

Case Study: Upper Pajaro Part 2 – Implementation & Adaptation

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The STRAW Program

Our Role In Restoration:

1. Revegetation
2. Biotechnical Erosion Control
3. Invasive Plant Control
4. Community Engagement
5. "One-Stop" Project Management
 - Planning/Design
 - Implementation
 - Maintenance
 - Monitoring & Reporting



Climate-Smart Restoration Implementation and Adaptation

- STRAW introduction and overview
- Climate-Smart application at Gonzales Ranch project



Partners!



Students and Teachers Restoring A Watershed

Since 1992:

- Over 40,000 Students
- Over 500 Restorations
- 45,000 Native Plants
- Over 40 Miles of Riparian Habitat
- 7 acres of marsh/upland ecotone



Gonzales Ranch



Anticipated future climate conditions

- Cal-Adapt
- Average temperature overall
 - Incr by 3.4 to 5.8 degrees F
- Average extreme heat days
 - Incr from 4 (1961-1990) to 18.82
- Annual precipitation
 - Variable; less
- Wildfire risk
 - Decreases slightly...
- SLR and snow pack



Climate-considered restoration activities

- Modified planting design with tool
 - Design redundancies
 - Diversity of plants
 - Timing considerations for flowering/seeding
- Shift in species range
- Considered salinity
- Local seed sourcing and working with local nurseries
- Human communities



Identify key vulnerabilities considered

- Lack of habitat for wildlife
- Riparian systems overall decline
- Species of special concern (Least Bell's and CTS)
- Developing relationships with ranchers and community
- Challenges to vegetation establishment



Application of climate-smart tool

Climate-Smart Planting Design Tool

Plant Selection
 1. Instructions: Enter a "Y" or "N" in the "include?" column to indicate your plant selections.
 2. Enter soil salinity value for project location in the green box. This value can be found by:
 - Go to www.calflora.org
 - in left hand column, click **What Grows Here?**
 - Use map to locate project site. Click **TOOLS**, then check the box **CLIMATE & SOIL PROFILE**.

Enter soil salinity value for project location, value between 0 and 50 (including decimals if applicable)

10

Trees (10 selected)			Shrubs (9 selected)			Grasses & Forbs (4 selected)		
include?	Common Name	Scientific Name	include?	Common Name	Scientific Name	include?	Common Name	Scientific Name
Y	boxelder	Acer negundo		common manzanita	Arctostaphylos manzanita		horsemint	Agastache urticifolia
	California buckeye	Aesculus californica		Bearberry	Arctostaphylos uva-ursi	Y	mugwort	Artemisia douglasiana
	white alder	Alnus rhombifolia		Marin manzanita	Arctostaphylos virgata		narrow leaved milkweed	Asclepias fascicularis
	red alder (coastal)	Alnus rubra		CA Sagebrush	Artemisia californica		showy milkweed	Asclepias speciosa
	madrone	Arbutus menziesii		Salt Marsh Baccharis	Baccharis douglasii		Pacific aster	Aster chilensis
Y	Oregon ash	Fraxinus latifolia	Y	coyote brush	Baccharis pilularis		sedge	Carex spp
	coast silk tassel	Garrya elliptica		CA barberry	Berberis pinnata		red ribbons	Clarkia conoveri



Gonzales Ranch goals and metrics

- Revegetation
- Community involvement and education
- Birds
- Connectivity
- Thermal refugia
- Soil conditions and carbon sequestration



CalFlora site salinity data

Calflora What Grows Here? Search TOOLS Map Map Layers

PLANT FILTER PLANT NAMES County Elevation Precipitation Wet Season Temp Range December Low July High Accumulated Temperature Growing Season Hardiness Zone

RESULTS

HELP SHARE THIS PAGE What Grows Here? Wizard Advanced Search Observation History (at this location) Printable version of this page CLIMATE & SOIL PROFILE

36.9742, -121.5004

SOIL:
 pH 8.5
 Salinity 10 (moderately saline)
 Min Depth 250 cm
 Texture clay
 CaCO3 5% (low)
 Soil Map Link: 4537063 (CA Soil Resource Lab)

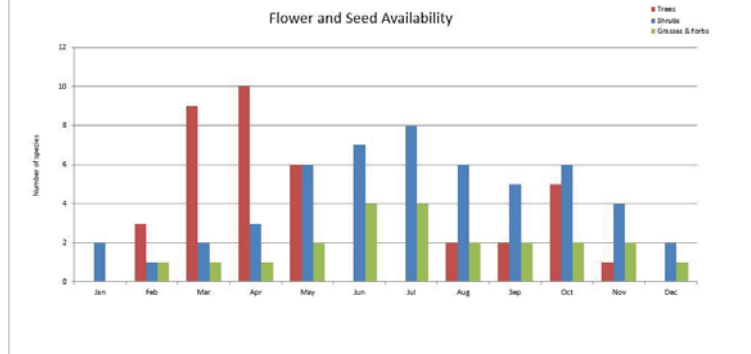


Application of climate-smart tool

In planting design?	Vegetation species		Climate-related traits (Y = yes, N = no, ? = undetermined)						Resources for wildlife (Y = yes, N = no, ? = undetermined)				
	Common Name	Scientific Name	Tolerates full or partial sun	Tolerates clay soil	Tolerates wet conditions	Tolerates dry conditions	Evergreen	Fire Adapted	Max salinity tolerance	Wildlife fruit source	Wildlife Nectar source	Wildlife Seed Source	Insectary Plant
Y	boxelder	<i>Acer negundo</i>	Y	Y	Y	Y	N	N	5.9	N	?	Y	Y
Y	California buckeye	<i>Aesculus californica</i>	Y	Y	Y	Y	N	Y	2	N	Y	N	Y
Y	white alder	<i>Alnus rhombifolia</i>	Y	Y	Y	N	N	N	1.8	N	?	Y	Y
Y	red alder (coastal)	<i>Alnus rubra</i>	Y	Y	Y	N	N	N	1	N	?	Y	Y
Y	madrone	<i>Arbutus menziesii</i>	Y	Y	N	Y	Y	Y	1	N	Y	?	Y
Y	Oregon ash	<i>Fraxinus latifolia</i>	Y	Y	Y	N	N	Y	1	?	Y	Y	Y
Y	coast silk tassel	<i>Garrya elliptica</i>	Y	Y	N	Y	Y	Y	0	Y	Y	Y	Y
Y	California black walnut	<i>Juglans hindsii</i>	Y	Y	Y	Y	N	Y	2.8	N	?	Y	?
Y	tan oak	<i>Lithocarpus densiflorus</i>	Y	Y	N	N	Y	Y	1	N	?	Y	?
Y	sea myrtle	<i>Myrica californica</i>	Y	Y	Y	Y	Y	N	1	Y	N	?	?
Y	western choke cherry	<i>Prunus virginiana demissa</i>	Y	Y	Y	Y	N	Y	0	Y	Y	?	Y
Y	coast live oak	<i>Quercus agrifolia</i>	Y	Y	N	Y	Y	Y	3	N	N	Y	Y
Y	black oak	<i>Quercus laevis</i>	Y	Y	N	Y	N	Y	1.8	N	N	Y	Y
Y	valley oak	<i>Quercus lobata</i>	Y	Y	Y	Y	N	Y	3.7	N	N	Y	Y
Y	sandbar willow	<i>Salix exigua</i>	Y	Y	Y	N	N	Y	3.6	N	Y	?	Y
Y	coastal or Hooker's willow	<i>Salix hookeriana</i>	Y	Y	Y	?	N	Y	1	N	Y	?	Y
Y	red willow	<i>Salix lasiolepis</i>	Y	Y	Y	N	N	Y	1	N	Y	?	Y
Y	yellow willow	<i>Salix lasiolepis</i>	Y	Y	Y	N	N	Y	1	N	Y	?	Y
Y	lampro willow	<i>Salix lasiolepis</i>	Y	Y	Y	N	N	Y	6	N	Y	?	Y



Application of climate-smart tool



Application of climate-smart tool

In planting design?	Vegetation species		Resource phenology (F = flower, S = seeds)												Notes	
	Common Name	Scientific Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Y	boxelder	<i>Acer negundo</i>			F	F					S	S	S	S		birds eat seeds, buds, flowers
Y	California buckeye	<i>Aesculus californica</i>						F	F					S	S	nectar and nectar poisonous to its
Y	white alder	<i>Alnus rhombifolia</i>	F	F	F	F									F	birds eat seeds/buds, cover and n
Y	red alder (coastal)	<i>Alnus rubra</i>	S	S	F	F								S	S	birds eat seeds/buds, cover and n
Y	madrone	<i>Arbutus menziesii</i>			F	F	F						S	S	S	butterfly host plant, fruit for birds
Y	Oregon ash	<i>Fraxinus latifolia</i>					F	F						S	S	
Y	coast silk tassel	<i>Garrya elliptica</i>														Fruit eaten by birds, salinity detail
Y	California black walnut	<i>Juglans hindsii</i>		F	F	F	F				S	S	S	S		oak are larval food plants for 7 sp
Y	tan oak	<i>Lithocarpus densiflorus</i>						F	F	F	F	F	F	F	F	nuts for birds
Y	sea myrtle	<i>Myrica californica</i>			F	F	F							S	S	
Y	western choke cherry	<i>Prunus virginiana demissa</i>				F	F	F						S	S	butterfly host plant - Longhorn's Ad
Y	coast live oak	<i>Quercus agrifolia</i>				F	F							S	S	birds eat nuts, leaf galls, nesting
Y	black oak	<i>Quercus laevis</i>					F	F						S	S	birds eat nuts, leaf galls, nesting
Y	valley oak	<i>Quercus lobata</i>				F	F							S	S	birds eat nuts, leaf galls, nesting
Y	sandbar willow	<i>Salix exigua</i>			F	F	F									Admiral, Mourning Cloak
Y	coastal or Hooker's willow	<i>Salix hookeriana</i>														
Y	red willow	<i>Salix lasiolepis</i>			F	F	F									salix species are important early
Y	yellow willow	<i>Salix lasiolepis</i>														

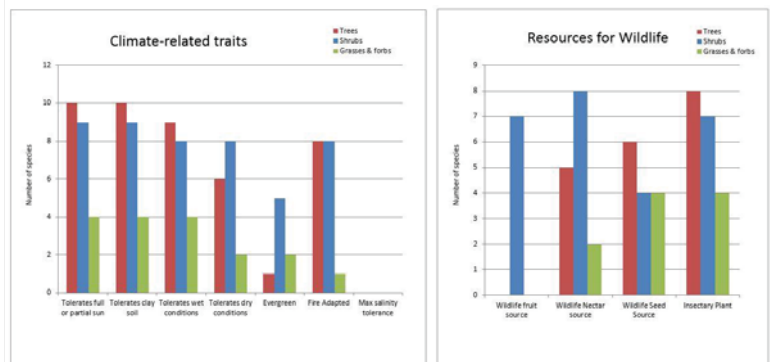


Community Engagement

- Outreach
- 5 schools
- 4-H and biology clubs



Application of climate-smart tool



Challenges and what we learned

- Difficult to locate every plant species
- No able to confirm seed provenance for some species
- Plant mortality higher than expected for various reasons



Outcomes and successes based on climate-smart process

- CA LCC climate adaptation grant funded continued outreach, education, and training around this project
- Education reached underserved schools and resulted in students feeling part of a hopeful solution to climate change
- TNC partnership and expertise
- Demonstration of multi-use
- A model we can share
- Ignited motivation to expand STRAW's reach



Collaboration and Partnerships



Thanks! Questions?

- California LCC
- The Nature Conservancy
- Wildlife Conservation Society
- Silicon Valley Community Foundation
- Santa Clara Valley Habitat Agency

