



Point Reyes National Seashore Coastal Dune Habitat Restoration Project

Recent Events and Updates

Dune Restoration in the Seashore

Dunes are dynamic interfaces between the land and the sea. From afar, they appear somewhat barren landscapes of seemingly endless undulating mounds of sand, but, in reality, they teem with life. The ecologically precarious **western snowy plovers** (*Charadrius alexandrinus* var. *nivosus*), listed as federally threatened species, nest at the oceanward edge of dunes, moving further inland at times for foraging. Federally threatened **California red-legged frogs** (*Rana aurora draytonii*) breed in the swale wetlands that form within interdune depressions in this otherwise seemingly arid landscape. Rare butterflies such as **myrtle's silverspot** (*Speyeria zerene myrtleae*) forage on delicate violets and other vegetation within their midst. All in all, this unique habitat supports 11 federally listed plant and animal species.



Aerial view of Abbotts Lagoon

NPS Photo

Unfortunately, as with many other unique habitats in California and the coast of the U.S., dunes have been tremendously impacted. Homes and businesses have been built to the edge of the sea. Where dunes remain, they have often been artificially stabilized by vegetation and fencing to prevent migration and impact to adjacent homes, businesses, farms, and ranches. Many of the plants brought in to stabilize dunes come from elsewhere and, once introduced, these **non-native species** spread rapidly, slowly encroaching into and eventually ousting the native plant species adapted to this environment—many of which have subsequently become threatened and endangered. Some of the most common species planted to stabilize dunes are European beach grass (*Ammophila arenaria*), and iceplant (*Carpobrotus* spp).

Top of Page

Not only do these non-native species displace rare and common native plant species, but, because most of these species form dense colonies, they actually retard the natural process of dune movement or migration. In natural communities, dunes continually move in response to wind pressure and wave action, typically forming morphologically and floristically distinct smaller foredune and slightly larger backdune communities. These dune systems are often characterized by relatively flat corridors between dunes that allow for movement of many animal species, including snowy plovers, and "slacks" or depressional basins where groundwater and precipitation form an aquatic oasis. Non-native species and their deep root and rhizome systems act to armor dune systems and prevent natural migration, which leads to overly large foredunes and backdunes, an impoverished native vegetation community, and a substantial decrease in value of this system to wildlife.

Some of the largest remnant dune systems in California can be found in Point Reyes National Seashore. There are approximately 16 miles of dunes along the Point Reyes Peninsula, Drakes, and Limantour coastlines. In addition, the Seashore has one of the largest remaining breeding populations for the plover, which, based on statewide numbers, is in imminent danger of extinction. However, the Seashore's dunes are threatened by continued encroachment of European beachgrass and iceplant, which were planted decades ago to stabilize these systems.

[Top of Page](#)



Dune Habitat at Abbotts Lagoon showing native vegetation in the foreground and dunes dominated by non-native European beachgrass in the background.

For this reason, the Seashore is embarking on an active program of restoration for its dune systems. Since 2002, it has been conducting a number of small-scale removal projects near Abbotts Lagoon that have been focused on mechanical removal with limited spot spraying of resprouts. Initial results have been encouraging. While dunegrass has resprouted, its density has been reduced, and the cover of native plant species, including some federally threatened and endangered species such as Tidestrom's lupine (*Lupinus tidestromii*), has more than dramatically increased (Peterson 2005). In addition, these efforts have seemingly encouraged some restoration of more natural contours through redistribution of sand in the formerly *Ammophila*-armored dunes.

Based on these promising results, the Seashore is embarking on a more ambitious program of removal just south of Abbotts Lagoon to remove more than 130 acres of European beachgrass from a 300-acre Project Area. This project, which is still in the planning stages, would possibly start in 2010. The Seashore is currently releasing the draft Environmental Assessment for public review (see below). In future years, the Seashore hopes to expand its restoration program southward along the Great Beach and on the dunes that border Drake's and Limantour Esteros.

[Top of Page](#)



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Coastal dunes west of Abbotts Lagoon. Note the dunes covered by European beachgrass. Detail of photo taken in November 2002 by the California Coastal Records Project.

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Coastal dunes west of Abbotts Lagoon after removal of European beachgrass. Detail of photo taken in November 2005 by the California Coastal Records Project.

[Top of Page](#)

Recent Events and Updates

- **Dune Restoration Pilot Project:** Starting Monday, December 7, the Seashore is conducting a small pilot dune restoration project approximately 1 mile south of Abbott's Lagoon. The pilot project would involve mechanical removal of European beachgrass (*Ammophila arenaria*) through excavation and burial and placement of a clean sand cap that is not contaminated with the highly viable rhizome fragments. The project will essentially represent a pilot or initial phase designed to refine construction approaches and cost estimates for the larger project currently in development. It is anticipated to last approximately one week. This should not impact visitor use of beach areas, however, visitors may experience more noise associated with operation of construction equipment. **More detail provided below.**
- **Planning Phase:** Since release of the EA and FONSI, the Seashore has been working with the Denver Service Center of the Park Service and consultants to develop Restoration Plans and Implementation Plans that will be used to guide implementation of the larger dune restoration project, which is planned to start construction in summer 2010.
- **FONSI:** The Finding of No Significant Impact that signals completion of compliance requirements under the National Environmental Policy Act was signed in June 2009. **More detail provided below.**
- **EA:** The draft Environmental Assessment was released in winter 2009 for a 45-day public comment period, which closed March 20, 2009. **More detail provided below.**

[Top of Page](#)

Abbotts Lagoon Pilot Dune Restoration Project

Starting Monday, December 7, 2009, the Seashore is conducting a small pilot dune restoration project approximately 1 mile south of Abbott's Lagoon. The project is anticipated to take approximately one week. This should not impact visitor use of beach areas, however, visitors should anticipate some noise, however, from operation of construction equipment.

The pilot project will involve mechanical removal of European beachgrass (*Ammophila arenaria*) through excavation and burial and placement of a clean sand cap that is not contaminated with the highly viable rhizome fragments. The project will essentially represent a pilot or initial phase designed to refine construction approaches and cost estimates for the larger project currently in development.

In past projects, mechanical removal of European beachgrass has typically focused on "horizon flipping" or excavation of the aboveground biomass and 3- to 6-feet of sands contaminated with rhizomes, with biomass and "dirty" sands being buried underneath a cap of clean sand varying anywhere from 3- to 6 feet deep depending on the potential mobility of the particular dune zone. However, mechanical excavation of anywhere from 100 to 120 acres is extremely costly. The Seashore has been working with its planning consultants to strategize on ways to improve and refine the mechanical excavation approach to decrease costs.

Under the pilot project, potentially two or more mechanical approaches would be used—the horizon flipping method described above and a "bulldozer push" method. Under the latter method, contractors would use bulldozers to push the aboveground biomass and the top 3 feet of rhizome-contaminated "dirty" sands into existing, non-wetland swales in the backdunes (or dunes at the rear of the dune system). Biomass and "dirty" sands would be pushed into these topographic low points, and then "clean" sands below the excavated 3-foot "dirty" sand layer would be bulldozed over the top of the European beachgrass and iceplant materials to create a minimum 3-foot "clean" sand cap. The resulting excavation will reduce the exaggerated heights of the European beachgrass-stabilized backdune system, while maintaining the natural topographic low points between foredunes and backdunes, in dune swale wetland areas, and in blow-out or sparsely vegetated dune "valleys" oriented approximately perpendicular to the shoreline.

The Seashore has completed the necessary compliance needed to move forward with the pilot project. A Finding of No Significant Impact was signed in June 2009, which concluded National Environmental Policy Act compliance for this and the larger project (see below). The U.S. Army Corps of Engineers has verified that there are no potential jurisdictional Section 404 wetlands present in the Project Area, and, therefore, there are no areas subject to Section 401 jurisdiction by the Regional Water Quality Control Board, either. The Seashore received a concurrence letter from the California Coastal Commission that the project would not affect the coastal zone and, therefore, does not require a consistency determination. The proposed project is also compatible with the requirements of the Seashore's approved Biological Opinion for Section 7 of the Endangered Species Act for the overall project, which was received from U.S. Fish and Wildlife Service in spring 2009.

[Top of Page](#)

FONSI

After reviewing comments on the EA, the Seashore selected Alternative C, the preferred alternative, as the alternative to be implemented. For a more complete description of the alternatives, including Alternative C, please see the EA section below. In selecting the action to be implemented, comments by the public and other organizations and agencies were considered. While few letters were received, those submitted advocated implementation of the preferred alternative. None of the public comment letters required any modification to the alternatives, including the Preferred Alternative, so the Selected Alternative is the same as the Preferred Alternative in the EA.

The Finding of No Significant Impact, which indicates completion of all compliance requirements under the National Environmental Policy Act, was signed by the Park Service in June 2009. Feel free to download a copy of the signed [FONSI](#) (1,289 KB PDF) and the separate [Errata](#) section (1,802 KB PDF) that contains minor changes made to the draft document as a result of public and internal comment.

[Top of Page](#)

EA for Abbotts Lagoon Dune Restoration Project

In winter 2009, the Seashore released the **Abbotts Lagoon Area, Dune Restoration Plan and Environment Assessment (EA)** (4,607 KB PDF), which focuses on improving and restoring coastal dune habitat directly south of Abbotts Lagoon, for public review.

Part of project planning is the examination of environmental impacts through the National Environmental Policy Act (NEPA) process. Because no significant impacts are expected to occur, the Seashore has prepared an environmental assessment, rather than an environmental impact statement.

In the National Park Service, the public is asked to comment on the EA or any other aspect of the proposal in an early 45-day comment period. The 45-day public comment period ended on March 20, 2009. In addition to releasing the EA, the Seashore also held a public information meeting on Wednesday, March 11, at 6:00 p.m. in the Red Barn.

Top of Page

Options for treating different subsets of the 300-acre project area now slated for *Ammophila* removal were initially developed after public scoping and refined using value analysis. Alternatives presented in the project EA evaluate different approaches to achieving restoration within the 300-acre project area. Alternative C would achieve restoration objectives using mechanical excavation treatments with potential re-treatment of resprouts with minimal use of herbicides through spot spraying of herbicides, and Alternative B that would treat all 300 acres using a combination of treatment methods including fire and herbicides in addition to mechanical excavation. Alternative A is the No Action Alternative and would continue the present program of small-scale eradication projects.

The preferred alternative is Alternative C, which emphasizes Mechanical Control Methods. The preferred alternative was selected after initial assessment and comparison of the potential impacts associated with four alternatives. Both Alternatives B and C would equally improve the condition of resources in the long term, but Alternative C would have fewer adverse impacts and therefore result in less loss of resource during implementation. Cost was considered as well, but was secondary to the alternative's ability to meet the primary objective of resource protection.

Previous work on experimental plots in the Seashore and elsewhere have indicated that the most effective treatment to restore dunes where these invasive species exist is to remove all biomass and bury it deep under a cap of clean sand. This requires the use of heavy motorized equipment. Small scale hand removal to protect resources (where *Ammophila* is interspersed with wetland or rare vegetation for example) and the minimal use of herbicides to minimize resprouts would also occur. (Herbicide is being included as a potential retreatment option, because other projects have demonstrated that *Ammophila* removal is not as effective without some use of herbicide.) Small experimental burns are also possible.

Top of Page

Any restoration work would be accomplished within the constraints imposed by laws, policies and sound management practices including environmental protection measures. For example, no heavy equipment would be used within 500 feet of where snowy plovers are nesting, and surveys and flagging would prevent impacts from excavators to sensitive plant and animal species. In addition, a minimal amount of herbicides would be used only in selected areas with protective buffers established adjacent to wetlands, rare plants, nesting areas, and adjacent land uses and would involve only a very controlled application of herbicide directly to resprouts.

Consultation on potential impacts on to listed special status species has been conducted with the US Fish and Wildlife Service, with the Biological Opinion finalized in spring 2009. In addition, because the project area is located within the coastal zone, and will result in modification to wetland resources, the project will also require review of by, and permits from the San Francisco Bay Regional Water Quality Control Board, US

Army Corps of Engineers, and federal consistency review by the California Coastal Commission.

Abbotts Lagoon Area Dune Restoration Plan Finding of No Significant Impact – June 25, 2009
(1,289 KB PDF)

Abbotts Lagoon Area Dune Restoration Plan Environmental Assessment – January 2009 (4,607 KB PDF)

Abbotts Lagoon Area Dune Restoration Plan Environmental Assessment: Errata – June 25, 2009
(1,802 KB PDF)

Letter to Interested Parties - February 9, 2009 (43 KB PDF)

Restore Critical Dune Habitat Flyer - October 14, 2005 (220 KB PDF)

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Top of Page



Did You Know?

Marine biologists have identified nearly a third of all known marine mammal species in the waters surrounding Point Reyes. Blue whales and humpback whales feed here during spring and summer months. Gray whales migrate past our shores twice a year on their round trip from Alaska to Baja.

[more...](#)

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