

# Little River State Beach Nearshore Dunes Restoration Project

## Annual Report



**North Coast Redwoods District**

**February 2010**

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## INTRODUCTION

Since the 1930's European beachgrass (*Ammophila arenaria*) has steadily displaced the native plant communities at Little River State Beach (LRSB), contributing to the loss and degradation of the nearshore dunes found in this area. These impacts were exacerbated in the 1960's by the construction of the current Highway 101 alignment that led to a complete loss in upland dune communities. Currently the entire Park is being heavily impacted by European beachgrass, and yellow bush lupine (*Lupinus arboreus*), both non-native invasive plant species.

The Park provides habitat for the western snowy plover (*Charadrius alexandrinus nivosus*), pink sand verbena (*Abronia umbellata* spp. *breviflora*) and historically for beach layia (*Layia carnosa*). These species often occur in sand verbena-beach bursage and native dunegrass floristic series, vegetation types considered rare and worthy of special consideration by the California Department of Fish and Game (CDFG 2004). The expansion of the non-native plant species into dune habitat at LRSB has degraded or eliminated suitable habitat for the western snowy plover at this site.

In 1999, the dredge *M/V Stuyvesant* (the "*Stuyvesant*") spilled at least 2,100 gallons of Intermediate Fuel Oil 180 into the Pacific Ocean near the mouth of Humboldt Bay, California (Hampton et al. 2007). The expanse of the spilled oil reached from the mouth of the Eel River to Patrick's Point State Park. Both state and federal law require that liability be established for natural resource damages caused by the oil spill and require the responsible parties to make the environment whole for the damage and loss of natural resources resulting from the oil spill into navigable and/or marine waters (Hampton et al. 2007). To fulfill this mandate the Stuyvesant Trustee Council was established. The Stuyvesant Trustee Council was designated and authorized to act on behalf of the public to assess and recover natural resource damages and to plan and implement actions to restore, replace, or acquire the equivalent of the affected natural resources injured as a result of the oil spill (Hampton et al. 2007). The Stuyvesant/Humboldt Coast Oil Spill Final Damage Assessment and Restoration Plan Environmental Assessment (DARP) was prepared for this oil spill and describes the injuries resulting from the spill and proposes restoration alternatives (Hampton et al. 2007). As part of this process the Stuyvesant Trustee Council identified and evaluated restoration alternatives and provided the public with an opportunity to review and comment on the proposed restoration alternatives (Hampton et al. 2007).

The Park was impacted by the Stuyvesant Oil Spill in 1999 and was subsequently identified as a preferred location to restore and rehabilitate some of the affected resources injured as a result of the spill. Many species of birds were affected by the spill, including the western snowy plover. This Park is part of one of the few remaining active breeding sites for snowy plovers in Humboldt County. The purpose of this project, as outlined in the DARP, is "to make the environment and the public whole for injuries resulting from the Spill by implementing restoration actions that return injured natural resources and services to baseline conditions and compensate for interim losses" (Hampton et al. 2007).

## **PROJECT LOCATION**

Located near McKinleyville, California, LRSB spans from the Pacific Ocean to Highway 101 and is comprised of beach, dunes, and wetlands (Figure 1.0). The Little River, for which the Park is named, flows through the northern portion of the Park. The project area consists of 40 acres of nearshore dune habitat (Figure 1.0)

## **PROPOSED PROJECT**

This project has two primary goals which are 1) to restore the ecological function and the native flora and fauna found within approximately 40 acres of nearshore dunes at LRSB and 2) to enhance breeding and sheltering habitat for the western snowy plover. In addition the Stuyvesant DARP has two primary goals relating to this project. These goals are 1) to restore at least 7.1 acres of snowy plover nesting habitat and 2) to improve nesting fledging success and add 10 more plovers to the population. Four objectives have been developed to help achieve these goals. These objectives are 1) initially treat 30 acres of nearshore dunes through the removal of non-native plant species using heavy equipment removal techniques, 2) retreat approximately 40 acres of nearshore dunes (10 acres of which was previously treated under another project), 3) restore approximately 20 acres of treated dunes by revegetating with native plant species, and 4) assess pre- and post- treatment the flora, fauna, and dune morphology found within the project area.

## **PROJECT ACCOMPLISHMENTS**

Implementation of some of the aspects of the project have occurred over the last year. The majority of the work completed has focused on the initial treatment of the project area and monitoring.

### *INITIAL TREATMENT OF NEARSHORE DUNES*

Both heavy equipment and hand removal techniques were used to initially treat approximately 34 acres of European beachgrass infested nearshore dunes between October 26 and November 13, 2009. A dozer and excavator were used to treat 28 acres and bury the removed vegetation (Figure 2.0). California Conservation Corp (CCC) and CALFIRE inmate crews were used to hand treat 6 acres that were within the heavy equipment exclusion zone that had been placed around all sensitive natural resources (Figure 2.0). The westward side of the project area was reshaped to resemble a natural foredune and no sand was added or removed from the project area.

### *RE-TREATMENT OF NEARSHORE DUNES*

Retreatment of the project area will occur 3, 11, and 14 months after the initial treatment. Since the initial treatment was completed in November 2009 retreatment efforts are scheduled for February 2010 and October 2010 and January 2011. With only a few weeks to the beginning of the snowy plover breeding season, re-treatment efforts are underway throughout the project area.

### *REVEGETATION OF NEARSHORE DUNES*

Native dune mat vegetation has been slowly establishing itself on approximately 9 acres of nearshore dunes that were treated under the original pilot project. These vegetated areas will help in the process of re-establishing the native plants to the newly treated area. Due to project delays revegetation using seed and transplant did not occur this winter. Seed and plant collection will occur through out the next two growing season and used in the fall and winter of each year to begin revegetation efforts.

### *PROJECT MONITORING AND REPORTING*

The project includes the monitoring of restoration results and for compliance during the initial treatment activities. The monitoring focuses on vegetation, sensitive natural resources, and dune morphology.

#### ***Vegetation***

Vegetation monitoring consists of both rare plant surveys and vegetation sampling. A complete rare plant survey was conducted prior to the initial treatment to document any special status species that may have occurred within the restoration area. Vegetation sampling was also conducted pre initial treatment efforts and post treatment sampling will be conducted in the spring and summer of 2010 and 2011 to determine restoration success.

#### ***Western Snowy Plover***

A permitted snowy plover biologist was on site to monitor all project operations that occurred on the waveslope and in the nearshore dunes. No snowy plovers were observed within 100 m (330 ft) of the operational project area and no work stoppages were necessary. Snowy plovers were observed near the project and fresh tracks were present some mornings in the newly treated areas of the project site.

To determine if the proposed restoration provides suitable habitat for breeding snowy plovers, a permitted snowy plover biologist will be monitoring breeding success (nesting and fledging success) within the project area. As this report is being prepared prior to the first snowy plover breeding season since restoration began no results are reported here.

#### ***Dune Morphology***

Before the initial large scale treatments commenced a pre-treatment topographic survey of the entire State Park property, using RTK (real time kinematics) GPS was performed. These surveys will be conducted pre, post, and one year after treatment occurs. The post treatment monitoring should occur soon with additional monitoring occurring in November 2010 and 2011.

#### ***Project Reporting***

Project reporting is important for the overall success of the project and to help direct adaptive management. This report acts as the first of three annual project reports to be prepared for this project.

## PROEJCT TIMELINE

The proposed project time line was based on general estimates of when funds would be made available and staff work loads. Unforeseen delays occurred during completion of the LRSB Restoration and Enhancement Plan and associated environmental documents and permits. Due to this delay the proposed timeline was pushed back delaying the project by one year. Implementation of the project began in mid 2009. Table 1.0 summarizes the proposed tasks and the originally proposed timeline. Due to the project delays a revised timeline has been created and is shown in Table 2.0.

Table 1.0. Original proposed project timeline for the LRSB Nearshore Dunes Restoration Project.

TASKS	Fall 2008	WINTER 2008	SPRING 2009	SUMMER 2009	FALL 2009	WINTER 2009	SPRING 2009
Project Management	X	X	X	X	X	X	X
Initial Treatment of Nearshore Dunes	X	X					
Retreatment of Nearshore Dunes			X		X		X
Revegetation of Nearshore Dunes		X	X			X	
Compliance Monitoring	X	X			X	X	
Monitoring of Project Success/Results	X	X	X	X	X	X	X
Project Reporting			X				X

Table 2.0. Project timeline for the completion of the LRSB Nearshore Dunes Restoration Project.

TASKS	SPRING 2010	SUMMER 2010	FALL 2010	WINTER 2010	SPRING 2011	Summer 2009	FALL 2009
Project Management	X	X	X	X	X	X	X
Retreatment of Nearshore Dunes			X	X			X
Revegetation of Nearshore Dunes			X	X			X
Monitoring of Project Success/Results	X	X			X	X	
Project Reporting	X			X			X

## PROJECT EXPENDITURES

The proposed budget of \$132,000.00 was based on preliminary estimates and was to be spent over a four year period (2009-2011). Actual costs may have varied due to unforeseen costs associated with the actual implementation of the project. The project expenditures through 2009 have been summarized below in Table 4.0

Table 4.0. Project tasks and associated expenditures through 2009 for the LRSB Nearshore Dunes Restoration Project.

Tasks	Estimated Cost
Project Management	\$1,976.88
Initial Treatment of Nearshore Dunes (30 acres)	\$56,657.84
Retreatment of Nearshore Dunes (40 acres)	\$0.00
Revegetation of Nearshore Dunes (20 acres)	\$0.00
Monitoring of Natural Resources	\$21,341.56
Administration Cost (10%)	\$13,200.00
Total Cost	\$93,176.28

**LITERATURE CITED**

California Department of Fish and Game. 2004. Natural Diversity Data Base. Sacramento California.

Forys, Michelle, Don Beers, and Patrick Vaughan. 2008. Little River State Beach Restoration and Enhancement Plan – Draft. California Department of Parks and Recreation, North Coast Redwoods District, Eureka, California.

Hampton, Steve, Matt Zafonte, Julie Yamamoto, Katherine Verrue-Slater, Daniel Welsh, Charlene Hall, Janet Whitlock, Charles McKinley (Stuyvesant Trustee Council). 2007. Stuyvesant/Humboldt Coast Oil Spill Final Damage Assessment and Restoration Plan/Environmental Assessment. California Department of Fish and Game, California State Lands Commission, United States Fish and Wildlife Service.



Figure 1.0. Project area map.



Figure 2.0 Treatment map.