

# Ecosystem Restoration Approaches

## Session I: Restoration Planning and Implementation

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# Background/Purpose:

- Status of estuarine restoration to date:
  - Current restoration projects
  - Effectiveness monitoring efforts
  - Existing capacity for future restoration project development
- Characterize innovative restoration project types related to sediment management and physical processes



# Existing Restoration Activities

(Project Type: Tidal Reconnection)

- Grays Bay (Columbia Land Trust)
- Youngs Bay (CREST/NCWA)
- Baker Bay (CREST, Sea Resources)
- Limited amount in mainstem and tidal freshwater project (ACOE, Columbia Land Trust)



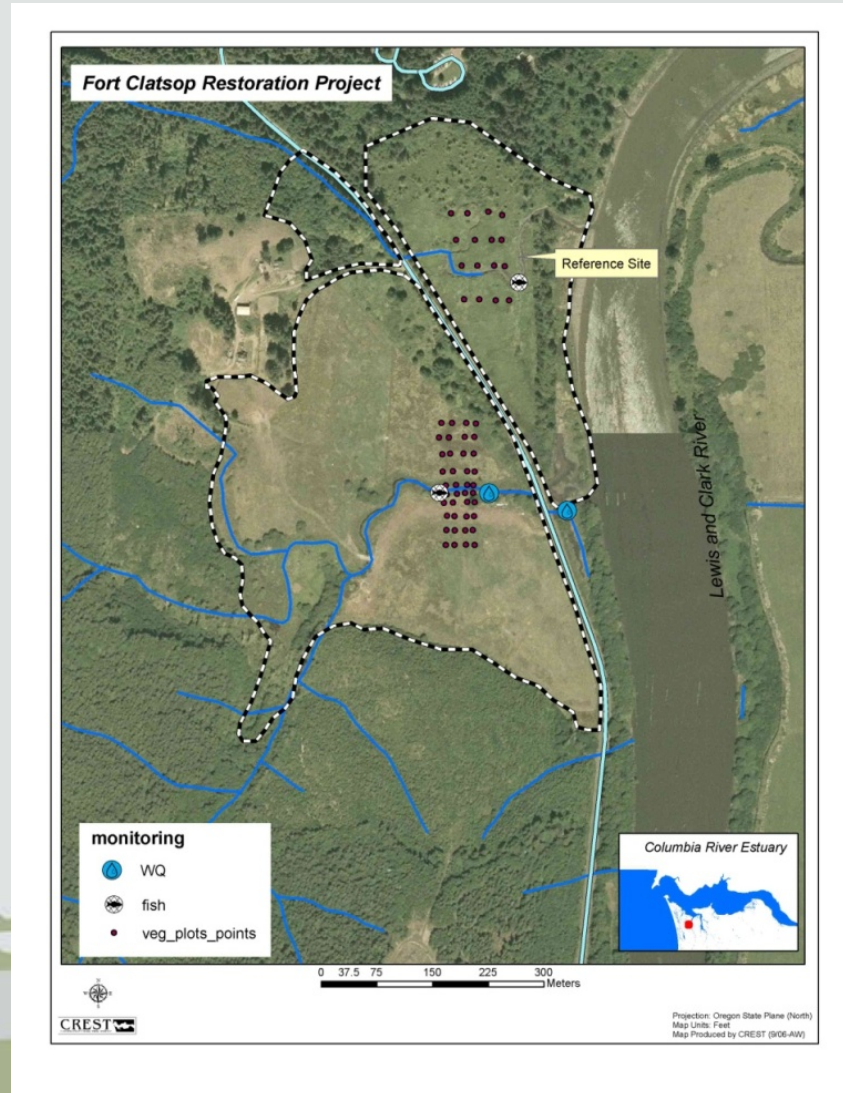
# Estuary Restoration Project Type: Tidegate/Dike removal (Fort Clatsop National Memorial)



Result:



# Effectiveness Monitoring



# Future of Estuary Restoration

- LCREP Outreach Project Findings:
  - Focus on estuary still high as cost-effective vehicle for salmon recovery
  - Limited amount of tidal reconnection opportunities
  - Limited organizational capacity to develop restoration projects and conduct rigorous effectiveness monitoring



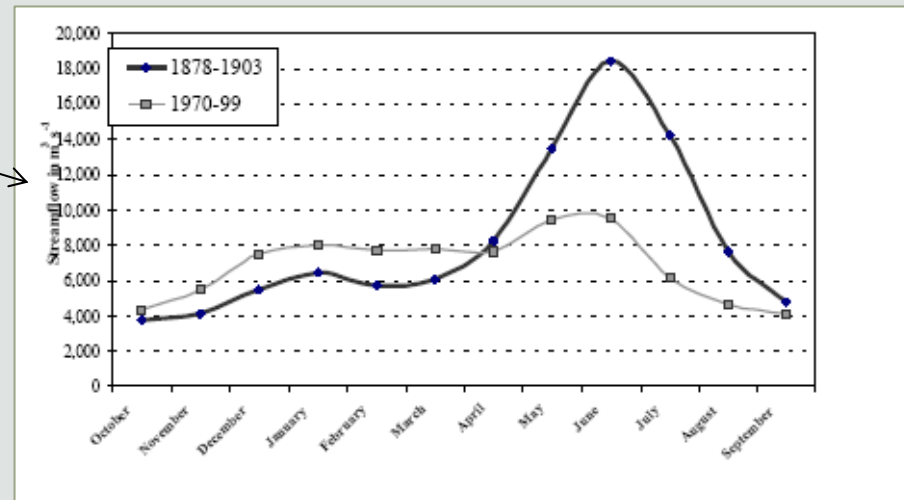
# New Restoration Approaches

- Shared Landscape Factors:

- Mainstem Hydro-modification
- Navigation Channel Operations
  - Pile Dikes
  - Dredging Activities
  - Dredge Material Disposal
- Sediment Response

- Mainstem focus

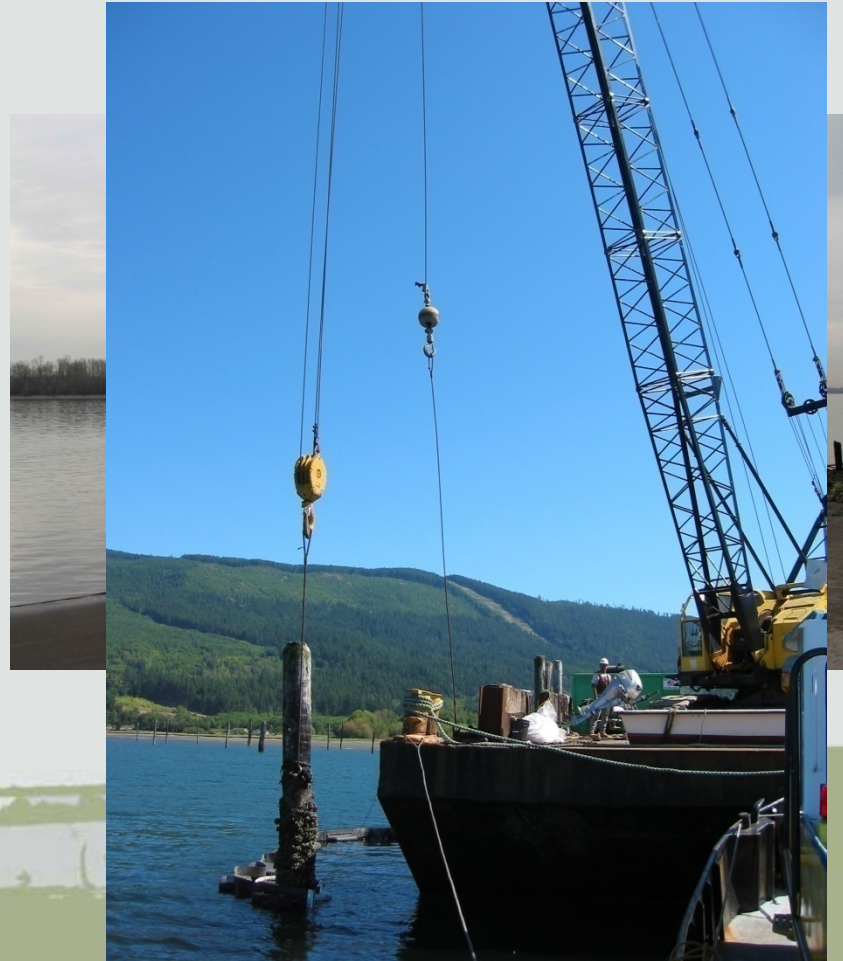
- Supportive of all Columbia River salmon populations and life history patterns



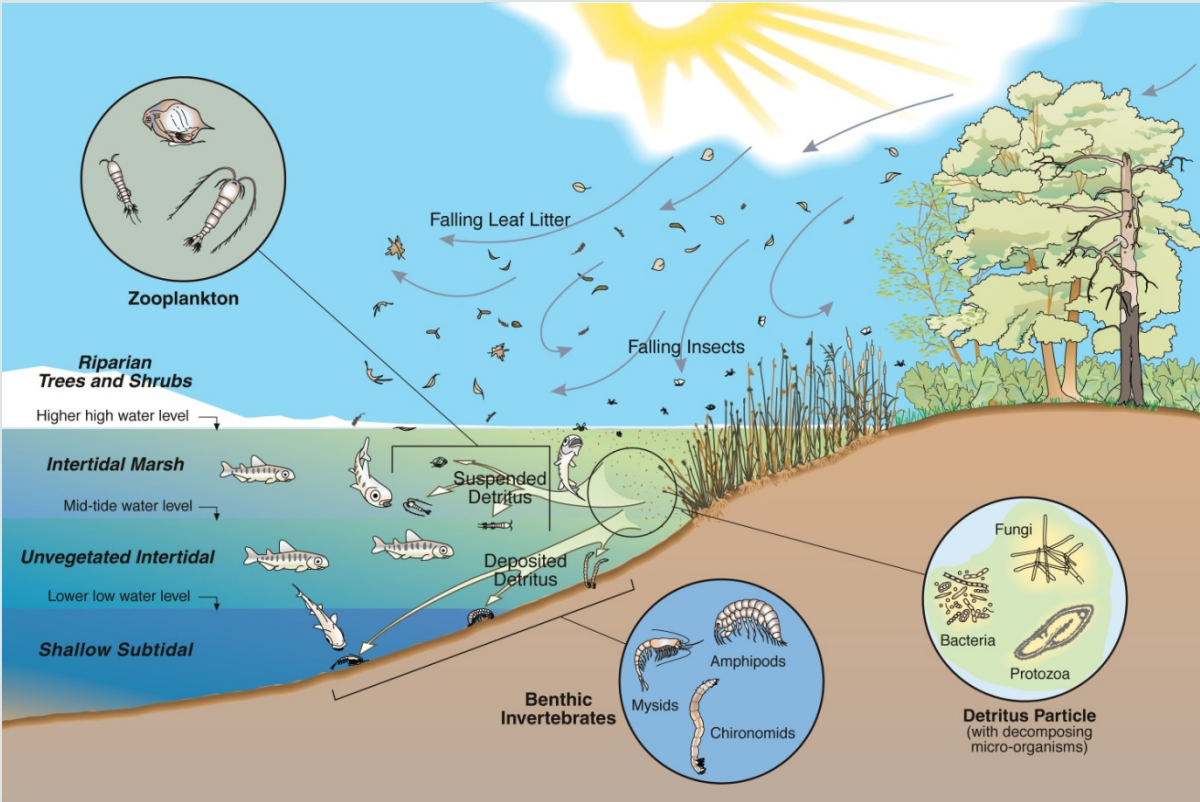


# Project Type: Pile Structure Removal

- Potential Benefits
  - Improved sediment processes
  - Water quality
  - Increased access to rearing habitat
  - Reduced predation
- New LCREP Program



# Intertidal Wetland Conceptual Model



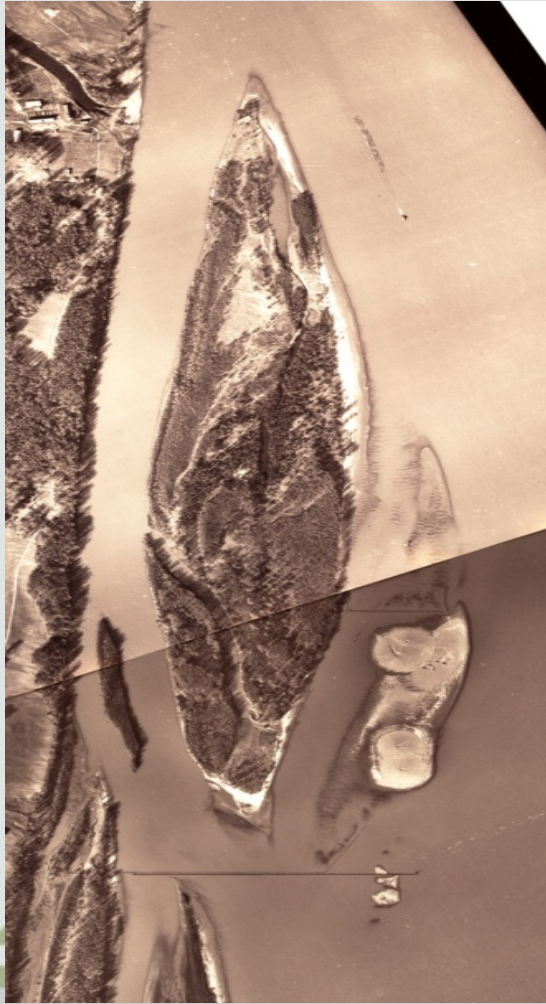
# Project Type: Sediment Manipulation

- Modifications to elevation to encourage inter-tidal wetland formation:
  - “Scrape down”
  - Creation
- “Scrape Down” Examples:
  - Decker Island Sacramento
  - Crims Island, Lower Columbia

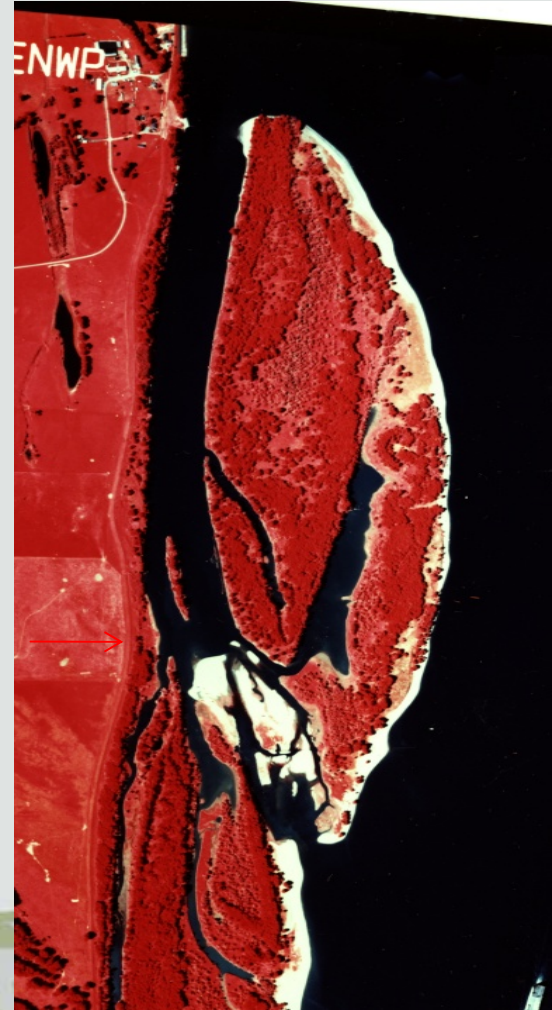


Decker Island, Sacramento River

# Wetland Creation Examples



1939



2001



# Restoration Design Approach

- Develop conceptual model
- Define testable hypotheses
- Site investigations of completed projects including reference sites
- Understand controlling factors and existing site trajectory
- Monitoring as the basis for both project design and ecological effectiveness
- Use monitoring to inform future treatments on site or elsewhere in the region



# Project Type: Exotic Weed Removal



# Summary

- Fewer number of “fruit” for conventional restoration project types
- Need to expand ecosystem restoration “toolbox” to explore new set of project types
- Linkage to current landscape management factors (hydromods, dredging)
- Monitoring as the basis for adaptive learning and testing of assumptions about existing sediment related processes affecting Columbia river estuary ecosystem





# Questions/Contact Info:

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