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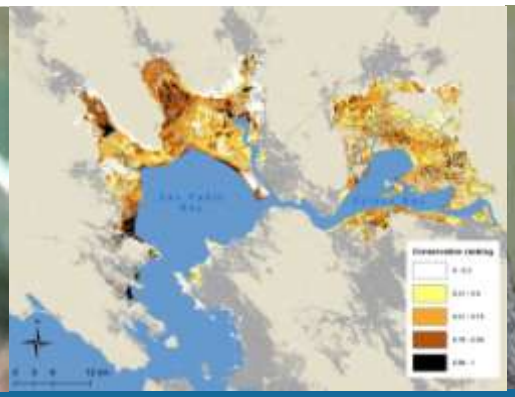
PRBO Conservation Science




Model Inputs – Bird Response to Sea-Level Rise

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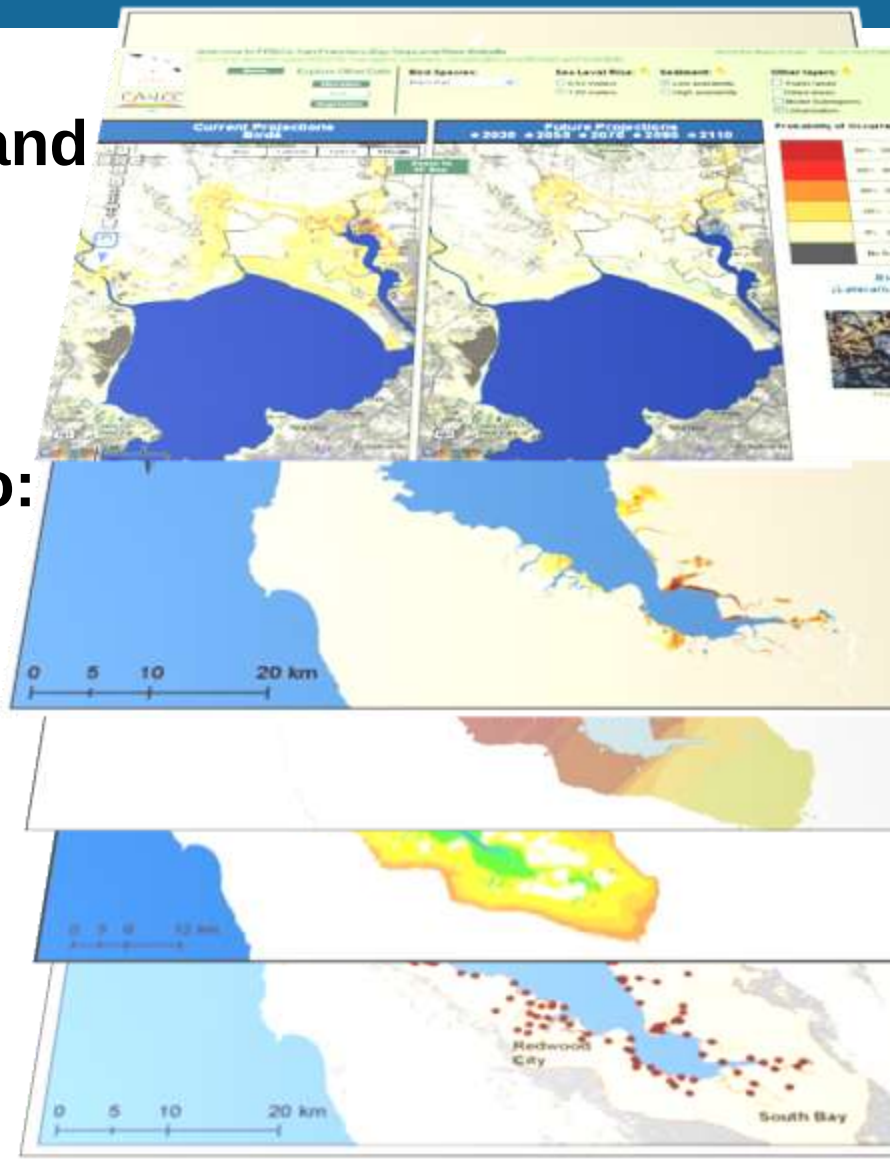
Lisa Schile UCB; John Callaway USF; Tom Parker SFSU, Steve Crooks, Matt Brennan ESA PWA

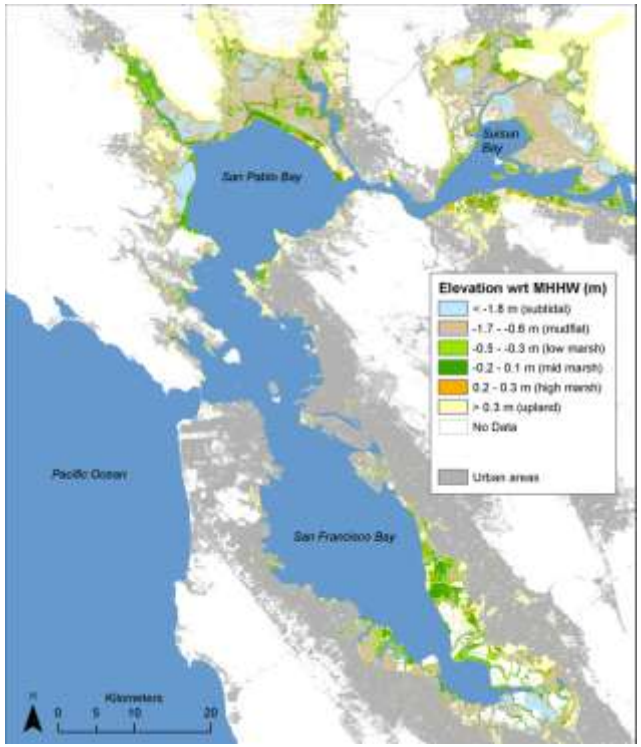
Methods- Data layers, modeling, SLR Tool

- **Observation data for birds and vegetation, >600 locations**
- **Correlated observations to physical variables related to:**
  - **elevation, salinity, tidal range, distance metrics**
- **Maps predicted distribution**
- **SF Bay SLR Tool**
  www.prbo.org/sfbayslr

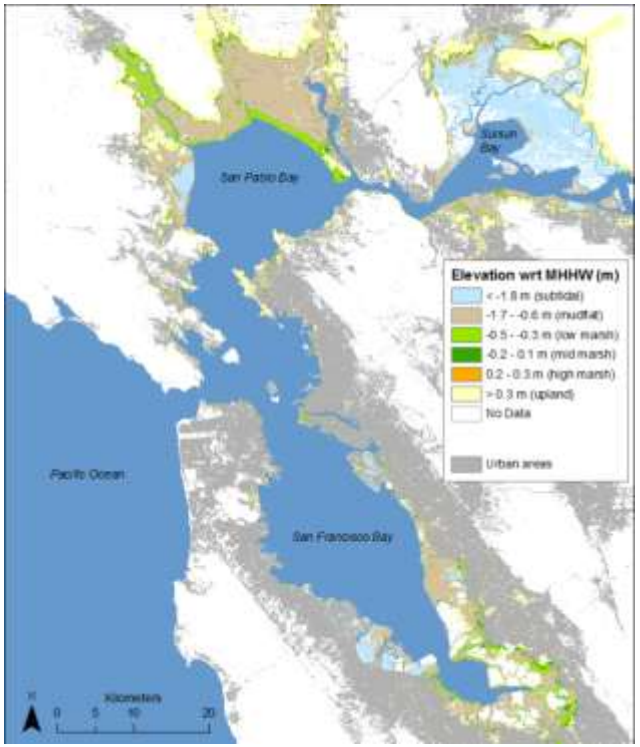


Models largely based on elevation

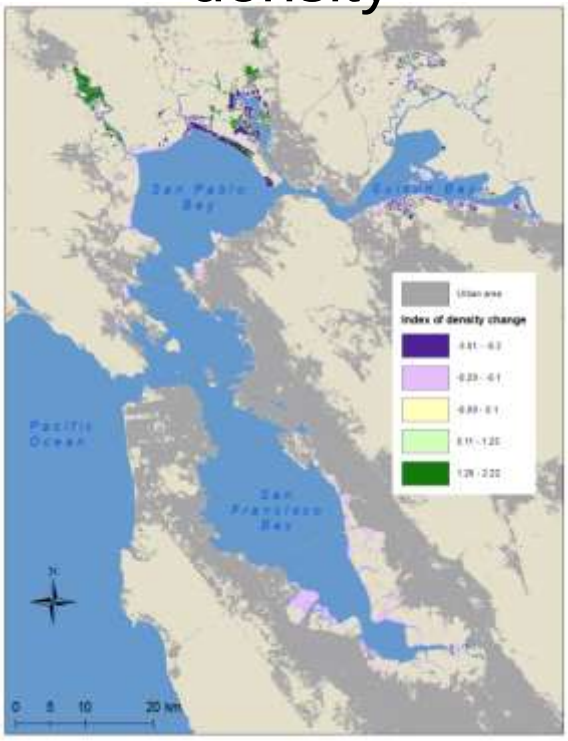
2010 Elevations



2110 Elevations



Projected change in Black Rail density

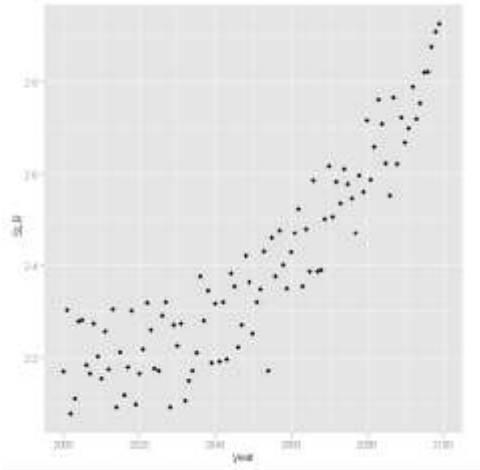


Song Sparrow population viability sensitive to nest survival

- Nest survival is a function of:
  - Nest flooding
  - Predation

- A 10% increase in nest survival could result in a stable or increasing population.

- Spatial projections of high water, extreme events needed

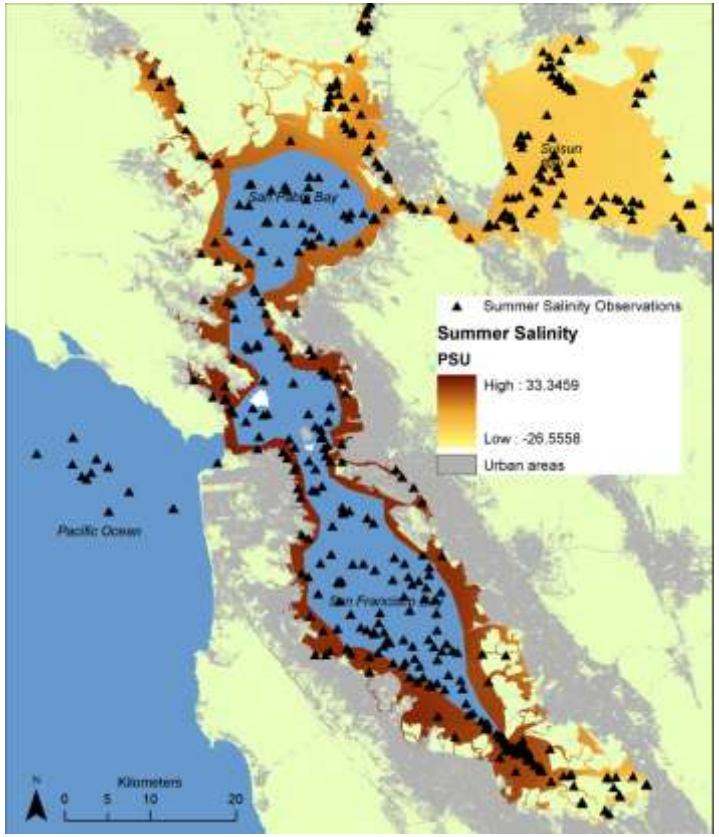


Barnard et al. 2011

Salinity

- Important for vegetation and wildlife
- Interpolation from observations in open water and large channels
- In-marsh salinity data needed

Summer Salinity



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Scientific Input: Dave Schoellhamer (USGS), Neil Ganju (USGS), Stuart Siegel (WWR), Bruce Jaffe (USGS)

Elevation Data: Noah Knowles (USGS), FEMA, Joel Dudas (DWR), Stuart Siegel (WWR), Sonoma County

Variable	Abbreviation	Units	Static variable
Spring salinity	sprsalin	Practical Salinity Units (PSU)	No
Summer salinity	sumsalin	Practical Salinity Units (PSU)	No
Mean marsh elevation (relative to MHHW)	mhhw10mean	Meters	No
Majority marsh elevation (relative to MHHW)	mhhw10maj	Meters	No
Standard deviation of MHHW marsh elevation	mhhwsd	Meters	No
Tidal Range (=Difference between MHHW and MLLW	meanhhw	Meters	Yes
High-marsh (0.2 m to 0.3 m) proportion	mhhwHigh	Proportion	No
Mid-marsh (-0.2 m to 0.1m) proportion	mhhwmid	Proportion	No
Low-marsh (-0.5 m to -0.3 m) proportion	mhhwlow	Proportion	No
Mean slope	slope	Percent Rise	No
Percent of area that is channels	channelpercent	Percent	Yes
Distance to edge of bay	distbay	Meters	Yes
Distance to nearest channel	distchan	Meters	Yes
Distance to nearest levee	distlevee	Meters	Yes
Distance to nearest urban area	urbdist	Meters	Yes