

# Adaptive Management Perspectives for the Lower Columbia River Estuary Partnership

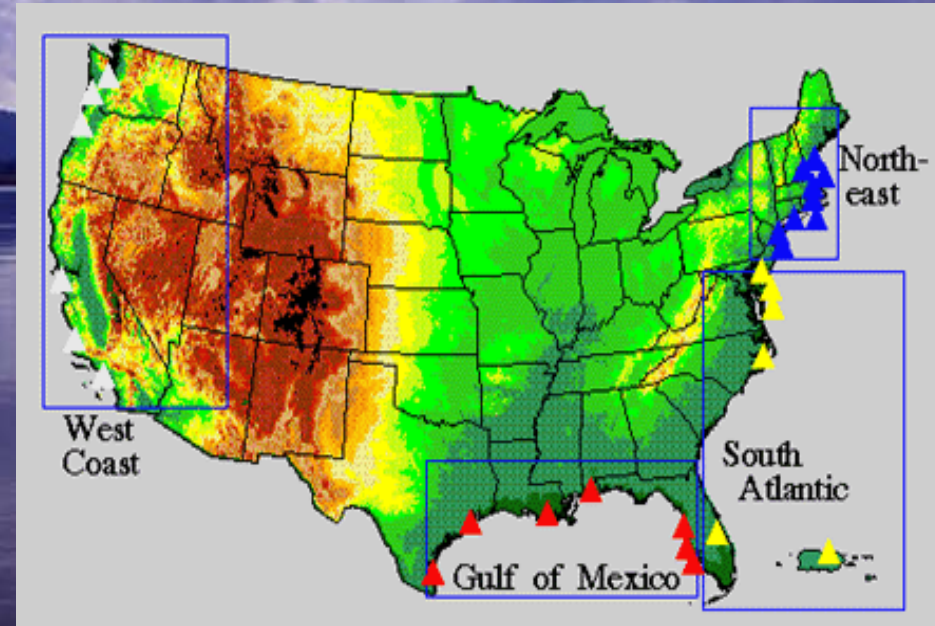
Columbia River Estuary Conference  
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Chris Hathaway (for Debrah Marriott, Executive Director)  
Lower Columbia River Estuary Partnership



# Lower Columbia River Estuary Partnership

- Part of National Estuary Program
- Estuary of “National Significance”
- EPA – Section 320 CWA
- Bi-state / federal partnership
- Non-profit
- Diverse Board of Directors
- Program area – Bonneville Dam to the Pacific Ocean
- Develop and implement Comprehensive Conservation and Management Plan (CCMP or Management Plan)



# Estuary Partnership Mission

- Preserve and enhance the water quality of the estuary to support its biological and human communities.
- What we are
  - Collaborative, locally based, community driven
  - Focused on the entire ecosystem
  - Partnership oriented – knitting local efforts into a regional framework
- What we are not: activist, single species, reactive



# Estuary Partnership “drivers” re: restoration

- Estuary Partnership Management Plan Actions
- National Estuary Program
- Science Work Group
- Funding organizations’ “drivers”
  - Bonneville Power Administration
  - NOAA Community-based Restoration Center
  - EPA Targeted Watershed Program
- Restoration partners
- Communities, land owners, etc.

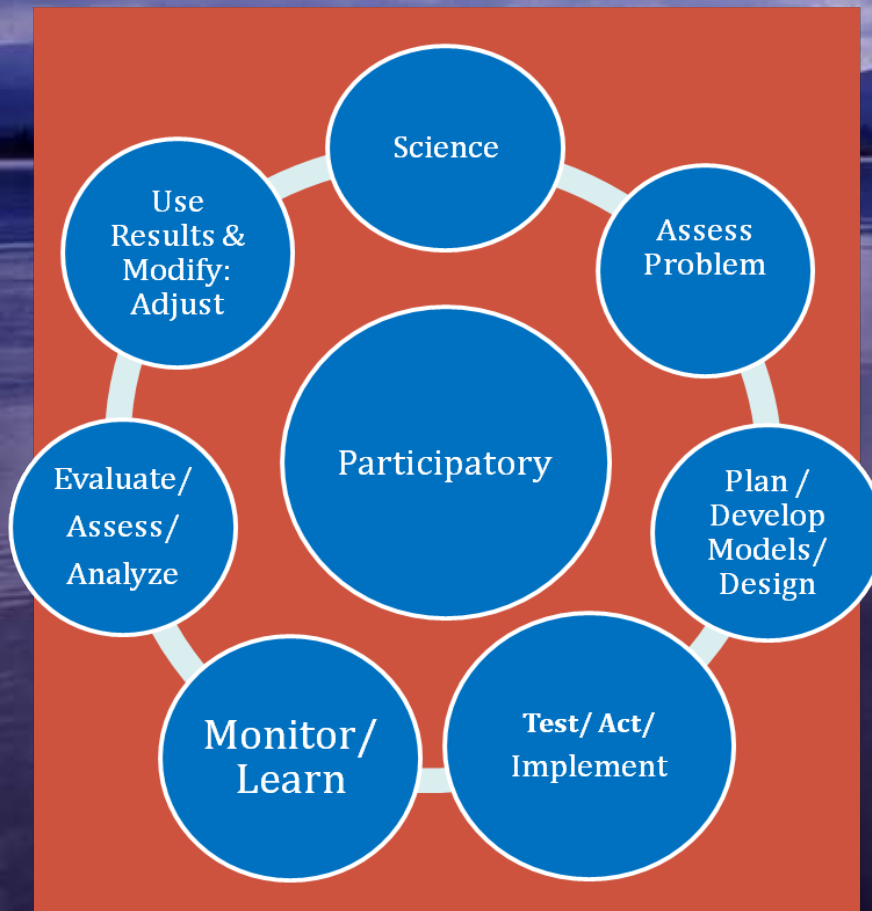
# Adaptive Management

- A structured, iterative process of optimal decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring



# Adaptive Management

- Chart Form:



# Adaptive Management

- Or - Learning by Doing





# EP Adaptive Management Approach

- Learn by doing
- Continuously evaluating and adapting
- Example re: Habitat Restoration Program
  - Habitat restoration program goal
  - Project review criteria
  - Project review process
  - Emphasis on project development
  - Action effectiveness monitoring



# EP Management Plan Habitat Goal

- 1999 Restoration Goal
  - Protect and restore 16,000 acres by 2010
  - Includes 3,000 acres of tidal wetlands
  - Incorporated into 2000 Biological Opinion
- Regional goal achievement!
- 2009 Restoration Goal Revision
  - Protect and restore 19,000 acres by 2014
  - New goal incorporated into EPA Strategic Plan (2009 – 2014)



# EP Habitat Rest. Project Review Criteria

- Intended for regional use and applicability
- Reviewed by ISRP
- Derived in part from:
  - Guiding Ecological Principles For Restoration of Salmon Habitat in the Columbia River Estuary (Simenstad, Bottom)
  - An Ecosystem-based Approach to Habitat Restoration Projects with Emphasis on Salmonids in the Columbia River Estuary (Johnson, Thom, Whiting, Sutherland, Ricci, Southard, Ebberts and Wilcox. 2003)
  - Proceedings of the Lower Columbia River and Estuary Habitat Conservation and Restoration Workshop (Estuary Partnership and USACE. 2001)

# EP Habitat Rest. Project Review Criteria

- Ecosystem Criteria:
  - Habitat Connectivity
  - Areas of Historic Habitat Type Loss
  - Improvement in Ecosystem Function
  - Adequate Size and Shape
  - Level of Complexity
  - Accessibility For Target Species
- Implementation Criteria:
  - Use Natural Processes over Habitat Creation
  - Community Support & Participation
  - Potential for Success & Self Maintenance
  - Potential for Improving Ecosystem Function while avoiding impacts to Healthy & Functioning Ecosystems
  - Avoid Sites Where Irreversible Change has occurred
  - Capacity of Sponsor/Partnership
  - Project Context within Broader Management & Planning Objectives
- Monitoring Criteria:
  - Monitoring & Evaluation with Relationship to Stated Goals and Objectives
  - Displays linkages to Reference Site(s)
  - Transferability of Results

# EP Habitat Rest. Project Review Criteria

- 2009 - Scoring and weighting added
- 2009 - Slight modifications to recognize the priorities of different funding sources
- Future ?? – opportunities for revisions or overlays to continue to respond to regional needs and provide coordinated, efficient project review processes

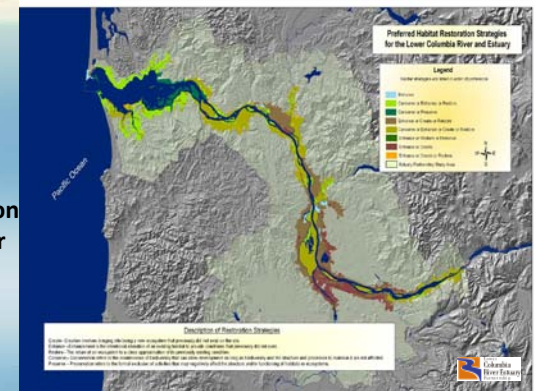


# EP Habitat Project Review Process

- Continual refinement
- Request for proposals
- Science work group review
- Site visits
- Project review committee
- Project evaluation criteria
- Tier 2 Prioritization Framework
- Potential for additional refinements or elements as regionally needed

## Current Habitat Restoration Prioritization

- Two-tiered - Scales from system-wide to project specific
- **Tier 1** uses disturbance model (stressors)
  - provides method for comparing site function and structure at larger scales
  - Focuses on existing data
  - refine by updating/adding new data
- **Tier 2** provides scientific method of comparing specific projects using change in function and likelihood of success



# EP Focus on Project Development

- Universe of restoration projects somewhat limited
  - Landowner buy-in, community support
  - Few organizations and agencies implementing restoration projects
  - Organizations lack staff and resources to implement and develop projects concurrently



# EP Focus on Project Development

- Variety of projects/strategies
  - 2007 – Subcontract: 2007 Implementing the Lower Columbia River and Estuary Restoration Strategy Through Targeted Landowner Contact (Columbia Land Trust)
  - 2007 – Subcontract: Targeted Outreach for Development of Restoration Project Proposals and Assessment of Effectiveness Monitoring Capacity (Trask)
  - June 2008 – Habitat Restoration Project Development Summit
  - May 2009 Habitat Restoration Forum
  - 2010 – BPA directly funding project development
- Future ?? – Coordinated, non-competitive project development approach

# EP Action Effectiveness Monitoring

- Research to determine effects of restoration actions on fish performance and/or habitat conditions
- Assess ecosystem benefits and uncertainties affecting restoration success
- Support adaptive management of restoration by regional partners
- Four primary sites – varied project types, locations,
- Utilize Roegner, et. al Protocols





# EP – Part of Larger Coordinated Regional Effort

- Cumulative effects study
  - USACE with NOAA and PNNL
- Reference site study
  - EP with PNNL
- Action effectiveness monitoring
  - EP, CREST, Columbia Land Trust, Ash Creek Forest Management, NOAA Fisheries, Scappoose Bay WC
- Coordination to ensure:
  - Data are comparable across sites and time for similar types of actions and habitats
  - Results are scalable up

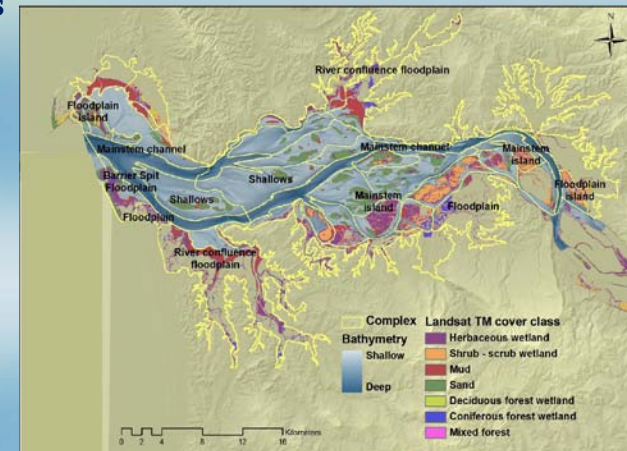


# EP Adaptive Management - Next Phases

- Develop and continue to refine restoration strategy
- Support recovery plans
- Use best available data
- Support multi-species
- Coordinated project development
- Increase capacity of project sponsors
- Improve efficiencies to increase quantity and quality of projects

## CRE Ecosystem Classification

- Applications:
- **Prioritizing habitats for protection and restoration**
  - Using landscape metrics
    - Fragstats
    - McGarigal, K., S. A. Cushman, M. C. Neel, and E. Ene. 2002. Available from UMass
  - Number of patches
  - Types of patches
  - Edge density



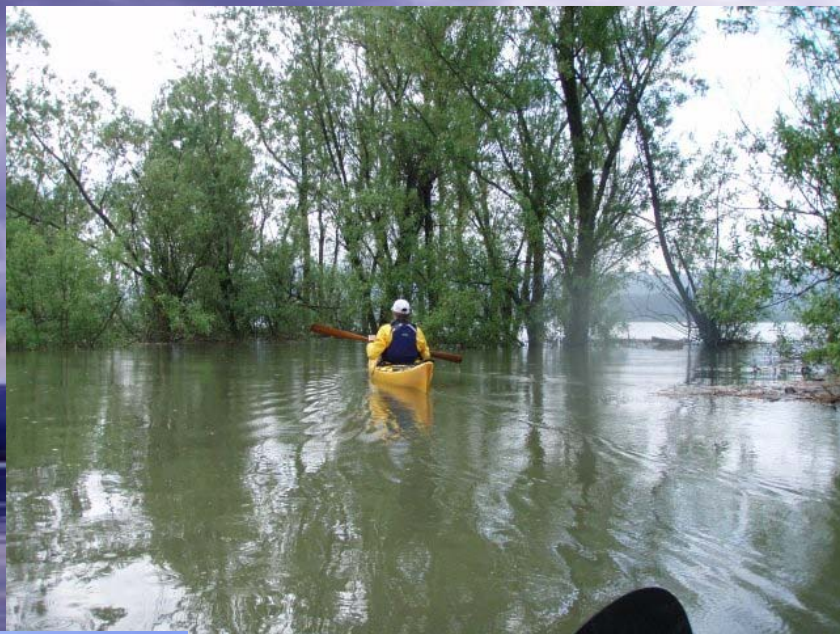
From Burke et al. 2005 presentation @ ERF



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A landscape photograph of a wide river or lake under a cloudy sky, with mountains in the background. The text "• The End" is overlaid in the center.

• The End





# Management Plan Goals

- Protect and restore 19,000 acres by 2014
- Improve land use practices to protect ecosystems by reducing stormwater runoff
- Prevent toxic and conventional pollution;
- Eliminate persistent bioaccumulative toxics;
- Reduce PAHs and heavy metal discharges associated with petroleum powered vehicles & equipment;
- Reduce bacterial contamination.
- Implement and sustain long term monitoring Heighten lower Columbia River coordination
- Provide educational and stewardship programming to all ages

# Challenge

- Not just planning for but employing
- Defining the goals, the measures
- Setting up a process to do/ act & learn
- Seeing failure as a learning tool not a punishment
- Time

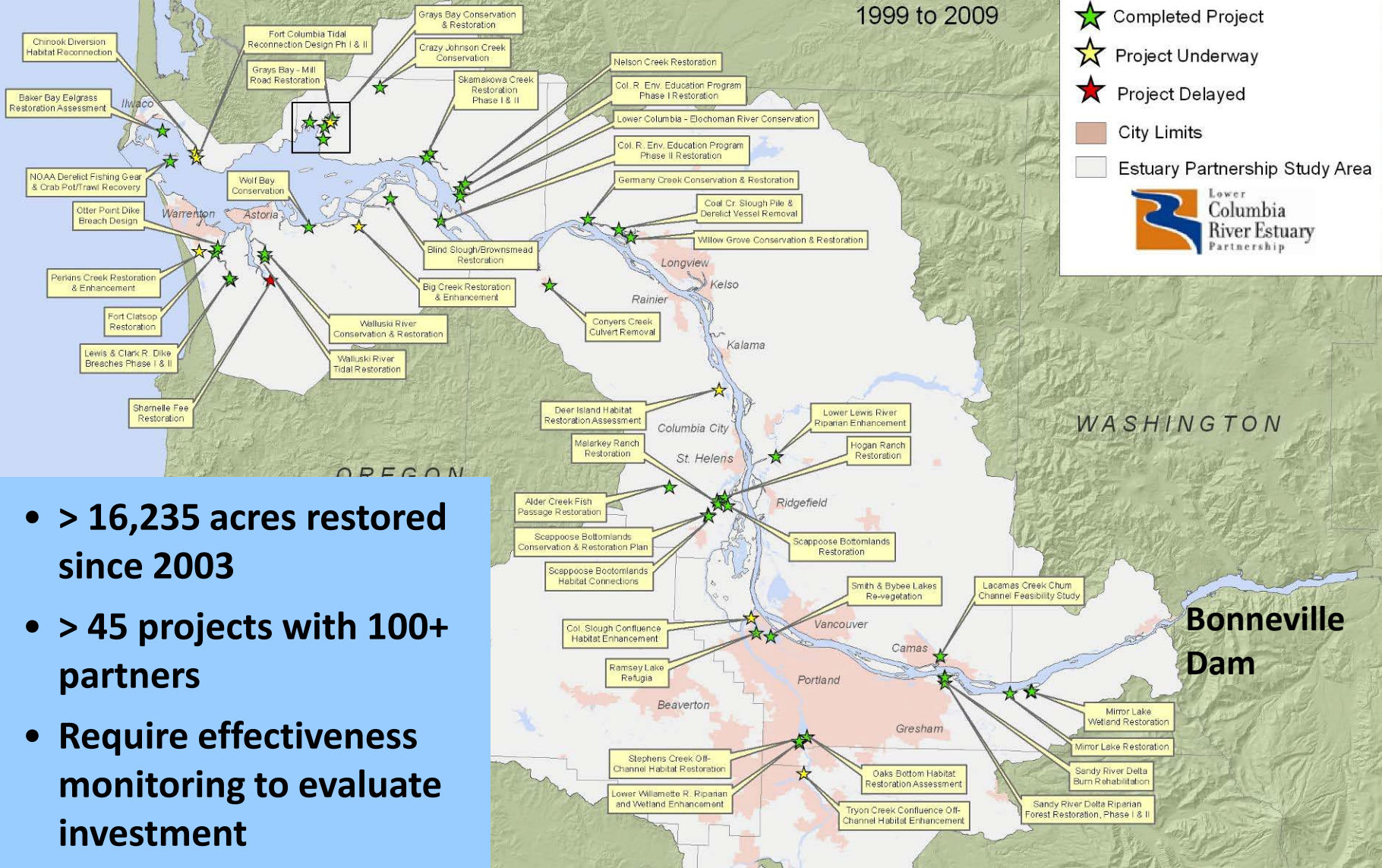
# Regional Investment in Restoration

## Habitat Restoration Projects Funded By the Estuary Partnership

1999 to 2009

### Map Legend

- ★ Completed Project
  - ☆ Project Underway
  - ★ Project Delayed
  - City Limits
  - Estuary Partnership Study Area
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- > 16,235 acres restored since 2003
- > 45 projects with 100+ partners
- Require effectiveness monitoring to evaluate investment

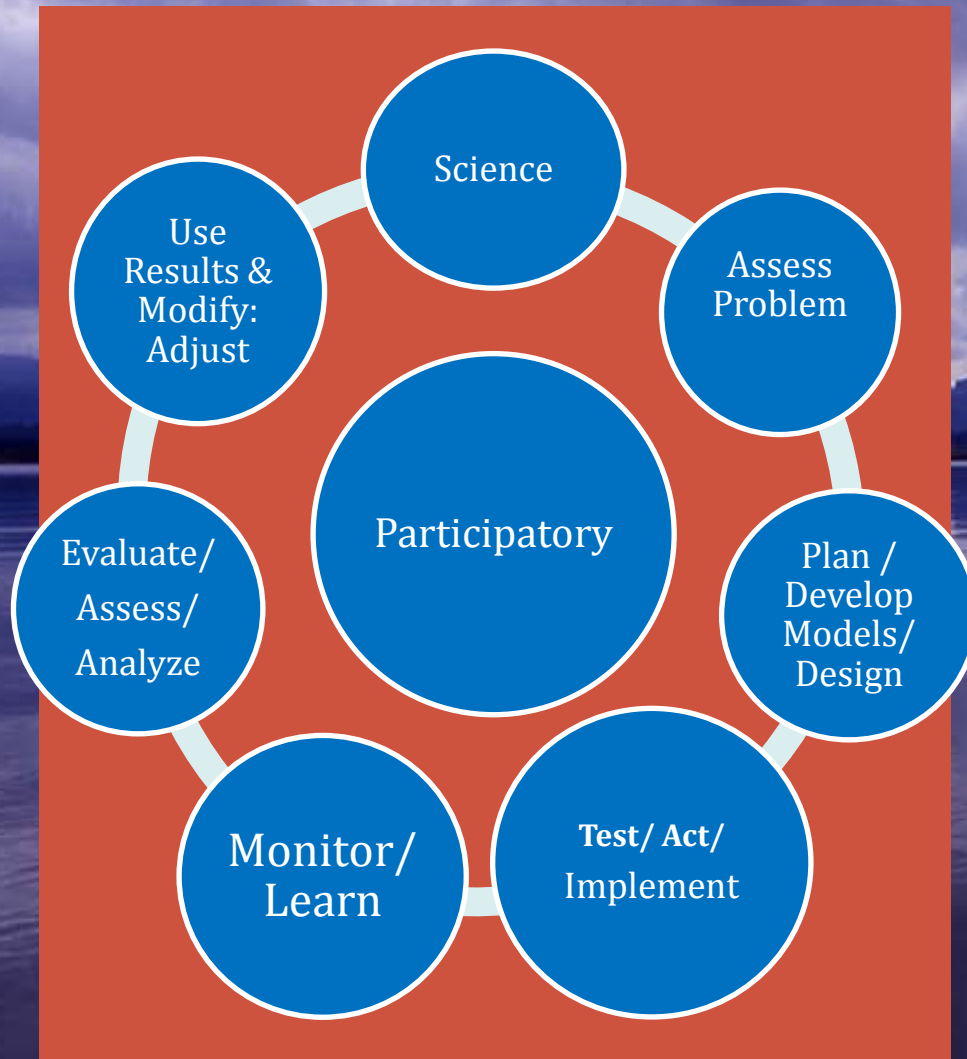


# EP Habitat Program AM Attributes

- Multi-tiered approach:
- Clear program actions (our Management Plan);
- Identifying and securing funding
- Developing projects that align with habitat program goals:
  - Habitat restoration and protection projects
  - Filling data gaps (e.g., Estuary Ecosystem Classification, Shoreline Condition Inventory, Restoration Prioritization)
  - Coordinating, supporting partners and filling gaps
    - Technical assistance
    - Capacity building
    - Project development
- Garnering partners' feedback/support for steps needed to implement actions and identify gaps (e.g., Science Work Group, Board of Directors, Science to Policy Exchanges)
- Decision framework supporting responsive and responsible management decisions (e.g., Science Work Group, Science to Policy Exchanges, topical workshops)



# Adaptive Management



Adaptive management is good management, but that not all good management is adaptive management.

Adaptive management requires common sense, but it is not a license to just try whatever you want.

Adaptive management requires an explicitly experimental "scientific" approach to managing conservation projects.

Adaptive management incorporates research into conservation action. It is the integration of design, management, and monitoring to systematically **test assumptions** in order to **adapt and learn**.

# Program Attributes

## Multi-tiered approach:

- 1) Establishing clear program actions (i.e., our Management Plan);
- 2) Identifying, securing funding, and developing projects that align with program actions:
  - 1) Habitat restoration and protection projects
  - 2) Filling data gaps (e.g., Estuary Ecosystem Classification, Shoreline Condition Inventory, Restoration Prioritization)
  - 3) Coordinating, supporting partners and filling gaps
    - 1) Technical assistance
    - 2) Capacity building
    - 3) Project development
- 3) Garnering partners' feedback/support for steps needed to implement actions and identify gaps (e.g., Science Work Group, Board of Directors, Science to Policy Exchanges)
- 4) Decision framework supporting responsive and responsible management decisions (e.g., Science Work Group, Science to Policy Exchanges, topical workshops)

# EP M Habitat Restoration Program

## Goal

- **19,000 acres to be restored by 2014**
  - Includes 3,000 acres of tidal wetlands along lower 46 miles
  - Original Goal of 16,000 acres by 2010 was achieved by regional partners
  - Included in EPA Strategic Plan; Management Plan original goal was adopted into the 2000 BiOp by NOAA



Culvert Removal, Young Creek

# Estuary Partnership Basics

- Bi-State/Federal Partnership  
OR - WA - EPA
- Diverse Board of Directors
- Public-Private, Non-Profit, Community Based
- Study area 146 miles –  
Bonneville Dam to the  
Pacific Ocean





# OR and WA Governor's Charge

- Bring together the complex ecosystem, multiple partners, multi-species, diverse uses and issues
- Build capacity of partners and leverages resources to fill gaps
- Deliver tools, data and information to all citizens
- Remove barriers to better management of the lower Columbia River through collaboration, convening and coordination: science based community solutions,
- Locally driven implementation; support, enhance, coordinate
- Regional cohesiveness, efficiencies, regional funds
- Ecosystem based focus on the lower 146 miles of the river

# Estuary Partnership Habitat Programmatic Adaptive Management

- 1999 – Reactive: solicitation through RFP
- 2001: Regional Project Evaluation Criteria, 100 scientists
- 1999-2010: developing new science
  - Columbia River Estuary Ecosystem Classification
  - Data sets
  - Shoreline Inventory
  - Restoration Prioritization
  - Effectiveness Monitoring
  - Reference Sites
  - Cumulative Effects



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- 2005: Habitat Restoration Case studies
  - 2005, 2007, 2008: Refined Project Evaluation Criteria
  - 1999, 2001, 2003, 2006, 2008, 2010 Astoria conferences
  - 2008 & 2009: Forums assessing successes & challenges ahead
    - Proactive project development using data, lack of ready projects, technical capacity, funding more phases, land owner and community needs
    - 2009: Proactive Targeted Solicitation
    - 2009: Updated restoration goal to 19,000 acres
      - 16,000 acres original goal achieved
    - 2009-2010: BPA funding project development, technical capacity

# Estuary Partnership Management Plan

- Actions based on 7 priority Issues:
  - Biological Integrity
  - Impacts of Human Activity and Growth
  - Habitat Loss and Modification
  - Conventional Pollutants
  - Toxic Contaminants in Sediments
  - Institutional Constraints
  - Public Awareness and Stewardship

