

Project Website:
<http://climate.calcommons.org/cvlcp>

A Collective Vision for an Ecologically-connected California Central Valley



Central Valley Landscape Conservation Project

March 8th & 16th, 2016

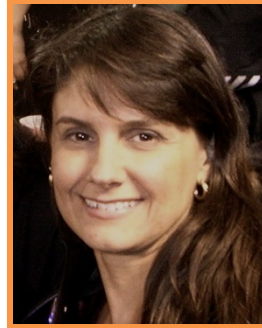


The Project Planning Team

Central Valley Landscape Conservation Project



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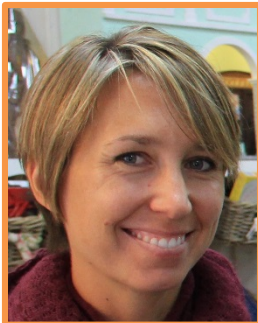
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Rachel Gregg, EcoAdapt

Presentation Outline

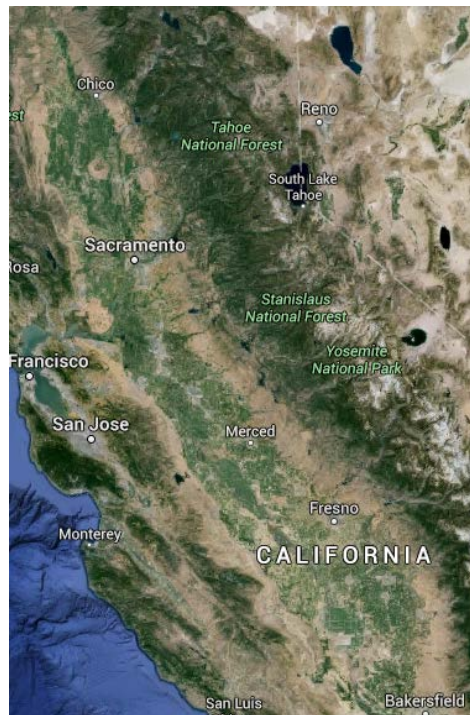
- Introduction to the Central Valley Landscape Conservation Project
- What We've Accomplished
- Applications of the results
- What's Next and How to Participate

Why the Central Valley Landscape Conservation Project

A future Central Valley we can all work toward.



Yesterday



Today



Tomorrow

Central Valley Landscape Conservation Project

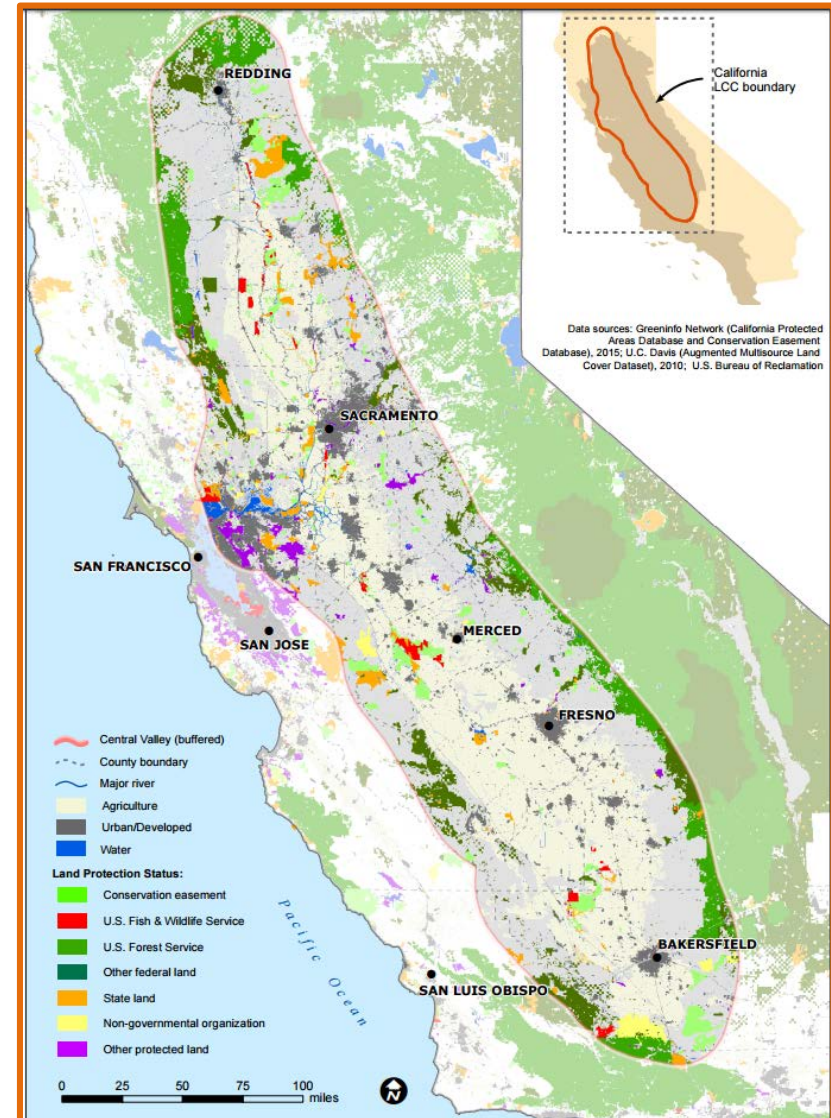


Let's Work Together!

Project seeks to align and support
planning & programs

Examples:

- Refuges/Wildlife Reserves
- Central Valley Joint Venture
- State Wildlife Action Plan
- Dept. of Water Resources - Flood System Conservation Strategy
- **Growing number of conservation programs**





Central Valley LCP Applications

We want to work with water managers to restore ecosystems for multiple benefits.

We want to prioritize our work across the landscape to enhance water availability for wildlife.

We need to incorporate climate change adaptation into our HCP.

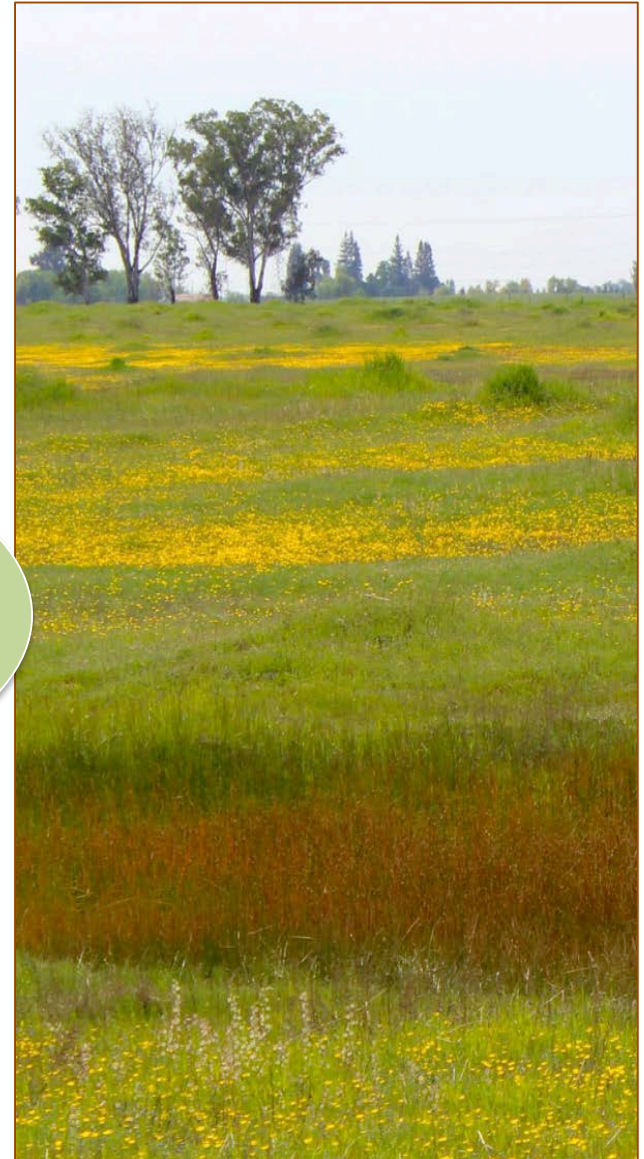
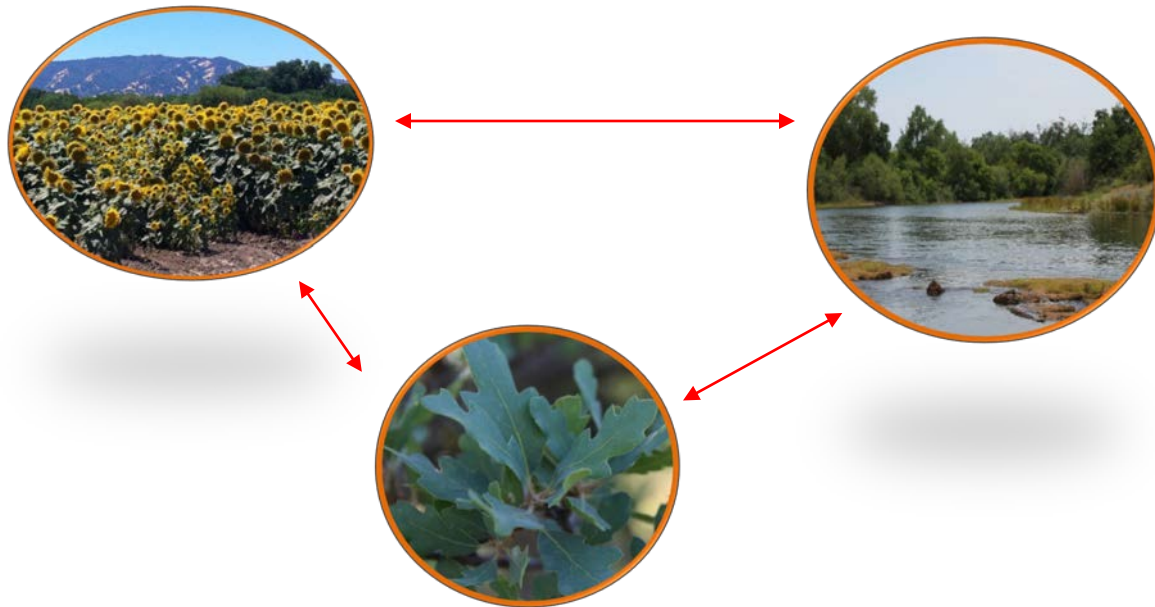


Photo by A. Graffis

Central Valley Landscape Conservation Project Goal

In partnership with natural resource managers and scientists, identify climate-smart conservation strategies and actions that will maximize the adaptive capacity of priority species, habitats, and ecosystems to support an ecologically-connected Central Valley landscape.



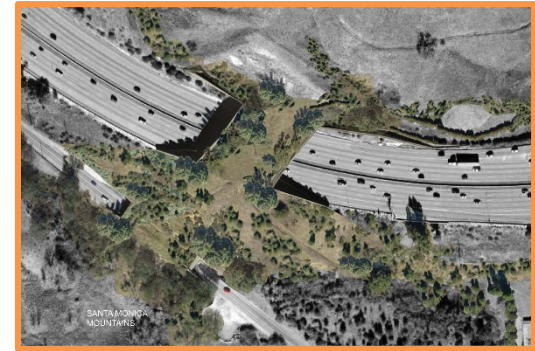
Conservation Goals & Objectives

Central Valley Landscape Conservation Project

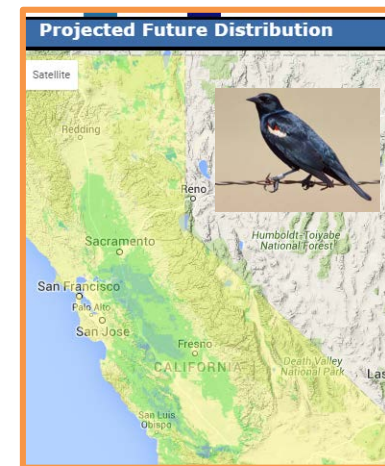
Objective 1. Reduce the impacts of climate change and other stressors to Central Valley ecosystems.



Objective 2. Promote landscape-scale connectivity and ecological and physical processes that function within current and future ranges of variability to support a diverse and thriving Central Valley.



Objective 3. Conserve resilient and adaptable ecosystems that sustain future Central Valley biodiversity.





The Central Valley Landscape Conservation Project

Climate-Smart Process



Project Outcomes

- **Future scenarios** for the Central Valley
- **Vulnerability assessments** for priority natural resources
- Partnership-led **adaptation strategies and actions**
- **Supporting maps, data, and literature** online
- A **network of practitioners** conducting coordinated, Climate-Smart conservation in the Central Valley region



Future Scenarios

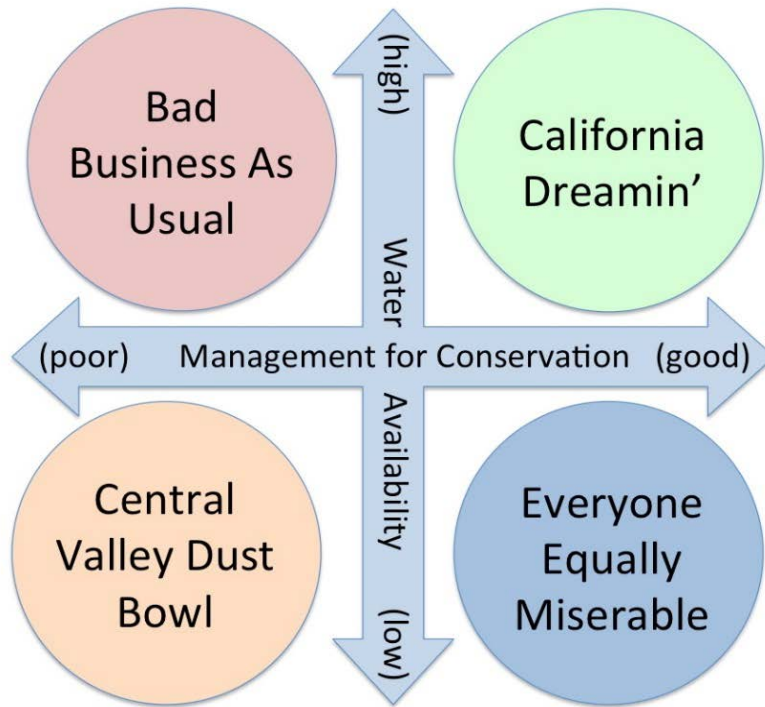


Purpose: Provide a common understanding of a range of future conditions for the region as a basis for vulnerability assessment and adaptation strategy development.

- Point Blue guided 38 stakeholders at an all-day workshop
- Multi-stakeholder understanding and agreement of plausible futures
- Plan for strategies robust across scenarios



Future Scenarios



Four plausible futures for the Central Valley region based on major drivers of change:

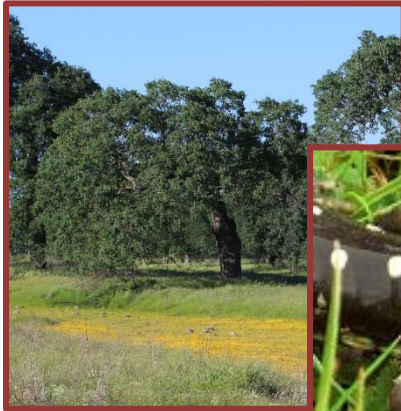
- **Water availability** – amount and seasonal timing of water
- **Management for Conservation** – degree of economic, legislative, and regulatory support for functioning ecosystems and biodiversity

Priority Natural Resources



Purpose: Agree upon a set of priorities on which to focus evaluation of vulnerabilities and strategies

- These resources are representative of an ecologically-connected Central Valley landscape
- Collected and ranked focal resources from 100+ plans with over 300 priorities
- CA LCC staff guided 30 Central Valley experts in a workshop



Priority Natural Resources



Central Valley Landscape Conservation Project

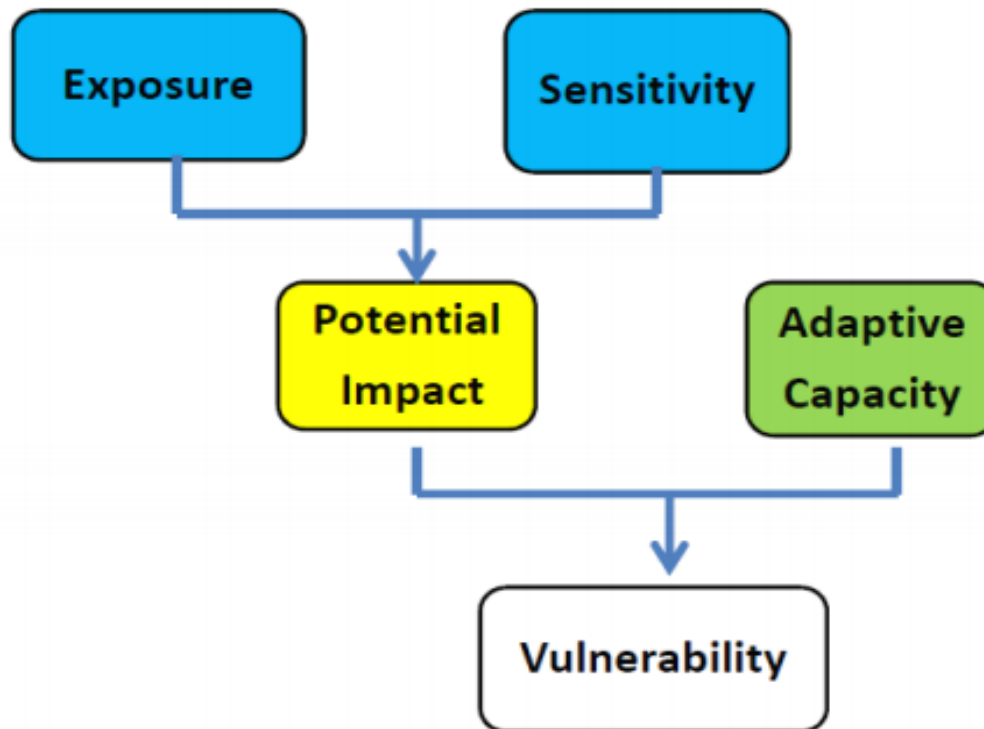
Habitats	Species Groups	Species
Floodplain and riparian vegetation	Western bumblebee and pollinators	Valley oak
Stream channel	Salmonids	Yellow-legged frog
Dunes	Wetland-dependent reptiles	Blunt-nosed leopard lizard
Oak & foothill pine woodland	Breeding water birds	CA tiger salamander
San Joaquin desert	Burrowing mammals	Tricolored blackbird
Vernal pools and swales	Vernal pool crustaceans	Green sturgeon
Flooded cropland	Dragonflies and damselflies	Pacific lamprey
Chaparral and serpentine shrublands	Large wide-ranging mammals	Yellow-billed magpie
Permanent wetlands	Cavity nesters and roosters	Red-legged frog
Seasonal wetlands and saline playas	Wintering waterfowl and shorebirds	
Grasslands	Riparian nesting birds	
Rice cropland	Wetland-dependent mammals	

Vulnerability Assessments



Purpose:

- Identify what is most vulnerable and why
- Help design adaptation strategies to address vulnerabilities
- Help prioritize management action
- Help reconsider conservation goals in light of climate change

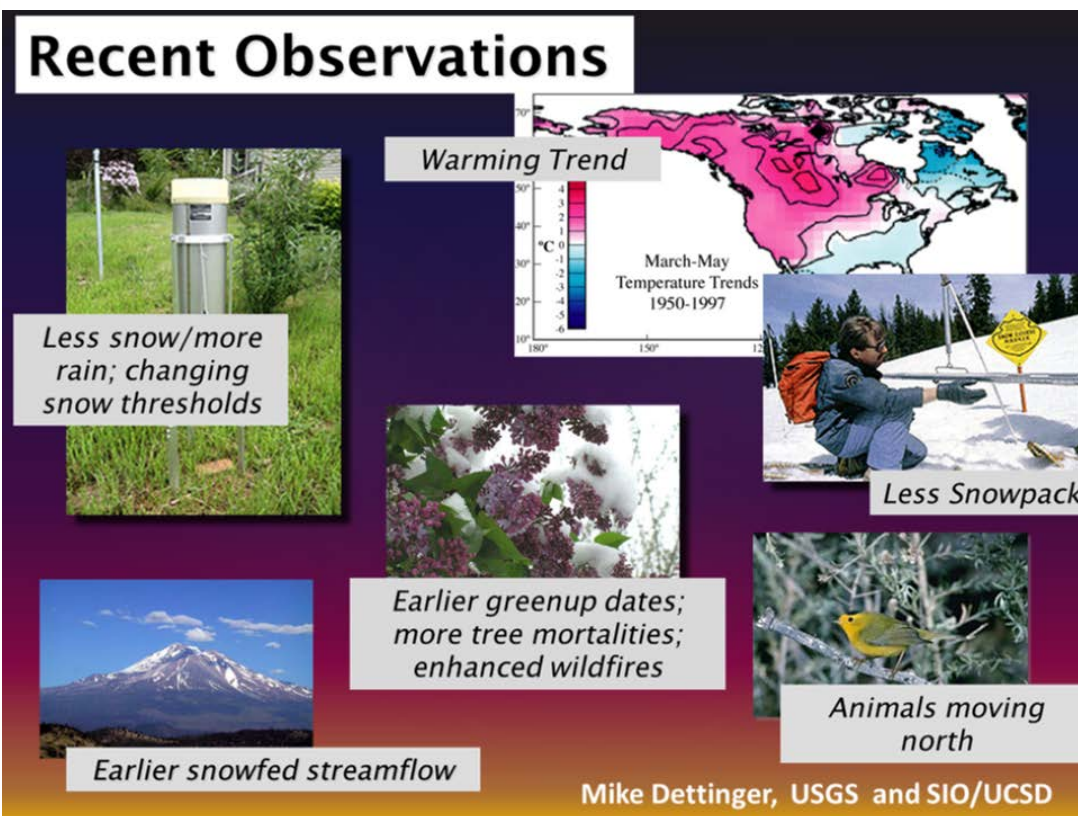


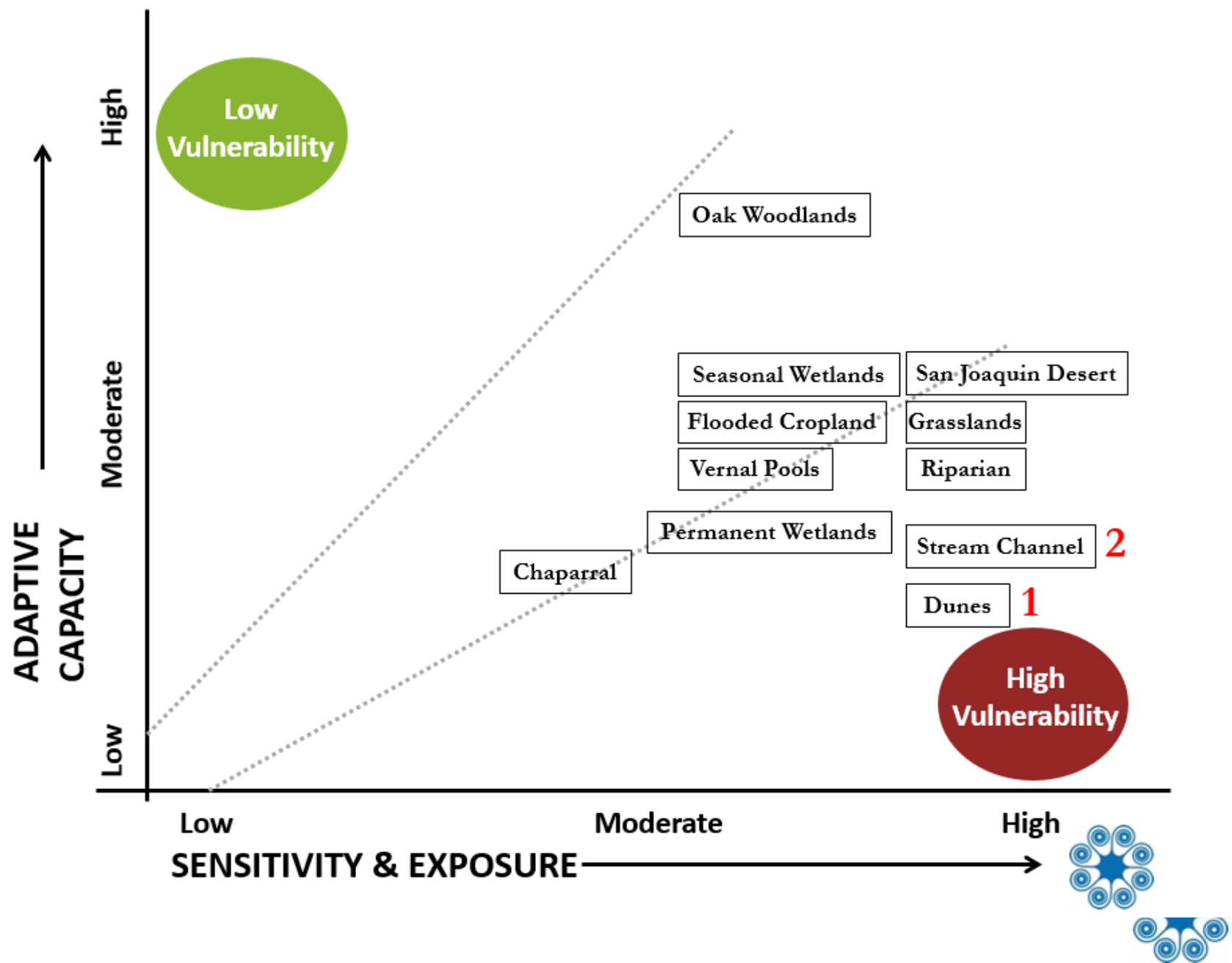
Included climate and non-climate stressors, locations of high threat, and potential for management action

Vulnerability Assessments



- EcoAdapt guided 45 experts through the process for all priority resources
- Results being compiled with literature searches. Expected completion: **Early May 2016.**





Grasslands

Executive Summary

Central Valley grasslands are open grasslands that support a diversity of annual and perennial plant species. Grasslands are characterized by winter precipitation and seasonal summer drought, and exhibit high temporal and spatial diversity.

Key climate drivers for grassland systems include soil moisture, precipitation timing and amount, drought, and air temperature. These factors influence germination, species composition and diversity, productivity and phenology. Key disturbance mechanisms are grazing, wildfire, and insect composition, and grassland development, agricultural and problematic species habitat, alter species composition, and species have significantly

Grasslands represent a series of varying levels of habitat development and exotic stressors listed above, in Although grassland habitat wildlife diversity. Resilience demonstrated diversity in species resilience is fostered with deeper rooting systems. However, native dispersal is difficult, limiting migration fragmentation. Managerial area restoration efforts,

Grasslands	Score ¹	Confidence
Sensitivity	High (5)	High (3)
Exposure	High (5)	High (3)
Adaptive Capacity	Moderate (3)	High (3)
Vulnerability	Moderate-High (4)	High (3)

Sensitivity

I. Sensitivities to climate and climate-driven factors

Climate and climate-driven factors identified:

- Soil moisture: High sensitivity (5), high confidence (3)
- Precipitation (amount): High sensitivity (5), high confidence (3)
- Precipitation (timing): Moderate-high sensitivity (4), high confidence (3)
- Air temperature: Moderate-high sensitivity (4), high confidence (3)
- Drought: Moderate-high sensitivity (4), high confidence (3)

Overall habitat sensitivity to climate and climate-driven factors

- High sensitivity (5), high confidence (3)

Climate and climate-driven factors that may benefit the habitat

- No answer provided by workshop participants.

Notes from workshop participants

Precipitation biased towards spring only negatively affects eastern star thistle abundance. High or low amounts of precipitation also causes conversion to other habitat types.

Increased air temperature leads to climatic water deficit issues, increased climatic water deficit.

Supporting Literature

A literature review was conducted for those factors scoring 4 sensitivities identified should also be considered when developing actions.

Soil moisture

Soil moisture is influenced by precipitation, evaporation, soil

Example of a completed Vulnerability Assessment

- Expert knowledge + indepth research
- Scores for vulnerability components and confidence
- Searchable bibliographies

Vulnerability References:

Type	Title	Creator	Date	Subjects
Document	A climate change vulnerability assessment of California's at-risk birds	Gardali, Thomas, Seavy, Nathaniel E., DiGaudio, Ryan T., and Comrack, Lyann A.	2012	vulnerability assessment, climate change adaptation, climate change impacts on biodiversity
Document	Additive effects of simulated climate changes, elevated CO2 and nitrogen deposition on grassland diversity.	Zavaleta ES, Shaw MR, Chiarello, NR, Mooney HA, & Field CB.	2003	grasslands, climate change impacts on biodiversity
Dataset	Bird Distribution Responses to Climate Change	Point Blue Conservation Science	2010	species distribution modeling, birds, bioclimatic modeling
Document	Cattle Grazing Mediates Climate Change Impacts on Ephemeral Wetlands	Pyke, C. R., and J. Marty.	2005	grazing, rangelands, vernal pools
Dataset	Conservation Prioritization for California Landbirds	Point Blue Conservation Science	2011	species distribution modeling, habitat conservation, birds
Document	Effects of pool characteristics on California tiger salamander larval density at Dutchman Creek Conservation Bank, Merced County	Brand, A. L., Scherer, R., and Hansen, E.	February, 2016	California tiger salamander
Document	Habitat loss confounds climate change impacts. <i>Frontiers in Ecology and the Environment</i>	Pyke, C. R.	2004	land use planning, vernal pools
Document	Integrated climate and land use change scenarios for California rangeland ecosystem services: wildlife habitat, soil carbon, and water supply	Byrd, Kristin B., Lorraine E. Flint, P. Alvarez, C. F. Casey, B. M. Sleeter, C. E. Soullard, Alan L. Flint, T. L. Sohl	January, 2015	rangelands, ecosystem services, soil carbon, habitat conservation, water resources

Project Website with Products

<http://climate.calcommons.org/cvlcp>



California Landscape Conservation Cooperative

Climate Commons

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Central Valley Landscape Conservation Project



A collective vision for an ecologically-connected California Central Valley.

Our Approach	Our Partnership	About the Central Valley	Available Science
Goals and Outcomes Workshops Priority Resources	Partners and Teams Existing Efforts	About the Region Future Scenarios Climate Change	Map Gallery  Vulnerability Information: Uplands Wetlands Desert & Grasslands Riparian & Riverine

This project is in progress. Please see what's next for the Central Valley Project



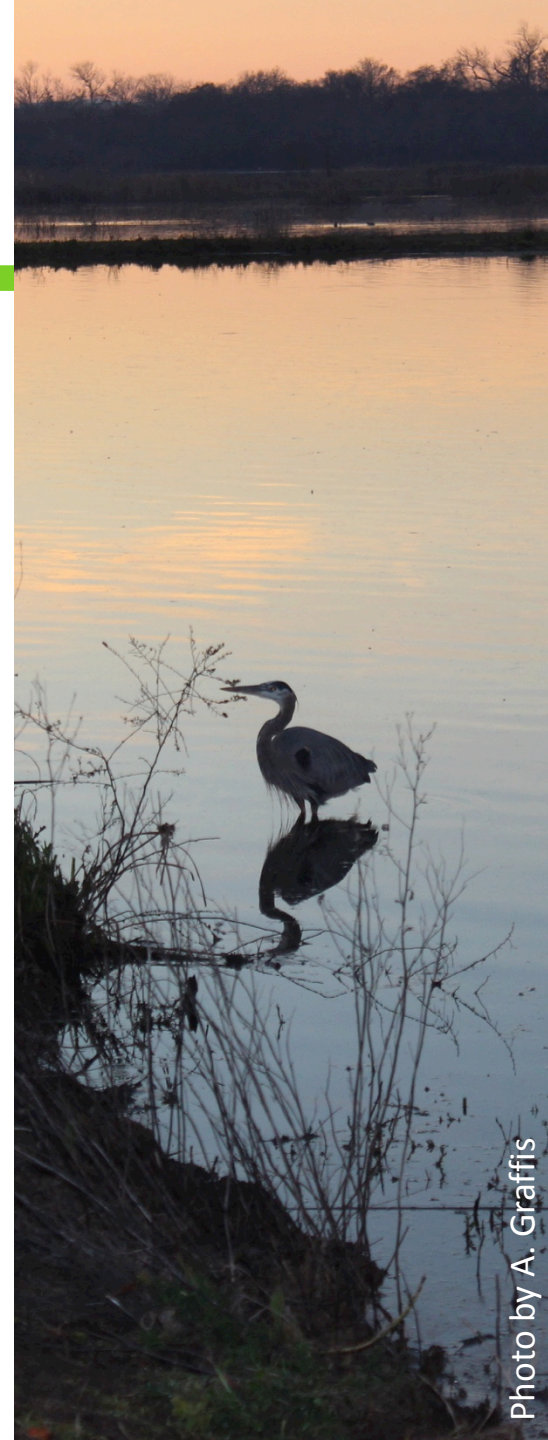


Next Steps: Adaptation Strategies & Actions

Purpose: Provide a framework for coordinated landscape-scale conservation in the Central Valley.

Spring – Fall 2016: **Adaptation Strategy and Action Workshops**

- First workshop May 10-11
- Develop Landscape-scale and Resource-specific Adaptation Strategies
- Develop Actions and Methods to Monitor





Next Steps: Adaptation Strategies & Actions

- **Resource-specific adaptation strategies** address vulnerabilities of the priority species and habitats under changing conditions
- **Landscape-scale adaptation strategies** address changing climate, ecological, and physical processes affecting multiple habitats and species



Photo by P. Huber

Developing Adaptation Strategies

Example		
Stressors	Landscape-scale Adaptation Strategy	Major implications of strategy for the landscape
Increasing temperature, habitat fragmentation, invasive species.	Maintain or restore a continuous matrix of habitat from Tejon Ranch northward along the western side of the valley to Tracy	Allow migration of species and habitat northward

Other attributes to be captured:

- Priority natural resources that benefit
- Geographic footprint of strategy
- Potential partners
- Interactions or conflicts



Next Steps: Data and Information

Spring and Summer, 2016:

- Survey Partners about data and tool needs
- Develop digital library

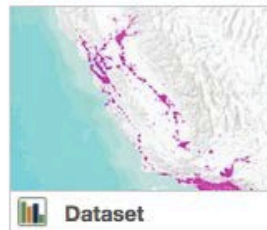
Fall/Winter, 2016-17:

- Develop needed datasets and maps to support partners' implementation of strategies and actions.

Central Valley Landscape Conservation Project



▼ Climate, Hydrology, and Land Use Change Projections (4 items)



California urban growth scenarios, 2050



California urban growth scenarios, 2020



Climate and Hydrology Projections: 2014 California BCM Sample Layers



Climate and Hydrology Change Over Time

► Conservation Areas and Boundaries (9 items)

► Habitat Connectivity (2 items)

► Land and Water Basemaps (3 folder(s) and 23 item(s))



Next Steps: Outreach

Winter/Spring 2017

- Assist programs to access, understand, and apply products
- Facilitate a coordinated landscape-scale approach

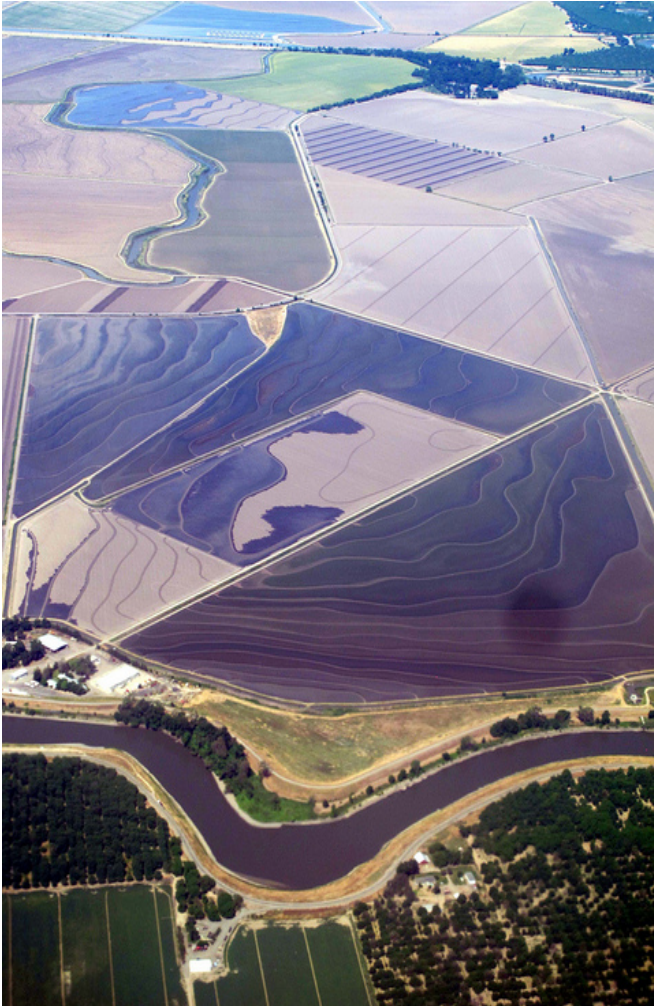


Photo by P. Huber



You are Invited to Participate

Opportunities for involvement:

- Help develop adaptation strategies
Next workshop May 10-11, 2016
- Define data needs and tools
– **Stakeholder Survey, Summer 2016**
- Participate in the landscape-scale
Central Valley conservation partnership
- Apply the results to your conservation
work

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Questions ?



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