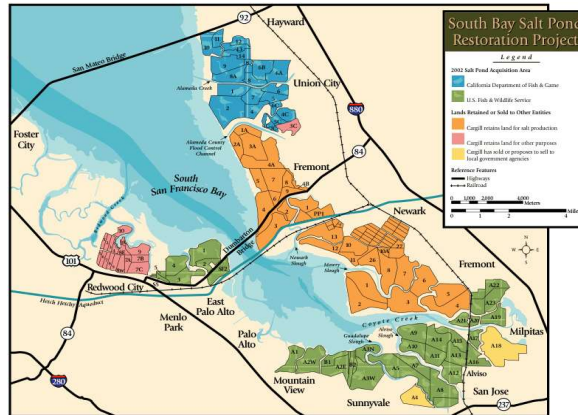
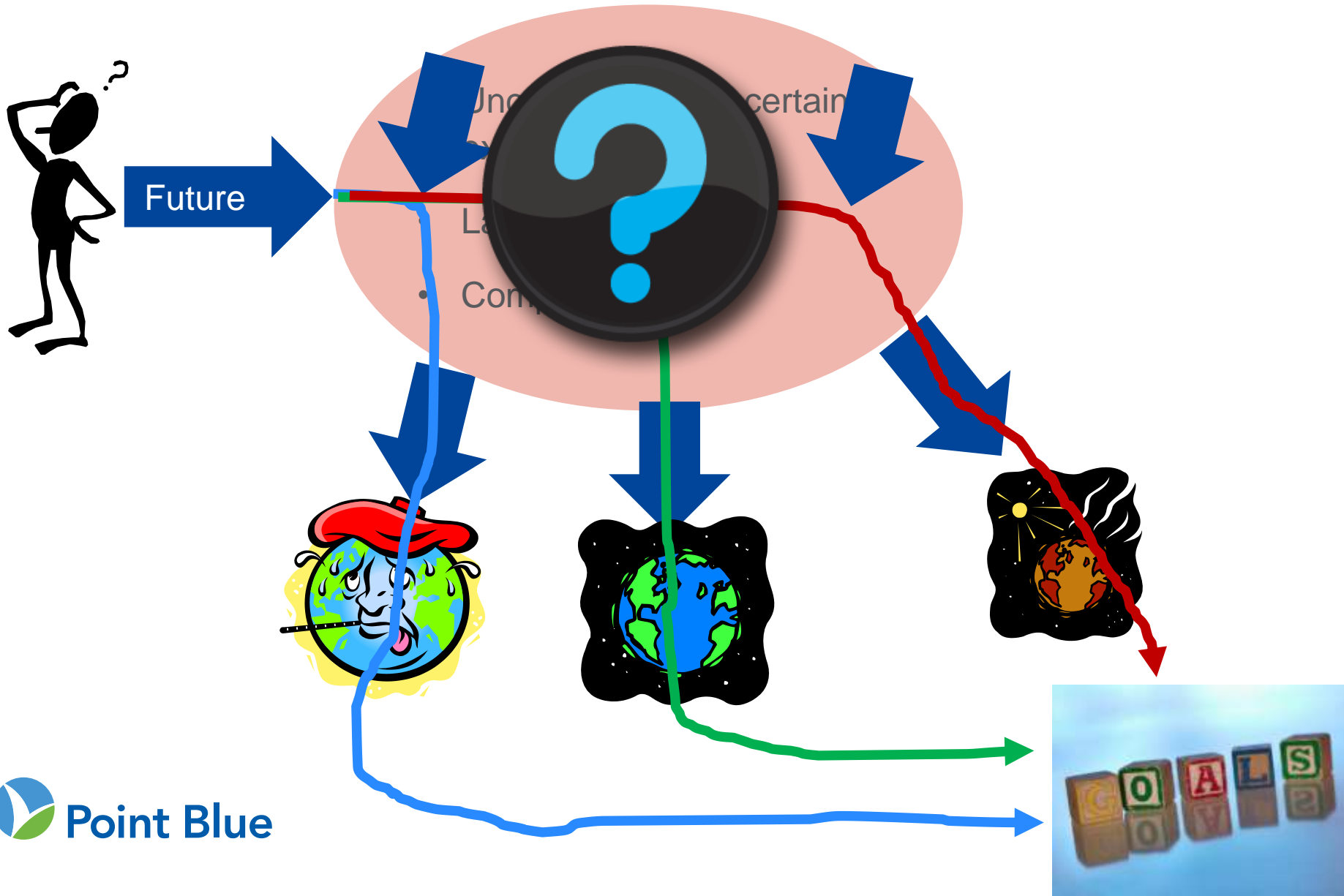


Using scenarios to support climate-smart adaptation for the South Bay Salt Ponds Restoration Project

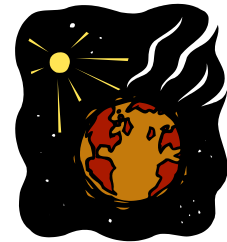
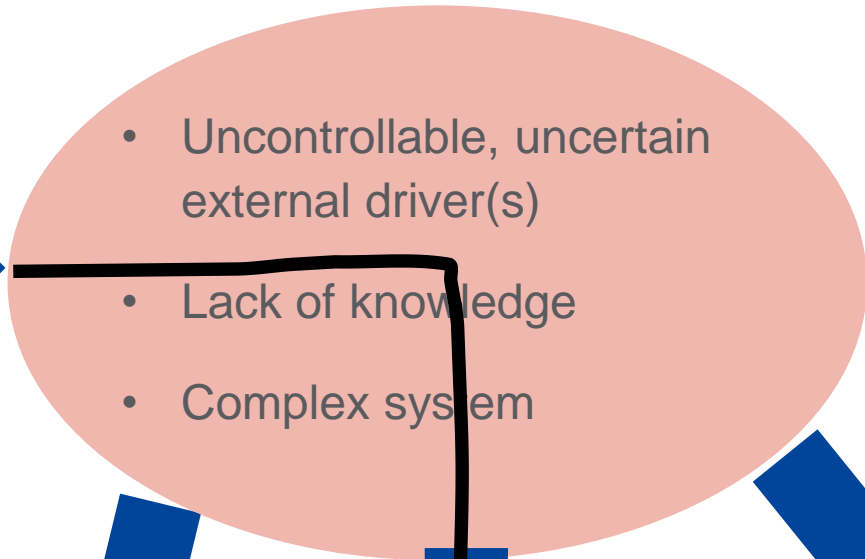
Sam Veloz, Matthew Reiter, Dennis Jongsomjit, Nadav Nur



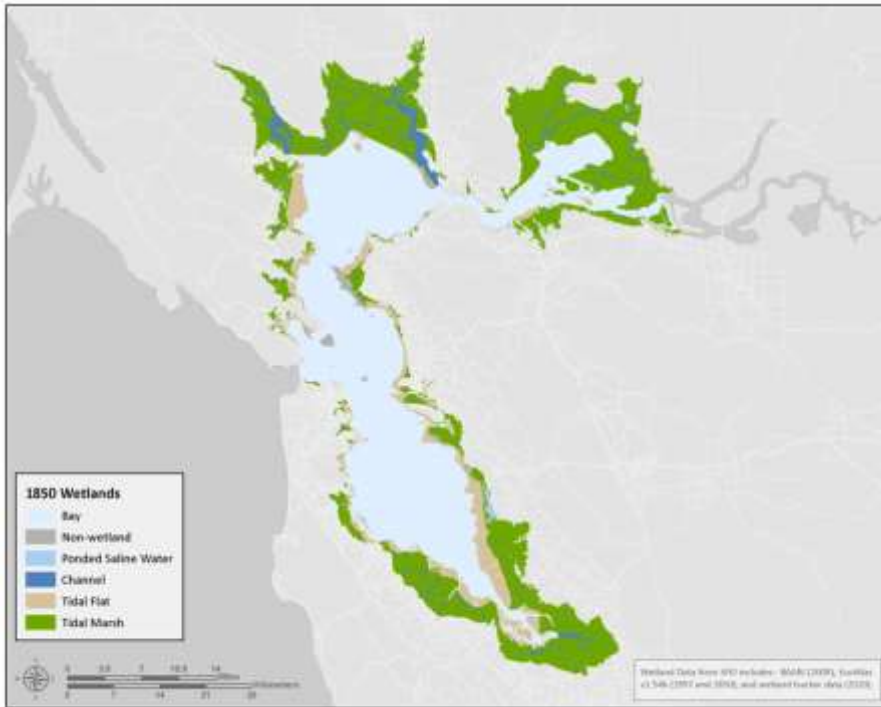
Planning and uncertainty



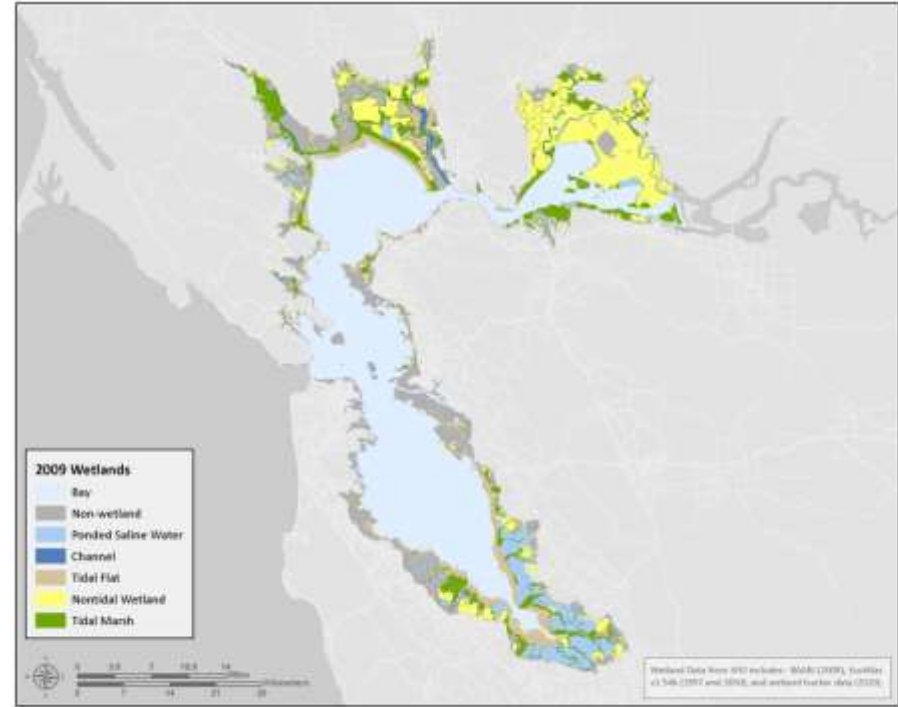
Planning and uncertainty



90% loss of historic tidal marsh ecosystems



1850

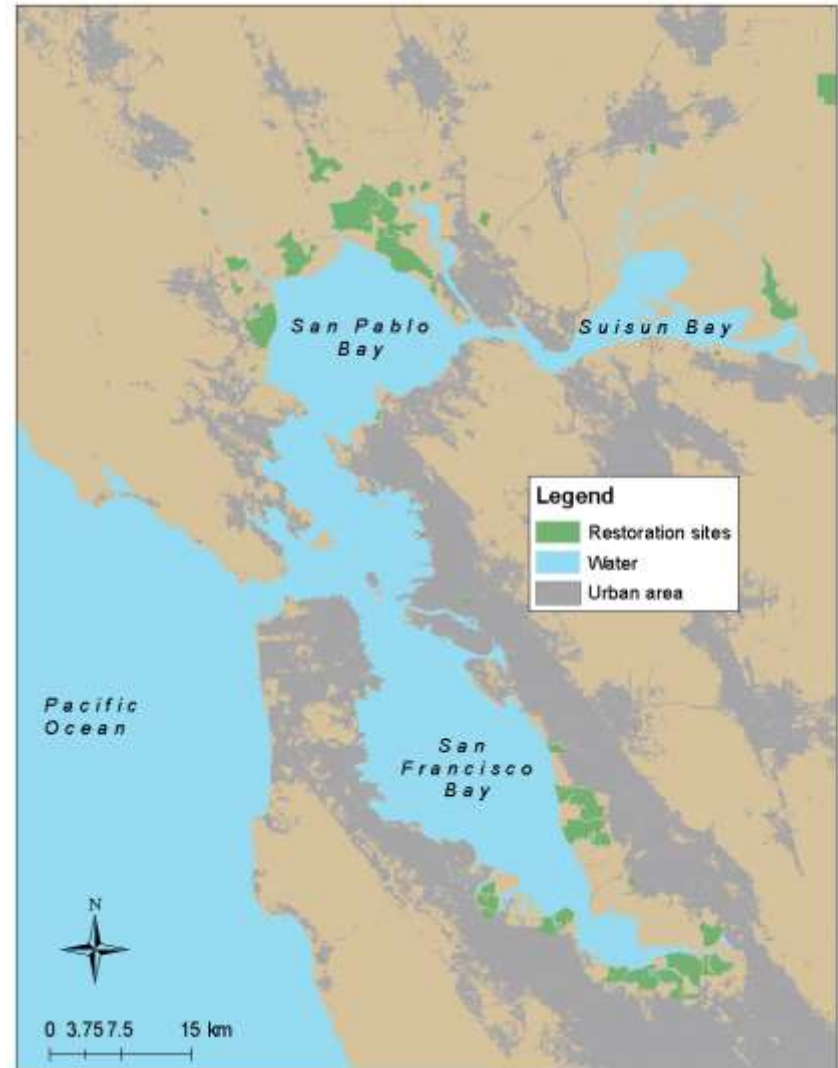


2009

Figures San Francisco Estuary Institute

Sea level rise poses a restoration dilemma

- 1999 SF Bayland Goals report: 265% increase in tidal marsh habitat (100,000 acres)
- Will restoration projects be sustainable with sea level rise?



South Bay Salt Pond Restoration Project

Legend

2002 Salt Pond Acquisition Area

- California Department of Fish & Game
- U.S. Fish & Wildlife Service

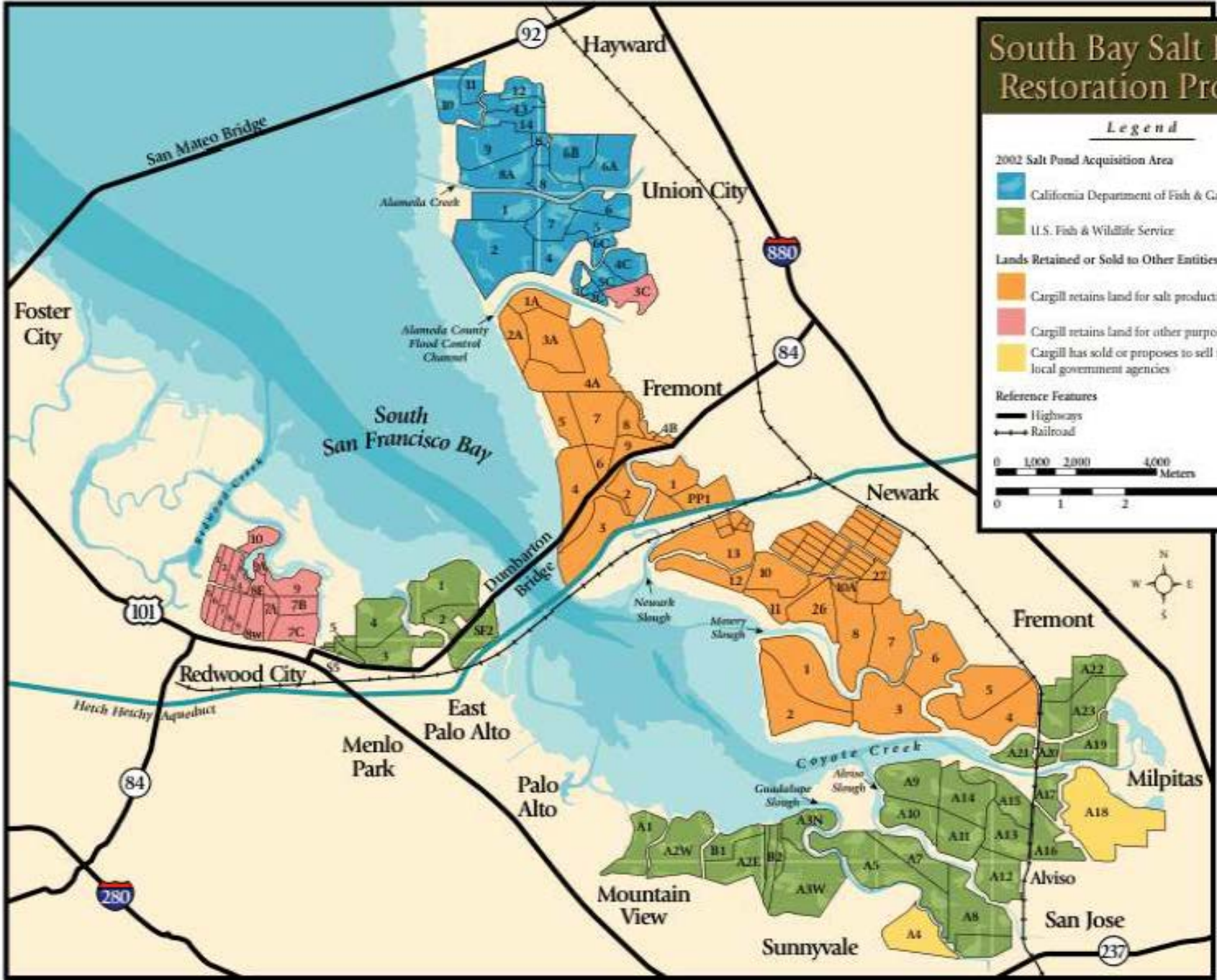
Lands Retained or Sold to Other Entities

- Cargill retains land for salt production
- Cargill retains land for other purposes
- Cargill has sold or proposes to sell to local government agencies

Reference Features

- Highways
- Railroad

0 1,000 2,000 4,000 Meters
0 1 2 4 Miles

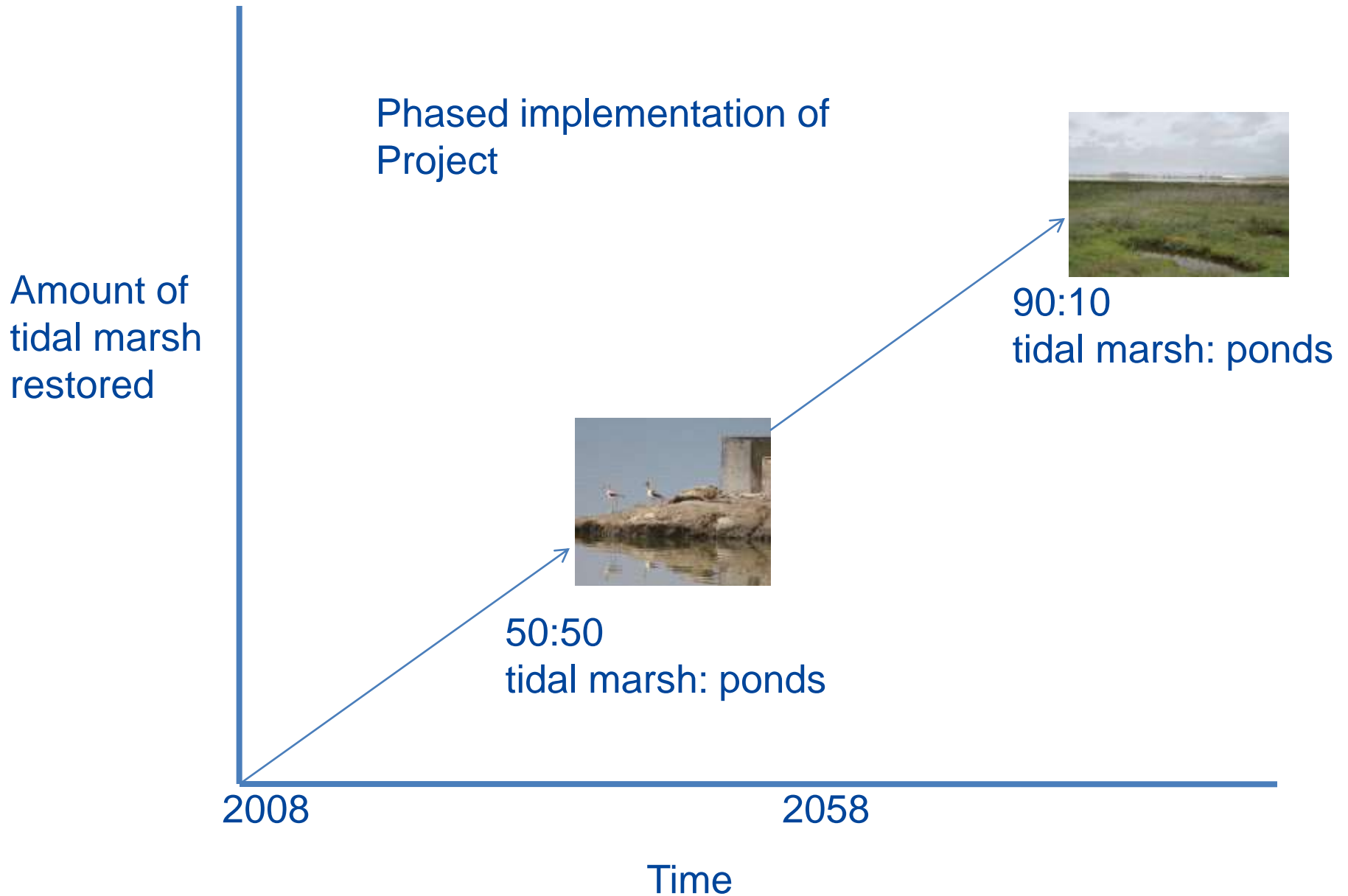


Managing for multiple objectives

- Promote restoration of native tidal marsh species
- Maintain habitat for migratory bird species
- Maintain or improve flood protection
- Provide public access and recreation opportunities



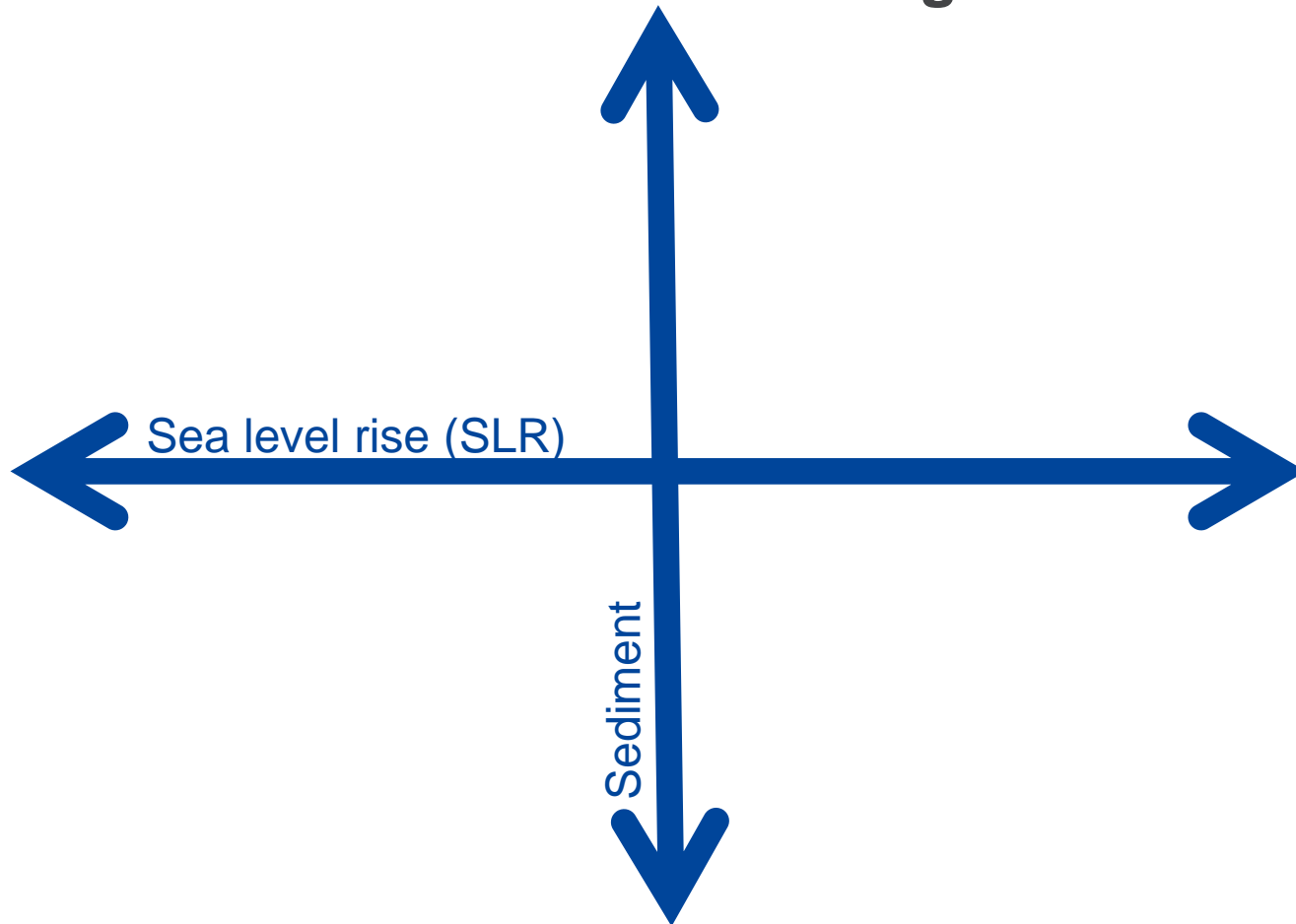
Adaptive Management Restoration



Future SF Bay Tidal Marsh Scenarios

Low SLR/ Low Sediment

High SLR/ Low Sediment



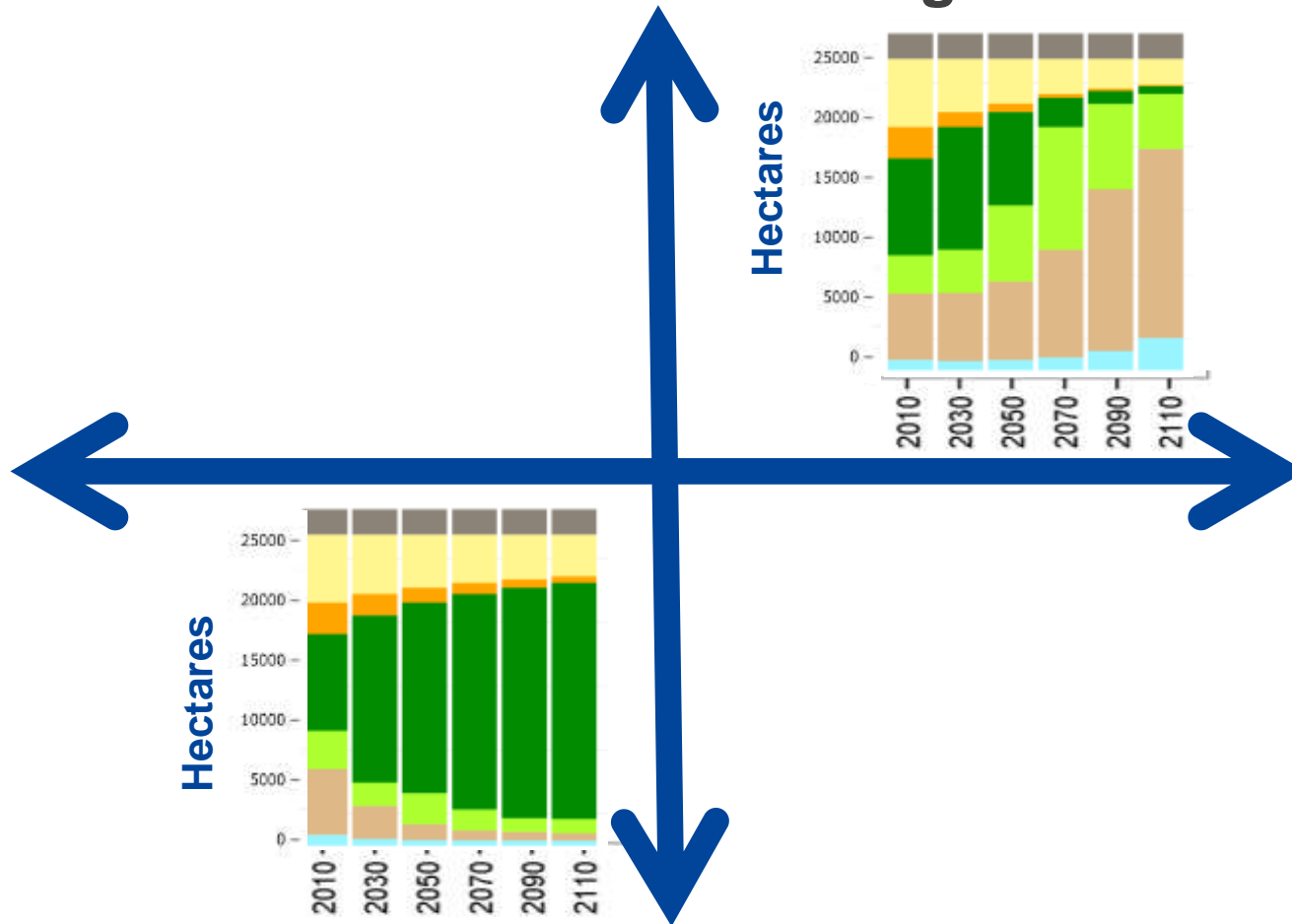
Low SLR/ High Sediment

High SLR/ High Sediment

Future SF Bay Tidal Marsh Scenarios

Low SLR/ Low Sediment

High SLR/ Low Sediment



Low SLR/ High Sediment

High SLR/ High Sediment

Modelling bird response to changing environmental conditions

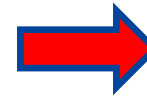
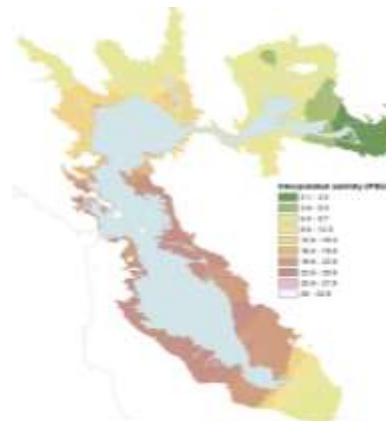
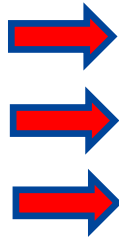
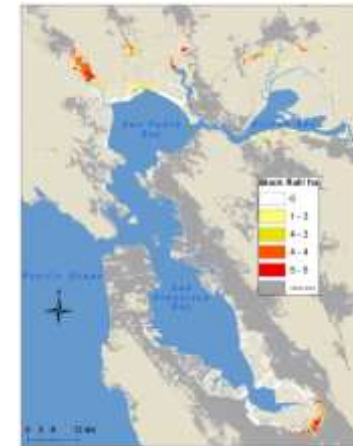
Bird observations



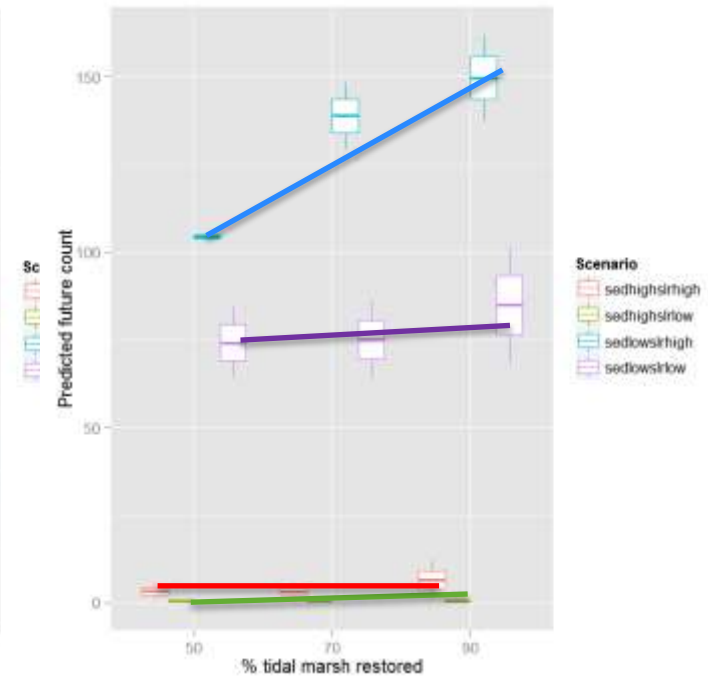
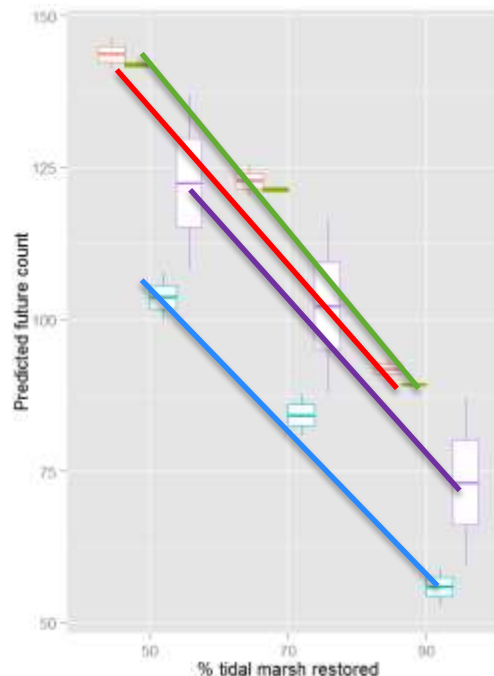
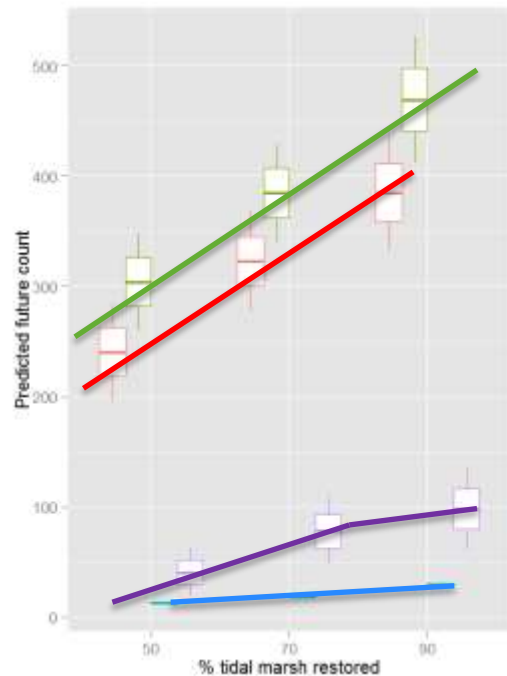
GIS environmental layers



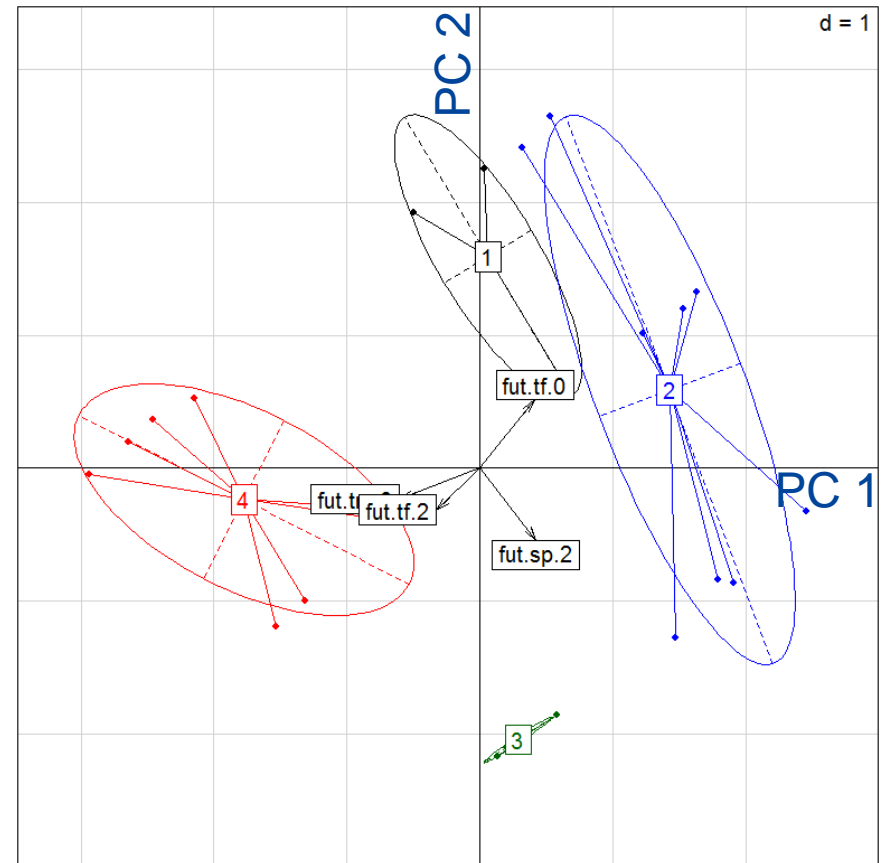
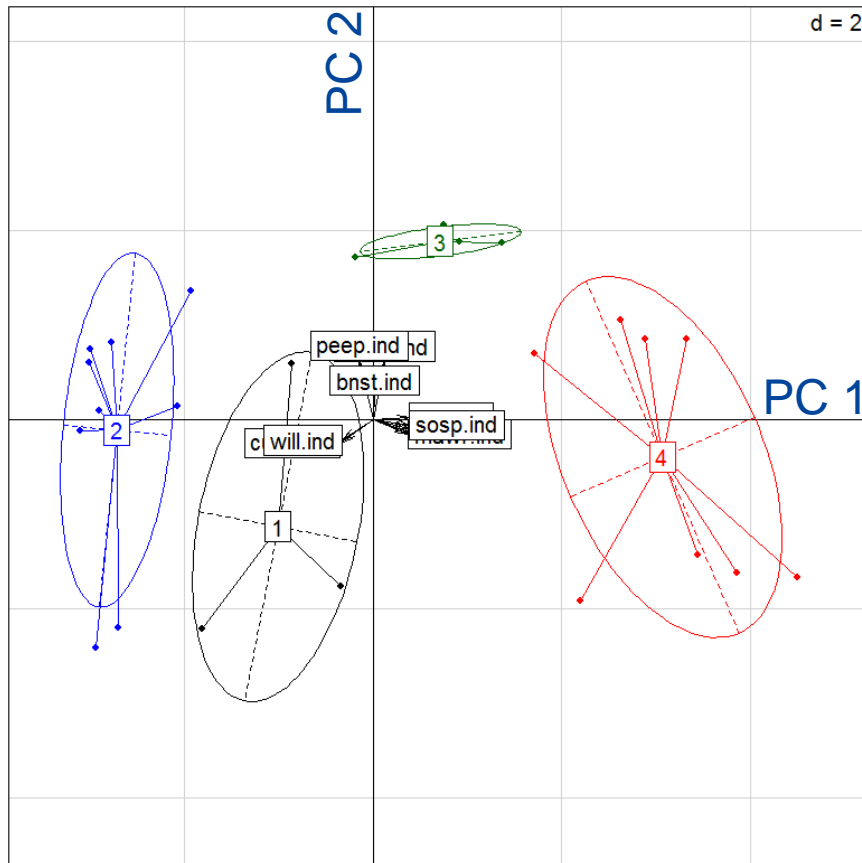
Projections of current & future density



Species respond individualistically to environmental & management scenarios



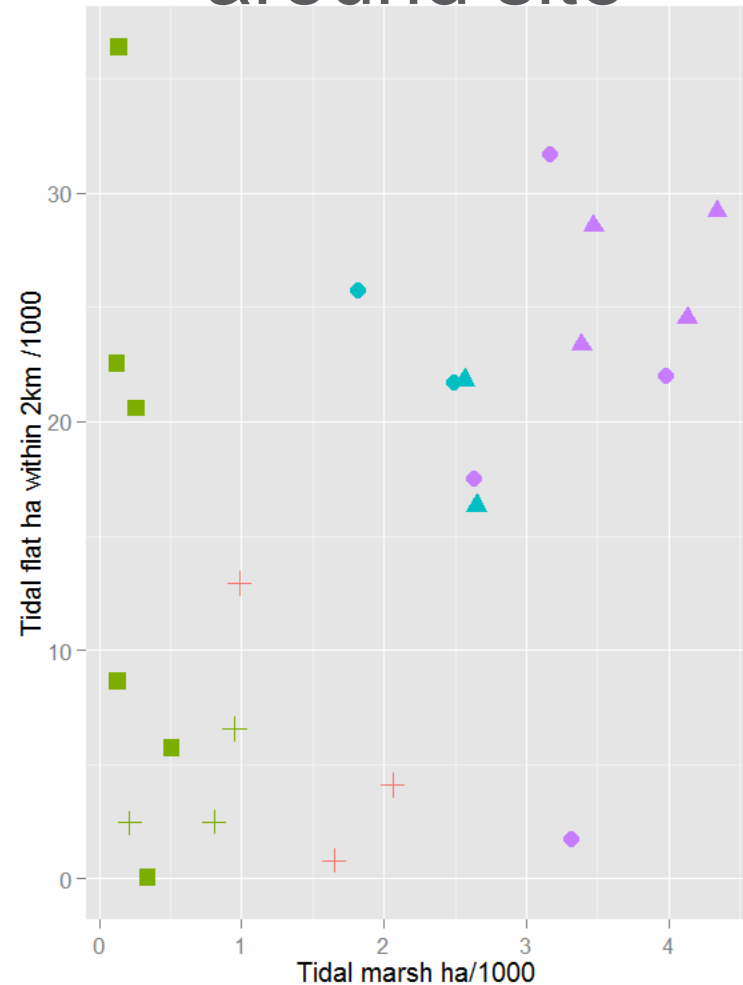
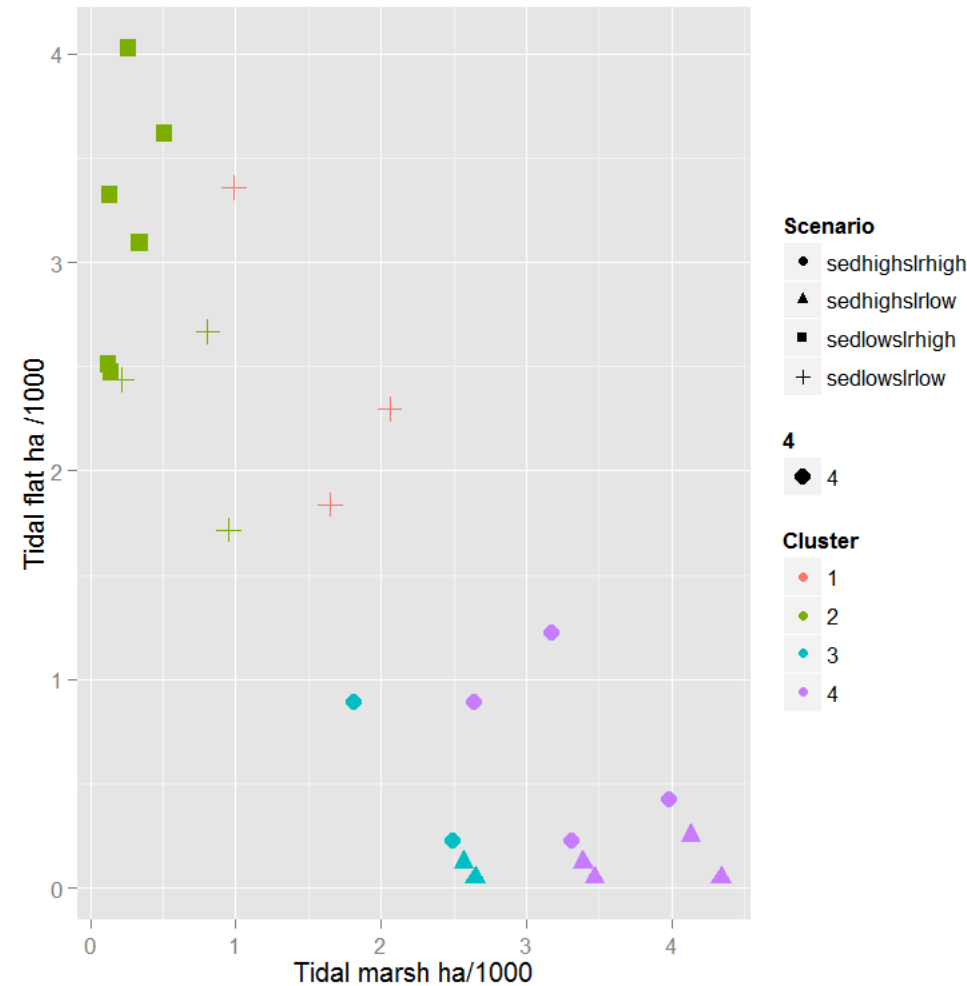
Species and environmental change form distinct clusters



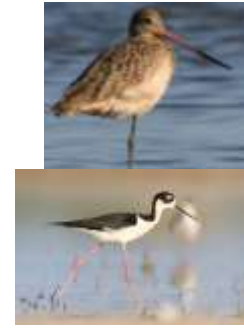
Changes in habitat are scale dependent

Site level

2km radius around site



Next steps: Scenario discovery



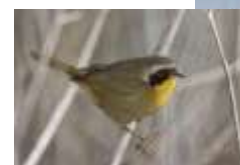
Little marsh/ lots of tidal flats: All restoration options

Medium tidal marsh with moderate tidal flats. Need at least 70:30 restoration ratio



Keep salt ponds (50:50), less tidal Marsh, medium tidal flats

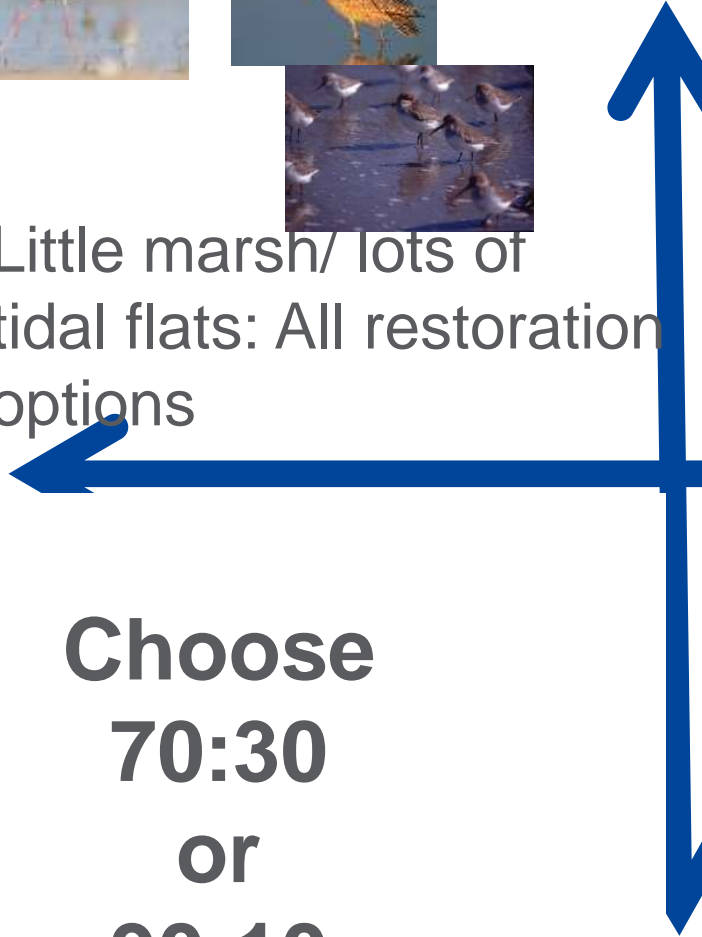
Tidal marsh with Surrounding tidal flats Need at least 70:30 restoration ratio



Next steps: Scenario



Little marsh/ lots of tidal flats: All restoration options

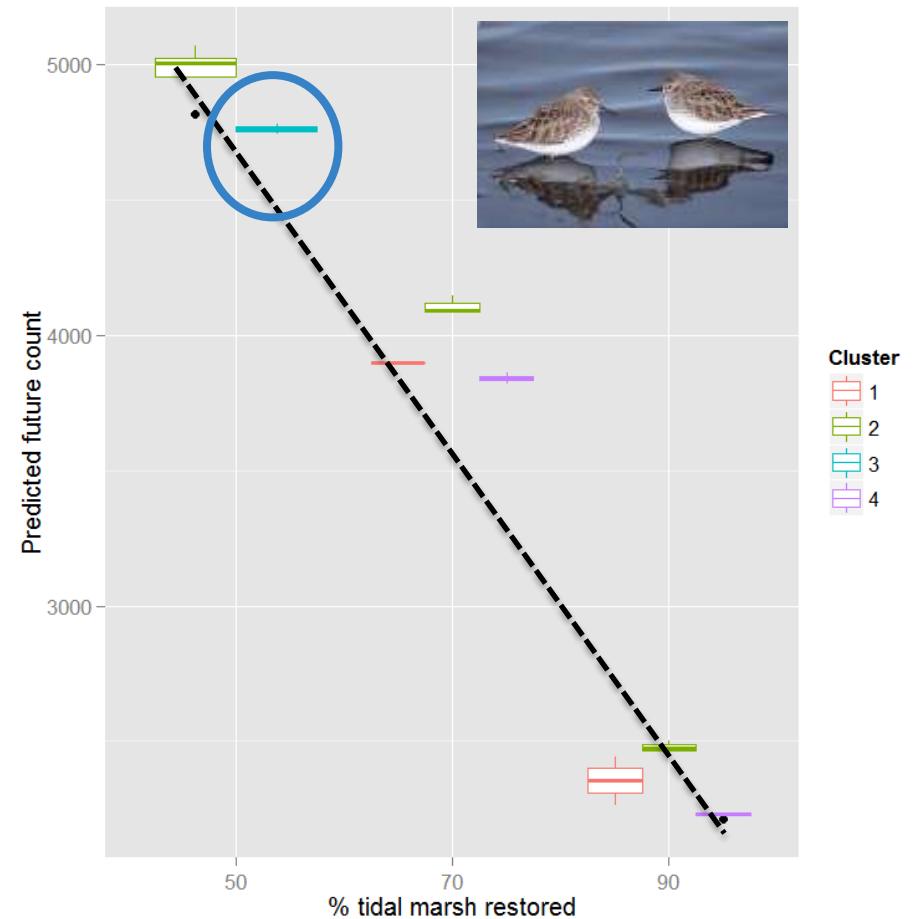
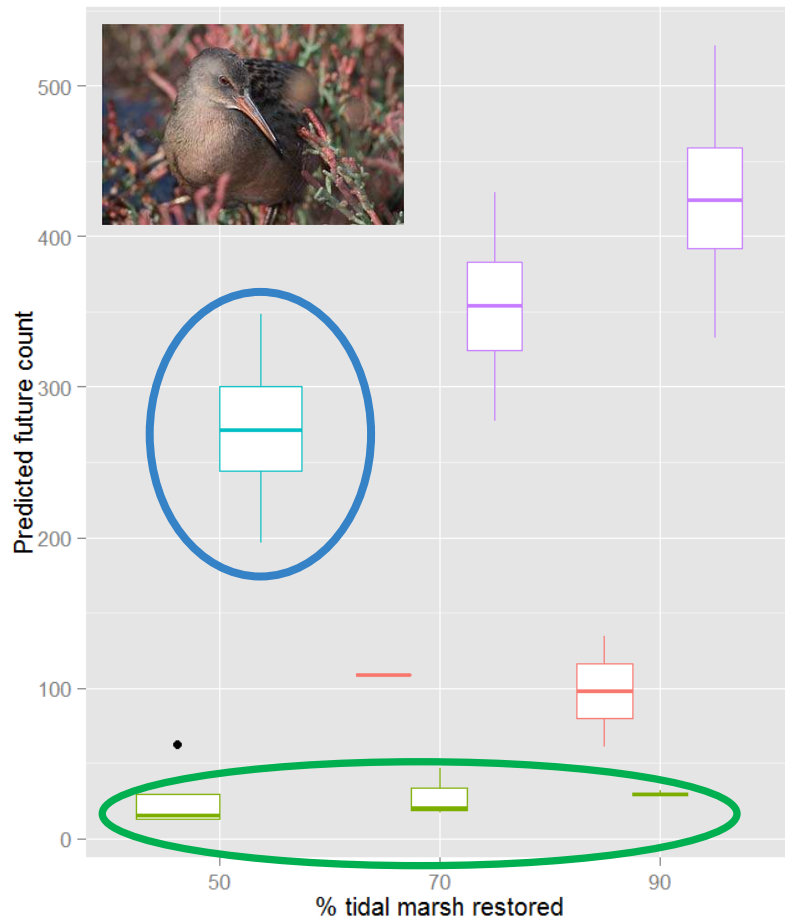


**Choose
50:50**

**Choose
70:30
or
90:10**

Where are decisions vulnerable?

Are there actions that reduce vulnerabilities?



Next steps

Develop strategies for dealing with vulnerabilities

Identify indicators for when strategies should be implemented.

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Technical Assistance: Doug Moody, Sherie Michaile (Point Blue Conservation Science); Justin Vandever (PWA)



Point Blue

Conservation science
for a healthy planet.

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Color Palette Reference Guide

Please use this page as a visual reference only for choosing colors from your custom color palette. This page is not editable.

Primary Palette



Bright Blue

Green

Dark Blue

Bright Blue, Green, and Dark Blue are the primary colors and take priority over the secondary palette.

Secondary Palette



Lichen

Poppy

Light Grey

Dark Grey

Lichen, Poppy, Light Grey, and Dark Grey are used minimally and when you need more colors than the Blues and Green.