

PRAIRIE CREEK WETLAND/RIPARIAN REHABILITATION

Redwood National Park

Introduction:

In November and December 1986, Redwood National Park implemented a wetland/riparian restoration project along lower Prairie Creek at the mouth of Skunk Cabbage Creek (Redwood National Park Watershed Rehabilitation Site 86-6). The purpose of the project was to mitigate for wetland and riparian habitat losses resulting from construction of the U.S. 101 Bypass project. The bypass resulted in the loss of 13.6 acres of riparian habitat and 0.7 acres of wetland vegetation. The mitigation project replaced 12.7 acres of the 14 acres total that were lost (0.7 acres of wetland and 12.0 acres of riparian habitat). The balance of the habitat losses (1.3 acres) was replaced by California Department of Transportation funding of a Redwood Community Action Agency streamside habitat restoration project on Prairie Creek immediately upstream of site 86-6 (see Final Environmental Impact Statement, U.S. 101 Bypass for additional background information).

\$16,000 in funding for the project was provided by the California Department of Transportation (Caltrans) through an agreement with the National Park Service (NPS No. MA 8480-5-0003; District Agreement No. 01A368). The 45.58 acre tract was purchased by Caltrans and donated to the National Park Service on July 15, 1986.

Accomplishments:

The mitigation project consisted of four steps: (1) disking the pasture with a farm tractor, (2) excavating a total of 0.7 acre in four separate areas to a depth of one to three feet utilizing a D-4 size Caterpillar tractor, (3) spreading alder seed and planting Sitka spruce seedlings, and (4) reconstructing the fence between park lands and adjacent private property.

Approximately 11 acres of sod were broken by the farm tractor pulling a disk, leaving about three-quarters of an acres unaffected. The disked areas were turned over at least twice by the operator to achieve a fairly uniform disturbance of the sod. The unplowed areas were intentionally left undisturbed to maintain open grassland areas for wildlife habitat.

Wetland habitat was created by excavating portions of the pasture one to three feet below existing grade. A mid-1950's vintage, D-4 size Caterpillar tractor was utilized for the excavation. It created the depressions by repeatedly pushing the soil out of the excavated areas. The excess material was mounded to create gentle topographic relief.

Two hundred, two year old, bare root Sitka spruce seedlings were planted in clumps, primarily on the higher areas created by the excavation of wetland areas. One pound of alder seed was spread evenly across the disturbed area.

Most of the fencing was accomplished by Redwoods United, Inc. workers under contract with the National Park Service. A four strand barbed wire fence was constructed across the north flank of the site. It was extended north along the existing park boundary to the Skunk Cabbage Hill road gate. The latter was intended to prevent trespass grazing onto the mitigation tract. In wetter areas, split redwood fence posts were used exclusively while in dryer portions, a combination of redwood and metal posts were used for the fence.

Analysis:

An evaluation of the project indicates that the goals were only partially met in the short term. Areas disked with the farm tractor rapidly returned to grass and weedy species. Excavated areas remained dry throughout the winter. Elk and cattle grazing and trampling removed many of the Sitka spruce seedlings and no alder seedlings were observed after the first year.

These problems resulted from a combination of factors, beginning with a lack of winter rain. The relatively dry winter (about 70% of normal) prevented excavated areas from filling with water and upland pasture areas stayed relatively dry throughout the winter.

Second, the soils were better drained than expected and did not retain any water. The relatively gentle terrain meant that a few inches difference in topography separated areas of standing water from dryer zones.

Third, pasture areas were probably inadequately disked and competition by grass was not inhibited.

Fourth, trespass grazing of cattle around and through the new boundary fence resulted in the trampling of seedlings during the early winter months. Elk grazing took its toll later in the year as they moved into the site following the cessation of cattle grazing.

In retrospect, use of larger equipment may have allowed the wetland areas to be created by working out from existing wet terrain. The relatively small crawler tractor may not have been suitable for the work. During rehabilitation planning, it was contemplated that a larger crawler tractor would be used, however lack of access to the site dictated use of a small crawler tractor. A steep, narrow path led from U.S. Highway 101 to the site and equipment had to negotiate a sharp turn along the path. No shoulder existed along U.S. 101 at the area and equipment could not be unloaded on the highway itself. All equipment had to be hauled in and out on a small trailer pulled by pick-up trucks.

Ripping or plowing the pasture may have been more effective than disking in inhibiting grass. Completion of a detailed topographic map of the site and excavation of soil test pits may have allowed better placement of the wetland areas. Completion and securing of the boundary fence prior to planting would have reduced some of the seedling trampling.

Additional Work:

To complete the mitigation work, additional planting occurred during the 1988 winter. 200 additional Sitka spruce seedlings (with vexar tubes to lessen elk grazing), one pound of alder seed, and 1000 willow stem cuttings were planted or spread at the site.

Conclusions:

Despite the apparent lack of immediate success, the lower reaches of Skunk Cabbage Creek are heavily utilized by Roosevelt elk. Removal of cattle has opened up the entire 45 acre tract for native wildlife use. In addition, the project has protected existing Redwood National Park property and resources along Skunk Cabbage Creek from trespass grazing. As a result, even more habitat is available for use by native wildlife.

Costs:

Total cost for the project was \$11,158. This cost breaks down as follows:

Disking and Excavating:

Heavy Equipment:

D-4 Cat 31 hours @ \$49/hour	=	\$1519
Tractor 13 hours @ \$45/hour	=	585

Heavy Equipment Supervision:

Physical Science Technician	=	689
Supervisory Geologist	=	251

Total:	=	<u> </u>	\$3044
--------	---	-------------------	--------

Replanting:

Materials (alder seed and spruce):	=	\$ 130
------------------------------------	---	--------

Labor:

Biological Technician	=	\$ 820
Supervisory Botanist	=	<u>\$ 354</u>

Total:	=	<u> </u>	\$1304
--------	---	-------------------	--------

Fencing:

Materials (fence posts and wire):	=	\$ 550
-----------------------------------	---	--------

Labor:

Redwoods United Inc. (625 hrs)	=	4176
Park Supervision (152 hrs)	=	1928

Vehicle (mileage):	=	<u>56</u>
--------------------	---	-----------

Total:	=	<u> </u>	\$6710
--------	---	-------------------	--------

Documentation:

Air and ground photos:	=	<u>\$ 100</u>
------------------------	---	---------------

Total Cost:	=	<u> </u>	<u>\$11,158</u>
-------------	---	-------------------	-----------------