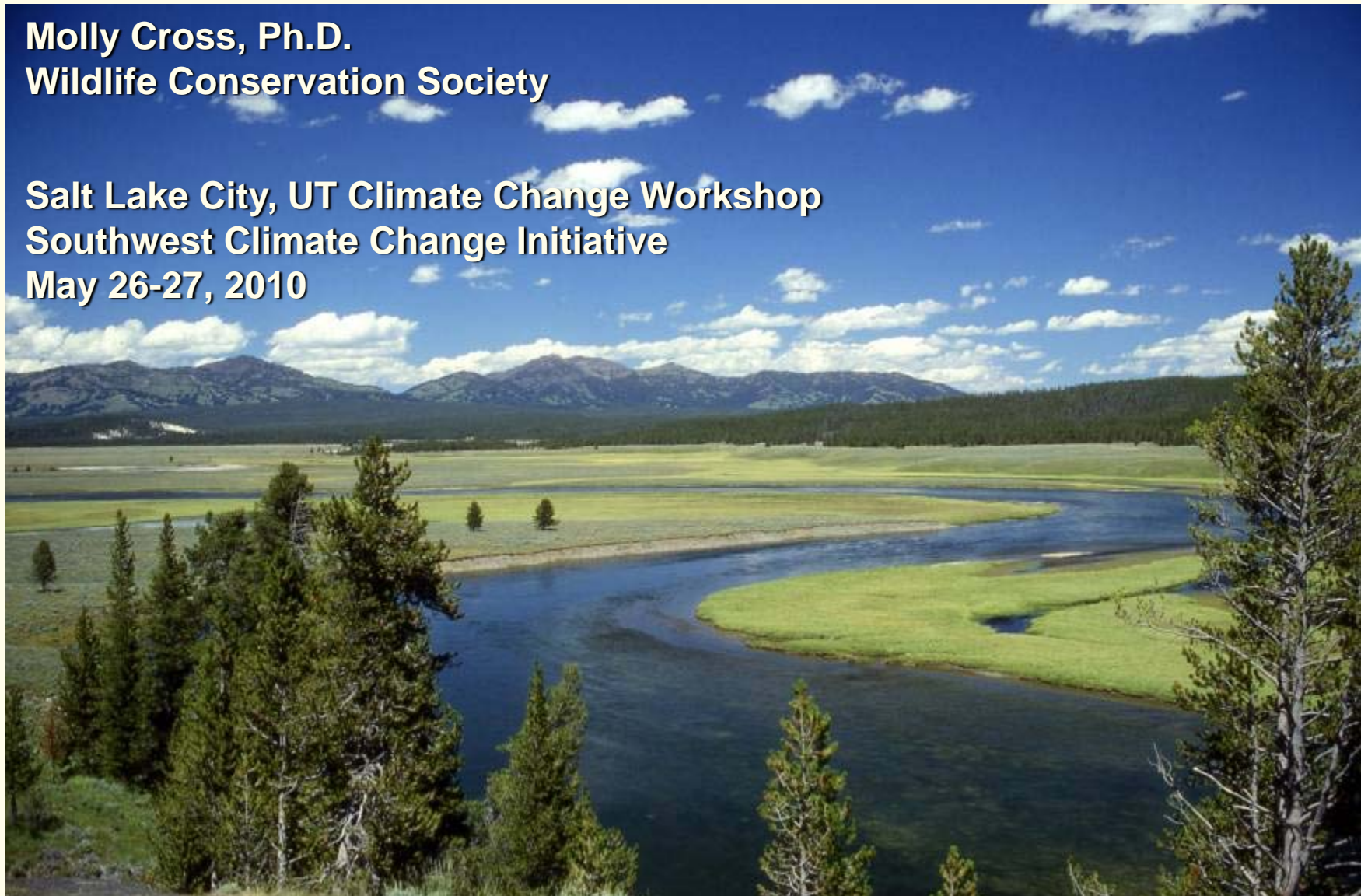




Place-based climate change planning: Overcoming the paralysis of uncertainty

Molly Cross, Ph.D.
Wildlife Conservation Society

Salt Lake City, UT Climate Change Workshop
Southwest Climate Change Initiative
May 26-27, 2010



Climate change adaptation

Adaptation = actions that enable species or systems to better cope with or adjust to changing climate conditions.



Challenges facing natural resource management

How to make applicable to my system?

Where to begin?

Uncertainty?
Complexity?

What to manage FOR?



J. Kastner



Reframing management goals

Increase **RESISTANCE** to change

Promote **RESILIENCE** to change

Enable ecosystems to **RESPOND** to change

Determine when to consider **TRIAGE**
(setting and adjusting priorities)

Challenges facing natural resource management

How to make applicable to my system?

Where to begin?

Uncertainty?
Complexity?

What to manage FOR?



J. Kastner



Climate Change Adaptation Framework

Combines concepts from:

1. **ADAPTATION FOR CONSERVATION TARGETS (ACT) FRAMEWORK**
developed by the Climate Change and Wildlife Conservation working group

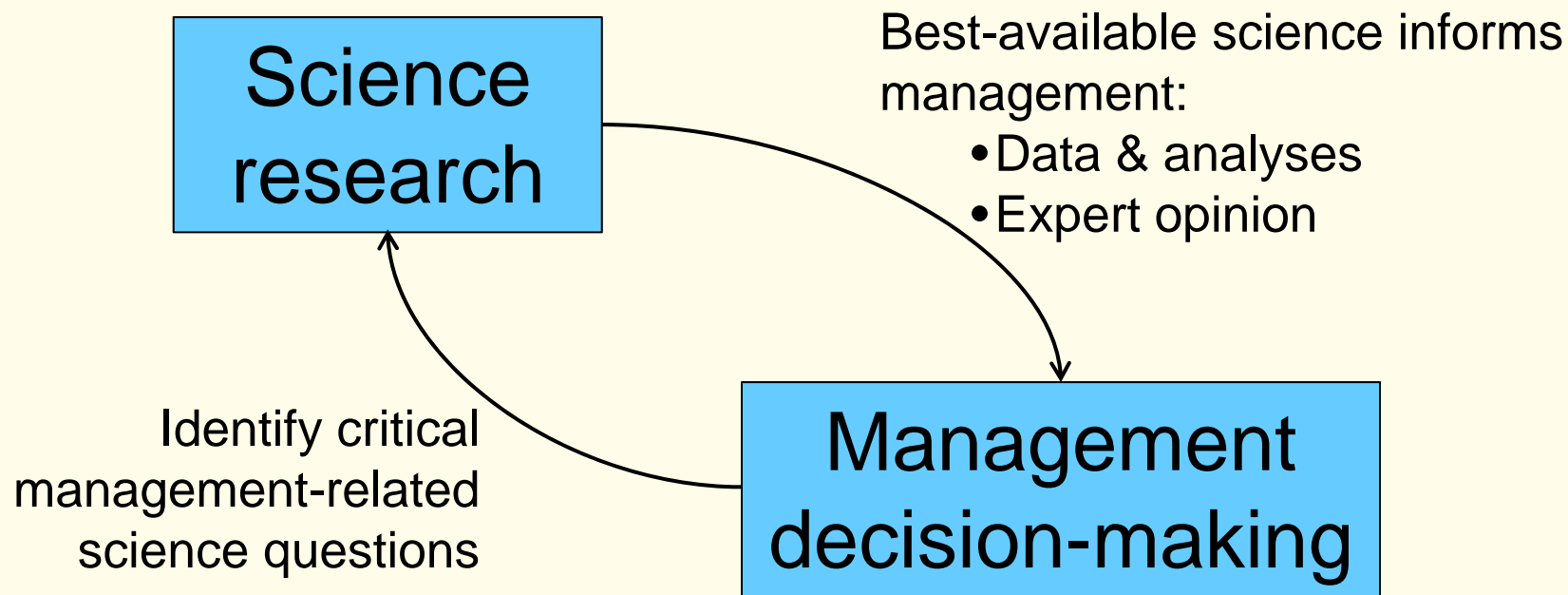


1. **CONSERVATION ACTION PLANNING GUIDELINES FOR DEVELOPING STRATEGIES IN THE FACE OF CLIMATE CHANGE**





Participatory: Integrating science & management



Iterative: Incorporate new information and adjust



Climate Change Adaptation Framework

Select conservation feature
&
Define management objectives

FEATURE:

Species
Ecological process
Ecosystem

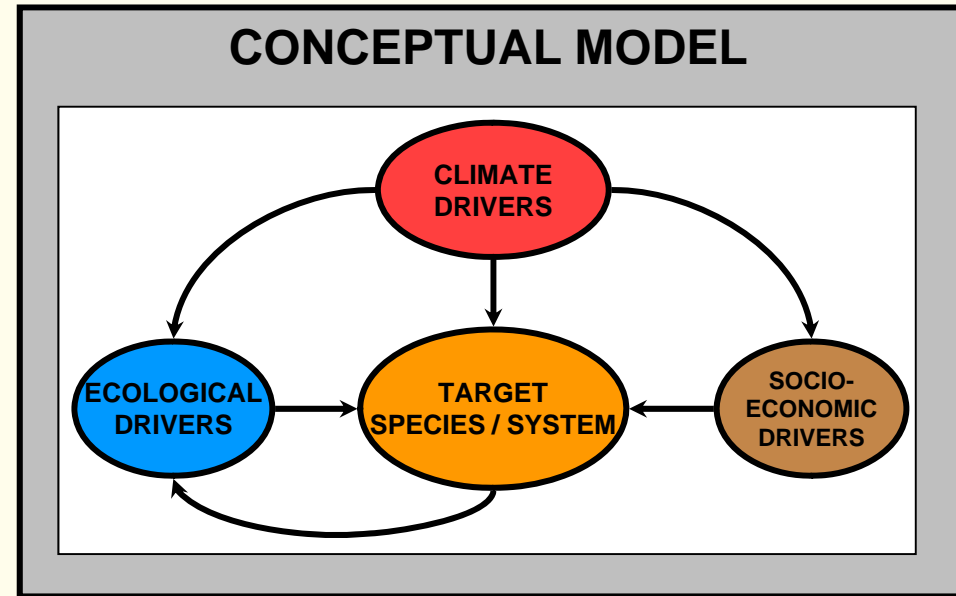
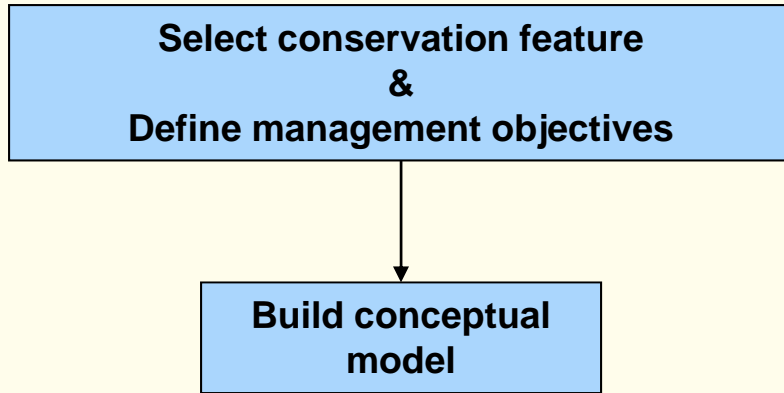
OBJECTIVES:

Current Objectives

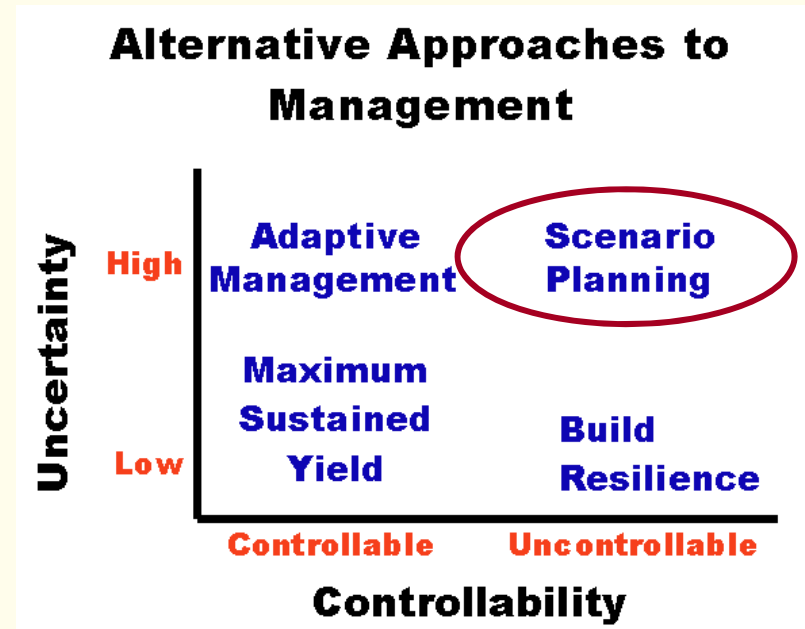
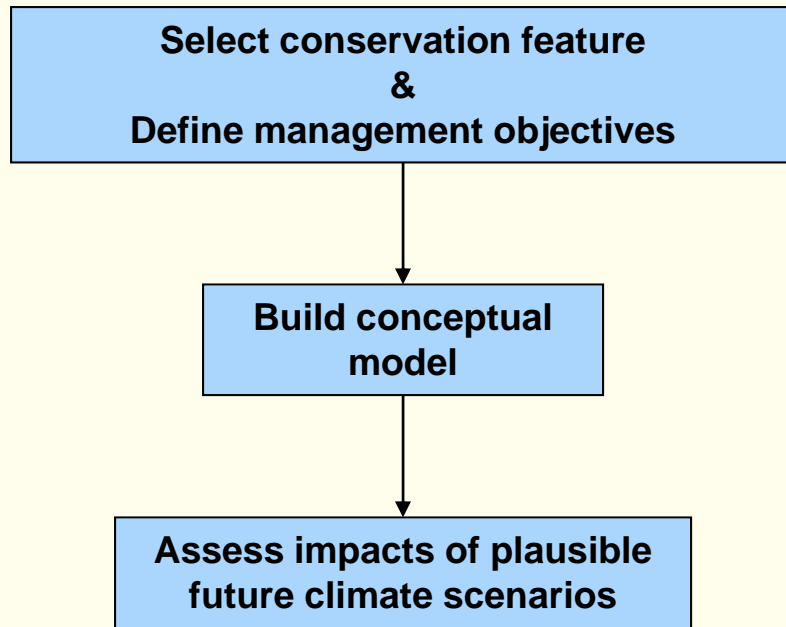
or

Resistance
Resilience
Response

Climate Change Adaptation Framework

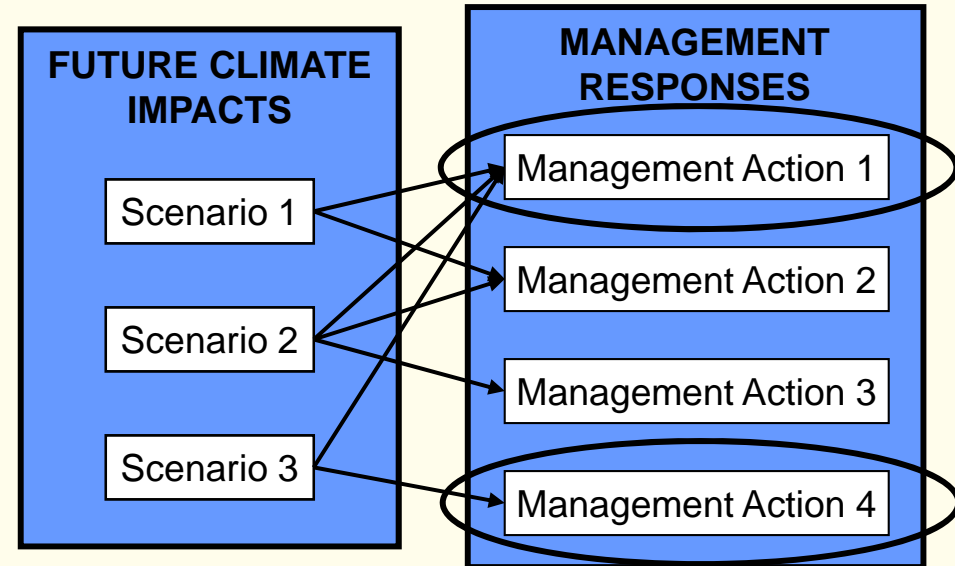
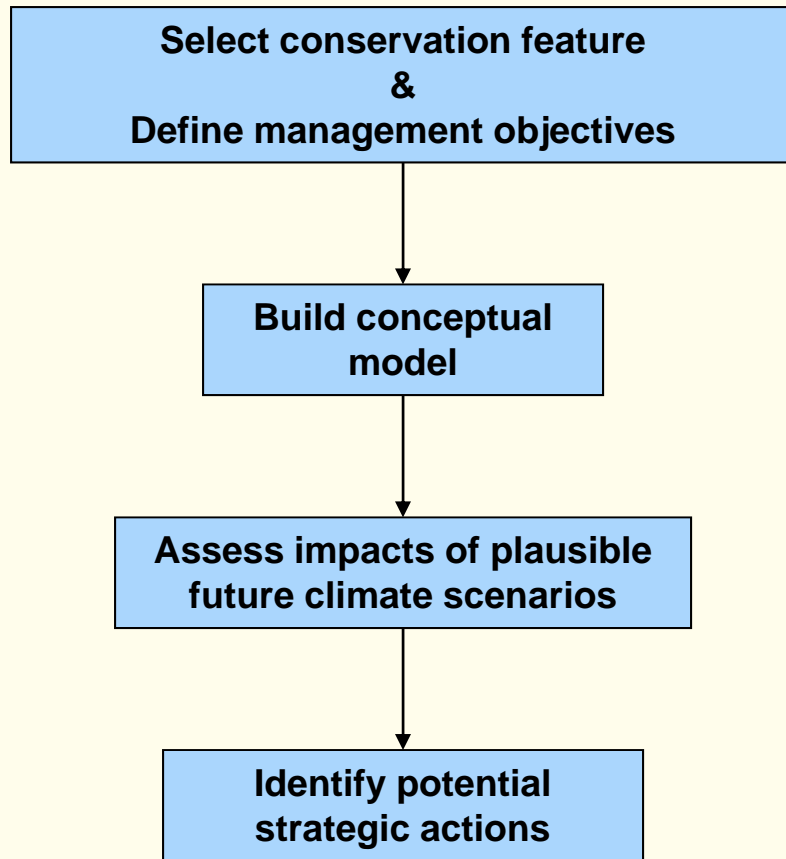


Climate Change Adaptation Framework

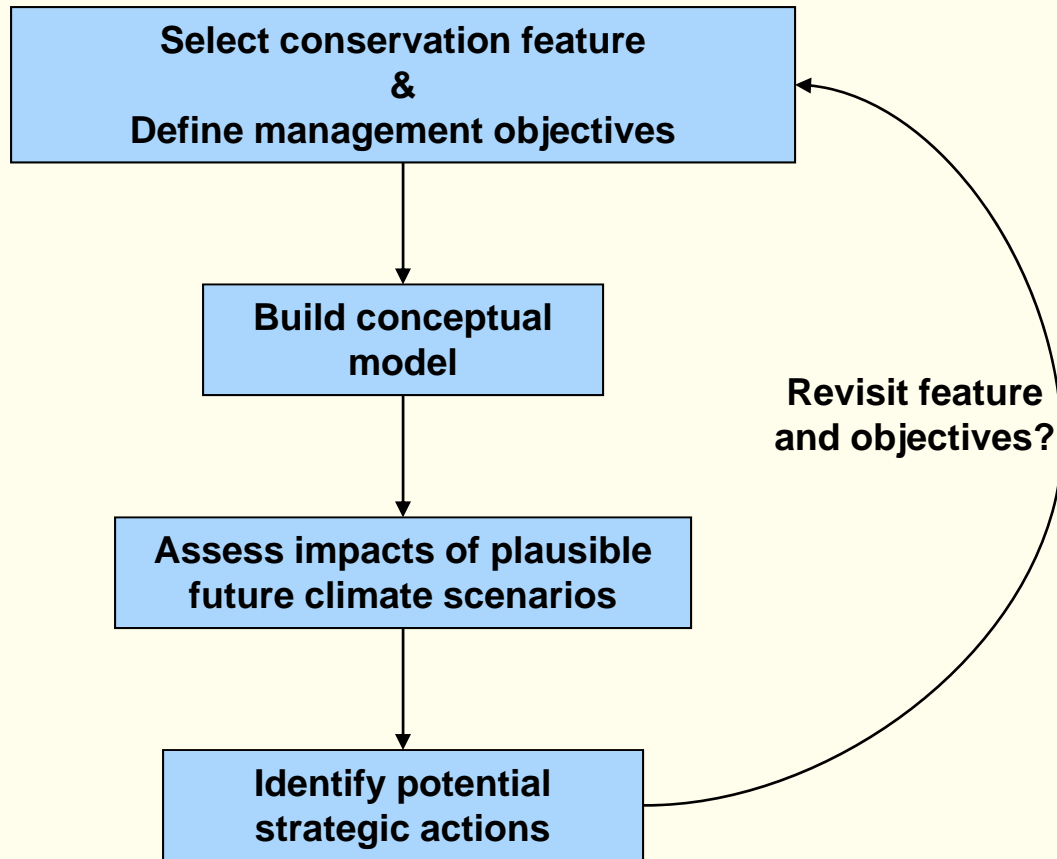


Peterson et al. 2004

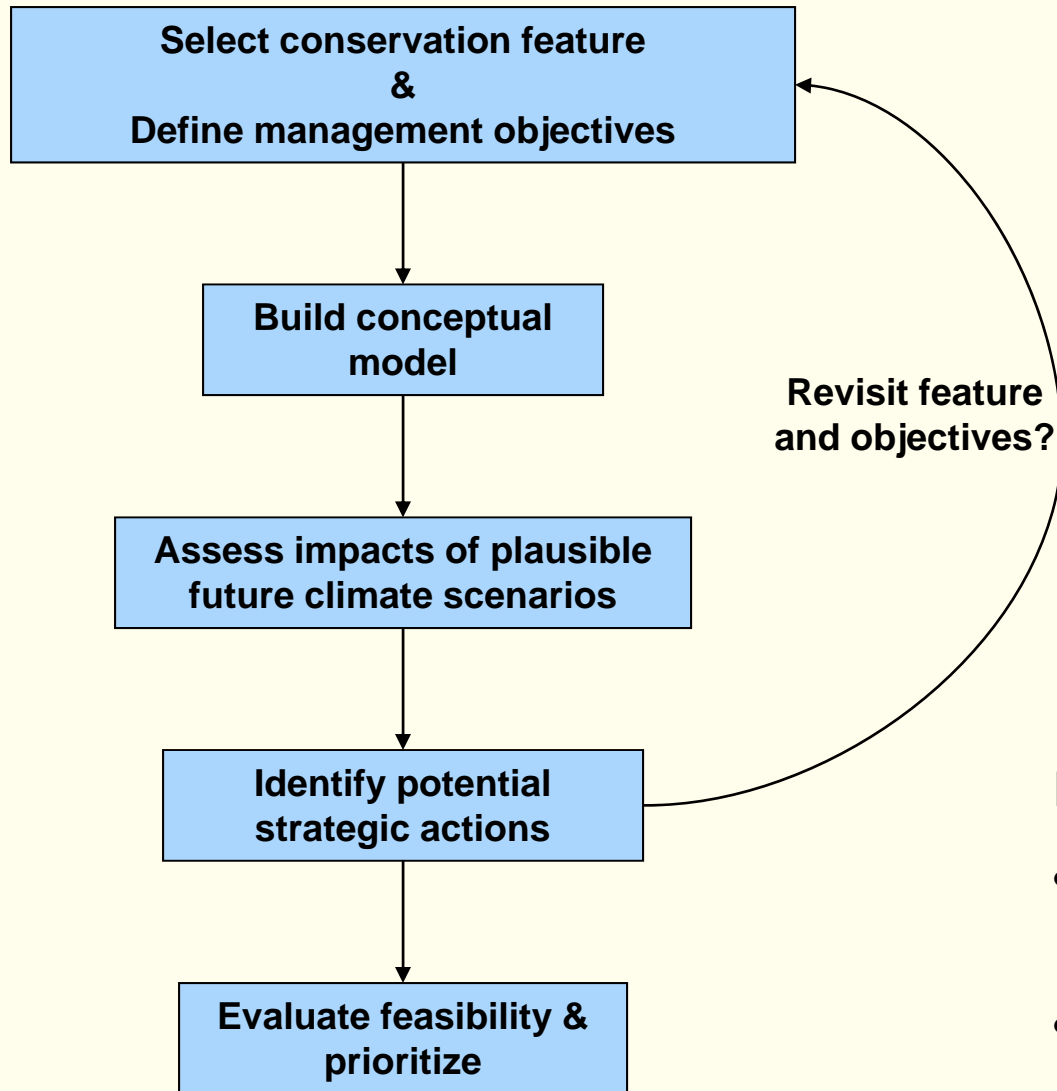
Climate Change Adaptation Framework



Climate Change Adaptation Framework



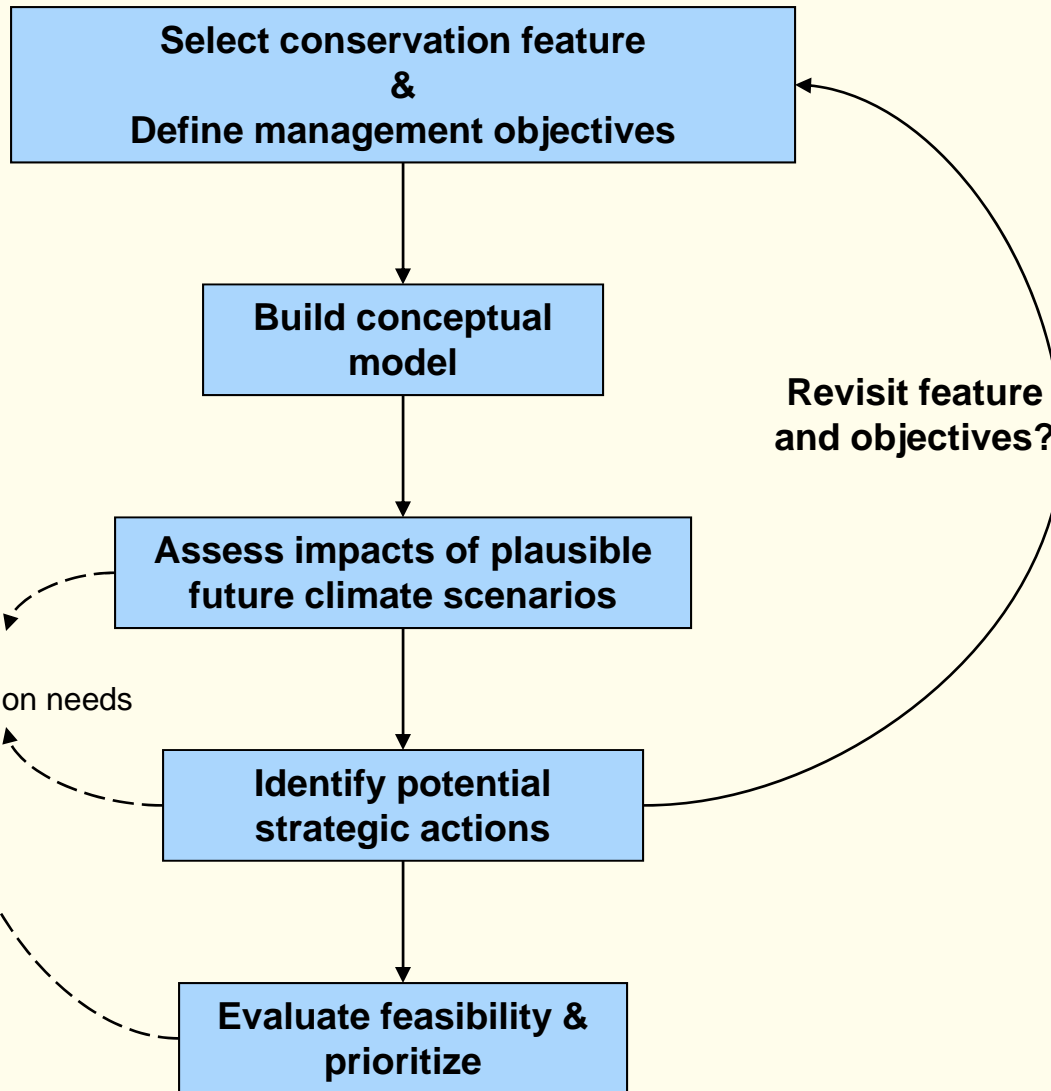
Climate Change Adaptation Framework



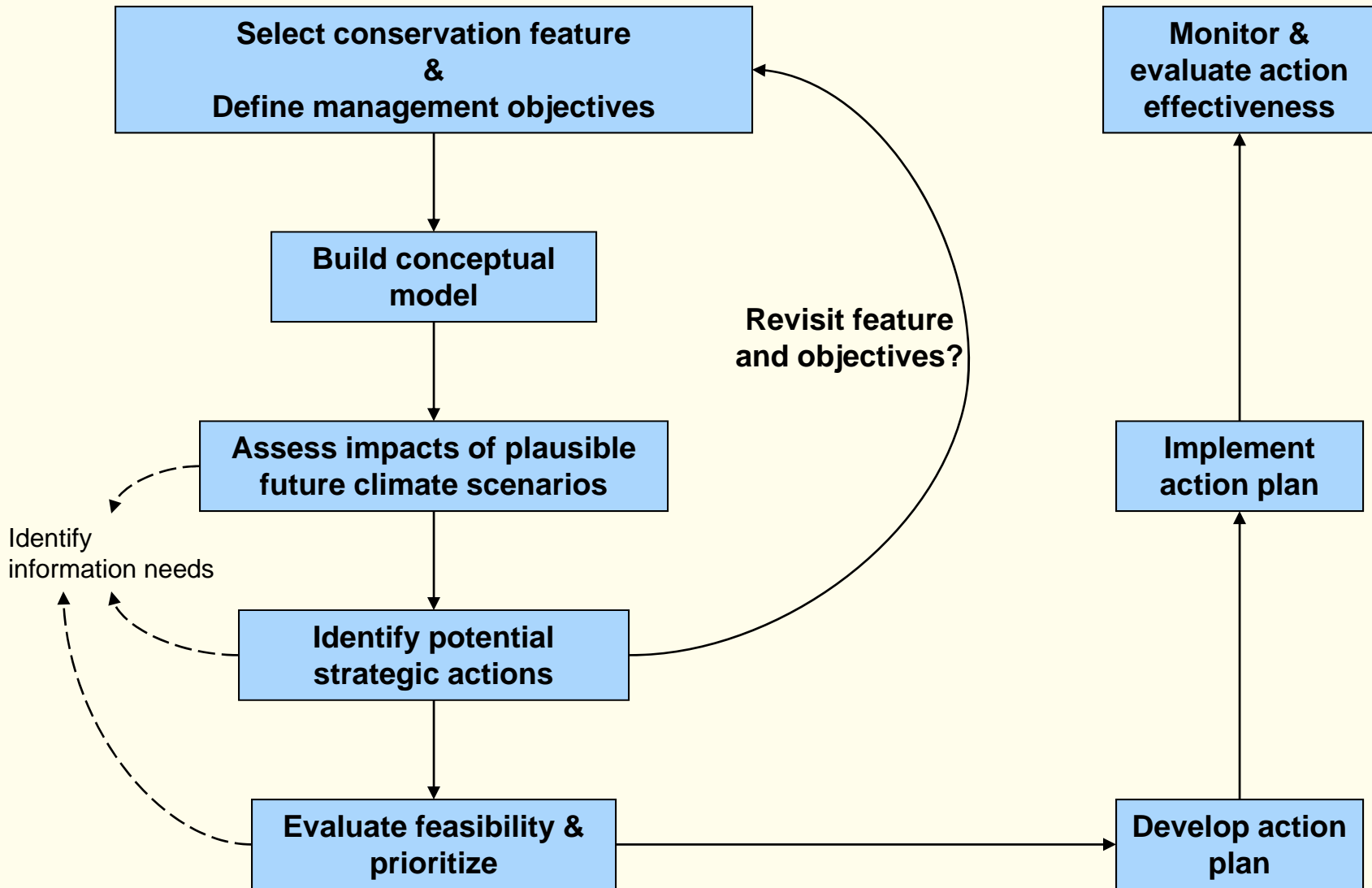
EVALUATION FACTORS:

- How “robust” to climate change uncertainty
- Feasibility (economic, regulatory, social)

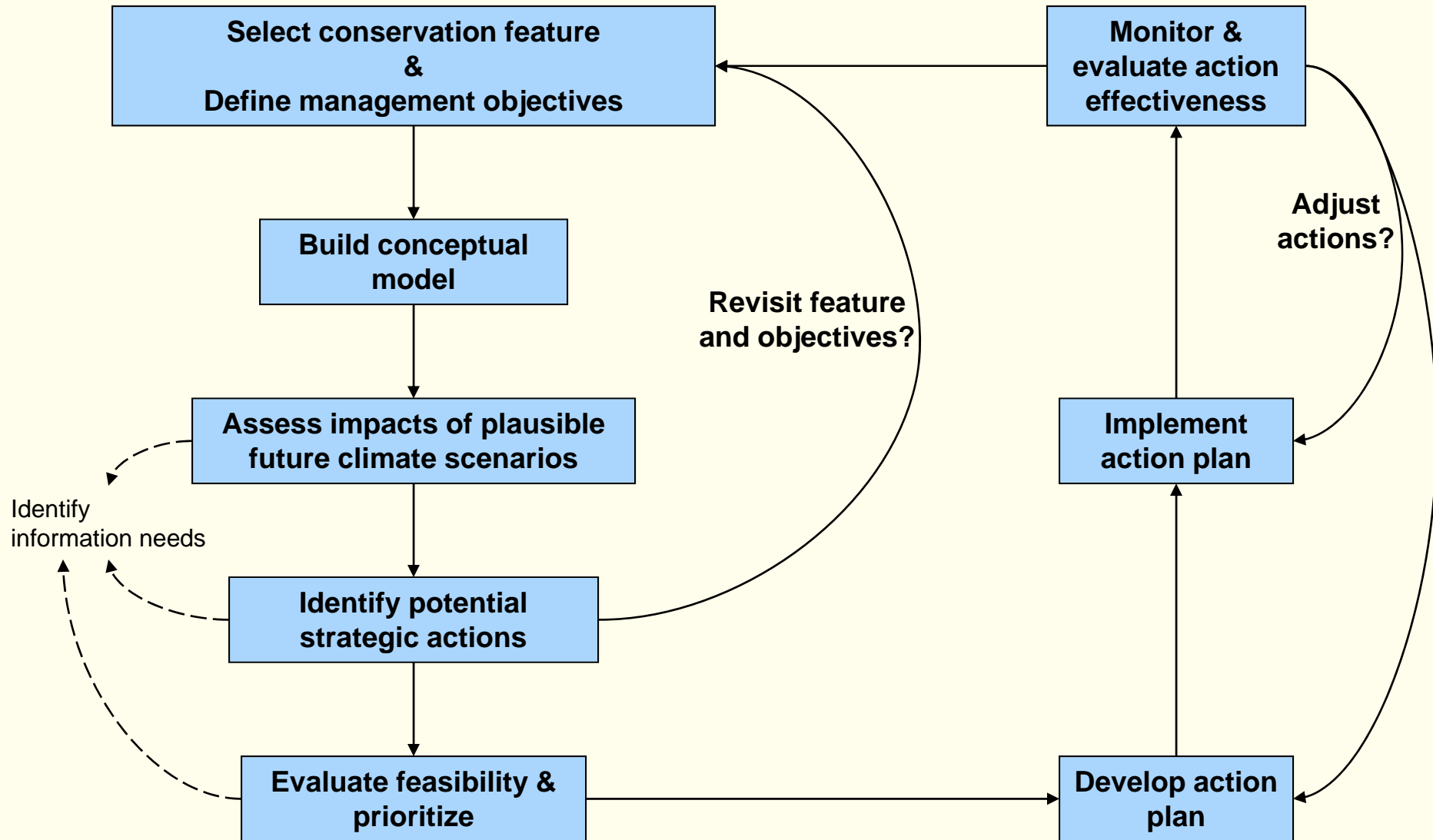
Climate Change Adaptation Framework



Climate Change Adaptation Framework



Climate Change Adaptation Framework



Climate Change Adaptation Framework

Planning phase

Implementation phase

Select conservation feature
&
Define management objectives

Build conceptual
model

Assess impacts of plausible
future climate scenarios

Identify potential
strategic actions

Evaluate feasibility &
prioritize

Monitor &
evaluate action
effectiveness

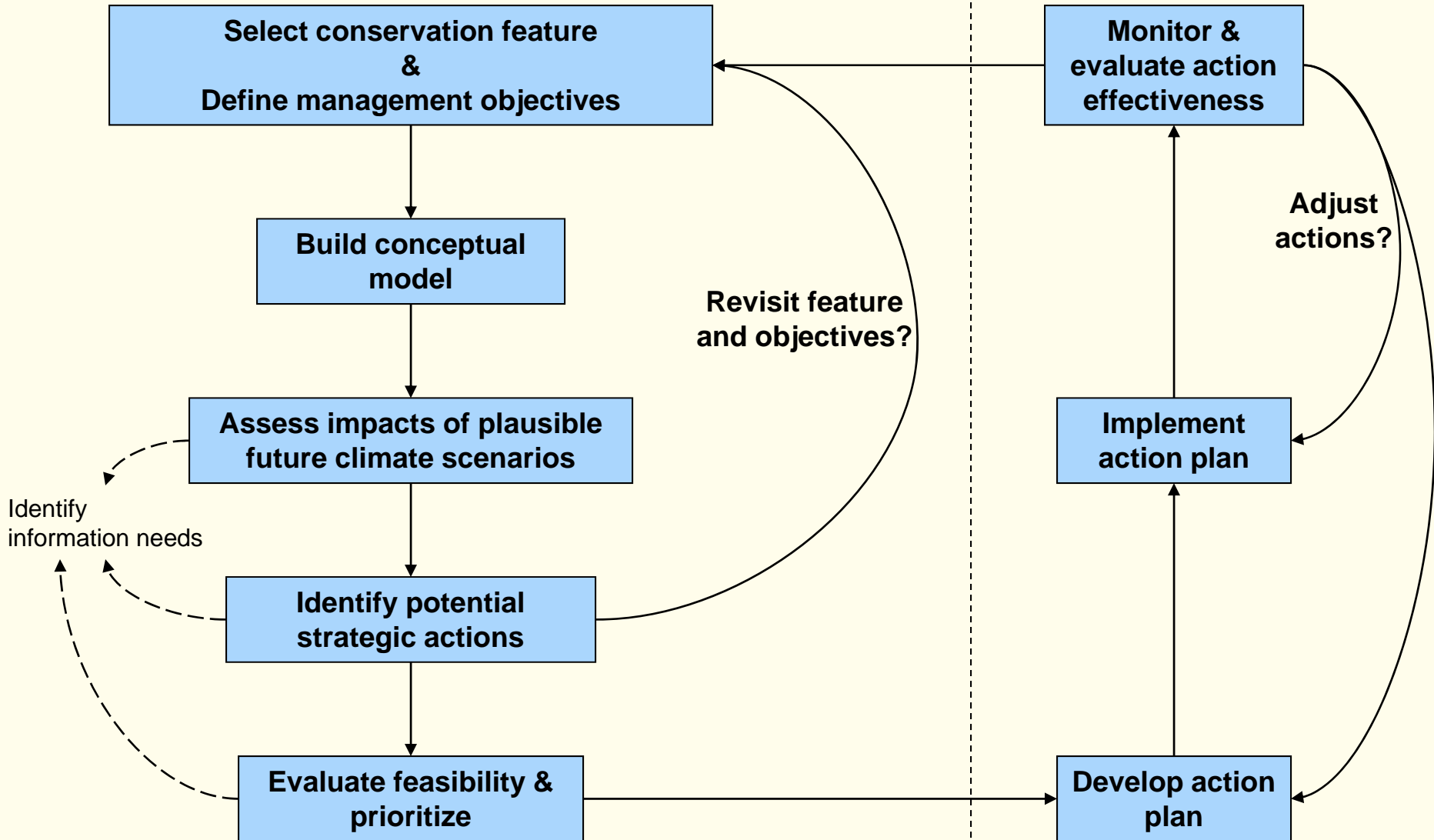
Implement
action plan

Develop action
plan

Revisit feature
and objectives?

Adjust
actions?

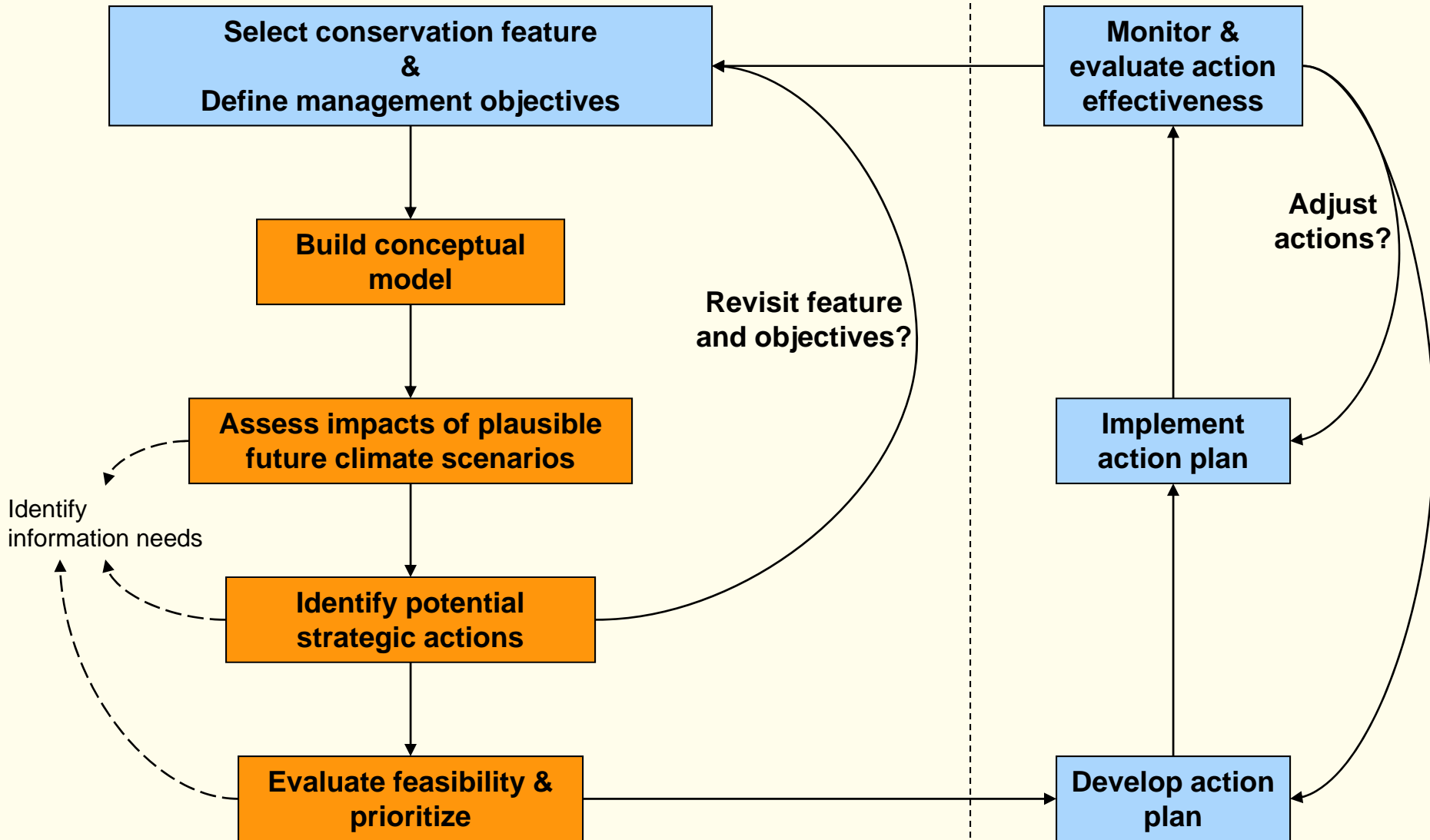
Identify
information needs



Climate Change Adaptation Framework

Planning phase

Implementation phase



 = steps we will walk through during workshop

A real world example

Greater Yellowstone Ecosystem





Select feature and define management objective

**Yellowstone River flows
(ecological process)**



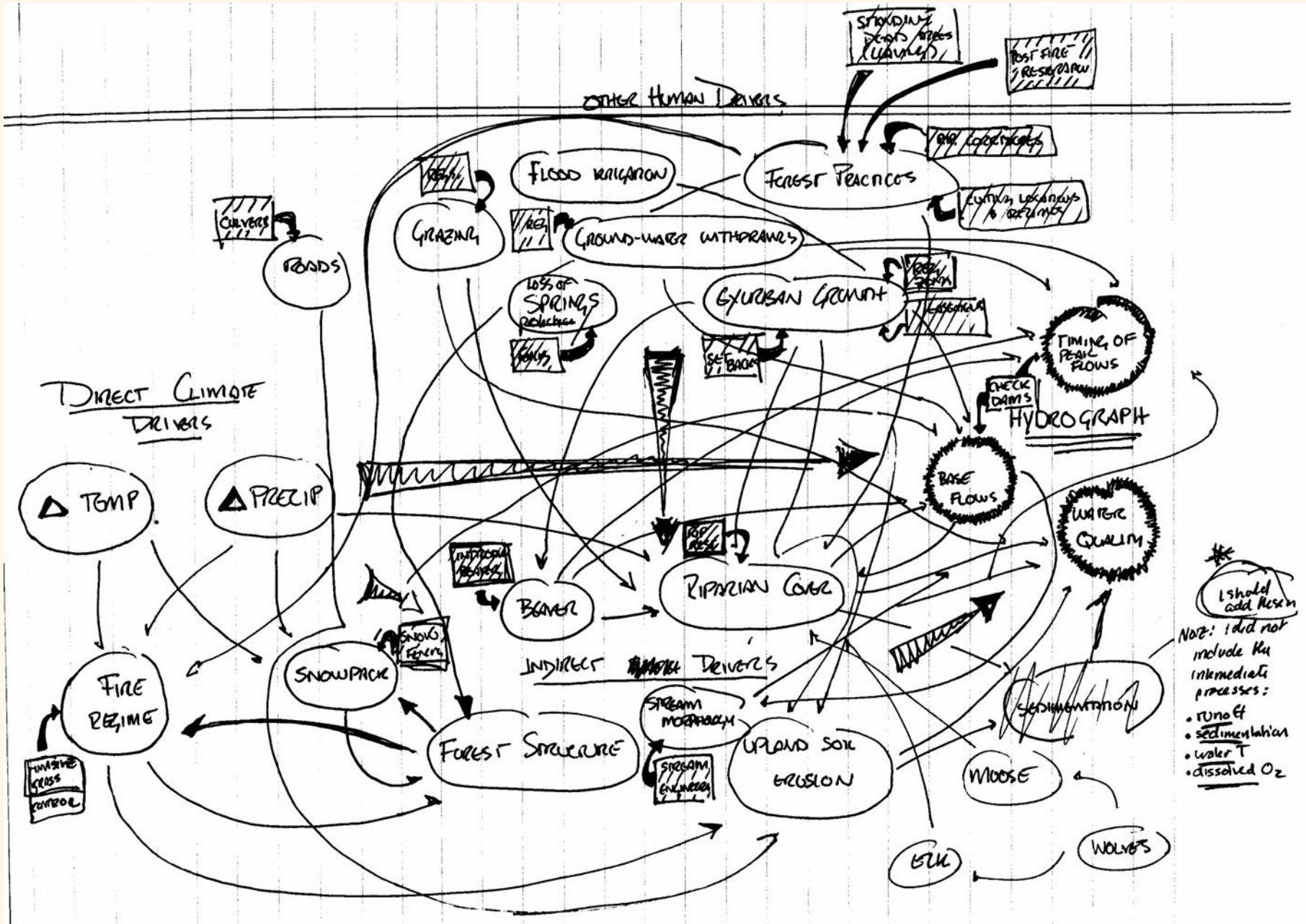
**To maintain
Yellowstone
cutthroat trout**



Build conceptual model



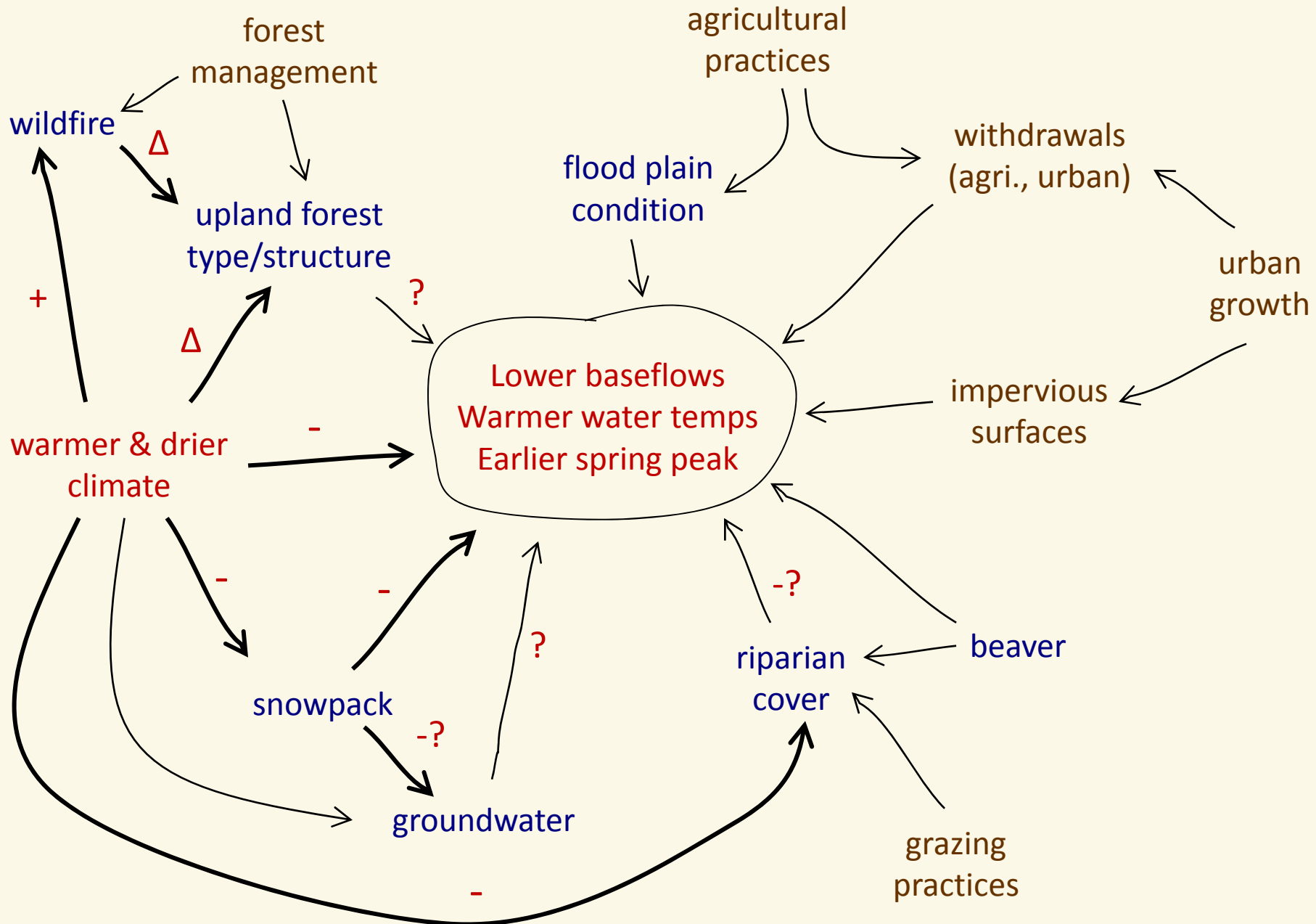
Build conceptual model



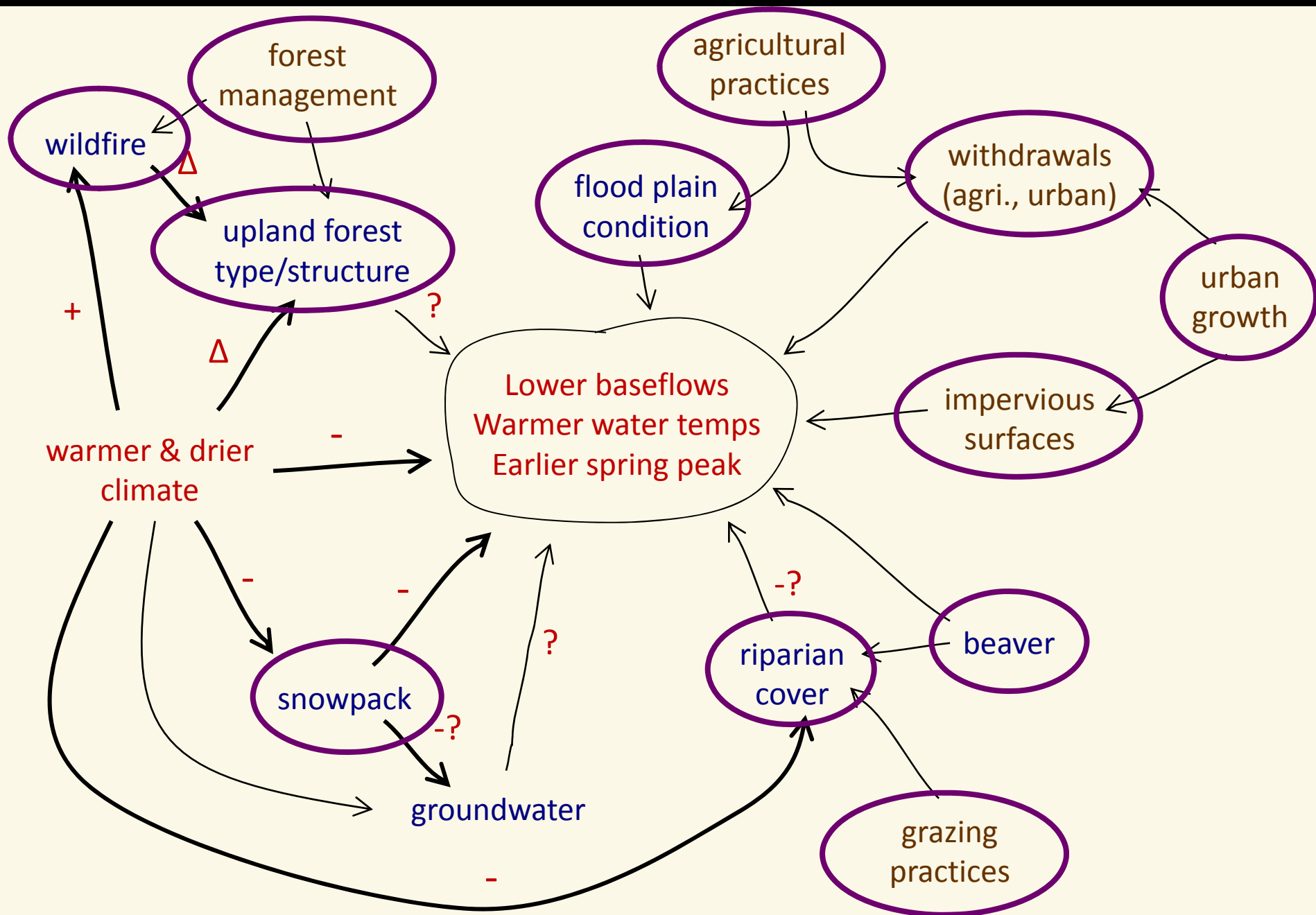
Build conceptual model



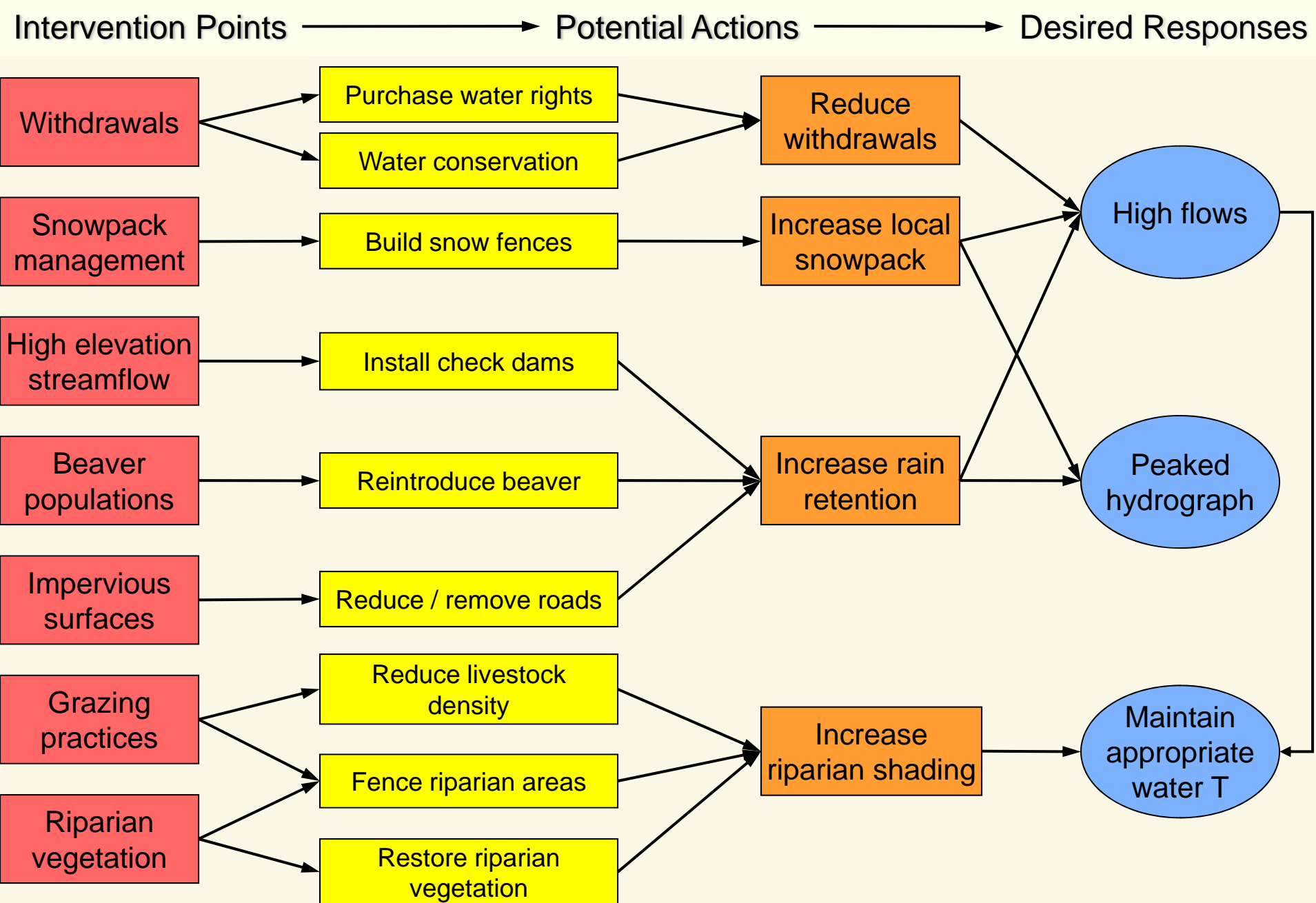
Initial climate scenario: Warmer & drier



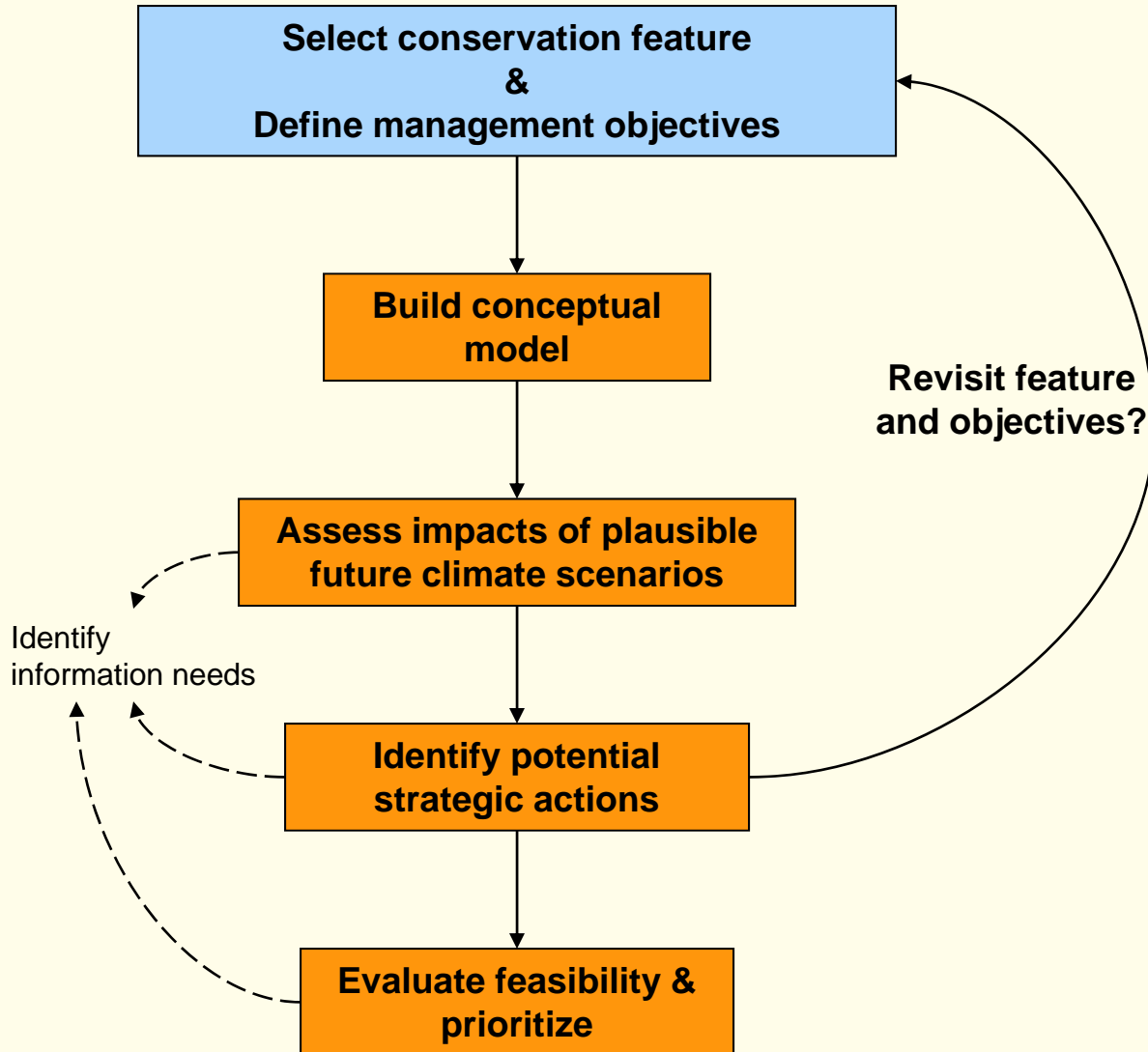
Identify intervention points



Potential actions for initial climate scenario



Goal for breakout sessions



Questions?





Reframing management goals: ecosystem examples

RESISTANCE

Maintain the same structure and function

e.g., install extreme fire-prevention measures to prevent a forest from burning

RESILIENCE

Allow some changes in structure and function, but ultimately return to current state

e.g., thin to prevent catastrophic change in forest type when fires do occur

RESPONSE

Actively or passively facilitate changes from one state to another

e.g., plant new species after fire that are more likely to find new climate suitable



Reframing management goals: species examples

RESISTANCE

RESILIENCE

Maintain a species across its
current or historic range

RESPONSE

