Improving Habitats along Delta Levees

Issue Paper Proposed for Council Endorsement
Presented by Jessica Davenport

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DELTA STEWARDSHIP COUNCIL

Delta Habitat Then

- **Historically the Delta had many habitat types that supported a diversity of fish and wildlife species**
  - *Shaded riverine aquatic habitat*
  - *Freshwater marsh*
  - *Riparian forest*
  - *Scrub-shrub*
  - *Grassland*

The Delta Today

But the Delta landscape has been dramatically altered

- Levees were originally built to reclaim land for agricultural purposes
- Many of the levees are heavily riprapped on the water side and devoid of significant vegetation

Purpose of the Issue Paper

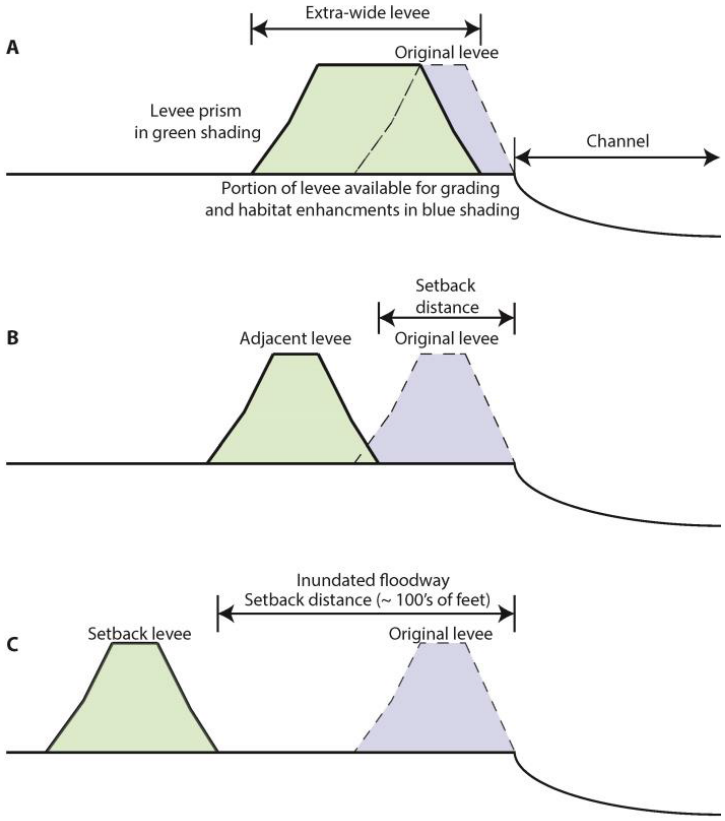
- Explore how State investments in flood risk reduction can also contribute to fulfilling environmental mandates:
  - *achieving the coequal goals, particularly with respect to ecosystem restoration*
  - *providing a net benefit for aquatic species in the Delta*

What we did

- To produce the paper, the project team
  - *Reviewed monitoring reports from past projects*
  - *Interviewed experts*
  - *Summarized lessons learned*
  - *Developed recommended next steps*

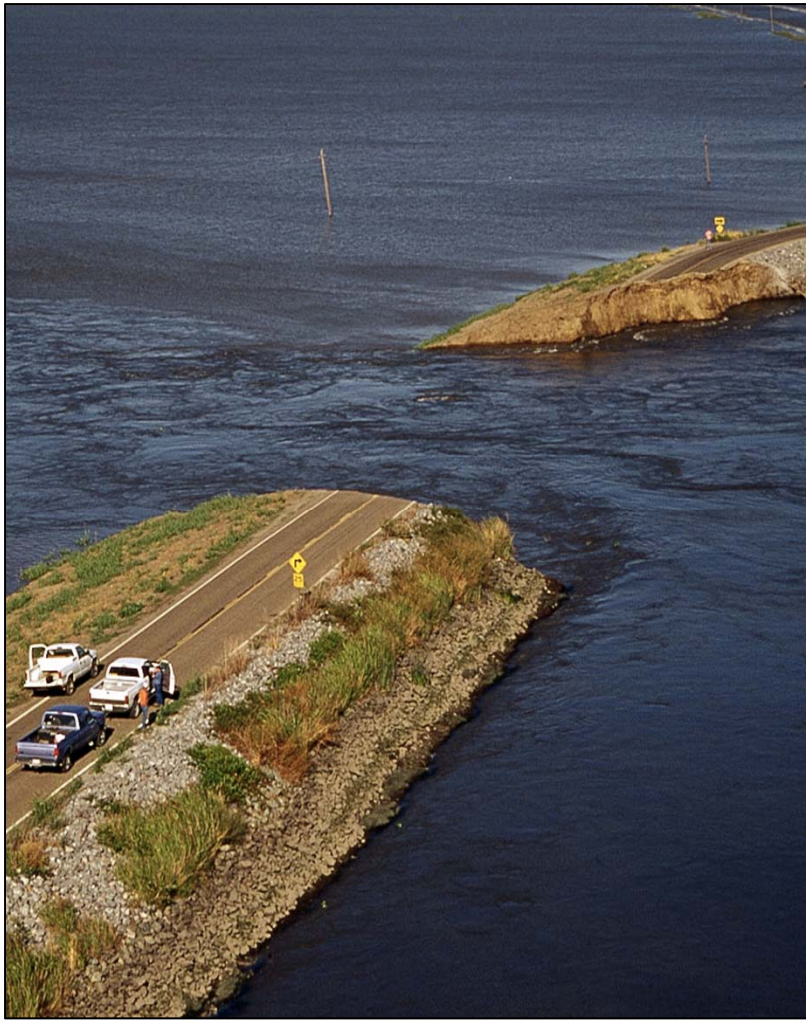
What are the options for improving habitats along levees?

- Structural Options
  - *Extra-wide levee*
  - *Adjacent levee*
  - *Setback levee*



What are the constraints?

- Regulatory requirements
- Liability
- Feasibility
- Landowner interest



Extra-wide levee with a planting bench

Canal Ranch, Beaver Slough, before and after

Photos by Gil Cosio, MBK Engineers

What did we learn about project effectiveness?

- Channel Margin Habitat—Benefits for Salmonids
  - *Mitigation matters*
  - *Benches are better*
  - *Substrate matters*
  - *Woody material is good in moderation*

What did we learn about project effectiveness?

- Floodplain and Riparian Habitat—Benefits for Birds
  - *Elevation is essential*
  - *Patch size and connectivity are important*
  - *Successional stage matters*

Recommended Next Steps

- Develop appropriate performance measures as part an adaptive management plan.
- Track the incremental cost of habitat improvements.
- Carefully consider the tradeoffs associated with on-site and off-site mitigation.

Recommended Next Steps (continued)

- Use landscape-scale planning to guide project location and design.
- Measure fish and wildlife response through a standardized regional monitoring program.
- Use the Delta Levees and Habitat Advisory Committee to discuss incorporation of effective habitat improvement components into levee projects.

Acknowledgments

Co-Authors:

Darcy Austin

Jahnava Duryea

Daniel Huang

Daniel Livsey

Advisors and Supporters:

Advisory Committee members

Interviewees

Commenters

Delta Stewardship Council executive team