

COASTAL STRAND ENHANCEMENT PLAN

TRESTLES WETLANDS NATURAL PRESERVE

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Trestles Wetlands Natural Preserve is an area surrounding the outlet of San Mateo Creek. It is highly biodiverse with over 260 plant species in 10 plant communities, including an 8 acre lagoon and associated marshes, willow woodlands, coastal sage scrub and coastal strand. It is within an area bordered by the San Diego County line to the north and San Onofre Creek to the south, between the Pacific Ocean and the interstate 5 freeway. It fronts the world-famous Trestles surf breaks.

Pleasure and interesting experience in the realm of plant and animal life await him, who with seeing eye and love of nature in his heart, strolls through this strip of land 'twixt bay and sea. A dune, in its prosaic implication, is but a mound of sand, and nothing of a poetic nature is commonly connected with so dry a subject. Man may scorn a 'sandy waste,' but Nature is not chary of her gifts to an offspring apparently so unpromising. Perhaps in no other area of equal size do the plants put up a greater struggle to maintain themselves than in the coastal dunes where the waves and the wind are ever at work to change the contour of the land. -Edith A. Purer, PhD (1933)

A. PLAN OBJECTIVES

Coastal Strand is a term used to describe a plant community of flowering plants that form along the shore in loose sand just above the high tide line. Many plants that grow in this area are endemic to the strand. The community has low species diversity because so few plants can tolerate the harsh conditions of high winds, battering salt spray, and extreme high temperatures in the summer. Plants must also be adapted to sandy saline soils, with extremely low nutrient loads, and low water holding capacity.

--(http://en.wikipedia.org/wiki/Coastal_Strand)

It is an important plant community for several reasons:

- Halophytic (salt tolerant) plants are rare, representing less than 2% of all angiosperms.
- Coastal Dunes are habitat for several listed species including California Snowy Plovers and the California Least Terns.
- It is possibly the smallest and most impacted single plant community in Southern California. It can only exist in sand and sand dunes between the high tide mark and the beginning of soil-based scrub. Many of these areas, the Southern California "beaches", are sanitized with mechanical straining, removing not only trash, but essentially all plant life.
- At the TWNP, the Coastal Strand is a plant community that is most adjacent to pedestrian traffic and as such is essential to the public view shed.

This Plan will outline actions that can be taken to enhance the TWNP Coastal Strand Plant Community by:

1. Removing invasive and exotic species
2. Reducing foot traffic in foredune areas to promote dune formation and plant growth
3. Promoting the natural reseeding and planting of existing native plants.
4. Reviewing and studying the potential of planting sensitive Coastal Strand plants that are currently in Camp Pendleton but not in the TWNP because of past disturbances.
5. Reviewing and studying the potential that areas exist that could be nesting sites for Snowy Plovers and Least Terns.

B. THE TWNP COASTAL STRAND HABITAT

The TWNP CSH may be described in four sections:

Area A: Cotton’s Point to the Creek Mouth (two pictures above): A wide beach that has remnant sand dunes but also “patches” of scrub/coastal strand plant communities in a mix of soil/sands. The soil may be natural occurring or spoils from excavation when the trestle and rails were built. Strand plants are dominated by Beach Bur (*Ambrosia chamissonis*) and the invasive exotic Sea Rocket (*Abronia maritima*); there is some Red Sand Verbena (*Abronia maritima*). In the back dunes, where the beach sand has some soil mixture, there is healthy scrub mix including *Encelia californica*, Coast Goldenbush (*Isocoma menziesii*) Buckwheat (*Eriogonum fasciculatum*) and Coyote Bush (*Bacchus pilularis*). There is also a small seaside cliff community north of the end of the trestle.

Area B: Creek Mouth halfway to Lowers: Foredunes fronting a lower (possibly sub-sea level) elevation transitioning to a strand/scrub mix. The foredunes are partially denuded and subject to continual disturbance from pedestrians and tidal action:



Example of disturbed Foredune: pedestrian and vehicular traffic

Behind the foredunes are three distinct beds of *Heliotropium curassavicum*, *Distichlis spicata* Saltgrass, and *Jaumea carnosa* Jaumea (aka Fleshy or Marsh Jaumea).



Heliotropium curassavicum



H. curassavicum: distinctive “fiddleneck” or coiled spikes and distinct star-like Flowers



Distichlis spicata Saltgrass



Jaumea carnosa Jaumea (aka Fleshy or Marsh Jaumea)

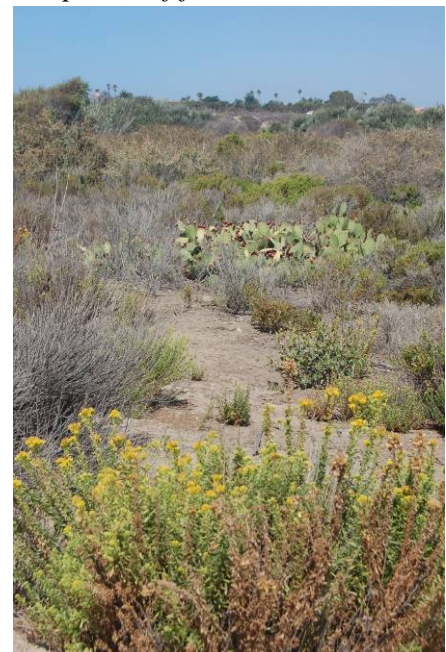
Area C: Midpoint Creek Mouth/Lowers to San Onofre Creek

The beach is significantly narrower in this section, transitioning rather quickly to Coastal Sage Scrub. The beach is narrower probably because of the tidal action across the point, and the fact that this area is the approximately the midway point between San Mateo and San Onofre Creek mouths.

There are few plants in the sand in this area because the narrow beach is subject to vehicular and pedestrian traffic during periods when surf contests are hosted (see below). In addition, there is a *de facto* road along this area created by California Park Service lifeguard vehicles. This road “threads” in places, causing greater impact.



Traffic associated with Surf Contests prohibit the development of foredunes



*Behind the narrow strip: Mixed community Scrub/Strand
(note *Opuntia littoralis* in right photo)*

C. EXOTIC SPECIES

The TWNP Coastal Strand has a significant amount of *Cakile maritima* and *Carpobrotus chilensis*, the former more dominant in the northern half and the latter in the southern half. There are also scattered patches of *Arundo donax*. Past work by the CPS and the USMC has resulted in the removal of *Arundo donax* and to a lesser extent the two iceplants. The Sea Fig (*Carpobrotus*) and *Arundo* was treated with glyphosate in October, 2009. The Sea Fig biomass was considered too heavy to remove, but will be monitored and re-treated as needed. The Sea Rocket (*Cakile*) is an annual and will be treated after Spring, 2010 budding.



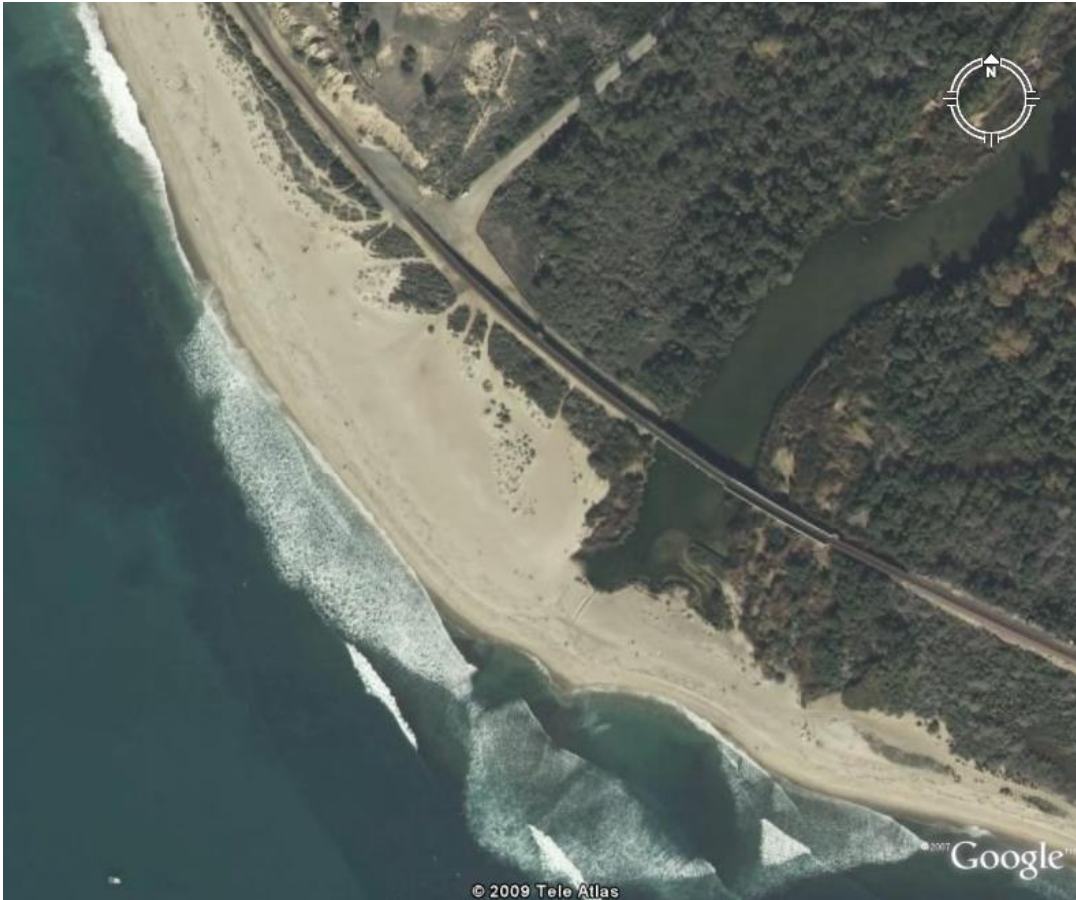
Carpobrotus chilensis (Sea Fig) and *Cakile maritima* (Sea Rocket) with *Ricinus communis* (Castorbean) growing at the edge.



Arundo donax emerging at edge of Cattails.

D. RESTORATION AND ENHANCEMENT

Area A. Cotton's Point to the Creek Mouth.

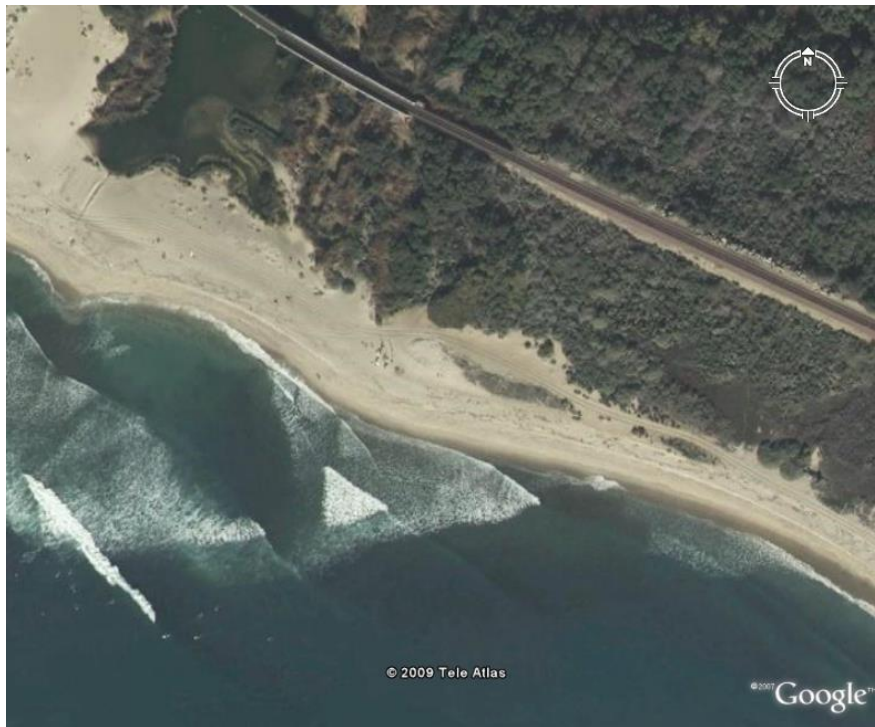


Pedestrian Indicators: As can be seen in the photo above, multiple paths have threaded the dunes. Small signs (less than 12" x 18"), stating "DUNE RESTORATION" placed on 1"x2" posts, approximately 18" high, will be placed in very select areas to create more space for natural dune formation and plant regeneration. These will not be "barriers" but reminders that to pass over the indicator is disturbing the restoration.

Natural Re-Seeding and Planting: Scatter local seeds and rhizomes in barren areas as needed, plant a small amount of one-gallon to help fill in. Suggested plants and seeds: *Ambrosia chamissonis* Beach-Bur (local seeds only), *Isocoma menziesii* Golden Bush, *Abronia maritima* Red Sand Verbena, *Camissonia cheiranthifolia* beach evening primrose and a limited number of *Heliotropium curassavicum* Seaside Heliotrope and *Eriogonum Parvifolium* Dune Buckwheat.

Vehicular Path: Designate one vehicular road for CPS vehicles. Eliminate threading.

Area B: Creek Mouth halfway to Lower:



This area has a comparatively wider section of beach from the creek mouth running south approximately 300 meters where the beach narrows to a tidal plain that transitions relatively rapidly to sage scrub. There two “isolated” dunes in the right middle of the photograph. There is a vehicle path on either side.

Pedestrian & Vehicular Indicators: As can be seen in the photo above, there are two vehicular paths and unbounded pedestrian traffic, isolating the dunes and creating a plant-free area south of the mouth. The pedestrian and vehicular traffic may be routed away from the current plant edge allowing expansion for the plant community.



Marsh Fleabane adjacent Creek Mouth

Dune Restoration: Replant the two isolated dunes and consider some berming just south of the creek mouth. Plants to restore dunes: *Isocoma menziesii* Golden Bush, , *Camissonia cheiranthifolia* beach evening primrose and *Eriogonum Pervifolium* Dune Buckwheat.

Open Beach Area: Scatter local seeds and rhizomes in barren areas as needed, plant a small amount of one-gallon to indicate. Plants and seeds are to be the same species as the

plants in the adjacent areas. Attempt to expand and create other pockets of *Heliotropium curassavicum* Seaside Heliotrope and *Abronia maritima* Red Sand Verbena.



Area B: Multiple vehicular tracks – note far right in dead seaweed

Area C: Midpoint Creek Mouth/Lowers to San Onofre Creek



At least half of the beach width above is in the tidal zone. The remaining relatively narrow strip must serve the needs of CPS vehicles and beachcomber and surfer traffic. There are also significant periodic disturbances caused by tent and platform staging

during surf contests. There are some important plant groupings on the fringe including *Heliotropium curassavicum* (Salt Heliotrope).

Rehabilitation and mitigation may be limited due to continuing impact on the narrow strand. Planting will attempt to expand the existing communities of: *Ambrosia chamissonis* Beach-Bur (local seeds only), *Abronia maritima* Red Sand Verbena, *Camissonia cheiranthifolia* Beach Evening Primrose and *Calystegia soldanella* various subspecies Beach Morning Glory.

D. TWNP Coastal Strand Plants in TWNP



Heliotropium curassavicum and *Camissonia cheiranthifolia* (Beach Evening Primrose), limited at TWNP but there exist two communities were indicated. Also a small community of *Calystegia soldanella* various subspecies (Beach Morning Glory) further south.

Trestles Wetlands Natural Preserve Coastal Strand Plants

("Feldmeth Only": not observed by author)

Asteraceae Family

Ambrosia chamissonis Beach-Bur (Feldmeth)

Encelia californica Coast Sunflower [found extensively in "berm" areas]

Isocoma menziesii Golden Bush (Feldmeth = *Haplopappus venetus*)

Jaumea carnosa Jaumea (aka Fleshy or Marsh Jaumea) (Feldmeth)

Pluchea odorata Marsh Fleabane (Feldmeth)

Amblyopappus pusillus Dwarf Coastweed (Annual: Feldmeth only)

Gnaphalium californicum California Everlasting (Biennial: Feldmeth only)

Nyctaginaceae Family

Abronia maritima Red Sand Verbena (Feldmeth)

Chenopodiaceae Family

Atriplex californica Saltbush (Feldmeth)

Atriplex lentiformis Quail Saltbush (Feldmeth)

Salicornia virginata Pickleweed

Convolvulaceae Family

Calystegia soldanella various subspecies Beach Morning Glory (Feldmeth)

Calystegia sepium (Feldmeth only)

Calystegia macrostegia var. *subsp.* (Feldmeth only)

Boraginaceae Family

Heliotropium curassavicum Seaside or Salt Heliotrope (Feldmeth)

Poaceae Family

Distichlis spicata Saltgrass (Feldmeth)

Polygonaceae Family

Eriogonum Parvifolium Dune Buckwheat (Feldmeth only; recently at Trail 5)

Cactaceae Family

Opuntia littoralis Prickly Pear Cactus (Feldmeth)

Opuntia prolifera Coastal Cholla Cactus

Onograceae Family

Camissonia cheiranthifolia Beach Evening Primrose (Feldmeth)

BEACH STRAND and MARSH Interface

Saururaceae Family

Anemopsis californica

Yerba Mansa

Invasives/Exotics:

- Cakile maritima* Sea Rocket (Feldmeth) Brassicaceae family
- Carpobrotus chilensis* Sea Fig (Feldmeth = *carpobrotus aequilaterus*)
- Melilotus indicus* Annual Yellow Sweet Clover (Feldmeth)
- Mesembryanthemum crystallinum* Crystal Ice Plant (Feldmeth)
- Arundo donax* Giant Reed

The following are Coastal Strand Plants listed in INTEGRATED NATURAL RESOURCE PLAN MCB, TABLE 3-5. RARE AND SENSITIVE PLANT SPECIES FOUND ON CAMP PENDLETON.



Lotus nuttallianus Nuttal's Lotus (Fabaceae)
Has the banner, wings, keel inflorescence of the subfamily **Faboideae**.



Erysimum ammophilum Sand-loving wallflower (coastal dunes, and CSS/sandy)
Brassicaceae Family