Conservation Easements and Other Instruments:

Promising compliments to rangeland leases

Central Coast Rangeland Coalition
Training: Leases That Work For The Land, Landowners, Lessees & Livestock
Half Moon Bay, California
April 17, 2014

Bill Coleman
Great Ecology Inc.
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Bill's Info

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Work Experience:

- **Great Ecology Inc.**, Senior Associate San Francisco
- **PG&E Environmental Dept**., Habitat Conservation Plan Program
- Global Footprint Network (Oakland), Director of Technical Programs
- Green Building Exchange (Redwood City), President / COO
- Planktos Inc. (Foster City), COO
- Consultant / Earth Assets Group – Ecosystem Marketplace, Intertox Inc., Futura Solar, Lehr Inc., Luminesa
- EPRI Environment Division (Palo Alto), Manager / Director (18 yrs)
    - **Ecological Asset Management**
- Edison Electric Institute (Washington D.C.), Govt. Affairs Exec. Liaison
- Entergy Corporation (Little Rock), Manager / Environmental Affairs (10 yrs)

Education:

University of New Mexico – Environmental Science (terrestrial ecology)

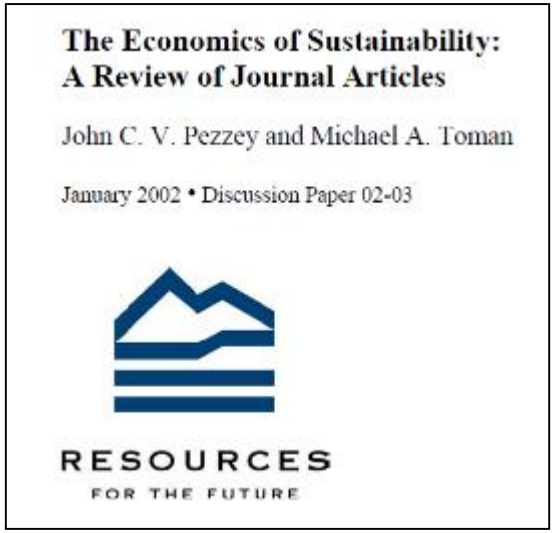
University of Arkansas – Environmental Psychology

Stanford / Columbia – Ecological Economics

We've been hearing about the economics of sustainability for 10 years or more.

Is sustainability measurable?

Is it profitable?


The Economics of Sustainability:
A Review of Journal Articles

John C. V. Pezzey and Michael A. Toman

January 2002 • Discussion Paper 02-03

RESOURCES
FOR THE FUTURE

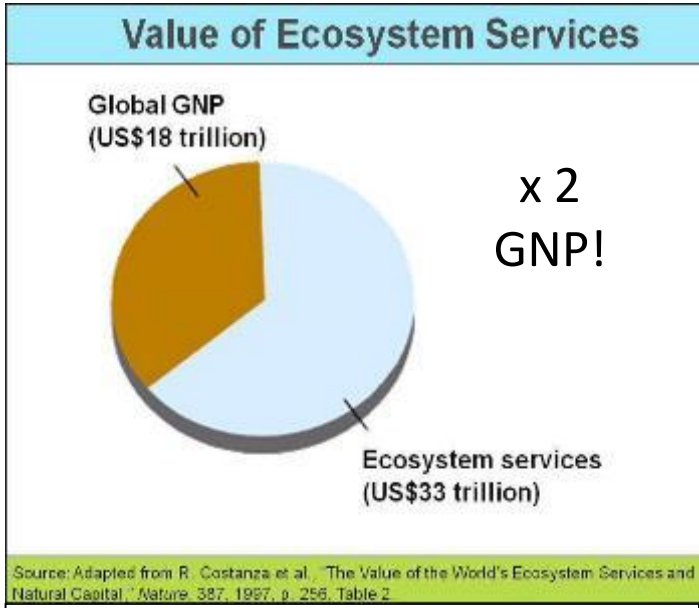
What does sustainability mean in terms of <u>rangeland management</u>?

Sustainable Rangelands Roundtable

Intro Aug. 19, 2003

Progress towards sustainable ranching:

- holistic landscape planning
- rotational grazing
- drought intensive management
- passive irrigation
- integrated pest management
- use of organic or non-toxic chems



Cost reduction?

Revenue production?

While sustainability was being debated things were changing.

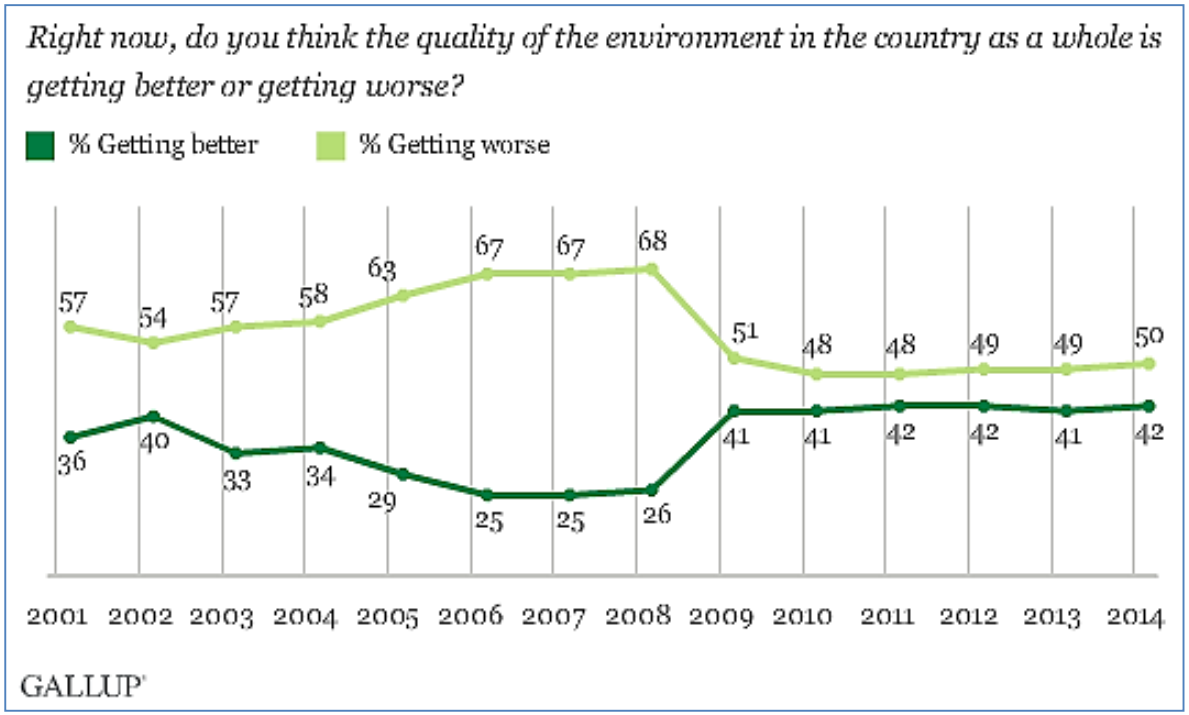
Example: quality of life was still in question.

March 19, 2014

Americans' Outlook for U.S. Environmental Quality Steady

Republicans more likely than Democrats to say environment is excellent or good

by Rebecca Riffkin



The pace of global change was accelerating.

IPCC Report: A changing climate creates pervasive risks

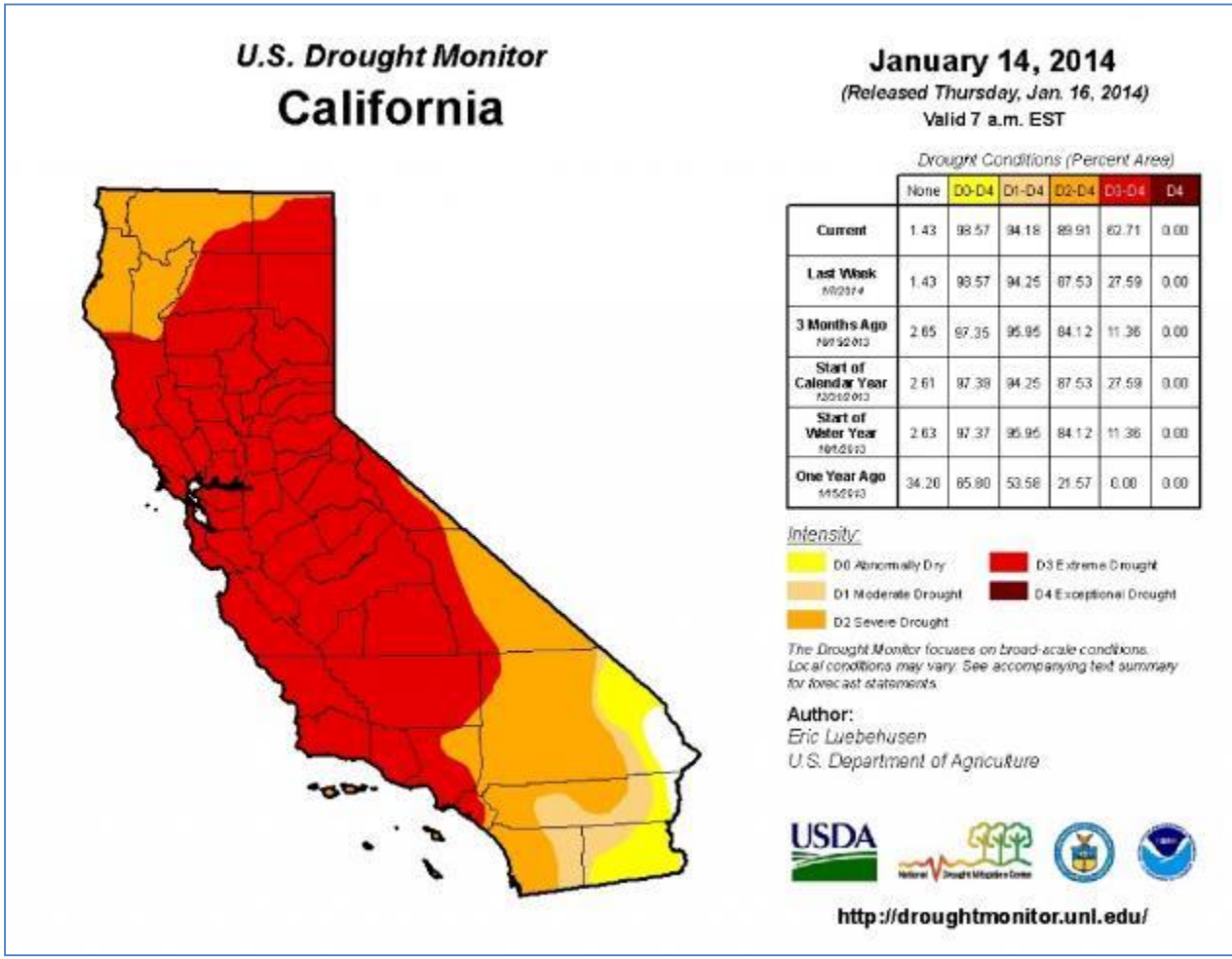
Climate Change Adjustments Must Be Fast And Major, U.N. Panel Says

Climate change keeps getting closer to home.

California drought: Feds declare 27 counties as ‘natural disaster areas’

Posted on January 17, 2014

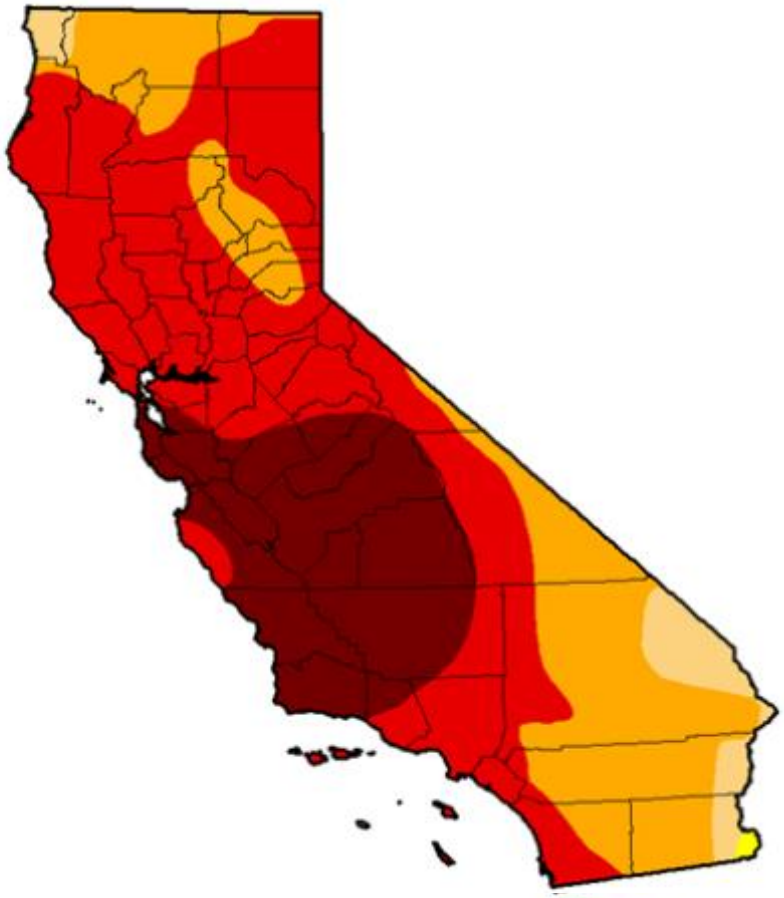
Governor Jerry Brown’s emergency drought declaration on Friday came on the heels of the US DOA designating nearly half of California’s counties as “natural disaster areas”.



Current Drought Situation

U.S. Drought Monitor

California



April 1, 2014

(Released Thursday April 3, 2014)

Valid 7 a.m. Eastern

Statistics type: (•) Traditional (D0-D4, D1-D4, etc.) ( ) Categorical (D0, D1, etc.)

Drought Condition (Percent Area):

Week	Date	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	4/1/2014	0.00	100.00	99.81	95.21	68.76	23.49
Last Week	3/25/2014	0.00	100.00	99.80	95.21	71.78	23.42
3 Months Ago	12/31/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Calendar Year	12/31/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year	10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago	4/2/2013	0.00	100.00	48.38	24.22	0.00	0.00

View More Statistics

Intensity:

- D0 - Abnormally Dry
- D1 - Moderate Drought
- D2 - Severe Drought
- D3 - Extreme Drought
- D4 - Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

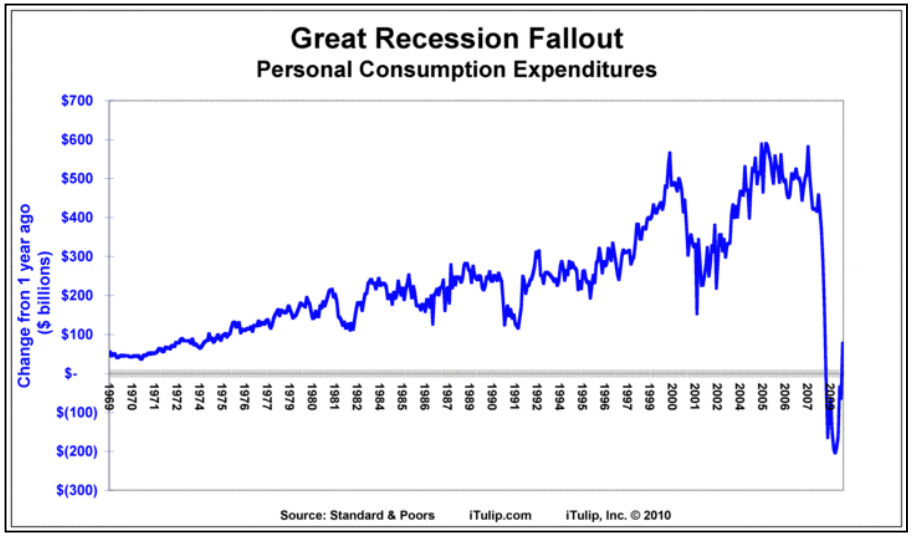
http://droughtmonitor.unl.edu/

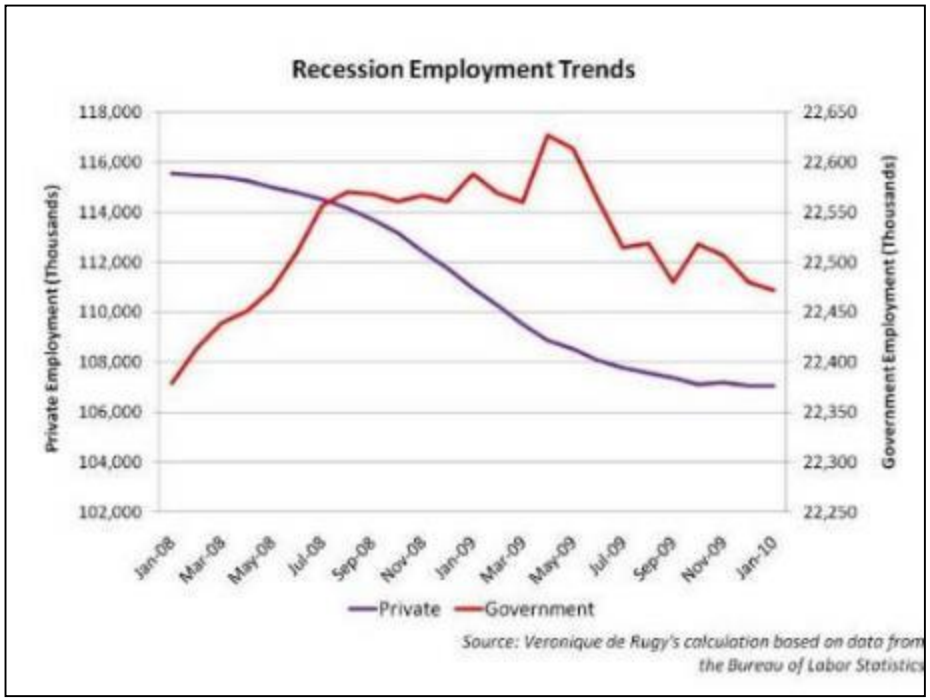

Lesson 1:
Ranching is often at the mercy of the elements
Profits don’t come easy

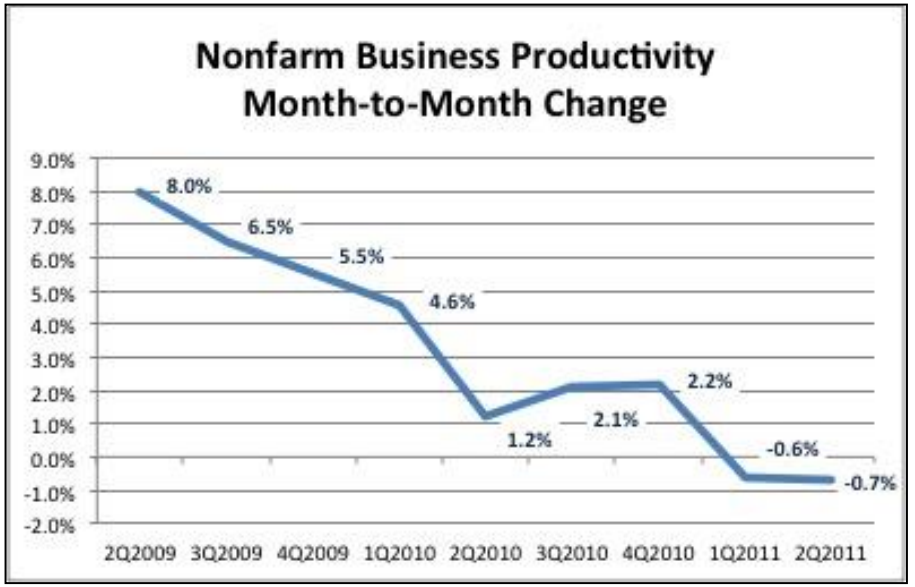
The economy collapsed.

‘Great Recession’
2007 – 2012

Every business was affected



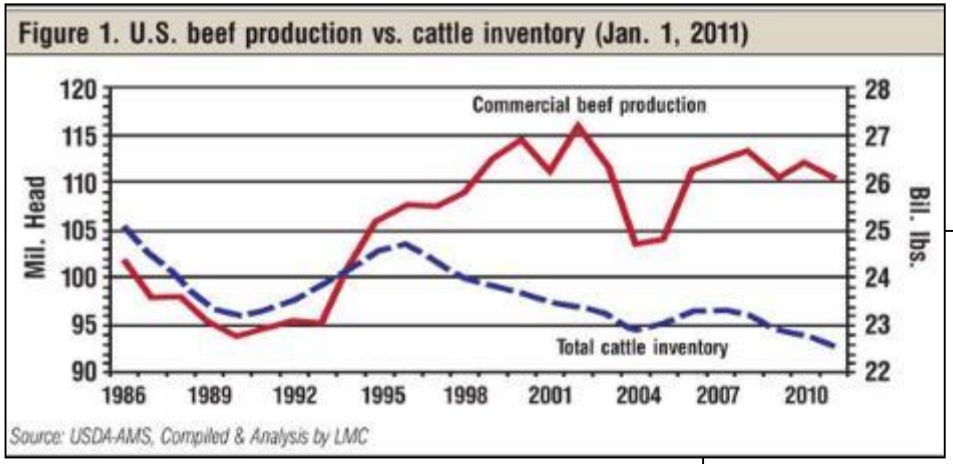




Lesson 2:
Ranch economics is changing

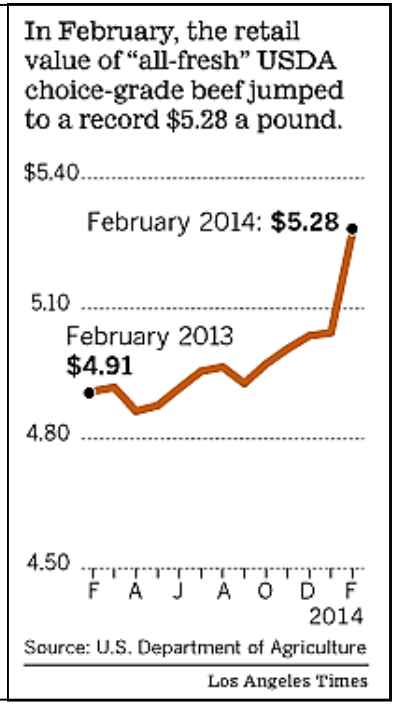
Profits don't come easy

Beef cow numbers declined – starting in the 1990s, when the biofuels era began.



Beef prices hit all-time high in U.S.

Extreme weather has thinned the nation's cattle herds, roiling the beef supply chain from rancher to restaurant.



Off-farm income became scarce.

- fewer in-town jobs
- fewer unskilled jobs
- more in-town seekers
- more minimum-wage jobs
- higher costs to get to town

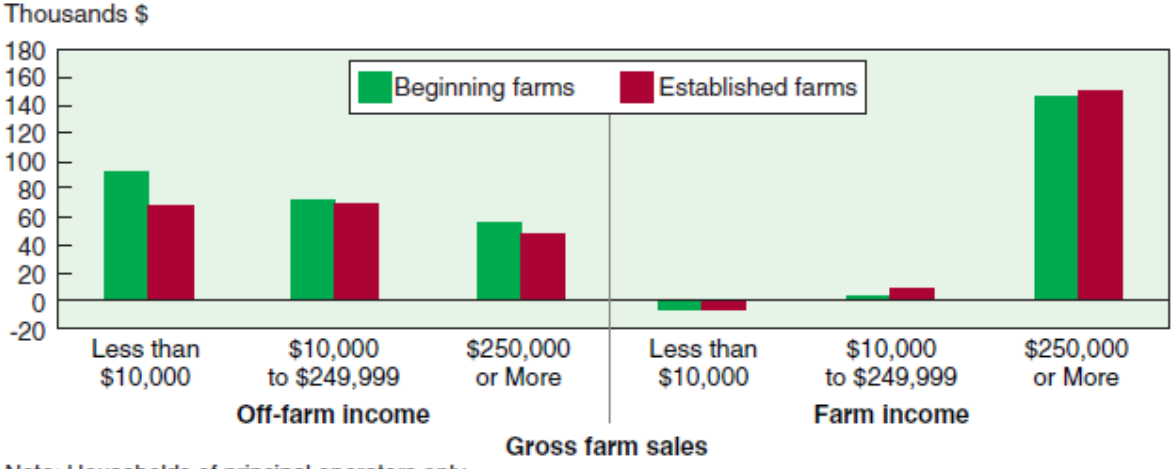
Lesson 3:
Off-farm income is iffy

Profits don't come easy

Households Receive Most of Their Income From Off-Farm Sources

For decades, most farm households—whether beginning or established—received a majority of their household income from off-farm sources. On average, off-farm income accounted for 83 percent of farm operator household cash income in 2011. Most farm families operating small farms have negative net farm income (after depreciation)—that is, in a typical year, they lose money farming. The average farm income of beginning farm households is less than that for established farm households ($1,902 versus $18,119 in 2011), but their households had higher average off-farm incomes than established farm households ($89,015 versus $68,172). Beginning farm households received less farm income and more off-farm income than established farms regardless of farm size.

Households operating beginning farms have higher average off-farm income and lower average farm income at every farm size



Note: Households of principal operators only.
Source: USDA, National Agricultural Statistics Service and Economic Research Service, Agricultural Resource Management Survey, 2011.

California Ranches For Sale

Looking for something else?

Ranches For Sale
Northern California Timber Land For Sale
Northern California Ranches For Sale
Mountain Properties For Sale
California Hunting Land For Sale
Recreation Properties
Northern California Hunting

Vineyard View Ranch

$195,000 | 80 +/- Acres | El Dorado County, CA

Property Type: Recreation - Hunting and Timber, Ranchette and Residential

The Vineyard View Ranch is beautiful level to rolling acreage immediately adjacent to the well-known Perry Creek Vineyards with incredible views of the vineyards, the valley below and surrounding mountains. Dense woods to open meadows. Huge building pad with view, access roads throughout property. Cedars, pines, madrones, black oaks, live oaks and manzanita. Lots of wildlife. 80 acres. Adjacent 20 acre parcel with

We all want the ranches to survive

Despite careful management ranching costs can still exceed the market value of livestock.

So how does a common rancher stay in business?

“Every rancher has some way to reduce costs, to ignore others, and to find **supplementary sources of revenue**.”

What are the revenue options?

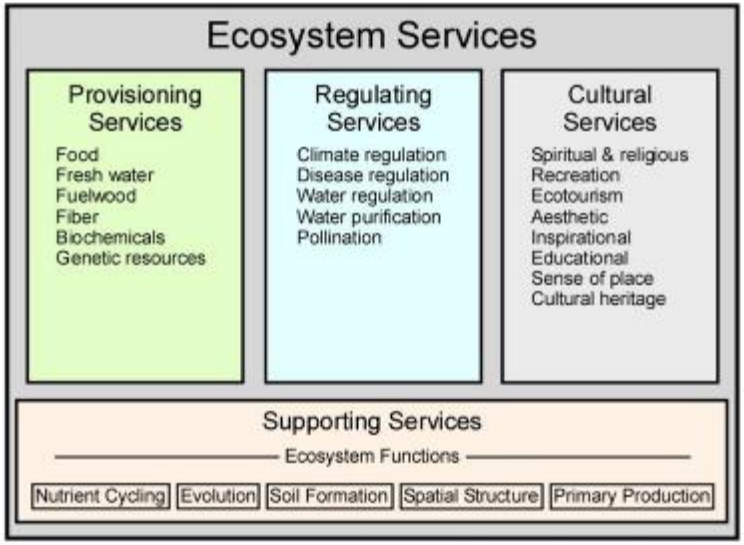
- Curb spending
- Off-ranch work
- Rent / lease land
- Raise hay, grass to sell
- Hunting, education, recreation fees

“The cattle operation itself has little, if any, margin. But land values keep rising.”

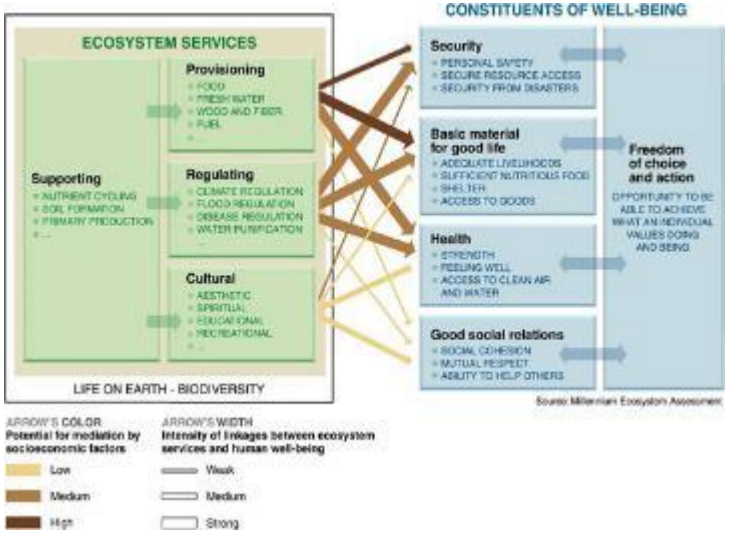
- Should we sell off portions of the land ?
- **Should we look into new, high-value ‘cash crops’?**

Ecosystem Services –

source of *all* economic productivity



Modified, with additions, from the Millennium Assessment



Ecosystem Services – A Framework for Thinking about Sustainability

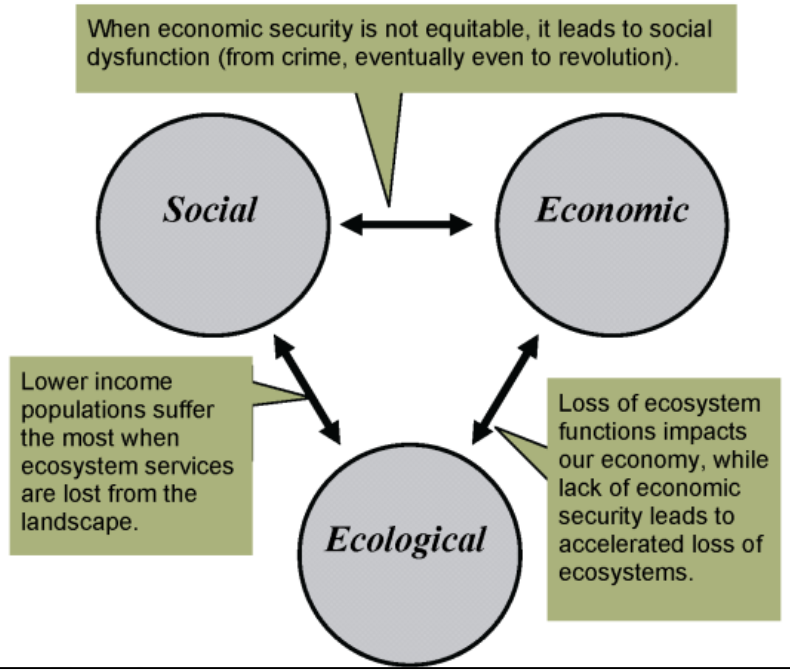
By Kevin Halsey

In recent years, *sustainability* has become a widespread concern, and there are many efforts to help move towards sustainability. For instance, we are told to "reduce, reuse, recycle"—very good advice. Businesses increasingly manage their operations to meet a triple bottom line of economic, social, and ecological accountability, which should be encouraged and rewarded. Indeed there are efforts at many levels, from LEED certification standards for new buildings to carbon trading, to reduce harmful emissions.

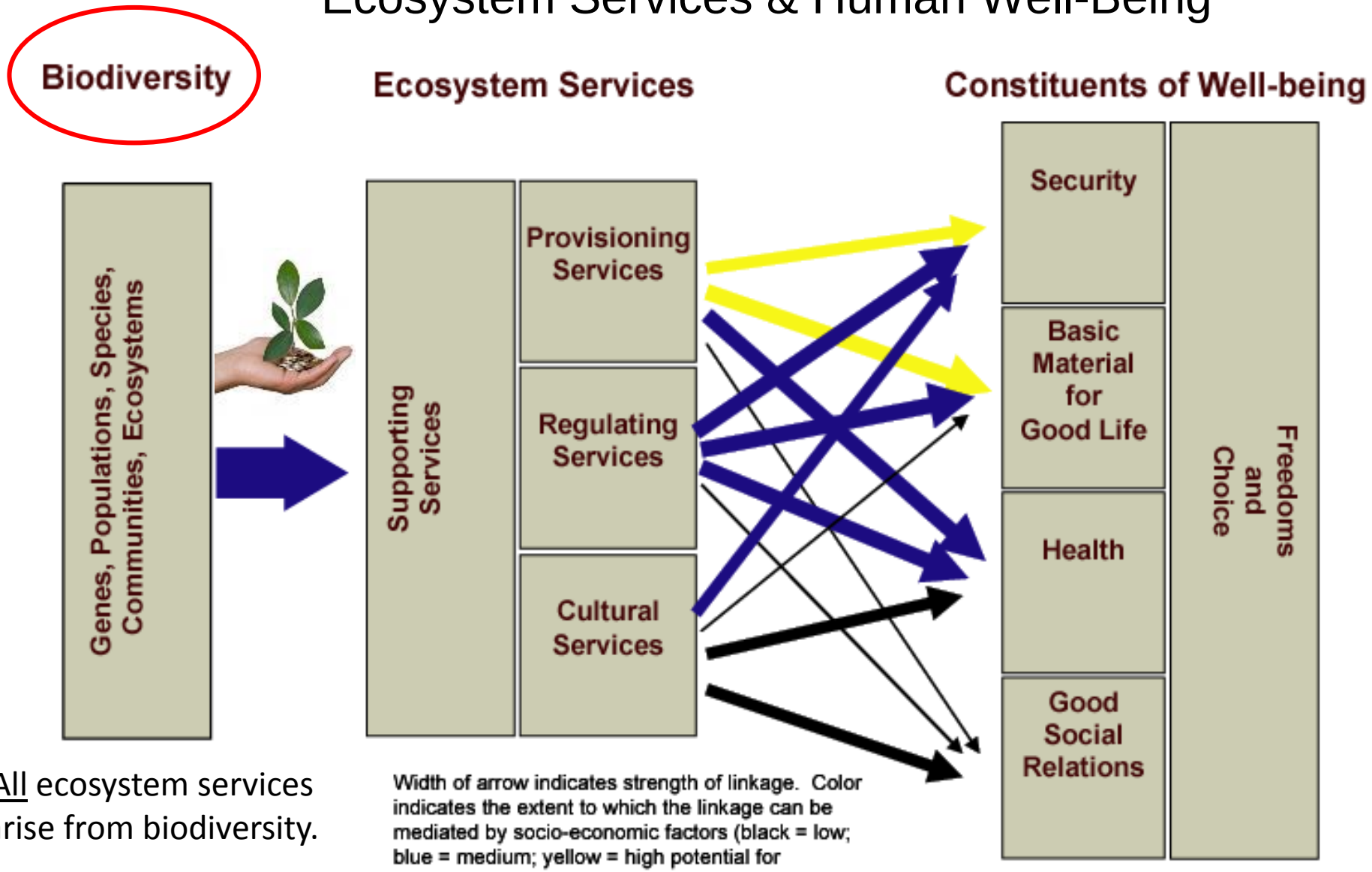
All of these efforts are laudable and necessary to help reduce the footprint of our presence on the planet, and they should be rewarded and encouraged. However, as valuable as they are, they currently represent steps towards an unknown endpoint. The question remains: *how do we think* about what it means to be sustainable? What *is* a sustainable footprint, and *how might we measure our progress* toward that critical goal?

Ultimately, we know that to be sustainable we must be able to exist without depleting the planet's available resources (theoretically, in perpetuity). It is also generally accepted that sustainability requires us to balance economic health, social equity, and ecological stewardship. This suggests that to be sustainable, we must live in a manner whereby our total landscape, both natural and human, is able to perform the entire suite of social, economic and ecological functions we need for survival and quality of life. Furthermore, these functions must be performed at adequate levels, with appropriate distribution, and at a non-consumptive rate that will allow these functions to continue over time.

If the adequate performance of the full suite of economic, social, and ecological functions is truly the target, then there are several important ramifications that we must face as we seek to reach that target. First, we must understand that the full suite of functions is vast and all these functions must be



Ecosystem Services & Human Well-Being



All ecosystem services arise from biodiversity.

Biodiversity supports *all economic productivity*.

Protecting Ecosystem Services

San Benito County

Provisioning Services

Products obtained from wetland ecosystems:

- Food
- Fresh Water
- Fibre & Fuel
- Genetic resources
- Biochemical Products

Regulating Services

Benefits obtained from regulation of wetland ecosystem processes:

- Climate regulation
- Hydrological regimes
- Erosion Protection
- Reduction of Natural Hazard risk
- Pollution Control & Detoxification processes

Cultural Services

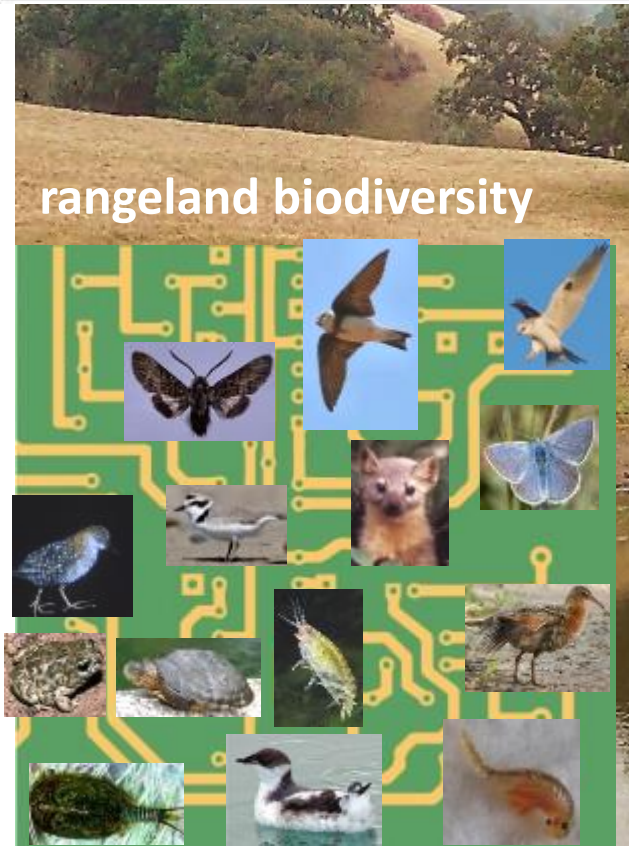
Material and non-material benefits obtained from wetland ecosystems:[1]

- Spiritual & Inspirational
- Recreational
- Aesthetic
- Educational
- Historical Artifacts
- Traditional Livelihoods & Knowledge

Supporting Services

Services necessary for the production of all other ecosystem services:

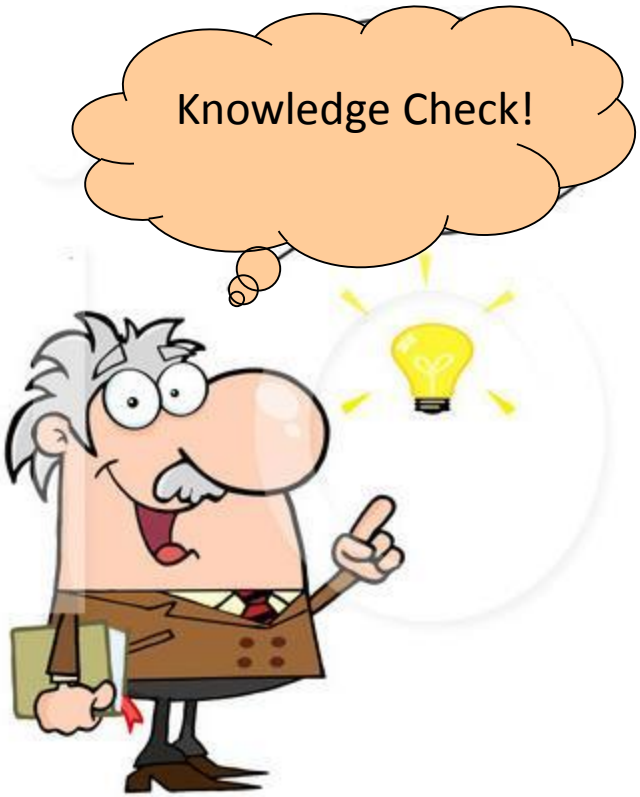
- Soil formation
- Nutrient cycling
- Primary production

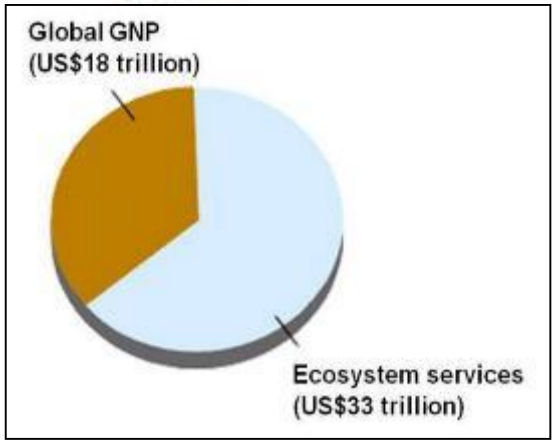


energy
materials
information

→

Renewable
Natural
Resources





<u>All</u> ecosystem services stem from biodiversity productivity.

Biodiversity supports *all economic productivity.*

Ranches are *rich* in biodiversity.

<u>Monetizing</u> biodiversity value could lead to your next significant source of rangeland revenue.

Government Programs (subsidies) supporting sustainability:

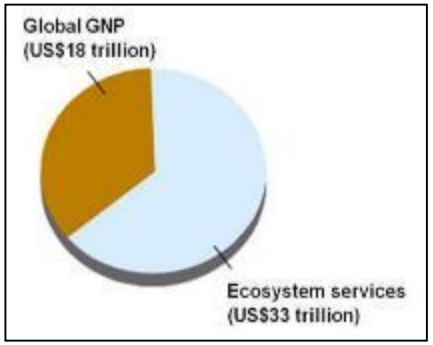
- Wildlife & Habitat Incentive Program (WHIP)
- Forest Land Enhancement Program (FELP)
- Conservation Reserve Program - State Acres For wildlife Enhancement (SAFE)
- Agricultural Management Assistance
- Grassland Reserve Program
- Grazing Land Conservation Initiative
- Conservation of Private Grazing Land (CPGL) program
- Forest Legacy Program
- Forest Stewardship Program
- Watershed Forestry programs
- Wetlands Reserve Program (WRP)

Ecological Assets = market based revenue production

Menu of rangeland ecological assets →

- wetlands restoration (wetland credits)
- habitat / species protection (biodiversity credits)
- carbon sequestration credits – soils & trees

- stream runoff buffer / filtration credits
- riparian stream zone protection / restoration credits
- aquifer recharge credits



80,500 farms and ranches in California

California Agricultural Production Statistics

California has more than **18 million acres of rangelands** in the Central Valley /Coast Range.

The state's 80,500 farms and ranches received a record $44.7 billion for their output in 2012, up from $43.3 billion in 2011 and $37.9 billion during 2010. + 1% ? = $450 million / yr

+ 10% ? = $4.5 billion / yr

http://www.cdfa.ca.gov/statistics/

USGS
science for a changing world

Future Scenarios of Impacts to Ecosystem Services on California Rangelands

The 18 million acres of rangelands in the Central Valley of California provide multiple benefits or "ecosystem services" to people—including wildlife habitat, water supply, open space, recreation, and cultural resources. Most of this land is privately owned and managed for livestock production. These rangelands are vulnerable to land-use conversion and climate change. To help resource managers assess the impacts of land-use change and climate change, U.S. Geological Survey scientists and their cooperators developed scenarios to quantify and map changes to three main rangeland ecosystem services—wildlife habitat, water supply, and carbon sequestration. Project results will help prioritize strategies to conserve these rangelands and the ecosystem services that they provide.

Cattle on rangeland on Mission Peak, near Fremont, California, in the San Francisco Bay area. This image is an example of the expansion of urban areas into former rangeland. (Photograph courtesy of David Amme, California Native Grasslands Association.)

March, 2014 http://pubs.usgs.gov/fs/2014/3019/pdf/fs2014-3019.pdf

Agencies are increasingly supportive of measured ecosystem service value,

including monetized ecological asset value.

News Release

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Media Contacts:
Steve Lyle, CDFA Public Affairs, (916) 654-0462

FIRST-EVER ECOSYSTEM SERVICES DATABASE SHEDS LIGHT ON FARMLAND'S MULTIPLE BENEFITS

cdfa

Release #13-025
Print This Release

SACRAMENTO, September 13, 2013 - The California Department of Food and Agriculture is pleased to announce what is believed to be the first-ever Ecosystem Services Database, which is now available at http://apps.cdfa.ca.gov/EcosystemServices

Ecosystem Services are defined as the multiple benefits we gain from farming and ranching, including crop and livestock production. Many of these benefits extend into environmental stewardship and conservation. For example, the maintenance of wildlife habitats, biodiversity enhancements on working lands, renewable energy use and production, increased nutrient cycling and storage, soil enrichment, water conservation, and support for pollinating insects are some of the benefits. A more comprehensive list of ecosystem service benefits in agriculture can be found at http://www.cdfa.ca.gov/EnvironmentalStewardship/EcosystemServices.html

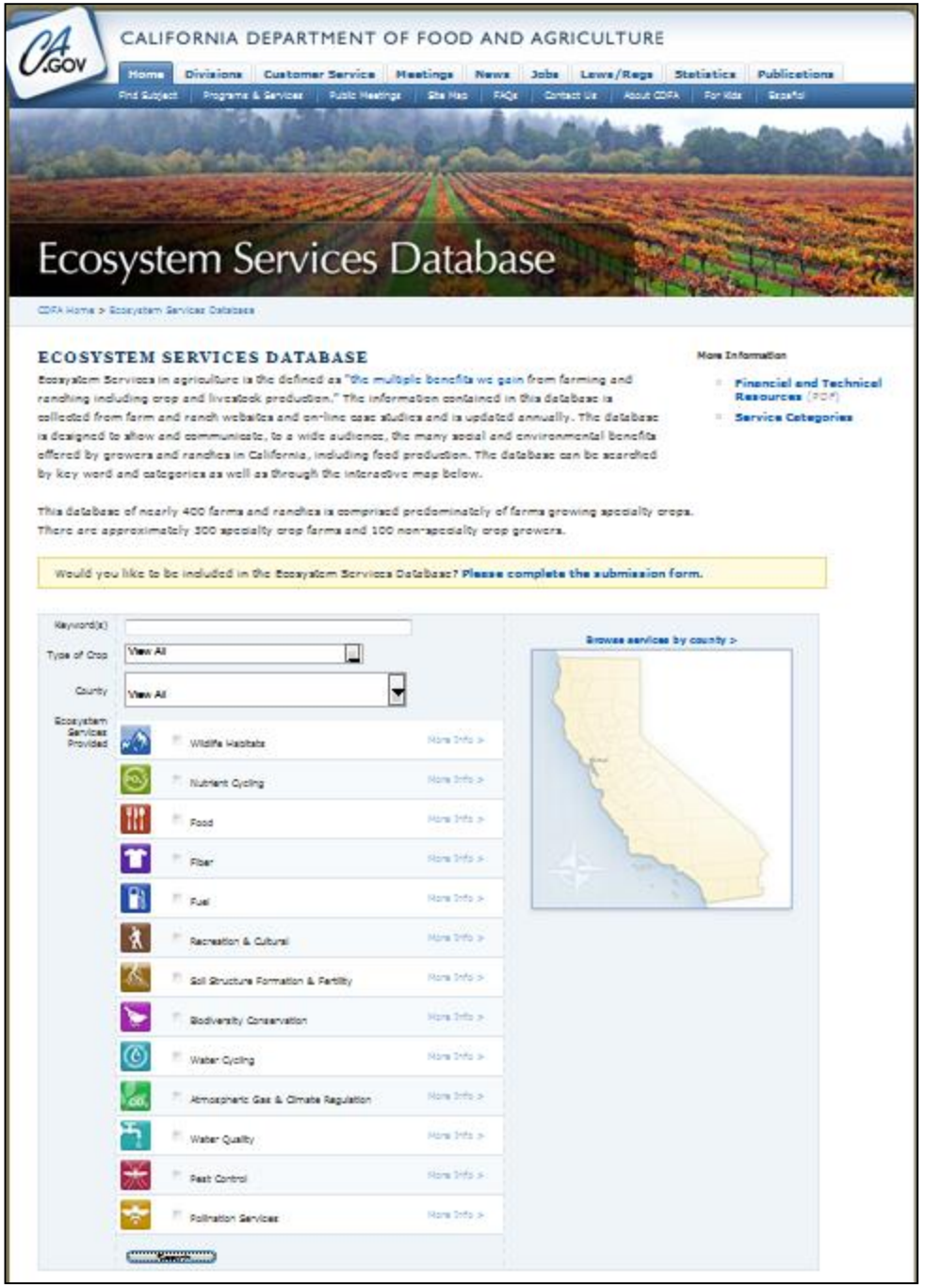
"California's working farms and ranches are an important part of our natural landscape," said CDFA Secretary Karen Ross. "The commitment to ecosystem services demonstrates clearly that beyond the productivity of fields and pastures, resource management decisions by farmers and ranchers provide us with wildlife and pollinator habitat, contribute to clean water and air, provide recreational and tourism connections, and much more."

The database contains nearly 400 farms and ranches. It is intended to easily communicate to a broad audience the multiple benefits provided by agriculture in California. The database can be queried by key word, county, crop type, and type of ecosystem service. An interactive map allows users to view where the services are taking place.

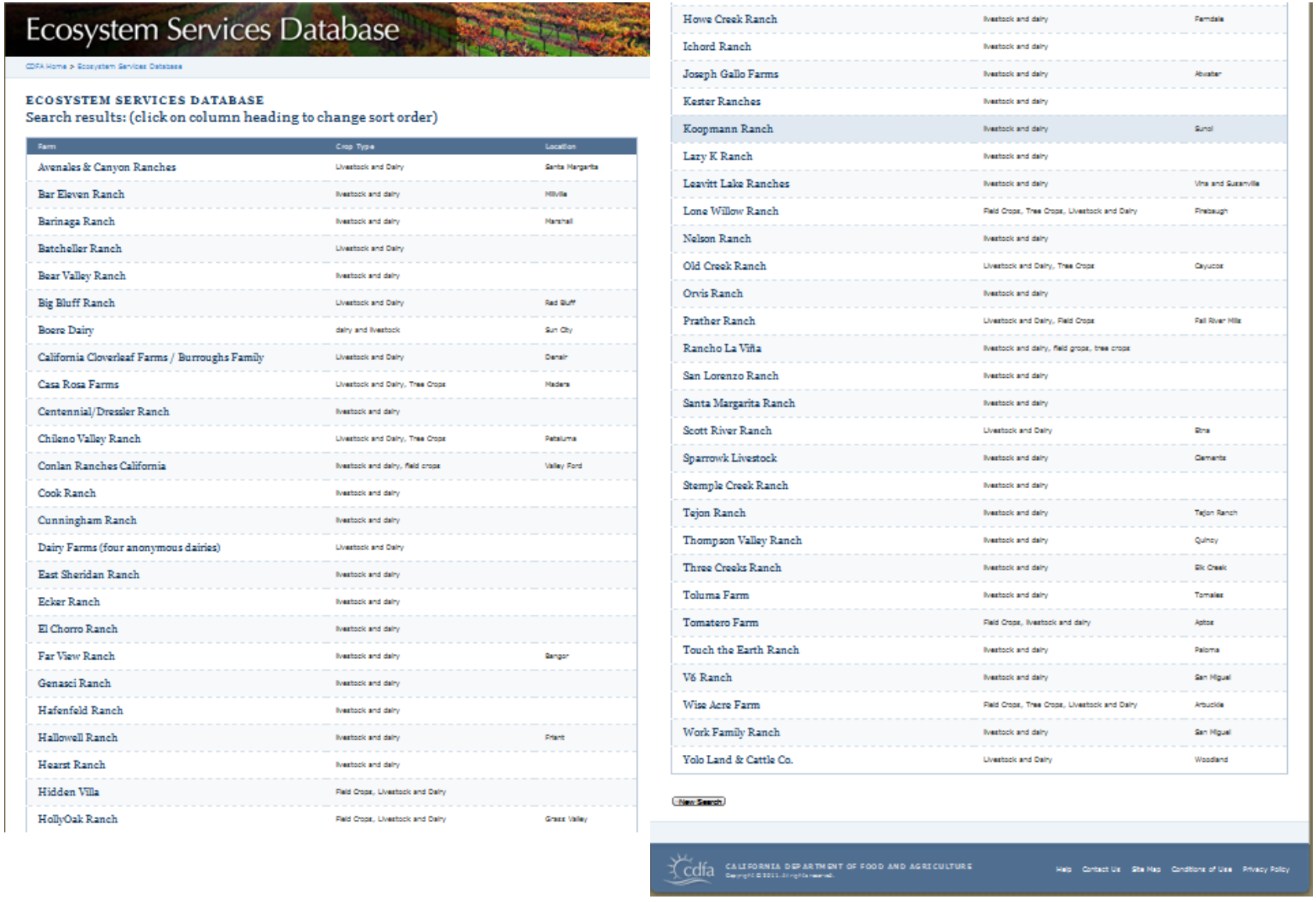
The purpose of the database is twofold. It helps the department discuss the multiple benefits provided by California agriculture, and it assists growers, ranchers, and stakeholders who want to learn more about ecosystem services.

CDFA's first-ever farm & ranch <u>ecosystem services database</u>

- 400 properties reported (0.5%)
- 13 value-based ecosystem services
  - ✓ …Wildlife habitat
  - ✓ Biodiversity conservation



53 properties (13%) state-wide delivering ‘wildlife’ and ‘biodiversity’ eco-services



Ecosystem Services Database

CDFA Home > Ecosystem Services Database

ECOSYSTEM SERVICES DATABASE

Search results: (click on column heading to change sort order)

Farm	Crop Type	Location
Avenales & Canyon Ranches	Livestock and Dairy	Santa Margarita
Bar Eleven Ranch	livestock and dairy	Milville
Barinaga Ranch	livestock and dairy	Marshall
Batcheller Ranch	Livestock and Dairy	
Bear Valley Ranch	livestock and dairy	
Big Bluff Ranch	Livestock and Dairy	Red Bluff
Boere Dairy	dairy and livestock	Sun City
California Cloverleaf Farms / Burroughs Family	Livestock and Dairy	Dorair
Casa Rosa Farms	Livestock and Dairy, Tree Crops	Madera
Centennial/Dressler Ranch	livestock and dairy	
Chileno Valley Ranch	Livestock and Dairy, Tree Crops	Petaluma
Conlan Ranches California	livestock and dairy, field crops	Valley Ford
Cook Ranch	livestock and dairy	
Cunningham Ranch	livestock and dairy	
Dairy Farms (four anonymous dairies)	Livestock and Dairy	
East Sheridan Ranch	livestock and dairy	
Ecker Ranch	livestock and dairy	
El Chorro Ranch	livestock and dairy	
Far View Ranch	livestock and dairy	Bangor
Genasci Ranch	livestock and dairy	
Hafenfeld Ranch	livestock and dairy	
Hallowell Ranch	livestock and dairy	Friant
Hearst Ranch	livestock and dairy	
Hidden Villa	Field Crops, Livestock and Dairy	
HollyOak Ranch	Field Crops, Livestock and Dairy	Grass Valley
Howe Creek Ranch	livestock and dairy	Ferndale
Ichord Ranch	livestock and dairy	
Joseph Gallo Farms	livestock and dairy	Atwater
Kester Ranches	livestock and dairy	
Koopmann Ranch	livestock and dairy	Sunol
Lazy K Ranch	livestock and dairy	
Leavitt Lake Ranches	livestock and dairy	Vina and Susanville
Lone Willow Ranch	Field Crops, Tree Crops, Livestock and Dairy	Firebaugh
Nelson Ranch	livestock and dairy	
Old Creek Ranch	Livestock and Dairy, Tree Crops	Cayucos
Orvis Ranch	livestock and dairy	
Prather Ranch	Livestock and Dairy, Field Crops	Fall River Mills
Rancho La Viña	livestock and dairy, field grops, tree crops	
San Lorenzo Ranch	livestock and dairy	
Santa Margarita Ranch	livestock and dairy	
Scott River Ranch	Livestock and Dairy	Etna
Sparrowk Livestock	livestock and dairy	Clements
Stemple Creek Ranch	livestock and dairy	
Tejon Ranch	livestock and dairy	Tejon Ranch
Thompson Valley Ranch	livestock and dairy	Quincy
Three Creeks Ranch	livestock and dairy	Elk Creek
Toluma Farm	livestock and dairy	Tomales
Tomatero Farm	Field Crops, livestock and dairy	Aptos
Touch the Earth Ranch	livestock and dairy	Paloma
V6 Ranch	livestock and dairy	San Miguel
Wise Acre Farm	Field Crops, Tree Crops, Livestock and Dairy	Arbuckle
Work Family Ranch	livestock and dairy	San Miguel
Yolo Land & Cattle Co.	Livestock and Dairy	Woodland

New Search

cdfa CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

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WHAT ARE *ECOSYSTEM SERVICES*?

The Environmental Farming Act Science Advisory Panel has defined ecosystem services as

"the multiple benefits we gain from farming and ranching including crop and livestock production.

In addition to valuable open space and wildlife habitat, the management decisions and conservation practices of farmers and ranchers also enhance environmental quality, provide recreational opportunities and offer social benefits."

Lundberg Family Farms

Full Belly Farm near Davis

Listed Species

WILDLIFE HABITATS (View Image)
Provide habitats for resident and transient wildlife populations

NUTRIENT CYCLING (View Image)
Provide nutrient storage and cycling

FOOD, FIBER AND FUEL PRODUCTION (View Image)
Provide food, fiber, and fuel to sustain a growing global population

RECREATION AND CULTURAL (View Image)
Provide opportunities for recreational activities

SOIL STRUCTURE, FORMATION AND FERTILITY
Provide opportunities for enhancing the soil system, promotes organic matter buildup/carbon sequestration, and prevent disturbances

BIODIVERSITY CONSERVATION
Promote biodiversity

WATER CYCLING
Maintain soil moisture and regulate water movement/cycling

ATMOSPHERIC GAS/CLIMATE REGULATION
Regulate atmospheric chemical composition.

WATER QUALITY
Reduces salinity and organic/inorganic constituents in surface and ground water.

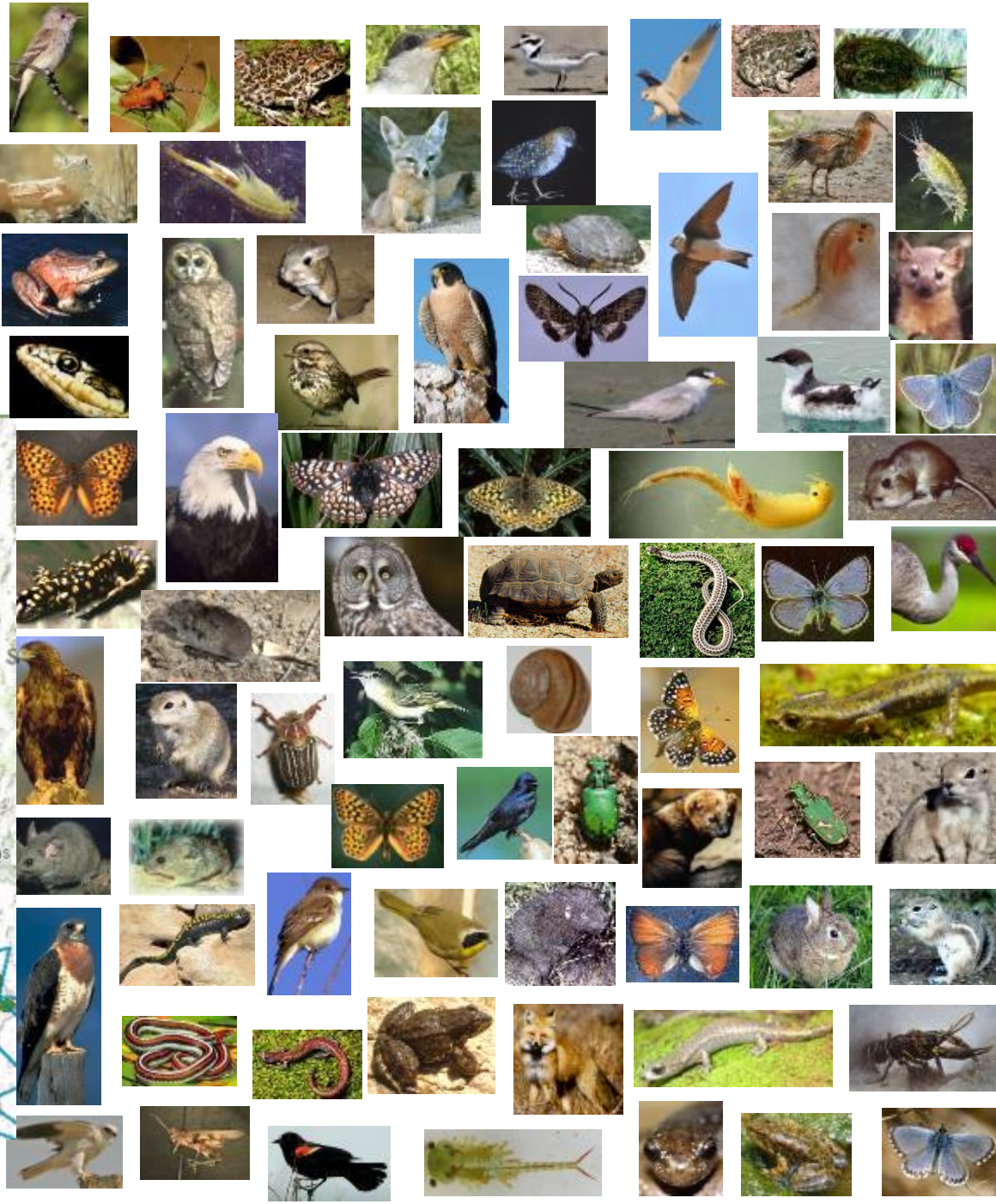
PEST CONTROL
Control pests and weeds by natural enemies and weed seed predators, respectively

POLLINATION SERVICES (View Image)
Contribute to fruit, nut, and vegetable production

Examples of California Listed Species

Vernal pool shrimp species

California is home to hundreds of rare, threatened & endangered species



A Listed Species 'eye chart'

California has over 300 animal & plant species needing protection.

Species information

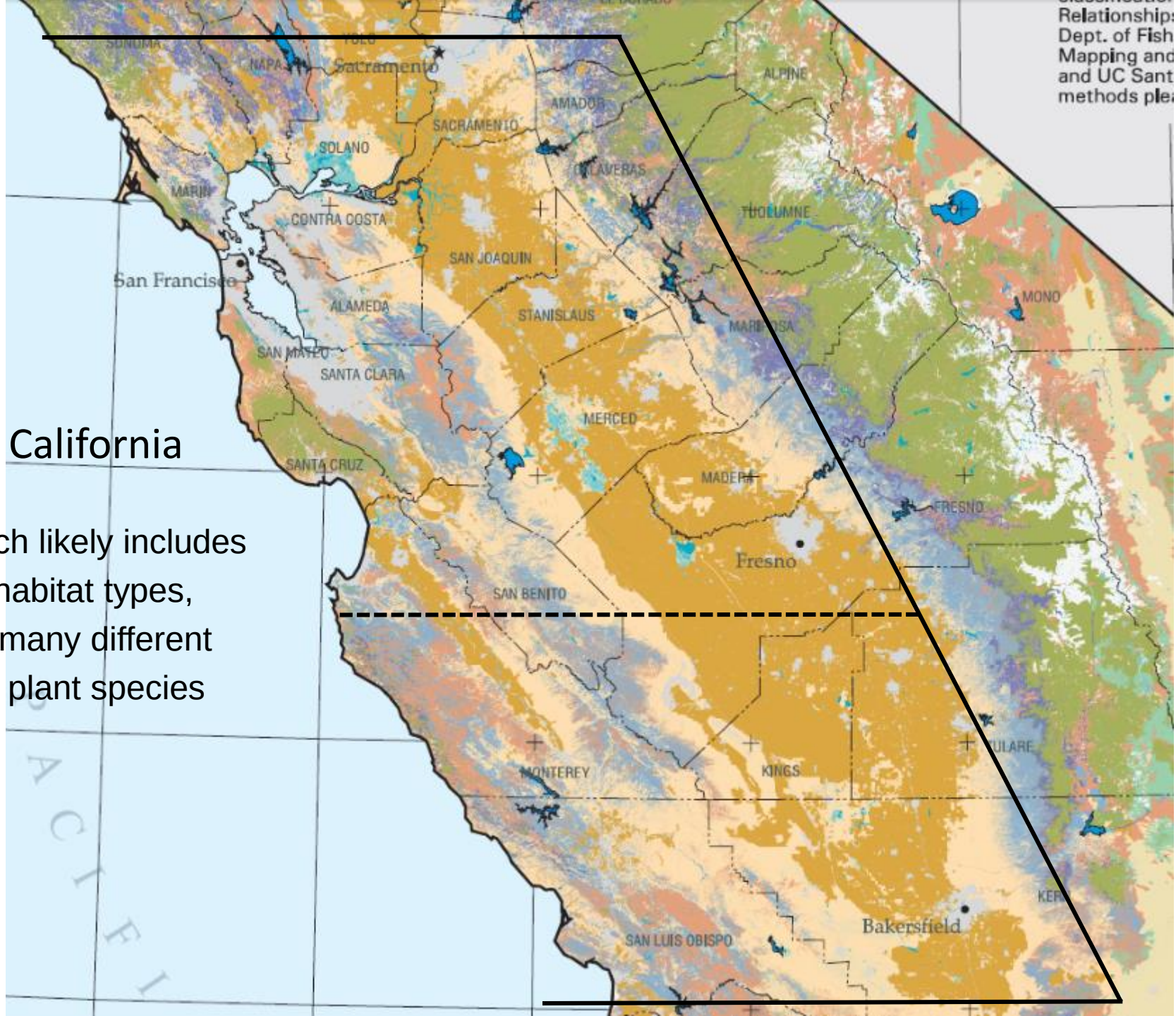
	Links				Status				
Species	Map (jpg)[1]	Map (pdf)[1]	FWS Ecos	Search Natureserve	Federal	California	CNPS	CDFG	CNDDB code
NATURAL COMMUNITIES	natcom.jpg	natcom.pdf							
CRITICAL HABITATS	crithab.jpg	crithab.pdf							
MAMMALS									
Buena Vista Lake shrew (Sorex ornatus relictus)	AMABA01102.jpg	AMABA01102.pdf	ECOS	Natureserve	Endangered	–	–	SC	AMABA01102
Giant kangaroo rat (Dipodomys ingens)	AMAFD03050.jpg	AMAFD03050.pdf	ECOS	Natureserve	Endangered	Endangered	–	–	AMAFD03050
San Joaquin kangaroo rats, Fresno kangaroo rat (Dipodomys nitratoides exilis)	AMAFD03151.jpg	AMAFD03151.pdf	ECOS	Natureserve	Endangered	Endangered	–	–	AMAFD03151
San Joaquin kangaroo rats, Short-nosed kangaroo rat (Dipodomys nitratoides brevinasus)	AMAFD03153.jpg	AMAFD03153.pdf		Natureserve	–	–	–	SC	AMAFD03153
San Joaquin kangaroo rats, Tipton kangaroo rat (Dipodomys nitratoides nitratoides)	AMAFD03152.jpg	AMAFD03152.pdf	ECOS	Natureserve	Endangered	Endangered	–	–	AMAFD03152
Riparian brush rabbit (Sylvilagus bachmani riparius)	AMAEB01021.jpg	AMAEB01021.pdf	ECOS	Natureserve	Endangered	Endangered	–	–	AMAEB01021
Riparian woodrat (Neotoma fuscipes riparia)	AMAFF08081.jpg	AMAFF08081.pdf	ECOS	Natureserve	Endangered	–	–	SC	AMAFF08081
San Joaquin antelope squirrel (Ammospermophilus nelsoni)	AMAFB04040.jpg	AMAFB04040.pdf		Natureserve	–	Threatened	–	–	AMAFB04040
San Joaquin pocket mouse (Perognathus inornatus)	AMAFD01061.jpg	AMAFD01061.pdf		Natureserve	–	–	–	–	AMAFD01061
San Francisco dusky-footed woodrat (Neotoma fuscipes annectens)	AMAFF08082.jpg	AMAFF08082.pdf		Natureserve	–	–	–	SC	AMAFF08082
San Joaquin kit fox (Vulpes macrotis mutica)	AMAJA03041.jpg	AMAJA03041.pdf	ECOS	Natureserve	Endangered	Threatened	–	–	AMAJA03041
Tulare grasshopper mouse (Onychomys torridus tularensis)	AMAFF06021.jpg	AMAFF06021.pdf		Natureserve	–	–	–	SC	AMAFF06021
BIRDS	ABNJB05035.jpg	ABNJB05035.pdf		Natureserve	Delisted	–	–	–	ABNJB05035
Aleutian Canada goose (Branta canadensis leucopareia)									
Bald eagle (Haliaeetus leucocephalus)	ABNKC10010.jpg	ABNKC10010.pdf		Natureserve	Delisted	Endangered	–	–	ABNKC10010
Bank swallow (Riparia riparia)	ABPAU08010.jpg	ABPAU08010.pdf		Natureserve	–	Threatened	–	–	ABPAU08010
California condor (Gymnogyps californianus)	ABNKA03010.jpg	ABNKA03010.pdf	ECOS	Natureserve	Endangered	Endangered	–	–	ABNKA03010
Cooper's hawk (Accipiter cooperii)	ABNKC12040.jpg	ABNKC12040.pdf		Natureserve	–	–	–	–	ABNKC12040
Ferruginous hawk (Buteo regalis)	ABNKC19120.jpg	ABNKC19120.pdf		Natureserve	–	–	–	–	ABNKC19120
Golden eagle (Aquila chrysaetos)	ABNKC22010.jpg	ABNKC22010.pdf		Natureserve	–	–	–	–	ABNKC22010
Greater sandhill crane (Grus canadensis tabida)	ABNMK01014.jpg	ABNMK01014.pdf		Natureserve	–	Threatened	–	–	ABNMK01014
Le Conte's thrasher (Toxostoma lecontei)	ABPBK06100.jpg	ABPBK06100.pdf		Natureserve	–	–	–	SC	ABPBK06100
Least Bell's vireo (Vireo bellii pusillus)	ABPBW01114.jpg	ABPBW01114.pdf	ECOS	Natureserve	Endangered	Endangered	–	–	ABPBW01114
Loggerhead shrike (Lanius ludovicianus)	ABPBR01030.jpg	ABPBR01030.pdf		Natureserve	–	–	–	SC	ABPBR01030
Peregrine falcon (Falco peregrinus)	ABNKD06071.jpg	ABNKD06071.pdf		Natureserve	Delisted	Endangered	–	–	ABNKD06071
Prairie falcon (Falco mexicanus)	ABNKD06090.jpg	ABNKD06090.pdf		Natureserve	–	–	–	–	ABNKD06090
Mountain plover (Charadrius montanus)	ABNNB03100.jpg	ABNNB03100.pdf		Natureserve	–	–	–	SC	ABNNB03100
Northern goshawk (Accipiter gentilis)	ABNKC12060.jpg	ABNKC12060.pdf		Natureserve	–	–	–	SC	ABNKC12060
		pdf		Natureserve	–	Threatened	–	–	ABNKC19070
		pdf		Natureserve	–	–	–	SC	ABPBXB0020
		pdf		Natureserve	Candidate	Endangered	–	–	ABNRB02022
		pdf		Natureserve	–	–	–	SC	ABNSB10010
		pdf	ECOS	Natureserve	Threatened	–	–	SC	ABNNB03031
		pdf		Natureserve	–	–	–	–	ABNGE02020
		pdf		Natureserve	–	–	–	–	ABNKC06010
		pdf	ECOS	Natureserve	Endangered	Endangered	–	–	ABPAE33043
		pdf	ECOS	Natureserve	Threatened	–	–	SC	AAABH01022
		pdf	ECOS	Natureserve	Threatened	Candidate Endangered	–	SC	AAAAA01180
		pdf		Natureserve	–	–	–	SC	AAABH01050
		pdf		Natureserve	–	–	–	SC	AAABF02020
		pdf	ECOS	Natureserve	Threatened	Threatened	–	–	ARADB21031
		pdf		Natureserve	Endangered	Endangered	–	–	ARACF07010
		pdf		Natureserve	–	–	–	SC	ARACF12022
		pdf	ECOS	Natureserve	Threatened	Threatened	–	–	ARADB36150
		pdf		Natureserve	–	–	–	SC	ARADB21021
		pdf		Natureserve	–	–	–	SC	ARACC01012
		pdf		Natureserve	–	–	–	SC	ARAAD02030
		pdf		Natureserve	–	–	–	–	IICOL4C030
		pdf	ECOS	Natureserve	Threatened	–	–	–	IICOL48011
		pdf		Natureserve	–	–	–	–	ICBRA06010
		pdf	ECOS	Natureserve	Endangered	–	–	–	ICBRA03010
		pdf	ECOS	Natureserve	Endangered	–	–	–	ICBRA03020
		pdf	ECOS	Natureserve	Threatened	–	–	–	ICBRA03030
		pdf	ECOS	Natureserve	Endangered	–	–	–	ICBRA10010

PLANTS									
Alkali milk-vetch (Astragalus tener var. tener)	PDFAB0F8R1.jpg	PDFAB0F8R1.pdf		Natureserve	–	–	1B.2	–	PDFAB0F8R1
Bakersfield cactus (Opuntia basilaris var. treleasei)	PDCAC0D055.jpg	PDCAC0D055.pdf		Natureserve	Endangered	Endangered	1B.1	–	PDCAC0D055
Bakersfield smallscale (Atriplex tularensis)	PDCHE04240.jpg	PDCHE04240.pdf		Natureserve	–	Endangered	1B.1	–	PDCHE04240
Boggs Lake hedge-hyssop (Gratiola heterosepala)	PDSCR0R060.jpg	PDSCR0R060.pdf		Natureserve	–	Endangered	1B.2	–	PDSCR0R060
Brittlescale (Atriplex depressa)	PDCHE042L0.jpg	PDCHE042L0.pdf		Natureserve	–	–	1B.2	–	PDCHE042L0
Bush anemone (Carpenteria californica)	PDHDR04010.jpg	PDHDR04010.pdf		Natureserve	–	Threatened	1B.2	–	PDHDR04010
California jewelflower (Caulanthus californicus)	PDBRA31010.jpg	PDBRA31010.pdf	ECOS	Natureserve	Endangered	Endangered	1B.1	–	PDBRA31010
Caper-fruited tropidocarpum (Tropidocarpum capparideum)	PDBRA2R010.jpg	PDBRA2R010.pdf		Natureserve	–	–	1B.1	–	PDBRA2R010
Colusa grass (Neostapfia colusana)	PMPOA4C010.jpg	PMPOA4C010.pdf	ECOS	Natureserve	Threatened	Endangered	1B.1	–	PMPOA4C010
Delta coyote-thistle (Eryngium racemosum)	PDAPI0Z050.jpg	PDAPI0Z050.pdf		Natureserve	–	Endangered	1B.1	–	PDAPI0Z050
Diamond-petaled poppy (Eschscholzia rhombipetala)	PDPAP0A0D0.jpg	PDPAP0A0D0.pdf		Natureserve	–	–	1B.1	–	PDPAP0A0D0
Earlimart orache (Atriplex erecticaulis)	PDCHE042V0.jpg	PDCHE042V0.pdf		Natureserve	–	–	1B.2	–	PDCHE042V0
Fleshy owl's-clover (Castilleja campestris succulenta)	PDSCR0D3Z1.jpg	PDSCR0D3Z1.pdf	ECOS	Natureserve	Threatened	Endangered	1B.2	–	PDSCR0D3Z1
Greene's tuctoria (Tuctoria greenei)	PMPOA6N010.jpg	PMPOA6N010.pdf	ECOS	Natureserve	Endangered	Rare	1B.1	–	PMPOA6N010
Hairy Orcutt grass (Orcuttia pilosa)	PMPOA4G040.jpg	PMPOA4G040.pdf	ECOS	Natureserve	Endangered	Endangered	1B.1	–	PMPOA4G040
Hartweg's golden sunburst (Pseudobahia bahiifolia)	PDAST7P010.jpg	PDAST7P010.pdf	ECOS	Natureserve	Endangered	Endangered	1B.1	–	PDAST7P010
Heartscale (Atriplex cordulata)	PDCHE040B0.jpg	PDCHE040B0.pdf		Natureserve	–	–	1B.2	–	PDCHE040B0
Hispid bird's beak (Cordylanthus mollis hispidus)	PDSCR0J0D1.jpg	PDSCR0J0D1.pdf		Natureserve	–	–	1B.1	–	PDSCR0J0D1
Hoover's calycadenia (Calycadenia hooveri)	PDAST1P040.jpg	PDAST1P040.pdf		Natureserve	–	–	1B.3	–	PDAST1P040
Hoover's spurge (Chamaesyce hooveri)	PDEUP0D150.jpg	PDEUP0D150.pdf	ECOS	Natureserve	Threatened	–	1B.2	–	PDEUP0D150
Hoover's woolly-star (Eriastrum hooveri)	PDPLM03070.jpg	PDPLM03070.pdf		Natureserve	Delisted	–	4.2	–	PDPLM03070
Hospital Canyon larkspur (Delphinium californicum ssp. interius)	PDRAN0B0A2.jpg	PDRAN0B0A2.pdf		Natureserve	–	–	1B.2	–	PDRAN0B0A2
Kaweah Brodiaea (Brodiaea insignis)	PMLIL0C060.jpg	PMLIL0C060.pdf		Natureserve	–	Endangered	1B.2	–	PMLIL0C060
Keck's checkerbloom (Sidalcea keckii)	PDMAL110D0.jpg	PDMAL110D0.pdf	ECOS	Natureserve	Endangered	–	1B.1	–	PDMAL110D0
Kern mallow (Eremalche kernensis)	PDMAL0C031.jpg	PDMAL0C031.pdf	ECOS	Natureserve	Endangered	–	1B.1	–	PDMAL0C031
King's gold (Twisselmannia californica)	PDBRA33010.jpg	PDBRA33010.pdf		Natureserve	–	–	1B.1	–	PDBRA33010
Large-flowered fiddleneck (Amsinckia grandiflora)	PDBOR01050.jpg	PDBOR01050.pdf	ECOS	Natureserve	Endangered	Endangered	1B.1	–	PDBOR01050
Legenere (Legenere limosa)	PDCAM0C010.jpg	PDCAM0C010.pdf		Natureserve	–	–	1B.1	–	PDCAM0C010
Lesser saltscale (Atriplex minuscula)	PDCHE042M0.jpg	PDCHE042M0.pdf		Natureserve	–	–	1B.1	–	PDCHE042M0
Little mousetail (Myosurus minimus ssp. apus)	PDRAN0H031.jpg	PDRAN0H031.pdf		Natureserve	–	–	3.1	–	PDRAN0H031
Livermore tarplant (Deinandra bacigalupii)	PDAST4R0V0.jpg	PDAST4R0V0.pdf		Natureserve	–	–	1B.2	–	PDAST4R0V0
Lost Hills saltbush (Atriplex vallicola)	PDCHE04250.jpg	PDCHE04250.pdf		Natureserve	–	–	1B.2	–	PDCHE04250
Mason's lilaeopsis (Lilaeopsis masonii)	PDAPI19030.jpg	PDAPI19030.pdf		Natureserve	–	Rare	1B.1	–	PDAPI19030
Merced Phacelia (Phacelia ciliata opaca)	PDHYD0C052.jpg	PDHYD0C052.pdf		Natureserve	–	–	1B.2	–	PDHYD0C052
Mt. Diablo phacelia (Phacelia phacelioides)	PDHYD0C3Q0.jpg	PDHYD0C3Q0.pdf		Natureserve	–	–	1B.2	–	PDHYD0C3Q0
Mt. Hamilton coreopsis (Coreopsis hamiltonii)	PDAST2L0C0.jpg	PDAST2L0C0.pdf		Natureserve	–	–	1B.2	–	PDAST2L0C0
Munz's tidy-tips (Layia munzii)	PDAST5N0B0.jpg	PDAST5N0B0.pdf		Natureserve	–	–	1B.2	–	PDAST5N0B0
Palmate-bracted bird's beak (Cordylanthus palmatus)	PDSCR0J0J0.jpg	PDSCR0J0J0.pdf	ECOS	Natureserve	Endangered	Endangered	1B.1	–	PDSCR0J0J0
Recurved larkspur (Delphinium recurvatum)	PDRAN0B1J0.jpg	PDRAN0B1J0.pdf		Natureserve	–	–	1B.2	–	PDRAN0B1J0
San Joaquin adobe sunburst (Pseudobahia peirsonii)	PDAST7P030.jpg	PDAST7P030.pdf	ECOS	Natureserve	Threatened	Endangered	1B.1	–	PDAST7P030
San Joaquin Valley Orcutt grass (Orcuttia inaequalis)	PMPOA4G060.jpg	PMPOA4G060.pdf	ECOS	Natureserve	Threatened	Endangered	1B.1	–	PMPOA4G060
San Joaquin woolly-threads (Monolopia (=Lembertia) congdonii)	PDASTA8010.jpg	PDASTA8010.pdf		Natureserve	Endangered	–	1B.2	–	PDASTA8010
Sanford's Arrowhead (Sagittaria sanfordii)	PMALI040Q0.jpg	PMALI040Q0.pdf		Natureserve	–	–	1B.2	–	PMALI040Q0
Showy Indian clover (Trifolium amoenum)	PDFAB40040.jpg	PDFAB40040.pdf	ECOS	Natureserve	Endangered	–	1B.1	–	PDFAB40040
Slough thistle (Cirsium crassicaule)	PDAST2E0U0.jpg	PDAST2E0U0.pdf		Natureserve	–	–	1B.1	–	PDAST2E0U0
Spiny-sepaled button celery (Eryngium spinosepalum)	PDAPI0Z0Y0.jpg	PDAPI0Z0Y0.pdf		Natureserve	–	–	1B.2	–	PDAPI0Z0Y0
Striped Adobe-lily (Fritillaria striata)	PMLIL0V0K0.jpg	PMLIL0V0K0.pdf		Natureserve	–	Threatened	1B.1	–	PMLIL0V0K0
Subtle orache (Atriplex subtilis)	PDCHE042T0.jpg	PDCHE042T0.pdf		Natureserve	–	–	1B.2	–	PDCHE042T0
Valley spearscale (Atriplex joaquiniana)	PDCHE041F3.jpg	PDCHE041F3.pdf		Natureserve	–	–	1B.2	–	PDCHE041F3
Vernal pool smallscale (Atriplex persistens)	PDCHE042P0.jpg	PDCHE042P0.pdf		Natureserve	–	–	1B.2	–	PDCHE042P0

Maps with species occurrence records require a password. Contact the administrator to inquire about access.

Why so many listed species in California?

California's unique geology has created a huge variety of microhabitats – more so than any state in the nation.



Central California

Your ranch likely includes multiple habitat types, home to many different animal & plant species

You may be thinking:

What does any of this have to do with me?

I’m not ranching salamanders, owls or frogs!

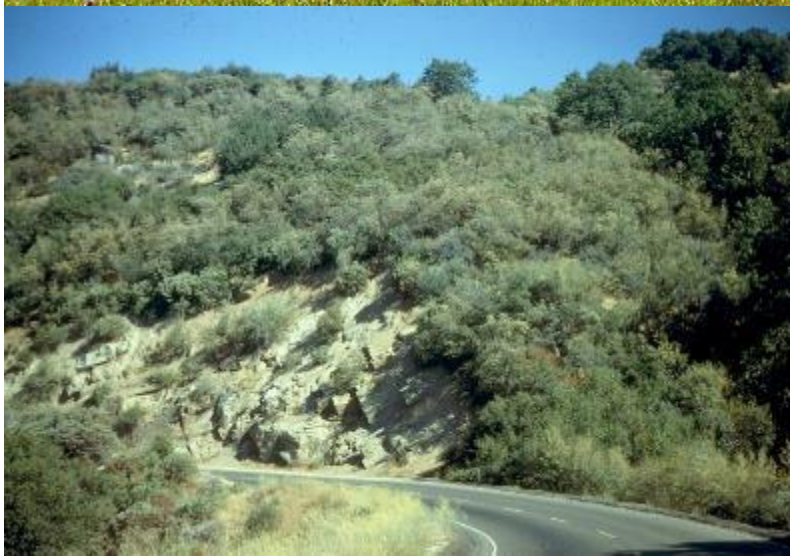
But many of your properties already support listed species.

Until recently, nobody knew how to put a price on these eco-assets.

All that has changed.

If you own or manage properties that include any of the following *underutilized natural habitats,* you may be leaving money on the table year to year:

- Native grasslands
- Wetlands or streams
- Shrub or scrub lands
- Forest or woodlands



Riparian habitats support a rich diversity of species.

Compensatory Mitigation:

~ Compensating for impacts by ‘mitigating’ of ‘offsetting’ effects ~

Mitigation offsets development impacts by conserving similar habitat, often of higher quality than the impacted area itself.

Mitigation is often larger than the impacted areas. Mitigation ratios come into play.

Compensation is required by State & Federal Agencies.

Compensation can happen in several ways, but the most popular is:

- purchasing mitigation credits offered by approved mitigation or conservation banks

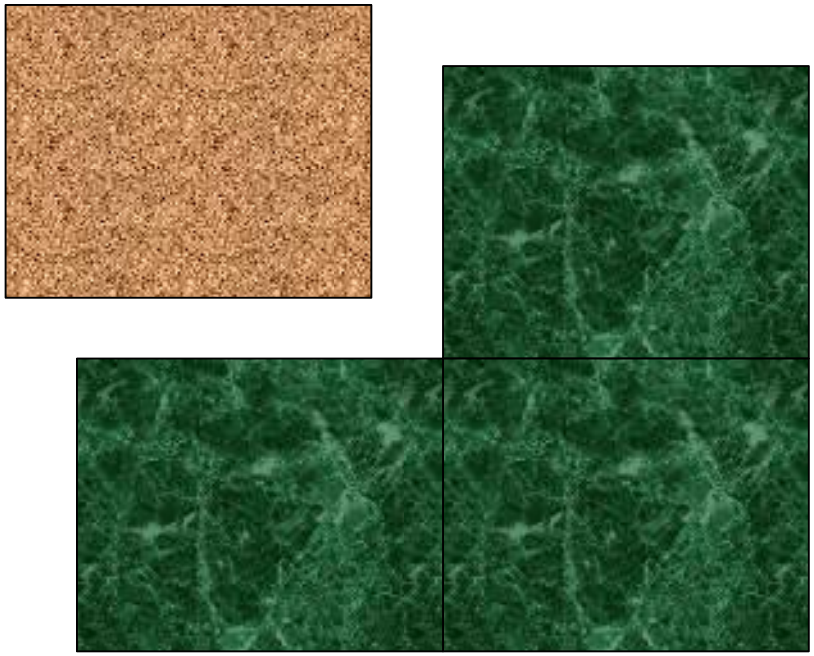
- purchasing mitigation credits developed via conservation easements

A **mitigation bank** is a wetland, stream, or other aquatic resource area that has been preserved, enhanced, restored, or (in some cases) created in order to compensate for unavoidable impacts to aquatic resources permitted under the Clean Water Act or similar wetland regulation.

A **conservation bank** is an area of dry land habitat that has been conserved and managed for the conservation of identified natural resource values, the benefits of which are used to offset negative impacts to the resource occurring on other areas from land use activities.

A **conservation easement** allows a landowner to limit conflicting uses on their property, while retaining private ownership of the land. A third party conservancy (or land trust) receives the easement in the public interest and enforces the terms *in perpetuity*. Once signed, an easement applies to all future owners of the land.

Mitigation Ratios



Consider a parcel of natural habitat that is impacted by development:

- 1 acre of development is therefore subject to mitigation.
- Agencies assign a 3 : 1 mitigation ratio.
- 3 acres of similar habitat must be acquired as compensation,
- then transferred to the public domain *in perpetuity.*
- Mitigation credits (acres) will come from approved conservation banks or easements.

‘You might be leaving money on the table.’

What kind of money? Examples in California include:

- Wetland mitigation credits -- $200,000 / acre
- Species mitigation credits (from conservation easements or conservation banks)
  - Burrowing owl -- $22,000 / credit-acre
  - California tiger salamander
  - California red legged frog -- $8,000 / credit-acre
  - Tri-colored blackbird -- $10,000 / credit-acre
  - Vernal pool credits (fairy shrimp, etc.) -- $16000 / cr-ac
- Carbon sequestration credits @ $10/ton/yr
- Nitrate reduction credits (Monterey County), prices tbd

Review of Mitigation Costs in Western States

July 18, 2012

Draft Report

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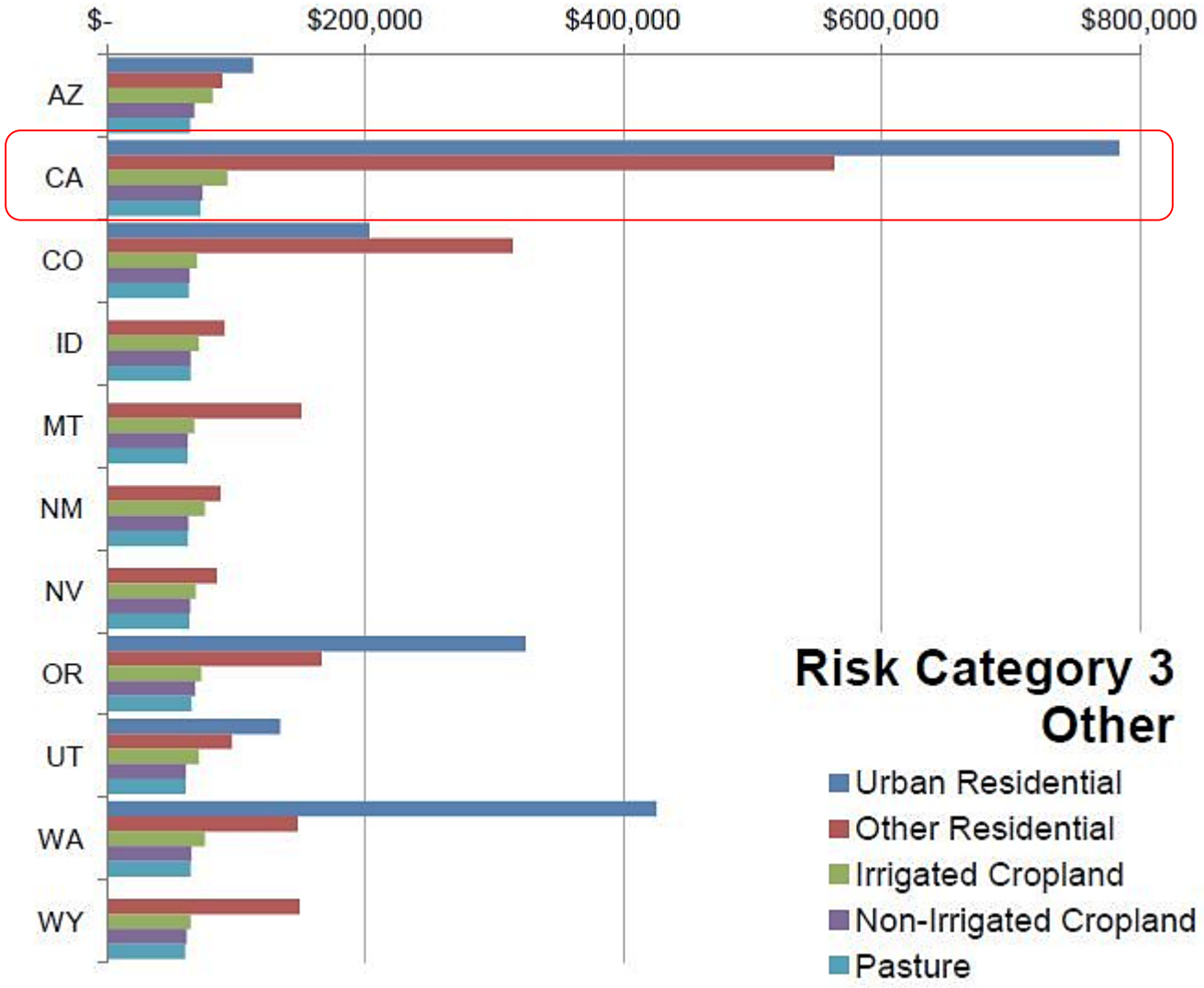
Table 6. Mitigation Costs for Risk Category 3 - Endangered Species

State	Year	Project Type	Mitigated	Acres	Total Cost per Acre (1)
CA	2000	HCP	Desert tortoise	368,000	$1,478
CA	2010	Transmission line	Desert tortoise CH	94	$3,616
CA	2010	Bank credit	Chaparral (low $)	NS	$8,178
CA	2000	HCP	Marshland	1,631	$9,918
CA	2010	Bank credit	Chaparral (high $)	NS	$15,335
CA	2010	Bank credit	San Joaquin kit fox (high $)	NS	$15,335
CA	2012	Bank credit	Alameda whipsnake	NS	$19,000
CA	2010	Bank credit	Giant garter snake (low $)	NS	$30,669
CA	2010	Bank credit	Giant garter snake (high $)	NS	$46,004
CA	2010	Bank credit	Vernal pool (low $)	NS	$51,115
CA	2012	Bank credit	Meadowfoam	NS	$75,000
CA	2010	Bank credit	Salmonids (low $)	NS	$81,784
CA	2005	Critical habitat	Riverside fairy shrimp	306	*$82,846*
CA	2010	Bank credit	Delhi sands flower-loving fly (low $)	NS	$102,230
CA	2010	Bank credit	Native fisheries (low $)	NS	$102,230
CA	2010	Bank credit	Salmonids (high $)	NS	$122,676
CA	2010	Bank credit	Least vireo breeding pair	NS	$127,788
CA	2010	Bank credit	Delhi sands flower-loving fly (high $)	NS	$153,345
CA	2010	Bank credit	Fairy shrimp (low $)	NS	$153,345
CA	2010	Bank credit	Native fisheries (high $)	NS	$153,345
CA	2012	Bank credit	Vernal pool	NS	$275,000
CA	2010	Bank credit	Fairy shrimp (high $)	NS	$306,690
CA	2012	Bank credit	Sonoma Sunshine	NS	$325,000
CA	2010	Bank credit	Vernal pool (high $)	NS	$332,248
CA	2005	Toll road	Riverside fairy shrimp	NS	$587,281
CA	2012	Bank credit	Burke's Goldfields	NS	$900,000


$-
$200,000
$400,000
$600,000
$800,000
AZ
CA
CO
ID
MT
NM
NV
OR
UT
WA
WY
Risk Category 3
Other
Urban Residential
Other Residential
Irrigated Cropland
Non-Irrigated Cropland
Pasture

Who's buying these credits? The list includes:

- Caltrans
- High Speed Rail Authority
- Big-Five energy companies
- Renewable energy projects
- Oil & gas industry (fracking!)
- Colleges & universities
- Agriculture (wineries)
- Mining companies
- Residential / commercial developers

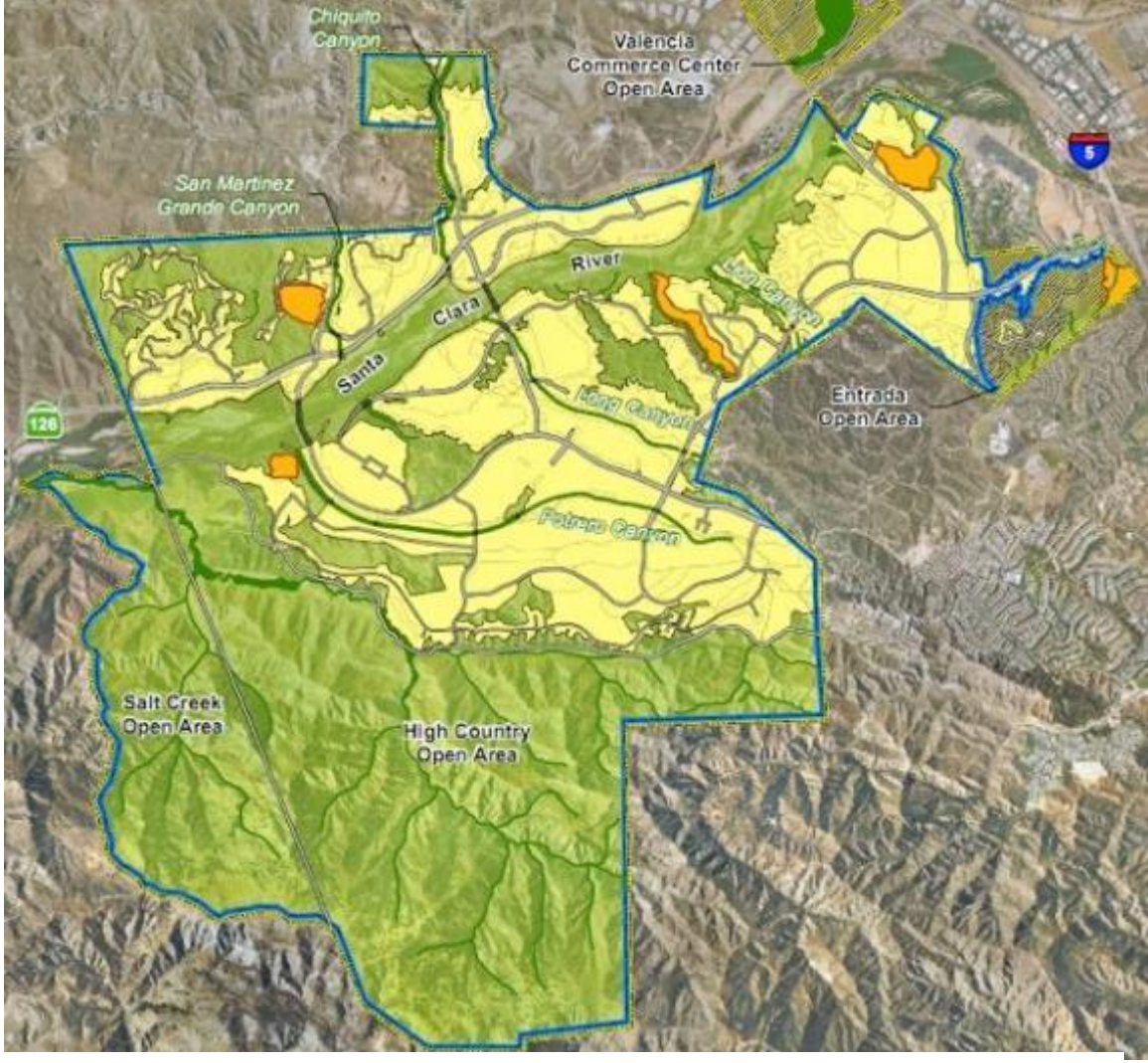
Newhall Ranch in Valencia, California

Newhall Ranch is a 12,000 acre master-planned community, west of Santa Clarita, along the Santa Clara River.

The **Newhall Land and Farming Company** incorporated in 1883 by the five sons of Henry Newhall, a businessman who had purchased 143,000 acres of former Mexican land grants.

Newhall instructed his sons not to sell the land after his death. But the income generated by ranching was not enough to support the families of all five sons.

They gradually sold their holdings leading to the Newhall Ranch community plan.



The development includes 21,000 homes, a commercial district, seven schools, three fire stations, a water reclamation plant, four parks, a golf course, and a 15-acre lake.

Developers will convert 20 miles of waterways into storm drains or levees and use 20 million cubic yards of excavated soil to fill in wetlands.

MITIGATION MONITORING AND REPORTING PLAN

for the

NEWHALL RANCH RESOURCE MANAGEMENT AND DEVELOPMENT PLAN AND SPINEFLOWER CONSERVATION PLAN

as required by

CALIFORNIA DEPARTMENT OF FISH AND GAME

as lead agency under the

CALIFORNIA ENVIRONMENTAL QUALITY ACT

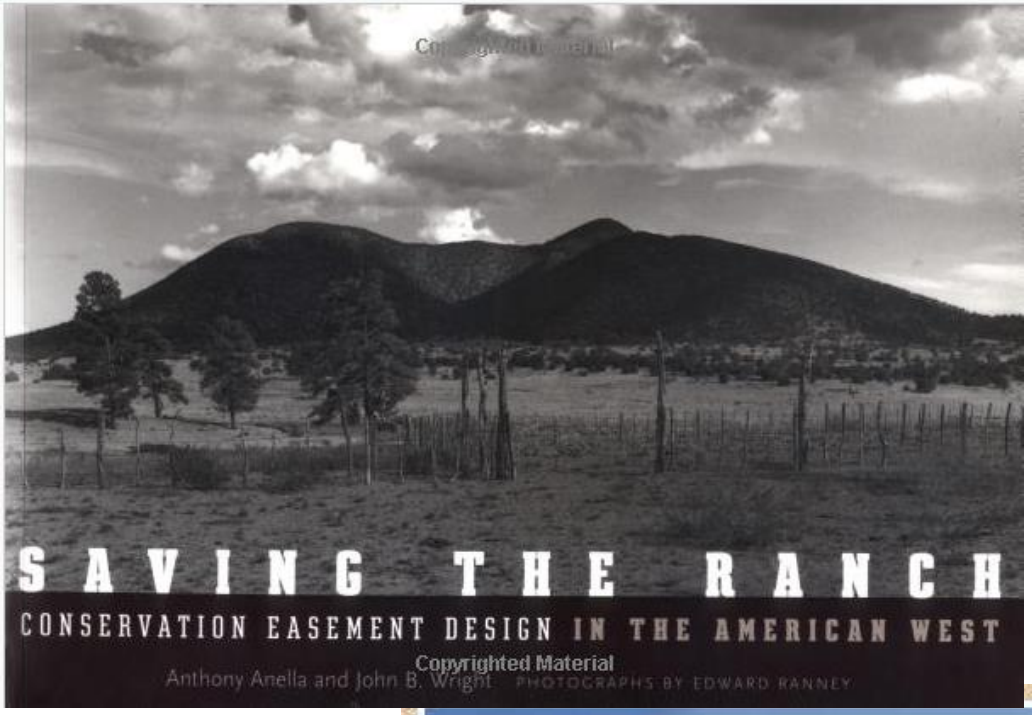
"The Potrero Canyon and Mayo Crossing restoration sites are considered the initial sites to be implemented prior to impacts by development, thereby establishing up front mitigation credits.

"As individual Project components are proposed for construction, quantities of mitigation acreage required to offset permanent impact acreages shall be calculated.

"A project would not proceed unless adequate mitigation capacity is demonstrated. Temporary impact areas shall be mitigated in place in a manner that restores impacted functions and services.

"If up front compensatory mitigation cannot be achieved, a Corps-approved method would be utilized to determine the additional compensatory mitigation to offset the temporal loss of functions and services not included in the 1:1 mitigation ratio for permanent impacts."

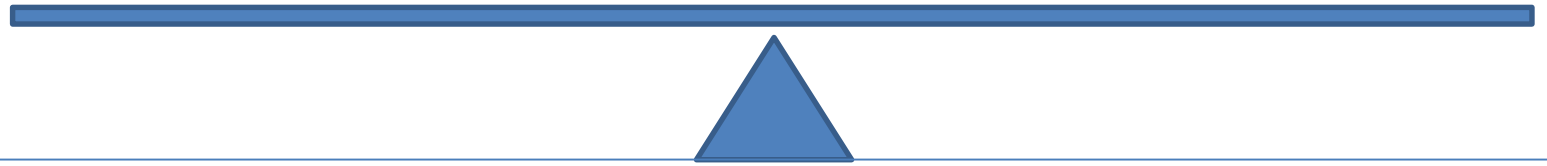
According to the EPA, the Newhall Ranch Resource Management and Development Plan was lacking a sufficient strategy to minimize or mitigate harmful effects of the project. The EPA *does not believe* the proposed mitigations "will replace the ecological functions provided by the existing natural features" or "that surface water quality will be protected from the project's storm water discharges".



SAVING THE RANCH: Conservation Easement Design in the American West, Island Press (2004)

31,000 acre Montosa Ranch

Keep the Ranch?	Sell the Ranch?
Conservation banking	I need a drink
Conservation easements	Do WHAT with the family ranch?
Payment for ‘eco-services’	Public perception of ranching; Govt. regs
Cropland Reserve Pgm	Govt. land use regulations
Wetland Reserve Pgm	Brand new business model; the Govt. ‘dole’
Love this way of life	All or nothing—ranch or develop
Personal values / ethics	Newcomers bring different values / ethics
Ample water	Water supply problems
Lease income	Lease disadvantages
Wildlife / Recreation income	Species / land use / neighbor conflicts
Town income	No jobs, we’re too far from town
Profit—cattle, crops, timber	Loss—cattle, crops, timber



Ranching with the public interest in mind

Mitigation banking

Conservation easements

Payment for ‘eco-services’

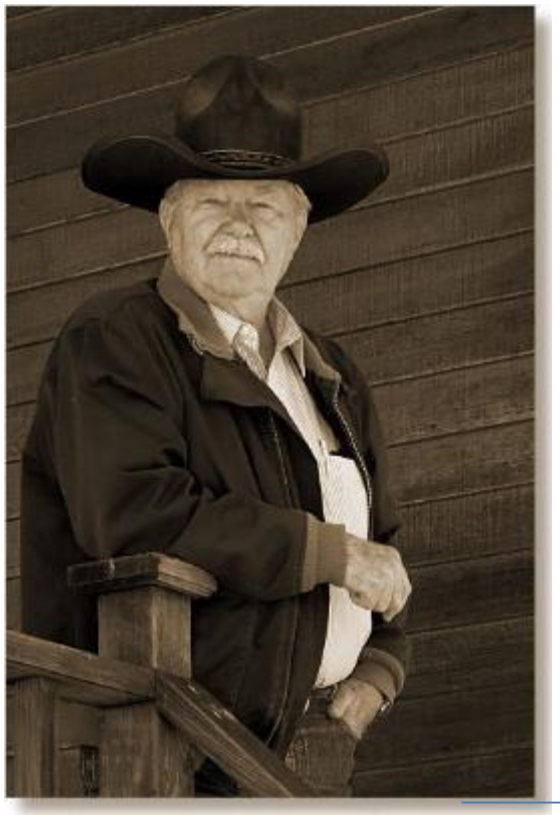
Cropland Reserve Pgm

Wetland Reserve Pgm

Love way of life

Personal values / ethics

Ranching as granddad intended



Ample water

Timber income

Wildlife / Recreation income

Town income

Profit—cattle, crops, timber

What's the bad news?

- Consulting scientists like me are involved
- Attorneys are involved
- Government agencies are involved
- Big companies are involved
- The process takes a while – maybe 2 years, start to finish
- The process can seem expensive at first

Now for the good news:

- Mitigation credits pay *real money* per the examples shown

- Conservation easements bring a second form of payment -- an endowment, to cover annual management costs

… in perpetuity

A conservation easement (CE) on 120 acres in San Luis Obispo County sold for $275,000. The endowment was priced at $1.1 M.

A CE on 140 acres in San Joaquin County sold for $545,000. The endowment was priced at $800,000.

A CE on 1280 acres in San Benito County was priced at $8.7 M. The endowment was priced at $2 M.

This property is now developing as a conservation bank.

Acquisition Process

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9
Identify Target Species per Subregion	Qualify New Leads	Confirm New Leads with Agencies	Conduct Biological Due Diligence; Report Results to Agencies	Develop and Submit Draft MAF	Conduct Site Visit with Agencies	Finalize Site Requirements with Agencies	Submit Final MAF	Complete Acquisition; Submit Supporting Materials

Research Process

Review Resources

San Joaquin Valley O&M HCP

- CNDDB
- Recovery Units
- Critical Habitat
- Willing CE Developers
- Mitigation Bankers

Submit Documentation

- Map
- Site Description
- Habitat Assessment
- Supporting Studies

1. County Assessor's Parcel Map
2. Site Location Map
3. Phase 1 EA
4. Preliminary Title Report
5. Documents supporting title exceptions / encumbrances
6. Draft Management Plan and PAR
7. Certificate of Visual Inspection (CDFW documentation)
8. A Proposed LAF or MAF
9. Transaction Summary
10. Original signed, notarized CE Deed or Grant Deed
11. Final Management Plan & PAR

Key Meetings, Decision Points, and Timeline

○ = Key Meeting ★ = Decision Point

1. PG&E and Wildlife Agencies discuss and advance new leads. PG&E provides materials 1 wk. prior to meeting.
1. Wildlife Agencies identify required biological due diligence to advance opportunity or provide rationale for rejection within 30 days of meeting.
2. PG&E and Wildlife Agencies review biological due diligence results (30 – 90 days). PG&E provides materials 1 wk. prior to meeting.
2. Wildlife Agencies document their preliminary approval/rejection of the site within 30 days of meeting.
3. PG&E and Wildlife Agencies review Draft MAF and items 1-6 (30 – 90 days). PG&E provides meeting materials 2 weeks prior to meeting.
3. Wildlife Agencies document their comments, continued support or rejection of mitigation opportunity within 30 days of meeting.
4. PG&E and Wildlife Agencies conduct site visit within 30 days of completion of Decision Point 3.
4. Wildlife Agencies document final edits and additional required information within 14 days of site visit.
5. PG&E and Wildlife Agencies resolve edits/ info requests within 30-60 days of Decision Point 4. PG&E provides materials 1 wk. prior to meeting.
5. Wildlife Agencies document their approval of Key Meeting 5 outcomes within 7 days of meeting.
6. PG&E and Wildlife Agencies discuss Final MAF, item 8, and supporting documentation (30 – 60 days). PG&E provides materials 1 wk. prior to mtg.
6. Wildlife Agencies document approval/ rejection of Final MAF within 30 days. This triggers the property acquisition.
7. PG&E and Wildlife Agencies review items 9-11. PG&E provides material s provided with 120 days of closing and a least 1 week prior to meeting.
7. Wildlife Agencies provide final approval of mitigation property within 30 days of receipt of final materials.

Mitigation Credit Development

(Conservation Easement)

Development Steps

Green Light

- Identify Priority Habitat, Species & Decision Makers
- Qualify Eco-Asset Types & Sources
- Confirm Property Opportunities with Agencies
- Conduct Property Due Diligence; Report Results to Agencies
- Develop Draft Mitigation Acquisition Form
- Finalize Site Requirements with Agencies
- Submit Final MAF and Supporting Materials

Supporting Information

Prelim Approval

Mitigation Credit Marketplace (credit demand)

- CNDDB
- Recovery Units & Corridors
- Critical Habitat Designations
- Corridor Linkage
- Mitigation Developers & Price Signals

(credit supply)

- Site Review
- Habitat & Wildlife Review
- Supporting Studies[1]

1. County Assessor's Parcel Map
2. Site Habitat Map
3. Phase 1 Env Assessment (toxics)
4. Preliminary Title Report
5. Documents supporting title exceptions / encumbrances
6. Draft Management Plan and Property Analysis Record (PAR)

Final Approval

7. Original signed, notarized CE Deed or Grant Deed
8. Mitigation Acquisition Form (MAF)
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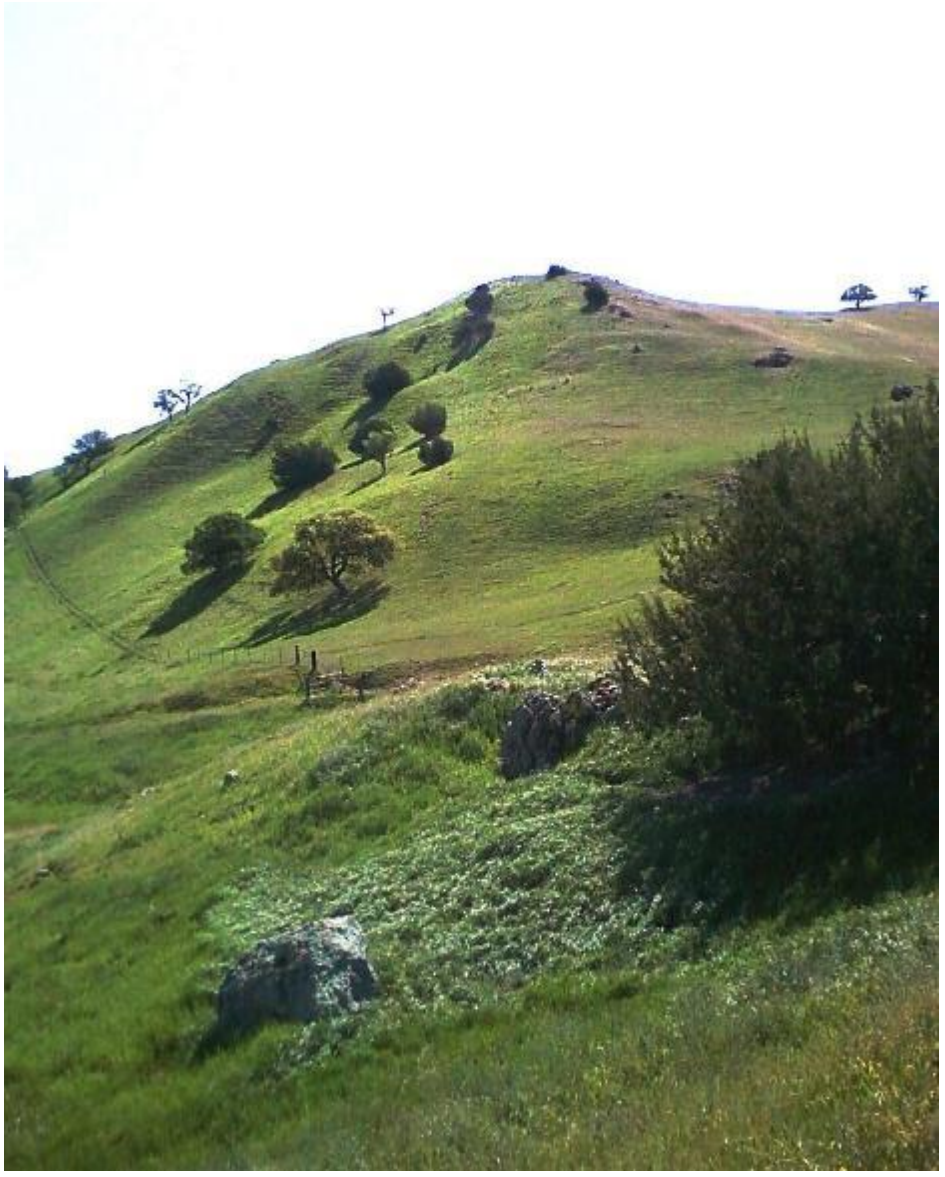
[1]Studies will address property-specific information needs


San Joaquin County Mitigation

San Joaquin County Mitigation

140 acres of 30,000 acre total



San Luis Obispo County

120 acres of 50,000 acre total

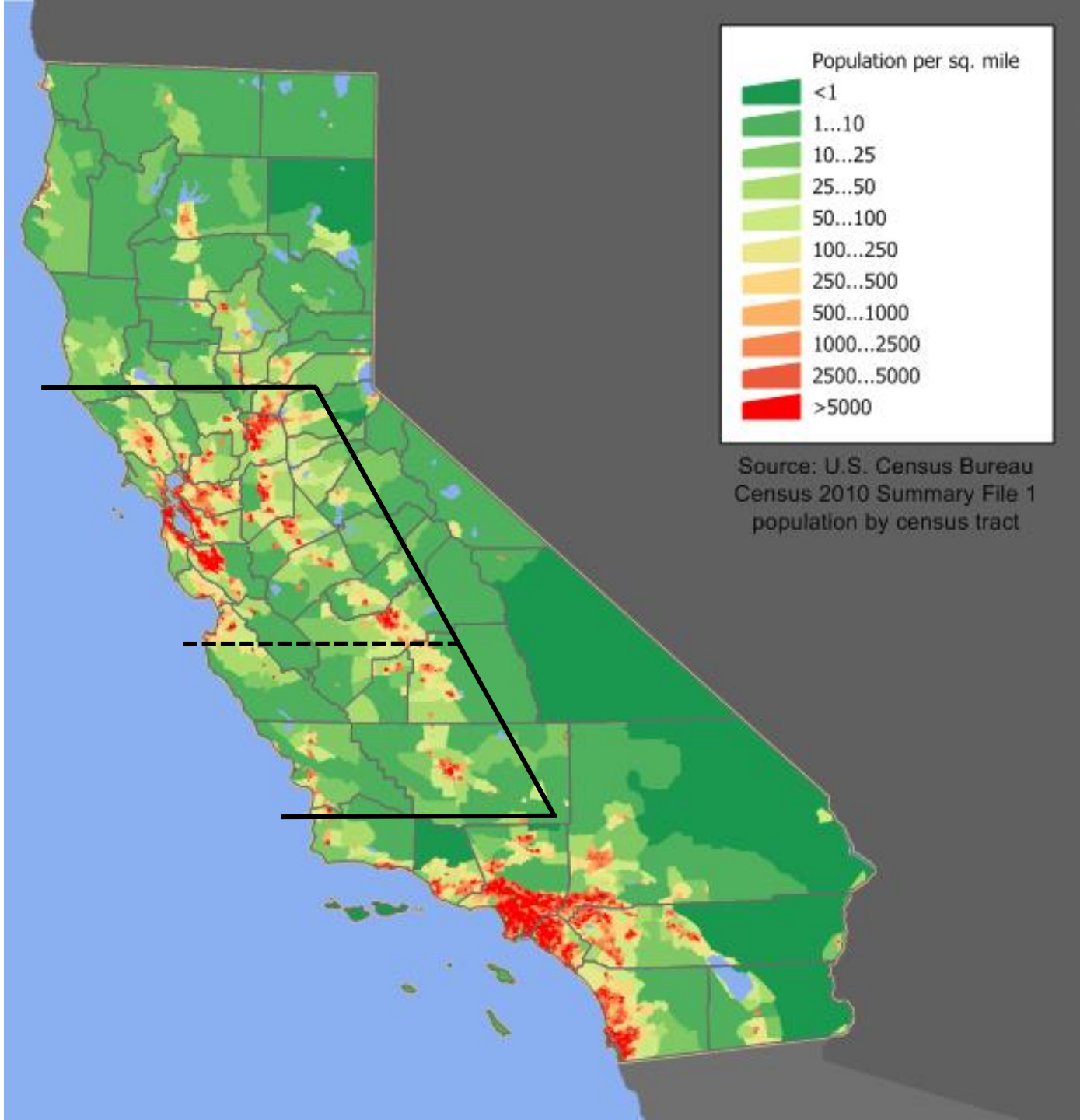
antelope squirrel

kit fox

red legged frog

Demand for mitigation will come from growth areas in the state.

Central California is projected to see the most rapid growth by 2050.



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Basic 4-Stage Process for Developing Mitigation Credits

Step 1

High level property evaluation for mitigation credit potential

Step 2

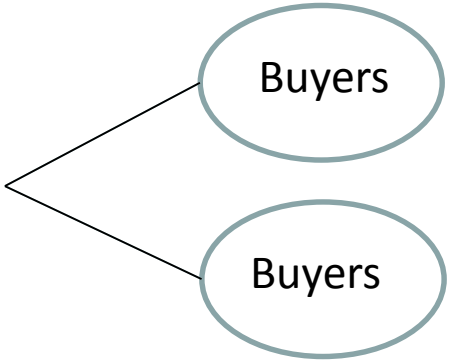
Detailed site review & 'wildlife management plan'

Step 3

Shepard WMP thru the agency review process

Step 4

Bring property mitigation credits to market




Step 1
High level property evaluation for mitigation credit potential
Step 2
Detailed site review & 'wildlife management plan'
Step 3
Shepard WMP thru the agency review process
Step 4
Bring property mitigation credits to market
Buyers
Buyers


$$ - management fund (yrs)
• fencing
• contouring
• pond mgmt
• planting / clearing
• livestock mgmt
• leasing, hunting…
$$ - mitigation credits (1 x)

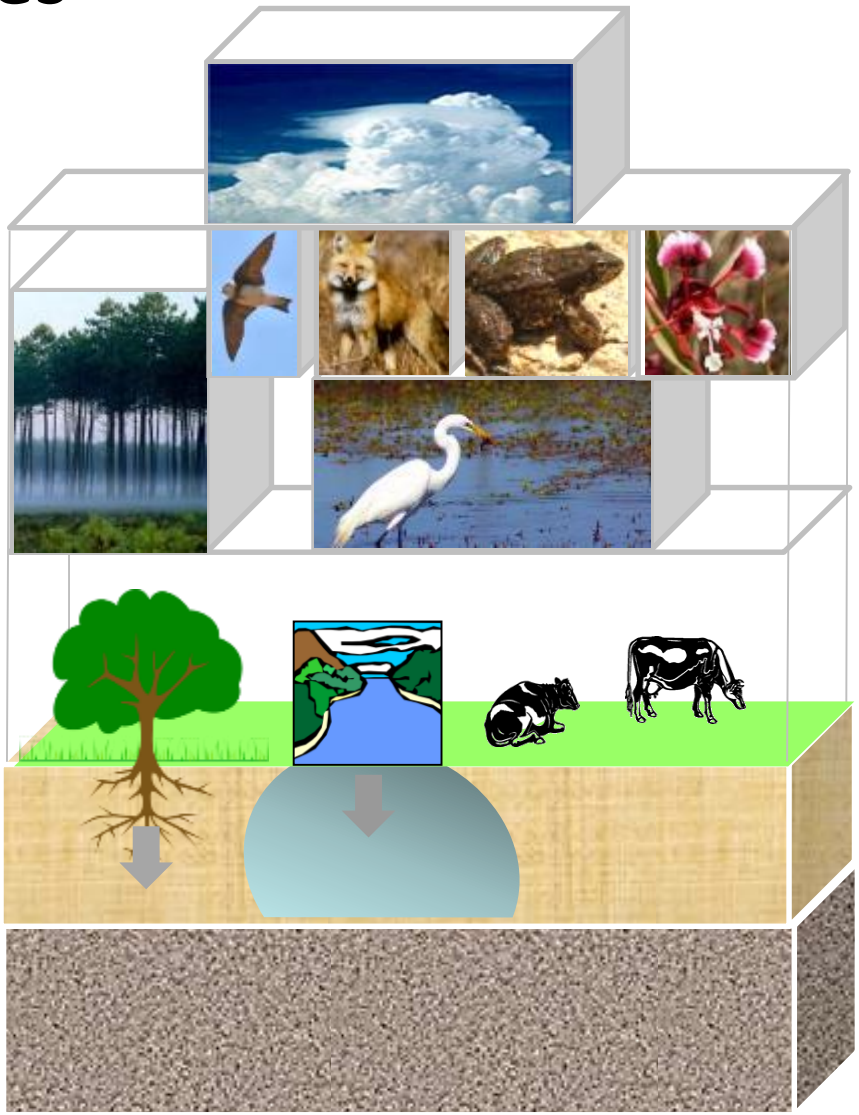

ALAMEDA
SAN MATEO
SANTA CLARA
SANTA CRUZ

‘Stacking’ Eco-Asset Values

Mitigation credits can be leveraged again and again over the years.

Managed with ecological assets in mind, the property can earn a variety of mitigation credits.

A property contributes many different ecosystem service values.



Should I develop credits now or wait for credit markets to mature?

What's the status of the biodiversity credit marketplace today?

The market is quickly maturing. Here are 8 reasons why:

1. Government support is growing
2. Standards are being established
3. Buyer-seller visibility is improving
4. Project partnerships are emerging
5. Development processes are being streamlined
6. Product volume is increasing, yet so is product demand
7. Credit prices are stabilizing as market visibility improves
8. A secondary market may soon emerge, drawing more participants

www.youtube.com/watch?v=74QdTdB4Yb8&feature=youtu.be

Secretary Jewell discusses the Department of the Interior's mitigation strategy to meet conservation and development objectives

Apr 10, 2014

Is rangeland sustainability measurable?

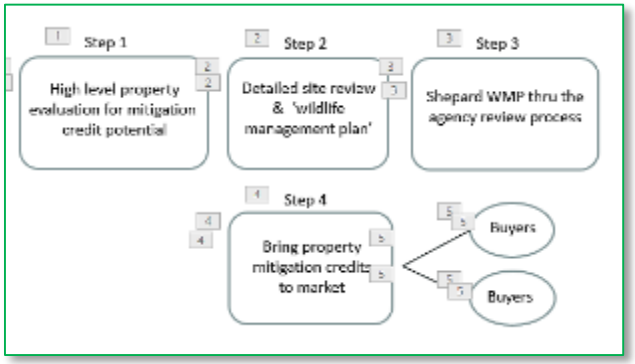
Is it profitable?

Yes – in terms of ecological assets

~ species / habitat mitigation credits ~

Real value – from investing in nature

GREATecology
ENVIRONMENT + DESIGN



Thank you!