

Ecosystem Services as a Management Framework for the US Forest Service

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Overview

- Working definition and brief description of ecosystem services, markets and partnerships in the PNW.
- Overview and goals for Deschutes N.F. project.
- Project framework, resource integration, partnerships and future needs.
- Example of collaborative approach using CFLRP.

Ecosystem services are “the benefits people obtain from ecosystems”

ECOSYSTEM SERVICES	
Supporting Services	Provisioning Services Food (crops, livestock, wild foods, etc...) Fiber (timber, cotton/hemp/silk, wood fuel) Genetic resources Biochemicals, natural medicines, pharmaceuticals Fresh water
Nutrient cycling Soil formation Primary production	Regulating Services Air quality regulation Climate regulation (global, regional, and local) Water regulation Erosion regulation Water purification and waste treatment Disease regulation Pest regulation Pollination Natural hazard regulation
	Cultural Services Aesthetic values Spiritual and religious values Recreation and ecotourism

Source:

Millenium
Ecosystem
Assessment,
(www.mea.org)

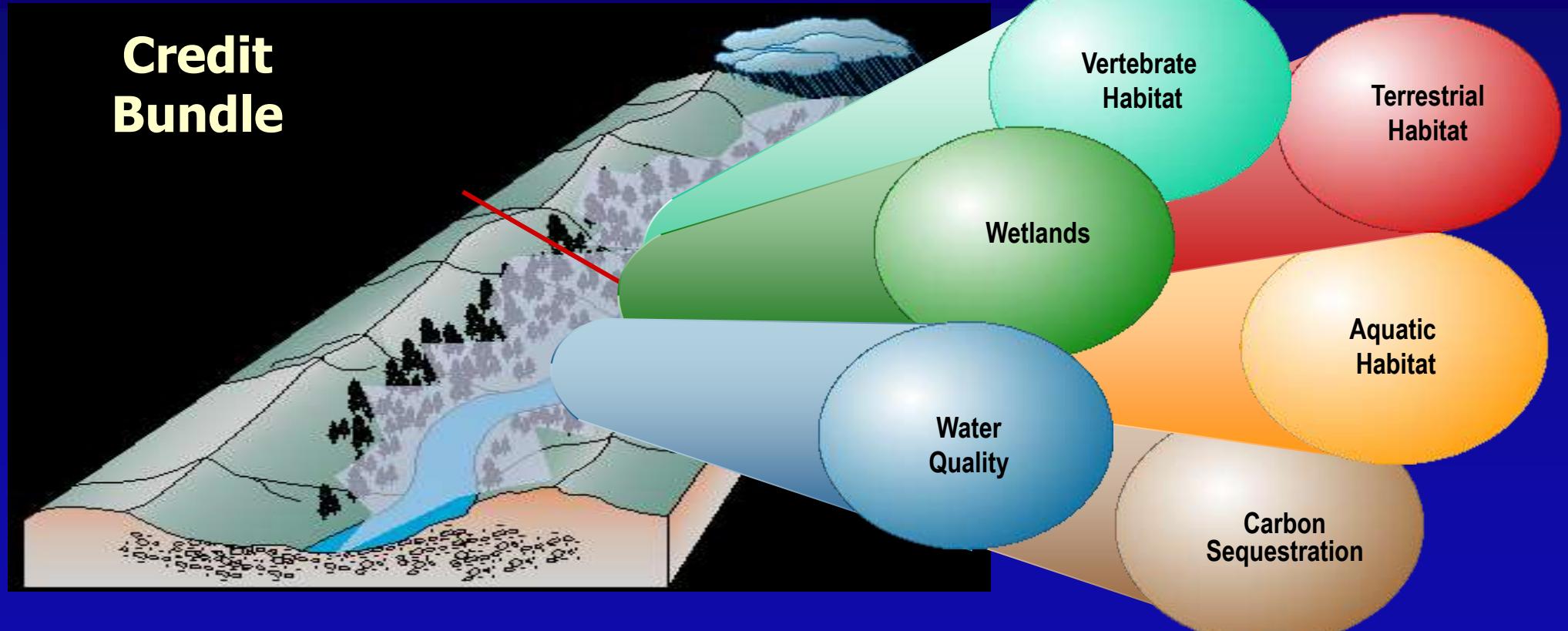
Ecosystem Services Markets

- Water quality trading
- Wetland mitigation
- Species conservation banking
- Carbon credits
- Biodiversity and voluntary markets

Water quality trading, wetland mitigation and species conservation banking

- Clean Water Act (Section 404)
 - Avoidance and minimization, then mitigation.
 - Credit ratio (currency value) and service area (watershed).
 - Over 500 banks now in operation.
- USFWS guidance 2003, CA guidance 1995
 - Private property owners receive financial returns in exchange for protecting rare species.
 - Conservation banks already protect nearly 25 endangered species and cover some 40,000 acres.

Bundling ecosystem services to increase forest value



Willamette Partnership- Counting on the Environment

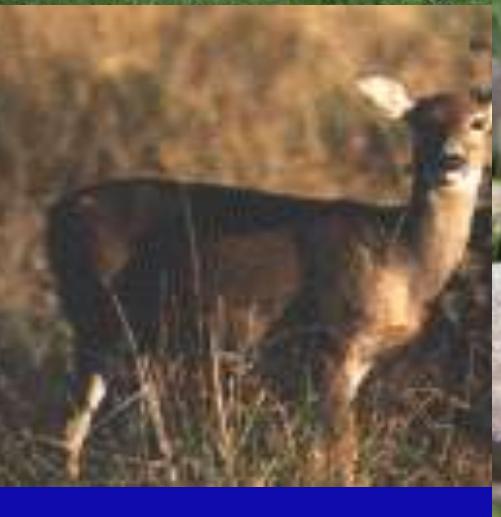
- Ecosystem Credit Accounting System supported by virtually every federal and state regulatory agency:
- Federal: NRCS, USFS, EPA, USFWS, Corps of Engineers...
- Oregon: ODOT, DEQ, ODF, State lands, Agriculture, ODFW...
- Cities and NGOs: Albany, Eugene, TNC, Defenders, Clean Water Services, Freshwater Trust, many others...

Willamette Partnership- Counting on the Environment

- Development of an integrated ecosystem credit accounting protocol for four ecosystem service markets:
- Water quality trading
- Wetland mitigation
- Salmonid habitat
- Prairie habitat



Ecosystem Services: more than just markets





Using Ecosystem Services as a Framework for Forest Stewardship

A collaboration between the Deschutes National Forest and the USFS Pacific Northwest Research Station

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Deschutes National Forest

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USFS Region 6

Deschutes National Forest Project

- Why is there interest in this ES framework?
- New approach for multiple resource management.
- Public demand for natural resource stewardship.
- Multiple benefits that forests provide to public.
- Integrates commodities including timber and water with less apparent benefits (e.g. climate regulation, soil productivity, carbon sequestration, wetlands, recreation, and wildlife and fisheries habitat).

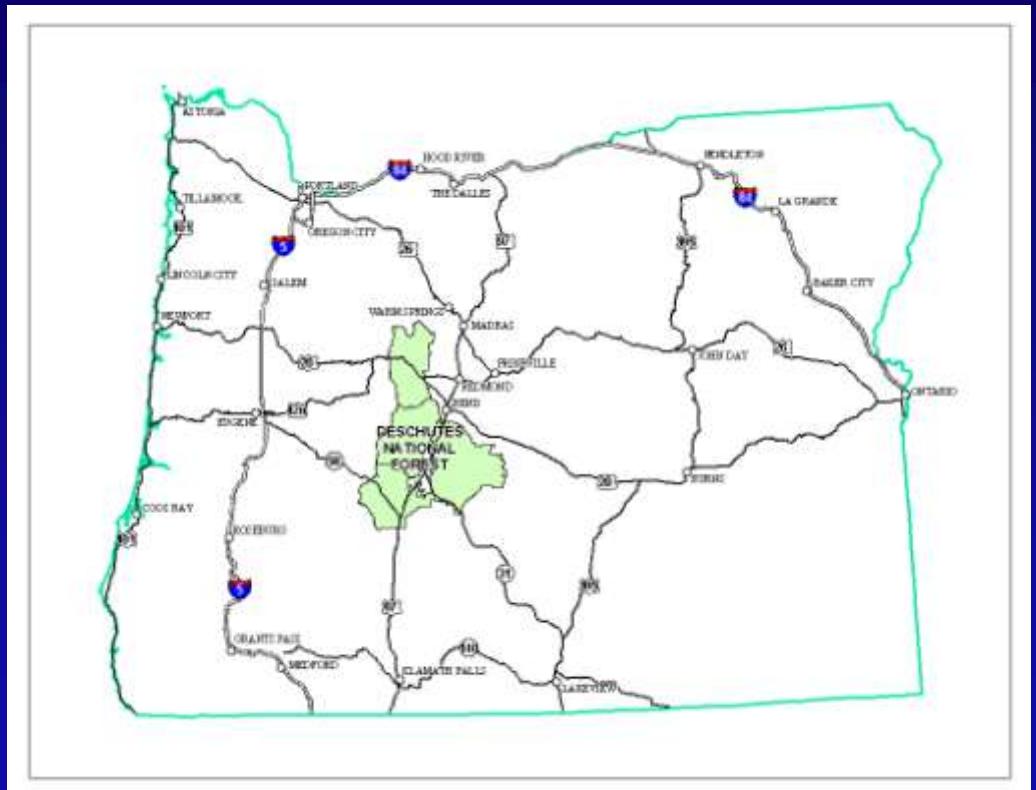
Building a New Language for Management: An Ecosystem Services Framework

Project Goals

- Articulate the values that the forest provides to the public.
- Evaluate effects between management actions and the sustainable delivery of ecosystem services.
- Build ecosystem services-based partnerships to design and fund needed work on the ground.
- Create analytical tools that allow managers to assess project outcomes and tradeoffs in ecosystem services terms, i.e., across resource areas and over longer time scales.

Place-Based Approach

- 1.6 million acres along the east side of the Cascade Range in Central Oregon
- Diverse landscape, multiple climatic gradients
- 350 species of fish and wildlife, including the Northern Spotted Owl
- History of fire suppression
- One of the most heavily-used forests for recreation in the Pacific Northwest

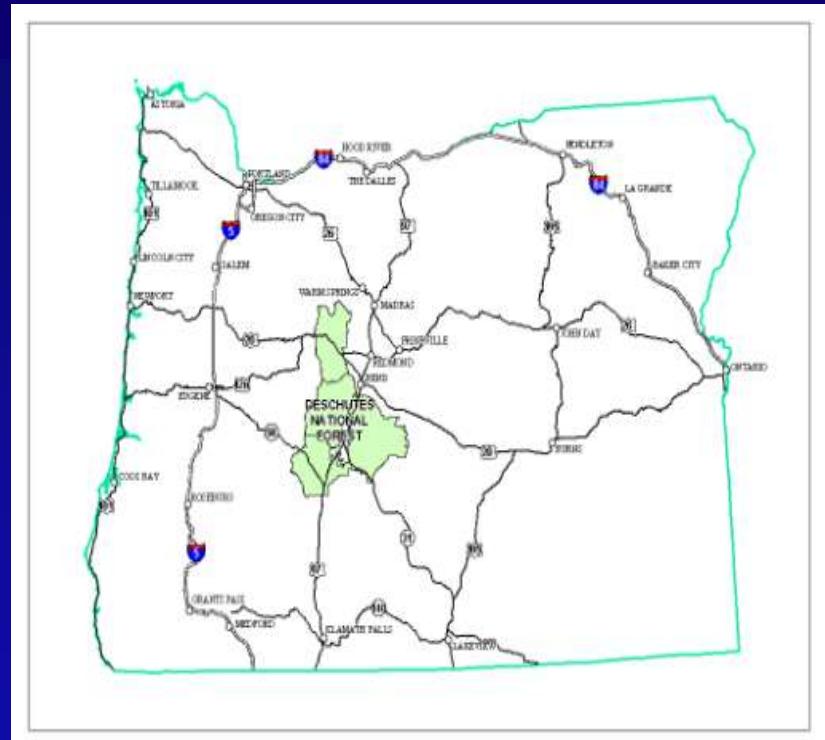


Balancing Objectives



Define ecosystem services in National Forest terms.

ECOSYSTEM SERVICES	
	<h3>Provisioning Services</h3> <p>Food (crops, livestock, wild foods, etc...) Fiber (timber, cotton/hemp/silk, wood fuel) Genetic resources Biochemicals, natural medicines, pharmaceuticals Fresh water</p>
Supporting Services	<p>Air quality regulation Climate regulation (global, regional, and local) Water regulation Erosion regulation Water purification and waste treatment Disease regulation Pest regulation Pollination Natural hazard regulation</p>
	<h3>Cultural Services</h3> <p>Aesthetic values Spiritual and religious values Recreation and ecotourism</p>



Some services can be quantified and monetized, while others are described qualitatively



Drawing connections between Forest Service management and delivery of ecosystem services

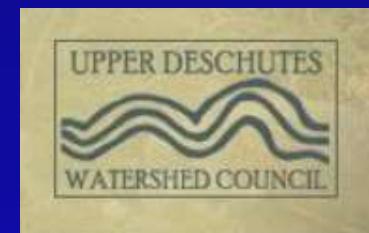
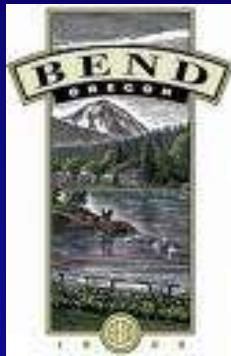
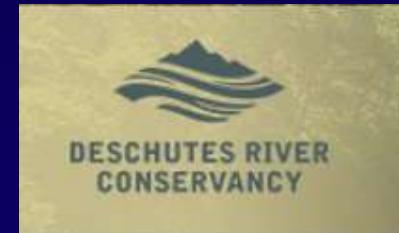
- Restoration of aspen, meadows, marshes, wetlands and stream channels.
- Culvert replacement to facilitate fish passage.
- Tillage treatments to restore soil porosity.
- Road restoration and decommissioning.
- Removal of invasive species.

The diagram illustrates the connection between forest service management actions and the delivery of ecosystem services. A large blue arrow points from the left side of the slide towards a central table. The table is divided into three main sections: Provisioning Services, Regulating Services, and Cultural Services, each listing specific ecological functions.

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Who benefits from
Forest Service
management
actions?

Who shares
common interests
in ecosystem
service provision?



The benefits of an ecosystem services approach to management

- An ***integrated approach*** - allows managers to assess the costs and benefits of projects across resource areas and beyond forest boundaries.
- Creates ***awareness*** about the services provided by public lands and brings attention to under-valued projects.
- Leverages ***partnerships*** and funds to implement work needed on the ground.

Conceptual Framing of Ecosystem Services for Landscape Planning and Decision Support

- Explain connections between ecosystem services and multiple use management.
- Identify how ecosystem services concept is applicable to NF planning and management.
- Propose ways to describe and evaluate ecosystem services to meet needs of NF managers.



Exploring cultural forest ecosystem services

- Focus on public and agency staff perceptions of ecosystem services.
- Develop a typology for measuring cultural services.
- Identify management challenges, knowledge gaps and research needs pertinent to ecosystem services provided by Deschutes NF.



Integrating and Optimizing Ecosystem Services into a Framework for Forest Management

- Develop concepts on integrated ecosystem services modeling.
- Use optimization modeling framework on landscape scale for several different services.



Making an Ecosystem Services Framework Operational

- Concepts might be included in forest plan revisions.
- Offers a new way to frame and present information in the NEPA process.
- Framework is being considered for both the Deschutes & Willamette NF



Collaborative Forest Landscape Restoration Act

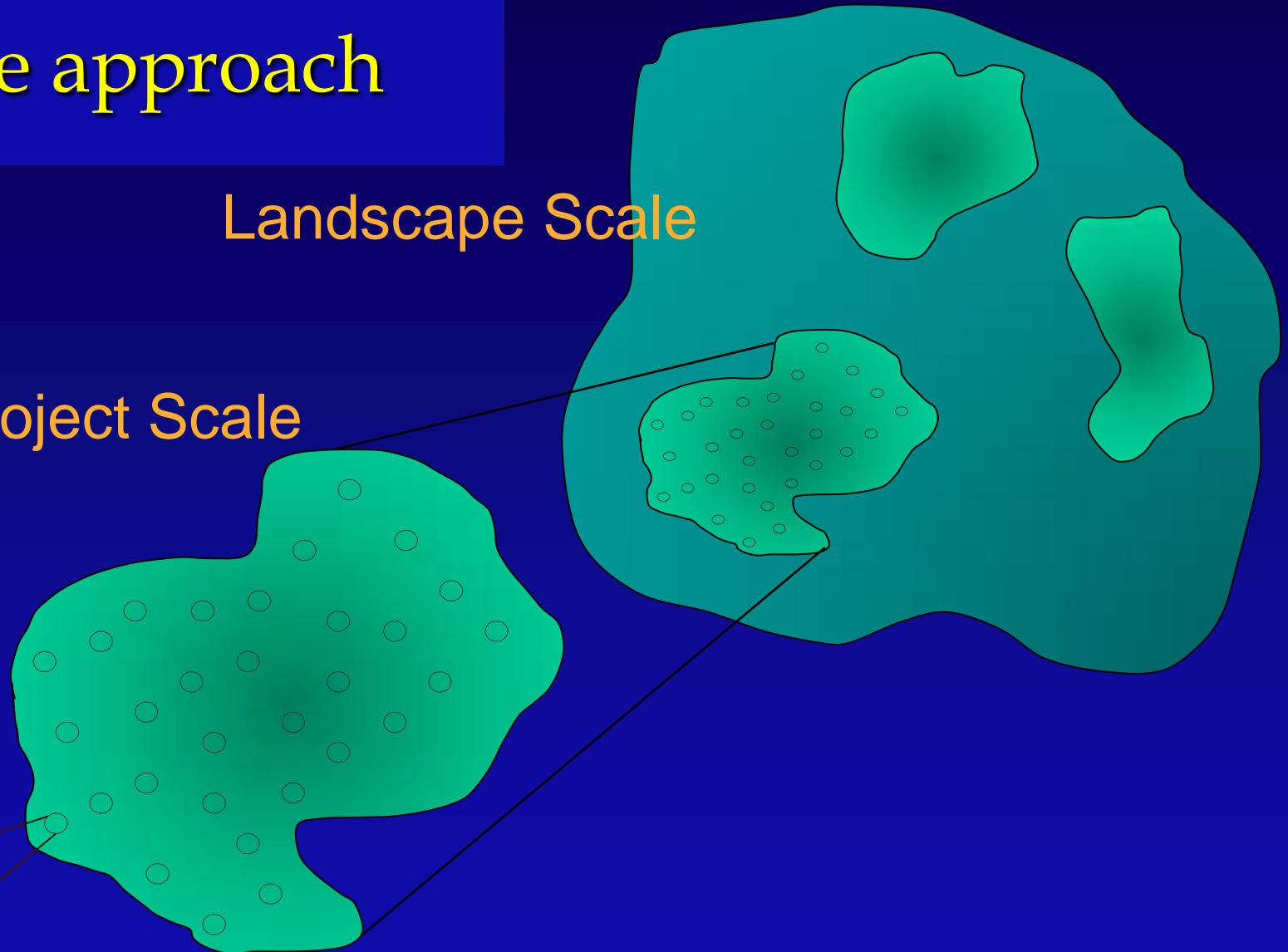
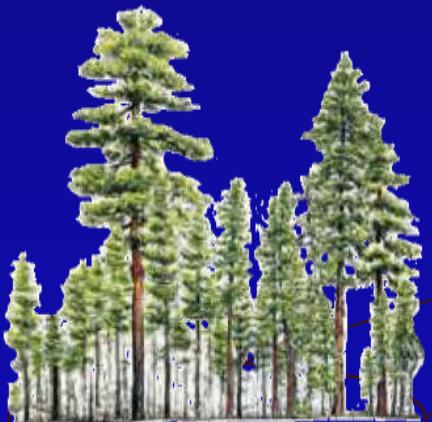
- 2009 Omnibus bill
- to select and fund projects that restore forests at a **landscape-scale** through a process that encourages:
 - collaboration
 - utilization of the best available science
 - local economic development, and
 - leveraging local resources with national and private resources

Multi-scale approach

Landscape Scale

Project Scale

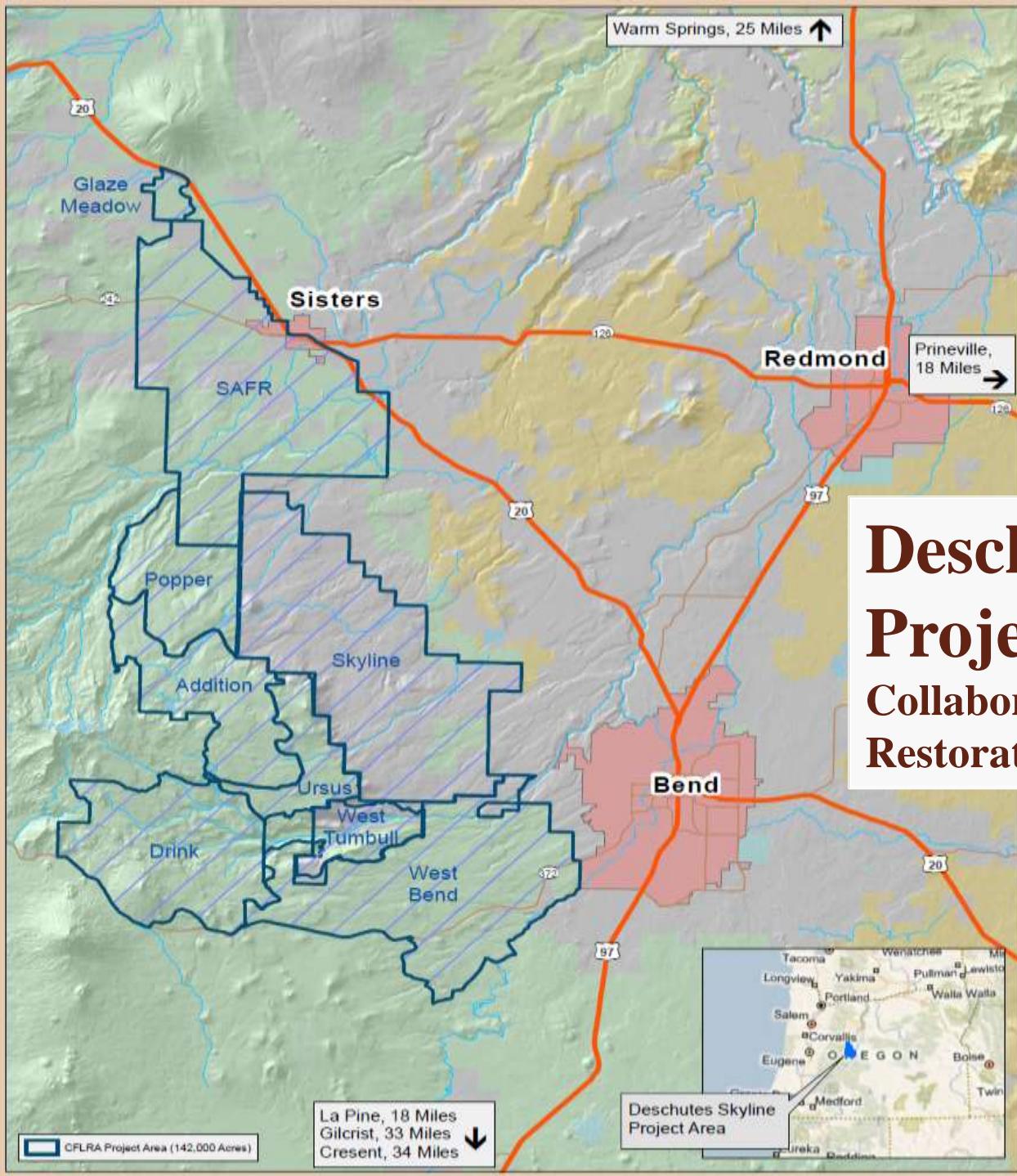
Stand Scale



Deschutes Skyline Proposal Collaborative Forest Landscape Restoration Project



Photo Credit: Aerial Images for Deschutes Land Trust



Deschutes Skyline Project

Collaborative Forest Landscape Restoration Project

Collaboration at Landscape Scales

- Develop landscape goals (proposal)
- Document areas of agreement applicable to multiple projects
- Work on areas of disagreement that we return to project after project
- Measure the trade-offs of stand mitigations to reaching landscape goals



Goals

- Move forest into more resilient condition.
- Support watershed restoration and reintroduction of anadromous fish.
- Reduce risk of high intensity fire in WUI and drinking watersheds.
- Provide forest restoration jobs and fiber for small diameter enterprises.

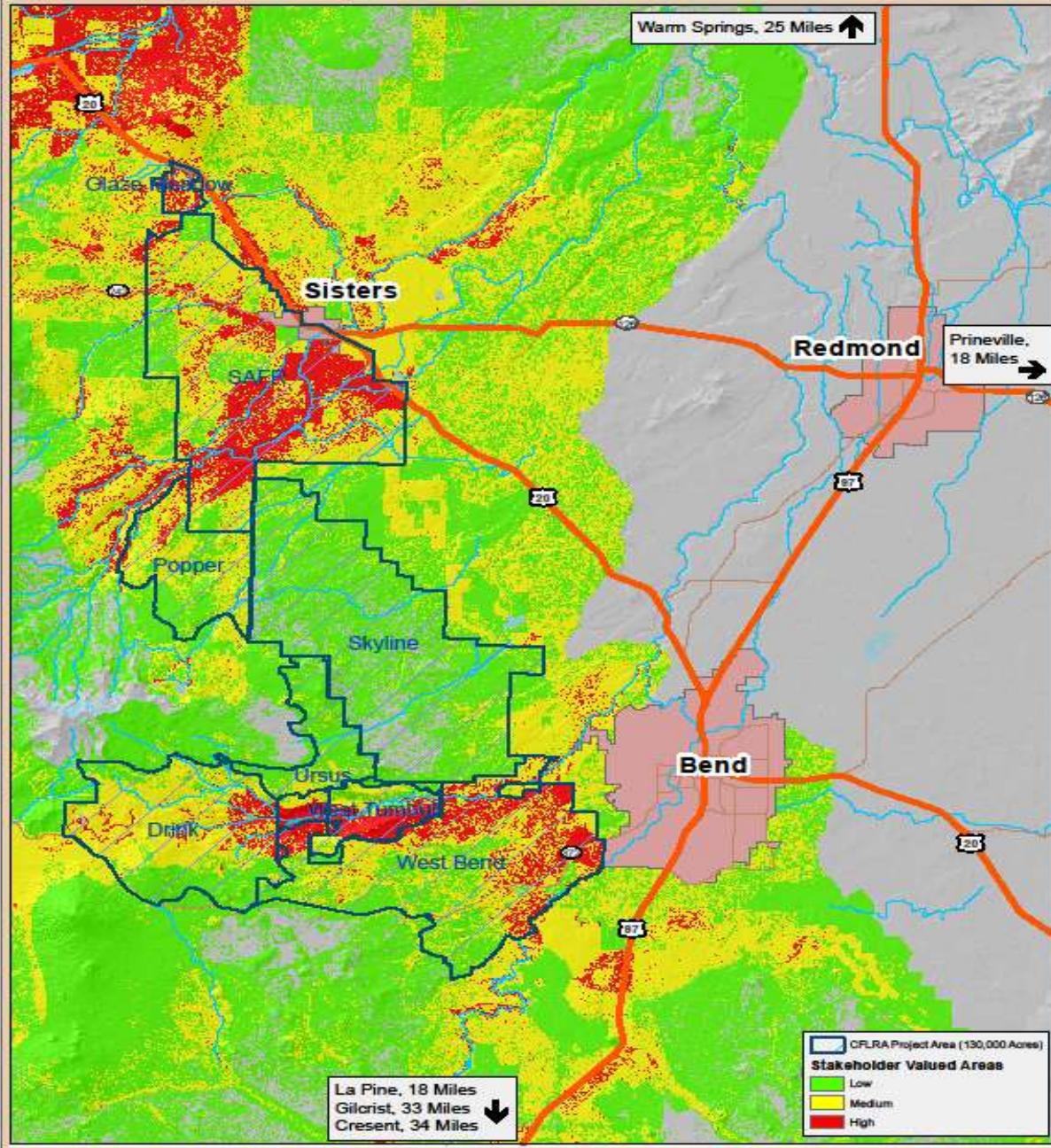


Natural Resource Values and Jobs

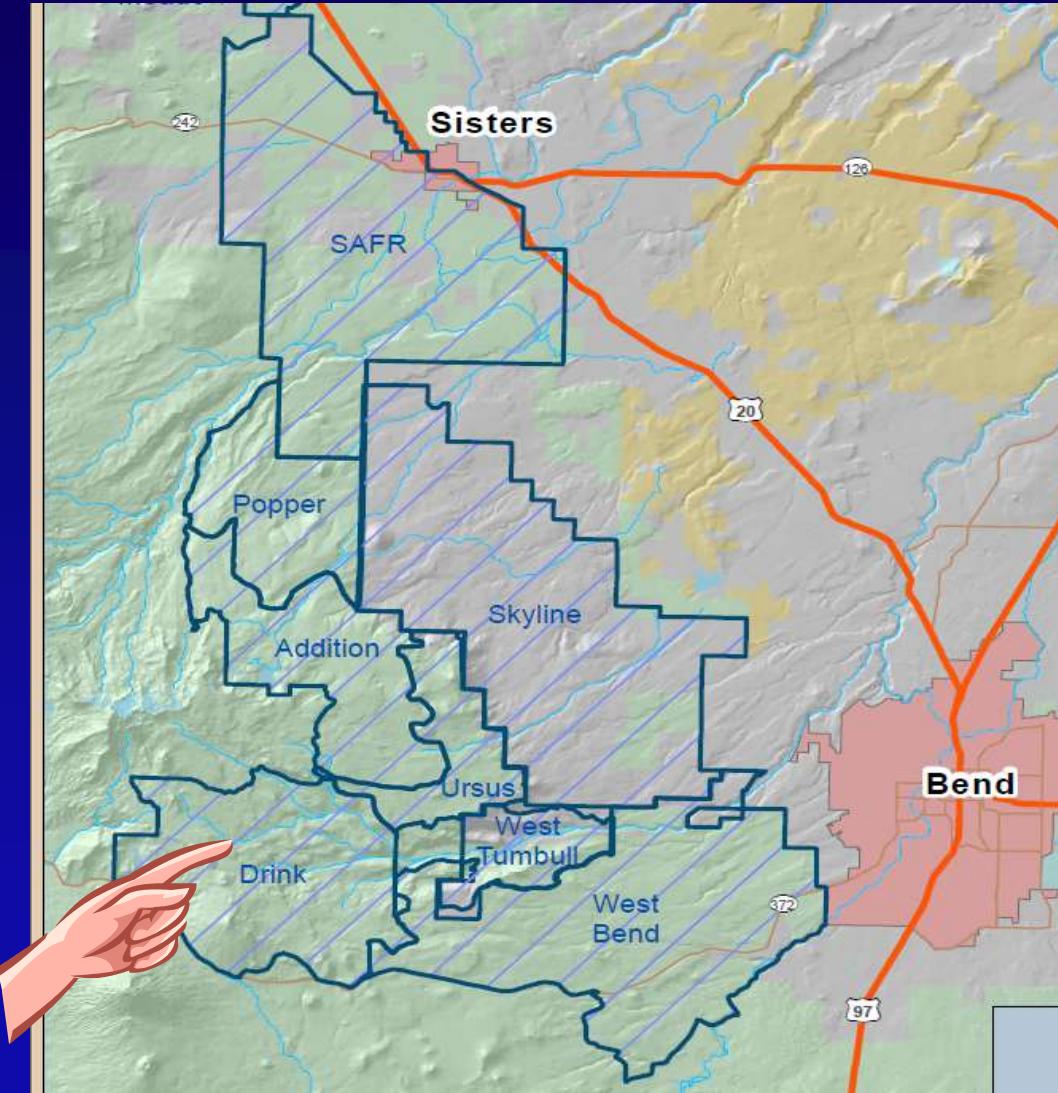
- Drinking water for Bend and Sisters.
- Hiking and biking trails, recreation.
- Forecast of 108 jobs each year over 10 years.
- Small diameter wood products, wood fiber, manufacturing facilities from forest restoration activities.
- Habitat for fish and wildlife, species of concern.



Deschutes Skyline: Stakeholder Valued Areas



Drink Landscape Area



Bend Water Source



Bend Municipal Watershed
1926 USFS Agreement
“preservation of volume & purity”

**Optimization
model of water
quality,
reducing fire
risk, and
spotted owl
habitat in
Drink Area for
Bend
Municipal
Water**



Next Steps

- Concept is being considered on both the Deschutes and Willamette NF.
- PNW Station is working with the NFS and partners to explore ways to apply research and concepts more broadly.
- Workshops planned in region and developing tools for managers to apply concept on the ground.



QUESTIONS

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