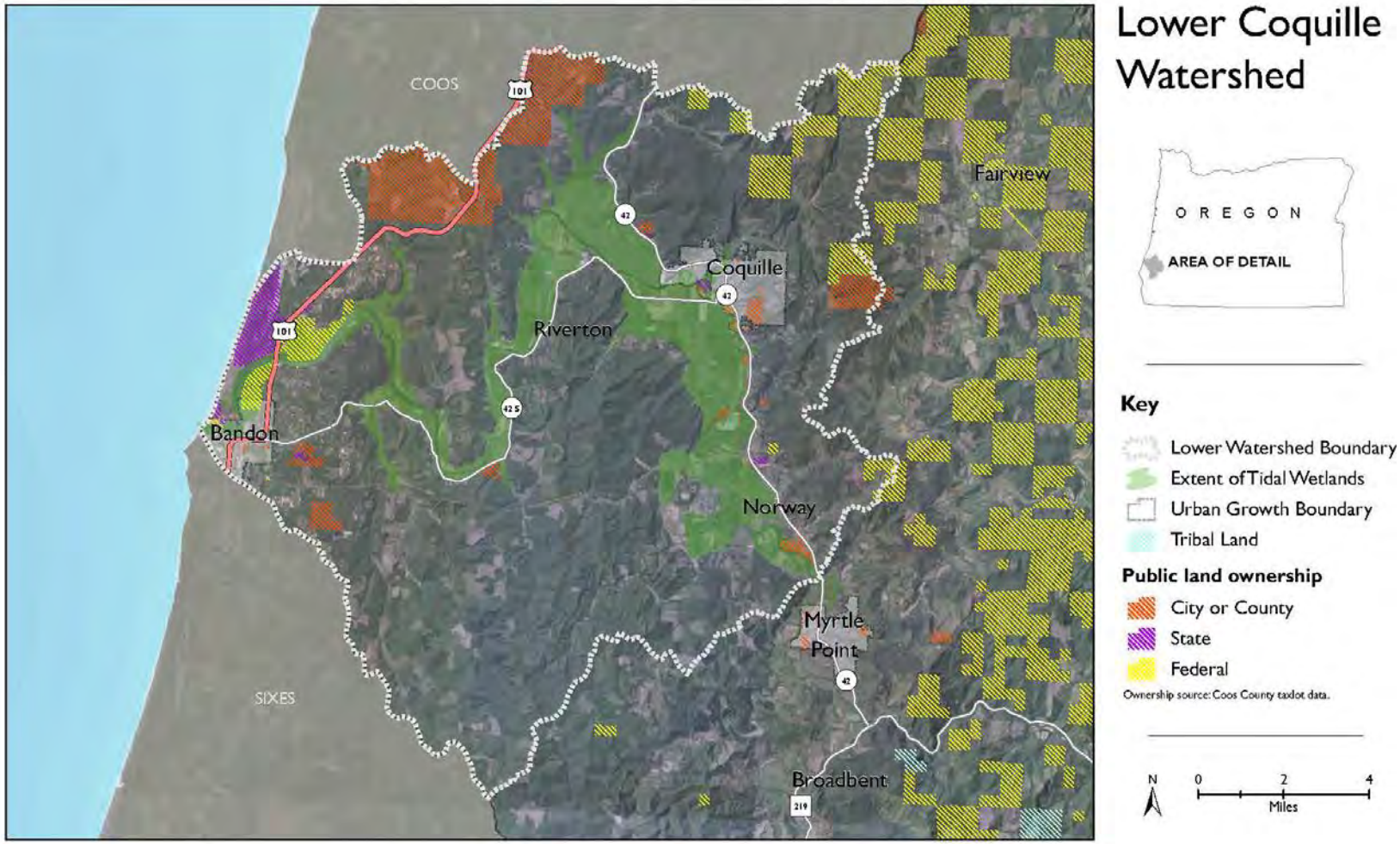
Lower Coquille Watershed Climate Change Vulnerability Project Kick-off Workshop April 18, 2012



Introductions

Eric Mielbrecht-	Facilitator, EcoAdapt
Darrin Sharp-	Oregon Climate Change Research Institute
Dan Uthman-	US Fish & Wildlife Service
Nicholas Jones-	SWCA Environmental
Dick Vander Schaaf-	The Nature Conservancy
Tom Miewald-	US Fish & Wildlife Service
Chris Swenson-	US Fish & Wildlife Service
Jeff Weber-	OR Coastal Management Program

The future ain’t what it used to be

-Yogi Berra

Today, in Three Acts

1. Introduction, goals, process
2. Setting the stage
3. Designing the vulnerability assessment

Project Goal

Provide scientific tools for natural resource managers to understand and better plan for potential change in the Coquille Estuary

- Create useful information and tools
- Agree on the scope and focus
- Determine the vulnerability of key Coquille Estuary species and processes
- Communicate findings

Phase 2 will support developing actual adaptation strategies

Workshop Goals: Setting the Stage

- Introduce climate change adaptation and vulnerability concepts
- Review what is known about climate change and its impacts relevant to the Coquille Estuary
- Understand and work with information gaps and uncertainties

Workshop Goals: Designing the Vulnerability Assessment

- Identify management activities/priorities, and related estuary components
  - Habitats, species, ecological processes and function
- Focus of end products for managers and how they can be used
- Vulnerability assessment approach
  - Geographic and temporal scope
  - Key estuary components/targets to consider
  - Information gaps to address
- Expert panel membership and roles

Participation is Encouraged

- Pre-workshop survey, Thanks!
- Discussion during presentation
- Worksheets
  - Building a Vulnerability Assessment
  - Information to Support….
- Discussion: Management activities/priorities
- Breakout groups: Building a Vulnerability Assessment Worksheet

Please Speak up!

Worksheets

Information to Support VA Development

Information to Support Vulnerability Assessment Development for the Coquille Estuary

Talk	Topics	Notes/Highlights
Sharp, Uthman, Jones	Historic, current and future climatology **(exposure)** ecologically relevant and at suitable spatial and temporal scales	
All, Uthman@lunch	Relevant general species, habitat and ecosystem information	
Vander Schaaf, Miewald	Historic, current and future responses **(sensitivity)** of species, communities, or ecosystems to climate change	
	Intrinsic and extrinsic **adaptive capacity** of assessment targets (population/community, habitat)	
Miewald	Tools	
Discussion	Management/ regulatory context	

Building a Vulnerability Assessment

Building a Vulnerability Assessment Worksheet

Your overarching "big picture" management goals for the Coquille estuary (e.g. improving the health of a particular watershed, ensuring the survival of a particular species)	Goals and objectives of the this Vulnerability Assessment (e.g. selecting appropriate management measures, developing management plans for species or watershed)	Identify suitable assessment targets/foci given the goals and objectives (e.g. polation, species, management unit, management plan)

Climate threats	
Non-climate threats	
Adaptive Capacity	
Appropriate spatial scale	

What are the management opportunities this can inform?
Who are the audience/users?
Expert Panel suggestions

Questions?

EcoAdapt™
Meeting the challenges of climate change

Climate Change: Adaptation and Vulnerability

Eric Mielbrecht, Directing Scientist and Director of Operations

“Climagedon”

To see what is in front of one’s nose needs a constant struggle

-George Orwell

Climtic change is affecting all ecosystems, and will continue to do so for centuries, so…

- *Incorporate climatic change into long-term planning is a smart thing to do*
  - Minimize risk wasting time, money, and effort
  - Maximize likelihood of success

…in dealing with climate change

Adaptation refers to human actions taken to limit the negative or take advantage of the positive effects of climate change.

Mitigation addresses the root cause of climate change, limiting emissions of GHG or increasing their removal from the atmosphere.

Both are essential

- **Mitigation** is what we do to decrease the potential of climate change itself

  ↓ *GHG emissions = a safe car with good tires*

- **Adaptation** is insurance given a non-zero probability that climate change will have an adverse affect on your investment

  limiting the impacts = wearing a seatbelt

Tenets of
Climate Savviness

But first, take a step back

- What is your resource management goal?
- How vulnerable to climate change is it?
- What are possible adaptation responses

1) Limit Change

- Protect places that will naturally change less
  → Refugia

- Limit local/regional change, e.g.
  - *Sea level rise*: Protect/restore processes supporting shoreline accretion (biological and physical), allow in-shore movement
  - *Temperature*: Restore/create shade, increase flow
  - *Acidification*: limit NOx and SOx pollution

2) Support resistance, resilience, and response

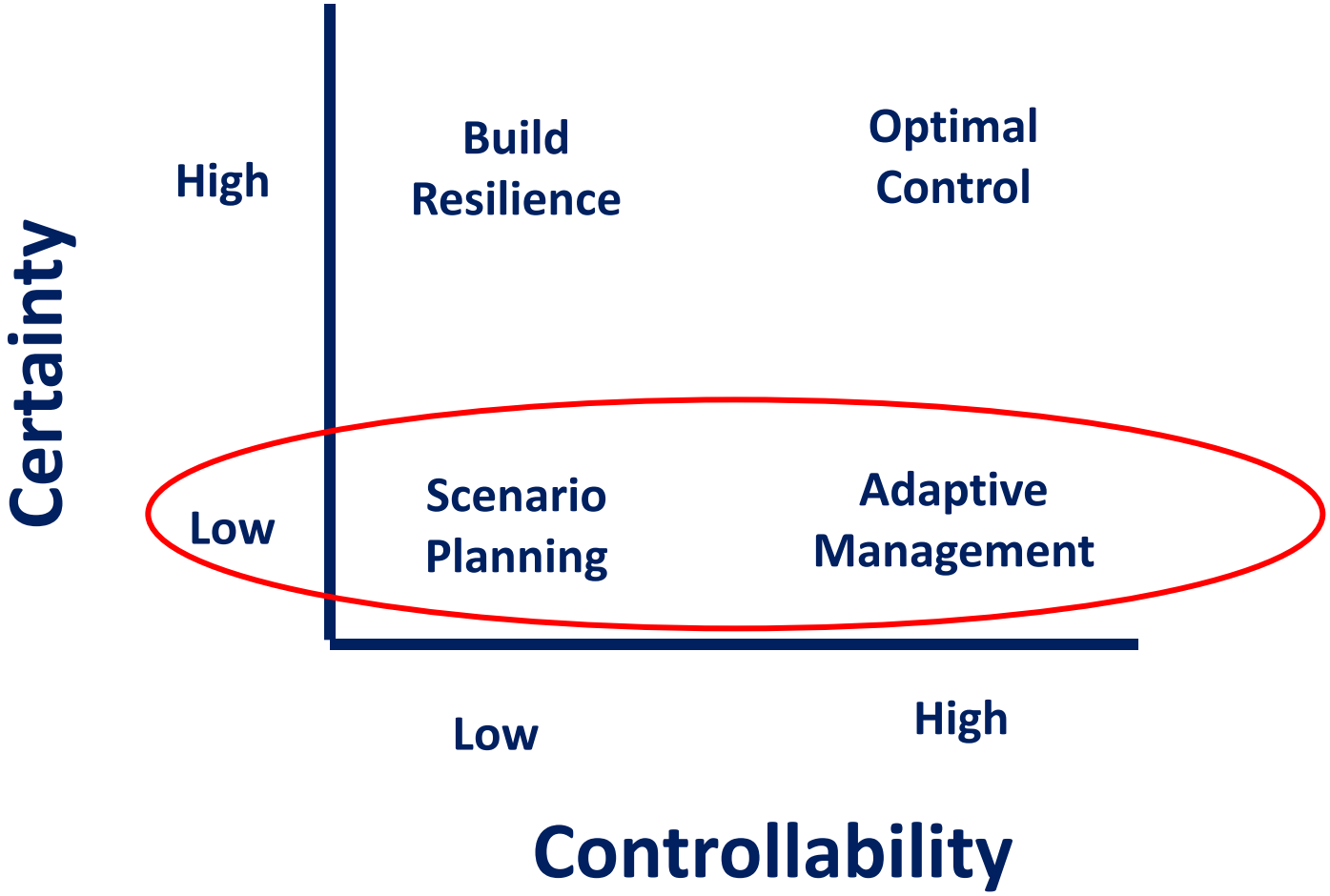
Resistance

- Reduce existing stressors
- Support evolutionary adaptation
- Movement & connectivity

Resilience

Response

3) Manage for Uncertainty



Adapted from Peterson et al 2003

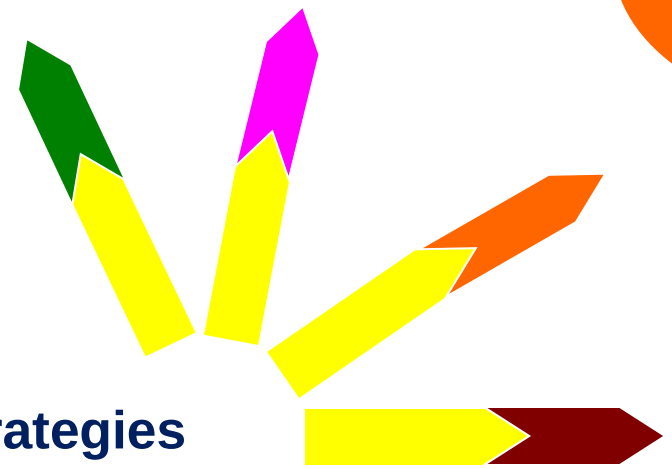
Scenario planning and robust decision-making, or *Should I bring my umbrella?*

Scenario 1: It rains hard all day

Scenario 2: it doesn't rain

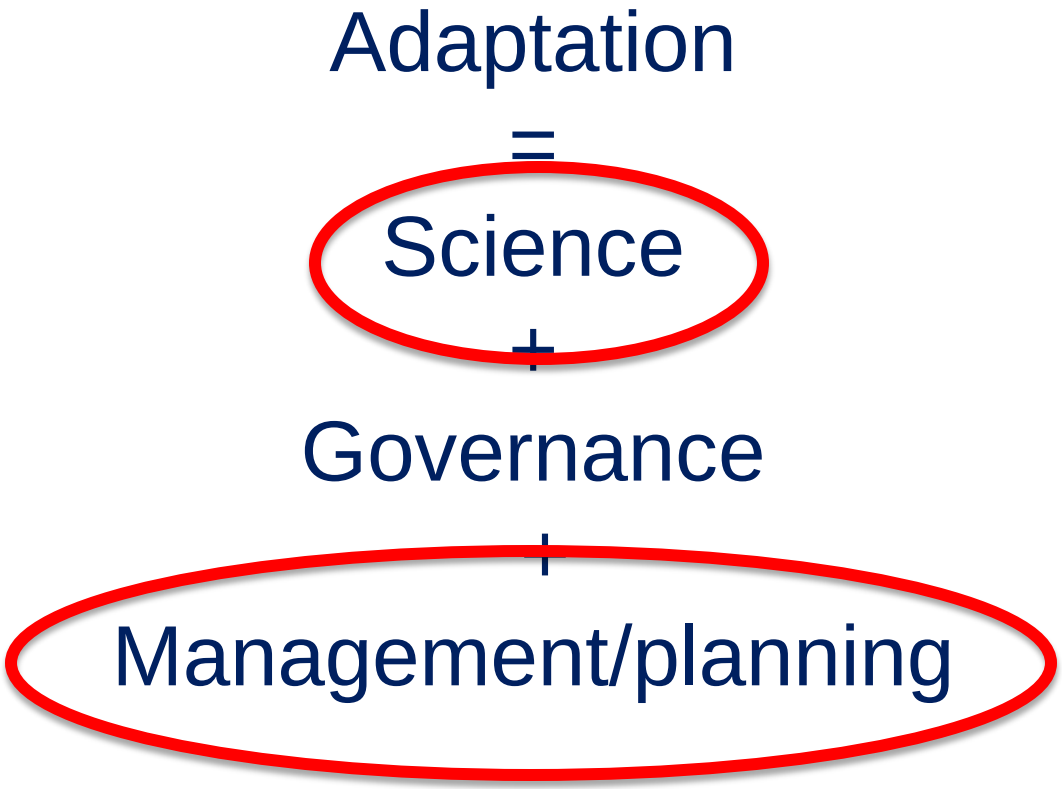
Scenario 3: It rains lightly

Scenario 4: It rains hard, but only briefly



Contingent actions/strategies

Core actions/strategies



Adaptation action happens when

- *It is built into existing efforts*
- *It doesn't focus just on climate change*

National Estuary System

- Maintaining water quality
- Sustaining fish and wildlife populations
- Preserving habitat
- Protecting human values
- Fulfilling water quantity needs

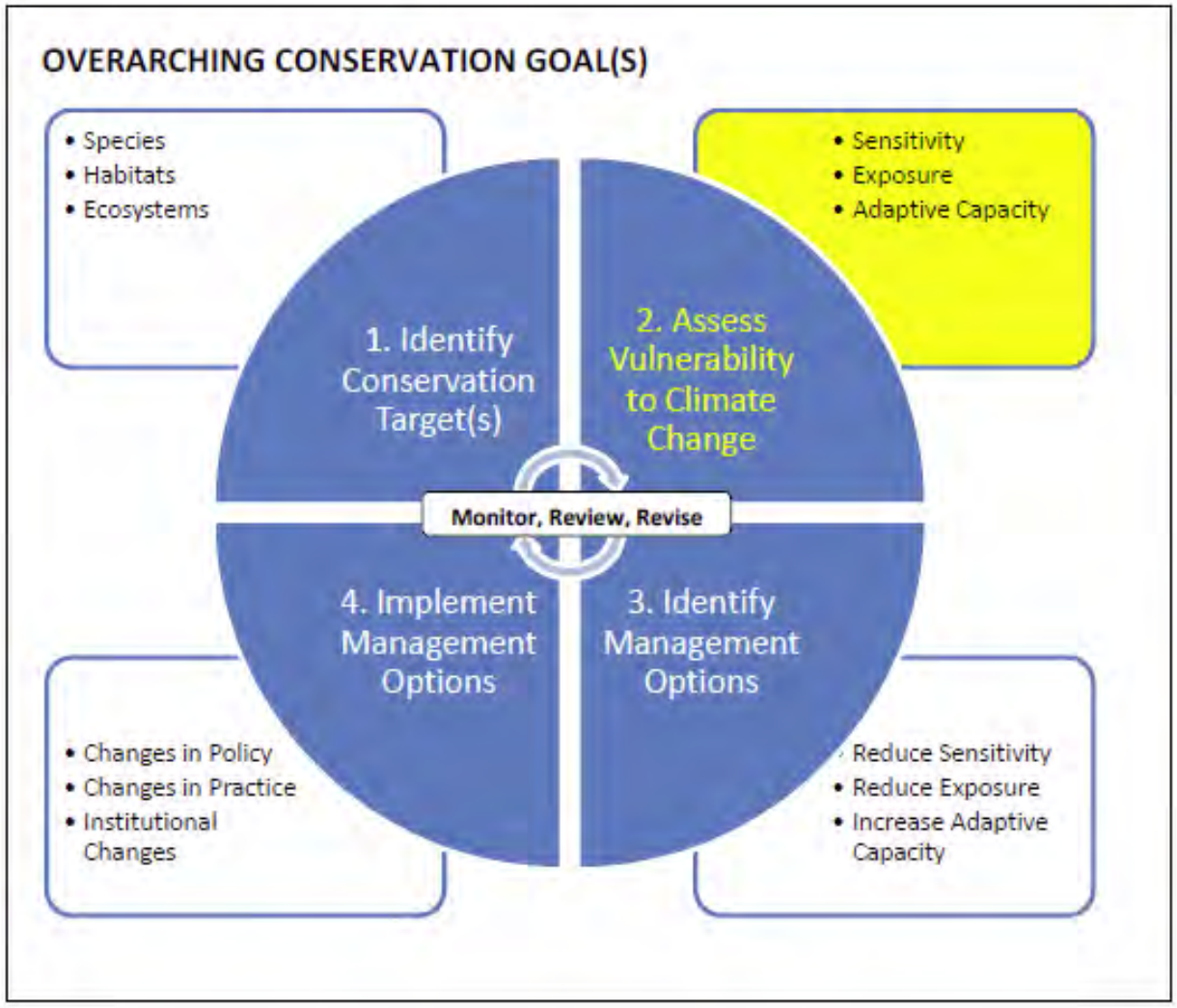
US Climate Change Science Program, SAP 4.4 Preliminary review of adaptation options for climate-sensitive ecosystems and resources. Chapter 7. 2008.

Key Findings

- Reduce and manage existing stressors
- Review existing management activities for easy adaptation opportunities
- Consider time-frames for action: Reactive, triggered (scenarios), proactive
- Plan and act now for the future: managing for uncertainty
- In some cases "… dramatic long-term losses in ecosystem services are inevitable…"
- Monitor relevant parameters

Assessing vulnerability

A tool for adaptation planning



Scanning the Conservation Horizon 2011

Defining vulnerability

Climate change vulnerability refers to the extent to which a species or system is susceptible to harm from climate change impacts

- What things are vulnerable
- Why they are vulnerable

Exposure + Sensitivity – Adaptive Capacity

= Vulnerability

Why assess vulnerability?

- Vulnerability assessments can help
  - Prioritize species and ecosystems for management action
  - Inform adaptation strategies
  - Efficiently allocate resources

- Vulnerability assessments don't
  - Make conservation decisions for you

Key steps for assessing vulnerability to climate change

1. Determine objectives and scope
2. Gather relevant data and expertise
3. Assess components of vulnerability
4. Apply assessment in adaptation planning

Considerations and compromises

Level of specificity and complexity ought to relate to objectives and types of decision processes

- Complexity not always best
- False accuracy at scales finer than the data

Uncertainty

- Natural resource management has always faced uncertainty
  - Anxiety and “analysis paralysis”
  - Don’t deny it - embrace it!
- Typical types of climate-related uncertainty
  - Future climatic changes (modeling)
  - Ecological responses
  - Management effectiveness
- Uncertainty in directionality vs. magnitude

- Incomplete or inadequate data
- Unsure of which models to use or how to parameterize them
- Addressing multiple uncertainties
- Need to make a decision anyway

➢ Expert judgment process or other structured decision-making process
  - Structured definitions, protocols, criteria,

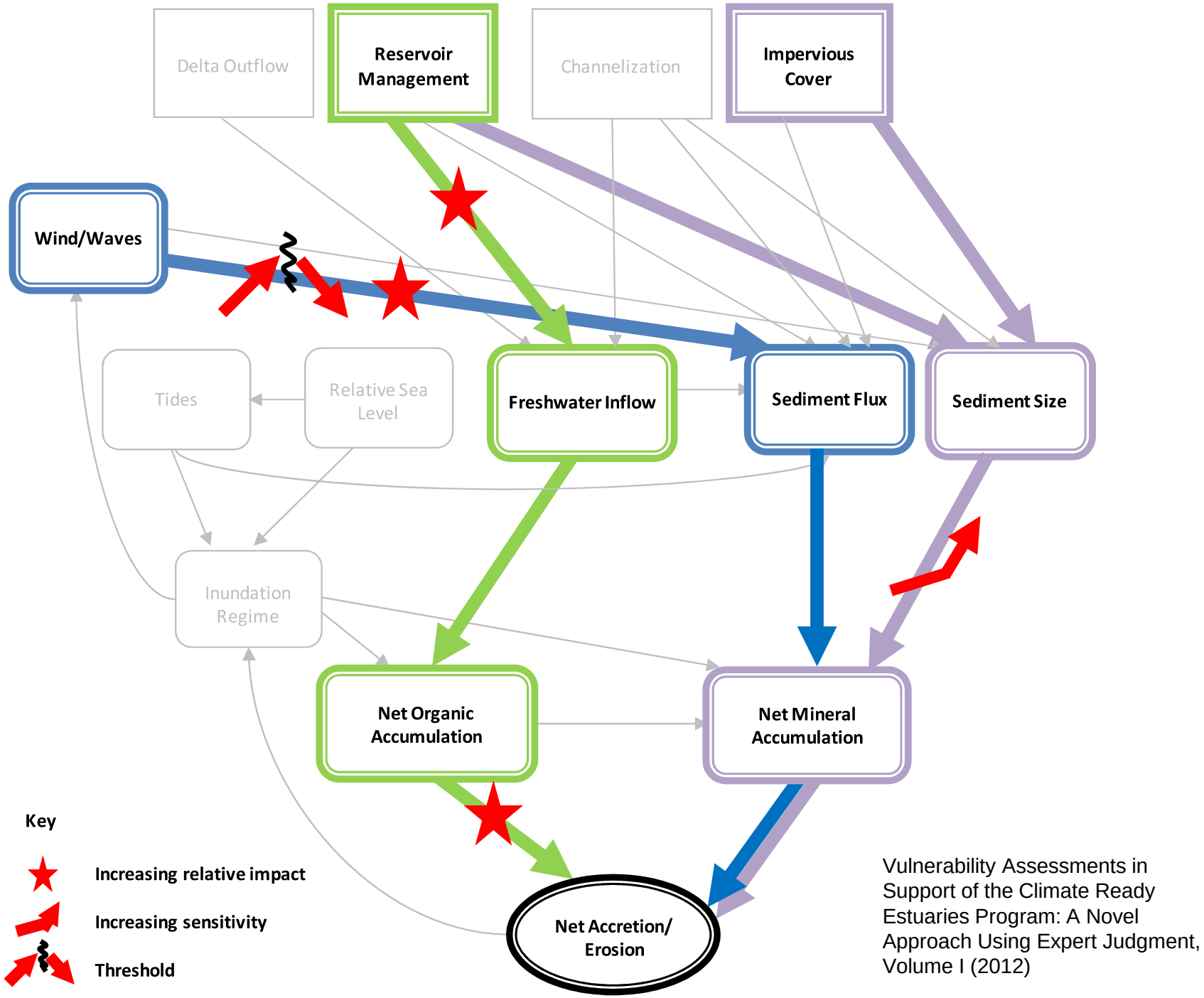
➢ Scenario planning

San Francisco Estuary Partnership Vulnerability Assessment

Expert Panel: 'rapid' and focused

1. Sediment retention in salt marshes
2. Interactions of shorebirds, prey and predators

- Influence diagrams
  - illustrate climate change impacts, sensitivities and thresholds
  - Lead to potential management options



Vulnerability Assessments in Support of the Climate Ready Estuaries Program: A Novel Approach Using Expert Judgment, Volume I (2012)

The real challenge

Avoiding getting lost in the minute details of research, modeling and impacts

Acting on what we already know

And remembering…

- Your resource management goals
- Opportunities for action

Regional activities

- Tillamook Estuaries Partnership
- Lower Columbia River Estuary Partnership
- Lower Coos/South Slough National Estuary Research Reserve

Survey Results

- Responsibilities
  - Landowner support, protected area management, maintaining water quality/quantity, increasing awareness, maintaining access
- Management goals
  - Sustain species (native), restore/enhance habitats, sustain recreation, sustain tribal resources, build partnerships & capacity, ag-land management
- Species/habitat
  - Coho salmon, riparian function/habitat, tidal wetlands, forests

Breakout groups

1. Aquatic species, habitats (tidal wetlands), processes, water quality
2. Terrestrial and riparian habitats and function
3. Awareness building, recreation access, ag-lands, water quantity, human dimensions

The road forward

- Timeline
  - Draft vulnerability assessment: Summer 2012
  - Final vulnerability assessment and report: Fall 2012 / Winter 2013
  - Phase 1 concluding workshop: Winter 2013

Expert panel

- Who?
  - Technical experts, resource managers, others?
- Roles
  - Provide information and analysis
  - Work together in structured decision-making process
  - Review products
- Responsibilities
  - Regular conference calls / virtual meetings

Volunteers?

Nominations?

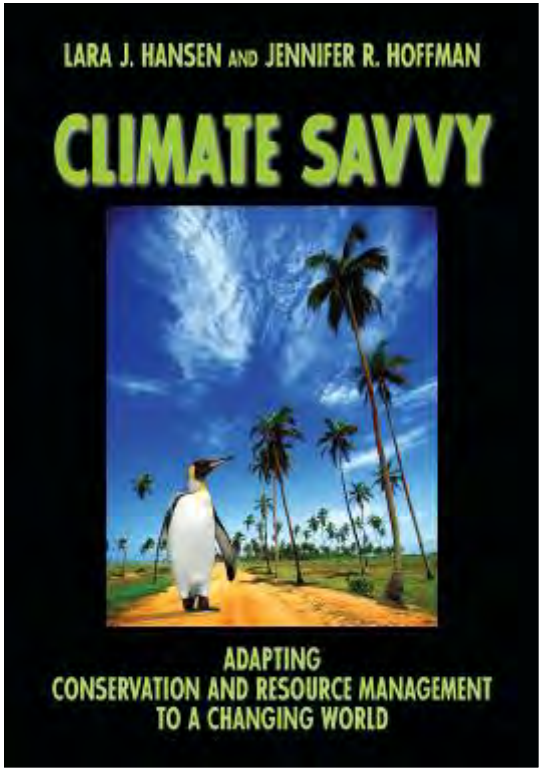
Suggestions?

Thank you!

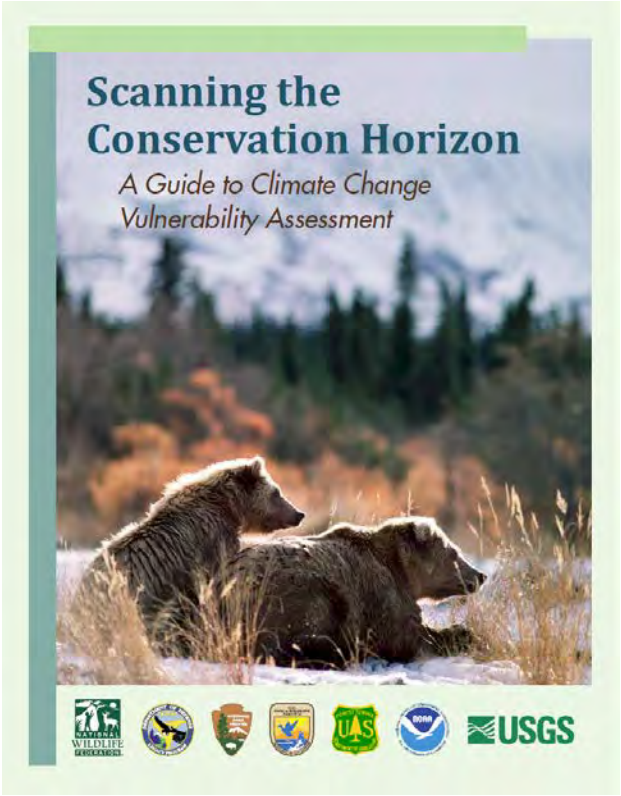
Climate Adaptation Knowledge Exchange

www.cakex.org

Resources



climatesavvy.org



nwf.org

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