

# A Look at Forest Health through Different Lenses

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# Lenses:

- Ecological
- Social-economic
- Political



# Ecological

- Ecosystem functioning within a range of variability (“historic range of variability” or “range of natural variability”).
- Disturbance driven: Fires, insects, disease, wind, and other natural disturbance agents occur.
- In some instances, large wildfires and insect infestations are the natural processes.
- Climate Change.

# Social-economic

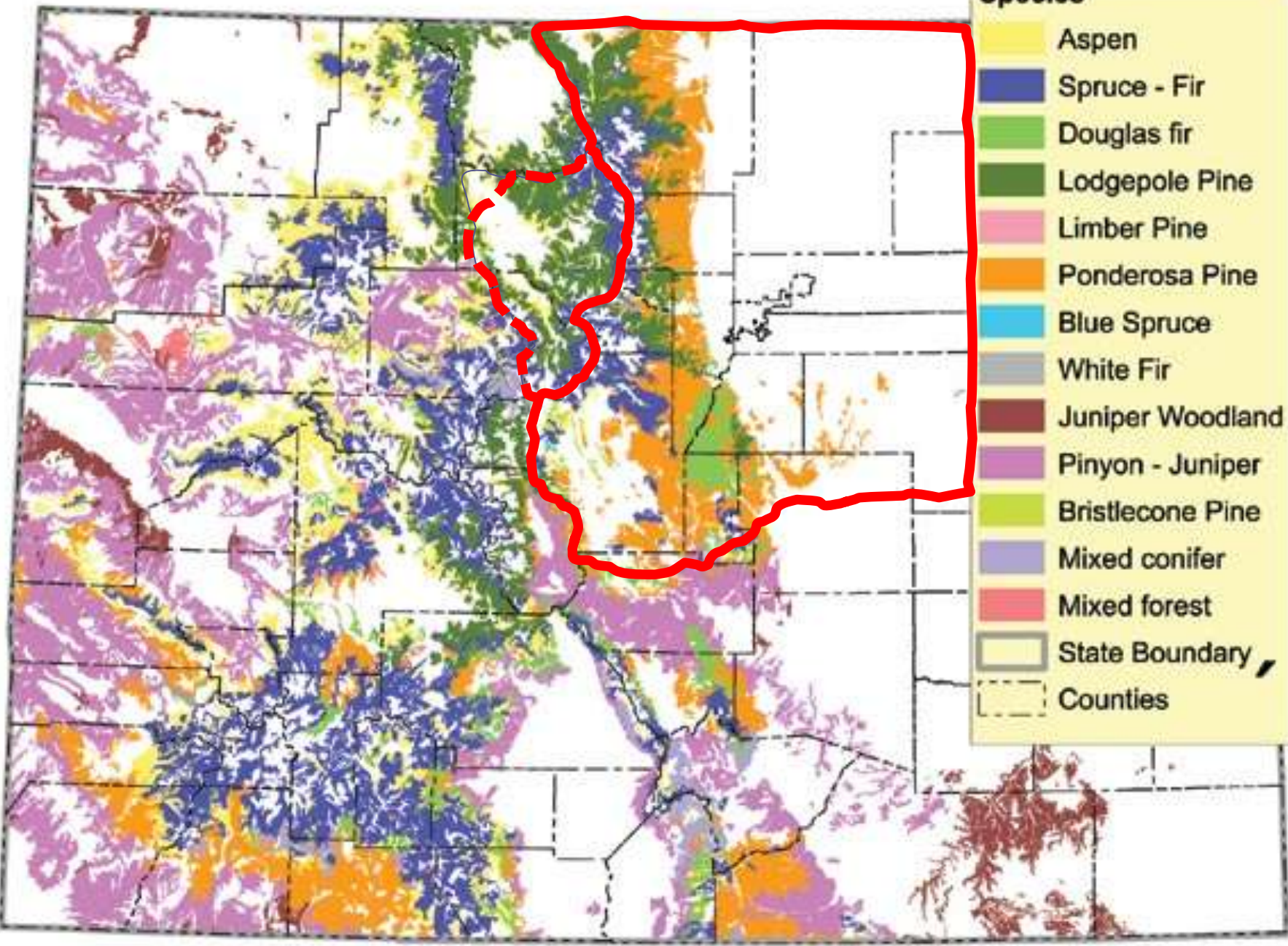
- “Natural” is in the eye of the beholder.
- Life and property protection against wildfires and large areas of standing dead trees.
- Importance of “green” forests for recreation, tourism and “amenity” communities.
- Sustaining a wood industry to provide stewardship services depends on green, living forests.
- Protecting watersheds for multiple objectives.

# Political

- Management decision-making affected by political, administrative and legal constraints.
- Multiple stakeholders involved in and affected by policy decisions.
- Highly contentious, emotional and symbolic issue.
- Limited public funds to address all needs.
- Tension between short term political discourse of the day, and long term natural processes.

**Species**

- Aspen
- Spruce - Fir
- Douglas fir
- Lodgepole Pine
- Limber Pine
- Ponderosa Pine
- Blue Spruce
- White Fir
- Juniper Woodland
- Pinyon - Juniper
- Bristlecone Pine
- Mixed conifer
- Mixed forest
- State Boundary
- Counties



**Alpine tundra**

**Forest-alpine ecotone**

11,500

11,000

10,000

9,000

8000

7000

6000

5000

**Subalpine forest**

Spruce/fir forest, lodgepole pine forest  
9000-11,500'

**Upper Montane**

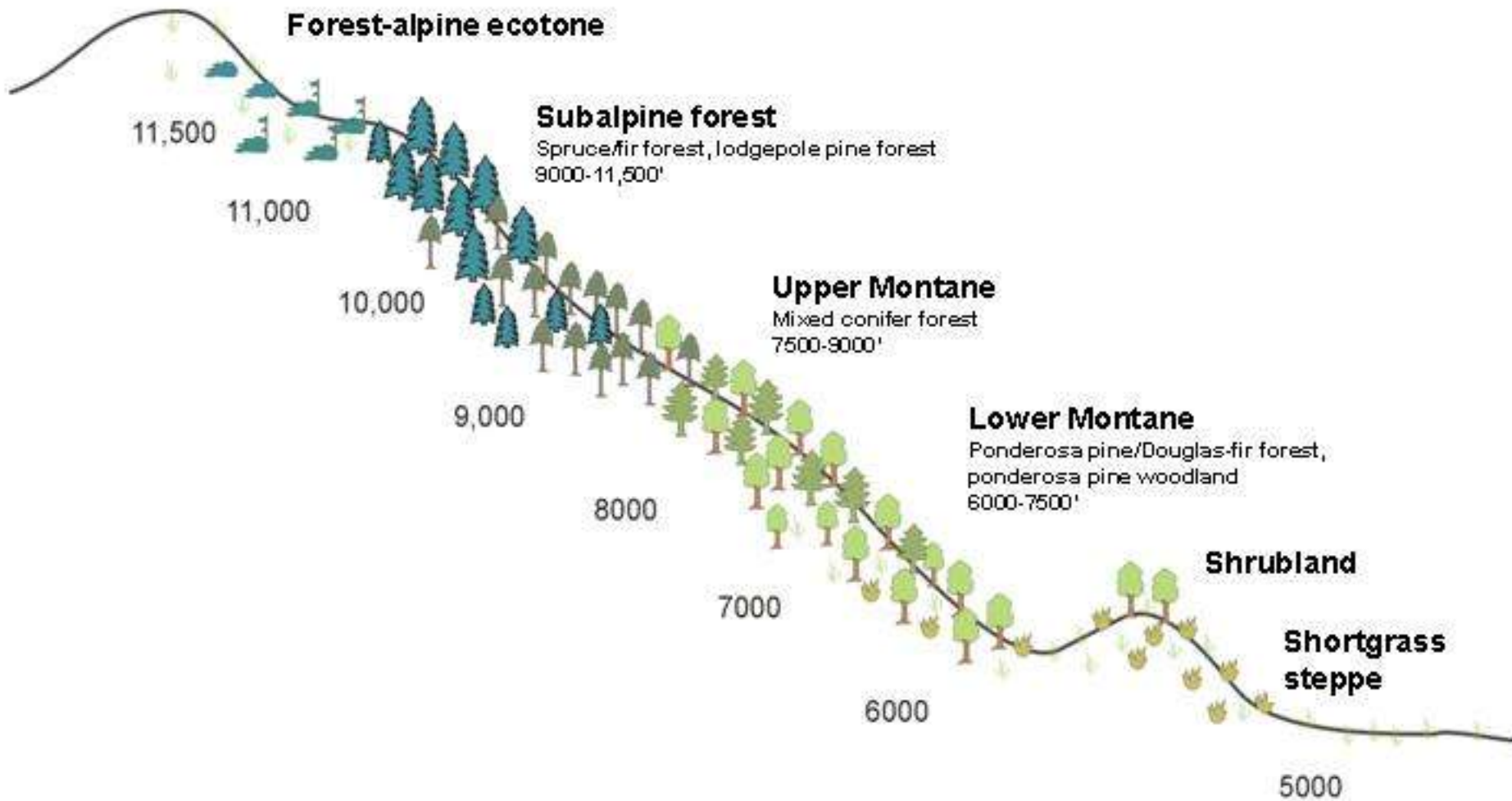
Mixed conifer forest  
7500-9000'

**Lower Montane**

Ponderosa pine/Douglas-fir forest,  
ponderosa pine woodland  
6000-7500'

**Shrubland**

**Shortgrass  
steppe**



# Lower montane: ecology

- Ponderosa pine-dominated
- Historically primarily affected by frequent, low-intensity fires, endemic insects & disease agents
- Clumps of trees interspersed with large openings
- Fire suppression and historic forest uses – higher tree density, changing species composition
- Current risks: uncharacteristically large, severe wildfires

# Lower montane: social-economic

- Population – wildland-urban interface and intermix: communities and livelihoods.
- Domestic and agricultural water supply and storage.
- High and diverse recreation uses.
- Municipal and county tax base.
- Road and electricity infrastructure.
- Broad consensus on the need for restoration and wildfire risk reduction.
- Lack of wood utilization opportunities – reliance on public funds.
- Emerging opportunities: small-scale industries and bioenergy applications.

# Upper montane: ecology

- Mixed-conifer forests – Ponderosa pine, Douglas-fir and some aspen.
- Historically affected by mixed-frequency and -severity wildfires, insect outbreaks.
- Patchwork of ages and species of trees and openings.
- Fire suppression may have removed intermediate-sized wildfires that created patchwork.
- Current risks: may be more susceptible to uncharacteristic wildfires in some places – lots of unknowns; showing susceptibility to bark beetle outbreak but intensity is unknown.

# Upper montane: social-economic

- Population – wildland-urban interface and intermix.
- Domestic and agricultural water supply and storage.
- High and diverse recreation uses.
- Municipal and county tax base.
- Road and electricity infrastructure.
- Agreement to treat around homes, communities and infrastructure, but not “backcountry”.

# Subalpine, forest-alpine and alpine: ecology

- Mix of lodgepole pine, spruce, aspen and subalpine fir.
- Historically affected by infrequent, mixed-severity and stand replacing fires, insect outbreaks.
- Dynamic patchwork of ages and species of trees and openings.
- Fire suppression and past forest uses have unlikely affected natural disturbance regimes.
- Current risks: low probability but high consequence wildfires

# Subalpine, forest-alpine and alpine: social-economic

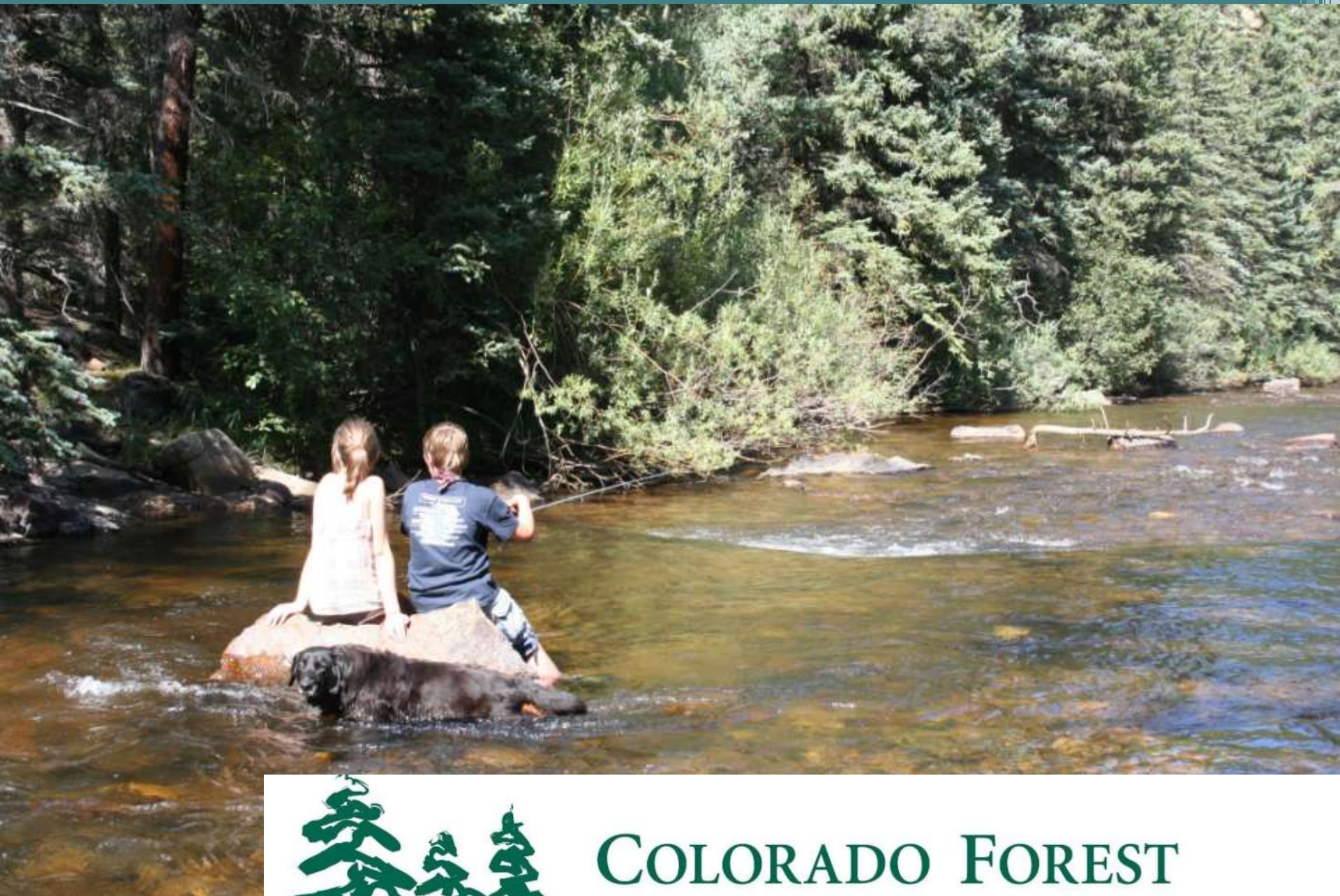
- Public lands
- Domestic and agricultural water supply
- Recreation
- Road and electricity infrastructure
- Agreement to treat around homes, communities and infrastructure, but not “backcountry”

# Political

- Multi-pronged approach – emergency hazard trees, collaborative partnerships like the Front Range Roundtable and the Colorado Bark Beetle Cooperative.
- Keeping policy-makers attention focused on the issues over decades.
- Multiple stakeholders involved in and affected by policy decisions.
- Broad agreement exists, primarily to protect life, communities and infrastructure.
- What do in the “backcountry” – short-term vs. long-term benefits and risks in the face of uncertainty.
- When and where do ecological goals trump social and economic values? When and where do social and economic goals trump ecological values?

# CFRI Contribution

- Complexity: provide collaborative support.
- E.g. There is increasing interest in watershed restoration, creates multiple benefits for multiple stakeholders over the long run.
- Science Delivery and Evidence-based Approaches, e.g. monitoring.
- Tools for adaptive management through collaboration and monitoring.



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