

Restoring Riparian Function and Diversity through Cost-Efficient Hazardous Fuel Removal

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Center for
Natural Lands
Management

Cal IPC Symposium

November 4, 2016



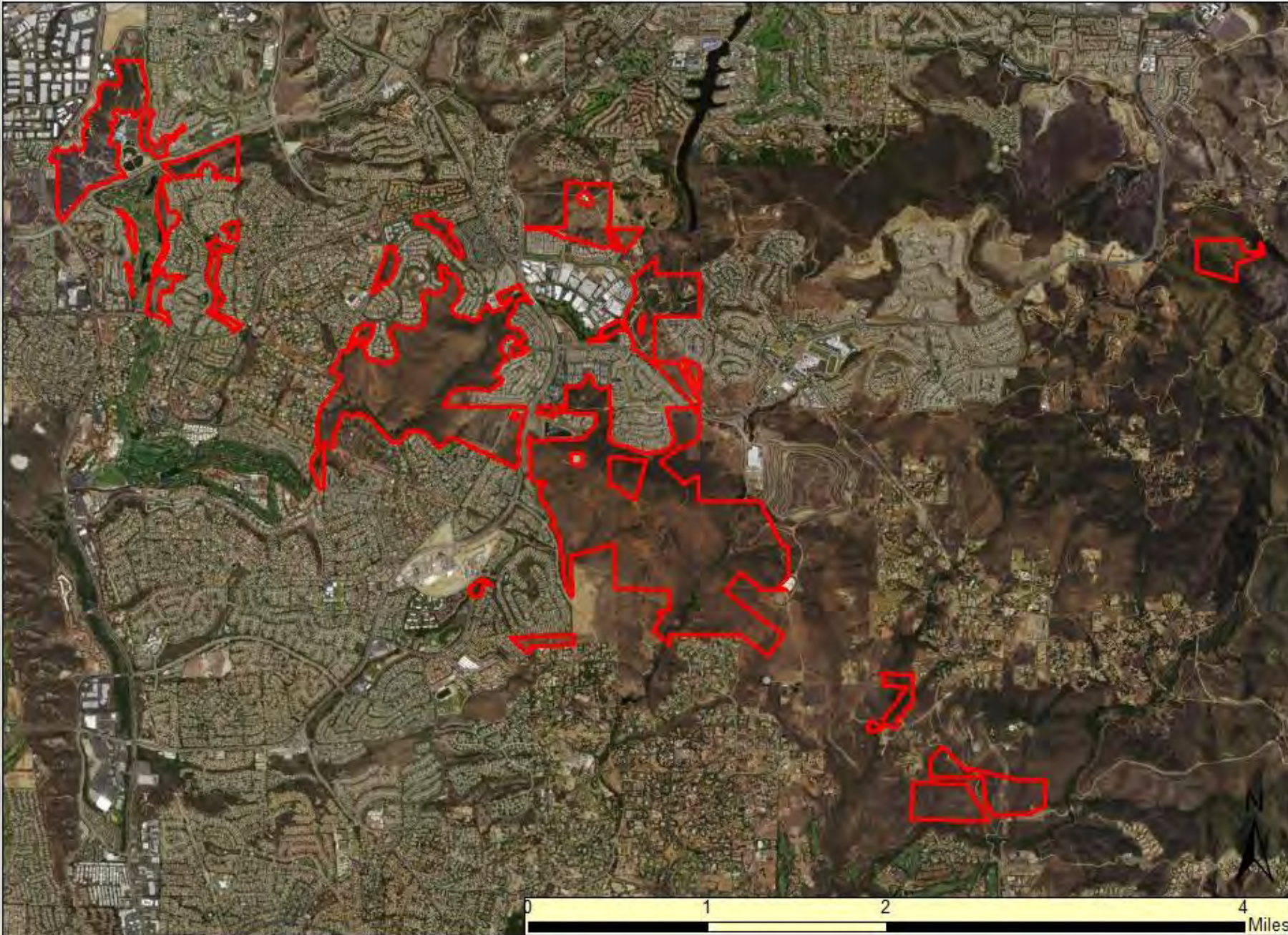
Center for Natural Lands Management:

- Habitat conservation in perpetuity
- California and Washington State
- More than 60,000 acres of land in conservation
- Endowment funding for management



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Rancho La Costa Habitat Conservation Area, San Diego, CA



42.9 miles of
urban EDGE!



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Endangered
species monitoring

Restoration of
burned and heavily
disturbed areas

Erosion control

How do I prioritize with
conflicting demands and
a limited budget?!

Paying employees,
rangers, field
technicians

Recreational users
and off-leash dogs

Weeds, weeds, and
more weeds!



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Carlsbad

San Marcos

Project Area

Encinitas



Eucalyptus lack Diversity and Function

- Highly volatile to fire; bark and leaf litter are very flammable; “Roman Candle”
- Monotypic stands exclude wildlife
- Alkaloids prohibit understory growth
- Eucalyptus longhorn borer killing trees



Threats of Eucalyptus

CAL- IPC “Moderate Invasive”

Alters:

- Soil moisture and chemistry
- Light availability
- Ecological relationships among species
- Displaces native shrubs and trees
- Fallen leaves in water courses change aquatic macroinvertebrate communities, altering food chain due to chemical content
- Changes composition of insect and bird communities (large decrease in cavity nesting species) – Point Blue Bird Observatory Reports state a 70% reduction in bird diversity vs. oak woodlands/native riparian

Site Challenges

Timing of treatment

- Dormancy, species, fire/rainy seasons

Access to site

- Roads
- Creek topography

Cost of tree removal using contractors

Biomass removal

Vigor of trees

- Rapid herbicide application (1-2 min)



Site Challenges



Project Budget

- Year One (2013- 2014)
 - \$5,000 Endowment
 - \$5,000 Match from San Elijo Lagoon Conservancy
 - Watershed Mitigated Negative Declaration
- = Total \$10,000

Crew 5 men/day = \$2500

Chipper per day = \$250
Herbicide (Garlon 4A)= \$250

= ~ 4 days crew work

Cost and Efficiency Increase in Project Budget

Year	Funding	Area treated (Acres)	# Work Days	# Trees Treated	Method
2013-2014	\$10,000	.1	4	250	Contractor (5 men)
2014-2015	\$5,000	.8	14	10,000	CalFire Camp Crews (15 women)
2015-2016	\$10,000	1.3	25	15,000	CalFireCamp Crews (15 women)



euc removal
copper creek

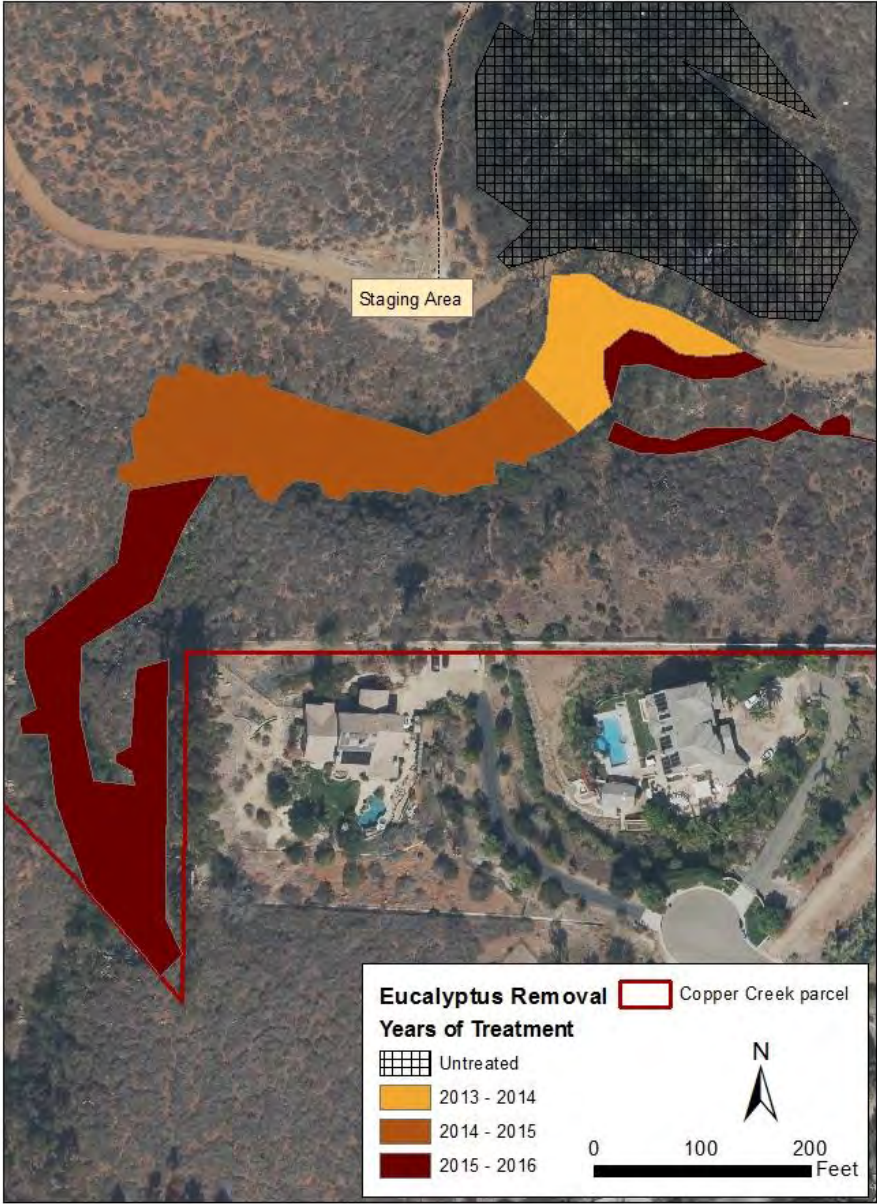
2015-12-10
14:41:24-08:00



euc removal
copper creek

2015-12-10
11:03:23-08:00

Phased Eucalyptus Removal in Copper Creek



Partnerships are Invaluable!

Natural Resources Conservation Service

- Environmental Quality Incentives Program (EQIP)
- Southwestern Willow Flycatcher Recovery
- Set cost/acre practice payments based on national average

California Department of Forestry and Fire Protection (CALFIRE) – California Department of Corrections and Rehabilitation (CDCR)

- Grants
- CEQA
- 43 camp crews throughout California



Benefits of Phased Removal

- Work with limited budget
- Can dedicate resources to retreat sprouts, prevent other invasions
- Passive restoration or successional plantings
- Provides for species restriction periods
- Allows for variables and other environmental factors
 - Creek hydrology and slope stability



Strategies

- Use as much biomass onsite as possible
 - Erosion control
 - Weed suppression
- Apply herbicide within 1 minute using targeted eye dropper bottle
- Small diameter trees first then progressively larger
- Leave dead standing trees (snags) for wildlife



Recovering Plant Communities

- Willow Riparian with Coast Live Oak
 - San Diego Marsh Elder (*Iva hayesiana*)(CNPS list 2b.2, rare/threatened/endangered in CA)
 - San Diego sagewort (*Artemisia palmeri*)(CNPS list 4.2, limited distribution)
- Coastal Sage Scrub
 - Sticky monkeyflower
 - California Sagebrush
 - California Deerweed
 - Laurel Sumac



2016-10-14
10:03:44-07:00



DIRECTION
311 deg(T)

33.07732°N
117.21039°W

ACCURACY 5 m
DATUM WGS84



euc removal
copper creek

2015-12-11
13:25:02-08:00



copper creek
euc removal

2016-10-14
10:02:49-07:00

March 2016: Coming Back to Life



May 2016, 2 Bucks Arrive



July 2016, Fawn born



Thanks to our partners



Thanks to my eucalyptus-removing mentors!



Ken Moore

Questions?

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