



OVERVIEW

- Rangeland Conversion
 - How much has been lost?
 - What has it become?
 - How much is protected?
- Importance of CA Rangelands to Wildlife
 - Grassland Birds, California tiger salamanders, Vernal pool species
 - Importance of management



Photo: Ed Pando-fino

Rangeland Conversion Study

Funded by The Nature Conservancy

Authors: Dick Cameron, Robert Holland, Jaymee Marty

Conversion Study Objectives

- 1) Document how much rangeland conversion occurred over a 25 year period within the CRCC Priority area
- 2) Assess the current land use of the converted land
- 3) Use this information to inform land use planning decision making, policy formulation and conservation strategies for rangelands

Conversion Study Methods

- Used CRCC priority area as study area boundary (35.4 million acres in 33 counties)
- Used Dept. of Conservation's FMMP dataset to identify converted grazing land (FMMP, 1984 - 2008)
- Selected all polygons that were grazing land in the first time period and not in the second
- Used aerial photo interpretation to assign current land use to converted land

Conversion Study Methods

- Assessed degree to which the remaining rangeland was protected by assembling land conservation status data (fee, easement ownership)
- Also assessed status of voluntary non-permanent protection using lands enrolled in the Williamson Act (2009 data)

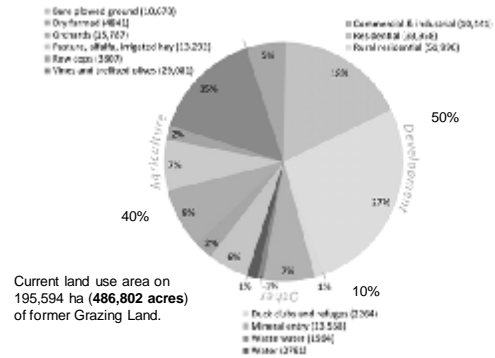
California wildlife faces uncertain future



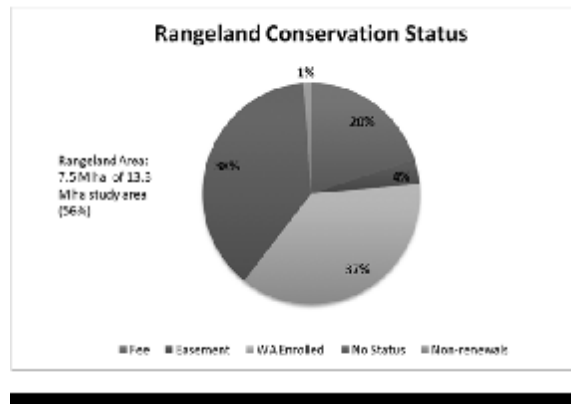
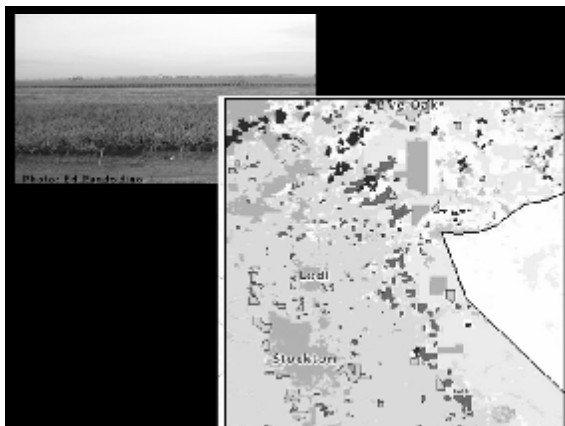
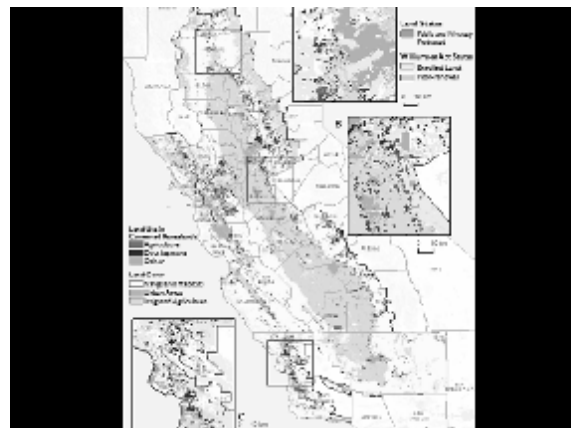
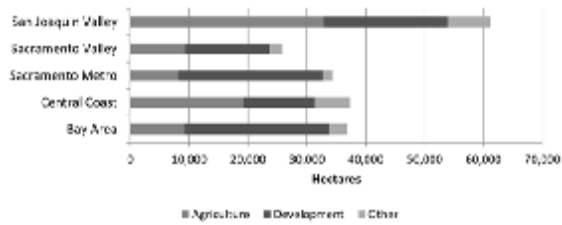
Lucera and Barrett 1995

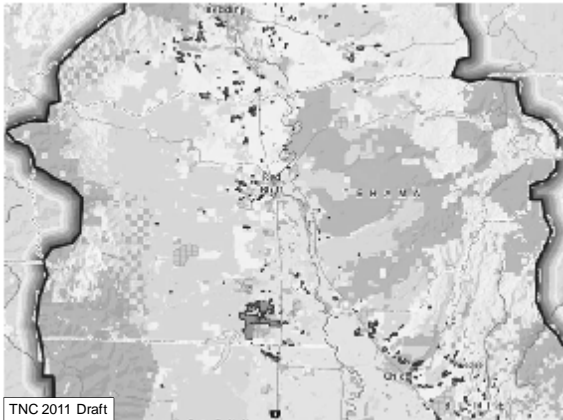
"Historically scientists have identified few cases in which agricultural development has enhanced wildlife diversity. Perhaps the best one can say is that relatively little opportunity now exists for additional habitat losses to agriculture. Most of the land in California that is suitable for agriculture has already been converted, and most of the water suitable for "development" is already being used."

Conversion Patterns (1984 – 2008)



Conversion Patterns (1984 – 2008)





How important is Rangeland as Habitat?

- S Rangelands (grazed grasslands, shrublands, woodlands) support a variety of species including freshwater fish, birds, invertebrates, mammals and hundreds of native plants.
- S 75 species of plants and animals that are associated with CA grasslands are listed as threatened or endangered (Jantz et al. 2007)
- S Central Valley grasslands support the most important wintering habitat for raptors in North America (Pandolfino and Smith 2011)



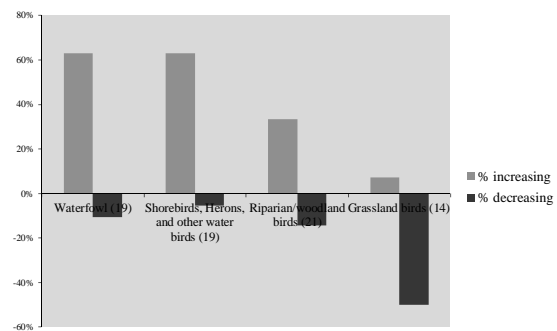
Importance of Rangeland to Grassland birds

(Pandolfino 2010)

- Pandolfino analyzed grassland bird data and conducted wintering raptor surveys (with Z. Smith)
- CV population trends for most wetland and riparian-associated birds are positive
- CV population trends for most grassland-associated birds are negative
- CV is of critical importance as a wintering site for North American raptors
- Grassland raptors NEED grassland...and they need it grazed
- Grasslands of the northeast San Joaquin Valley seem to be most productive for grassland raptors

Trends from CV CBC data (1976-2010)

(Pandolfino 2010)



Importance of Rangeland to Grassland birds

(Pandolfino 2010)

- CV population trends for most wetland and riparian-associated birds are positive
- CV population trends for most grassland-associated birds are negative
- CV is likely critical for some of these grassland species
- CV is of critical importance as a wintering site for North American raptors
- Grassland raptors NEED grassland...and they need it grazed
- Grasslands of the northeast San Joaquin Valley seem to be most productive for grassland raptors



California Tiger Salamander

- S At least 75% of grassland habitat historically used by CTS in the Central Valley has been lost (Shafer et al. 1993)
- S Rangeland habitat destruction and fragmentation are real threats to CTS populations, because they need:
 - S Breeding ponds with appropriate hydroperiod
 - S Unobstructed movement from pond to upland refugia
 - S Intact terrestrial habitat to move between breeding sites



California Tiger Salamander

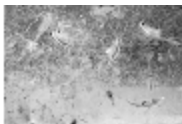
- S Ranches and grazed public land are vital to the California tiger salamander (CTS)
- S Large vernal pools and livestock ponds provide breeding sites
- S Grazing reduces vegetation biomass and thatch levels allowing better movement through the uplands surrounding breeding ponds
- S Grazing also maintains hydroperiod in natural pools (Marty 2005)
- S CTS can travel up to 2+ km from their breeding sites to find refuge in the surrounding upland—large contiguous tracts of habitat are essential (Searcy and Shaffer 2011)



Vernal Pools



- ⌞ Vernal pools are particularly vulnerable to conversion
- ⌞ Over 138k acres lost since 1970s
 - ⌞ 68% converted to agricultural land uses (Holland 2009)
- ⌞ Once they're ripped, they can't be restored



Vernal Pools

- S Most vernal pool dependent plants and animals lack effective mechanisms for long-range dispersal
 - S Crustaceans (e.g. fairy shrimp, tadpole shrimp)
 - S Rare plants (e.g. orcutt grasses, goldfields)
- S Because they can't move to new habitats, they go locally extinct
- S Habitat Mitigation = Net Habitat Loss



Management Matters

- S **Rangeland** matters to many wildlife species, not just grassland
- S Livestock grazing is a key management tool in grasslands dominated by non-native grasses and forbs



Management Matters

- S 10+ year vernal pool grazing study in Sacramento County (Marty 2005)
- S Grazing removal:
 - S Decreased native species diversity
 - S Increased Non-native cover
 - S Decreased vernal pool hydroperiod by 30-50 days
 - S Decreased invertebrate taxa diversity

Conclusions

- Lack of water and appropriate soil conditions are NOT limiting the conversion of rangeland to intensive agricultural uses.
 - Over 486,000 acres of rangeland converted in 25 years
 - Trend in conversion to hardened agriculture, especially in SJ Valley, continues
- Williamson Act protects ag. lands in general but does not protect rangelands from being converted to other ag. types
- Rangelands are vital to the conservation of hundreds of California's Wildlife species
- Livestock grazing on working ranches is the key component!



Questions?