

JACKSON DEMONSTRATION STATE FOREST

RESEARCH PLAN

Presented to the Board of Forestry and Fire Protection
January 28, 2015



JACKSON
DEMONSTRATION
STATE FOREST 

Jackson Demonstration State Forest

Research Plan



JDSF Research Committee
December 30, 2014

Purpose of the Research Plan

- Strategic guidance for research and demonstration within feasible context (*i.e.*, 5 years)
- Integrated with Management Plan- addendum
- Identifies 4 Focus Areas
 - High interest areas with relevance to redwood forest management.
 - Priority subject areas for CAL FIRE funded research.

Conceptual Framework

- Demonstration State Forests, including JDSF, are public lands that are mandated by law to provide opportunities to conduct research, demonstration, and education on sustainable forestry practices.
- Policy – conduct innovative demonstrations, experiments, and education in forest management; that timber production will be the primary land use on JDSF, and that recreation is recognized as a secondary but compatible land use on JDSF (Board Policy 0351.2).
- JDSF's unique role as a working public redwood forest provides the overarching demonstration of a sustainably managed 48,562 acre forest.
- This plan identifies the need for varied stand structures explicitly tying research goals more closely to management of the Forest.

Research Plan Development Process

- Complementary to the Management Plan
- Final product following years of input received from the Jackson Advisory Group (JAG), the Board's Research and Science Committee, technical experts, stakeholders and the general public.
- Review and development of this plan
 - Panel of former Board members
 - Expert panel

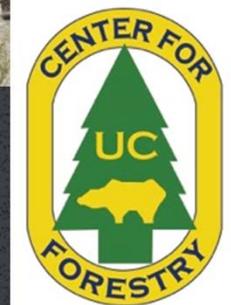
Prior Scoping and Outreach Feedback

Diverse Range of Perspectives

- Small Forest Landowner Field Trip, JDSF, August 2008
- JAG Silviculture - NTMP Oriented Forester Workshop, JDSF, October 2009
- JAG Science Workshop, UC Berkeley, February 2010
- JAG Agency Stakeholder's Meeting (CDFW, NOAA, CGS and others)
- JAG Conservation Groups Meetings, December 2010
 - Regional Save the Redwoods League, Nature Conservancy, and Sierra Club
 - CNPS Dorothy King Young Chapter and Mendocino Land Trust
- Letters from Scientists: Dr. Kevin O'Hara, Gary Nakamura, Dr. Christopher Keys
- Board of Forestry and Fire Protection's Research and Science Committee, April, 2012
- Recommendations regarding the Strategic Research Plan for State Demonstration Forests, specifically JDSF.
- Report of the Board of Forestry And Fire Protection on Forest Management Research, May, 2008
- California Demonstration State Forests : A Strategic Plan for Research and Outreach Report by CAL FIRE, 2003

JDSF Expert Panel

- UC Berkeley Center for Forestry assigned with commissioning of an Expert Panel
- Ensure research plan yields high quality research and outreach results
- Working within the 4 Focus Areas:
 - Literature review to address knowledge gaps
 - Define research needs
 - Summary of promising approaches
 - Sources of funding/support



JDSF Expert Panel – Key Questions

- How to maintain flexibility for emerging or unknown issues
- Are there additional subjects to be considered?
- Review spatial scales needed to carry out Focus Area priorities
- General review of plan, research infrastructure, data collection, research review protocols



JDSF Expert Panel



Kevin O'Hara

- *Prof. of Silviculture*
- *UC Berkeley*
- *Advised on Sustainable Forestry Focus Area*



Martin Ritchie

- *Research Scientist*
- *PSW Research Sta.*
- *Advised on Carbon and Climate Focus Area*



Tim Bean

- *Asst. Prof. of Wildlife*
- *Humboldt State Univ.*
- *Advised on Upland Wildlife and Forest Structure*

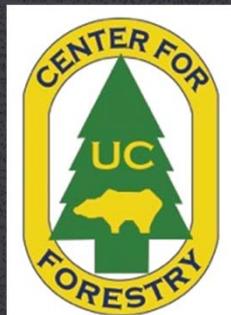


Lee MacDonald

- *Prof. of Hydrology*
- *Colorado State Univ.*
- *Advised on Watershed and Aquatic Focus Area*

General Timeline

- *Spring* – Agreement developed between Cal Fire and UC Center for Forestry
- *June/July* – Invitation of Expert Panel members, background reading and orientation
- *August* – Field Meeting, Define Work Product, Assignments
- *August – October* – Writing assignments, frame Focus Areas
- *October – November* – Coordination of Focus Areas, general recommendations
- *December* – Finalize draft plan, input of Jackson Advisory Group



The expert panel identified the following as basic forest management requirements for this Research Plan

- The management of JDSF should be no more restrictive than the regulations that govern forest practices in the region. The baseline for management should be the California Forest Practice Rules.
- The California Forest Practice Rules should be explicitly tested on JDSF. In order to test hypotheses, one may need to go beyond the limitations of the Forest Practice Rules.
- Projects should demonstrate existing and new methodology and technology (e.g., silvicultural methods, logging systems, vegetation management, road designs, etc.).
- Communication regarding proposed physical changes within an existing research project footprint is needed before changes occur.
- Long-term stability, commitment and research opportunity is key to successful implementation of research projects on JDSF.

Public Feedback

Jackson Advisory Group Meeting December 12, 2014

- Outreach to redwood region foresters regarding research needs
- Comprehensive outreach program outline with associated budget (includes outreach to Foresters)
- Identify tools for outreach (e.g., social media, video clips, stakeholder referrals)
- Infrastructure – baseline top priority for first year funding (e.g., LiDAR, weather station)
- Annual research/demonstration/monitoring update provided in new evolving media format that is shared with public

Focus Areas

- 1. Sustainable forestry*
- 2. Watershed science, restoration and aquatic habitat recovery*
- 3. Upland terrestrial habitat and forest structural relationships*
- 4. Managed redwood forests' climate change adaptations and role in carbon sequestration*

Desired Future Conditions

Stand Level Forest Structure Condition	Percent of Forest Acres
Late seral stands or old-growth groves	15-25
Older forest structure	10-20
Mature and large trees	5-15
Mixed age and size	30-40
Regeneration and pole-size younger trees	10-20
No specific structure assigned	0-10

Focus Area 1

Sustainable Forestry

- Thinning - Productivity, Growth and Yield
- Regeneration Methods
- Forest Operations
- Redwood Sprouting & Redwood Genetics and Clonal Patterns
- Fire and Disturbance Ecology



Forest Conditions and Scale for Sustainable Forestry

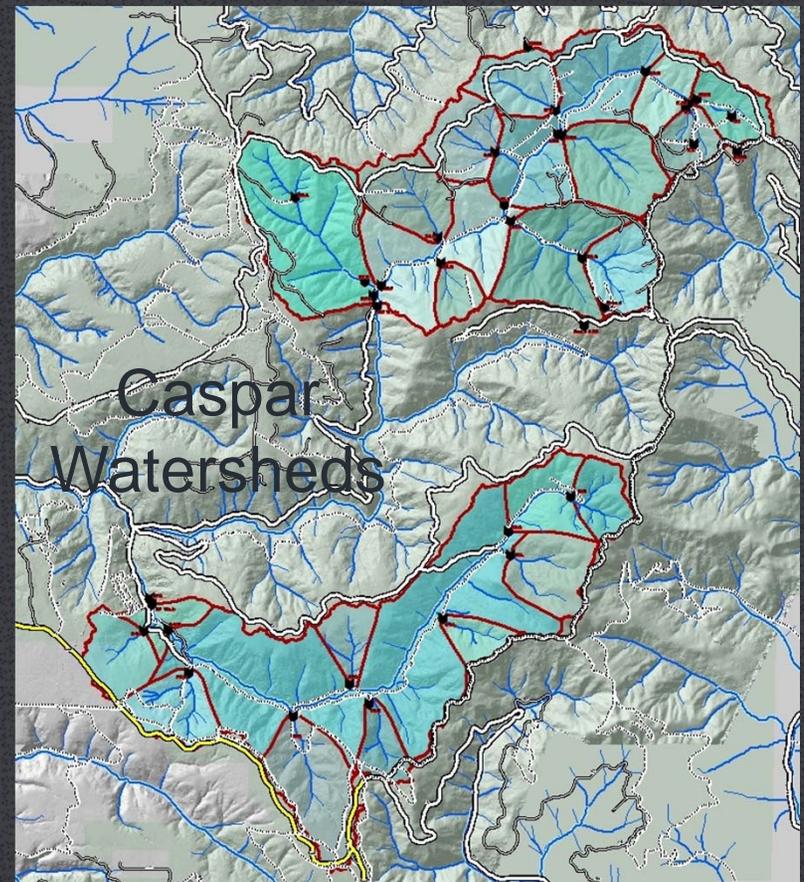
- Smallest scale - *individual stand or tree*
- Large - *management unit or watershed*
- Chronosequence – *Age of stand or time since disturbance/ harvest*
- Replication across
 - *Topographic position*
 - *Aspect*
 - *Soil type*
 - *Coastal to Inland Gradient*



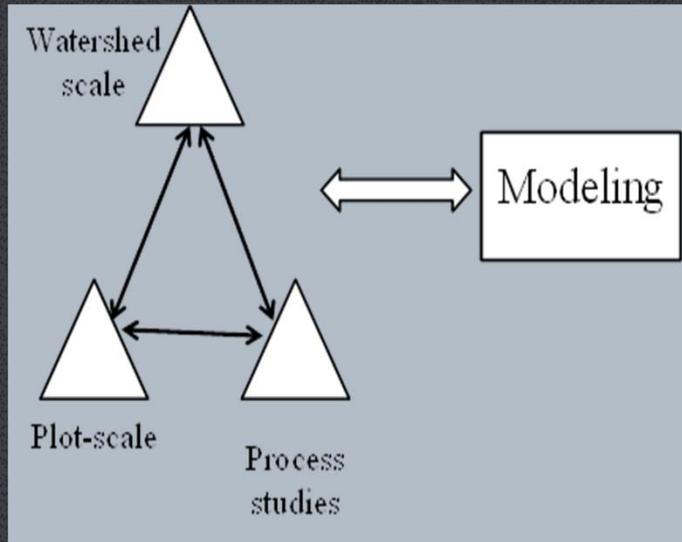
Focus Area 2

Watershed Science, Restoration and Aquatic Habitat Recovery

- Hillslope Sediment Production, Sediment Storage, and Sediment Delivery
- Cumulative Effects
- Water Temperature
- Watershed Restoration



Forest Conditions and Scale for Watershed Science, Restoration and Aquatic Habitat Recovery



Conceptual view of how different types and scales of studies are needed for an integrated understanding of watershed response and to guide models and management.

- **Plot**
- **Process**

Watershed - established relationships

Unmanaged watersheds – valuable, regionally few pristine examples

Paired Watershed - robust design *i.e.*, Treated vs Control

Calibration Period - need to sample multiple years because weather varies annually.

Focus Area 3

Upland Terrestrial Habitat and Forest Structural Relationships

- Maintenance of connectivity
- Maintenance of stand structural complexity
- Maintenance of landscape heterogeneity
- Maintenance of the integrity of aquatic systems by sustaining hydrological and geomorphological processes
- Use of knowledge of natural disturbance regimes in natural forests
- Impacts of wildlife on habitat



Forest Conditions and Scale for Upland Terrestrial Habitat and Forest Structural Relationships

- Minimum size: snag or small gap
- Topographic position *e.g.*, proximity to watercourse or campground
- Stand or subwatershed
- Forest wide or larger
- Older Forest Structure Zone provides unique opportunities
- Other part of forest has structure relevant to region

Focus Area 4

Managed Redwood Forests' Climate Change Adaptations and Role in Carbon Sequestration

Climate Change Adaption

Temperatures may:

- decrease with forecast increases in upwelling
- or increase with recent observed decreases in the degree of upwelling

Best approach is to monitor, observe and document.

Carbon Sequestration

Monitoring to Address both Climate Change Adaptation and Carbon Sequestration

- Existing permanent plot inventory system
- LiDAR - needs tree-stand scale calibration
- Regional cooperation

Forest Conditions and Scale for Managed Redwood Forests' Climate Change Adaptations and Role in Carbon Sequestration

- Less scale dependent than other Focus Areas
- Range of stand structures
- East to west gradient
- Stand level
- Forest level needs to include riparian and other less managed areas
- Sampling unique areas appropriately

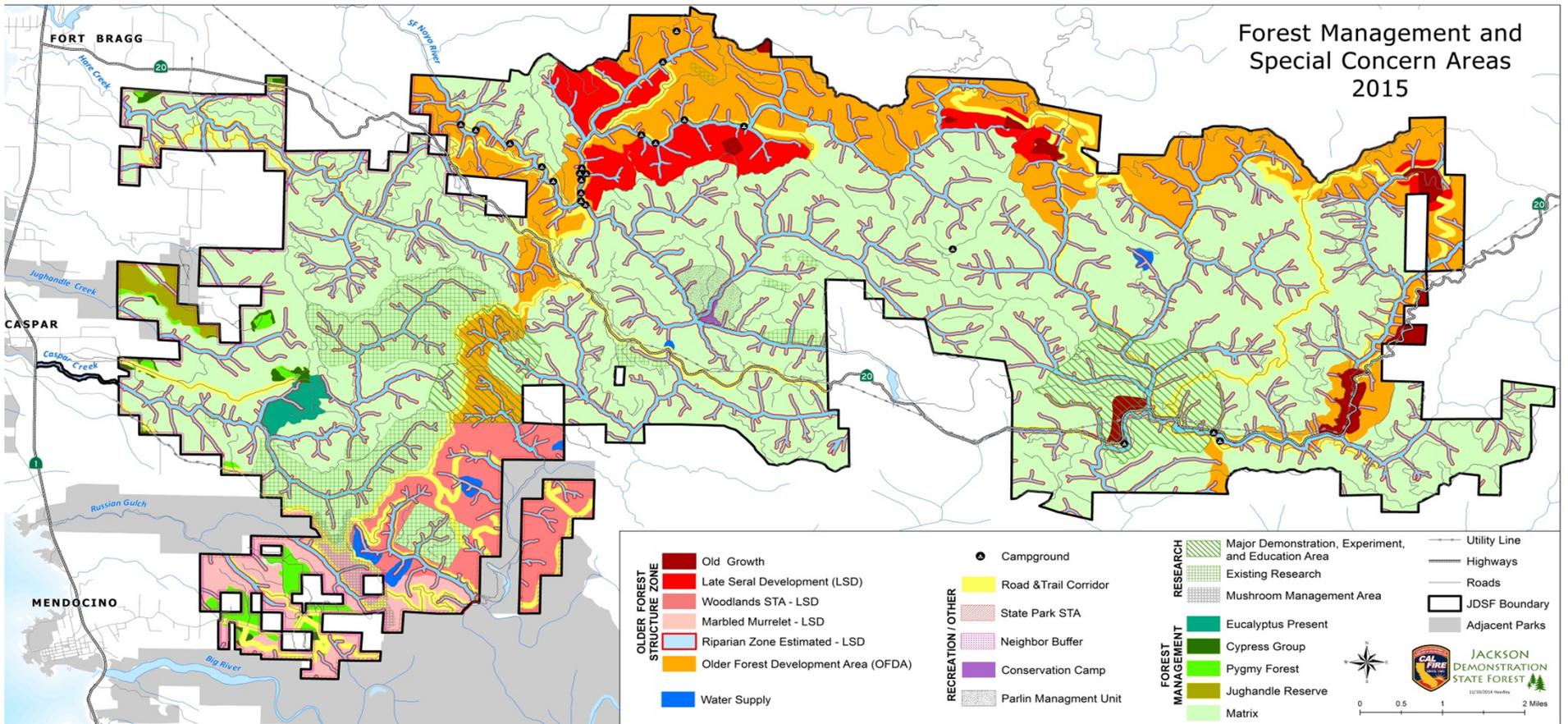


Table 3. JDSF 2015 Landscape Allocations.

Major Allocation	Specific Allocation	Acres	Subtotal
RESERVES			707
	Jughandle Administrative Pygmy Reserve	246	
	Old Growth Groves	461	
NON TIMBER MANAGEMENT AREAS			761
	Pygmy Forest	494	
	Cypress Groups	163	
	Power Line Right-of-Way	72	
	Conservation Camps	32	
LATE SERAL DEVELOPMENT AREAS			10,877
	Riparian Zone (WLPZ)	7,339	
	Woodlands Special Treatment Area	1,280	
	Marbled Murrelet	859	
	Late Seral Development	1,400	
OLDER FOREST DEVELOPMENT AREA			5,631
SPECIAL CONCERN AREAS			6,796
	Neighbor Buffer	409	
	Road and Trail Corridor	3,071	
	Domestic Water Supply	137	
	State Park Special Treatment Area	329	
	Research Areas (existing)	2,291	
	Campground Buffer	23	
	Eucalyptus Infestation Area	203	
	Parlin Fork Management Area	220	
MATRIX	Matrix		24,016
TOTAL			48,674

Research Administration and Funding

- Administrative process outlined.
- Key infrastructure needs identified.
- All projects to be reviewed.
- Externally funded projects will be allowed as they are consistent with JDSF goals and objectives.
- No specific Focus Area will be favored over another.

Partnerships

- Continue to improve and build upon
- Redwood Region Research Consortium
- Preliminary list of Partnerships
 - Colleges/Universities
 - Local, State and Federal Agencies
 - Cooperatives
 - Watershed Groups and Non-governmental organizations (NGOs)
 - Redwood region forest timberland managers
 - Board of Forestry and Fire Protection committees and working groups. (e.g., Effectiveness Monitoring Committee)

Outreach

- 1) Jackson Advisory Group (JAG)
- 2) Natural Resource Professionals/Organizations
- 3) Colleges/Universities
- 4) Forest Landowners
- 5) Forest Visitors/User Groups



Education

School field trips



Demonstration

Provides examples,
explanations,
feasibility tests



Demonstration of cleaning logging equipment to remove invasive weed seed

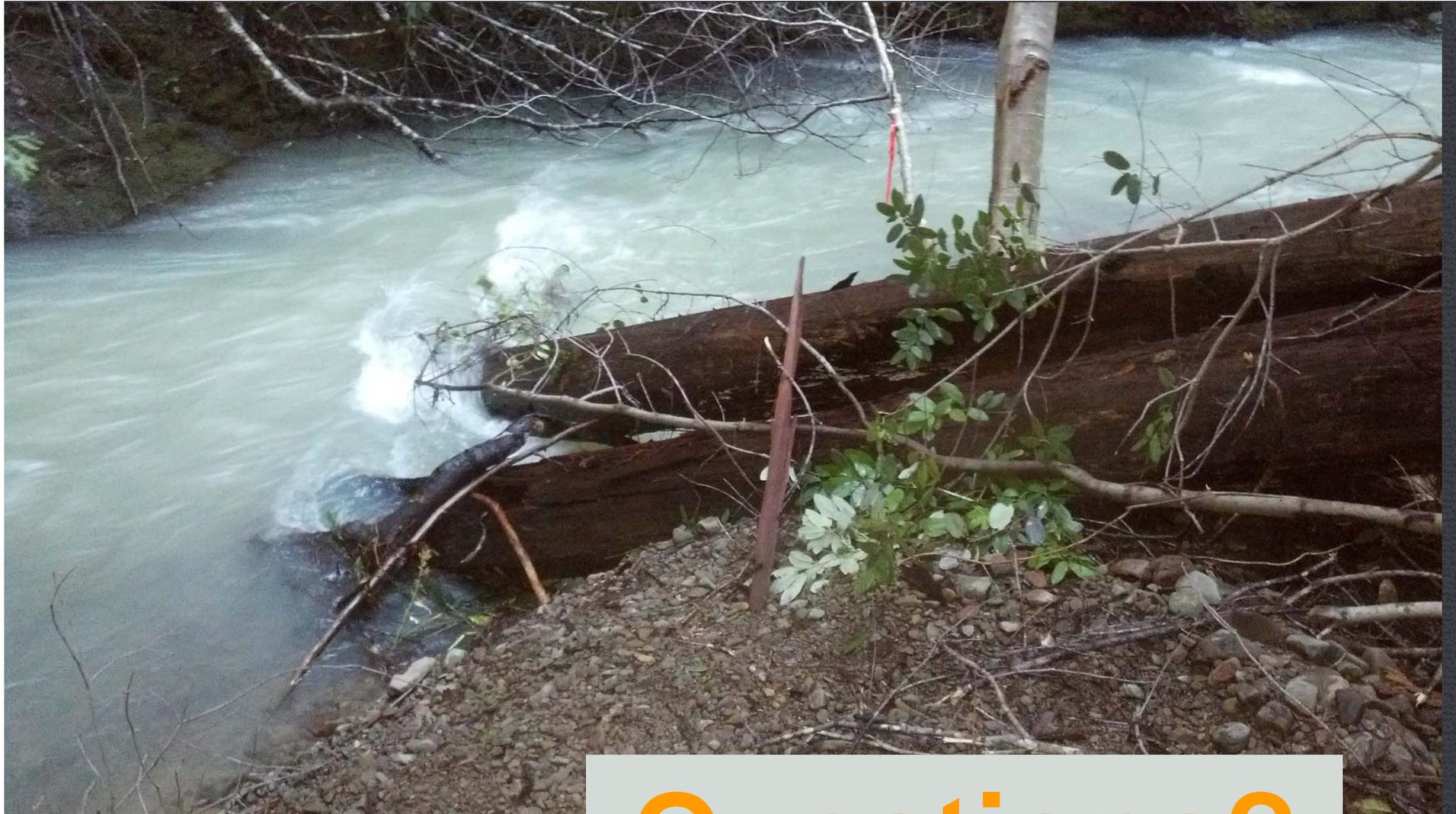
Monitoring

Framework for publishable results
Integrate with current and future research projects

Data

Priorities
Collection/Storage
Accessibility





Questions?



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