

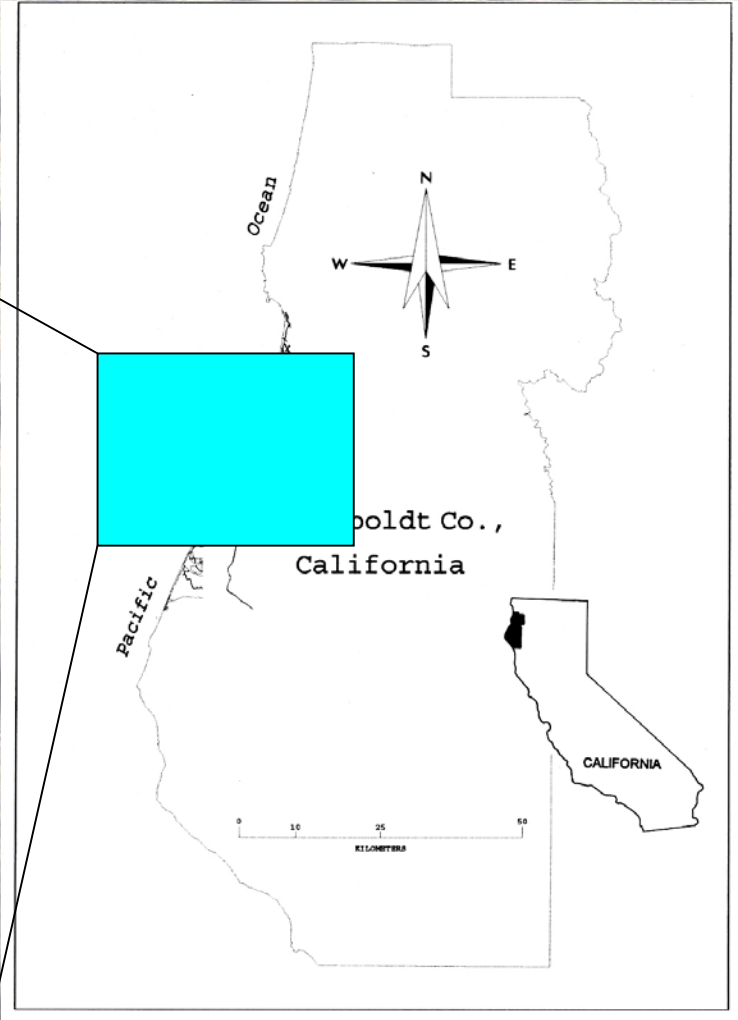
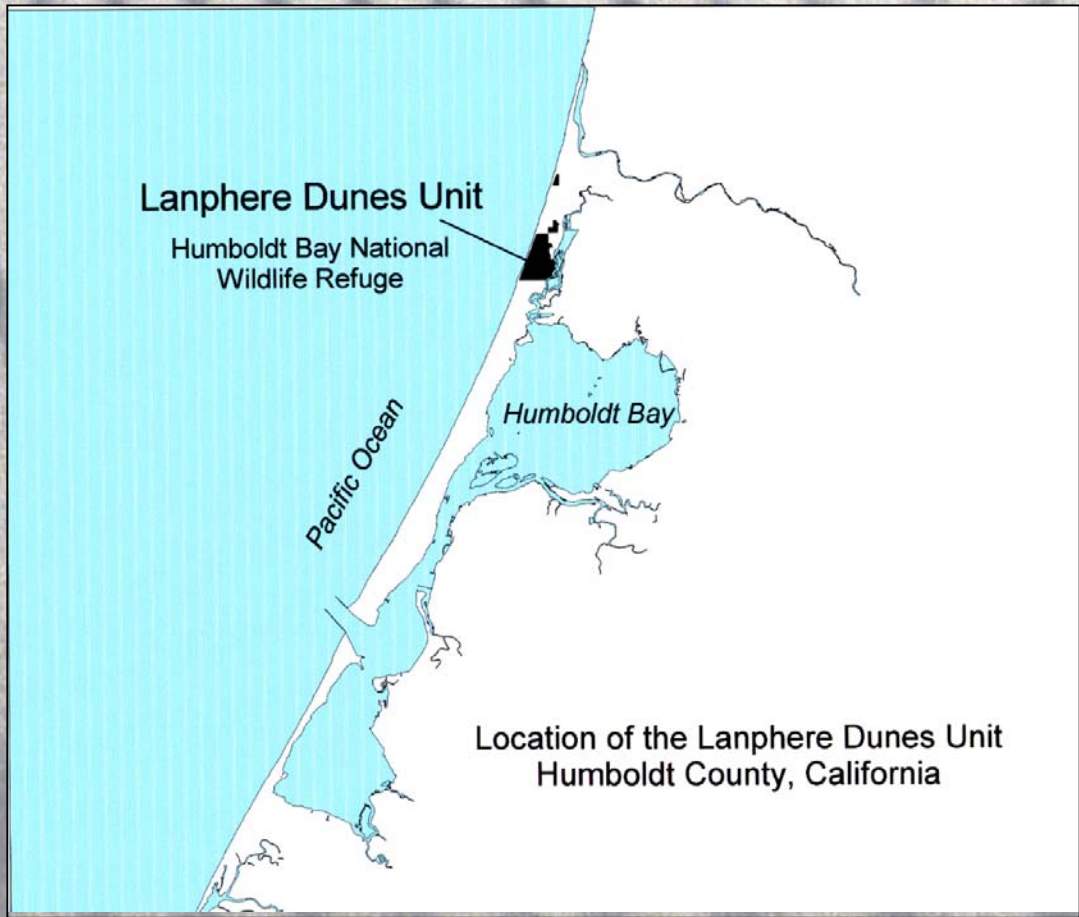


# A Decade of Dune Restoration at the Lanphere Dunes

Andrea Pickart

Humboldt Bay National Wildlife Refuge













































































































**MONITORING PLAN**  
for  
**Northern Foredune Grassland and Northern Foredune**  
at the  
**Lanphere-Christensen Dunes Preserve**

**ELEMENTS:** Northern foredune (NFD) and Northern foredune grassland (NFDG)

**COMMON NAME:** Dune mat

**SITE NAME:** Lanphere-Christensen Dunes Preserve

**EPCODE:** NCJ121A.01    **SITECODE:** USCASSLANP01

**RANK G1S1** (NFDG)

**EO RANK** A1.1 (NFDG)

**DATA STORAGE:** Preserve files and computer

**PREPARED BY:** Andrea Pickart    April 27, 1989



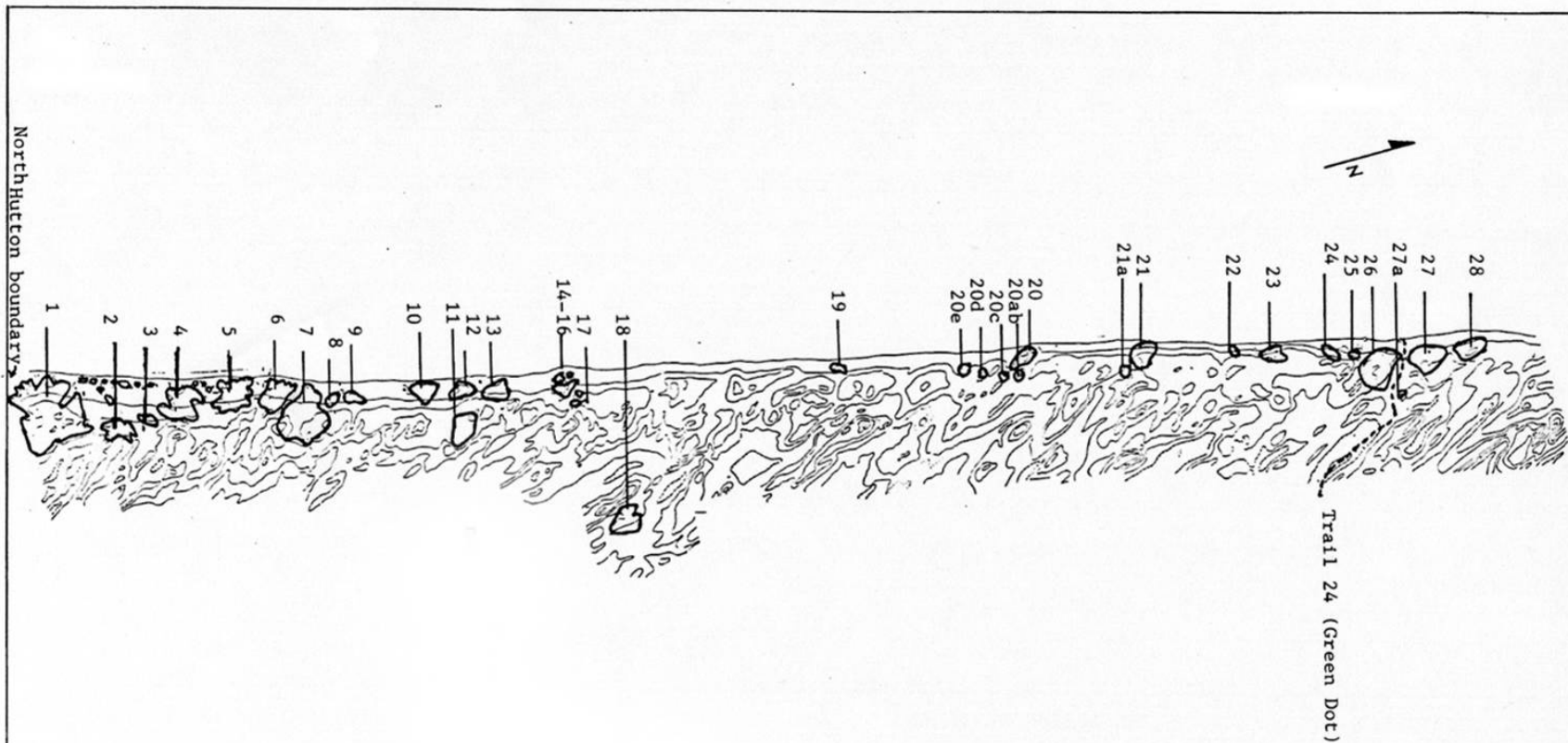
**IS THERE SUFFICIENT BASE-LINE INFORMATION TO SET  
ECOLOGICAL MANAGEMENT GOALS? Yes**

**A. LIST ECOLOGICAL MANAGEMENT GOALS:**



**2. Continue eradication program for Lupinus arboreus. expand buffer area on private lands to north.**





Northern beachgrass stands 1985







**LANPHERE-CHRISTENSEN UNIT RESTORATION PLAN**

North Coast Coordinated Management Area

Prepared by:  
Linda Miller  
Restoration Manager  
The Nature Conservancy

AUGUST 1994



**NORTH COAST COORDINATED MANAGEMENT AREA  
MANILA UNIT RESTORATION PLAN**

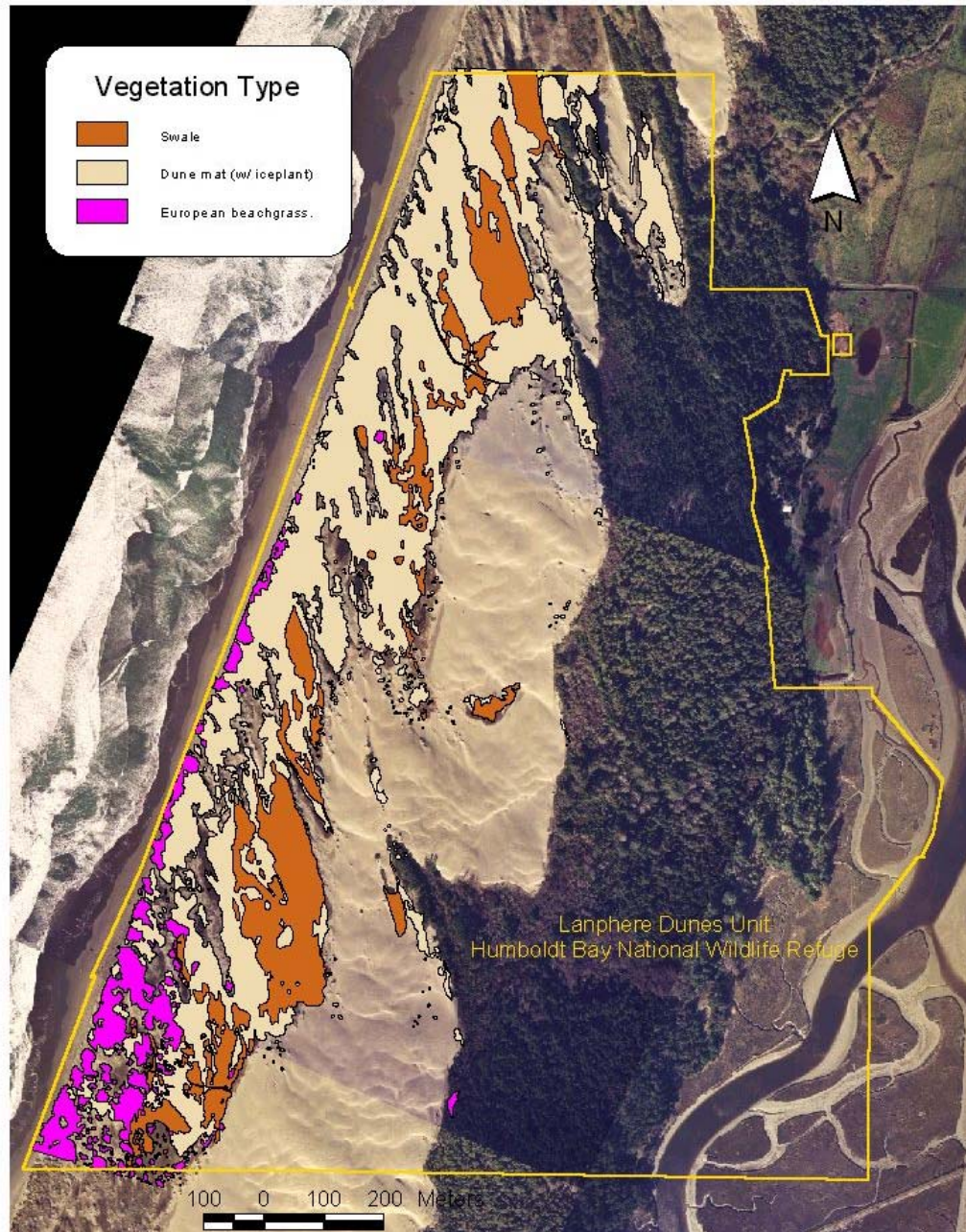


Prepared by:  
Andrea Pickart  
The Nature Conservancy

JUNE 1992




# Vegetation of Near-shore Dunes 1992







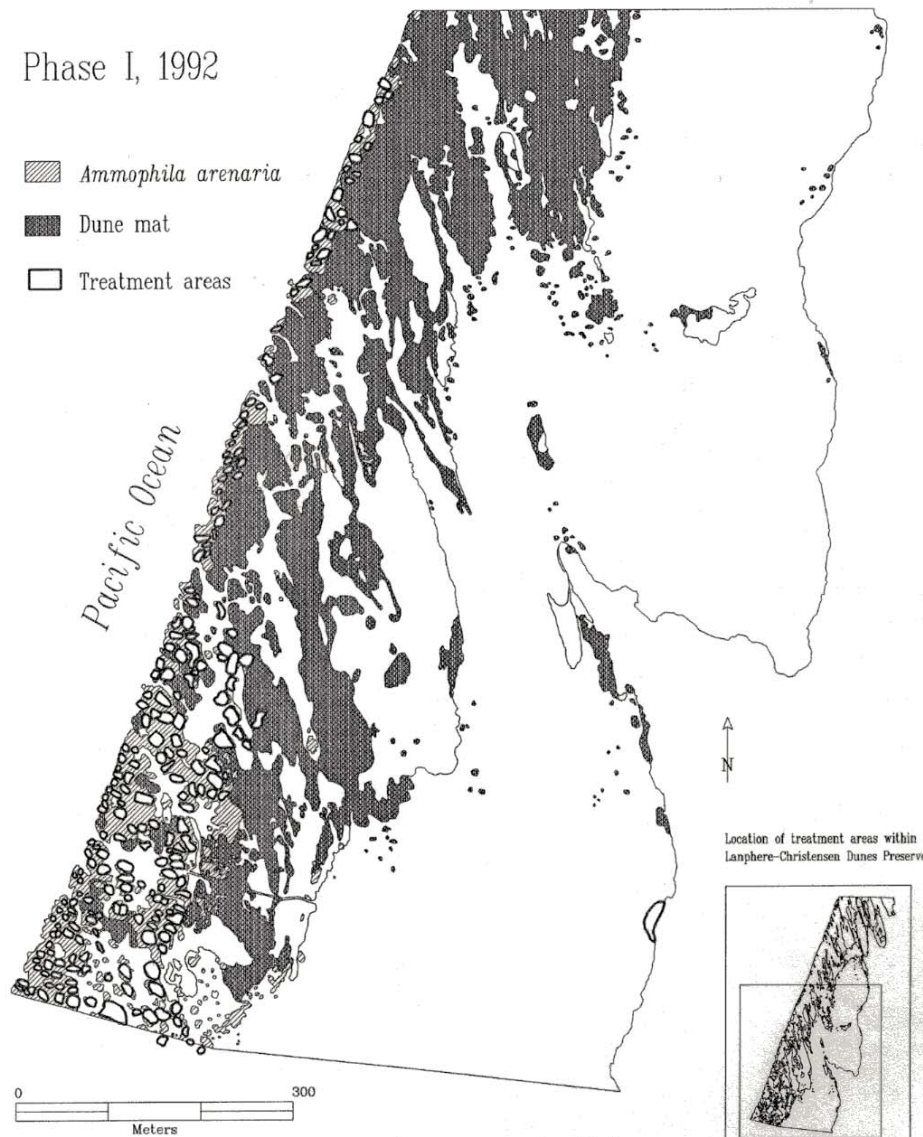
# Lanphere-Christensen Dunes Preserve Restoration *Ammophila* Treatment Areas

Phase I, 1992

 *Ammophila arenaria*

 Dune mat

 Treatment areas



















1992 (before)



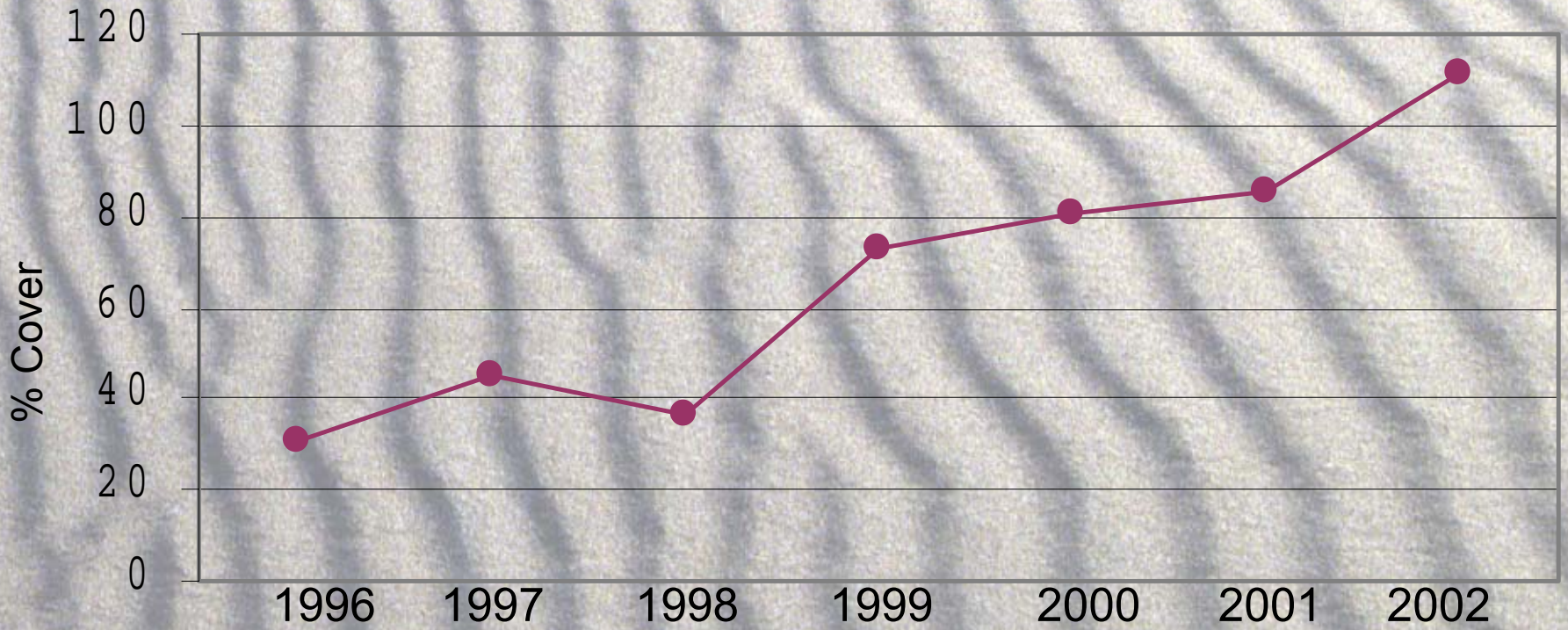
1994 (Phase 1)







# Native Cover in Restored Area as a Percent of Reference Area















1992





2001





1996





2001





1996





2001







## INFORMATION NEEDS

IS THERE SUFFICIENT BASE-LINE INFORMATION TO SET ECOLOGICAL MANAGEMENT OBJECTIVES? Yes

### A. LIST ECOLOGICAL MANAGEMENT OBJECTIVES:

1. It is not known whether the introduced iceplant (Carpobrotus chilensis) in its non-clonal (i.e. non-hybrid) form poses a threat to native plants. Some botanists believe this species may be native. To determine the need for management, we will measure changes in cover of this species relative to cover of native plants. If cover of Carpobrotus reaches 5%, research will be used to determine competitive relationships between native plants and Carpobrotus.

2. Clonal Carpobrotus hybrid monitoring efforts will document areas, and the number of clones to more than

3. Chenopodium arenaria was removed from the preserve due to its presence. Revegetation will be carried out unless voluntary cover reaches the following goals: 1997:30% of desired cover (i.e. cover in unaltered areas); 1998:40% of desired cover; 1999: 50% of desired cover; 2000 60% of desired cover.

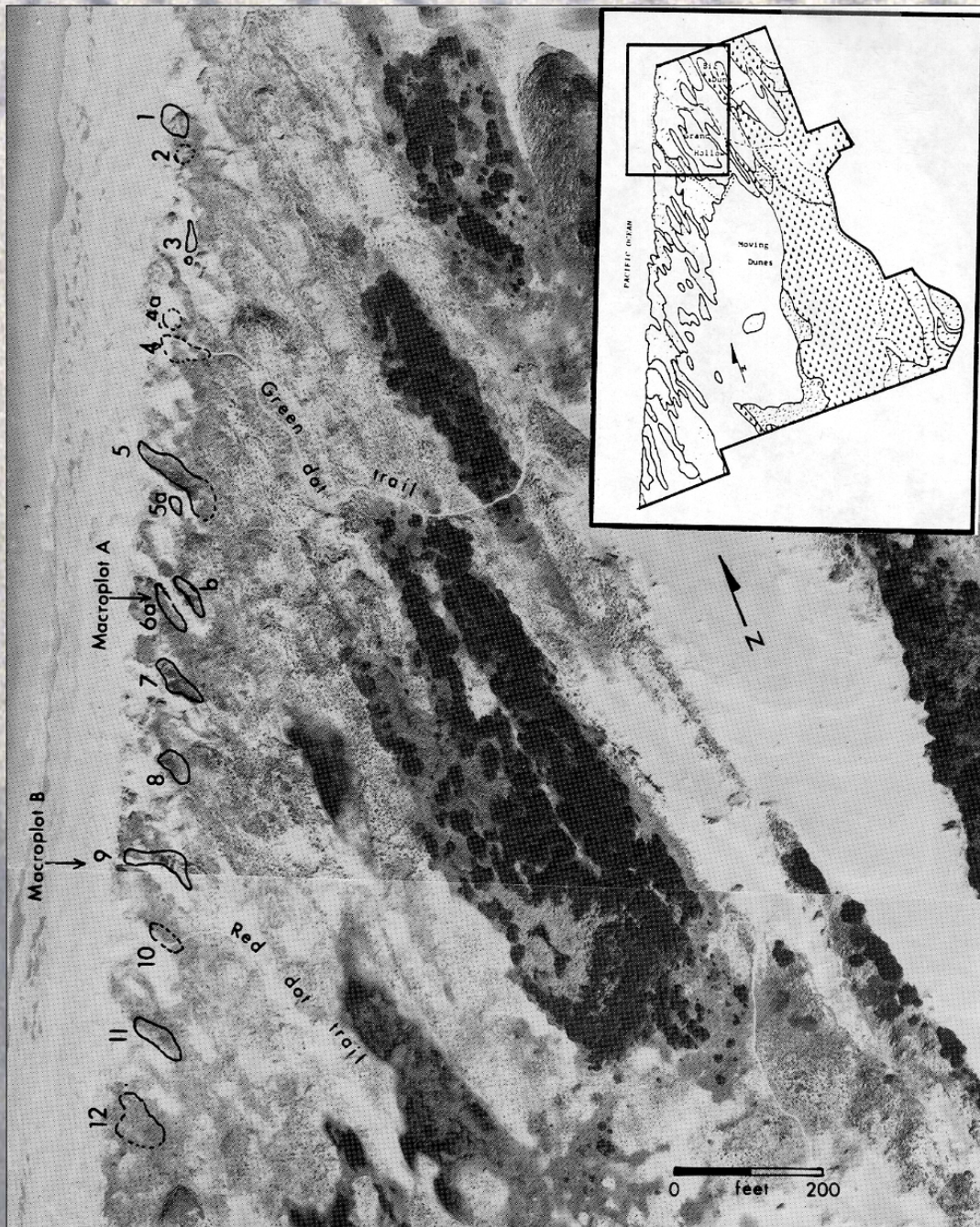
### B. LIST PARAMETERS MEASURED TO ASSESS PROGRESS TOWARDS GOALS.

Cover of Carpobrotus, bare sand, and native plant species using the point intercept method.





















1995



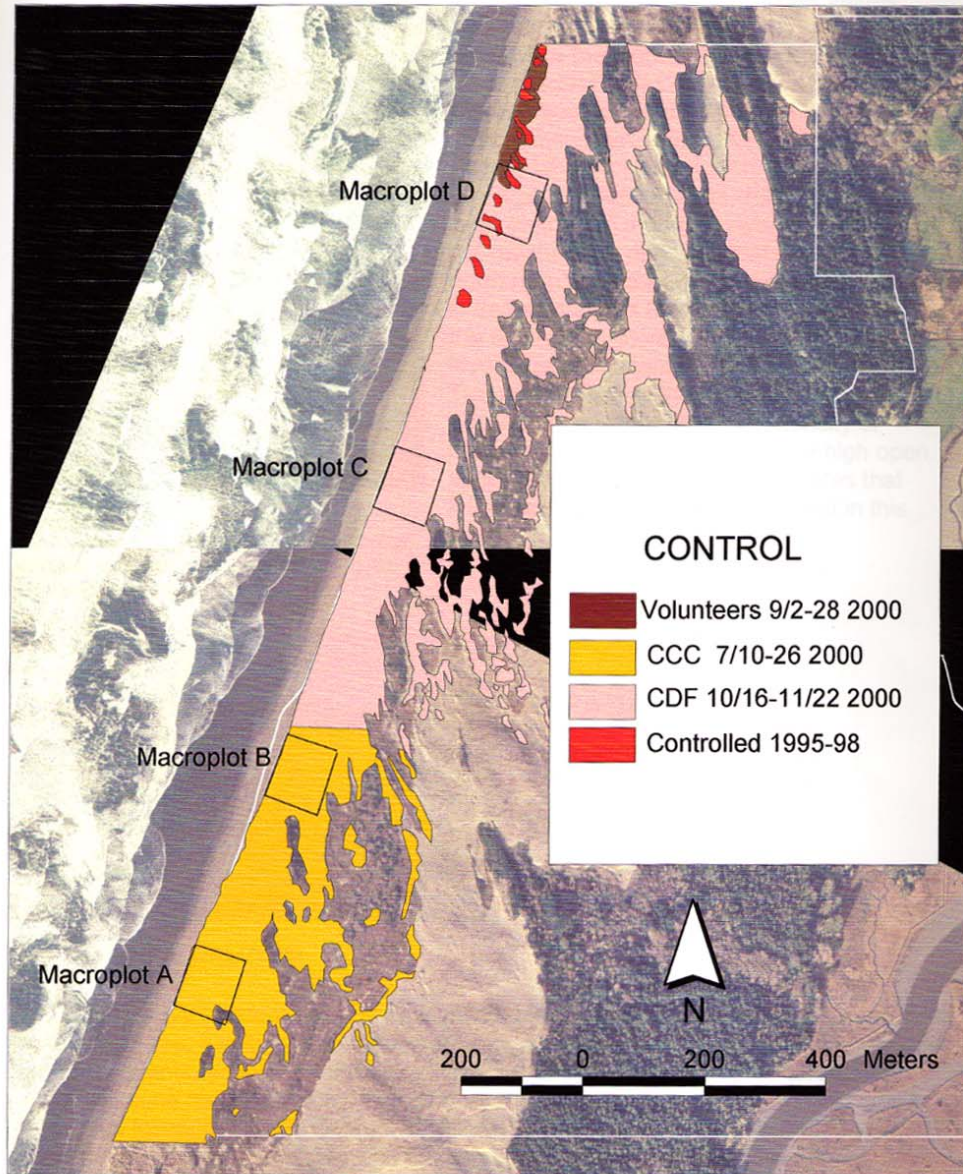


2001



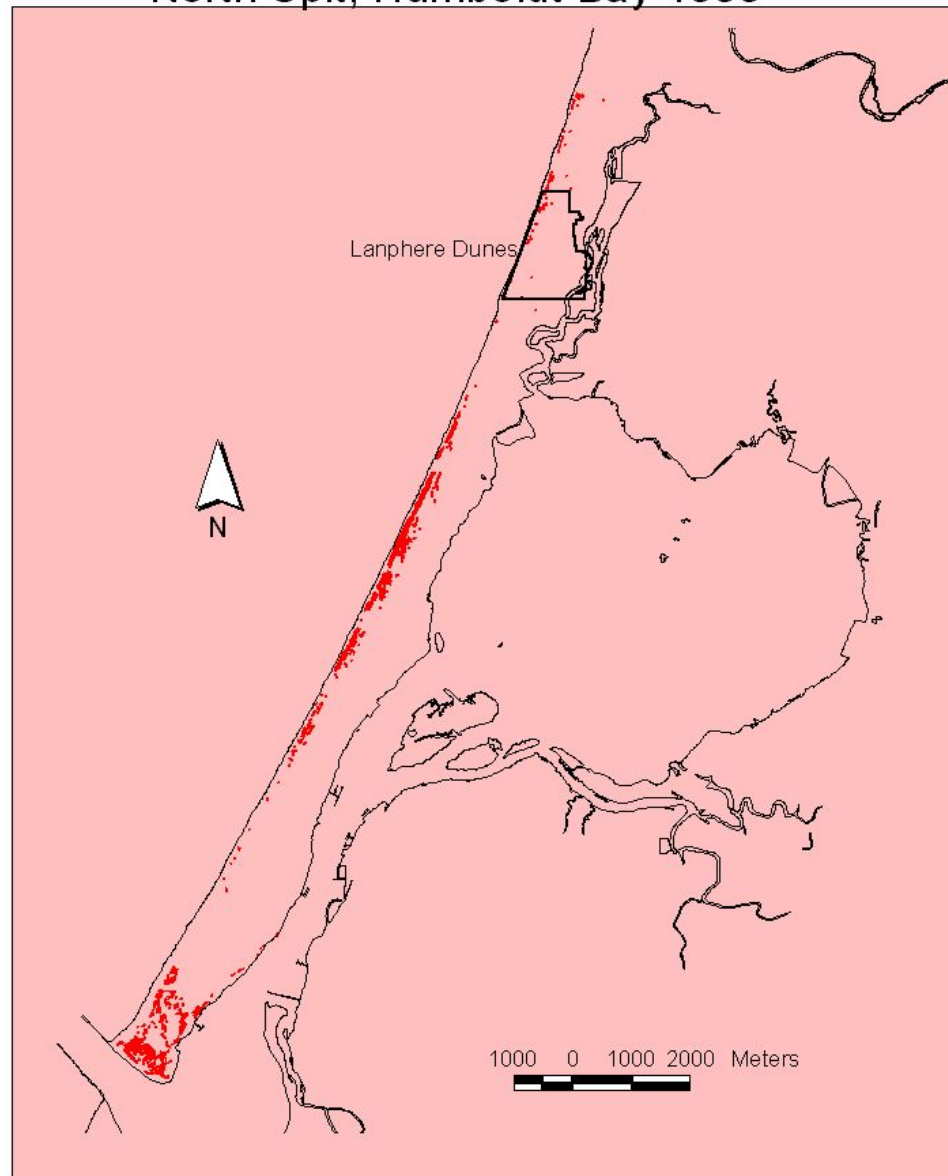
# *Carpobrotus* removal

RONS campaign, Lanphere Dunes Unit  
Humboldt Bay National Wildlife Refuge





## Distribution of Iceplant on the North Spit, Humboldt Bay 1999



Mapped by U.S. Fish and Wildlife Service







RESTORATION, MANAGEMENT, and MONITORING PLAN  
for  
Beach Pine/ Sitka Spruce Forest and Red Alder Riparian Forest  
at the  
Lanphere Dunes Unit,  
Humboldt Bay National Wildlife Refuge  
U.S. Fish and Wildlife Service

**PLANT COMMUNITIES:** Beachpine/Sitka spruce forest and Red Alder Riparian Forest

**SITE NAME:** Lanphere Dunes Unit, Humboldt Bay National Wildlife Refuge

**PREPARED BY:** Patti Clifford

**DATE:** July 7, 2003

**PLANT COMMUNITIES:**

The stabilized dune forest at Lanphere Dunes is a remnant activity. The underlying substrate is sand derived from sedimental River. Forested vegetation types predominate on the older dune system (USFWS 1998). The dune forest at Lanphere Dunes consists of Beach pine (*Alnus rubra*) riparian forest types, which are structurally diverse habitats. This forest system is an important stopping place for nesting birds (USFWS 1997). Diverse and abundant fungi and mosses occur in this forest system. Numerous species of macrofungi and 32 species of bryophytes recorded in this forest system. Numerous lichen species occur in the coniferous forest including *Bryoria pseudocailaris*. (Glavich 1999). The Lanphere Dunes Unit consists of 24 acres of beach pine forest and 24 acres of red alder forest (TNC 1998).

The Beach pine forest is considered to be a community of and ranked by the California Natural Diversity DataBase (B-3.1, 1998) (Alpert 1985). This forest has a range north to Alaska with the Northern limit at the mouth of the Klamath River (Pickart 1990). The forest assemblage at Lanphere Dunes differs from that described by Wiedemann (1984). At Lanphere Dunes Beach pine (*Alnus rubra*) and Sitka spruce (*Picea sitchensis*) are dominant tree species. Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), and western white pine (*Pinus monticola*) are also present.

Green (1999) described the structural complexity and vegetation of the coniferous forest at Lanphere Dunes. He described three distinct species types: Beach pine, Sitka spruce, and Mixed species. The beach pine type usually occupies the dune area. This type consists of an overstory dominated by beach pine and a dense understory. The important understory species include evergreen huckleberry (*Gaultheria shallon*), bearberry (*Arctostaphylos uva-ursi*), and wax

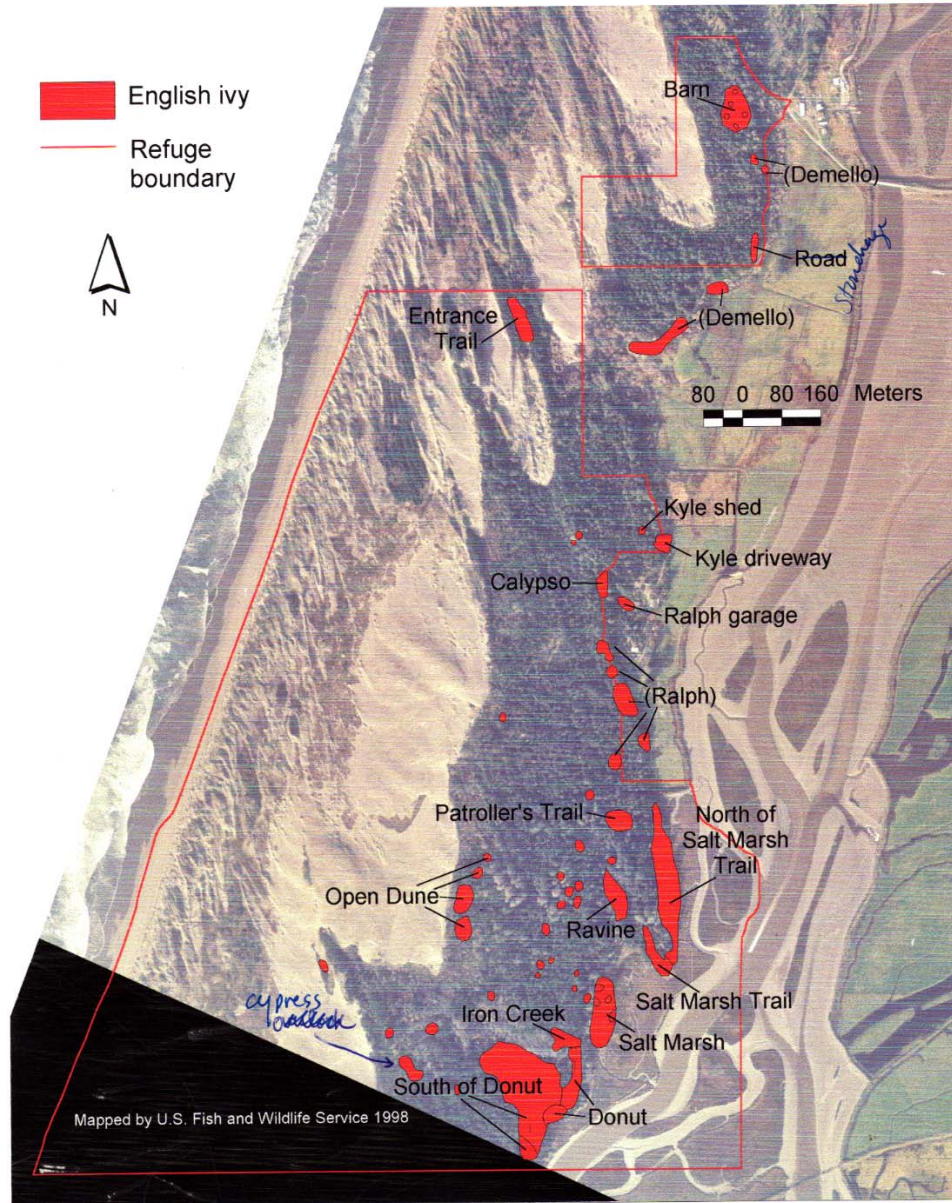
**Monitoring Objectives**

- Objective 1:** Document quantitative changes in horizontal and vertical ivy cover resulting from management.
- Objective 2:** Document quantitative changes in horizontal and vertical cover in response to management by native species.
- Objective 3:** Qualitatively determine ground cover of returning vegetation and need for revegetation at all sites.
- Objective 4:** Maintain GIS database with the current status of all sites in order to track restoration progress.



# English Ivy Occurrences at the Lanphere Dunes Unit Humboldt Bay National Wildlife Refuge

 English ivy  
 Refuge boundary



Mapped by U.S. Fish and Wildlife Service 1998











































1999



2003





Management and Monitoring Plans and Reports  
Lanphere Dunes Unit of the HBNWR  
1988-2003



U.S. Fish and Wildlife Service  
Humboldt Bay National Wildlife Refuge  
6800 Lanphere Rd.  
6801 Arcata, CA 95521



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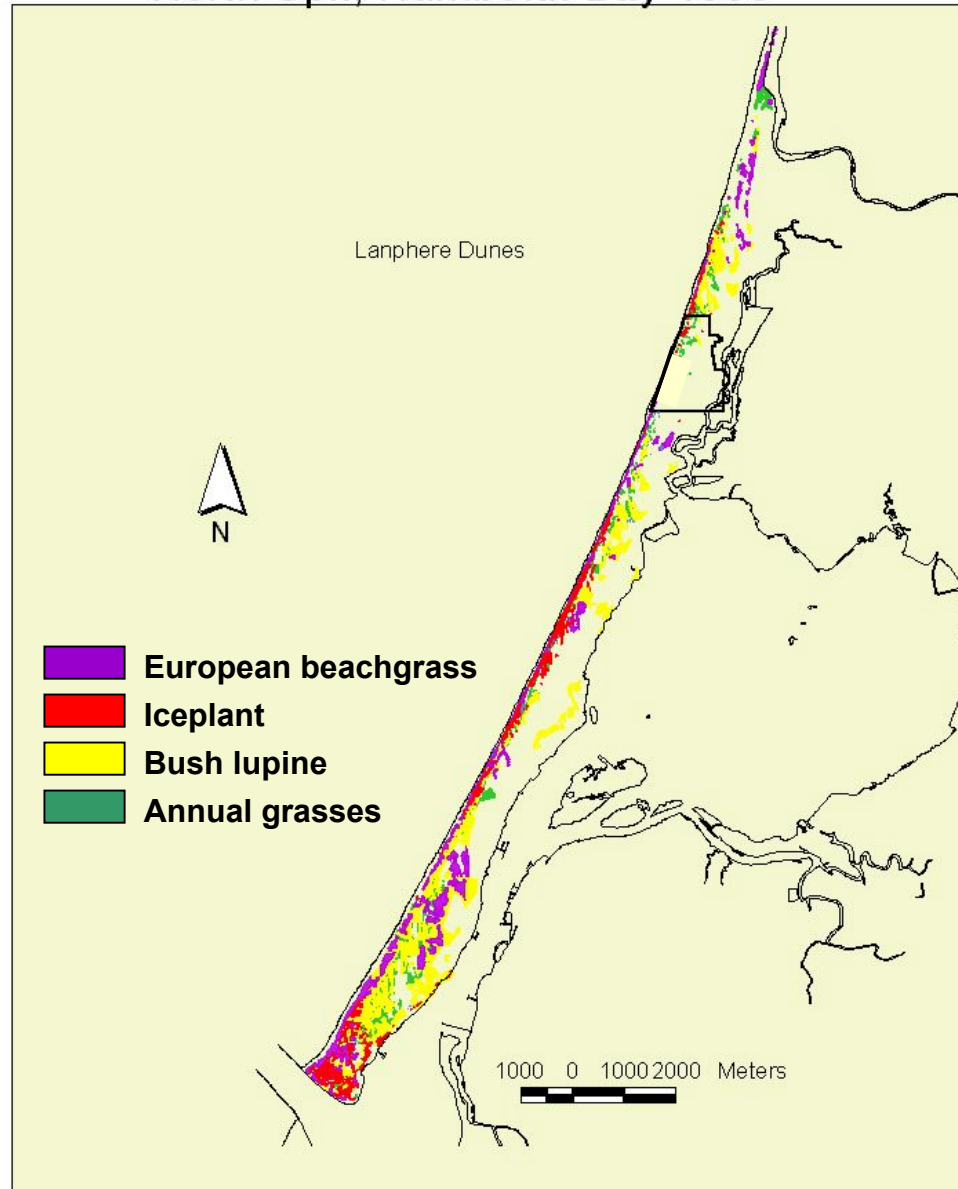
Monitoring Plan for *Cordylanthus maritimus*  
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Monitoring Plan for *Grindelia stricta*  
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# Invasive Plant Species on the North Spit, Humboldt Bay 1999



Mapped by U.S. Fish and Wildlife Service







































A sunset over the ocean with waves in the foreground. The sun is a bright orange circle partially obscured by the text, setting behind a dark blue horizon. The sky is a deep, dark blue, and the water in the foreground is dark blue with white foam from the waves.

## THANKS TO:

Patti Clifford, Kyle Wear, Linda Miller,  
Friends of the Dunes, California  
Conservation Corps, California Department  
of Forestry & Fire Protection, The Nature  
Conservancy, National Fish & Wildlife  
Foundation, California State Coastal  
Conservancy, and many others.