

Southern California Climate Adaptation Project

Focal Resources Workshop

November 18, 2014

San Dimas Technology & Development Center

San Dimas, CA



EcoAdapt



Photos: J. Armstrong



1. State of Adaptation Program

finding out how people are fishing

2. Climate Adaptation Knowledge Exchange

(CAKE; www.cakex.org)

connecting fishermen

3. Awareness to Action

teaching others to fish

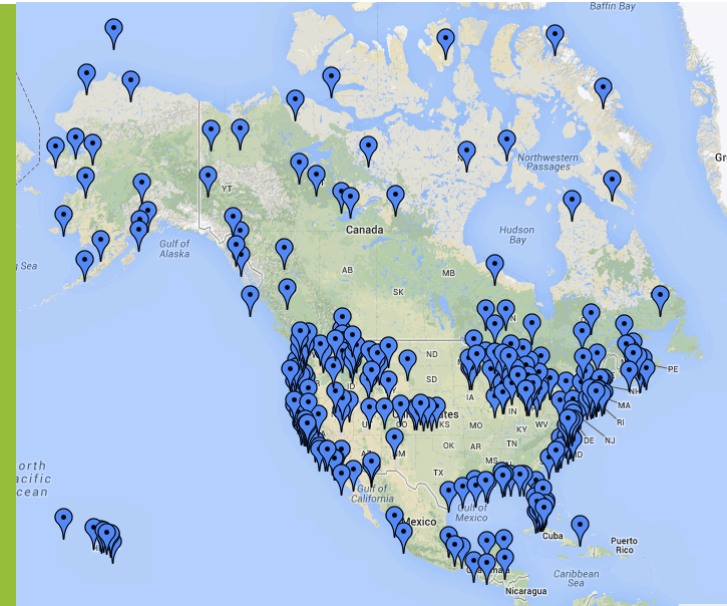
4. Adaptation Consultation

fishing for you



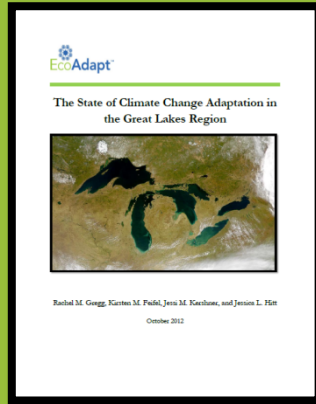
State of Adaptation

- Survey practitioners and assess adaptation efforts
- Develop case studies
- Synthesize trends, opportunities, and challenges
- Connect people to case studies, synthesis reports, and other resources to share lessons learned and build the adaptation field



“Climate change can be controversial but adaptation is something we all should be engaged in. It behooves each of us to consider the next steps on how to deal with this issue. [This] effort is a call to action to overcome the stubbornness and ennui towards climate change.”

- Louisiana Coastal Manager



www.CAKEx.org

Why Make a CAKE?

- Everything we do is vulnerable to climate change but few people know what to do about it
- Adaptation is a rapidly developing field
- We are spending more time **reinventing**, not enough **innovating**



Sponsors, Partners, and

Contributors: Kresge Foundation, Wilburforce Foundation, Data Basin, EBM Tools Network, Model Forest Policy Program, Northern Institute of Applied Climate Science, NCAnet, Integrated Data Management Network, USGS, and many more!

Why Join CAKE?

- **Explore** projects, people, and resources on the map
 - Map, text, and keyword searches
- **Publish and promote** your work on climate adaptation
- **Get advice** from adaptation experts
- **Request information** from your colleagues (advice, connections, training)



Awareness to Action

➤ Bring partners from awareness about climate impacts and adaptation to implementation

- Federal and state agencies
- Tribes
- Conservation organizations
- Community groups
- Foundations

EcoAdapt's Climate Vulnerability Assessment Quick Guide

V = E + S - AC

V = Vulnerability to climate change
E = Exposure is how much change occurs, including changes outside the project area that affect the target (e.g. loss of glaciers loss of water supply)
S = Sensitivity is how much the target is affected by a given amount of change
AC = Adaptive Capacity is the ability of an individual, community, or ecosystem to adapt to change; this reflects intrinsic traits (behavioral flexibility that allows individuals to respond to new situations) and extrinsic factors (e.g. degree of habitat fragmentation)

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graph TD; Exposure[Exposure] --> PotentialImpact[Potential Impact]; Sensitivity[Sensitivity] --> PotentialImpact; PotentialImpact --> Vulnerability[Vulnerability]; AdaptiveCapacity[Adaptive Capacity] --> Vulnerability; PotentialImpact --- Note[Potential Impact = the result of the interaction between exposure and sensitivity];
```

From Gidd and Stoltz 2011

Your vulnerability assessment goal affects how you do the assessment (e.g. audience, target, spatial and temporal scale, products). Some possible targets/ objectives of a vulnerability assessment include:

1. Informing decisions about whether or not to list a species under the Endangered Species Act
2. Setting acquisition priorities for an agency, land trust, or similar organization
3. Developing a management plan for a park, reserve, or other management unit
4. Deciding which management measures to use for a restoration project



EcoAdapt's Climate Adaptation Starter Kit

EcoAdapt's Climate Adaptation Starter Kit includes our top list of resources, tools, and adaptation examples to get you started. It is not intended to be fully comprehensive, but to provide a compilation of what we have found most practical and useful for planning, developing, and implementing climate adaptation.

The Climate Adaptation Starter Kit is divided into six parts:

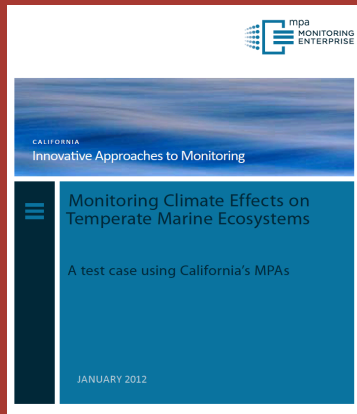
1. **Vulnerability Assessment** - resources for climate change vulnerability, risk and impact assessment.
2. **Adaptation Frameworks** - processes to guide the development of climate change adaptation strategies.
3. **Adaptation Portals and Tools** - a sampling of climate adaptation portals, tools, and resources.
4. **Examples of Adaptation Projects** - climate change adaptation case studies.
5. **Getting Started** - where to begin, working with what you already have, and avoiding maladaptation.
6. **Evaluation and Monitoring** - on how adaptation programs are succeeding.



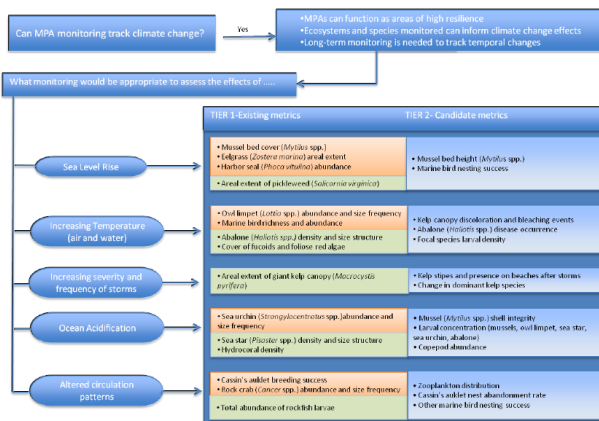
Adaptation Consultation

- Designed to help partners at any stage in the planning process
- Specifically tailored to each partners' needs – vulnerability assessments, adaptation planning, implementation support, etc.

Monitoring



Climate Change and MPA Monitoring

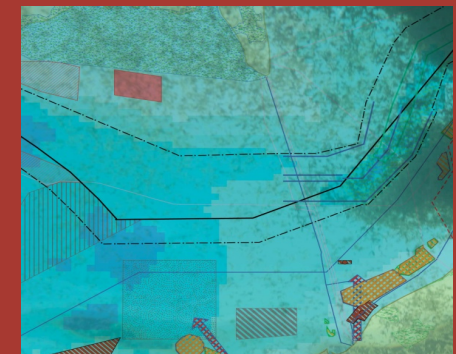
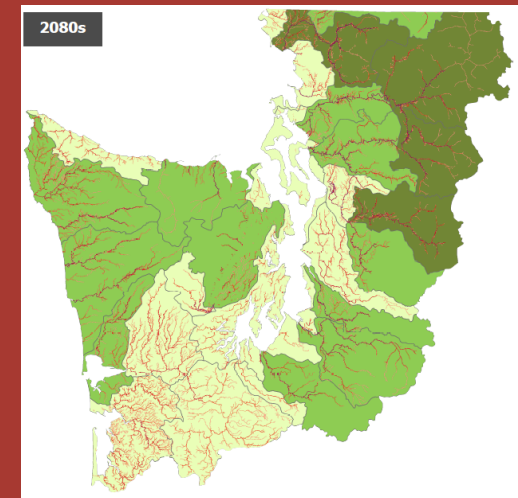


Adaptation Marketplace



www.adaptationmarketplace.org

Mapping and spatial tools



Project History

- **Fall 2012:** EcoAdapt & partners start Sierra Nevada project with funding from California LCC
- **Spring 2013:** EcoAdapt leads vulnerability & adaptation workshops
- **Winter 2014:** EcoAdapt releases vulnerability and adaptation reports
- **Summer 2014:** EcoAdapt & partners awarded funds to start So Cal project



California Landscape Conservation Cooperative

- A management-science partnership that facilitates complex, multi-sector conversations about prioritizing limited resources under rapidly changing ecological conditions





Project Need

- Feedback from Climate Scorecard
- Forest Plan revision
 - Monitoring program transition
- Project planning and NEPA
- Opportunities outside FS
- Tap into outside expertise

The Forest Service Climate Change Performance Scorecard, 2011 (version 1.3) To be completed annually by each National Forest or Grassland (Unit).		
Scorecard Element	Unit Name	Yes/No
Organizational Capacity		
1. Employee Education	Are all employees provided with training on the basics of climate change, impacts on forests and grasslands, and the Forest Service response? Are resource specialists made aware of the potential contribution of their own work to climate change response?	
2. Designated Climate Change Coordinators	Is at least one employee assigned to coordinate climate change activities and be a resource for climate change questions and issues? Is this employee provided with the training, time, and resources to make his/her assignment successful?	
3. Program Guidance	Does the Unit have written guidance for progressively integrating climate change considerations and activities into Unit-level operations?	
Engagement		
4. Science and Management Partnerships	Does the Unit actively engage with scientists and scientific organizations to improve its ability to respond to climate change?	
5. Other Partnerships	Have climate change related considerations and activities been incorporated into existing or new partnerships (other than science partnerships)?	
Adaptation		
6. Assessing Vulnerability	Has the Unit engaged in developing relevant information about the vulnerability of key resources, such as human communities and ecosystem elements, to the impacts of climate change?	
7. Adaptation Actions	Does the Unit conduct management actions that reduce the vulnerability of resources and places to climate change?	
8. Monitoring	Is monitoring being conducted to track climate change impacts and the effectiveness of adaptation activities?	
Mitigation and Sustainable Consumption		
9. Carbon Assessment and Stewardship	Does the Unit have a baseline assessment of carbon stocks and an assessment of the influence of disturbance and management activities on these stocks? Is the Unit integrating carbon stewardship with the management of other benefits being provided by the Unit?	
10. Sustainable Operations	Is progress being made toward achieving sustainable operations requirements to reduce the environmental footprint of the Agency?	

Project Overview

- **Audience:** land & resource managers
- **Scope:** South/Central California
- **Forests:** Angeles, San Bernardino, Cleveland, Los Padres
- **Vulnerability of:**
 - Habitats (coarse filter)
 - Species (fine filter)
 - Ecosystem services
- **Adaptation strategies for:**
 - Habitats
 - Species
 - Ecosystem services

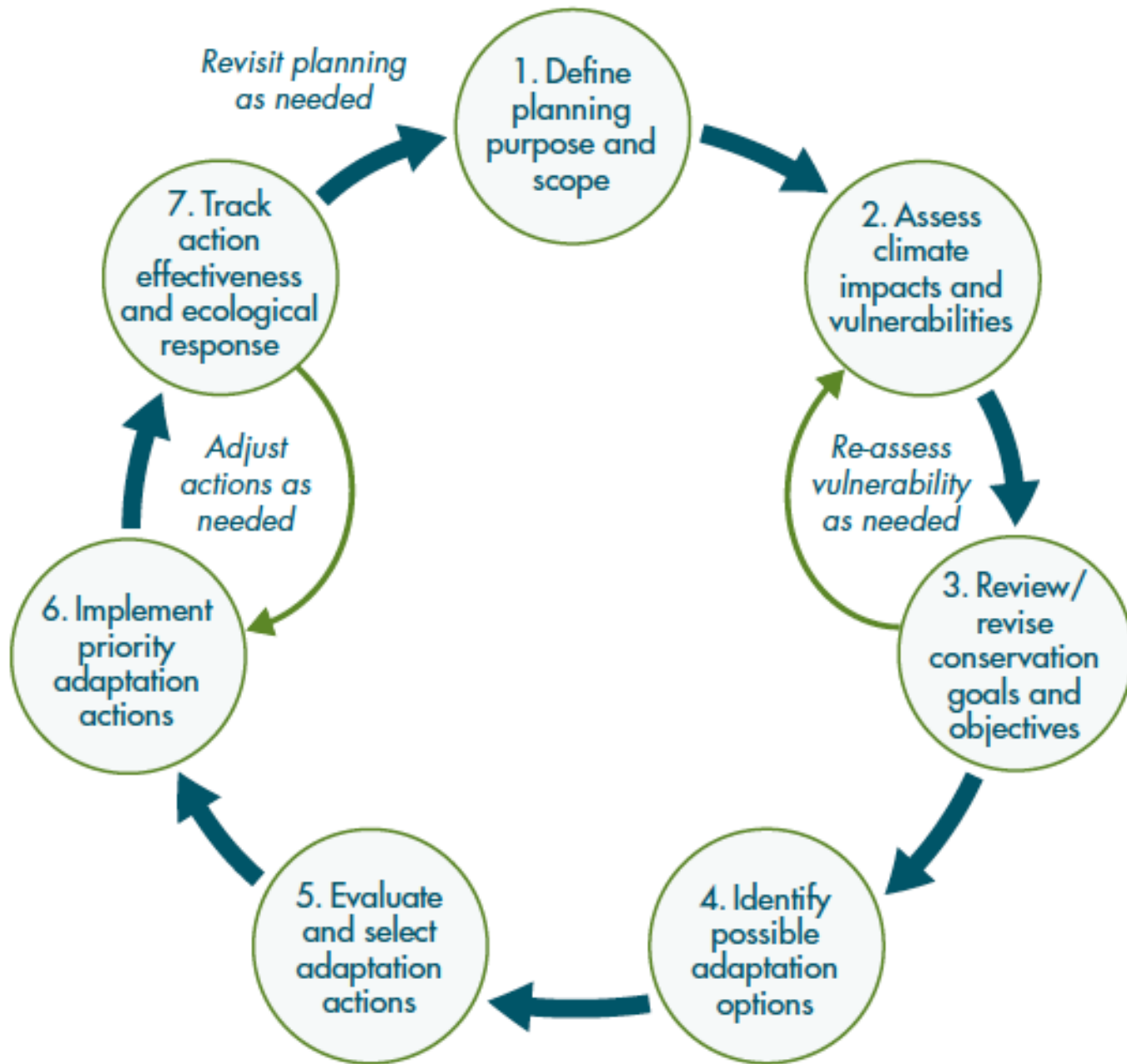


Project Goals

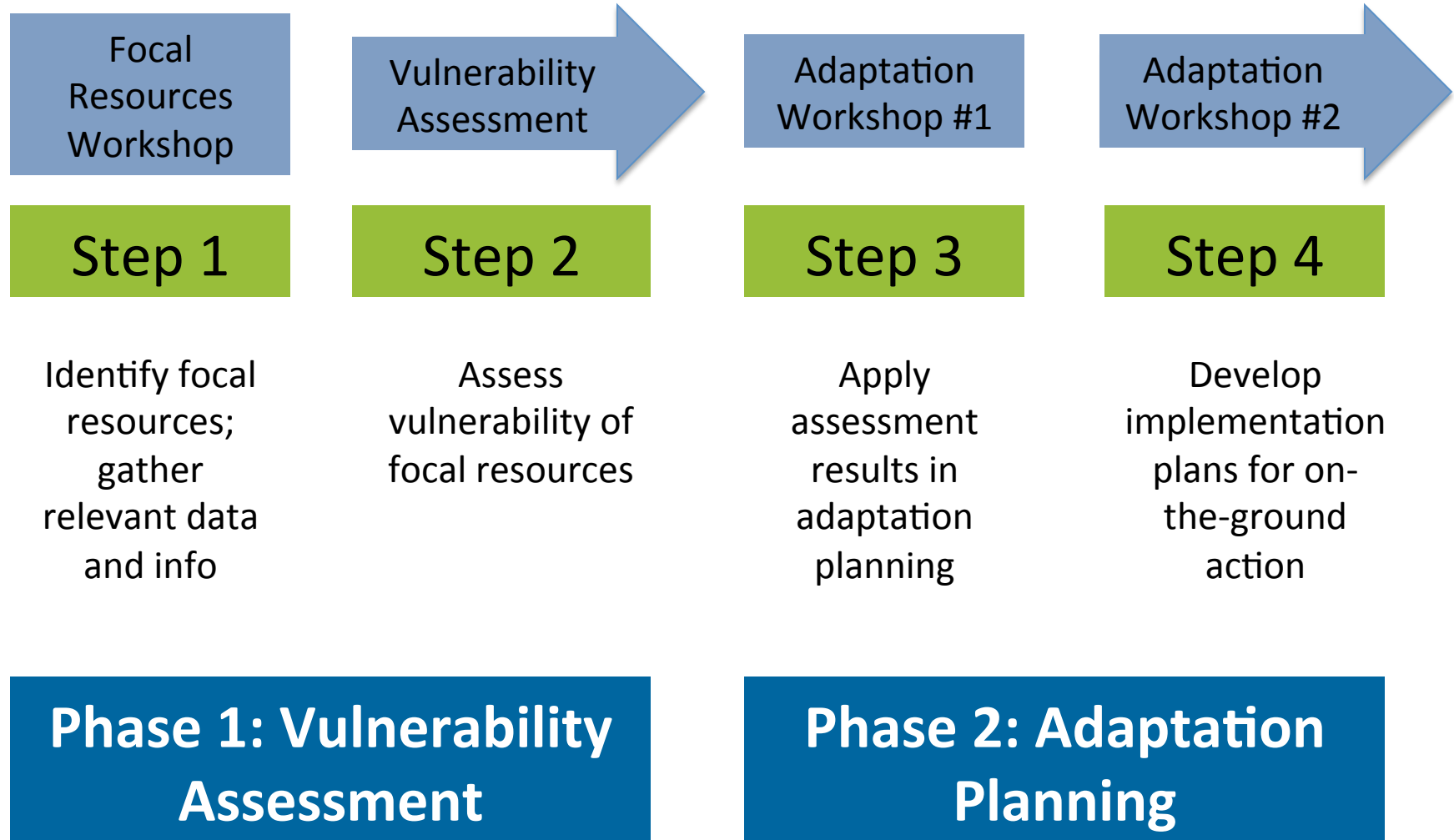
1. Collaboratively identify focal resources that reflect regional efforts and existing conservation goals
2. Conduct a vulnerability assessment for selected focal resources
3. Develop climate-smart adaptation strategies and actions to reduce vulnerabilities or increase resilience of focal resources
4. Generate adaptation implementation plans for focal resources



Climate-Smart Planning Framework



General Process



Phase 1: Vulnerability Assessment

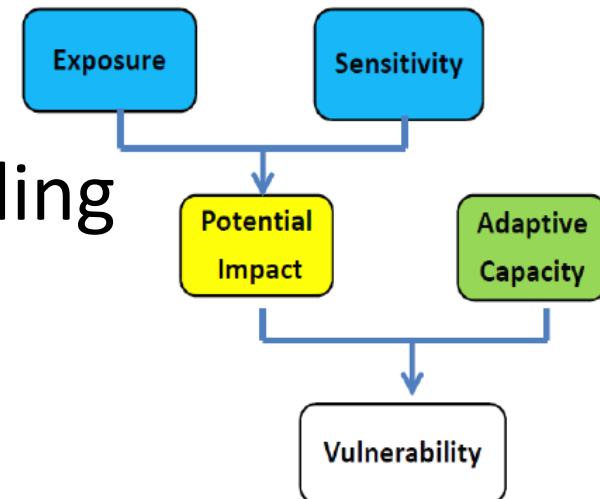
Workshop 1: Select focal resources (today)

- Habitats
- Species
- Ecosystem services



Assess vulnerability (Nov 2014 – May 2015)

- Literature review
- Relevant regional climate modeling
- Expert elicitation



Phase 1: Vulnerability Assessment

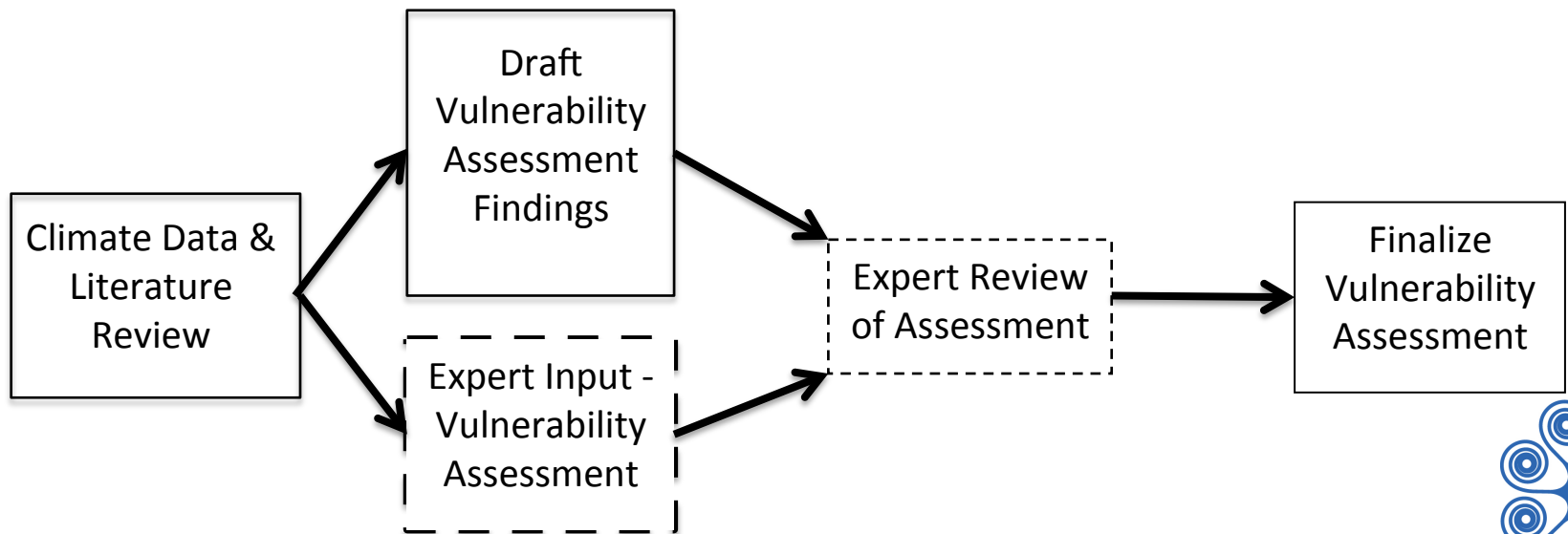
Process:

1. Literature review for focal resources
2. Design assessment survey
 - Includes each vulnerability component
3. Send survey to ~3-5 topic experts
4. Assemble draft assessment results
5. Send narratives to ~3-5 topic experts for review
6. Finalize assessment



Phase 1 Checklist

- Collaboratively identify focal resources
- Assess resource vulnerabilities
- Peer review of assessment
- Finalize vulnerability assessment



Dashed lines indicate expert collaboration



Phase 2: Adaptation Planning

Workshop 2: Adaptation planning #1 (May 2015)

- Review vulnerability assessment results
- Participants identify:
 - General adaptation strategies
 - Specific adaptation actions
 - Where actions can be applied
 - Implementation feasibility



KEY FOCUS: Identify actions currently being implemented AND actions that could be considered for implementation



Applying Vulnerability Assessment Results in Adaptation Planning

$$\text{Vulnerability} = \frac{\text{Exposure} \times \text{sensitivity}}{\text{adaptive capacity}}$$

↓ Reduce exposure

↓ Sensitivity

↑ Increase adaptive capacity



Applying Vulnerability Assessment Results in Adaptation Planning

- **Reduce Sensitivity**

- *Example:* Replant with mix of species that can cope with range of future conditions



- **Reduce Exposure**

- *Example:* Restore wetlands to limit drought impacts

- **Enhance Adaptive Capacity**

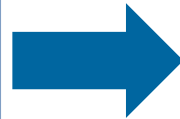
- *Example:* Support connectivity across the landscape between different populations



Applying Vulnerability Assessment Results in Adaptation Planning

Potential Vulnerabilities: Anthropogenic Fire Ignitions

- ↑ Length of fire season
- ↑ Fire frequency and area burned
- ↑ Type conversion from woody to herbaceous
- ↑ Sedimentation due to topography and soil erodibility



Adaptation Strategy:

Plan and prepare to reduce the sources of wildfire ignitions, particularly those that lead to large fires. Reduced fire frequency will limit the co-occurrence of fire and drought and increase older age classes of chaparral.

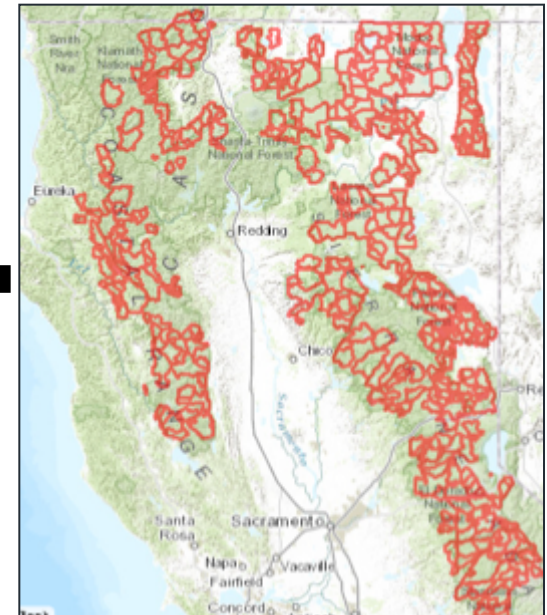
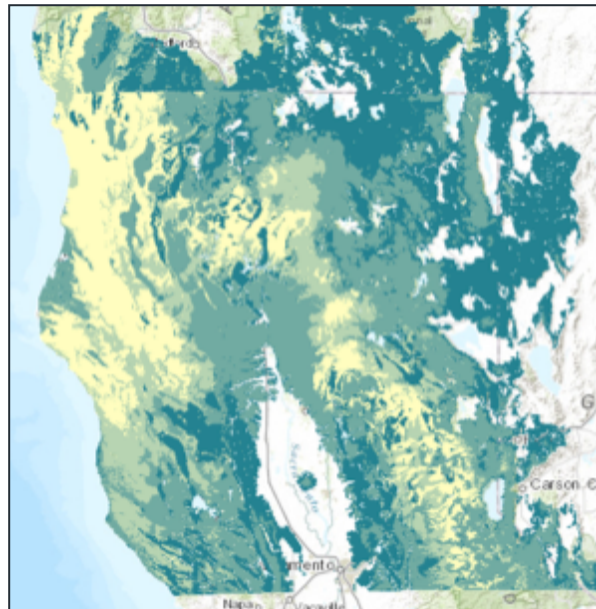
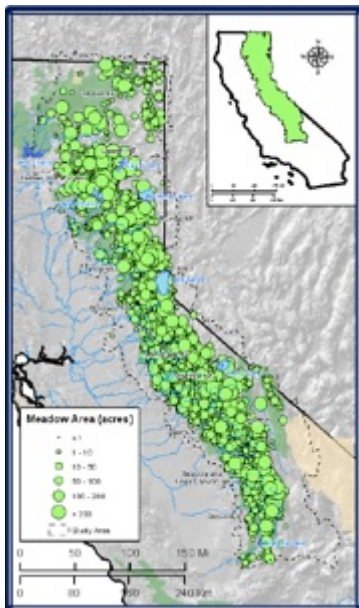
Actions:

- Complete studies of wildfire causes in southern California
- Develop BMPs to realistically limit the major sources of wildfire ignitions (e.g., underground power lines in wind corridors). For example, focus control on roadside fine fuels, identify high ignition probability locations along roads, and/or restrict power tool use in red flag conditions

Climate-Informed Mapping (Jan-Sept 2015)



- Vulnerability assessment
→ Used to create maps for a resource



- Adaptation actions + maps
→ Used to identify what to implement, where



Phase 2: Adaptation Planning

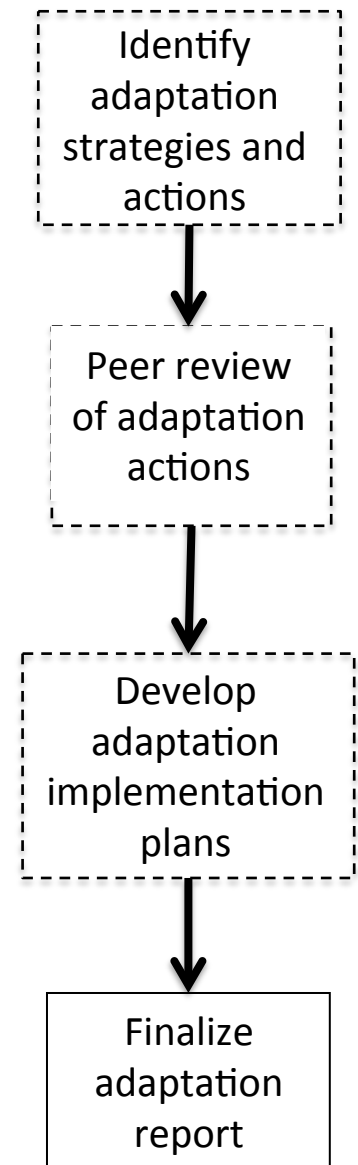
Workshop 3: Adaptation planning #2 (Fall 2015)

- Review results from Adaptation Planning #1
- Participants develop implementation plans for on-the-ground action:
 - Implementing actions within adaptive management framework
 - Using spatial information to identify what actions to implement and where



Phase 2 Checklist

- Collaboratively identify adaptation strategies and actions
- Peer review of adaptation strategies and actions
- Collaboratively develop implementation plans for resources
- Finalize adaptation report



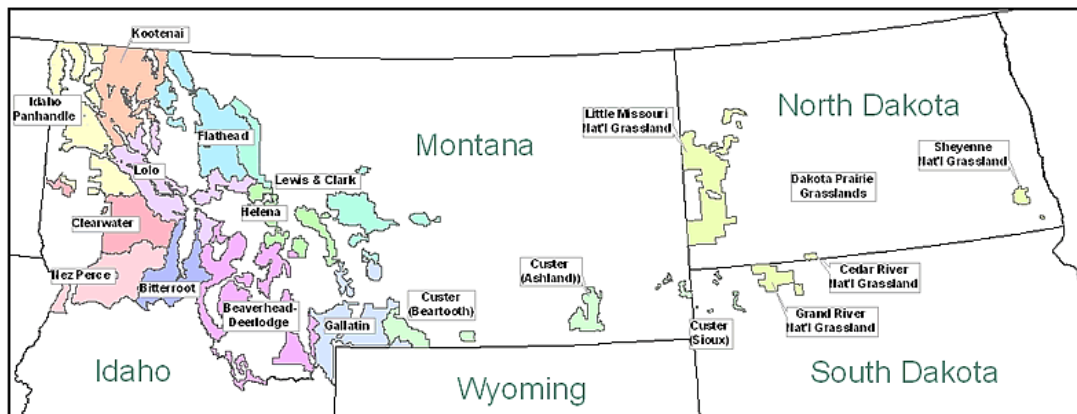
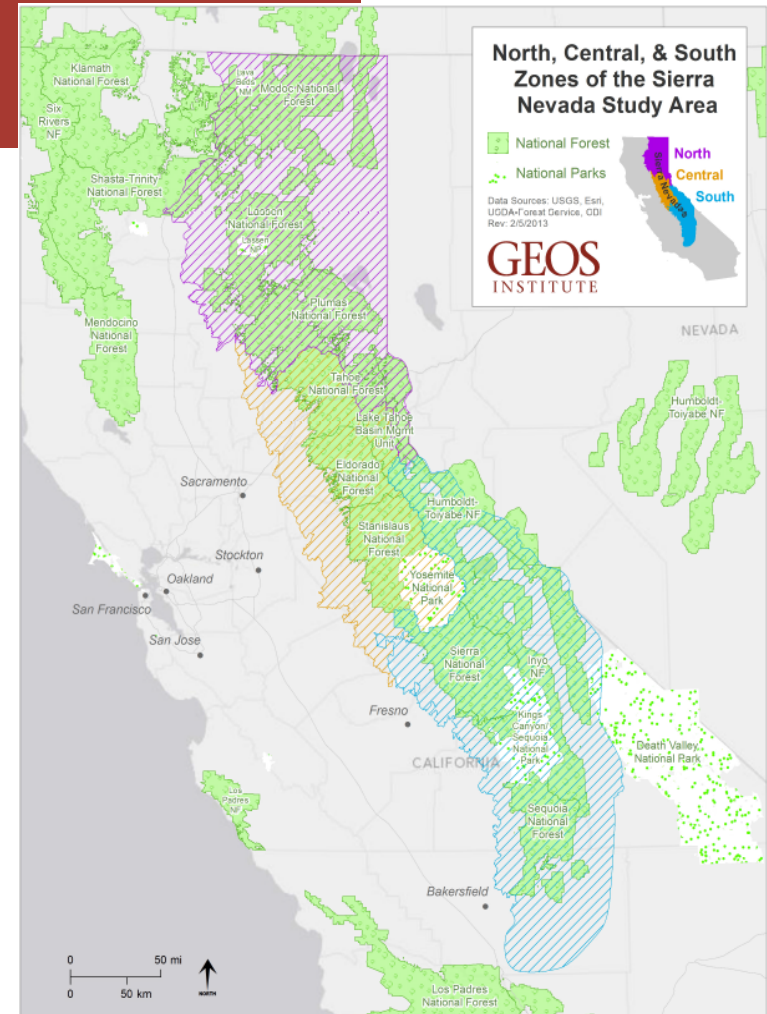
Benefits from Vulnerability & Adaptation Process

- ❑ *WHAT* and *WHY*
- ❑ Brings ecosystem service issues to the table
- ❑ Informs stakeholders of climate change implications
- ❑ Buy-in and provides stakeholders with potential actions
- ❑ Highlights cross-sector opportunities
- ❑ May drive additional research and scientific studies to fill data gaps



Broader Impacts & Application

- Sierra Nevada forests
- Tongass National Forest
- Nez Perce-Clearwater National Forests
- Other forests in Region 1
- Gulf of the Farallones National Marine Sanctuary





Today: Workshop Goal

To select a limited suite of resources (~10-15) that reflect regional efforts and existing conservation goals that will be the focus of the vulnerability assessment and adaptation planning components of the remainder of the Southern California Climate Adaptation Project.



Today: Workshop Objectives

1. Present draft list of focal resources including habitats, species, and ecosystem services.
2. Collaboratively discuss and evaluate potential focal resources using a coarse filter-fine filter approach.
3. Collaboratively select a final suite of focal resources.
4. Provide an overview of project next steps and engagement opportunities.



Workshop Structure

Agenda

9:30-9:45	Welcome and introductions
9:45-10:15	Project and workshop overview
10:15-11:30	Habitat and ecosystem services selection
11:30-1:00	Lunch and field trip
1:00-2:15	Species selection (if habitats found not to suffice)
2:15-3:00	Large group discussion
3:00-3:15	Break
3:15-3:45	Finalize focal resources
3:45-4:00	Next steps and close-out

Adjourn by 4pm



Logistics

- Lunch/Field Trip

Right on E Bonita Ave (1/4 mi)

Left N San Dimas Canyon Road (1.5 mi)

Left Sycamore Canyon Road (1/2 mi)





Breakout Activity & Worksheet

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Habitat Assemblage: _____

1. Habitat Selection

Consider the habitats included in your assemblage. Are they distinct, or can they be combined for the vulnerability assessment?

List your recommendations for habitats in your assemblage to be included in the vulnerability assessment.

Southern California Climate Adaptation Project: Focal Resources Workshop

2. Ecosystem Services Selection

On the draft ecosystem services list provided below, please check off the services that are provided by your habitat assemblage.

- | | | |
|--|---|---|
| <input type="checkbox"/> Air Quality | <input type="checkbox"/> Flood and Erosion Protection | <input type="checkbox"/> Sediment Transport/Soil Productivity |
| <input type="checkbox"/> Apiary Sites | <input type="checkbox"/> Grazing | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Biodiversity Provisioning | <input type="checkbox"/> Nitrogen Retention (Uplands) | <input type="checkbox"/> Timber |
| <input type="checkbox"/> Carbon Sequestration | <input type="checkbox"/> Pollination | <input type="checkbox"/> Water Quantity |
| <input type="checkbox"/> Fire Regime Controls | <input type="checkbox"/> Public Health | <input type="checkbox"/> Water Quality |

Please identify and describe the services present in your assemblage that you recommend to definitely or possibly include in the vulnerability assessment.

1. Definitely include in the vulnerability assessment.

2. Possibly include in the vulnerability assessment – time and resources permitting.

Habitat Breakout Groups

- Group 1 (shrublands)
- Group 2 (woodlands)
- Group 3 (grasslands)
- Group 4 (conifer)
- Group 5 (riparian)



Thank you!

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