Ecological site group R004BA206CA
Deflation Basins

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Key Characteristics

- Hydrologic processes dominate the landscape – LRU A
- Beaches and dunelands
- Deflation basins

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Physiography

These deflation basins are more stable, low-lying areas intermixed within the dunes that have a consistent water table at or near the soil surface most, if not all year long, and are dominated by water obligate and facultative wetland species. They will be found in depressional areas and have little to no slope or aspect influence.

LRU A is primarily influenced by hydrological processes and contains beaches, dunes, rivers, and marine terraces below 400 feet elevation. Wet forests, lakes, estuarine marshes, and tea-colored (tannic) streams are characteristic features of this LRU. Marshes and wetlands have been widely altered and/or drained with many converted to agriculture and urban developments.

Climate

The average annual precipitation in this MLRA is 23 to 98 inches (585 to 2,490 millimeters), increasing with elevation inland. Most of the rainfall occurs as low-intensity, Pacific frontal storms. Precipitation is evenly distributed throughout fall, winter, and spring, but summers are dry. Snowfall is rare along the coast, but snow accumulates at the higher elevations directly inland. Fog is a significant variable that defines this MLRA from other similar MLRAs. Summer fog frequency values of greater than 35% are strongly correlated to the extent of coast redwood distribution, which is a primary indicator species in this MLRA. Nightime fog is approximately twice as common as daytime fog and seasonally, it reaches its peak frequency in early August, with the greatest occurrence of fog from June through September (Johnstone and Dawson 2010). The average annual temperature is 49 to 59 degrees F (10 to 15 degrees C). The freeze-free period averages 300 days and ranges from 230 to 365 days, decreasing inland as elevation increases.

Soil features

The soils for this ESG are generally Typic, isomesic Psammaquents and a representative soil would be Clambeach. They are very poorly drained, have very high runoff, and frequent ponding, with a water table strongly connected to the ocean levels and adjacent streams that outlet into the ocean.

Vegetation dynamics

Beach dunes represent the more rapidly changing to older, more stabilized areas directly adjacent to the beaches. These deflation basins are more stable, low-lying areas intermixed within the dunes that have a consistent water table at or near the soil surface most, if not all year long, and are dominated by water obligate and facultative wetland species. This ecological site concept is unique to this LRU however it needs more data collected in order to properly refine the soil-site characteristics and better describe the dynamics of the site.

Abiotic Factors/Primary Disturbances

Poor drainage, onshore winds, nutrient limitations, and some limited sand burial are the most important disturbances that naturally drive the dynamics of this ecological site concept. The species that dominate this ecological site are adapted to poorly drained soil conditions, using various rooting strategies, leaf morphologies that can withstand anaerobic conditions, brackish water conditions, wind desiccation, and root and shoot strategies to ameliorate the low-fertility soil conditions.

Major Land Resource Area

MLRA 004B
Coastal Redwood Belt

Stage

Provisional

Contributors

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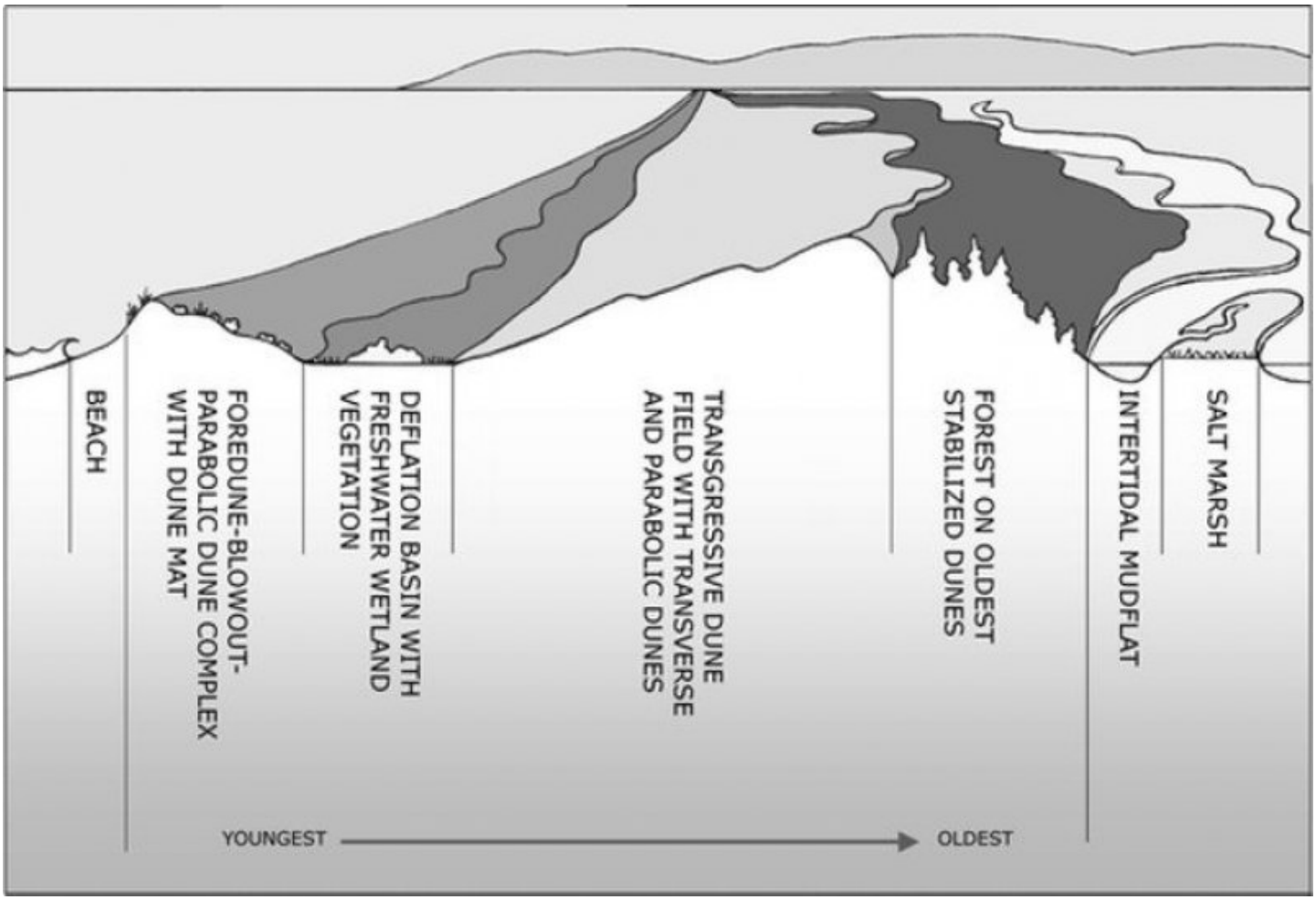
State and transition model



State 1
Reference State

The dynamics described below are general to the level that the site concept has been developed for Provisional ES concept identification and further investigation purposes only. It is meant to give a general overview of the ecological dynamics of the system and should not be viewed as a model for a specific ecological site level

management. It is supported by the current available literature that was reviewed for a general understanding of the system and basic understanding of the abiotic and biotic drivers. Further investigations and soil-site data collection and analysis should be conducted before specific land management can be applied at the ecological site specific scale. This STM only serves to explain the general ecology and dynamics. Reference State (State 1) – This reference state is one general community phase that is represented by shore pine, cypress, willows, and grass-likes typical of wetlands or marshes. At this very general scale, this reference state only really captures the generalities related to the functional groups that are most dominant and does not capture the more specific dynamics and patterns that would be found at the more detailed and refined ecological site scale that focuses on specific abiotic factors that drive some of these various complex plant expressions. More data and refinement is needed to capture the information needed in order to make specific land management decisions at the ecological site-component scale.

Community 1.1
Reference Community Phase

This community phase represents a fairly stable community phase dominated primarily by *Pinus contorta* spp. contorta (shore or beach pine), Salix (willow) species, Carex, and Juncus.

State 2
Drained State

This state represents the community phases that are more representative of either the dune swale areas in the dune system or dune scrub or dune forests, or possibly may reflect the invaded state of the dune ecological site as well. This state is currently only one community phase, representing all the different types of communities from the reference state and in the future more information and research should be done to determine more specific dynamics in this state that are more heavily related to the different community expressions within this state and the dynamics amongst them all.

Community 2.1
Drained

This community phase represents all the different community expressions of a drained state, and possibly also may look like the invaded community phases from the dune ecological site.

State 3
State 3

This state represents the intensive land uses that have significantly altered this ecological site due to urban developments, recreational activities, and agriculture. More information about this state is needed to flesh out the various impacts these types of land uses/alterations have had on the ecological site in order to better understand how to better manage of these areas or potentially attempt restoration of these areas where possible.

Community 3.1
Intensive disturbance

This community phase represents all the varied land uses that significantly alter this ecological site. This is an extremely varied community phase that includes all types of alterations that so significantly alter the ecological site that it is permanently changed and no longer has typical or even representative ecological dynamics.

Transition T1
State 1 to 2

This transition occurs when the consistent water table is removed and the soils are no longer saturated year round.

Transition T3
State 1 to 3

This transition is caused by significant human alterations that force this ecological site over a threshold and change the function and structure of this site in extensive ways.

Restoration pathway R1
State 2 to 1

This restoration pathway occurs if the water table can be reinstated to the site.

Transition T2
State 2 to 3

This transition is caused by significant human alterations that force this ecological site over a threshold and change the function and structure of this site in extensive ways.

Restoration pathway R3
State 3 to 1

This restoration pathway occurs only when significant time and money inputs that would require constant maintenance and weed management and should be focused on areas that have not been permanently altered by urban developments. This restoration pathway may be less likely than R2, since most of these very altered landscapes will be more hospitable to invasive species than to the native species that are more particular and require specific growing conditions that may not be replicable due to the alterations to the site that had occurred.

Restoration pathway R2
State 3 to 2

This restoration pathway occurs only when significant time and money inputs are focused on areas that have not been permanently altered by urban developments. This restoration pathway may be more likely than R3, since most of these very altered landscapes will be more hospitable to invasive species than to the native species that are more particular and require specific growing conditions that may not be replicable due to the alterations to the site that had occurred.

Citations

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