

California's Native Grasses and Grasslands



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California's Native Grasses and Grasslands

- Introduction
- A new perspective

California's Native Grasses and Grasslands

- A bunch of weeds!
- Empty fields
- Not all that's golden....

California's Native Grasses and Grasslands

- Diversity
- Distribution
- Types
- Physiology
- History
- Benefits
- Uses Past and Present

Diversity

- 7000 species of plants in California
- 478 are Grasses
- 303 are native to California
- 2/3's are Perennials



Distribution

- Over half occur at low elevations
 - Mediterranean climate
- Valley-Foothill
- Montane
- Coastal
- Desert
- Less than 1/10 of 1% of grasslands remain

Habitats

- Riparian
- Upland
- Woodland

Vernal Pool



Oak Woodland





Physiology

- Stem
- Leaves (texture, color, surface, shape)
- Flowers (Inflorescence)
 - Panicle
 - Spikelet
- Seeds
 - Shaped for dispersal (wind, water, animal)
 - Self Planting



Purple Needle Grass Seed



Blue Wild Rye Seed Head



Meadow Barley



History

- Fully developed & diversified before advent of humans
- Less than 1/10 of 1% CA Grasslands remain
- Many reasons
 - Agricultural conversion
 - Non-Native introduction
 - 19th Century drought
 - Selective grazing

Benefits

- Soil Formation
 - Pumps organic material into soil
 - Deep roots create water and air channels
- Carbon Sequestering
- Habitat
 - Birds
 - Mammals
 - Reptiles and Amphibians
 - Insects









© Joyce Gross

Northern Harrier Hawk



Burrowing Owl



Glenn and Martha Vargas
© 2002 California Academy of Sciences

Heerman's Kangaroo Rat



Dr. Lloyd Glenn Ingles
© 1999 California Academy of Sciences

California Garter Snake



California Tiger Salamander



© 1999 California Academy of Sciences

Western Spadefoot Toad



© 2004 William Flaxington



Co-Evolution

- Migratory grazing herds
- Fire
- Native Fauna
 - Invertebrates
 - Birds
 - Mammals



Past Uses

- Foods (most seed crops)
- Basketry (*Carex barbarae*, White Root)
- Arrow Shafts (Common Reed)

Present Uses

- Erosion Control
- Watershed improvement
- Range improvement
- Ag cover crops
- Ornamental

Control Invasive Plants



Carex barbarae

Cat tails (*Typha sp*)

Bank Stabilization









Graceful Gramma Grass



© 2004 James M. Andre

Ornamental Uses

- Predictable
- Manageable
- Desirable Form
- Foliage color
- Seed Head
- Critters (Solitary Bees, Butterflies, Birds)

Experimental Uses

- Road side dust control
- Toxin removal
- Barrier strips around cropland
 - Help keep noxious weeds out
 - Insectory for beneficials
- Vegetative buffer strips (Ag runoff)
- Canal bank protection

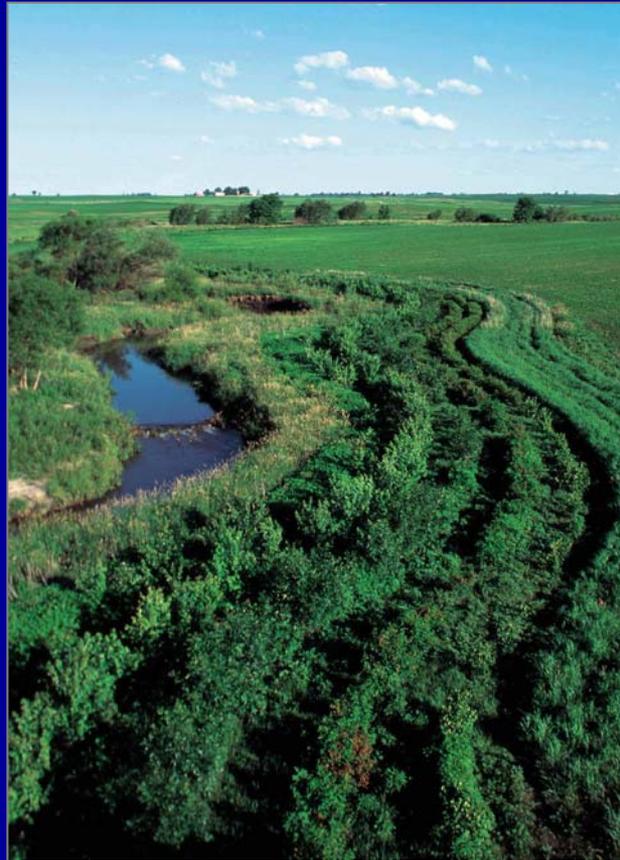


Field Border



Deergrass, Creeping wildrye or Blue wildrye, Idaho fescue, Calif. Oniongrass, Needlegrasses

Filter Strip



Creeping Wildrye, *Molate* red fescue, Meadow barley



Wetland Buffers



Creeping Wild Rye, Meadow Barley, Sedges, Rushes

How Buffers Work

- Trap particles in their roots and shoots and act as living filters for -
 - soil and sediment
 - fertilizers and nutrients
 - pesticides
 - oil and grease
 - pathogens –bacteria, fungi, etc.
 -



- Erosion
- Lack of Habitat
- Lack of Biofiltration
- Continuous Weed Control





Mallard ducklings need cover to hide and forage for insects

Cost Trade Offs Between Installation and Ongoing Maintenance



Photo Courtesy of the RCD of Monterey County

Pesticides and water quality: Transport after application

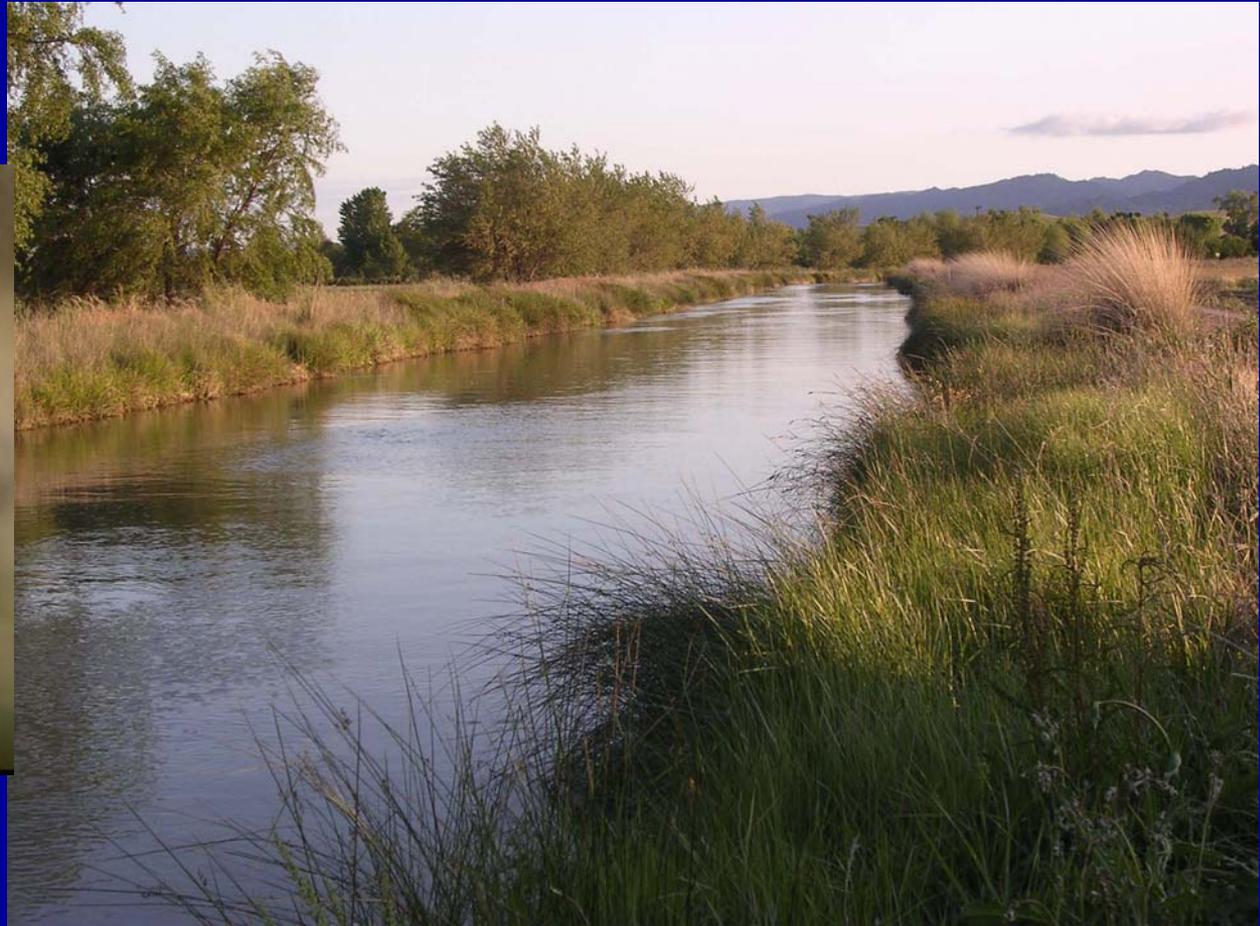
Pesticide detections:
99% rivers: 1 pesticide
70% rivers: ≥ 5 pesticides



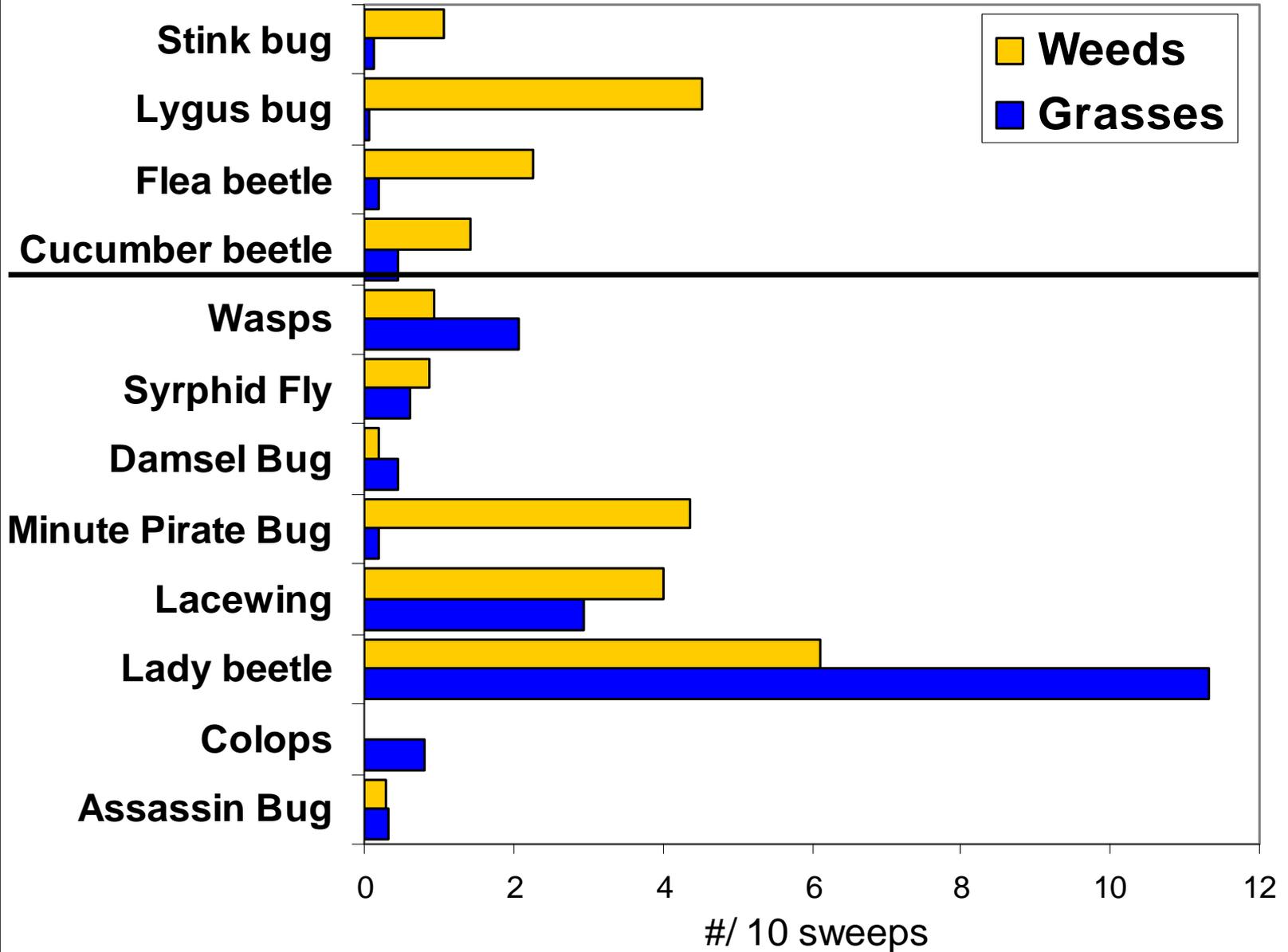
Benefits of Native Vegetation

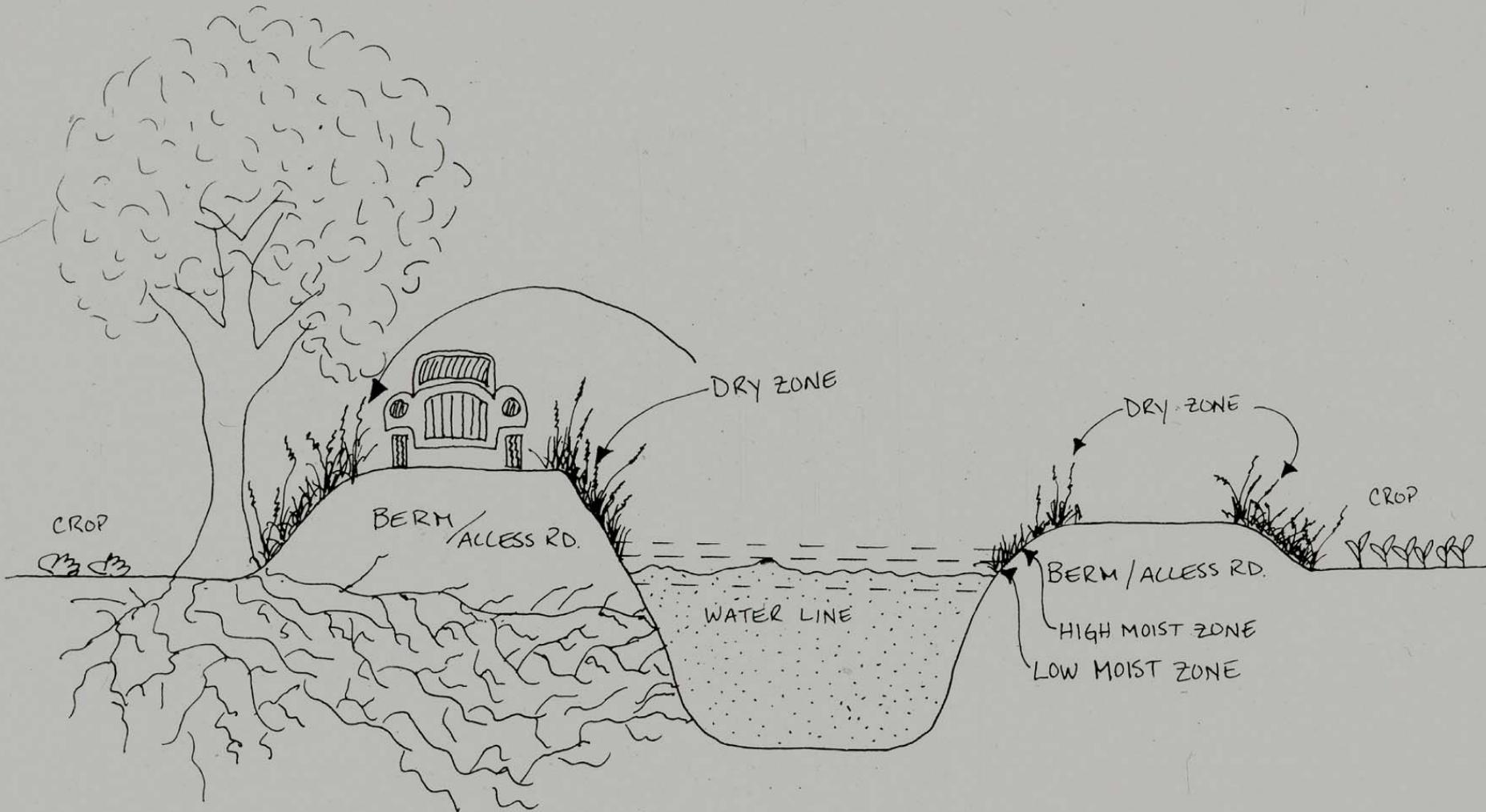
- Erosion protection and bank stabilization
- Biofiltration of ag water
- Reduction of blanket herbicide use
- Enhanced biodiversity & wildlife habitat

Gum plant



Grasses vs. Weeds April - June 2000













Late Winter / Spring Grass Diet of Wintering Artic Nesting Geese in the Great Valley, California

Cackling Canada Geese



Photo by Joe Silveira

Ross' Geese



Photo by Joe Silveira

Grazed grasses
are more digestible
and have higher
amounts of amino acids
and proteins available for
breeding, migratory
Arctic-nesting geese

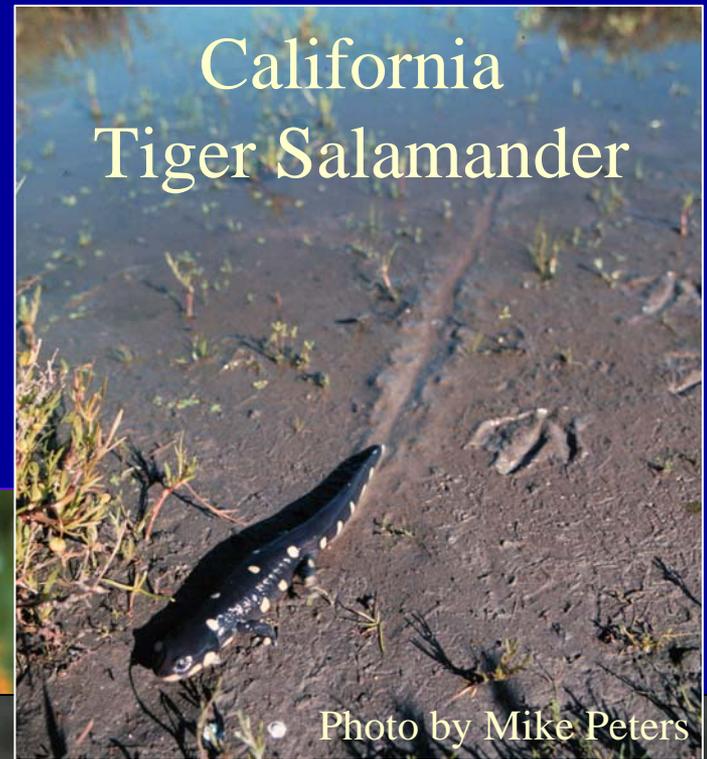
California Ground Squirrel

A Keystone Species
(Primary Burrower)

Increases with Grazing



Photo by Gary Zahm



California Tiger Salamander

Photo by Mike Peters



Burrowing Owl

Photo by Gary Zahm

Special Status Species of Grazed & Sparse Grasslands

Mountain Plover

Photo by Gary Zahm

California Horned Lark

USFWS Photo

Sandhill Crane

Photo by Gary Zahm

Kangaroo Rat

Photo by Joe Silveira

California's Grasslands



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