

# Workshop on Estuaries, Climate Change, and Conservation Planning

18- 19 November 2010  
Oregon Coast Aquarium, Newport, Oregon

## Raw Notes for Workshop Small Group Discussions

### Slide of small group discussion questions

## Questions & "To Dos"

- Report back Q2 to workshop
- We'll collect all information
- All info in summary and to ODFW
- Results for OCS update

**What strategies are available to help estuaries adapt to climate change?**

**Consider:** the planning horizon; observed and projected climate impact; and intervention points (where in the system we can influence via management and conservation;

**Brainstorm and list** strategies for these intervention points

What 1 or 2 of these strategies should take top priority?

**Consider:** cost; social and political feasibility; potential for positive effects or risk of unintended negative consequences for other features or objectives; and robustness to uncertainty in future climate

What will be the first actionable steps to implementing these priority strategies?

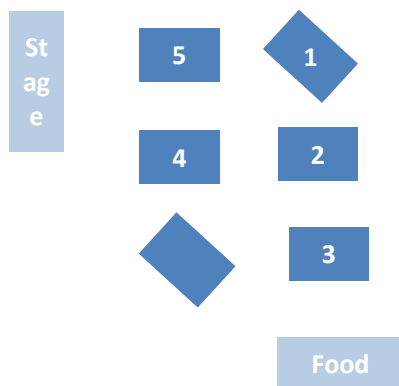
**Brainstorm and list** actionable steps for these intervention points

**Consider:** partners, timeline, etc.

What information or other resources will be needed to get there?

**Brainstorm and list**

### Table locations of groups



## Small group discussions

### Group 1

*Tony D'Andrea, John Christy, Bill Bridgeland, Laura Brophy, Georgeanne Ferdun, Scott Bailey, Gareth Ferdun*

### Top Strategy

- Work with land use planning process to preserve connectivity and opportunities for habitat migration (**#1 strategy**)
  - Land use planning, permitting, agency review development
- ACTION ITEMS
  - Map areas of vulnerability
  - Map areas without obstacles to migration
    - Develop protection for these lands
  - Work with agencies and local government to incorporate these areas into permit evaluation
  - Consider wetlands and uplands in this process
- KNOWLEDGE GAPS
  - Salinity regimes
  - Sediment regimes
  - How forest/upland changes with climate will change inputs to estuaries
  - How ocean changes with climate will change inputs to estuaries

### Strategies Discussion

- Work with land use planning process to adapt to climate and keep opportunities open
- Restoration – keep emphasis on natural process
  - Adaptive planning
  - Identify and select sites with room for habitat migration
- Develop conversations around land use/ownership conflicts that will arise with loss of coastal land – tidal lands changing
- Data gaps: Improve knowledge of the accretion process
  - Improve local on-the-ground data of sediment regimes
  - Improve knowledge of the salinity regimes
- Data gaps: Improve recognition and protection of middle and upper estuarine now (especially in anticipation of movements of humans into these areas with climate change; also because currently this is “underserved” habitat)

- Data gaps: Improve knowledge of impacts to uplands, forests, etc. and how this will feedback to estuaries (i.e., changes in woody debris, precipitation change influence on water inputs to estuaries)
- Data gaps: Improve knowledge of how ocean changes (currents, pH, etc.) will influence inputs to estuaries
- Watershed level planning
- Forest management planning to help moderate perturbations to estuaries
- Ag land management planning

### **Actions Discussion**

- Develop contingency plans
- Mapping zones of risk/opportunity in land use planning
  - Identify areas impacted by sea level rise (vulnerabilities – infrastructure, habitat, etc.)
  - Identify areas of opportunities (i.e., where obstacles are not in the way for habitat migration); prevent new obstacles
  - Identify constraints (roads, topographic features)
- Restoration and conservation of land
- Identifying role of government responsibility for land that will be impacted
- Look at precedent on beach front
- Add climate change aspects to permitting process (as one of the permit criteria)
  - Give tools to staff in order to do this (especially maps)
- ODFW to guide local government
- Get local government (county) etc. to include these issues in their permitting of new infrastructure
- Model how all estuaries/all types of estuaries in Oregon will respond to sea level rise
  - Identify most vulnerable types of estuarine habitats
  - Include uplands/wetlands for connectivity issues
- Protect up-watershed resources since lower-level resources may be impacted
- Channel set-backs
- Tidal set-backs
- Self-regulating tide-gates on agricultural lands
- Ag lands
  - Avoid development
  - Identify priority areas to take out of production when opportunities arise
  - Easements

### **Group 2**

*Dan Avery, Jimmy Kagan, Ted DeWitt, Amielle DeWan, Roy Lowe, Laura Mattison, Jeff Weber, Madeleine Vander Heyden*

## Strategies Discussion (Strategies in Priority Order for each one)

- Connectivity and Migration
  - Easements and Acquisitions
  - Removing and Breaching Dikes and Tidegates
  - Mitigation to: redistribute sediments; recreating vulnerable habitats
  - Creating green infrastructure (bridges on major highways for estuaries). (Analyze existing infrastructure in estuaries to determine how to reduce their impacts).

### Info Needs:

- Where to work based on climate change (what places should acquisition and mitigation occur)
- Distribution of ecological habitats and at risk species
- Hydrological modification and restoration (including salinity)
  - Recreating channel sinuosity
  - Sediment enhancement
  - Invasive species control
  - Addition of woody debris
  - Planting natives
  - Assisted migration

### Info Needs:

- Bathymetry
- Salinity
- Sediment Budgets and Transport
- Policy Strategies
  - Educating county commissioners about climate change impacts – education of outreach. Demonstrating costs and benefits.
  - Development Constraints – modify land use laws (rolling easements). Incorporate climate change information into permitting.
  - Incentives (to prevent development).
  - Changes in insurance policy, to reflect actual costs, expansion of the federal flood insurance program (FIRM) or ideas. (Redefine floodplains) Require bonding to rebuild.
  - Retreat (approach to identify and move development, structures).
  - Salmon as commodity. (Payment for Ecosystem Services?)

## What information do we need?

1. Actual economic costs of development decisions.
2. Online training for coastal goals.

## Group 3

*Cheryl Hummon, Jon Wickersham, Celeste Coulter, Darrin Sharp, Steve Zack, Jason Kirchner, Nadia Gardner, Jason Ainsworth, Anna Buckley*

## Summary of Strategies

- Strategic land conservation (#1 strategy)
- Restoration – tidal, beavers, etc. (#2 strategy)
- Land use planning (#3 strategy)
- BMPs for development
- Engineering solutions to maintain desired estuarine functions
- Control invasive species
- Funding- direct to highest ecological functions

## Strategies Discussion (plus some actionable items...)

- Ducks Unlimited – farmland conservation for flexibility , wetland migration inland, F & R Protection Program – ag easements not that much
- Build on [“add to”???] currently conserved lands (federal and state) with wide variety represented and manage collectively.
  - Most in lowlands now – need uplands/adjacent
  - Purpose – prevent development
  - More strategic approach than in the past
  - Land trusts transfer lands to agencies
  - Willing sellers (getting out of farming; dikes coming down)
  - Identify land based on intuition
- Ducks Unlimited (continued)
  - Returning tidal flows brings in good helpful critters
  - Remove impediments to tidal flow
  - Need acquisition and natural functions
  - Will tidal activity repair subsidence that occurred when water was gone?
  - No stumps/trees, no hummocks – add?
- Land use planning
  - City and county
  - Incorporate future impacts to expand current policies base on future impacts
  - Enforcement, reduce variances and conditional uses
  - Planners want economic development, not restoration
- Introduce native species into the system
  - Beavers up in watershed (not in estuary)
  - Filtering capacity of invertebrates
- Non-native species (plants) ---- “control invasive species”
  - Salt water invasives could increase
  - Early detection of north-migrating invasives from California
- Best Land Use Management Practices – design considerations for protecting existing infrastructure
  - For new development – practices such as bridges rather than dikes
  - Areas for no development

- Better marriage of development and restoration and mitigation – where they go
- FEMA/flooding & dikes -> landowner willingness to sell
  - Loss of ability to get flood insurance – fewer houses in flood zone
  - Need restrictions – cannot rebuild in flood zone
  - Dike management – some unmaintained or responsibility to landowner – kinds not productive – more landowners want out
  - FEMA based on old data – updates needed, new flooding regimes use new data to define
  - Balanced cut and fill isn't good enough
- Engineering approach
  - Add dikes to protect and control current wetlands?
  - Create new habitat? (not restoration)
  - This can add a specific function but may not be an adaptation strategy
  - Dredge spoils – raise levels of land that may be inundated
  - Approach may be useful when focused on a specific species with critical need
  - Better = natural processes
- Funders -- focus on undeveloped estuaries
  - And land adjacent -> for habitats to move
  - Or for estuaries with highest ecological function? (i.e., protect the best)

#### Group 4

*Cheryl Brown, Justin Saarinen, Fran Recht, Allison Aldous, Jim Morgan, Art Martin, Bruce Taylor, Dan Shively, Erin Stockenberg, Stacy Gallagher, Dave Plawman*

#### Strategies Discussion

- identify opportunities for estuary migration to maintain estuary function (**#1 strategy**)
  - Land use
  - Hydrological
- Identify future acquisition/easement
- Identify elements to address
  - Water quality
  - Sedimentation
- Scientific Analysis ~ transparency
  - Decision points
- Understanding the process
  - Develop knowledge network
- Downscaled
- Mapping and Modeling
  - Data layer creation - constraints, protected shoreline, vulnerability, habitat, LiDAR
  - Suite of analysis – strengths/weaknesses
  - Run models with various scenarios (i.e., dike removal)

- Wetlands planning
- Transportation – green infrastructure = migration potential
- Restoration planning
- Prioritize estuary value
  - Identify potential future resource areas
  - “risk analysis”
  - Demonstration sites
  - Social value
- Diversified portfolio (elevation, resiliency)
- Futures
- Monitoring – in restoration sites, learn from past use in planning for future
- Protect intact, project future need
- Watershed Protection Standards
  - Increased population = increased impacts
- Education and regulation on nutrient loading etc.
- Testing resiliency for adaptation strategies against major catastrophic events (e.g., corridors, etc.)
- Creative land use planning
  - Collaboration on easements

## Group 5

*Esther Lev, Debbie Reusser, Bob Buckman, Henry Lee II, Mike Gray, Stan Van DeWetering, Craig Cornu, John Bauer, Shawn Stephensen*

## Strategies Discussion

- Identify low areas – future not past
- Zone – regulate development
- Easement land trusts
- Road improvement – prioritize with transportation and their pinch or problem areas and potential conservation opportunities that alleviate the problem but promote ecological benefit
- Build on tsunami plans – call it “slow tsunami”, expand the geographic scope, impact, etc.
- Roads – ODOT, ODFW, county – engage in comprehensive visioning, problem solving, opportunity which infrastructure may not be repaired over time, etc.
- Update FEMA maps with LiDAR, 2 meters above high tide. Change regulatory programs to match better information
- Expand outreach.
  - Change words, not use “climate change” or punitive type language
  - Prefer the term “water catchment”
  - Look for common interests, opportunities
- Identify problems that we can look for new creative solutions