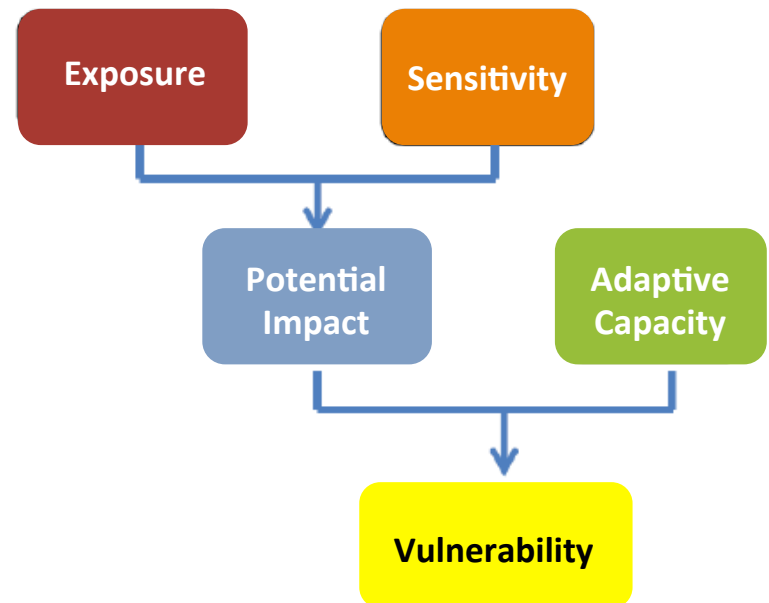


Moving from Vulnerability to Adaptation: Next Steps

Next Steps

Vulnerability Assessment

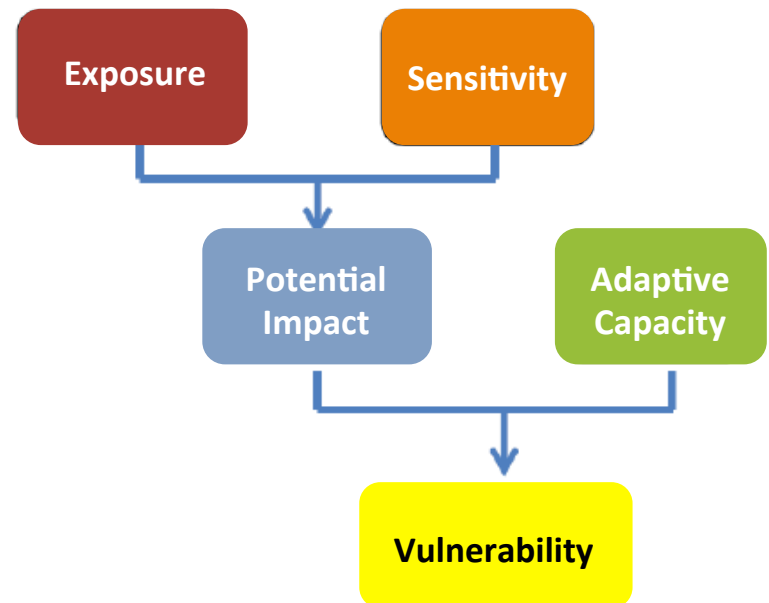
- Synthesize information gathered at workshops
- Add information from the scientific literature and other vulnerability assessments
- Send draft vulnerability assessment write-ups to workshop participants and other experts for review



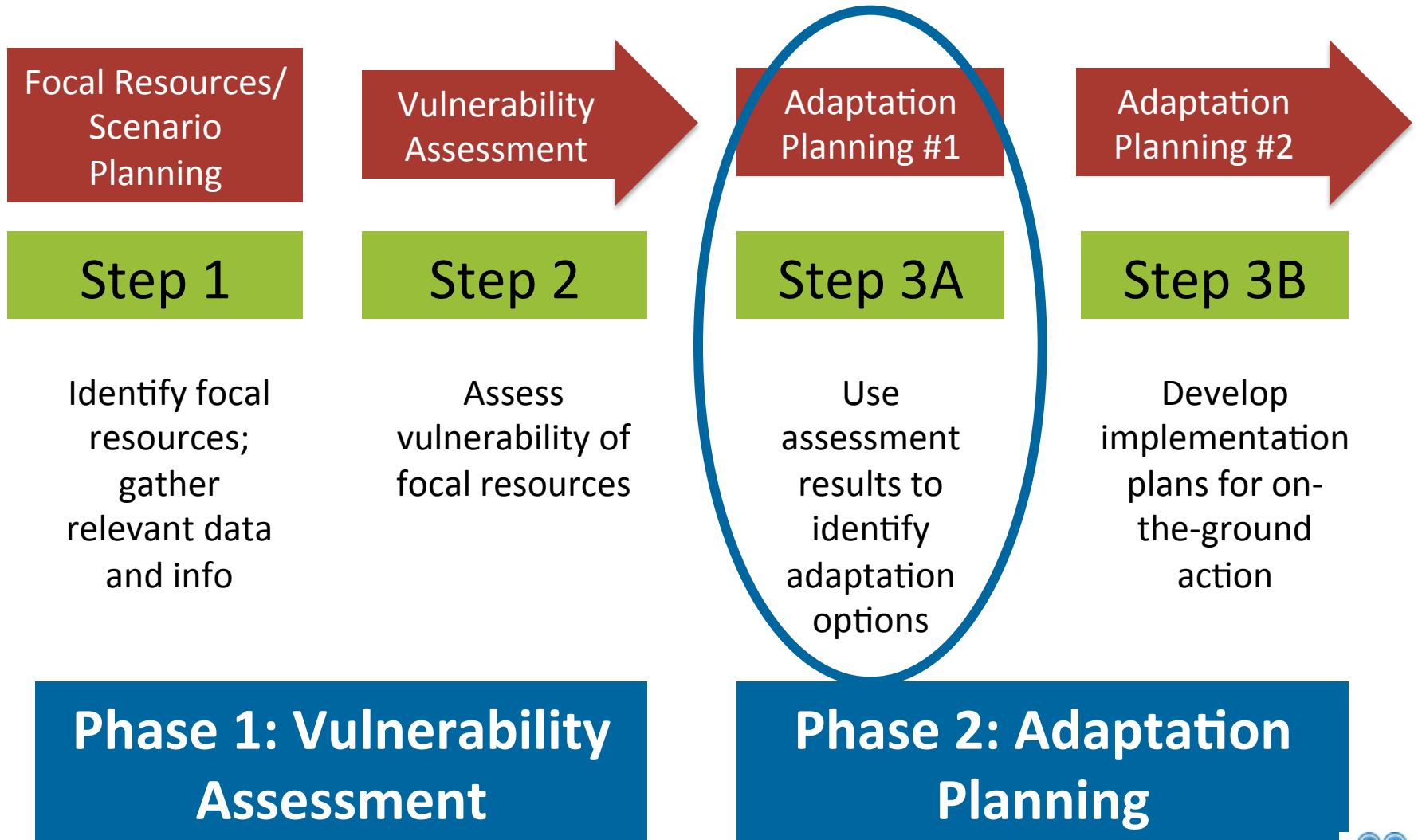
Next Steps

Vulnerability Assessment

- For those resources *not* assessed at workshops, we will be reaching out to scientists and other experts to evaluate vulnerabilities
- We are looking for folks willing to volunteer to assess additional resources OR review draft results!



Project Methodology



Next Steps

Identify Adaptation Strategies & Actions



Adaptation Workshops:

Generate adaptation strategies and specific actions to reduce climate change vulnerability for focal resources within the context of regional management goals

- Where, when, and how those actions can be applied
- Implementation feasibility and effectiveness
- Ways to modify existing actions to reduce vulnerabilities and/or increase resilience

FALL 2017



Defining Adaptation

Adaptation strategies attempt to reduce the negative impacts of climate change

Decrease vulnerability

↓ Exposure

↓ Sensitivity

Increase resilience

↑ Adaptive Capacity

Climate change adaptation refers to natural or human adjustments in an ecosystem in response to changing climate conditions



Applying Vulnerability Assessment Results in Adaptation Planning

- **Reduce Sensitivity**

- *Example:* Actively plant drought-tolerant native species in an area projected to get drier



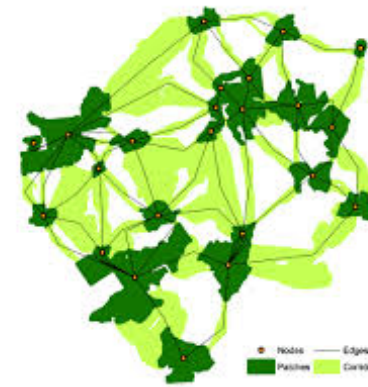
- **Reduce Exposure**

- *Example:* Replant riparian vegetation to limit water temperature increases



- **Enhance Adaptive Capacity**

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



Case Study #1: Sierra Nevada oak woodlands



Key Vulnerabilities:

- Increased water deficit leading to lower seedling survival
- Continued grazing/browsing of planted seedlings leading to decreased survival, making it more difficult to restore sites and enhance recruitment

Adaptation Strategies:

- Plant native bunch grasses to reduce spread of invasive species that outcompete oak seedlings for limited water supply (*reduce sensitivity*)
- Maintain and enhance landscape habitat connectivity to support top predators in order to help reduce/control herbivore numbers (*enhance adaptive capacity*)

Case Study #2: Gunnison Basin sage-grouse



Key Vulnerabilities:

- Increased drought
- Increased erosion from intense precipitation events
- Invasive species

Adaptation Strategies:

- Retain water in most vulnerable brood-rearing habitats (*reduce exposure*)
 - Improve irrigation practices
 - Restore seeps, springs; remove headcuts, gullies
- Improve and restore nesting and wintering habitats
 - Maintain and expand perennial grass and forb cover
 - Abate/prevent cheatgrass encroachment



Case Study #3: Upper Missouri headwaters



Key Vulnerabilities:

- Decreased late summer flows
- Increased stream temperatures

Adaptation Strategies:

- Identify high-flow potential basins resilient to climate change (i.e., temperature and discharge)
- Prioritize high-flow basins for whole-system restoration
- Install beaver mimicry structures as primary restoration approach (*reduce exposure*)



Thank You!!

Example products from other efforts:

- Climate Adaptation Project for the Sierra Nevada
 - <http://ecoadapt.org/programs/adaptation-consultations/calcc>
- Southern California Climate Adaptation Project
 - <http://ecoadapt.org/programs/adaptation-consultations/socal>

