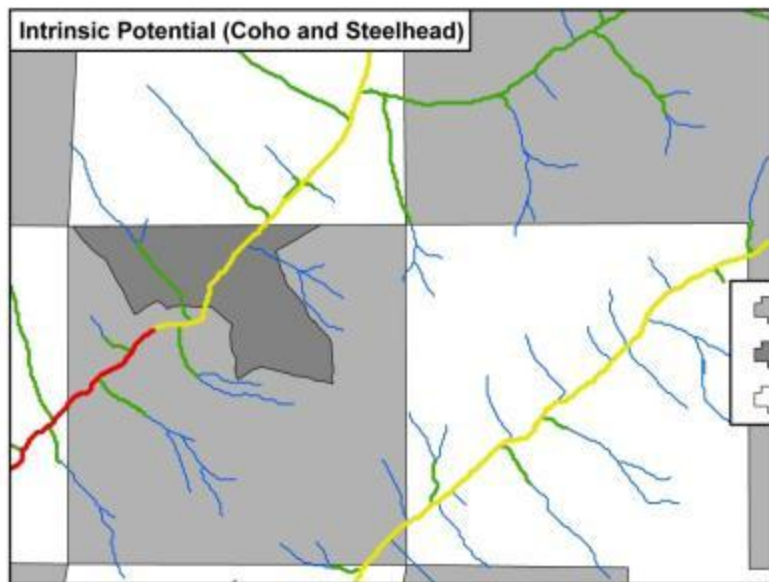


*Sensitivity analysis:  
Channels most  
sensitive to changes  
in thermal loading?*

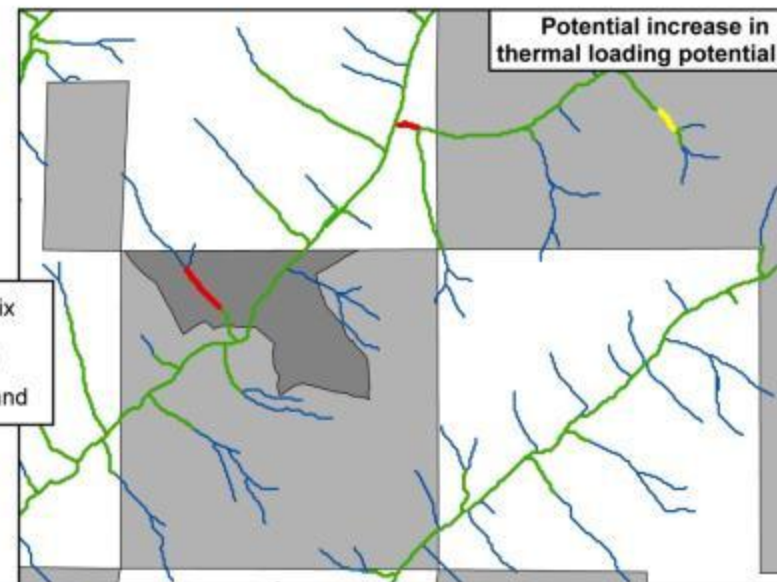


*Fully forested versus no vegetation (bare)*

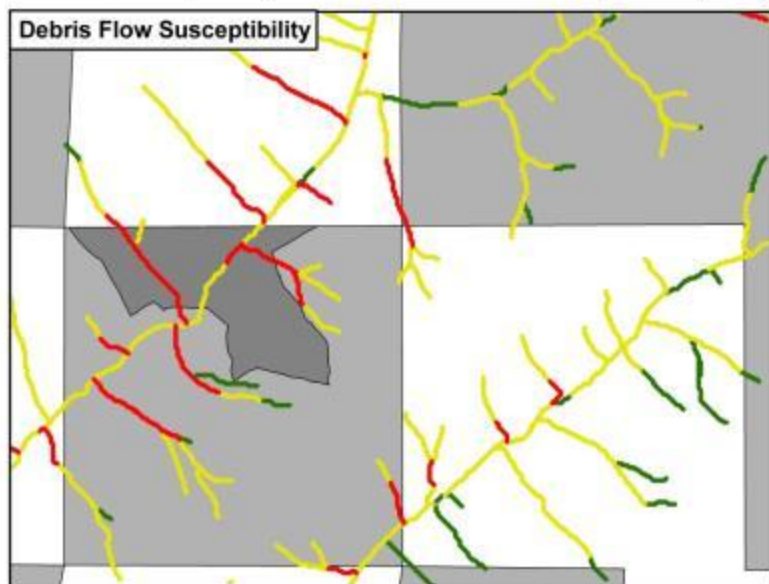




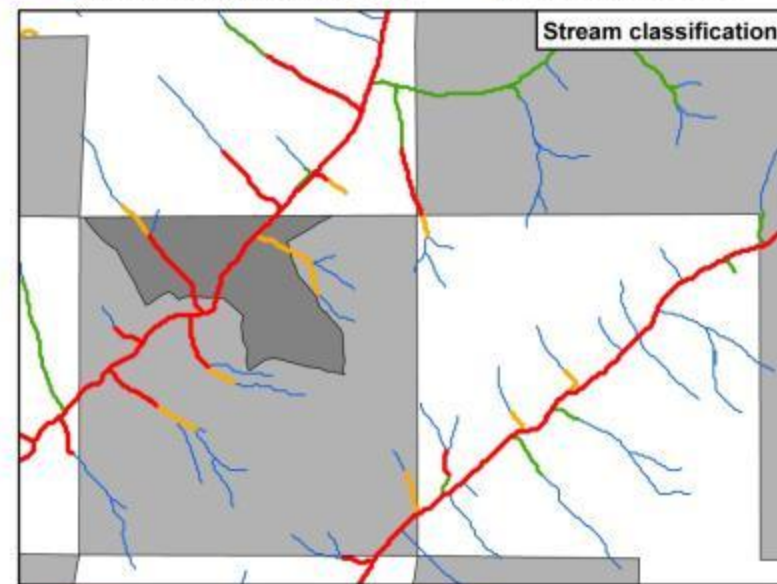
High IP (0.7-1.0)      Low IP (<0.5)  
 Med IP (0.5-0.7)      Non-fish bearing stream (No IP)



Thermal loading increase > 5%      Thermal loading increase < 5%  
 Thermal loading increase > 10%      Non-fish bearing stream



Medium-High (Upper 25%)      Moderate (Inter quartile 25-75%)  
 Low (Lower 25%)



Management Class 1      Management Class 3  
 Management Class 2      Management Class 4



# Option B Riparian Reserve Widths

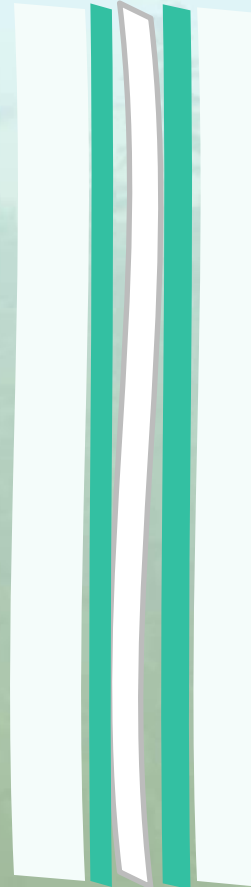
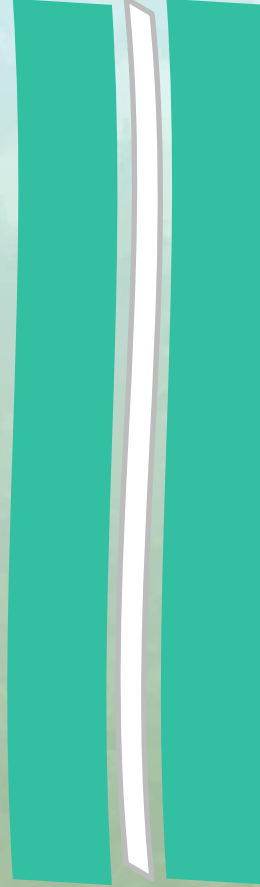
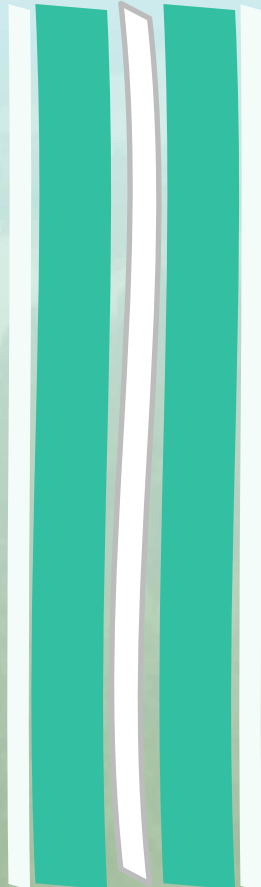
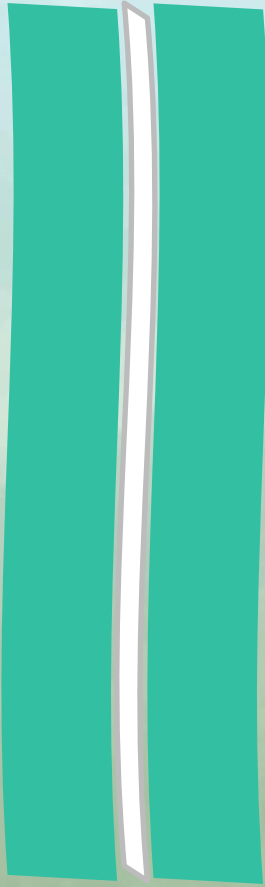
Stream Category

1

2

3

4



Ecological  
Forestry  
with tree  
tipping

One tree height

One tree height

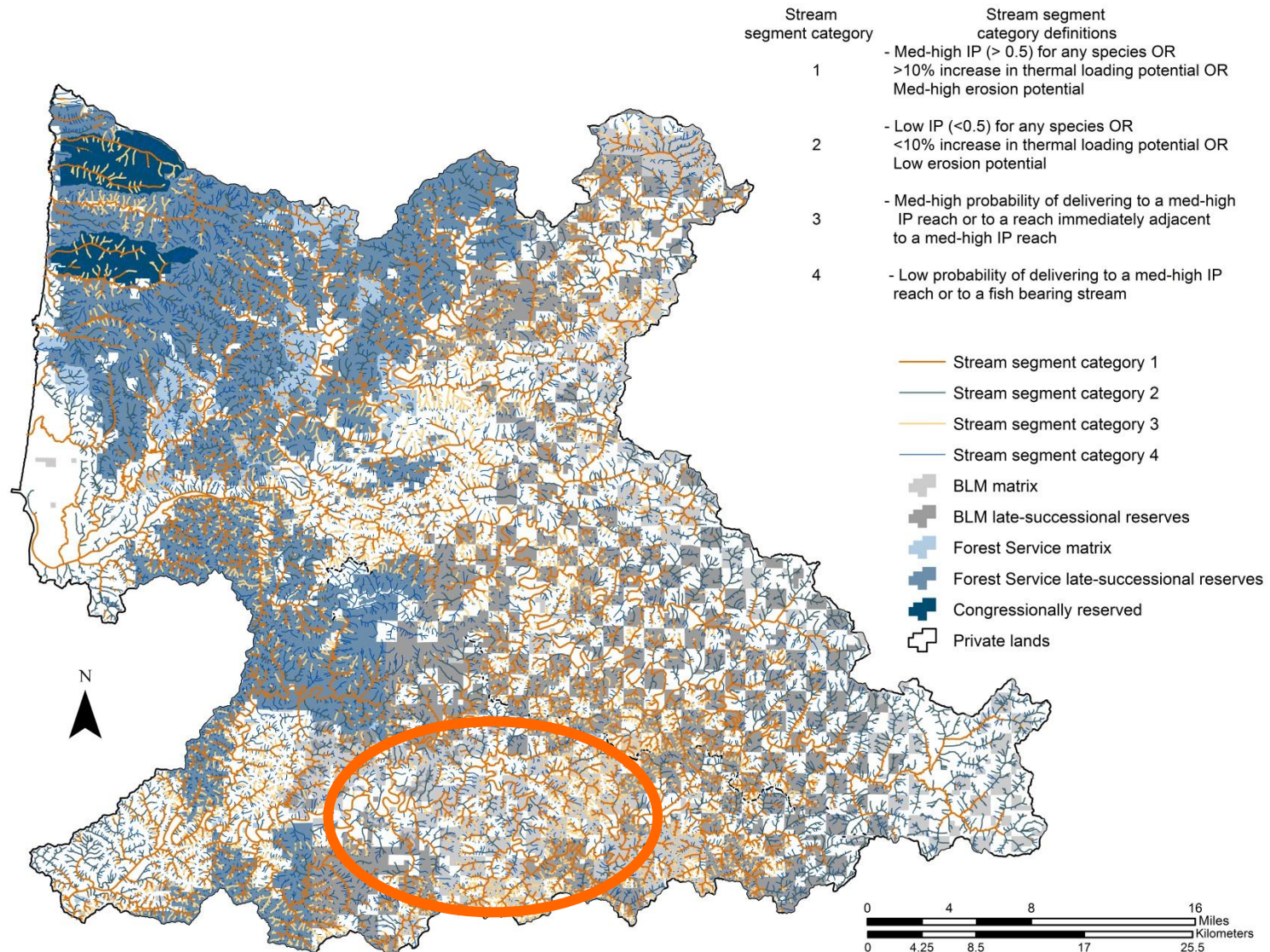
One tree height

One tree height

100 feet

50 feet

# Ecological Importance of Streams





# NetMap Watershed Analysis

## Stream Management Category

### *Fish-bearing Streams:*

- Category 1 (high ecological significance)
- Category 2 (low ecological significance)

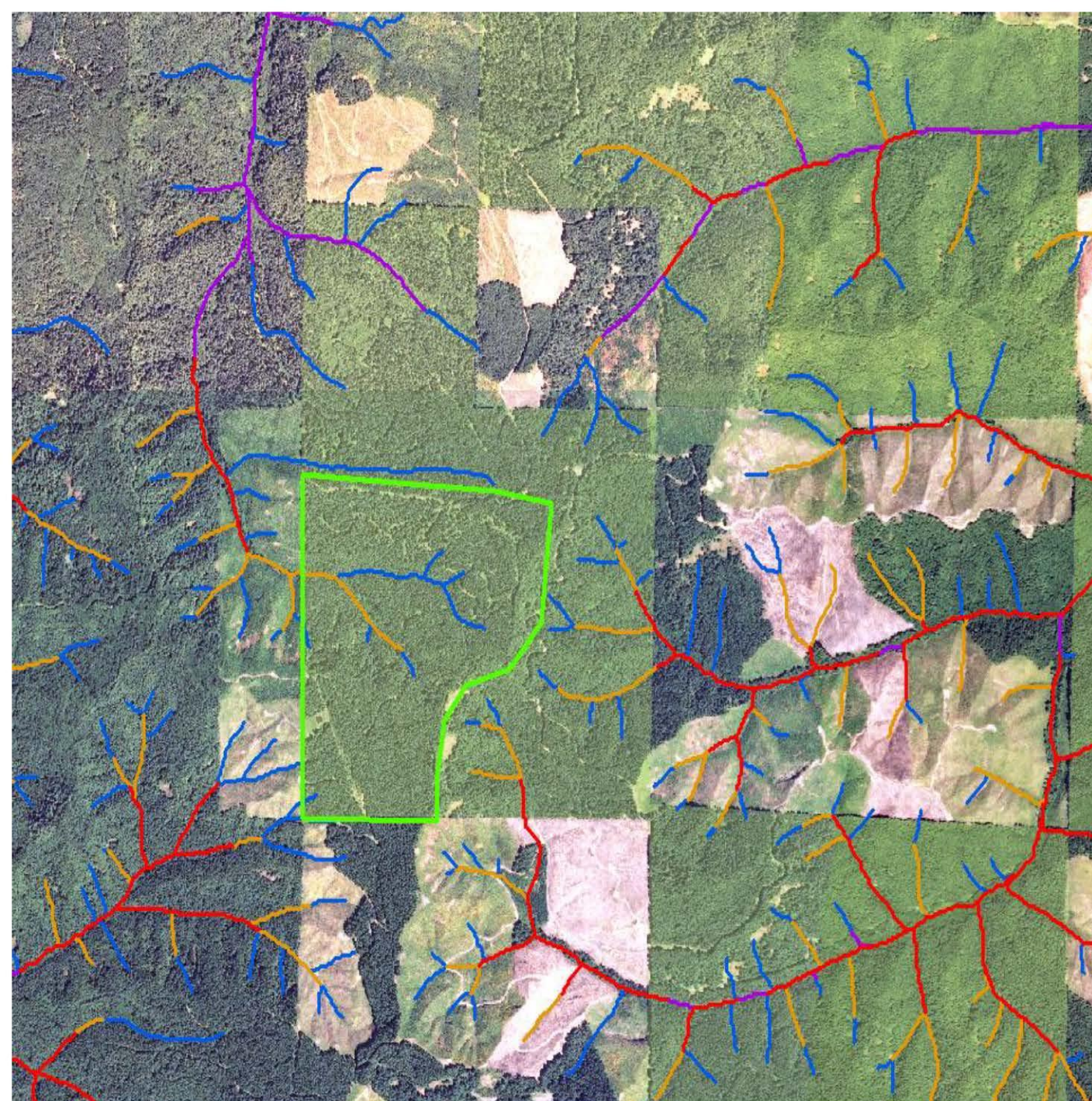
### *Non-fish-bearing Streams:*

- Category 3 (high ecological significance)
- Category 4 (low ecological significance)

■ BLM Matrix

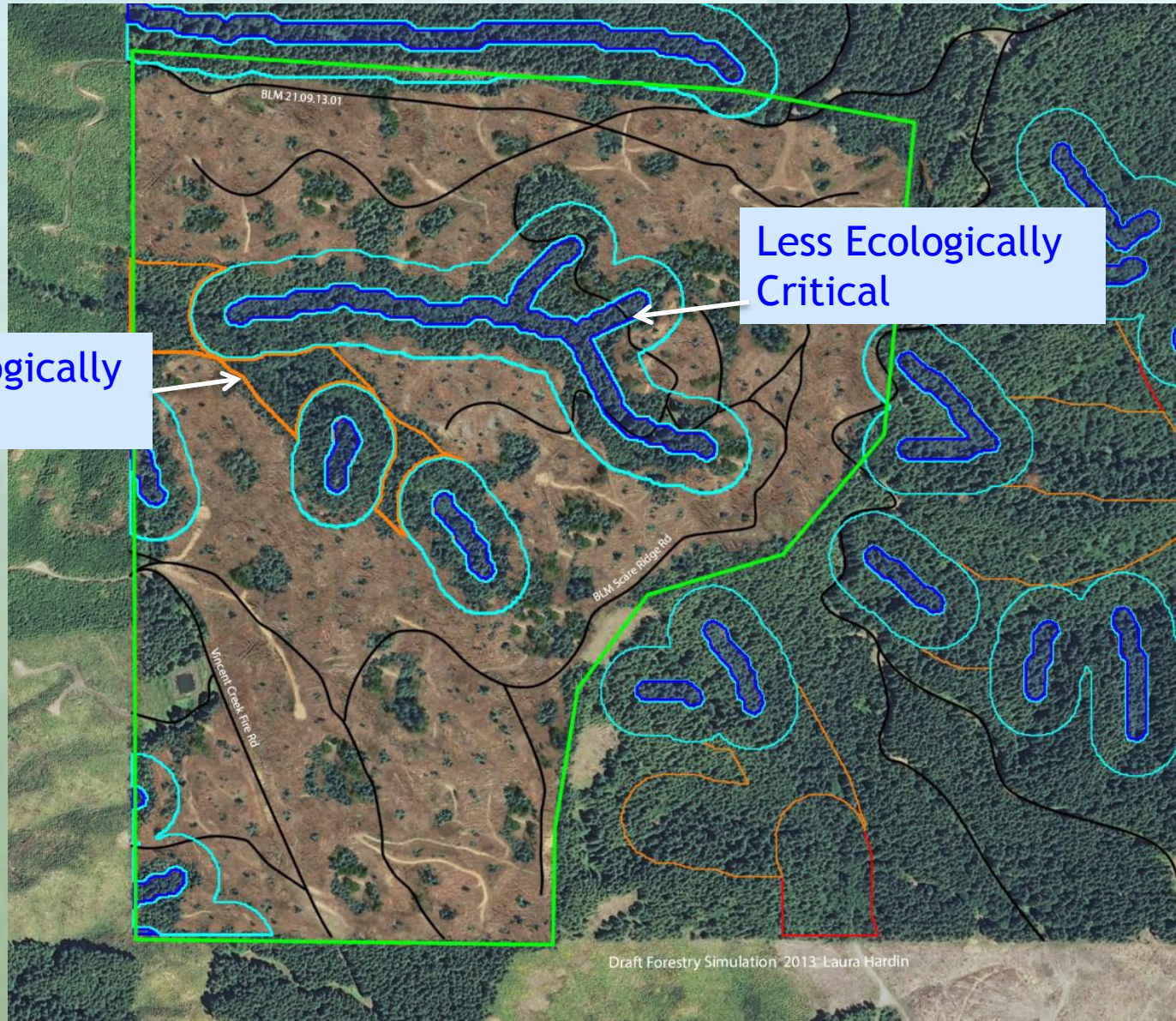
■ Project Area (293 Acres)

0 0.375 0.75 1.5 2.25 3 Miles





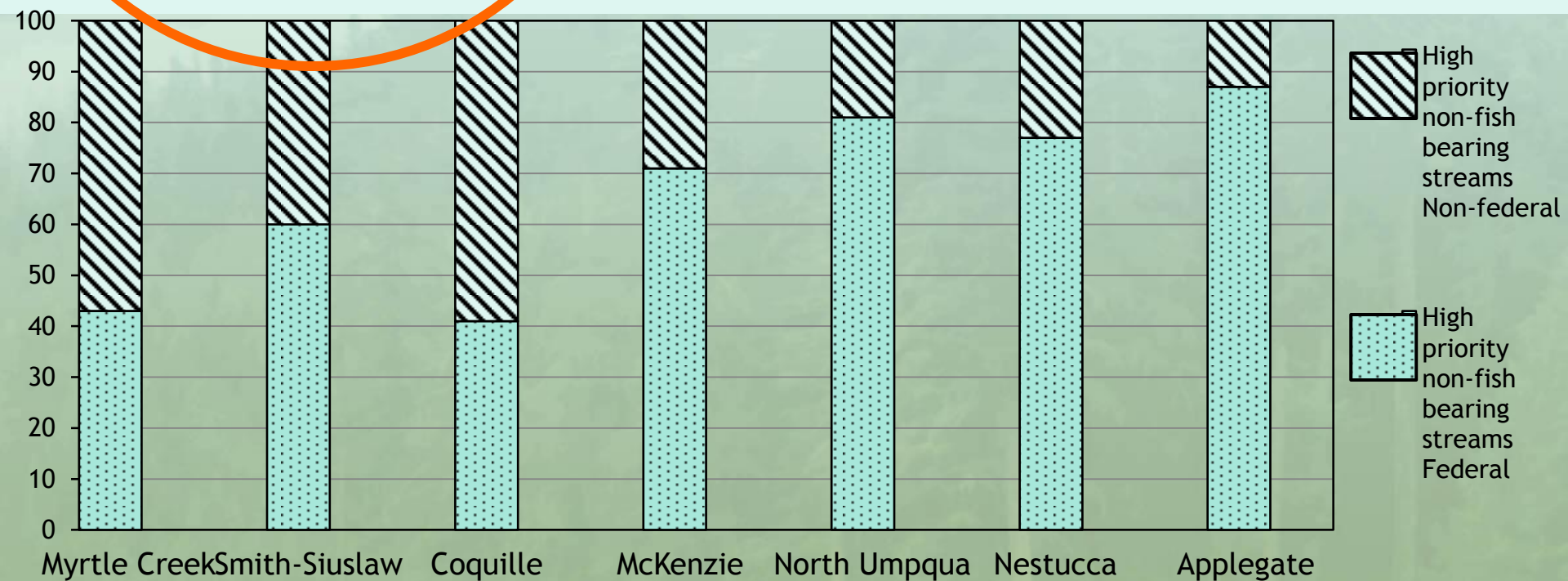
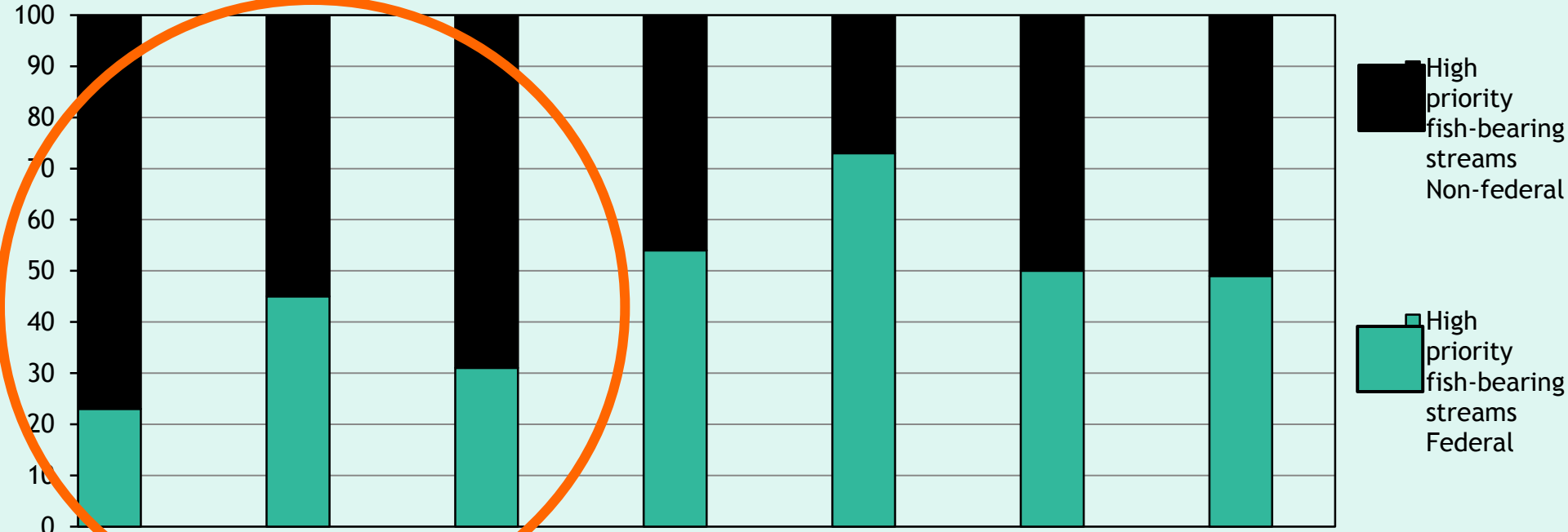
# Option B with Ecological Forestry











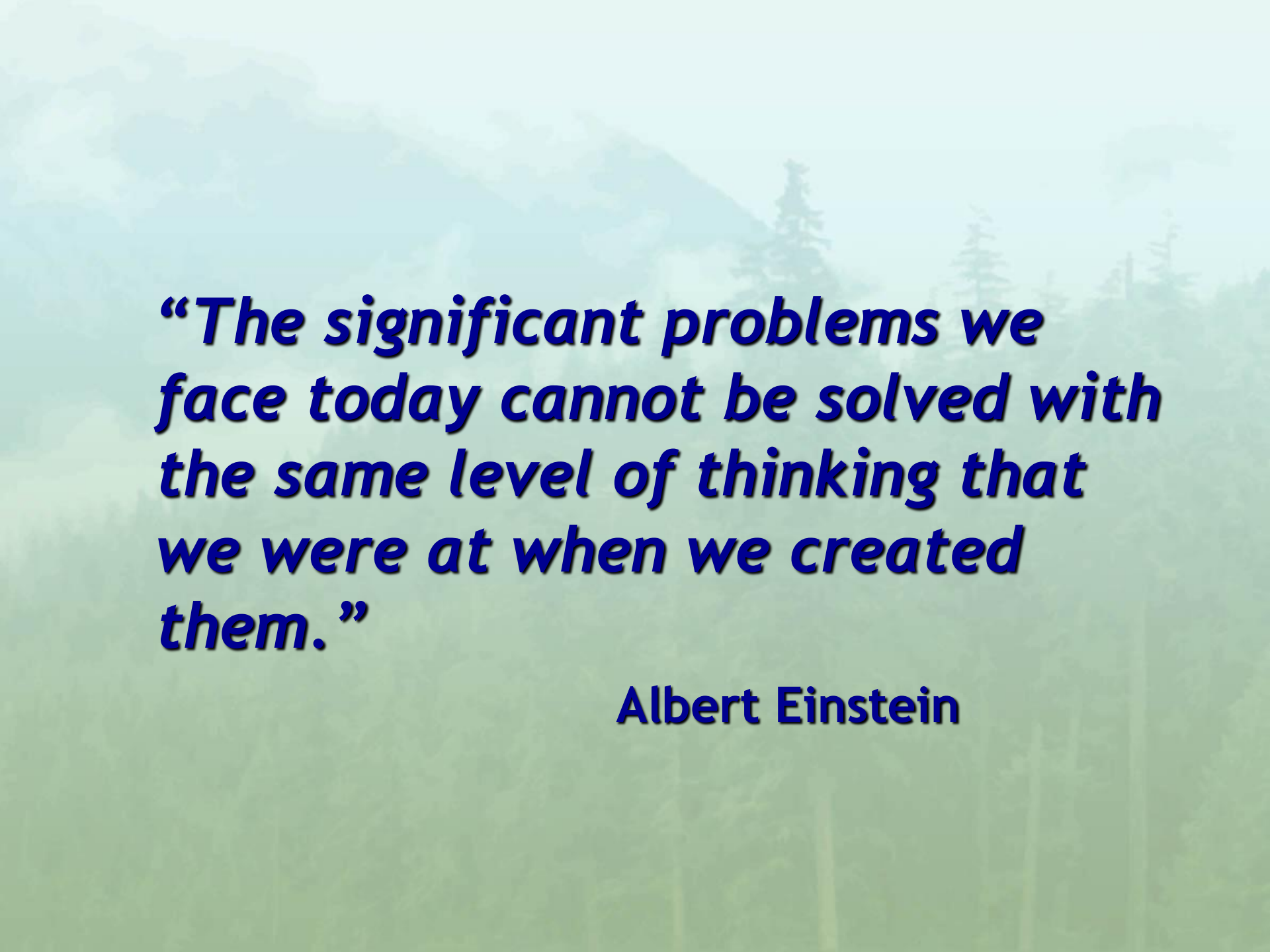
Source: Pickard et al. (2013)

		Option A			Option B		
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# Summary

- 💧 Each option will meet ASC goals
- 💧 Majority of area in Riparian Reserves still devoted to achieving ACS goals.
- 💧 In Matrix, a portion of the Riparian Reserve could have long-term timber harvest as a goal.
- 💧 An estimated 2-3% of the NWFP interim Riparian Reserve on BLM lands could have management in first 10 years
- 💧 Integrating ecological forestry with the options for Riparian Reserves provides for greater efficiency to meet multiple goals.
- 💧 Non-federal lands have relatively large amounts of ecologically important streams in some basins.

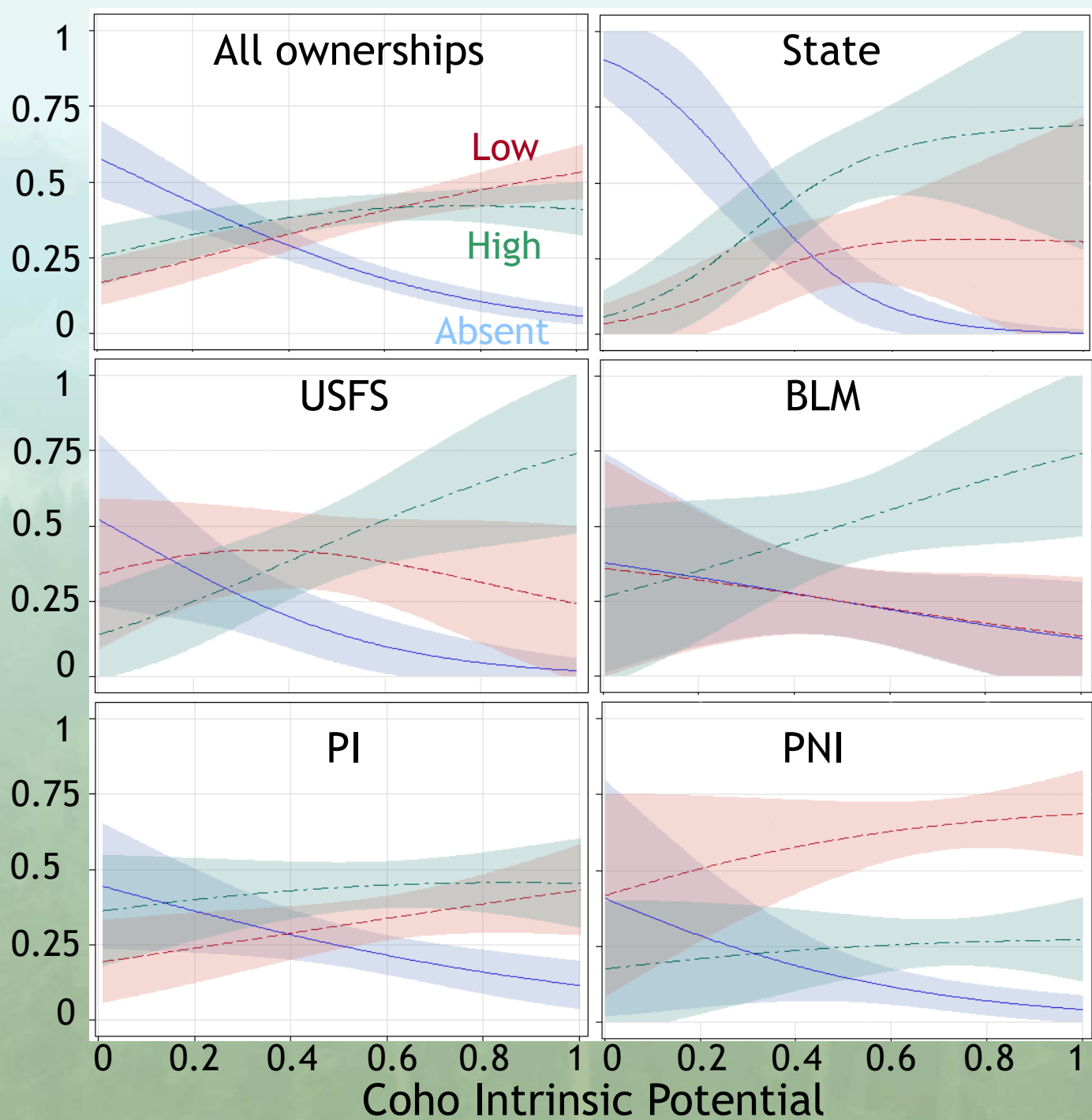
A background image of a dense forest with tall evergreen trees, partially obscured by a thick layer of white fog or mist. The scene is captured in a soft, slightly desaturated color palette, giving it a serene and somewhat mysterious atmosphere.

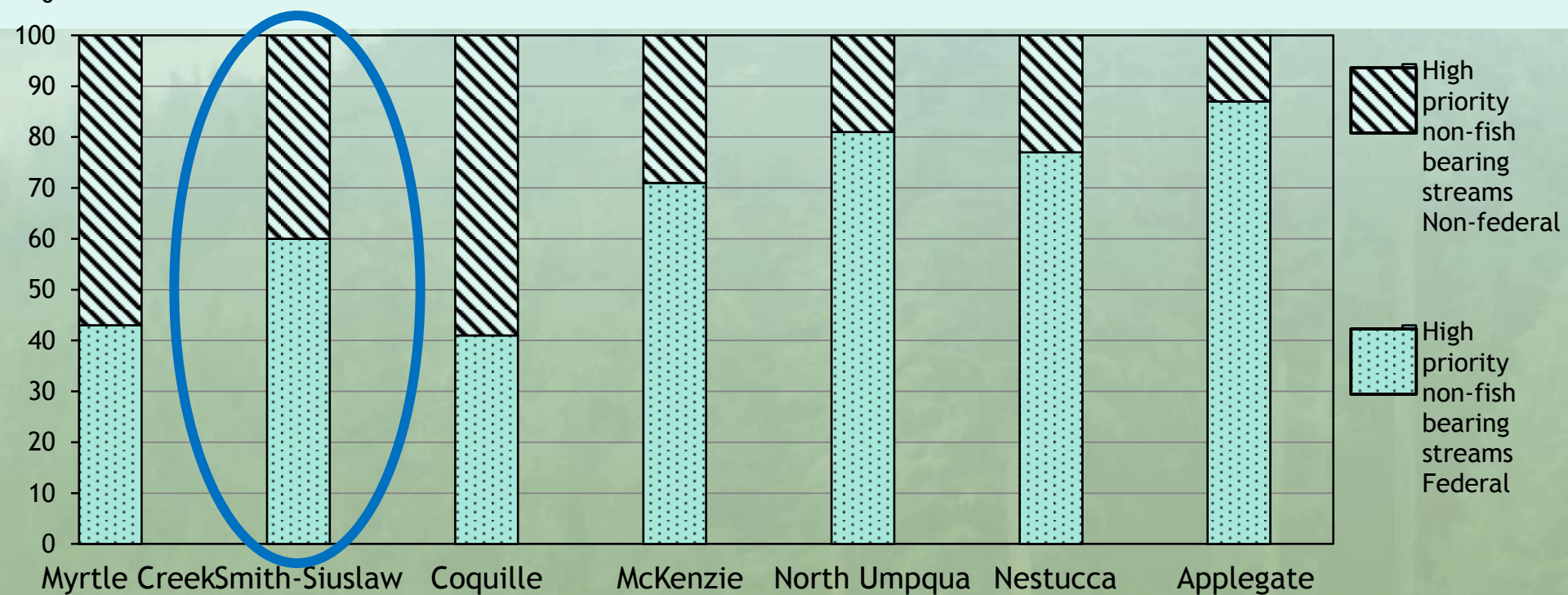
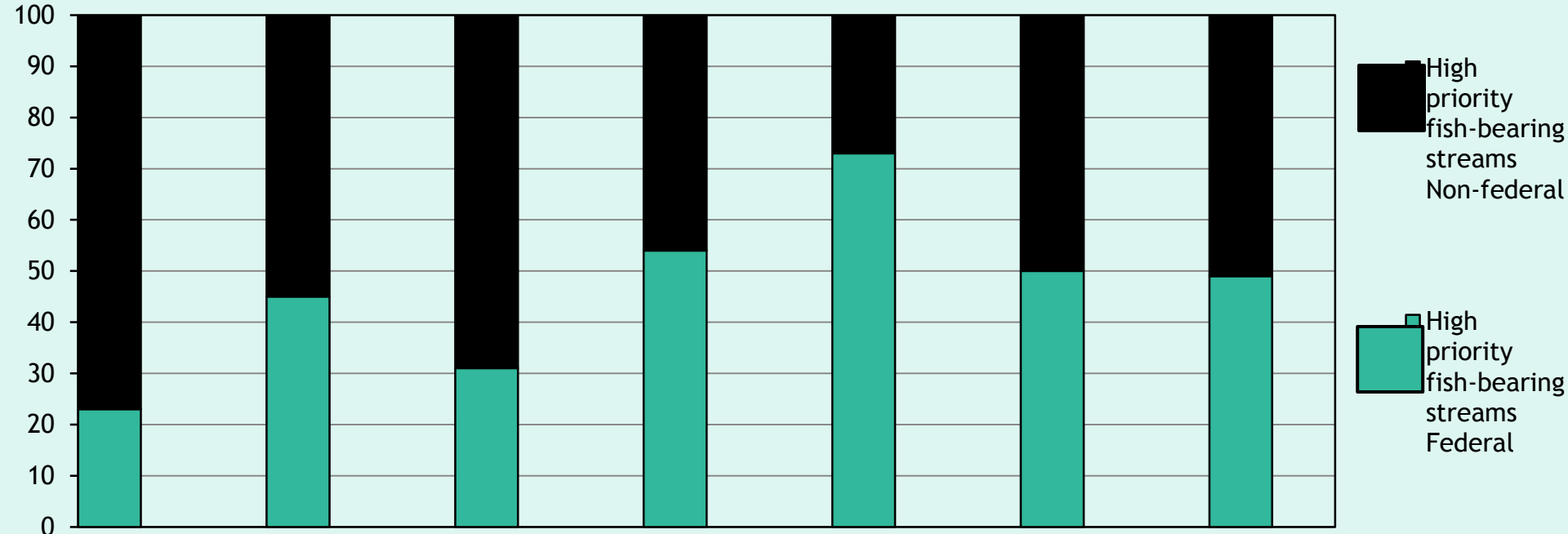
***“The significant problems we face today cannot be solved with the same level of thinking that we were at when we created them.”***

**Albert Einstein**



# Predicted Probability of Coho Density Class







Forestry Simulation 2019 Laura Polch