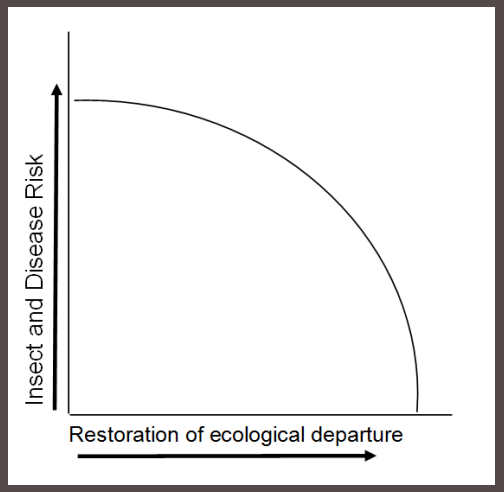
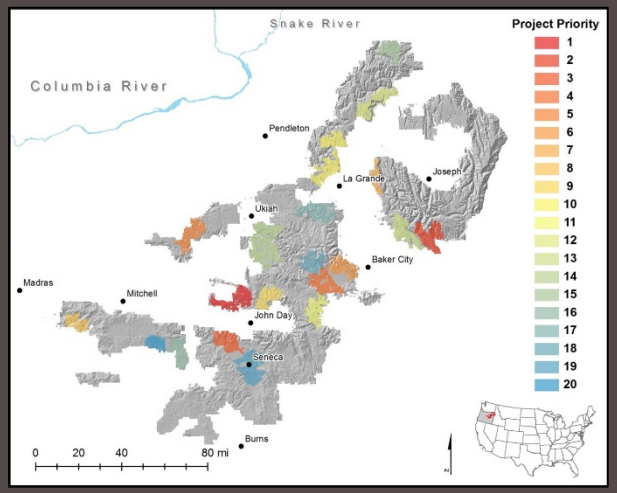
Spatial Optimization of Restoration in Fire Prone Forests: Tradeoffs and Production Possibility Frontiers

Kevin Vogler

Alan Ager, Michelle Day, Stuart Brittain

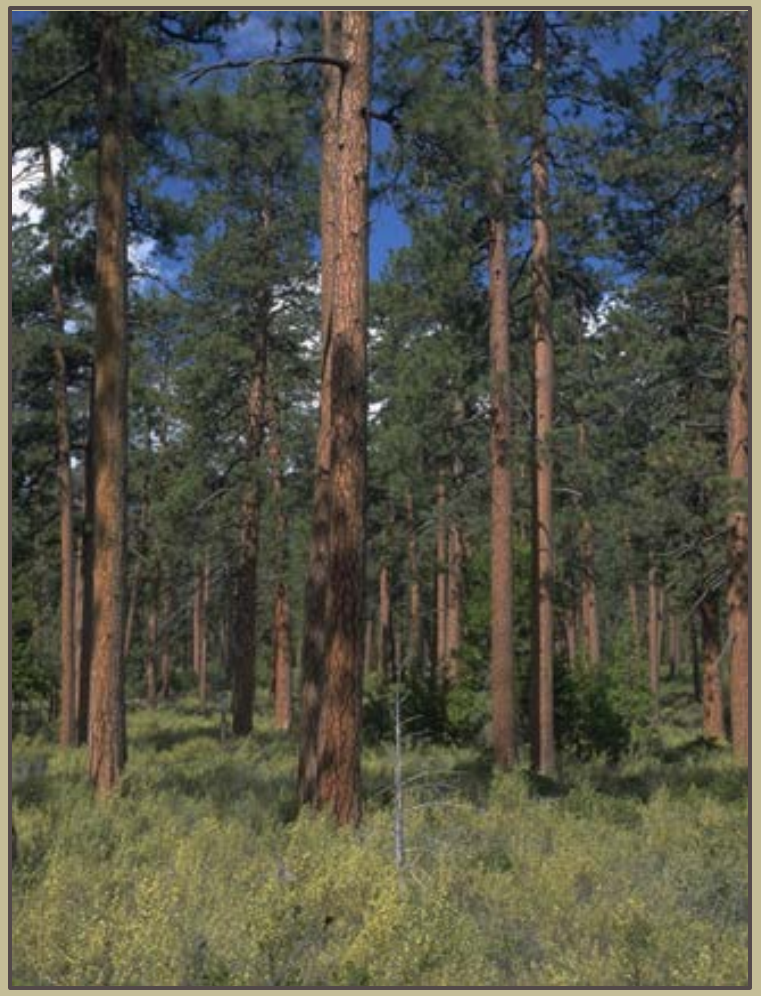
4 / 27 / 2015



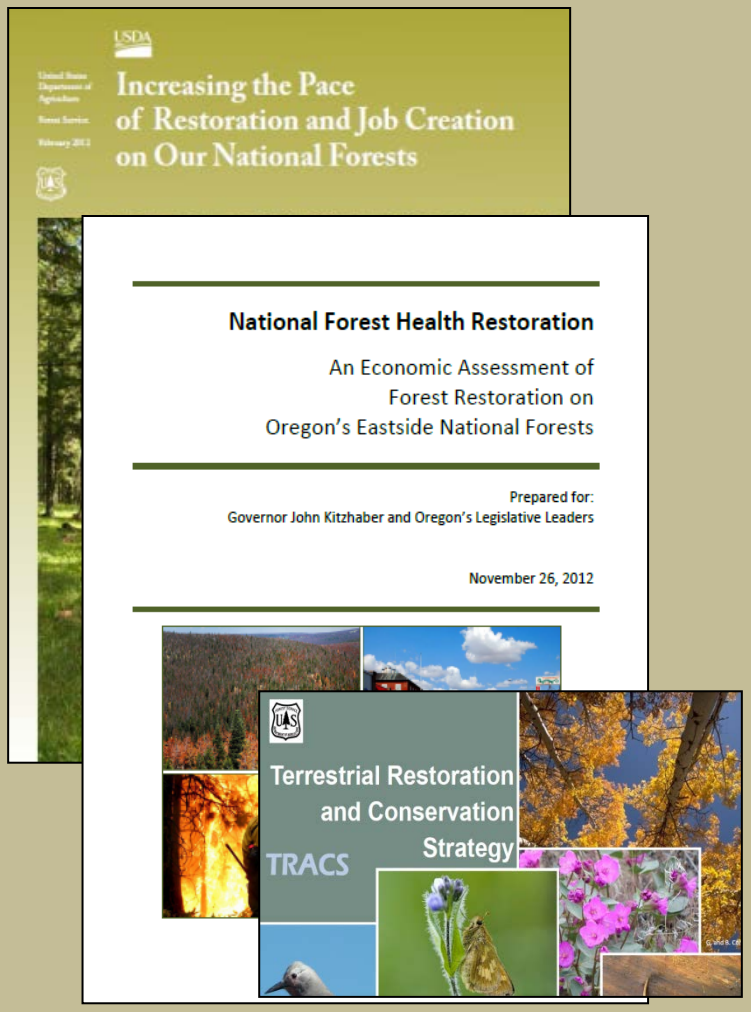


OUTLINE

- Introduction
  - Restoration and the USFS
  - Why prioritize treatments?
  - What are PPF curves?
- Methods
  - Data inputs
  - LTD Model
- Preliminary Findings
  - Tradeoff Curves
  - Evaluating USFS Projects
- Future Work



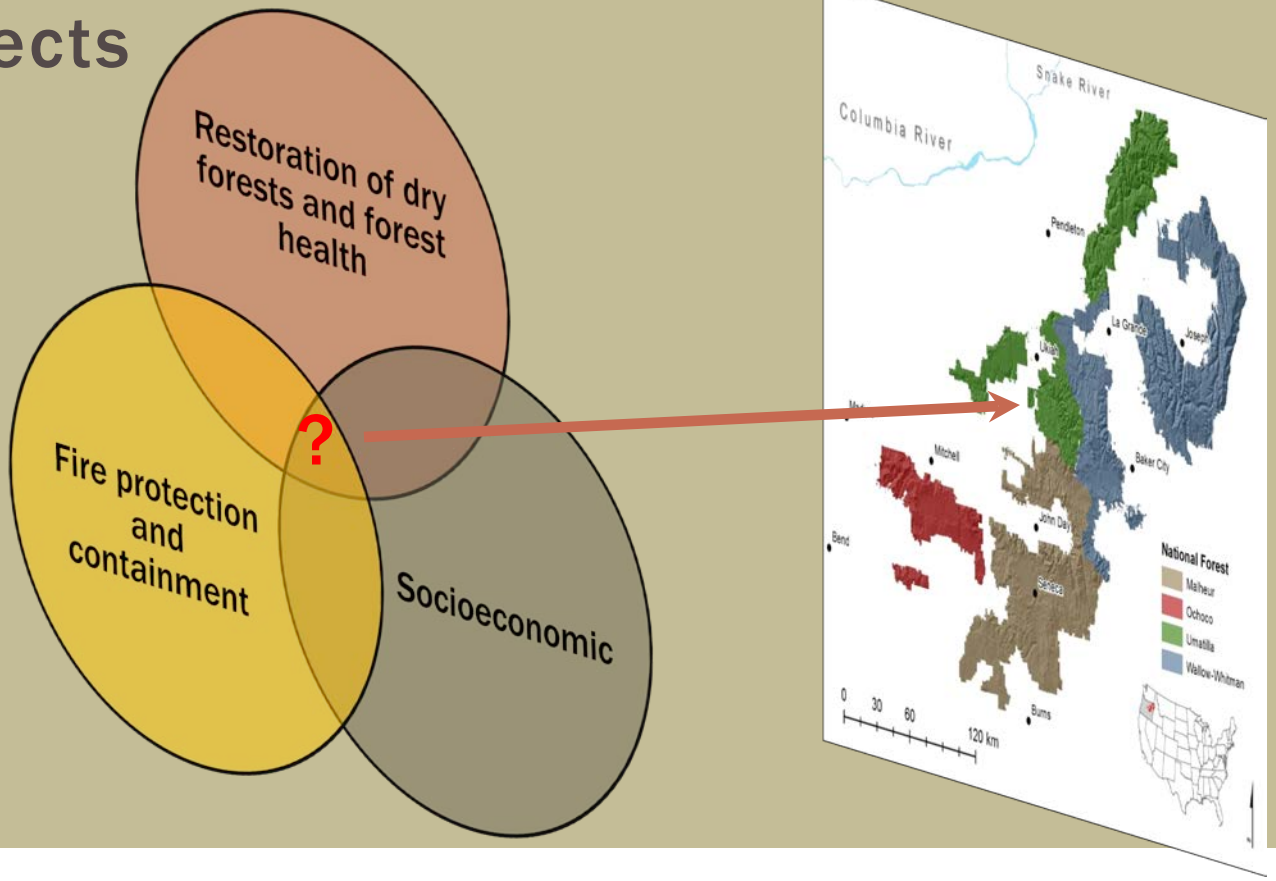
USFS AND FOREST RESTORATION



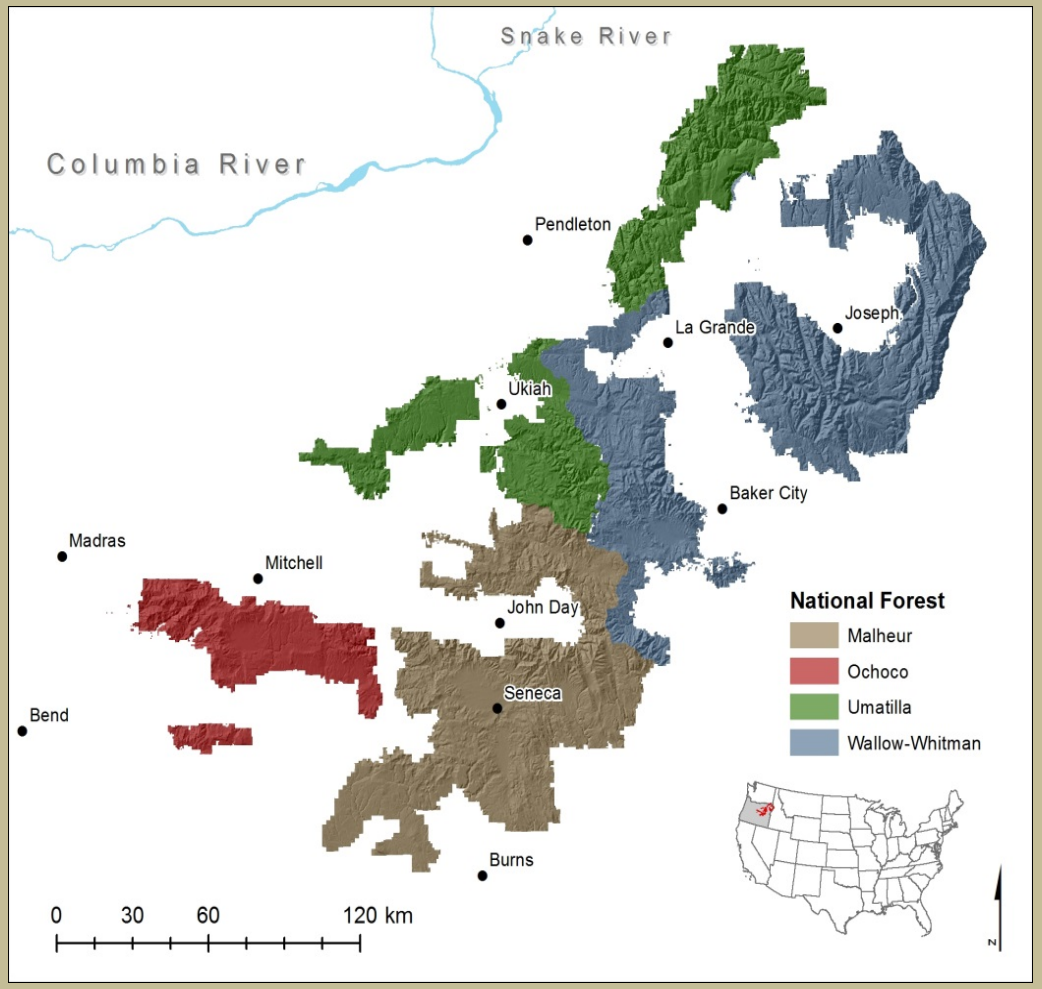
- USFS is currently focusing heavily on restoration
  - (CFLRP, 4FRI)
- New policy documents call for a dramatic increase in the scope and scale of treatments

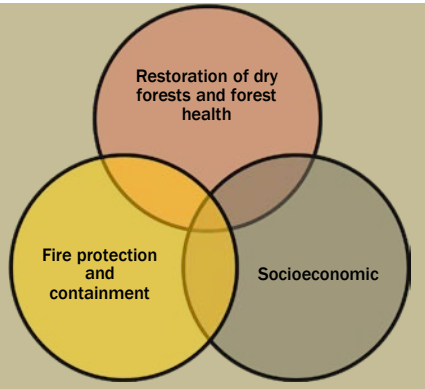
FOREST RESTORATION GOALS

Multiple goals and landscape conditions complicate the development of restoration projects



QUANTIFYING RESTORATION OBJECTIVES

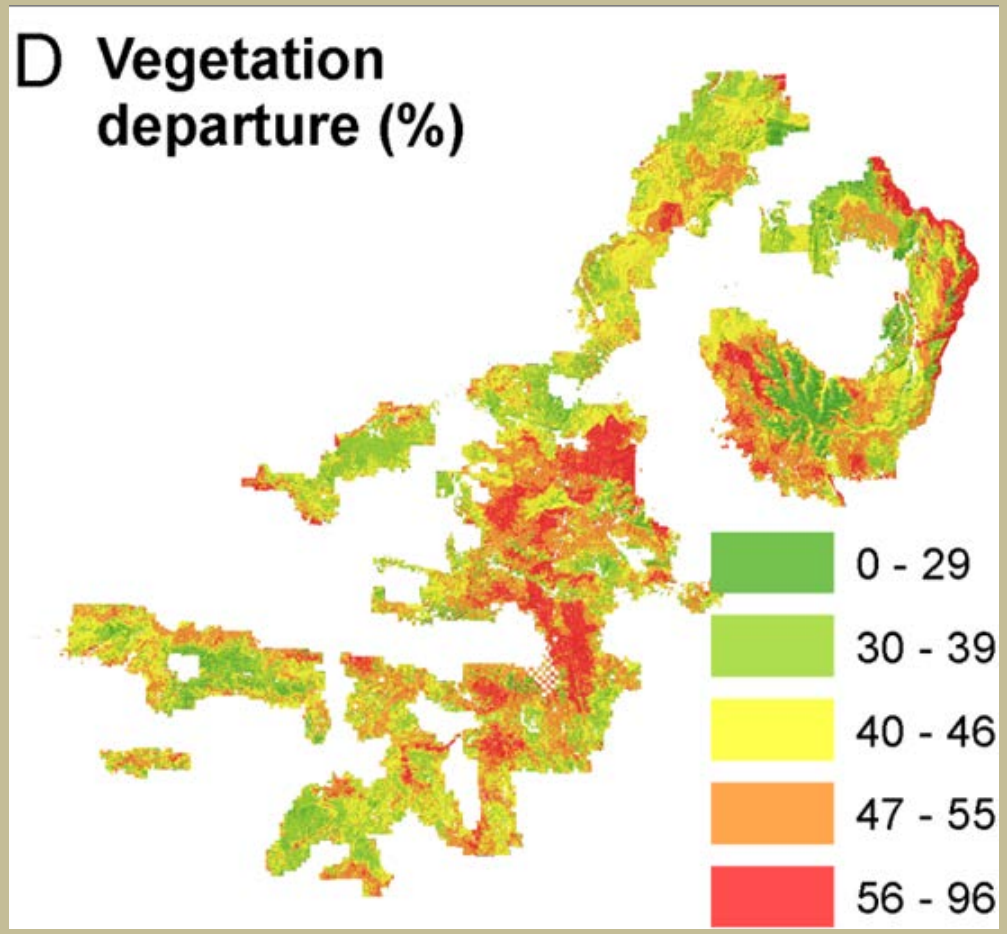




Blue Mountains Oregon:

- **Restoration of dry forests and forest health**
- **Fire Protection and containment**
- **Socioeconomic**

RESTORATION OBJECTIVES



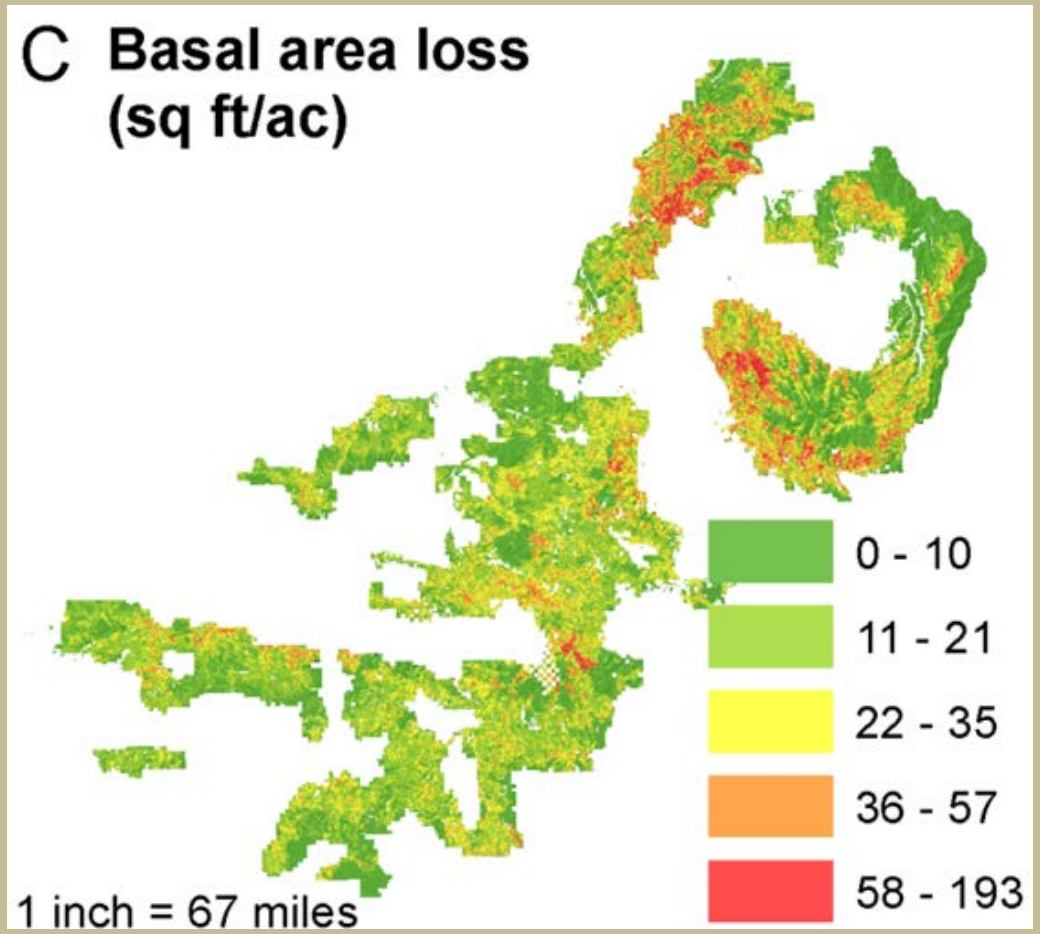
Restoration of dry forests and forest health:

1. Veg Departure

Fire Protection and containment:

Socioeconomic:

RESTORATION OBJECTIVES



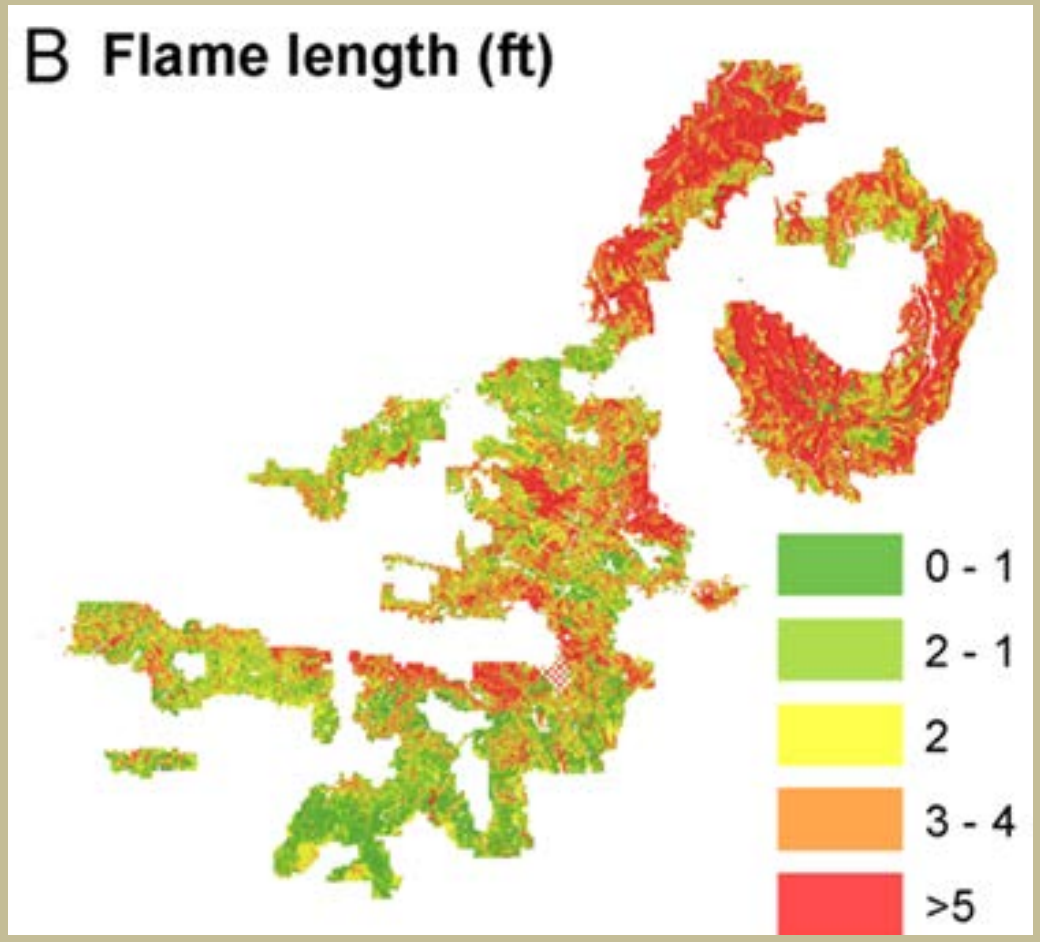
Restoration of dry forests and forest health:

1. Veg Departure
2. Insect and Disease

Fire Protection and containment:

Socioeconomic

RESTORATION OBJECTIVES



Restoration of dry forests and forest health:

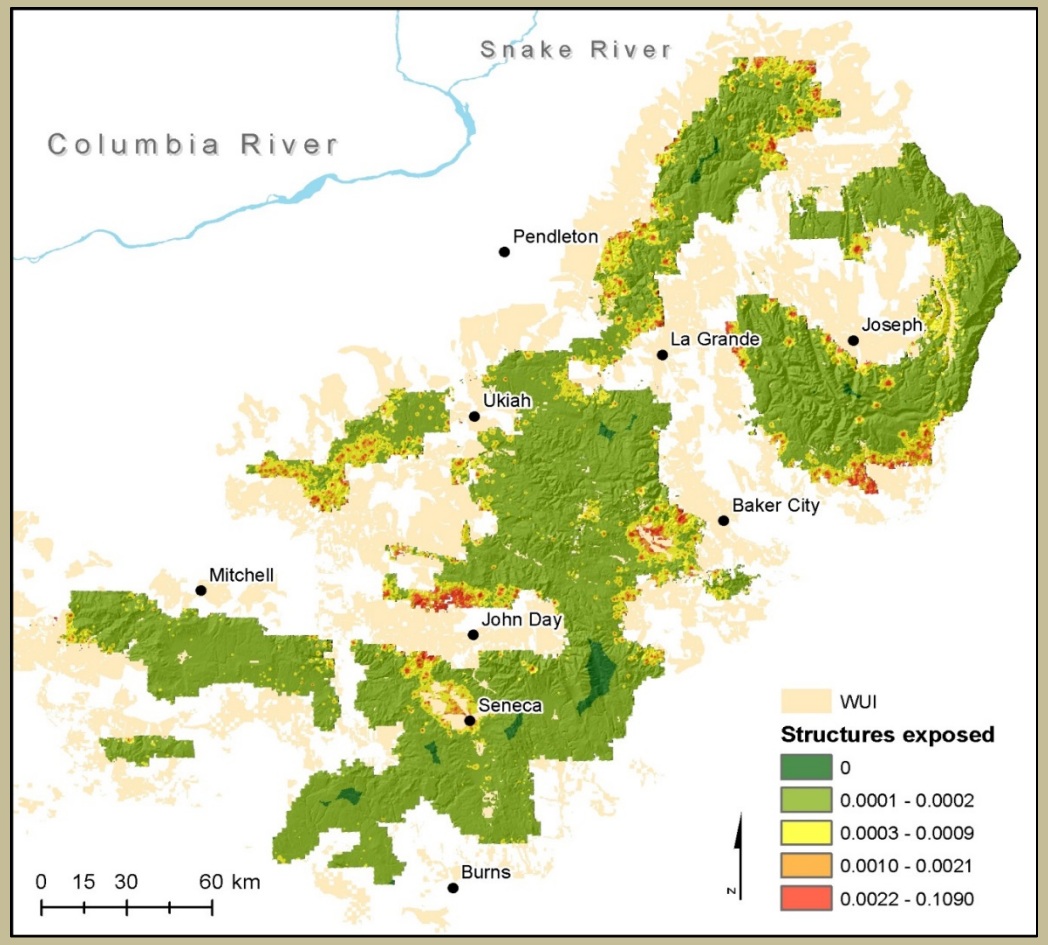
1. Veg Departure
2. Insect and Disease

Fire Protection and containment:

1. Fire Hazard

Socioeconomic

RESTORATION OBJECTIVES



Restoration of dry forests and forest health:

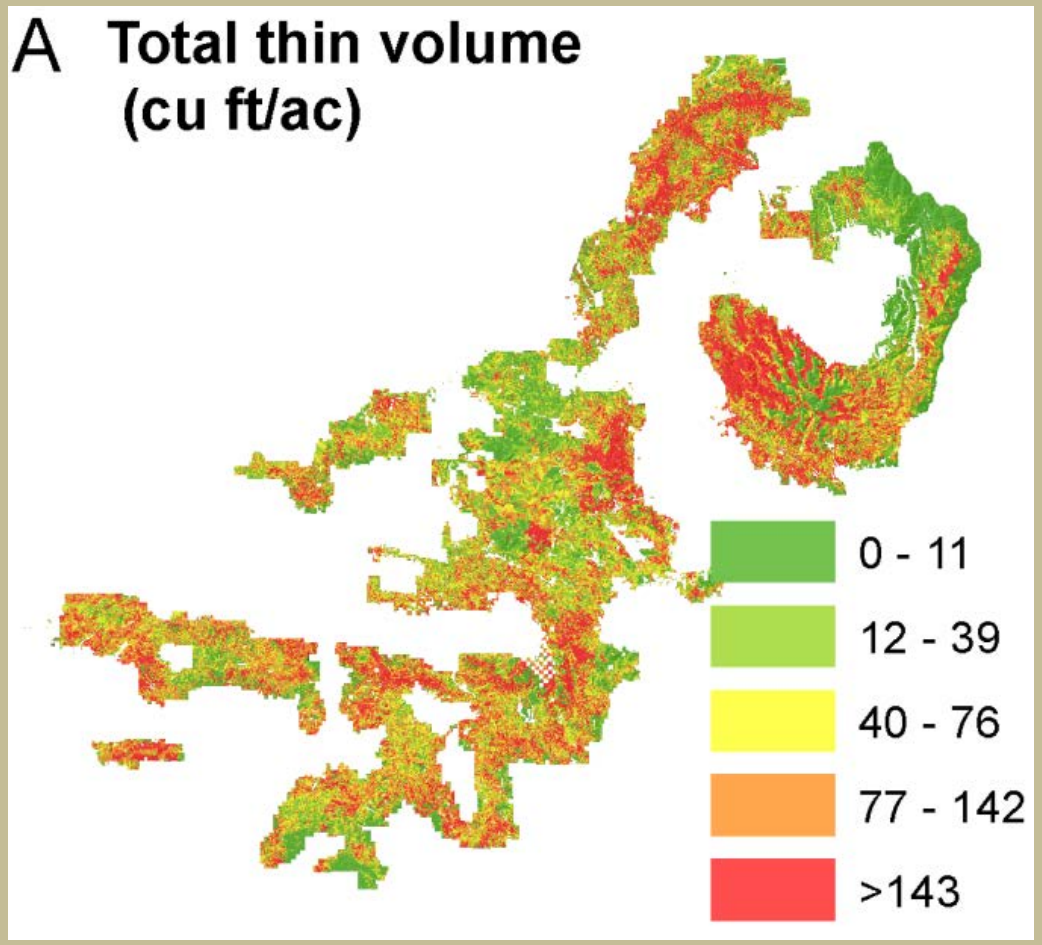
1. Veg Departure
2. Insect and Disease

Fire Protection and containment:

1. Fire Hazard
2. WUI Risk

Socioeconomic

RESTORATION OBJECTIVES



Restoration of dry forests and forest health:

1. Veg Departure
2. Insect and Disease

Fire Protection and containment:

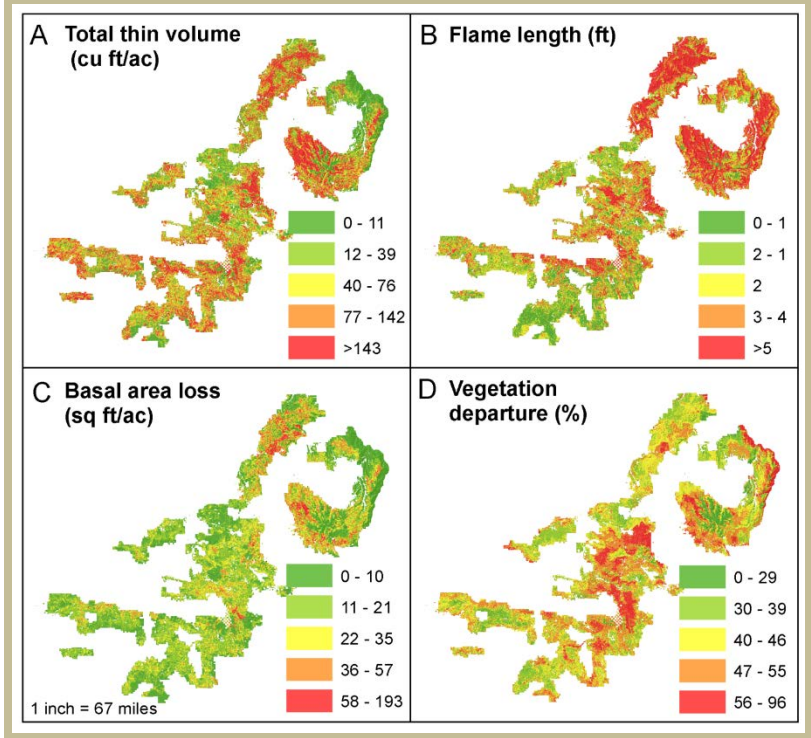
1. Fire Hazard
2. WUI Risk

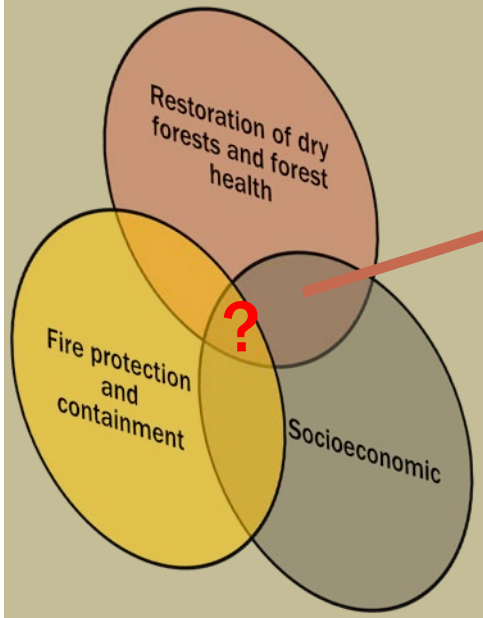
Socioeconomic

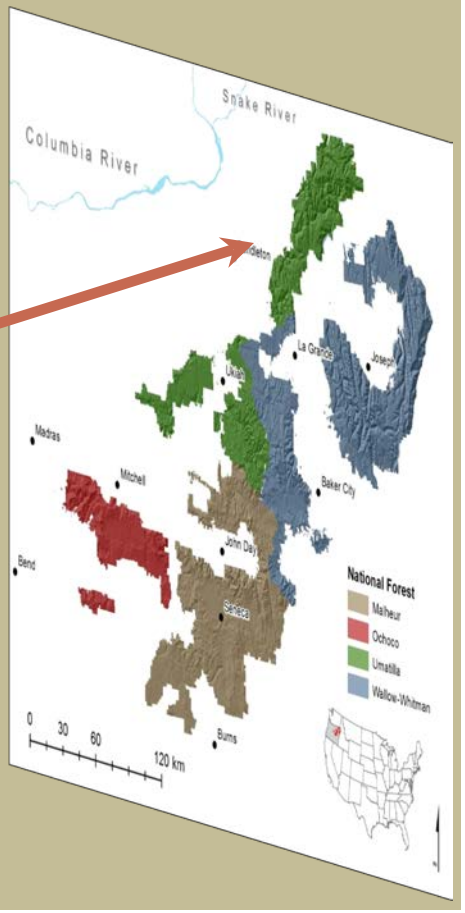
1. Timber Volume

RESTORATION OBJECTIVES

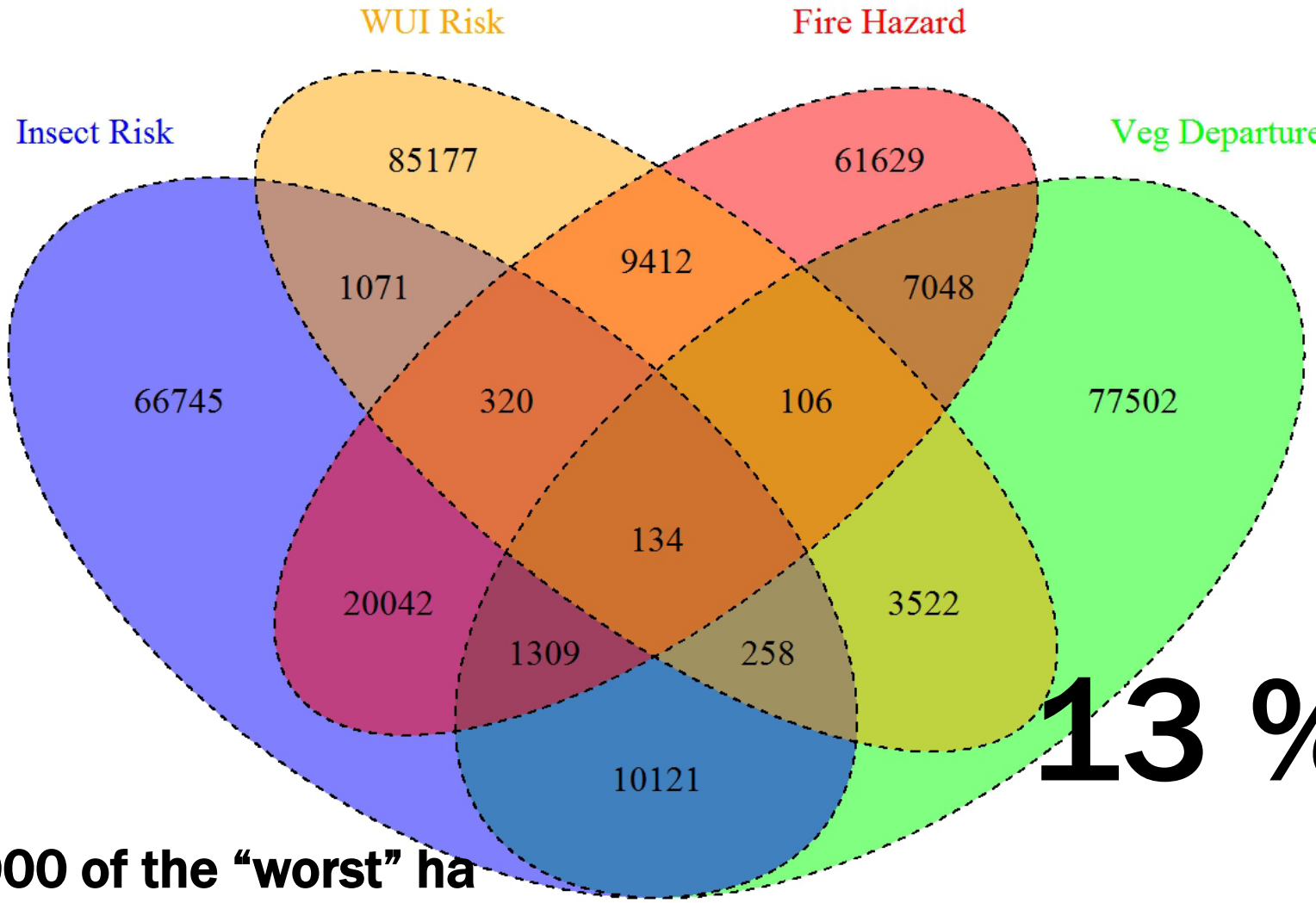
Can a restoration project achieve all goals?







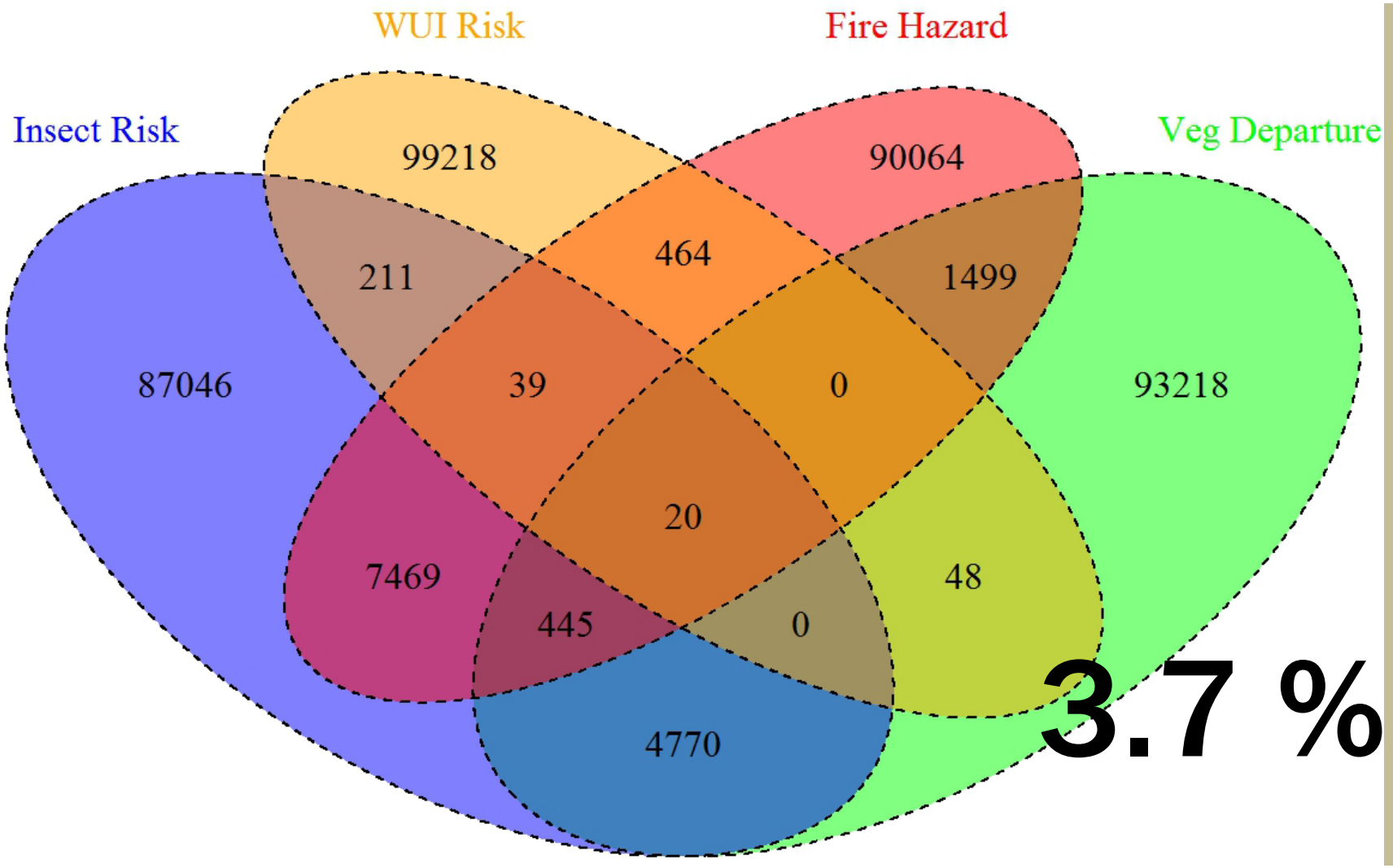
RESTORATION OBJECTIVES



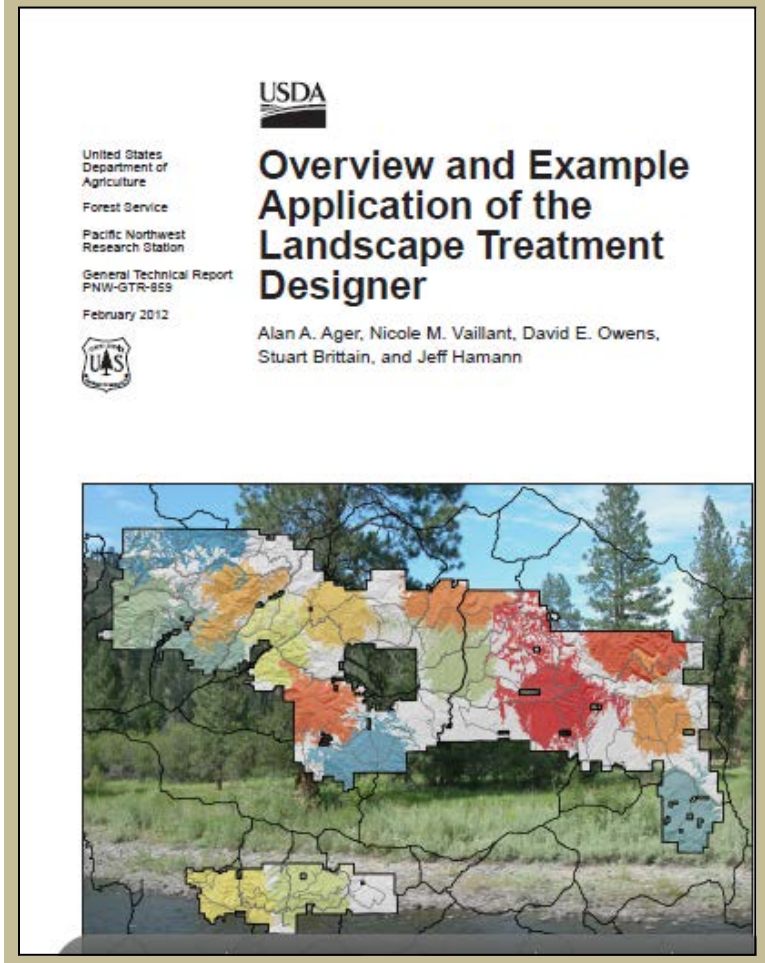
13 %

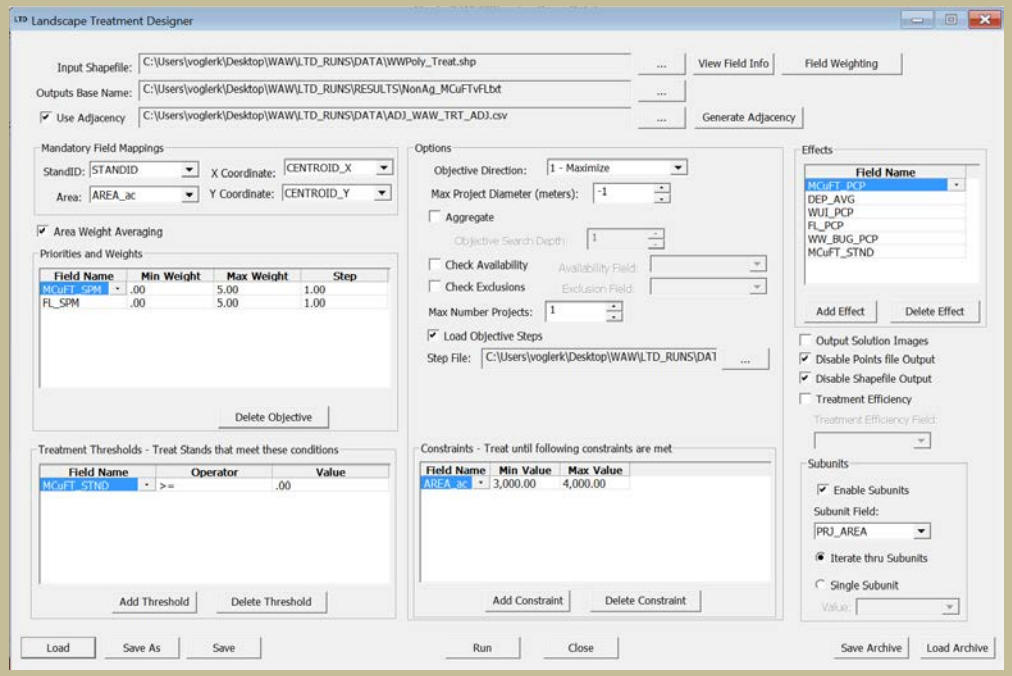
100,000 of the “worst” ha

RESTORATION OBJECTIVES



LANDSCAPE TREATMENT DESIGNER





1. Optimal Projects
2. Tradeoffs: PPF curves

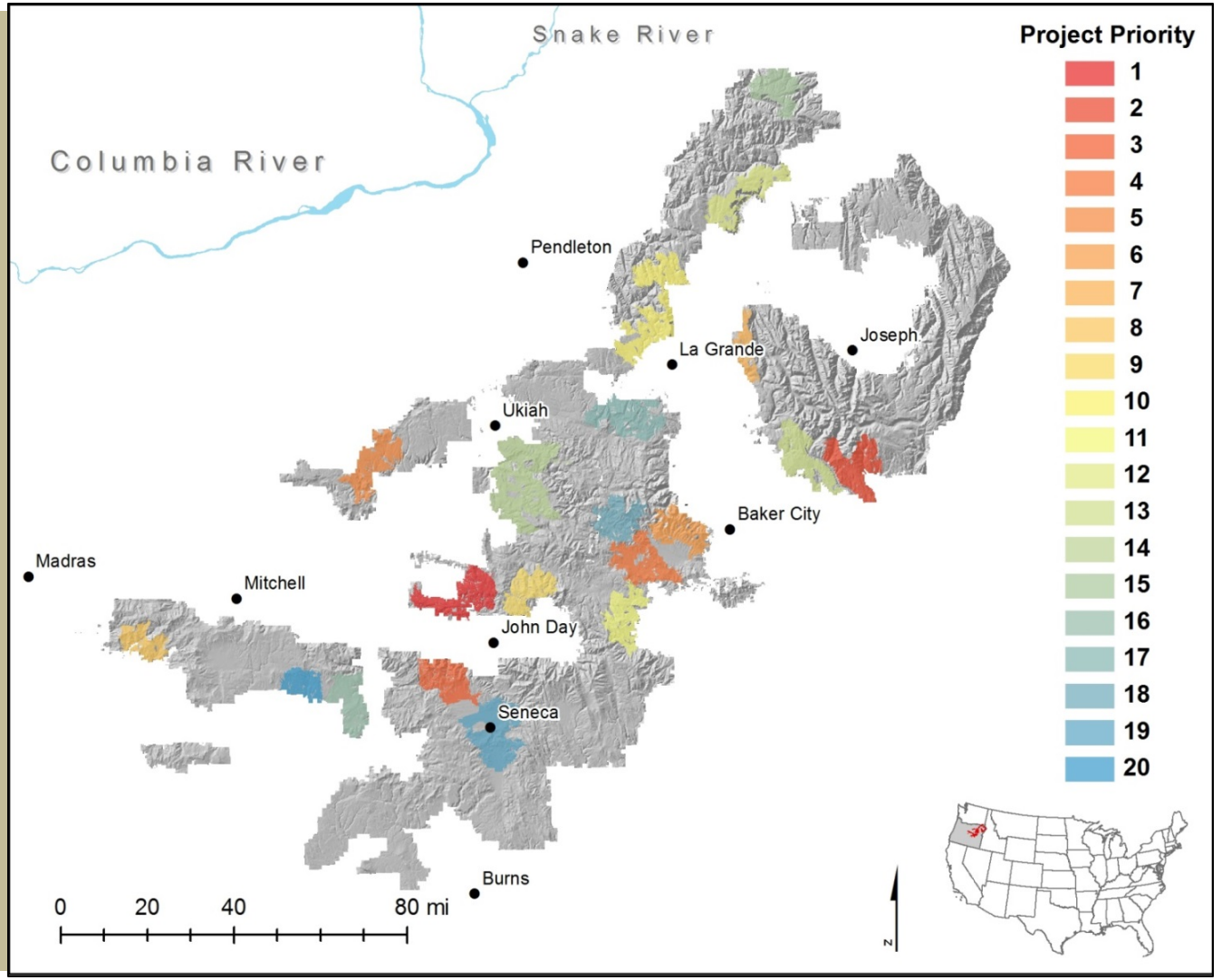
http://www.fs.fed.us/wwetac/ltd/

OPTIMAL PROJECTS

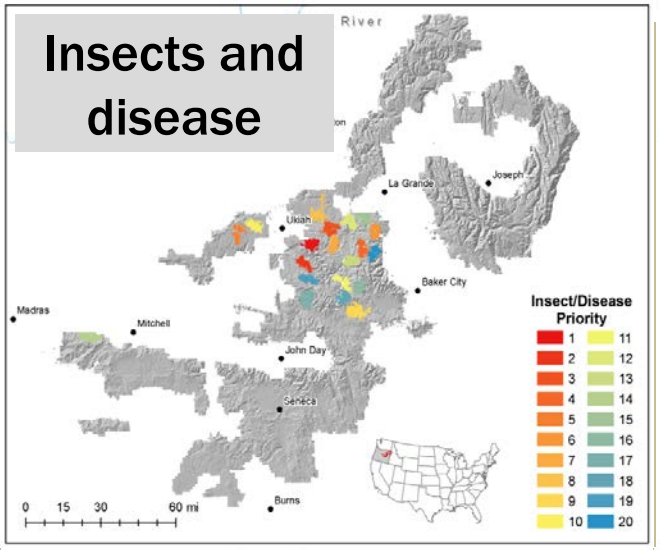
WUI Protection

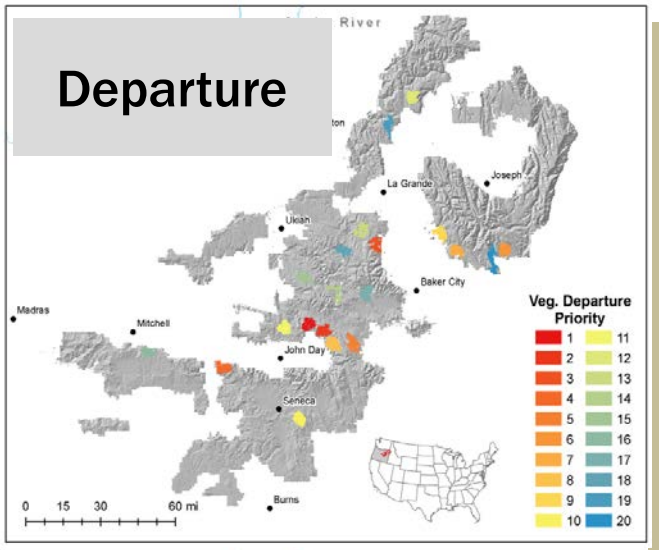
5 Years of work:

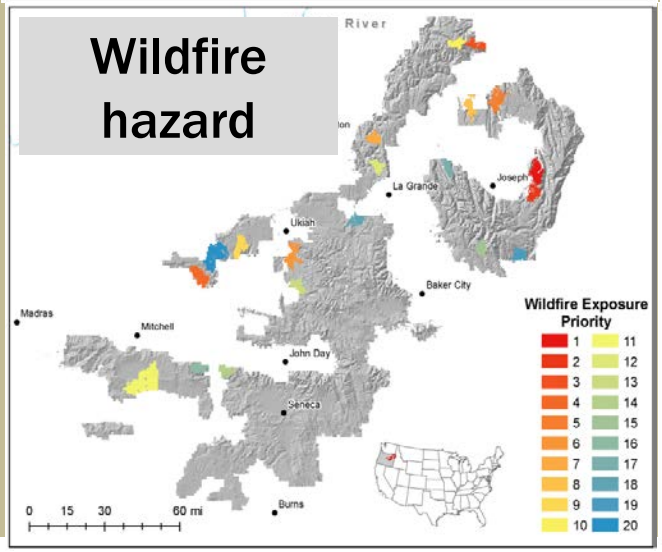
- 20 Projects
- 5,000 ha each

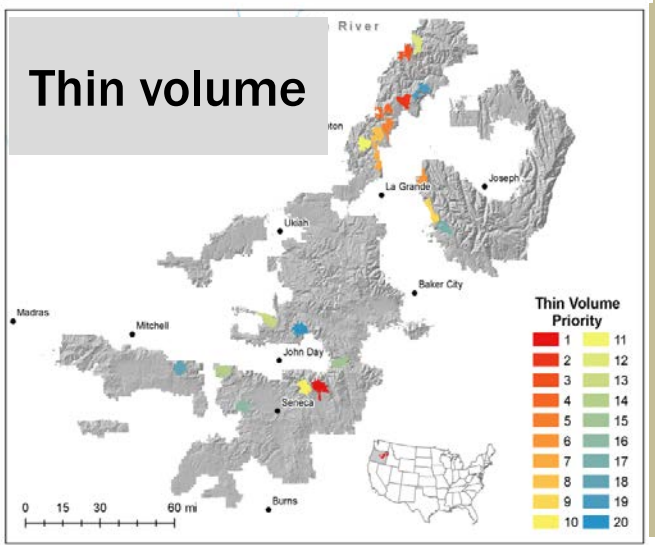


OPTIMAL PROJECTS

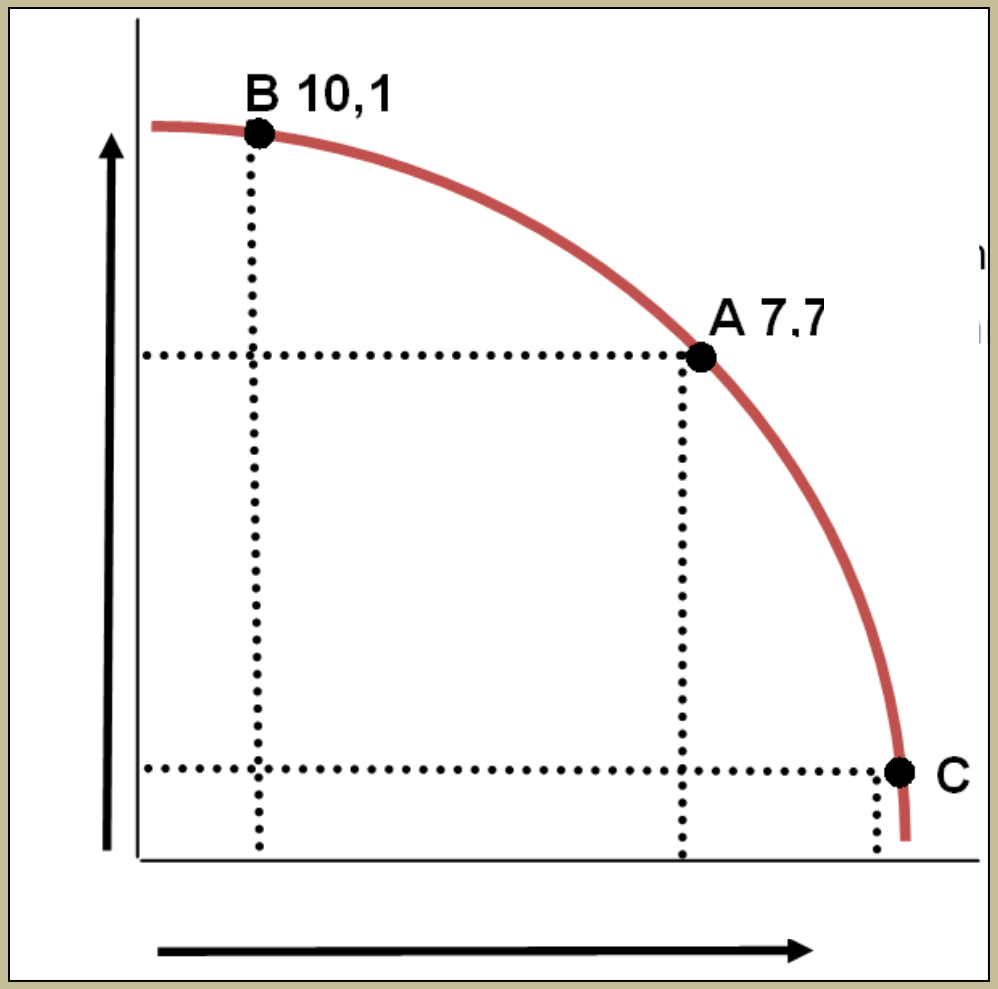






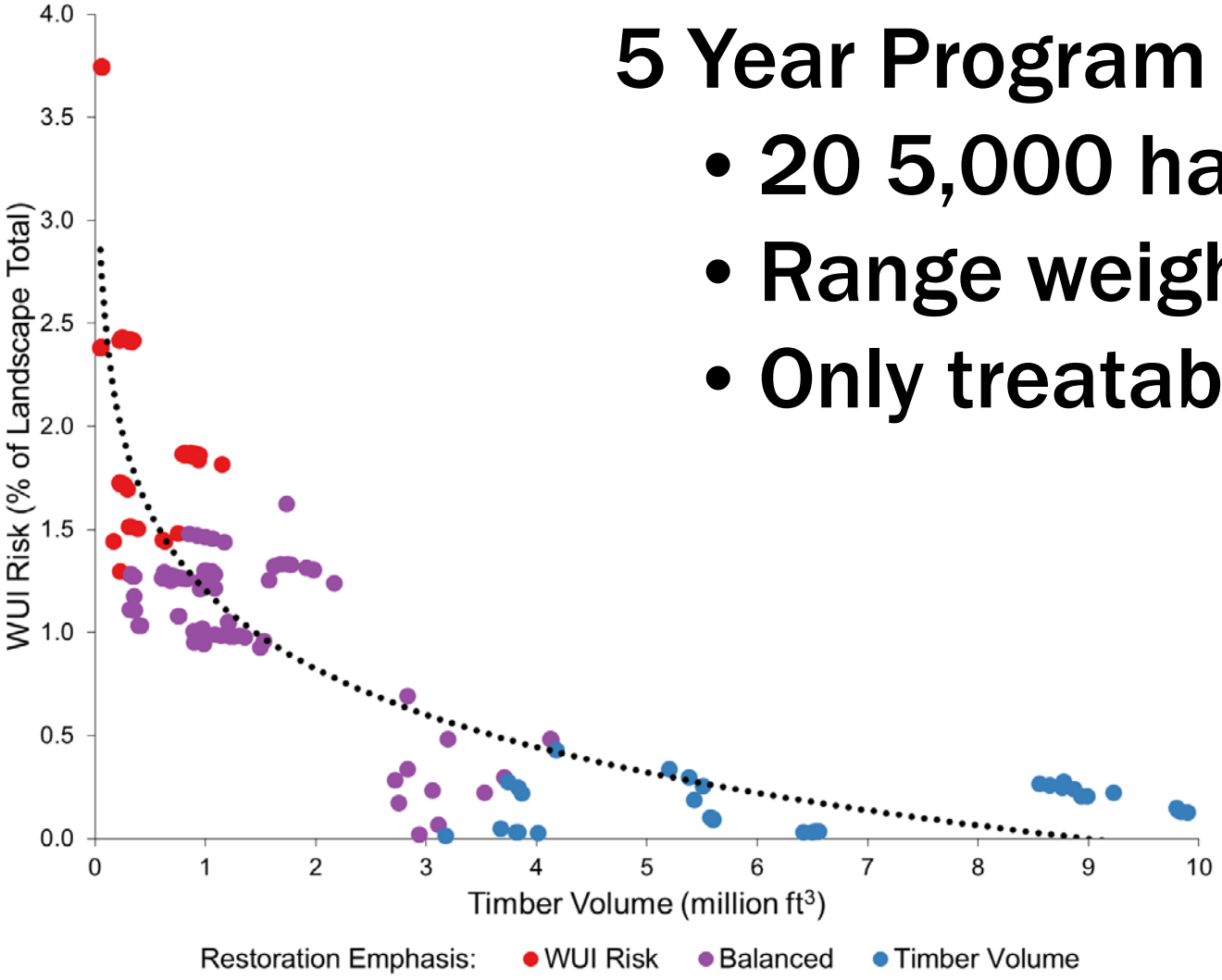


PRODUCTION POSSIBILITY FRONTIER CURVES



- Econ Theory
- Guns and Butter

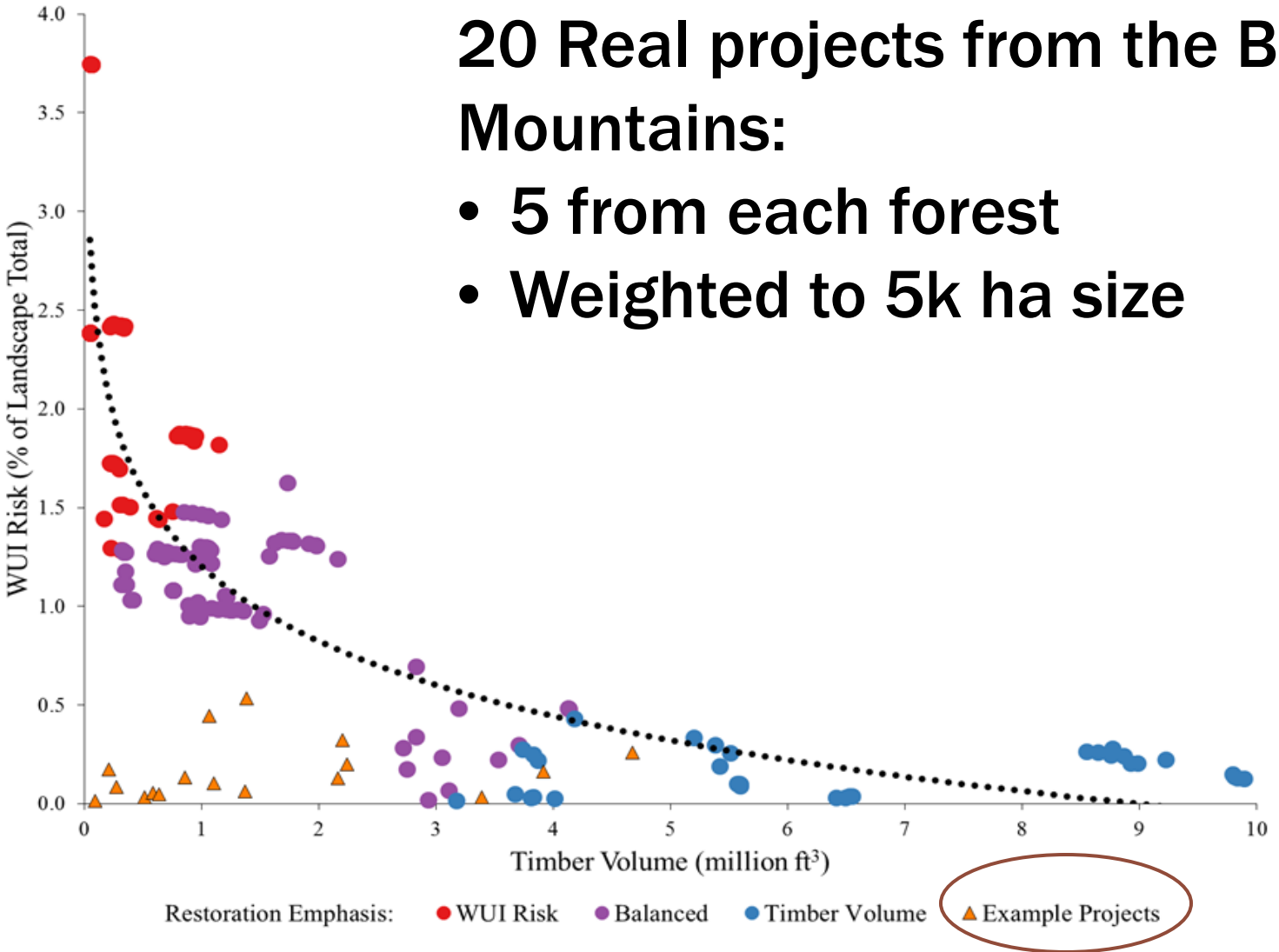
PPF: WUI VS TIMBER



5 Year Program of work:

- 20 5,000 ha projects
- Range weights from 0-5
- Only treatable lands

PPF: WUI VS TIMBER



20 Real projects from the Blue Mountains:

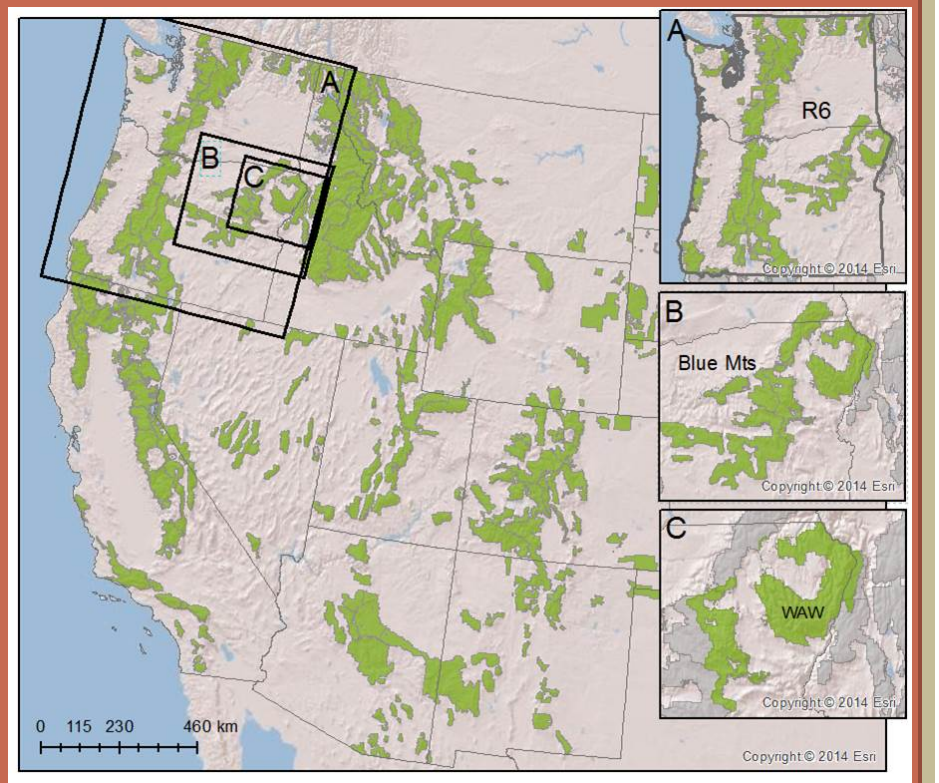
- 5 from each forest
- Weighted to 5k ha size

CONCLUSIONS

- Restoration objectives are often not located on the same acres
  - Or project area!
- PPF curves can show opportunity costs of different restoration strategies
  - And highlight USFS ability to meet goals

FUTURE WORK

1. ***PPF curves at multiple scales***
2. How does PPF curve change with different levels of investment?
3. What is opportunity cost of Project Areas?



FUTURE WORK

1. PPF curves at multiple scales
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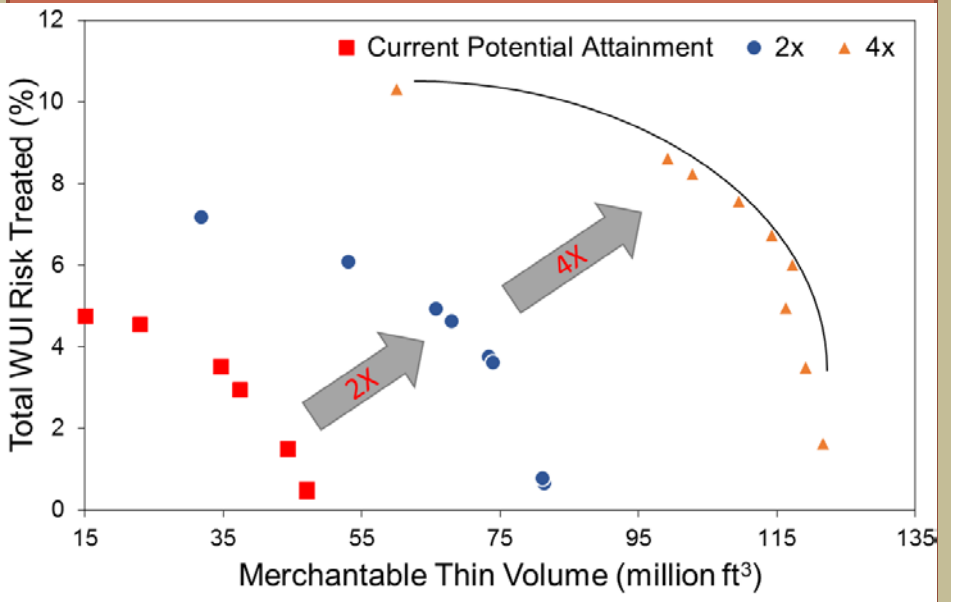
Increased investment in restoration



FUTURE WORK

1. PPF curves at multiple scales
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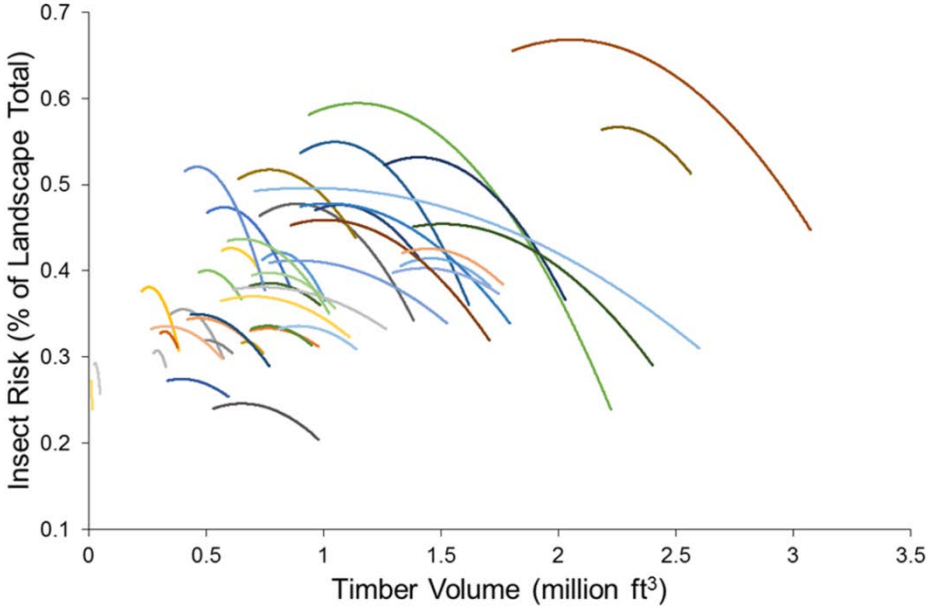
Wallowa-Whitman NF: 42 Project Areas



QUESTIONS?

LTD Website + Online Tutorial: **http://www.fs.fed.us/wwetac/ltd/**