Cuyamaca Rancho State Park
Reforestation Project
Annual Report FY 2009/2010

A Partnership Between

California State Parks and CAL FIRE

Contents

Introduction

In October of 2003, the Cedar Fire devastated more than 280,000 acres of San Diego County. It was the largest wildfire in the recorded history of California. Fifteen human lives were lost in the fire and more than 2,800 structures were destroyed. The fire also had severe impacts on the natural environment. One area impacted by the fire was Cuyamaca Rancho State Park; all but about 500 acres of the 25,000-acre park burned in the Cedar Fire.

Due to a decade of drought, unnaturally high stand density and several years of bark beetle infestation, the Park's forests were dry and dense. The Cedar Fire burned at a nearly uniform high intensity through the Park. Surveys conducted after the fire indicated that about 90 percent of the Park's conifer trees had been killed in the fire (Franklin 2005). More disturbing was the revelation that natural recovery of the conifer forest was very limited. A post-fire study found that conifer seedlings were found in only about one-third of the stands in the former conifer forest, that they were in very low densities and were composed of mainly one species, Coulter pine (Franklin 2008).

Mechanical mastication clears the way for a prescribed burn in the devastated forest.

The post-fire landscape in the Park was very different than that seen following previous fires. Usually fires burn at highly variable intensities. Some areas will burn at high intensity and the forest canopy will be destroyed. However in other areas, where fuels are perhaps more moist, or where fire had burned during cooler times of the day, the fire will burn on the ground or in the forest understory and leave the forest canopy intact. It is not uncommon for there to be patches that do not burn at all. So the post-fire landscape normally is composed of a mosaic of intensely burned, lightly burned and unburned patches. Lightly burned and unburned patches are important in post-fire recovery. These patches act as refuges where plants and animals survive the blaze then following the fire, disperse into and re-colonize the more intensely burned areas. There were few such refuges left following the Cedar Fire.

The strategy of the current program is to re-create a network of forest patches in about 10 percent of the Park's wildlands. Such a network would mimic the natural landscape following a wildfire of lesser intensity and will accelerate ultimate forest recovery. An added benefit will be the sequestration of carbon as the forest grows and spreads.

A State Parks employee sets fires during a prescribed burn.

In the fall of 2008 the project was presented by California State Parks at the Public Lands and Climate Change Symposium at the Center for Environmental Law and Policy at the University of California at Berkley. Interest in the program was expressed by potential donors and assistance in implementing the project was offered by CAL FIRE. In the spring of 2008, two plots totaling about 25 acres were planted as a pilot project on Cuyamaca Peak and Middle Peak in the Park. Clearing of the plots and planting was done by CAL FIRE inmate labor crews. About 9,000 Jeffrey pine seedlings were provided at no cost by CAL FIRE and the United States Forest Service. Environmental review of the project was conducted by State Parks staff; the planting was monitored by CAL FIRE foresters.

In 2009 the project was expanded to 256 acres. That year, 54 acres were cleared by CAL FIRE inmate labor, the remaining areas required no pre-treatment. However, it became apparent that at that scale it was not practical to have pre-planting preparation done by inmate labor. Surveys of the first year plantings showed that survival of the planted seedlings varied from a low of about 30 percent on Cuyamaca Peak to a high of 70 percent on Middle Peak.

CAL FIRE monitors a prescribed burn to clear the way for the replanting and eventual reforestation.

Fiscal Year 2009/2010:

During the 2009/2010 fiscal year, 331 acres were planted with nearly 78,000 seedlings. The species mix included Jeffrey pine, Coulter pine, incense cedar and sugar pine. At this scale it was no longer practical to have the pre-planting clearing done exclusively by CAL FIRE inmate labor. A 70-acre parcel on Middle Peak was cleared by mechanical mastication then prescribe-burned by State Park fire management crews assisted by CAL FIRE. The mastication contract was paid for by federal grants obtained by CAL FIRE. Other areas planted this year were treated by inmate crews (14 acres) or required no pre-treatment. Interplanting also was done in areas that had been previously planted but had experienced poor survival.

A worker collects sugar pine cones for seeds to use in replanting the forest.

In an effort to improve survival, a professional tree planting crew (California Reforest) was contracted. A problem the last two years has been the amount of time that seedlings have been in refrigeration before being planted. CAL FIRE inmate crews participate in many projects and frequently have other obligations that require their attention. It required more than a month for the inmate crews to plant 75,000 trees in 2009. The California Reforest crew, which works exclusively on a project until it is finished, was able to complete the 2010 planting in ten days. We anticipate that the reduced time in cold storage will result in improved seedling survival.

In 2009, an experiment was tried with a product called Dri-water which is water mixed with gelatin in a one-quart cardboard container. The container is installed into the soil near the roots of a planted seedling. The expectation is that within 30 to 90 days, soil micro organisms will digest the gelatin and release the water, improving soil moisture around the roots. This technique was tried on one planting on West Mesa. By the spring of 2010 there was no noticeable improvement in survival for the treated versus the untreated seedlings at that site. When we dug out the Dri-water containers, we found that most of them still contained a good portion the gelatin mix after 12 months in the soil. The Cedar Fire was so intense that litter and duff layers were completely volatilized over most of the park (Goforth and Minninch 2005). It is likely that populations of soil micro organisms were depleted by the fire and have been slow to recover, limiting the efficacy of Dri-water.

In addition to plot preparation and planting other project activities included planning, mapping (GIS), environmental review, monitoring, public outreach and project administration. Quarterly planning meetings are held between State Parks and CAL FIRE management personnel. The objective of these meetings is to select project areas, assign staff and resources to individual tasks and monitor project progress. Project areas are mapped using GPS and recorded in a GIS database so that maps can be produced for agency staff and contractors, and to facilitate accurate record keeping. Each project area is examined by State Parks archaeologists and environmental scientists prior to treatment to identify sensitive cultural or natural resources. When identified, these areas are excluded from the treatment area. When treatment is done by contractors, the work is monitored by CAL FIRE and State Parks staff to insure that the contract specifications are met and that any previously unknown sensitive resources are protected. Public outreach includes meeting with the media, recognition of donors and interpreting the project to volunteers and the general public. Project administration includes contracting and financial record keeping.

Project Recognition

During the spring of 2010 the Cuyamaca Rancho State Park Reforestation Project became the first project on public lands to be listed in the Climate Action Reserve. The project also received a CAL FIRE Director's award for partnership and the Ash Center for Democratic Governance and Innovation at the John F. Kennedy School of Government, Harvard University, named the project one of its inaugural "Bright Ideas," an award intended to highlight innovative government programs.

Press coverage of the project has included numerous print, television and radio pieces. Please see the appendix for several of these.

Having received the CAL FIRE Director's Award for their partnership work in the restoration of Cuyamaca Rancho State Park after the Cedar Fire, State Parks and CAL FIRE personnel stop for a photo. The group included Bill Snyder, CAL FIRE's Deputy Director; Gail Sevrens, State Parks Colorado Desert District Acting Superintendent; Doug Wickizer, CAL FIRE's Chief of Environmental Protection and Regulations; David Janssen, CAL FIRE's Forestry Assistant II; Howard Windsor, CAL FIRE's San Diego Unit Chief; Shannon Johnson, CAL FIRE's Forestry Assistant II; Peter Leuzinger, CAL FIRE's Forester; Del Walters, CAL FIRE's Director; Vince O'Neal, CAL FIRE's Battalion Chief; Nedra Martinez, State Parks Montane Sector Superintendent; Kathleen Edwards, CAL FIRE's Unit Forester; Tony Perez, State Parks Deputy Director, and Mike Wells, State Parks Environmental Scientist (retired annuitant).

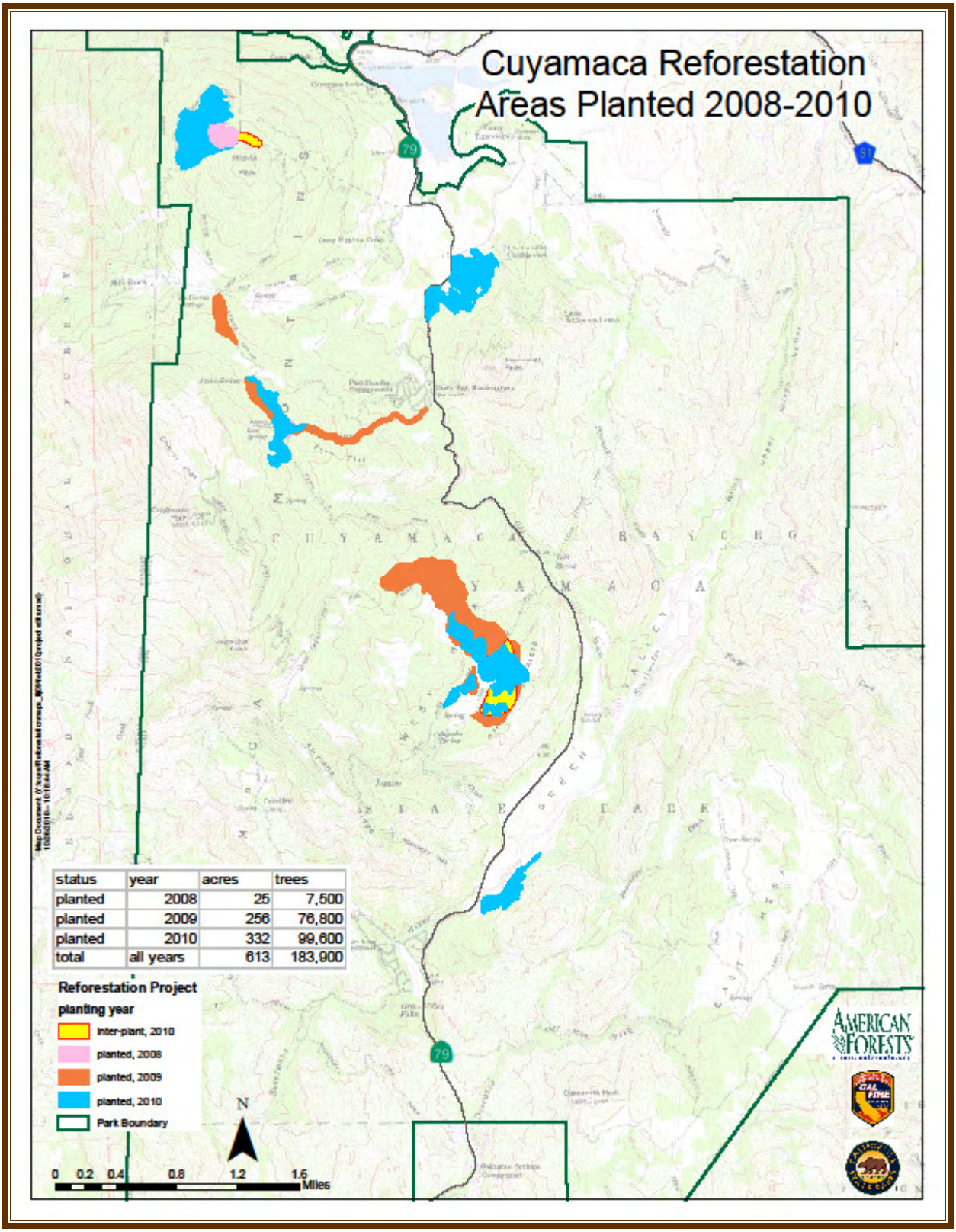
A CAL FIRE inmate collects Jeffrey pine cones near Paso Picacho Campground.

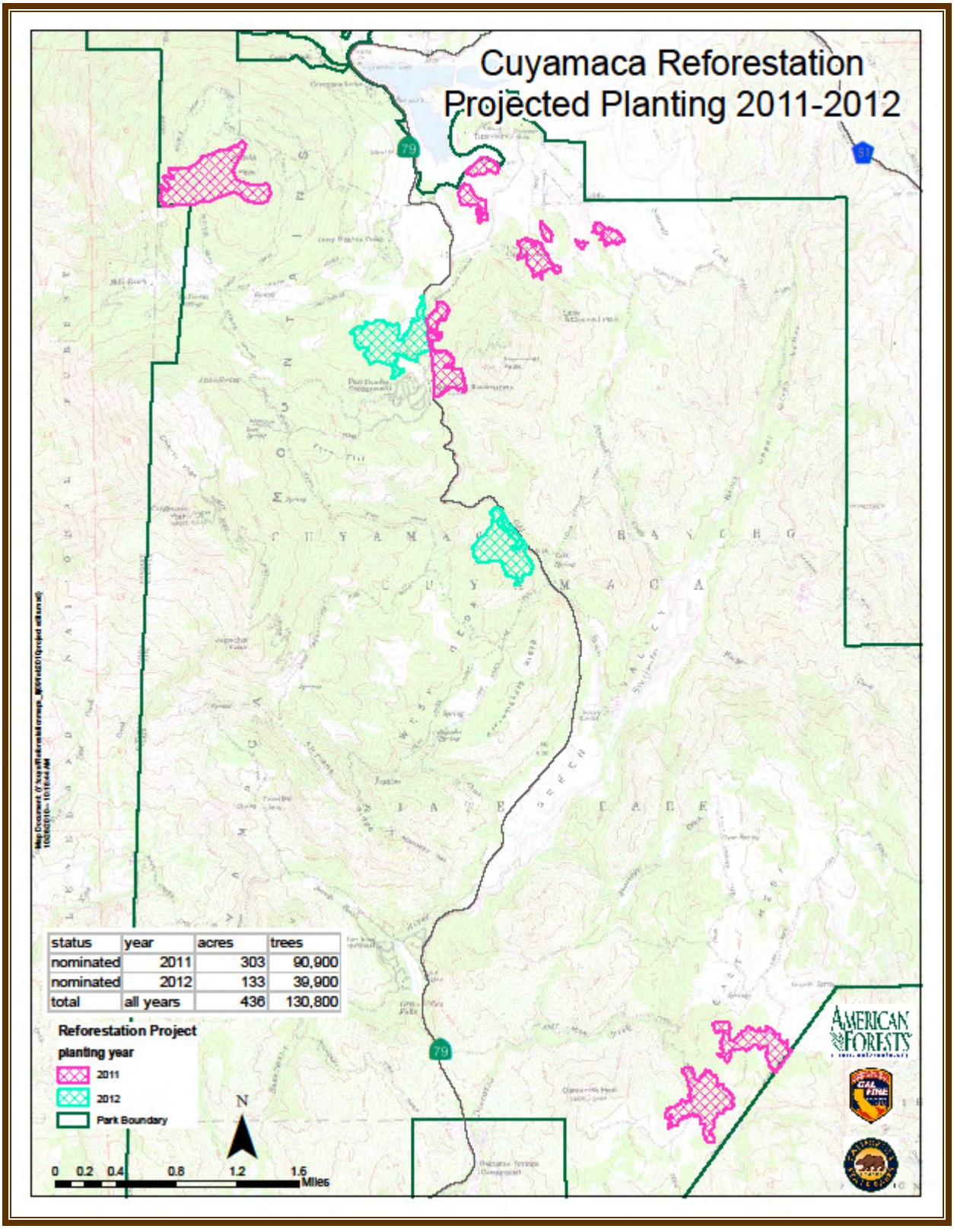
A CAL FIRE inmate collects Jeffrey pine cones near Paso Picacho Campground.

A volunteer plants seedlings during a service day organized by project sponsor Odwalla.

A member of the contractor's crew plants one of the few incense cedar seedlings that were used in the reforestation.

Maps: Project Planting Areas


Cuyamaca Reforestation
Areas Planted 2008-2010
status | year | acres | trees
planted | 2008 | 25 | 7,500
planted | 2009 | 256 | 76,800
planted | 2010 | 332 | 99,600
total | all years | 613 | 183,900
Reforestation Project
planting year
Inter-plant, 2010
planted, 2008
planted, 2009
planted, 2010
Park Boundary
N
0 0.2 0.4 0.8 1.2 1.6
Miles
AMERICAN FORESTS


Cuyamaca Reforestation
Projected Planting 2011-2012
status | year | acres | trees
nominated | 2011 | 303 | 90,900
nominated | 2012 | 133 | 39,900
total | all years | 436 | 130,800
Reforestation Project
planting year
2011
2012
Park Boundary
N
0 0.2 0.4 0.8 1.2 1.6
Miles
AMERICAN FORESTS

Appendices: Financial Reports, Workplan and Media

2009/2010 Reforestation Project at CRSP in 2009/2010 by Activity					
	Salaries	**Contracts**	**Outside Contracts**	**Equipment and Supplies**	**Total**
Mapping & Planning	$13,337.00				**$13,337.00**
Archeology	$5,127.00				**$5,127.00**
Forest Inventory & Survey Work	$696.00				**$696.00**
Site Preparation	$1,418.00				**$1,418.00**
Seedlings	$420.00	$21,446.73			**$21,866.73**
Planting and Interplanting	$691.00		$70,765.00		**$71,456.00**
Seedling Protection	$75.00	$4,970.00		$16,608.00	**$21,653.00**
Watering	$0.00				**$0.00**
CCAR Registration & Verification Fees	$0.00				**$0.00**
First two-year follow-up Vegetation Treatment	$0.00				**$0.00**
Project management & Public Outreach	$15,510.00				**$15,510.00**
	$37,274.00	**$26,416.73**	**$70,765.00**	**$16,608.00**	**$151,063.73**