Two Decades of Progress Towards Restoring North San Francisco Bay

Renee Spenst\textsuperscript{1}, Karen Taylor\textsuperscript{2}, John Takekawa\textsuperscript{3}, and Lacy Smith\textsuperscript{3}

\textsuperscript{1}Ducks Unlimited, Inc.; \textsuperscript{2}California Department of Fish and Wildlife; \textsuperscript{3}US Geological Survey
Current DU Partners in North Bay

Federal
- FWS
- NOAA
- EPA
- ACOE
- USGS

State
- Department of Fish and Wildlife
- Wildlife Conservation Board
- Coastal Conservancy
- Department of Water Resources

Regional/Local
- Bay Trail
- Sonoma County Water Agency
- Little ‘m’ mitigation funds
- Shell, Castro Cove NRDA

Private Foundations
- Hewlett, Packard, Moore, SFF

Nonprofits
- Sonoma Land Trust, Point Blue

Private Landowners
- Viansa

Industry
- PGE

Others…

Projects presented herein typically involved two or more of these partners. List is NOT all-inclusive for all North Bay projects.
Ponds 1-5 completed 2007
Central Unit Breach NPS Completed Fall 2009
South Unit Required > 1 mile channel excavation
Breached August 2010
Site Specific challenges...
Subsidence and sediment reuse
Key Monitoring Results
Shorebirds

L. Smith, J. Takekawa and others, USGS WERC
Total Invertebrate Density m$^{-2}$

L. Smith, J. Takekawa and others, USGS WERC
Bird colonization

L. Smith, J. Takekawa and others, USGS WERC
SMHM/Small Mammal trapping

I. Woo, J. Takekawa and others, USGS WERC
SMHM/Small Mammal trapping

I. Woo, J. Takekawa and others, USGS WERC
SMHM trapping

8.4%!!

Data: K. Taylor, CDFW
**Least Tern**

***No nests at NPS in 2013***

K. Taylor, CDFW
Western snowy plover

K. Taylor, CDFW
Figure 6. 2012-2013 steelhead and salmon monitoring sites in the Napa River watershed.

J. Koehler, Napa RCD
(Sandstrom et al., submitted)
Relative abundance

23 species

Total Fish 2010

- Inland silverside 76%
- Pacific herring 8%
- Topsmelt 8%
- Shimofuri goby 2%

4,529 fish individuals total

Total Fish 2011

- Inland silverside 54%
- Tule perch 2%
- Yellowfin goby 3%
- Cheekspot goby 4%
- Sacramento splitlata 6%
- Prickly sculpin 2%
- Pacific herring 8%
- Threespine stickleback 7%
- Striped bass 3%
- Staghorn sculpin 6%
- Shimofuri goby 2%
- Sacramento suckner
- Starry flounder
- Rainbow killfish
- Longjaw mudsucker
- Mosquito fish
- Chinook salmon
- Threadfin shad

2,072 fish individuals total

F. Demgen & M. Carbiener, URS Corp.
• If you build it, they *will* come, sometimes sooner than you think...
Key challenges

• $, Need more of it for acquisition, restoration, enhancement, monitoring; sticky wicket of mitigation dollars

• Species - When we build and they come, understanding when, where, why; persistence

• Habitat – Ensuring restoring sites continue to progress along desired trajectory, feedback with species and system ecology; shifting restoration targets

• Sediment supply – temporal and spatial monitoring; Figuring out beneficial reuse – policies, incentives. Despite decreasing SSC we are still allowing ≥56% to open ocean disposal!!!!

• Regulatory agility/flexibility in context of adaptive management framework for projects; BCDC bay fill
Key challenges

• **Climate change effects** (sea level rise, storms) and feedback on all of above

• **Prioritization** - Deciding what to ‘protect’ in place versus what and how to allow upland transgression; based on likelihood for success, or for other value

• **Connection corridors** – for marsh transgression, hydrological and geomorphological function, species migration.

• **Monitoring** - Crafting meaningful monitoring bay wide, balanced against reasonable expectations for projects

• **More Monitoring** – Funding comes in 1-3 year, project-specific slugs
Cullinan Ranch Project
Sears Point Restoration Project
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Questions?