

# Oak woodland management: an example from California State Parks



# Austin Creek State Recreation Area & Armstrong Redwoods State Reserve

2000 acres Oak Woodland

9 species of true oaks

## Red Oaks

- *Quercus agrifolia* coast live oak
- *Q. kelloggii* California black oak
- *Q. wislizenii* interior live oak

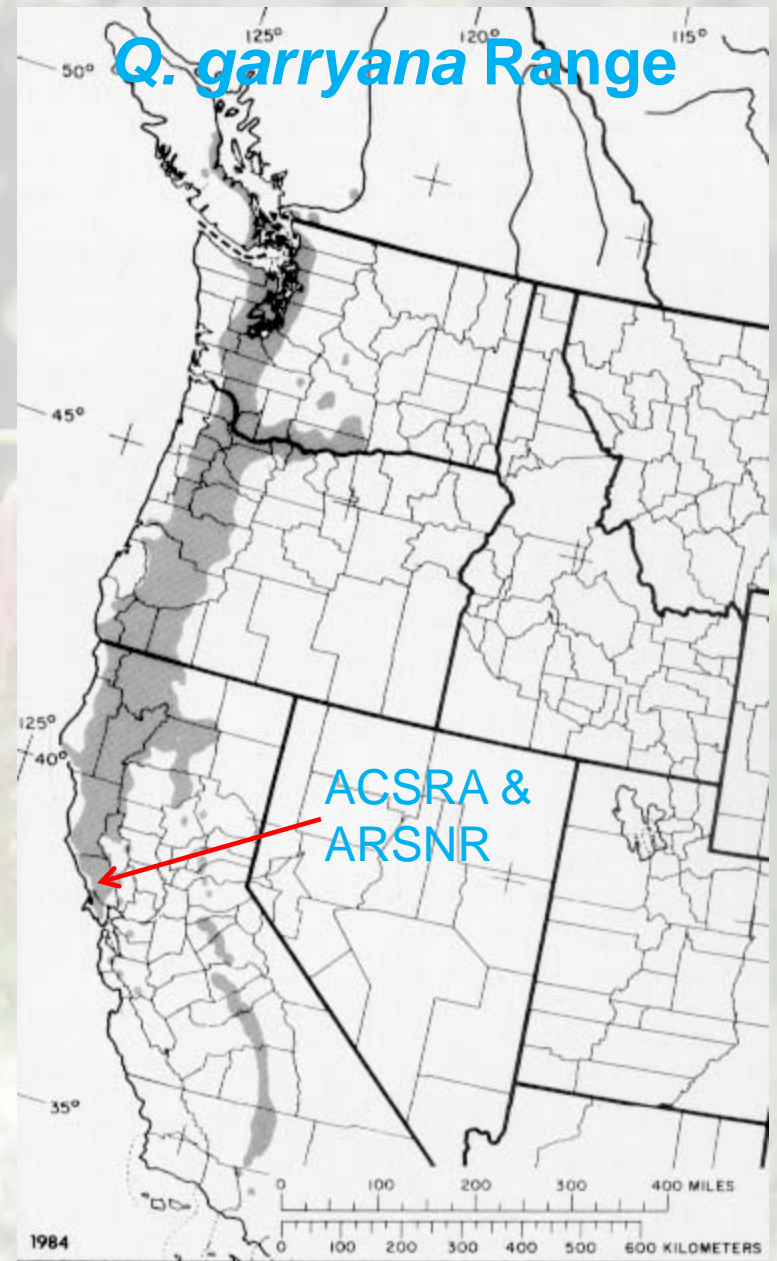
## White Oaks

- *Q. garryana* Oregon white oak
- *Q. lobata* valley oak
- *Q. dumosa* scrub oak
- *Q. durata* leather oak
- *Q. berberidifolia* scrub oak

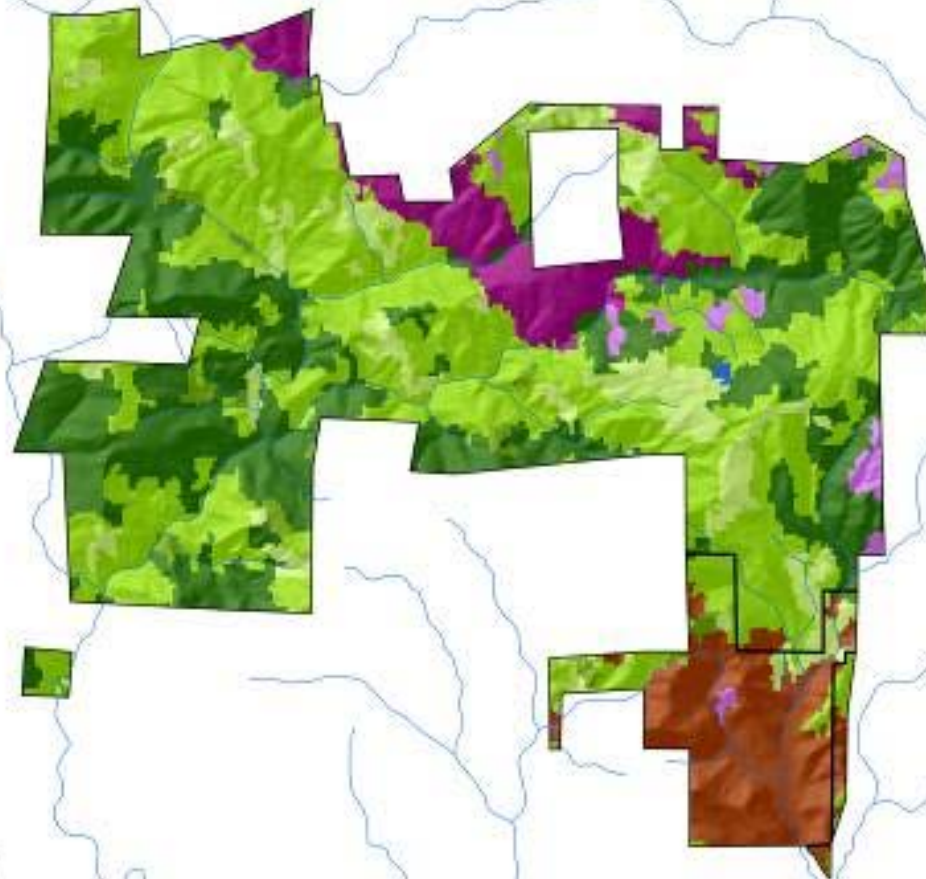
## Golden Oaks

- *Q. chrysolepis* canyon live oak

Hybrids noted



# Vegetation Types of Armstrong Redwoods State Natural Reserve and Austin Creek State Recreation Area



### Vegetation Types

- GRASSLAND
- CHAPARRAL
- SARGENT CYPRESS FOREST
- NORTHERN OAK WOODLAND
- MIXED EVERGREEN FOREST
- DOUGLAS FIR FOREST
- REDWOOD FOREST
- WATER

0 1,250 2,500 5,000 7,500 10,000  
Feet



# Unit-wide Goals

- Maintain and/or restore natural habitats and processes to support viable populations of native species and to promote species richness, resiliency, and habitat complexity.
- Maintain and /or restore habitat needed to conserve special status plants and animals.
- Control or eliminate invasive species where feasible.



# Goals and Objectives for Oak Woodland Management

Goal: Maintain oak woodlands. Restore structure and composition to type converting stands where feasible. Reintroduce fire where/when feasible.

- Less than one percent cover invasive forbs, perennial grasses and shrubs
- Less than ten percent soil disturbance from feral pigs
- Less than five percent conifer cover



# Watershed Restoration as related to ACSRA oak woodlands

Between 2001 and 2014 upgraded or decommissioned all major unpaved roads within ACSRA, approximately 25 miles

- Reduce road related erosion
- Upgrade to 100 year storm
- Decommission un-needed roads
- Reduce impacts to ground water resources from gullying

### Bringing Back Austin Creek

For eons, the cool clear waters of Austin Creek and its tributaries have flowed through redwood forest and marshes, and into the Russian River estuary on their way to the Pacific Ocean. The fish depended upon the resources offered up by the land and waters for their existence. In later years European settlers cut redwoods and grazed the surrounding hills. Today, Austin Creek is private ranches and parkland. Austin Creek is home to cold salmon and steelhead trout. These fish begin their lives in the creek and migrate to the ocean after spending a lengthy time in the cold fresh water. Adults return after two or three years to spawn and start the cycle over again. However, changes to the land, water, and ocean have brought these fish to the brink of extinction.





Sediment reduction. Excessive input of fine sediment to streams damages aquatic habitat, choking spawning grounds, and is lethal to both young and adult fish. One of the most significant sources of fine sediment in Austin Creek is erosion along road networks. Since the late 1900s, roads have been upgraded to reduce erosion, as well as removed from the riparian zone to reduce the input of sediment from entering Austin Creek and its tributaries. Supporting the Sonoma Resource Conservation District, Pacific Watershed Associates, Charles Hope Consulting, California Department of Fish and Wildlife, State Coastal Conservancy and the State Water Resources Control Board, we are working with landowners in upper Giliam Creek and Grey Creek in an effort to reduce sediment and restore riparian habitat to Austin Creek and its tributaries.





This notice is posted to inform visitors to Austin Creek State Recreation Area about the ongoing restoration efforts. Work will occur between September 3 and October 4, 2018. Should you have any questions, comments or concerns please feel free to contact any of the project managers.

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This project is being completed in partnership with the Sonoma Resource Conservation District, CA State Parks, California Conservation Corps, and funded by the CA Department of Fish and Wildlife, CA Department of Water Resources and the California Coastal Conservancy.








# Invasive plant species within Oak habitats of ACSRA

French broom

Scotch broom

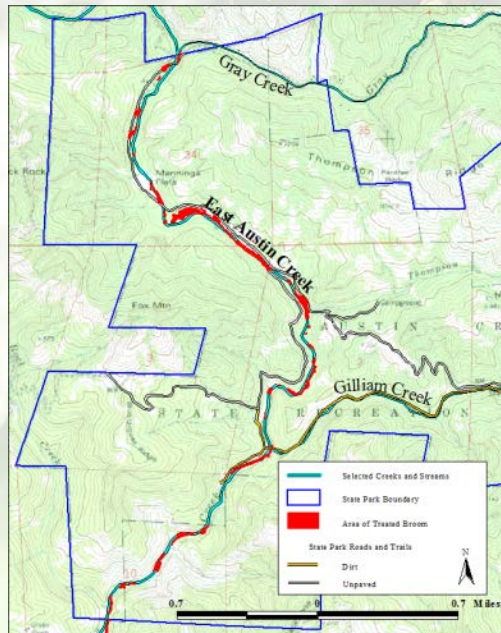
Medusa head

Teasel

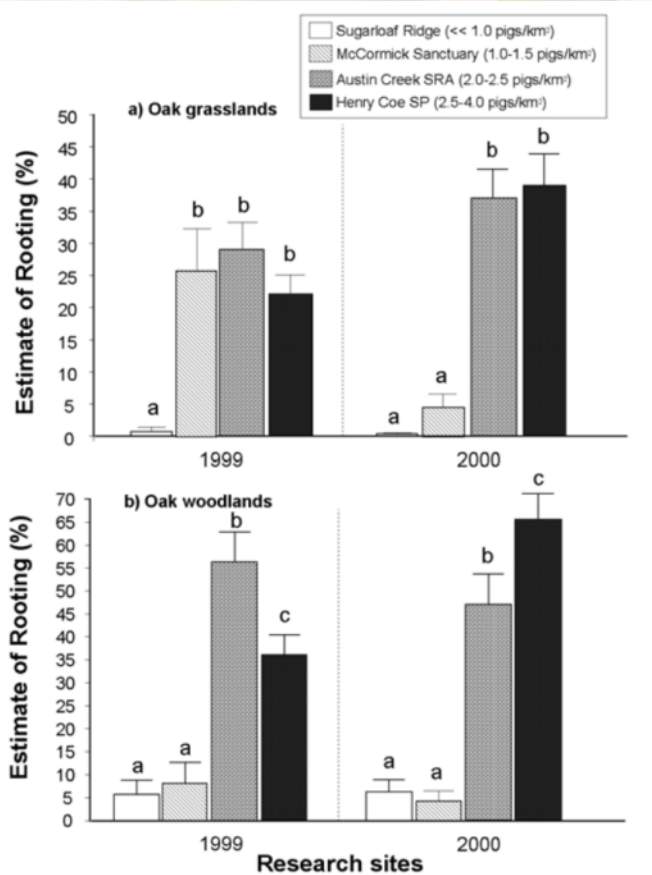
Acacia

Other incidental species

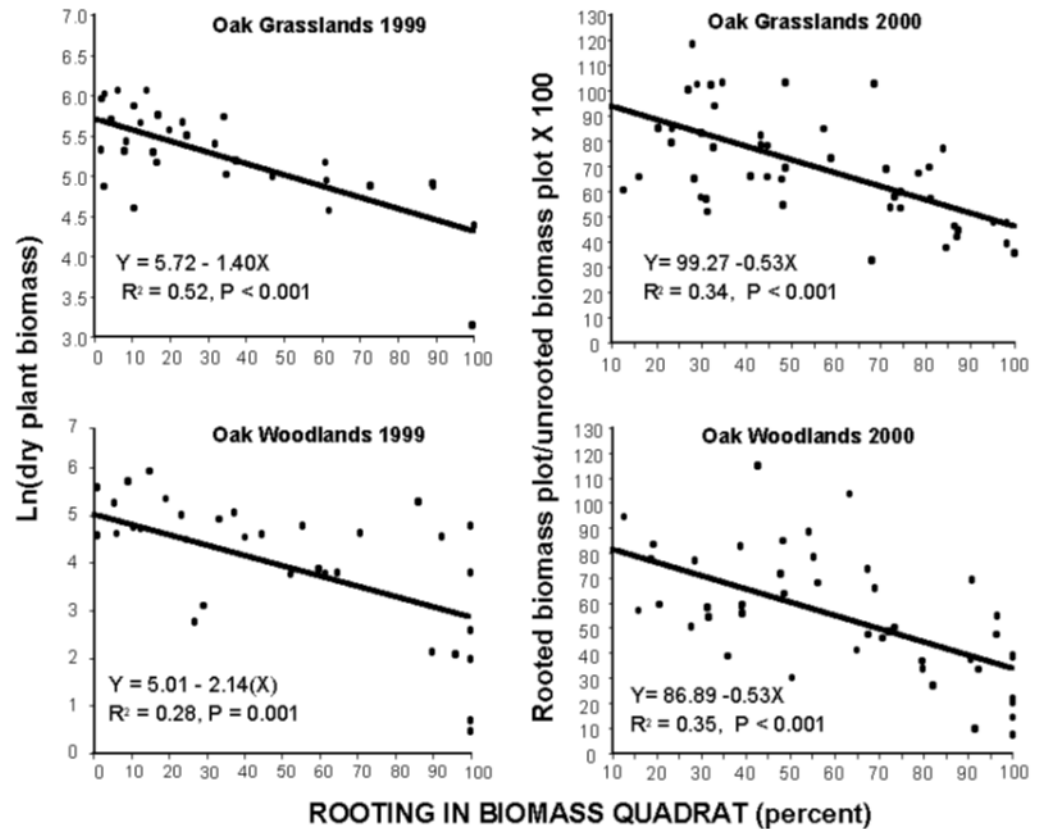
Annual grasses!



Sweitzer, Rick and Dirk H. Van Vuren. Rooting and Foraging Effects of Wild Pigs on Tree Regeneration and Acorn Survival in California's Oak Woodland Ecosystems. USDA Forest Service Gen. Tech. Rep. PSW-GTR-184. 2002.

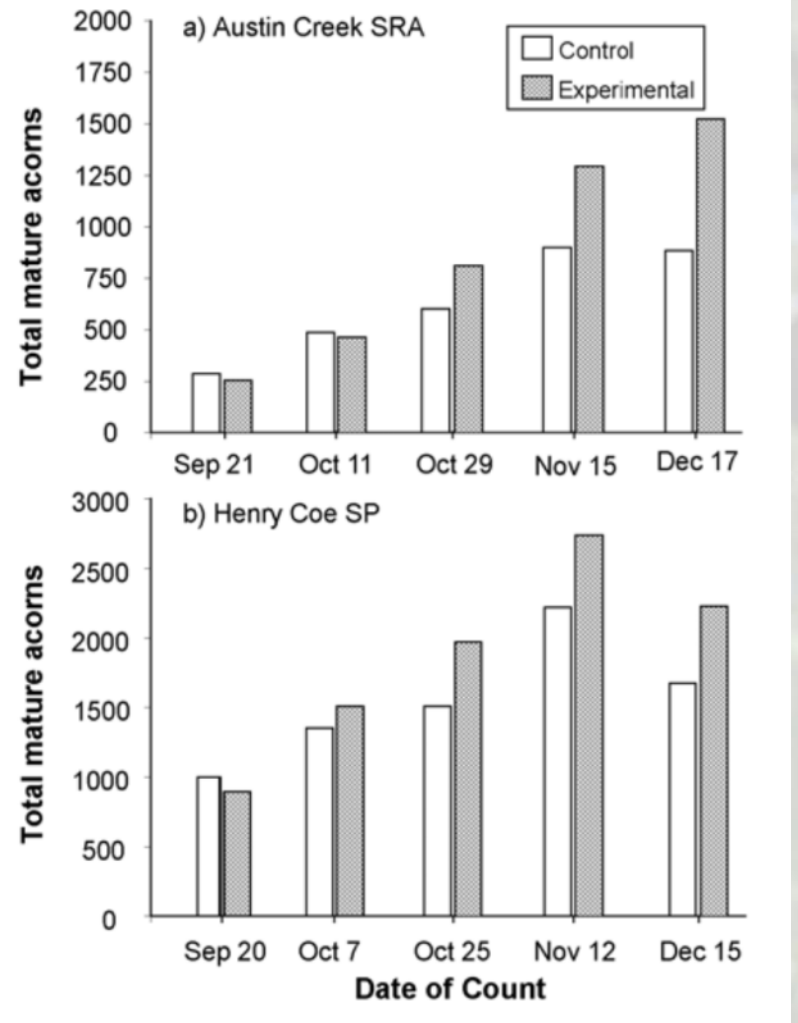
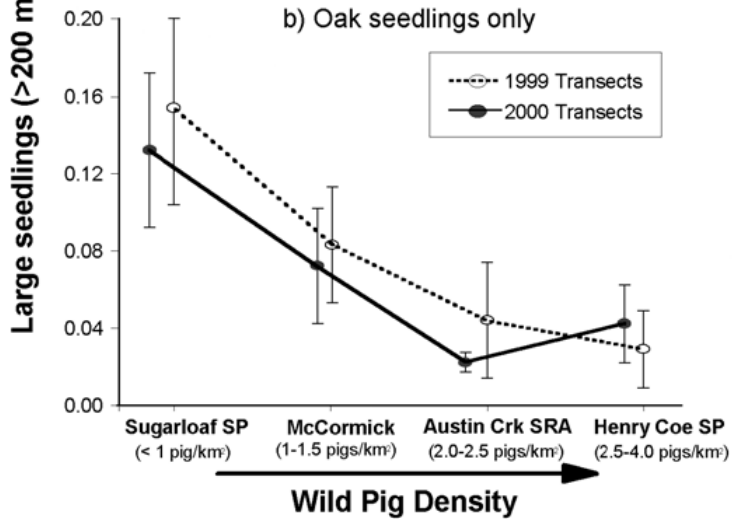
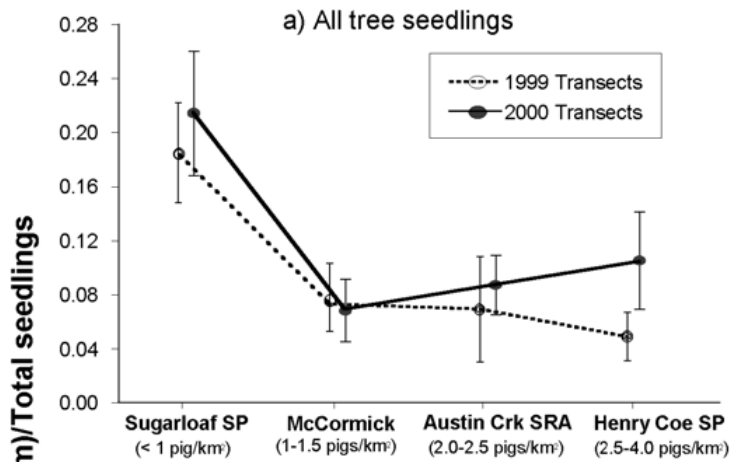


Soil disturbance by wild pigs was significantly higher in areas where wild pig densities are high.



Rooting significantly reduced aboveground plant biomass in oak grassland and oak woodland habitats, and may therefore reduce forage availability for herbivores in areas with widespread rooting.



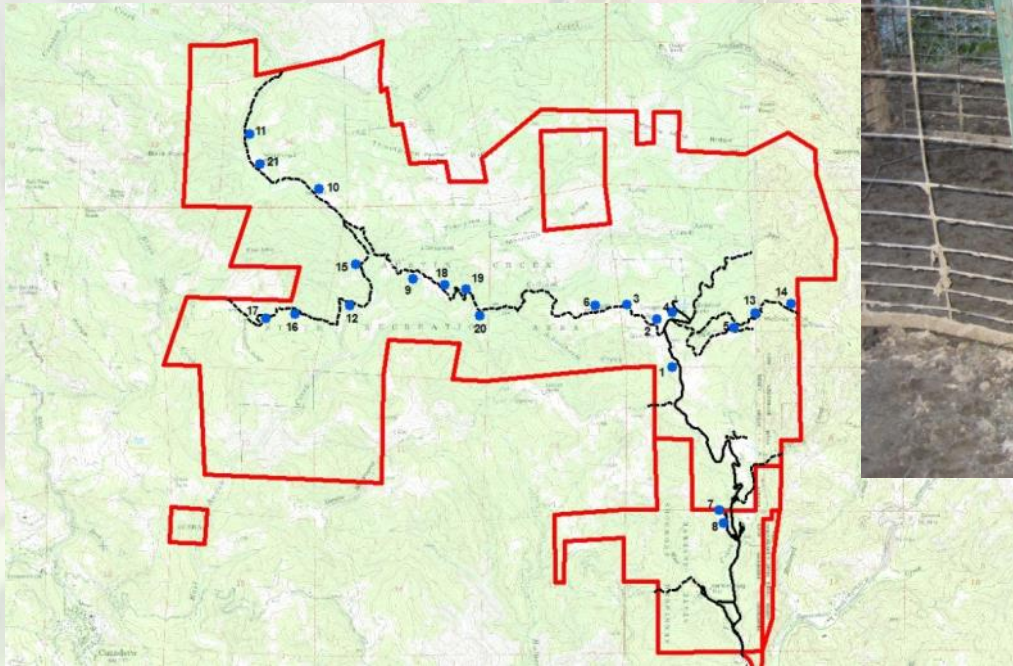


Rooting disturbance may be significantly reducing survival of tree seedlings, thereby limiting tree regeneration in oak woodlands.

Experimental plots associated with high masting oak trees indicated that wild pigs significantly reduced acorn survival and, therefore, reduced the availability of acorns for germination and consumption by native wildlife.

# Feral Pig Trapping Program

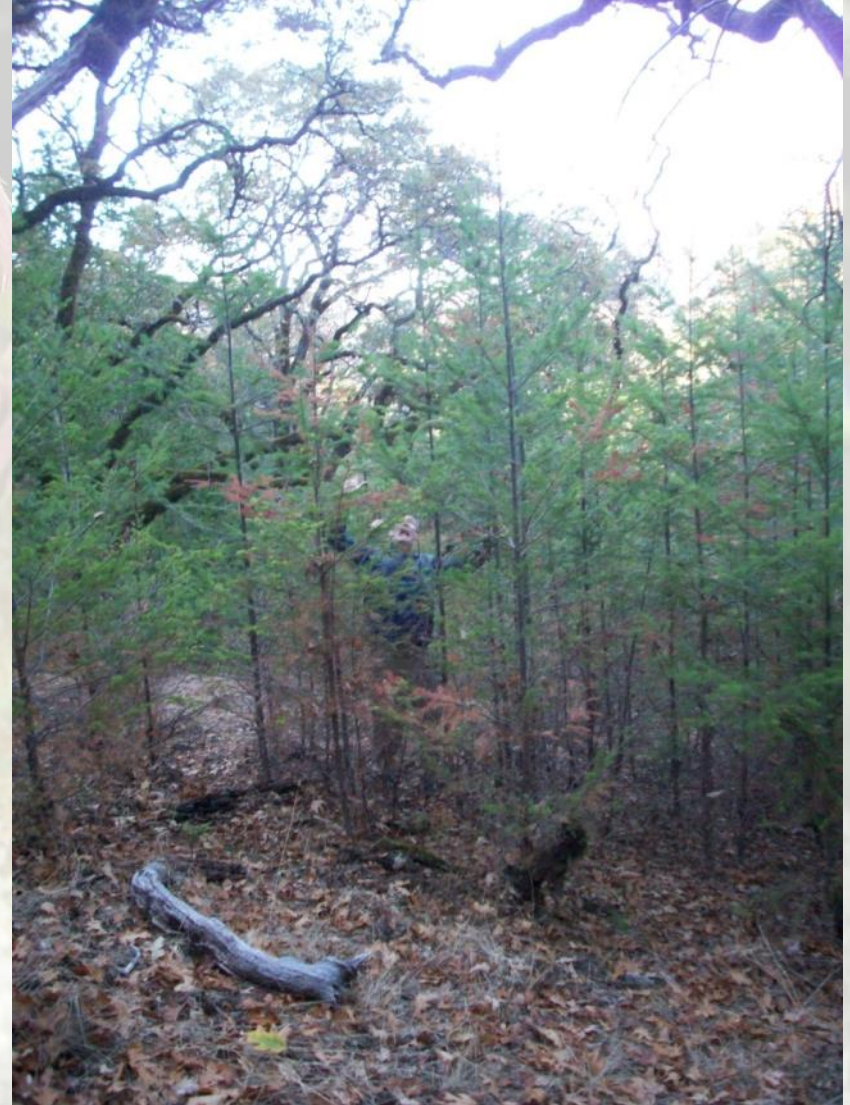
- Begun in 2006
- Pre-trapping annual disturbance in oak woodlands approximately 35%
- Disturbance generally below 5%, but varies depending upon level of effort



# Douglas-fir encroachment into Oak Woodlands

McBride, Joe and Stephen Barnhart. Assessment of Douglas-fir Establishment in Woodlands at Austin Creek State Recreation Area. California Department of Parks and Recreation. 2005.

- Douglas-fir establishes on sites that are characterized by conditions that minimize moisture stress on tree seedlings.
- Northern oak woodland plots averaged; 170 seedlings/ac., 32 saplings/ac., 4 poles/ac. and 12 trees/ac
- Black oak woodland plots averaged; 509 seedlings/ac., 125 saplings/ac., 271 poles/ac. and 28 trees/ac.



- Black Oak Woodlands are the highest priority for treatment.
- Prioritize with regard to the proximity of a Douglas-fir seed source, the acreage of the threatened type and other criteria important to the park management.
- Treatment should include hand removal of seedlings and saplings (preferably during the spring when the soil is moist), cutting of poles below the lowest lateral bud and the girdling of trees (DBH  $\geq$  10cm).







# Considerations to improve oak woodland management

- Add Rx fire 50 – 200 acres/year
- Revisit original monitoring plots to evaluate and improve effectiveness (CNPS relevee, rapid assessment and photo).

