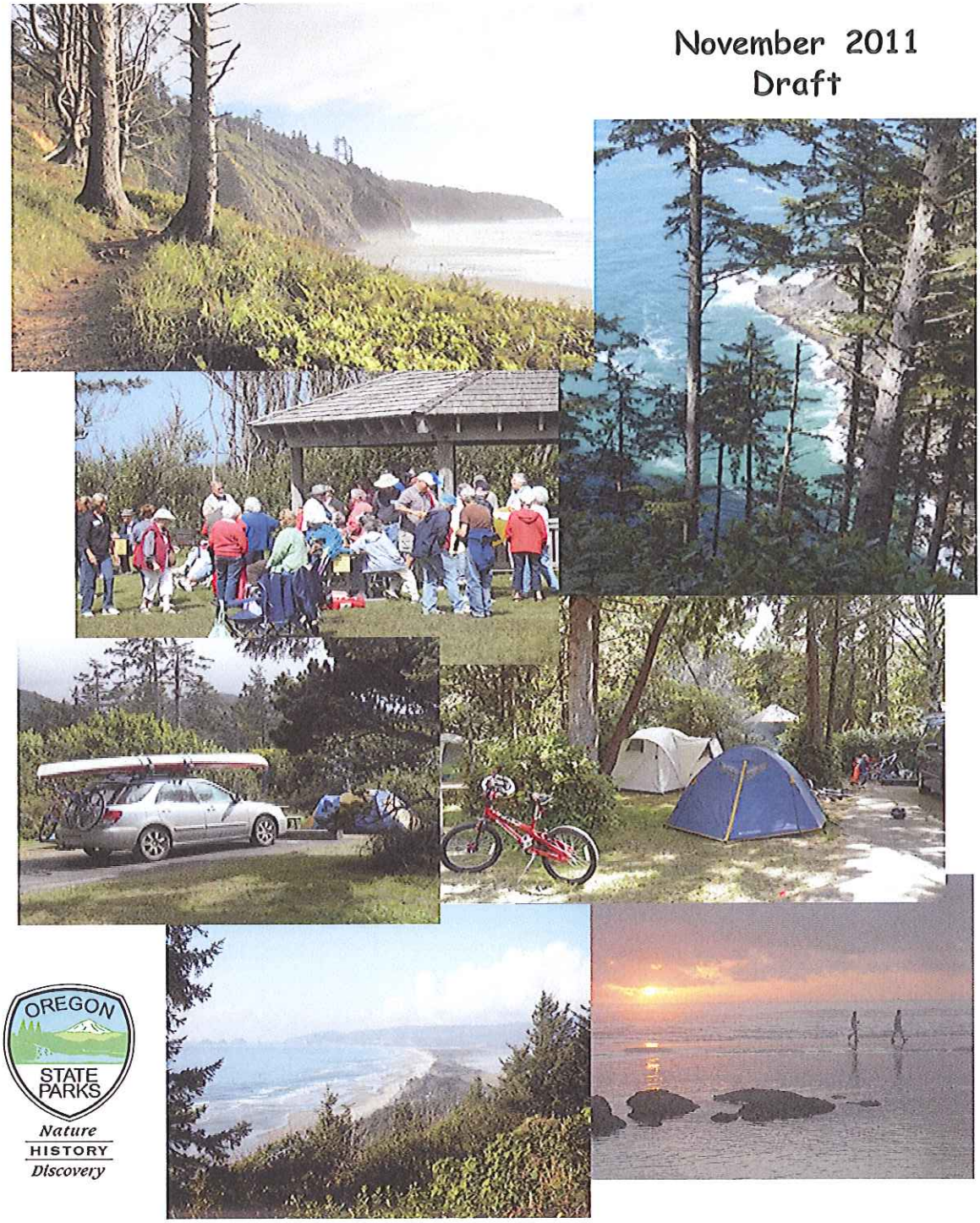
CAPE LOOKOUT STATE PARK

COMPREHENSIVE PLAN

November 2011
Draft



OREGON STATE PARKS
Nature HISTORY Discovery

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Chapter 1

Plan Summary and Process

A Vision for the Future of Cape Lookout State Park

Cape Lookout State Park is a jewel in Oregon's nationally esteemed state park system, and has long been one of Oregon's most popular coastal parks. Many visitors return year after year and generation after generation to experience this unique place that offers the best of the Oregon coast. It offers the thrill of the high, dramatic headland where hikers can walk a couple of miles on the Cape Trail to look out over the ocean and see amazing views of the coastline, and see migrating grey whales with their calves. It also offers an intimate-feeling beachside camping experience, a long ocean beach with excellent surf; and a long narrow sand spit between the ocean and Netarts Bay where hikers may meet only an occasional boater who has landed to explore. The tall coastal forest covering most of the park enhances the sense of wildness and intimacy that is truly a Cape Lookout experience. The park is a vacation destination, a day trip getaway, and a highlight for travelers along the Oregon Coast Highway and Three Capes Scenic Route, the Oregon Coast Bikeway and the Oregon Coast Trail. The recreational setting and character of the park attracts families, senior citizens and others who come to explore their recreational interests within the north coast's many coastal recreation opportunities.

First established during the Sam Boardman era, Cape Lookout was originally envisioned as a natural area preserve with only minimal development. The vision changed before the park's first 20 years had passed. Facilities were added to support easier access, oceanfront camping and picnicking, and much higher visitor capacity and visitation. The development was concentrated mostly on the lowlands next to the ocean shore, the primary attraction for visitors. Little has changed over the nearly 60 years passed since then. Today the park remains popular, not only for its natural and scenic character, but also for a long established recreational character. Little has changed, that is, except for the changes brought by the ocean.

The risk of locating the park facilities close to the shore was apparently realized within 10 years after the development occurred. A log seawall built during that time suggests that ocean waves were causing the shoreline to recede. The wall proved to be a temporary solution to an on-going problem, and was destroyed over time by the periodic onslaught of winter storm waves that finally reached, and caused the abandonment of, part the campground. The second effort to hold off storm waves, an artificial dune structure, has now been in place for 12 years. This solution requires a high level of maintenance. It has performed well, but its life expectancy is uncertain, and the protection it provides does not extend to all of the facilities eventually threatened by shoreline erosion and ocean flooding.

A new vision for the park is needed, a vision that recognizes the vulnerability of the park development to ocean hazards and sets a direction for gradual changes toward a safer and longer lived park. Without indications of a shift in the long term trend of rising sea level, increased storm activity and a receding shoreline, an underlying assumption guiding changes to the park is that this trend is likely to continue into the foreseeable future. Changing the park in a way that

gradually reduces the hazards generally means that most future development will be located farther from the shore on higher ground. It means that, over time, more visitors will camp within a short walk or bike trip to the beach, rather than directly behind the foredune. The available area for new development needs much work that will improve forest health conditions and create a desirable recreation setting over time. It will be somewhat challenging to fit development into the hummocky landscape and around intermixed wetlands, and at some locations this will determine the types of new campsites that are appropriate. A large share of the new campsites will be primitive walk-in tent sites, the largest share of new drive-in sites will also be primitive, while some sites will provide for higher amenity camping. The new trail system will play a key role in making the new campground a desirable place for the visitors, linking the new campground to the beach and other park features while supporting trail uses that, in and of themselves, are an attraction to visitors.

Camping in the existing camp loops near the shoreline can continue for as long as the facilities can reasonably be maintained and safely operated. Potentially, shoreline protection efforts may be expanded to better protect more facilities for a longer time. Maintaining the artificial dune structure is expensive, and expanding it will add to the on-going cost. A decision to invest more in shore protection must take into consideration the length of time it may be effective, given the uncertainties regarding sea level rise and possible increase in storm activity and intensity. Other possible alternatives for slowing shoreline erosion will also be explored in the decision process. The most vulnerable part of the campground, Loop A/B, will likely undergo a transition from developed camping to natural area as threats of shore erosion and ocean flooding pose greater risks and maintenance costs over time. Loops C and D are expected to be longer lived given their location behind the artificial dune.

As the low lying areas closest to the shoreline become more vulnerable, some redistribution will occur among park uses that rely most on their proximity to the shore. It will be important to make optimum use of limited space near the shore where somewhat greater distance from the shoreline and higher ground reduce the risks. Parking for beach access, currently concentrated in the picnic area, will be distributed among several locations, and the large parking lot will be partially landscaped to support picnicking, the hiker biker camp and camper cabins. Like the existing camp loops, this area could potentially be protected longer with measures to stabilize the shoreline.

Being more prepared for emergencies is the highest priority in making changes to the park. New service road connections to the existing campground and to the county road will facilitate more efficient evacuation and emergency access. A grassy open play area next to the new campground will double as a refuge and gathering place to support emergency evacuation. Procedures, equipment, staff training and visitor information to support emergency response operations will be kept up to date. Facilities critical to the continued operation of the park that are threatened by their proximity to ocean hazards will be protected at new locations on safer ground.

With changes to existing facilities, visitors will enter the park at a new location and register at a new registration center before proceeding to the new campground, existing campground, picnic area or beach access parking. Visitors who wish to attend an evening program or participate in other activities at the interpretive program center will find these facilities in a new area centrally located between the existing and new campgrounds. Interpretive programs and self guided tours offered to visitors will cover a wider range of topics conveying the natural beauty and diversity of the park, the knowledge of the past and the changing times.

While nearly all changes to recreation facilities will focus on the park's core area, natural resource management activities will emphasize habitat conditions throughout the park. A large share of the park has been spared from much human disturbance, although there are significant opportunities for habitat improvements both within and outside the core area. Densely overstocked plantation forests which were clearcut logged a half century ago will be thinned to promote succession toward healthy forest conditions, eventually adding to the expanse of old growth forest that now covers most of the southern part of the park. Stream hydrology in the core area, previously altered by road development and intentional diversions, will be restored to support spawning and rearing of salmon. Potential opportunities for habitat improvements on the Netarts Spit will mainly focus on restoration of open sand habitat for western snowy plover. The dynamic nature of the spit will likely dictate any changes over much of this area. Within and around the park facilities, significant infestations of invasive weeds need to be controlled and eradicated where feasible. Where shore erosion and ocean flooding finally overwhelm efforts to maintain facilities, these sites will be restored to natural conditions.

In keeping with its long standing character, the park will continue serving a range of traditional outdoor recreation interests and activities in the park and the surrounding area. It will continue as a recreation destination, a base for exploring regional attractions, and a welcome stop for those travelling the coastal highway and trail routes. Future visitors will witness changes. One of the challenges will be to promote understanding of why changes are needed.

Need for a Plan

Before making significant changes to a state park, the needs and opportunities for the park are studied in depth and represented in a plan that serves as the guiding document for the changes that follow. For Cape Lookout State Park, the primary reason a plan is needed is to guide decisions on adapting the park to the affects of weather patterns on coastal shoreline dynamics and related risks associated with resulting shoreline erosion and ocean flooding. Changes needed in response to this on-going issue must also be considered in relation to the larger park landscape opportunities, constraints, and values for preservation, restoration and recreation. The resulting plan sets out strategies for future management of the larger park.

Comprehensive Plan Summary

This Plan serves as the guiding document for future recreational uses and development and protection and management of park resources at Cape Lookout State Park. It describes the vision for the park's future, the planning purpose and process, current conditions in the park, recreation demand, opportunities and constraints that affect resource protection and recreation development, issues concerning public use and management, values and goals guiding

management and development, strategies for managing natural, cultural and scenic resources, and recreation development concepts. The following summary highlights the key concepts which are discussed in greater detail in the chapters that follow.

The core area is the gateway.
The park's core area, where most of the recreational support facilities are located, will continue to serve as the main gateway to the park's recreation opportunities. (Further south, the Cape Trailhead parking area serves the Cape Trail where it intersects the Oregon Coast Trail. This trailhead is outside the core area.) The core area also contains all of the suitable ground for development of new facilities in the park other than trails. (See Map 1-1)

Preparing for emergencies.
New access routes for emergency response and evacuation will be constructed, providing alternate access to and from the county road and between Loops C and D and the main park road. Support for emergency response operations will be updated as needed, included procedures, equipment, staff training and visitor information. Facilities critical to the continued operation of the park that are threatened by their proximity to ocean hazards will be relocated, including the access road to the existing campground, the park entrance road and the sewage lift station.

Protecting and maintaining existing facilities where practical.
The merits and feasibility of expanding shoreline stabilization efforts to protect more of the existing park facilities from shoreline erosion and ocean flooding will be studied further, and feasible projects will implemented accordingly. The emphasis of these efforts will be on protection of Camp Loops C and D. There is a strong probability that ocean flooding and related damages and maintenance costs will eventually necessitate abandonment of more facilities. Camp Loop A/B is most vulnerable. Efforts to stabilize the shoreline will favor methods that maintain an appearance similar to natural conditions. The artificial dune that now protects most of the campground may be enlarged in length and/or in height. The remaining natural dune north of the artificial dune may be stabilized with cobble supplemented with salt-tolerant native plantings, and this method may also be tried south of the artificial dune.

Creating a new campground.
New campground facilities will be constructed in suitable areas east of the existing park development between the county road and the existing main park road. Most campground development will consist of a combination of conventional primitive drive-in sites and walk-in sites supported by central restrooms and central water facilities. A smaller portion of campsites may have electric or full service hookups. A large grassy open play area will be developed over the existing drain field next to the new campground. Registration for both camping and day use will occur at a new registration center along the new park entrance road. A loop trail system supporting bicycle and pedestrian uses will connect the new development with the oceanfront and other park features.

Reallocating space in the day use area.
Beach access parking, which is now concentrated by the picnic area, will eventually be redistributed to new beach access parking areas, allowing the existing parking lot to be downsized. The reclaimed parking area will be landscaped for expansion of the adjacent picnic area, hiker biker camp and cabin area.

Creating a new program area and interpretive hub.
A new program area developed between the existing and new campgrounds will serve as the park's interpretive hub, and include a program center building and camp talk amphitheater. An interpretive loop trail will begin at the center and extend through the adjacent old growth forest and connect to the larger trail system. On the periphery of the program area grounds, a wildlife viewing blind will be constructed within the edge of the old growth forest.

Preserving and expanding quality habitats.
Natural resource management projects are planned in and around the core area and in certain outlying areas of the park. Weed control is needed in several areas close to the park development. Densely overstocked plantation forests need thinning to promote succession to healthy forest conditions, which will eventually add to the old growth forest that extends from the core area to the end of the cape and the south end of the park. In the core area, forest restoration work is also needed to create a desirable recreation setting for the new, and some existing, recreational use areas. Restoration work is planned for two stream systems within the core area to support spawning and rearing of salmon. At the edge of the existing campground, efforts will be made to replace trees dying from saltwater intrusion with salt-tolerant native vegetation. Where roads, campsites or other facilities must be abandoned or are otherwise removed, these sites will be restored to natural conditions. The far north end of the Netarts Spit may be restored to open sand habitat in hopes of attracting western snowy plover. Two existing dedicated Natural Heritage Areas, which cover the cape headland and the Netarts Spit, will continue to be protected and managed under guidelines outlined in the respective Dedication Agreements for these areas. (See Map 1-1).

Planning Process

The planning process for the park involves numerous steps in determining what is most appropriate for the park's future and formulating and adopting a plan that describes the management direction. The following summarizes the steps leading to adoption of the plan.

Resource Assessments: In the first steps of the process, information is gathered on the park's natural, cultural and scenic resources, existing park uses and facilities, recreation trends and interpretive opportunities, as well as information about the local community. The information about the park is condensed in a way that geographically represents the opportunities and constraints related to recreational development and preservation and management of important natural, cultural and scenic resources.

Vision for the Park: With the information gathered in the resource assessment process, the Department formulates a vision for the park's future that will be tested as the process unfolds. A core team made up of key Department staff is convened. The vision is formulated with input from the team.

Public Input: The information gathered in the resource assessment process, and the vision for the park, are shared in meetings with a stakeholder committee and the general public. The Department asks meeting participants to express their thoughts and ideas about the park's future, including issues that need consideration in formulating a plan. The stakeholder committee membership includes representatives of affected government agencies, interest groups and park neighbors. A written comment period follows the meetings.

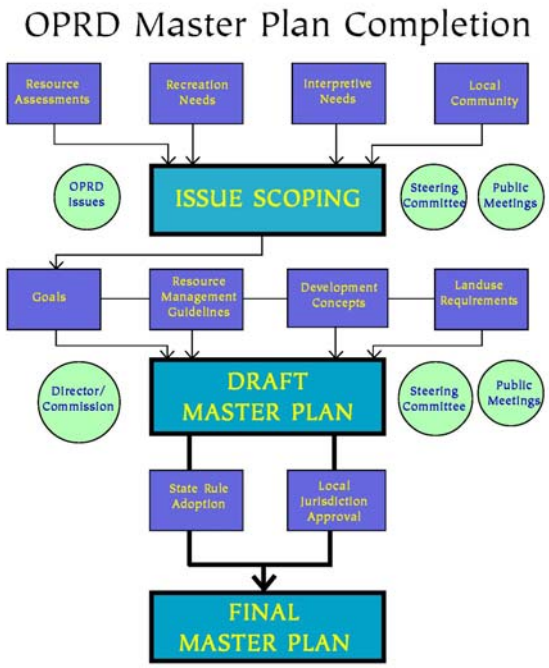
Draft Plan Formulation: The Department produces the first draft of the Plan based on the resource assessments and information gathered from meetings with the core team, stakeholder committee and the public. The draft Plan includes the park vision, resource assessment summary, issues summary, and the values and goals, resource management strategies, and design concepts as they pertain to future development and management of the park. Key members of the core team contribute to the production of the document. The draft material is shared with the entire core team and executive team for their input.

Public Input: The draft Plan is distributed for public review using OPRD's planning web site and available hard copies, and another set of meetings is held with the stakeholder committee and the general public for discussion of the draft. A written comment period follows the meetings.

County Commission Briefing: Department staff meets with the County Commissioners to brief them on the draft the plan and comments received in public and committee meetings, and ask for their input.

State Parks Commission Review and Approval: Any revisions recommended by the committee, general public or County Commission are reviewed by the Director, and needed changes are incorporated into the draft plan. The Plan is then presented to the State Parks Commission for their deliberation and approval. The Commission recommends any needed changes and directs the Department to proceed with the adoption process.

Land Use Compatibility Review: This Comprehensive Plan for Cape Lookout State Park serves as the "master plan" for the park as defined under OAR 660 Division 34 and OAR 736 Division 18. Prior to adoption, the draft Plan is checked for compatibility with the state land use goals and local comprehensive plans in consultation with local government planning officials. If the draft Plan is determined to be compatible, it can then be presented for adoption as a state rule. If the draft Plan is not compatible with local plans, OPRD takes steps necessary to achieve compatibility, either by making appropriate changes in the draft Plan for the park or by requesting pertinent changes in the local plans through the appropriate land use application process. The Plan for the park cannot be adopted as a state rule until it is compatible with local land use plans.



State Rule Adoption: A formal rule-making hearing is held which allows additional comments from the public. A written comment period follows the hearing before the hearing record is closed. Final edits may be made to the draft Plan based on public comments prior to final adoption.

(Map 1-1 here)

Chapter 2

Introduction to the Park and the Area

Cape Lookout State Park is one of the first campground parks established in Oregon's state park system. Its oceanfront setting is on the Tillamook County coast about 12 miles southwest of the City of Tillamook. The park is located along the Three Capes Scenic Route, a short side trip from the Highway 101 corridor. Visitors from Portland, which account for a large share of the park visitors, reach the park in two hours through Tillamook via Highway 26 and Highway 6 before continuing west on via Highway 131 and then heading south on Whiskey Creek Road to the park entrance. The community of Netarts is the closest town, about five miles north along the coastline from the park entrance, and the community of Oceanside is a short distance farther north, at about eight miles away. About fifteen miles to the south is the community of Pacific City.

Cape Lookout is popular for its own natural, scenic and recreational character, and also serves as a base for visitors seeking other recreation opportunities and tourist attractions in the north coast region. Like most state parks on the coast, the visitation is highly seasonal mainly due to seasonal weather patterns. Many families visit the park during the summer months. The campground remains open during the off season, serving retirees and others seeking to avoid the busy summer activity or taking advantage of holiday vacations, and camping in RVs, trailers, yurts or cabins.

The Park Today

The campground has a total of 212 conventional drive-in camp sites, most of which have no site utilities, but have sanitary facilities close by. About eighteen percent of the sites have full service hookups. There are also thirteen yurts, six deluxe cabins, two adjoining group tenting areas and a hiker biker camp. The picnic area accommodates groups of up to seventy five people and includes a large picnic shelter. Near the campground and park administration facilities, a small camp talk amphitheater and a yurt support interpretive and educational programs.

The visitors come for the beach activities, to camp and picnic next to the ocean. They come to relax and enjoy the scenery and socialize with friends and family. Many hike to the end of the cape. Some may go crabbing, clamming, fishing, boating, bird watching or whale watching, or visit Cape Meares lighthouse, the area's museums, cheese factories or local restaurants and shops. Some float river trails in the area, or kayak in the nearby estuaries or around the cape. A few launch paragliders from Anderson Point and sail over the park. Some bicycle on local roads, and some ride OHVs at nearby Sand Lake Recreation Area. And some are travelling through on foot or by bike, along the Oregon Coast Trail or Oregon Coast Bike Route.

Cape Lookout State Park Facilities

Overnight Facilities
38 full service hookup campsites
1 campsite with electric & water
173 primitive tent sites
13 yurts
6 deluxe log cabins
2 group tent camps, 25 person capacity each
16 hiker biker campsites
(2 campsites & 4 yurts are accessible to campers with disabilities)

Campground Amenities
Group gathering hall
Camp talk amphitheater & program support yurt
Restrooms and showers
RV dump station

Day Use Access Facilities
72 total picnic tables
Group picnic area with shelter
300 car parking lot
Restrooms
Roughly 13 miles of trails, including ¼ mile nature trail, soft surface

Administrative Facilities
Park office & maintenance yard
Campground fee booth
Day use parking fee booth

Recreation Activities at the Park
Camping
Picnicking
Beach combing
Surf activities
Hiking
Road biking
Sea kayaking
Fishing from shore
Clamming
Crabbing in bay
Wildlife observation
Paragliding

The Neighborhood

Most of the properties that abut Cape Lookout State Park are privately owned commercial timberlands. US Forest Service property abuts the park at its southeast corner. North of the park are a number of small acreages, some with dwellings along the bayshore and the county road leading to the park entrance. Abutting the south end of the park, Camp Meriwether, owned by Boy Scouts of America, reaches along the ocean shore as far south as Sand Lake.

OPRD's Role on the Tillamook County Coast

There are a total of twelve state parks on the Tillamook County coast including Cape Lookout. Two of these, Cape Lookout and Nehalem Bay State Parks, have campgrounds next to the ocean shore in addition to day use facilities. The largest of the two campground parks is Nehalem Bay State Park, located between the ocean and Nehalem Bay.

The overnight facilities at Nehalem Bay include 265 campsites with electricity and water, 18 yurts, a horse camp with 17 sites, a hiker / biker camp with 7 tent sites, a fly-in camp with 6 tent sites next to the park's airstrip, and other campground amenities similar to Cape Lookout including a group gathering hall and program area. Its day use facilities include the beach access parking, picnic area, hiking and bike trails, a horse rental concession and boating access facilities on the bayshore.

With two exceptions, the day use state parks in Tillamook County are also on the ocean shore. Oswald West State Park offers beach access and trails. Cape Meares State Scenic Viewpoint features the Cape Meares lighthouse. Clay Meyers State Natural Area occupies most of a small island in the Sand Lake estuary, and features a trail around the island and a large estuarine marsh. Cape Kiwanda State Natural Area features wave sculpted cliffs, tide pools and dunes. Bob Straub State Park, on the Nestucca River sand spit, offers trails and beach access. Beach access and picnic sites are offered at Manhattan Beach, Oceanside Beach and Neskowin Beach State Recreation Sites. Munson Creek Falls State Natural Site, located inland and east of Highway 101, features the highest waterfall in the Coast Range.

Tillamook County Parks

The Tillamook County Parks Department administers seven parks with campgrounds and several day use parks countywide. Most of these are along or close to the ocean shore. Barview Jetty Park, located at the outlet of Tillamook Bay, has 69 RV campsites, 219 tent sites, group campsites and a hiker/biker camp. Whalen Island Park, which occupies the southern end of Whalen Island adjacent to Clay Meyers State Natural Area, has 30 campsites, a day use and picnic area and a boat launch. Kilchis River Campground on the Kilchis River offers 60 RV or tent campsites, a day use area and a boat launch. Trask River Park on the Trask River offers 59 RV or tent campsites, a hiker/biker camp and a day use area. On the Nestucca River the County administers Woods Park, which has five RV campsites, three tent sites and a group use shelter. Webb Park is situated on the ocean shore next to Cape Kiwanda and has seven RV campsites and 33 tent sites.

Map 2-1
Cape Lookout State Park
Vicinity
August 2011
Nature
HISTORY
Discovery
Nehalem Bay State Park
WHEELER
BRIGHTON
Nehalem
Miami Foley Rd
Miami River
Manhattan Beach State Wayside
101
ROCKAWAY
TWIN ROCKS
Twin Rocks State Wayside
BARVIEW
GARIBALDI
BAY CITY
Kilchis River
Little North Fork Wilson River
Wilson River
Pacific Ocean
Cape Meares SSV
OCEANSIDE
Symons SSV
NETARTS
131
06
TILLAMOOK
Trask River
TILLAMOOK
Cape Lookout State Park
Tillamook River
Munson Creek State Natural Area
Sandlake Rd
HEMLOCK
Sand Lake ATV Site
SAND LAKE
BEAVER
Blaine Rd
BLAINE
Nestucca River
Clay Myers State Natural Area
TIERRA DEL MAR
Cape Kiwanda State Natural Area
HEBO
WOODS
Bob Straub State Park
PACIFIC CITY
CLOVERDALE
101
22
Three Rivers
YAMHILL
0 1 2 4 Miles

(Existing Roads & Trails Map here)

(Existing Facilities Map here)

Chapter 3

Park Resource Assessments

OPRD prepares park resource inventories and assessments as a basis for resource management and recreation planning decisions. This chapter summarizes the resource inventories and assessments completed for the plan.

Maps and tables that are most important in describing the findings of the resource assessments are included in this document. More detailed background reports and mapping prepared in the assessment process, and cited in this document, are not published with the plan but are available at the OPRD headquarters office in Salem, and will be available on OPRD's planning web site.

The resource assessments completed for the plan are not intended to serve as the final documentation guiding future decisions on resource management in the park. Refinements to the information gathered so far will be made through on-going studies of resource conditions and management needs for particular areas on a case-by-case basis in preparation for implementing projects for resource management and recreational development.

Physiographic Setting

Cape Lookout State Park is part of the Coast Range physiographic province, which includes the Coast Range mountains from the Columbia River to the Klamath Mountains, and the coastal plain between the Coast Range and the ocean shore. Average Coast Range elevation is about 1500 feet, but peaks such as Mount Hebo rise to about 3000 feet. The narrow coastal plain is interrupted by headlands, which consist mainly of basalts intermixed with marine sediments, sandstones and shales.

The park is located at the south end of the Netarts Littoral Cell and includes the headland of Cape Lookout. Cape Meares marks the northern end of the Netarts Cell. (The extent of the littoral cell has been defined by the Department of Geology and Mineral Industries and the Department of Land Conservation and Development). These capes are examples of basaltic headlands left standing while the surrounding, much softer sedimentary rock is eroded away. Even the more resistant basalts eventually give way to the erosive force of waves. The eroded materials are continually redistributed by wave action, building and always reshaping beaches and long sand spits, such as Netarts Spit. Sand spits are formed where waves meet the shoreline at an angle and move sand along it. The height of the spit is accentuated by wind blowing and depositing dried sand, creating dunes. The Netarts Littoral Cell is one of the smallest littoral cells on the Oregon Coast, with a shoreline length of roughly 10 miles between headlands. Like other littoral cells on the Oregon Coast, the Netarts Cell is susceptible to significant alongshore displacement of sand due to seasonal changes in the predominant directions of wave approach. In

general, sands tend to move southward during the summer months driven by waves approaching from the northwest. During the winter months, sands move northward driven by waves approaching from the southwest. Being small, the Netarts Cell is particularly susceptible to the northward displacement of beach sand during the winter that is accentuated by stronger and/or more frequent winter storm activity caused by El Nino and La Nina weather patterns.

The different rates of coastal erosion between the basalt headlands of Cape Lookout and Cape Meares and the softer sedimentary rocks of the Astoria formation have formed the depression occupied by Netarts Bay. At one time the bay may have been a freshwater lake either with an outlet at the south end or with no permanent outlet. The dunes at the northern end may have been connected to those near the community of Netarts until they were cut through by storm waves. Once an outlet at the north end was established, tidal currents and stream flows maintained it. This is a very shallow bay. At low tide, as much as 70 percent of the bottom of the bay is exposed.

Map 3-1

Netarts Littoral Cell Vicinity

Climate

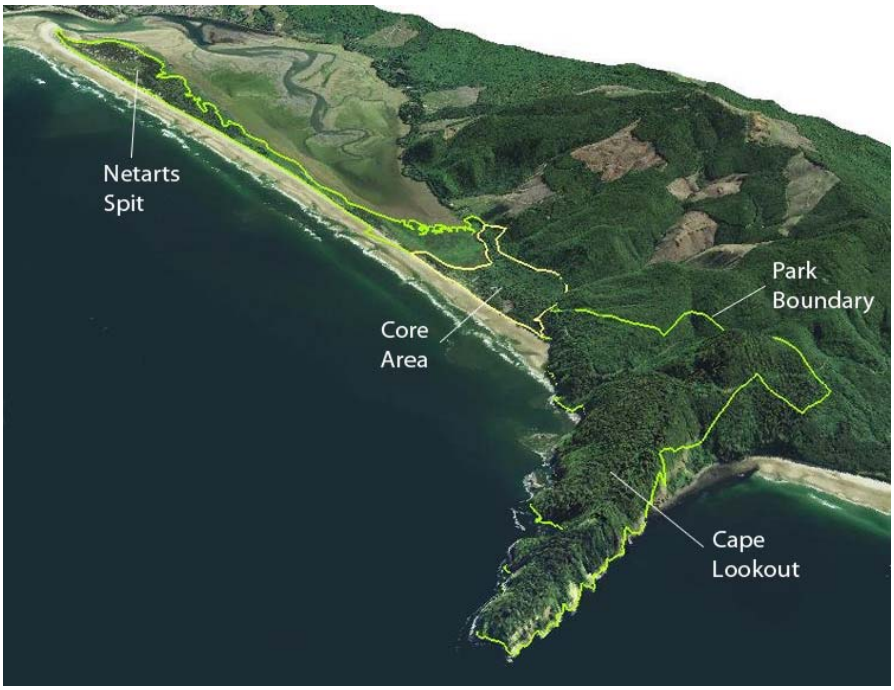
The marine climate of the north Oregon Coast is typical of continental west coast regions between 40 and 50 degrees latitude. Average temperatures range from 42 degrees F in January to 59 degrees F in July. The warm Japanese current brings moist air south along the Pacific Coast, rising and cooling as it meets the Coast Range, resulting in average annual precipitation of 90 inches in the Tillamook area, with most falling as rain. Precipitation is highly seasonal, with 10 inches or more per month between November and March, and only 2 inches per month July through August. Prevailing winds are from the southwest during the winter and from the northwest during the summer. Summers are usually quite cool, often windy and foggy, due to onshore winds bringing air cooled by ocean upwelling. On occasion, an east wind pattern allows warm sunny days in the summer.

The Park Landscape

Cape Lookout has been described as "probably the most striking and scenic headland on the Pacific Coast." (Mangum, 1967.) The two mile long cape, the longest of any Oregon Coast headland, is a narrow wedge of basaltic lava with vertical sea cliffs reaching as high as 800 feet. Cape Lookout displays typical evidence of sea cliff erosion, its blunt end left where the lower part of the cliff was undermined by wave action causing the upper portion to lose its support and break off, its sea cave formed by continued undermining of the cliff base, and its wave cut bench formed by retreat of the cliff. North of the cape, the park's lowlands extend north for nearly six miles, with the last five miles forming the Netarts Spit that fronts the Netarts Bay estuary. The spit has been described as "perhaps the best example of a dune ecosystem in Oregon." (Wilsey and Ham Inc., 1974.) Upland elevations in the park range from a low of around 12 feet on the sand spit to over 1200 feet near the neck of the cape.

The park's core area, where most of the recreational facilities area located, is situated on low and relatively flat ground at the interface of Netarts Bay and the Jackson Creek and Netarts Creek drainage systems. Small pocket depressions, draws, minor ridges, and gentle slopes are present. Steep slopes occur at the edges of the core area, particularly leading up to the county road to the east, and leading to the cape to the south. Aspects in the core area are primarily northerly and westerly. Upland elevations within the core area range from around 12 to 165 feet.

Map 3-2 Cape Lookout State Park Landscape



Geology and Soils

Regionally, most of the rocks that underlie the Tillamook area were laid down in ancient seas of the Eocene, Oligocene, and Miocene epochs. These consist of lava flows and sediments, some of which contain marine fossils. At various times in geologic history, the strata were uplifted, gently folded, faulted, and eroded. The old marine beds and lavas are now overlain in places by terrace deposits, dunes and river silts of Pliocene, Pleistocene and Recent age.

Map 3-3 depicts the surface geology of the Cape Lookout study area. Three primary formations make up the surface geology of the park. Two bedrock formations, both of the Miocene epoch, characterize the higher elevation areas of the park. The older of these is the Astoria formation, which consists mainly of sandstone and siltstone formed from uplifted and consolidated marine sediments. The local mountainous terrain from the south shore of Tillamook Bay to the southern flank of Cape Lookout is mostly the surface expression of the Astoria formation. The headlands of both Cape Lookout and Cape Meares consist of the younger Columbia River Basalt formation, formed when volcanic lava flowed to the surface from submarine and subaerial local vents, intruding and capping the older sedimentary rocks and cooling to form a more resistant bedrock surface, becoming promontory features over time as the surrounding sedimentary rocks were eroded away. Netarts Spit represents the third geologic formation, extending from the base of Cape Lookout northward and consisting of young, unconsolidated beach and dune sand deposits of Pleistocene and Recent age.

Soils formed from the surface geology are represented by Map 3-4. The following is a brief description of each of the park's major soil series that make up the soil units depicted by Map 3-4.

Soil Series

- Ascar series: Consists of moderately deep, well drained soils that formed in colluvium from volcanic rock. They are on side slopes of mountains. Slopes of 20 to 100 percent. The mean annual precipitation is about 90 inches, and the mean annual temperature is about 49 degrees F.
- Chitwood series: Consists of very deep, somewhat poorly drained soils on coastal marine and valley terraces. They formed in alluvium derived from sedimentary rocks. Slopes range from 0 to 15 percent. The mean annual temperature is 52 degrees F. and the mean annual precipitation is 70 inches.
- Condorbridge series: Consists of very deep, well drained soils formed in alluvium and debris flow deposits from sedimentary and igneous rocks. Condorbridge soils are on alluvial fans. Slopes are 3 to 15 percent. The mean annual precipitation is about 95 inches and the mean annual temperature is about 50 degrees F.
- Heceta series: Consists of very deep, poorly drained soils on deflation plains, interdunal depressions, swales and sandy lowlands. They formed in recently stabilized dune sand. Slopes range from 0 to 3 percent. The mean annual precipitation is about 80 inches and the mean annual temperature is about 52 degrees F.
- Hebo series: Consists of very deep, poorly drained soils that formed in alluvium of mixed materials. Hebo soils are on coastal valley and marine terraces and have slopes of 0 to 7 percent. The mean annual precipitation is about 85 inches and the mean annual temperature is about 51 degrees F.

- Klootchie series: Consists of deep and very deep, well drained soils formed in residuum colluvium from volcanic rock. Klootchie soils are on mountains and have slopes of 3 to 90 percent. The mean annual precipitation is about 85 inches and the mean annual temperature is about 48 degrees F.
- Necanicum series: Consists of deep and very deep, well drained soils formed in colluvium from volcanic rock on mountains. Slopes are 0 to 90 percent. The mean annual precipitation is about 100 inches. The mean annual temperature is about 48 degrees F.
- Waldport series: Consists of very deep, excessively drained soils formed in mixed eolian sand. They are on stabilized dunes and have slopes of 0 to 70 percent. The mean annual precipitation is 80 inches and the mean annual temperature is 51 degrees F.

Map 3-3

GENERALIZED GEOLOGIC MAP OF THE TILLAMOOK REGION, OREGON

EXPLANATION

QUATERNARY — PLIOCENE-PLEISTOCENE-RECENT

- **Qal** — Alluvium (River gravels, sands, and silts)
- **Qd** — Dune, bar, and beach sands
- **Qt** — Terrace deposits (Sands with layers of gravel, peat, wood, and clay capping wave-cut terraces)

MIOCENE

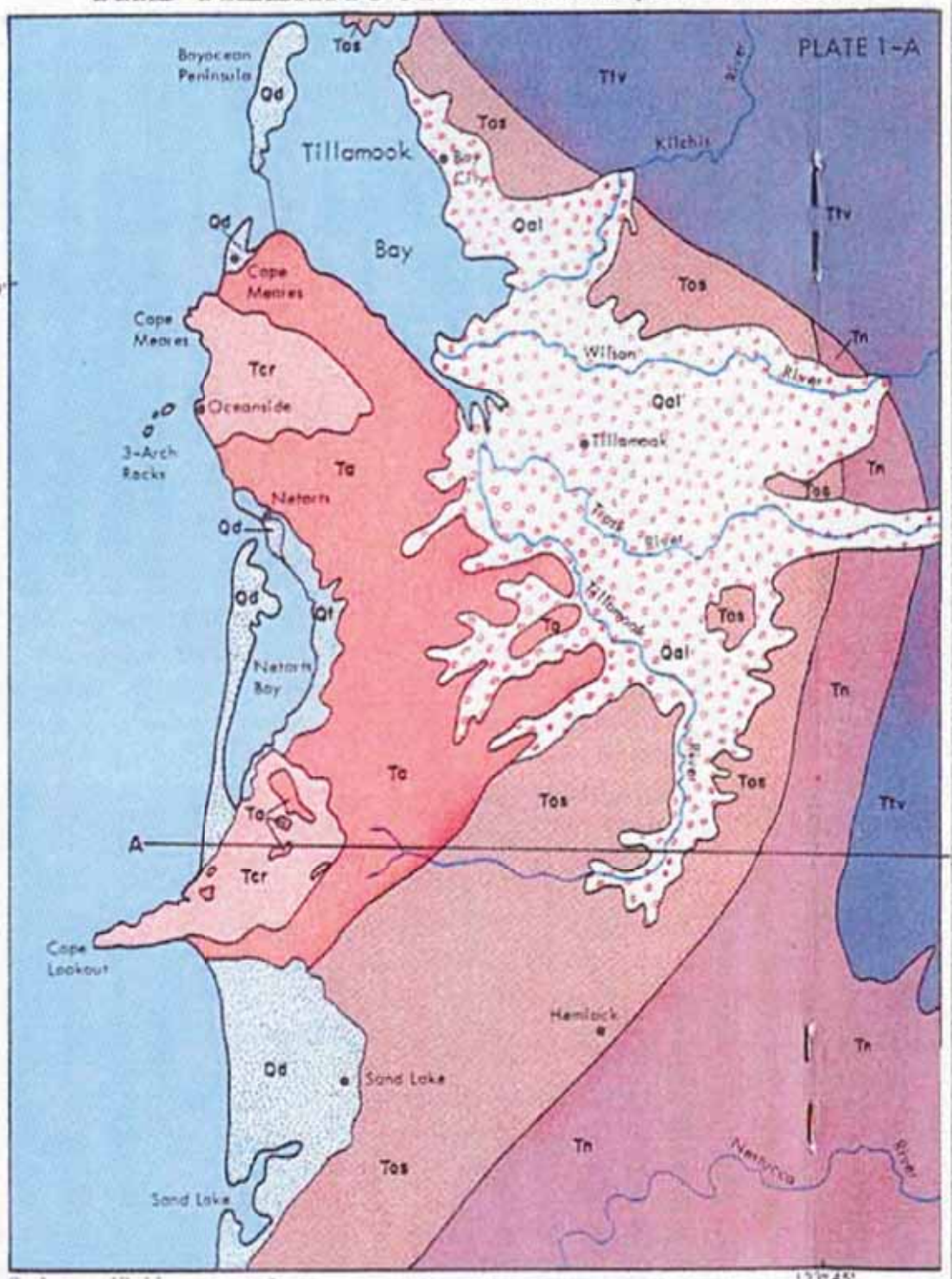
- **Tcr** — Columbia River Basalt (Submarine and subaerial volcanic flows from local vents; pillow lavas and columnar basalt characteristic)
- **Ta** — Astoria Formation (Massive micaceous marine sandstone; tuffaceous siltstone interbedded with Tcr)

TERTIARY — OLIGOCENE

- **Tos** — Oligocene sediments (Tuffaceous marine siltstone, mudstone, and sandstone)

EOCENE

- **Tn** — Nestucca Formation (Dark gray tuffaceous marine shale and thin-bedded sandstone with interbedded volcanic rocks)
- **Ttv** — Tillamook Volcanics (Submarine basalt flows and interbedded sediments)

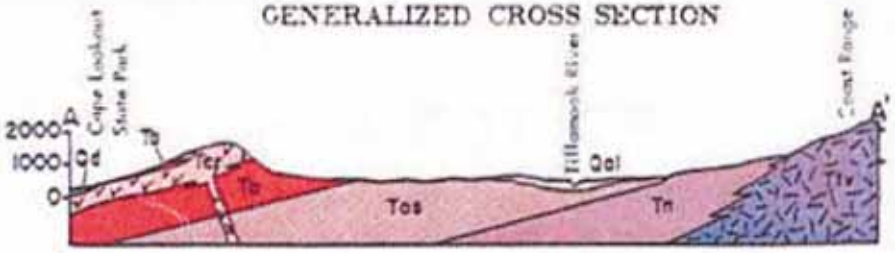


Geology modified from Wells and Peck, 1961

Scale 0 1 2 3 4 5 Miles

Map prepared by STATE OF OREGON

GENERALIZED CROSS SECTION



Cape Lookout State Park
Soils

Legend

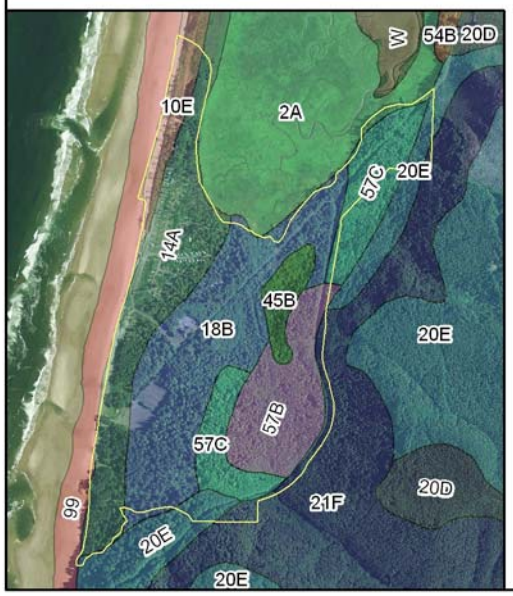
Area of Detailed Study

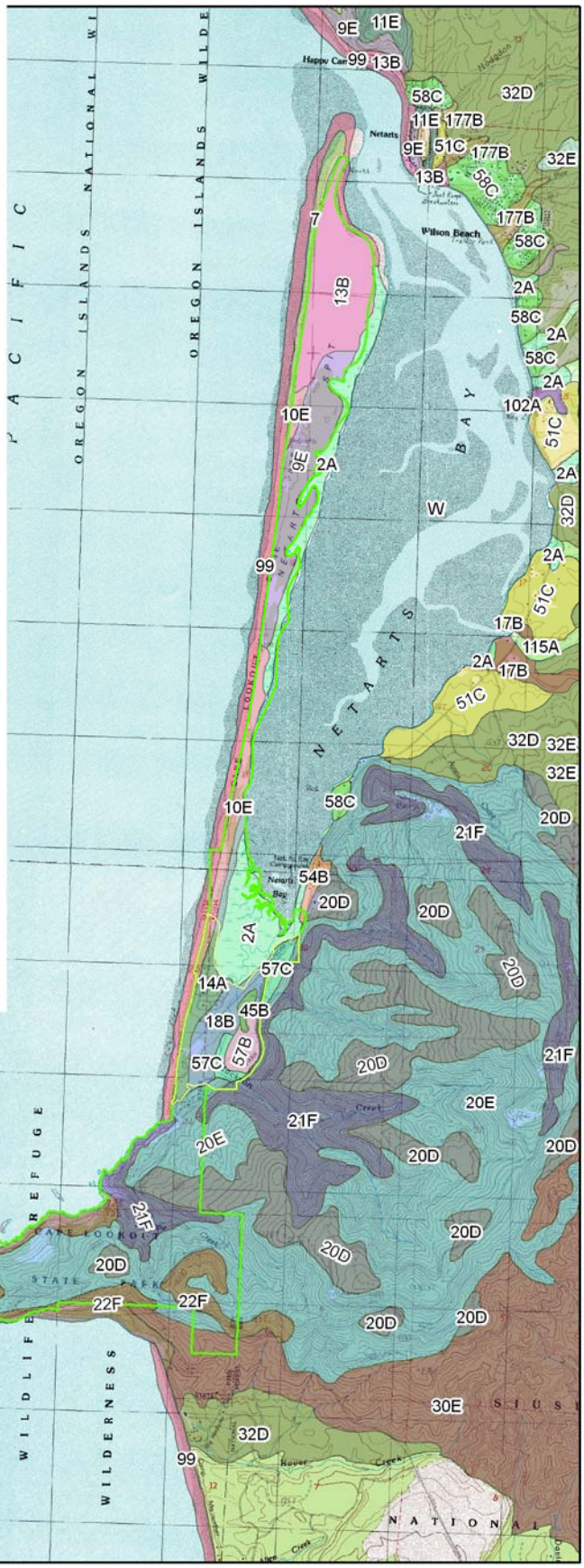
Approximate Park Boundary

Soils

Symbol, Name

- 102A, Fluvaquents-Histosols complex, 0 to 1 percent slopes, diked
- 10E, Waldport fine sand, thin surface, 15 to 60 percent slopes
- 115A, Aquepts, 0 to 1 percent slopes
- 11D, Netarts fine sandy loam, 5 to 30 percent slopes
- 11E, Netarts fine sandy loam, 30 to 60 percent slopes
- 13B, Waldport,thin surface-Heceta fine sands, 0 to 5 percent slopes
- 14A, Heceta fine sand, 0 to 3 percent slopes
- 177B, Dystrudepts-Aquepts complex, 0 to 7 percent slopes
- 178B, Fluventic Humic Dystrudepts-Dystrudepts-Aquepts complex, 0 to 5 percent slopes
- 17B, Chitwood-Hebo complex, 0 to 5 percent slopes
- 18B, Chitwood medial silt loam, 0 to 7 percent slopes
- 20D, Klootchie-Necanicum complex, 5 to 30 percent slopes
- 20E, Klootchie-Necanicum complex, 30 to 60 percent slopes
- 21F, Necanicum-Ascar-Klootchie complex, 60 to 90 percent slopes
- 22F, Ascar-Necanicum-Rock outcrop complex, 60 to 90 percent slopes
- 2A, Fluvaquents-Histosols complex, 0 to 1 percent slopes
- 30E, Templeton-Ecola medial silt loams, 30 to 60 percent slopes
- 32D, Munsoncreek-Flowerpot complex, 5 to 30 percent slopes
- 32E, Munsoncreek-Templeton medial silt loams, 30 to 60 percent slopes
- 45B, Hebo silty clay loam, 0 to 5 percent slopes
- 50B, Walluski medial silt loam, 0 to 7 percent slopes
- 51C, Walluski-Chitwood medial silt loams, 3 to 15 percent slopes
- 54B, Knappa medial silt loam, 0 to 7 percent slopes
- 57B, Condorbridge gravelly medial loam, 0 to 7 percent slopes
- 57C, Condorbridge gravelly medial loam, 3 to 15 percent slopes
- 58C, Knappa medial silt loam, 3 to 15 percent slopes
- 7, Dune land
- 99, Beaches
- 9E, Waldport fine sand, 30 to 60 percent slopes





This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Oregon Lambert Projection
Datum NAD 83

0 0.25 0.5 1 Miles

Hydrology

Cape Lookout State Park is mostly contained within the Netarts Bay-Frontal Pacific Ocean Watershed, which is a small watershed of 25 square miles that includes 14 perennial streams, the Netarts Bay estuary (3.6 square miles), and approximately 7 miles of Pacific coastline. The majority of this watershed drains into Netarts Bay, with the southern portion draining directly into the Pacific Ocean.

Annual precipitation ranges from a low of 90 inches per year in the north end of the watershed to 110 inches per year in the highest elevations of the southern portion of the watershed according to the state precipitation map. (Comparatively, the closest certified weather station, in Tillamook, reports approximately 90 inches per year at the station, with an average 30 year range of 61.2 to 109.3 inches per year.) Peak flows in the streams are generally in December and January and the lowest flows occur most often in September, but August or October can also be low flow months. The watershed can occasionally experience very high precipitation events, recorded as high as 5.22 inches in 24 hours.

Water resources within the park include 3 major perennial streams, numerous intermittent and seasonal streams, emergent, scrub-shrub, and forested wetlands, the estuarine habitats adjacent to Netarts Bay, and several open water, ponded areas associated with beaver complexes near Jackson Creek. The hydrology of the freshwater wetland systems within the park are primarily driven by direct precipitation, groundwater, and overland flow.

The most significant perennial streams within the park are Cape Creek, Jackson Creek, and Netarts Creek. **Cape Creek** is located in the southern portion of the park and is approximately 1.4 miles long with an outlet into the ocean just north of the Cape. This stream has a natural fish barrier near the mouth and does not host any anadromous fish species. **Jackson Creek** is an approximately 1.7 mile long stream that has two outlets. Its natural channel flows directly to the ocean through the park's picnic area, and a half mile long artificial channel diverts a portion of the flow to an outlet into Netarts Bay. Jackson Creek hosts anadromous fish populations and provides spawning and rearing habitat for salmon. **Netarts Creek** is a 1.2 mile long stream associated with a large wetland complex that flows to Netarts Bay near the outlet of the Jackson Creek diversion channel. Netarts Creek is thought to be used by anadromous fish but has not been surveyed. The extensive channel and wetland system along lower Netarts Creek appear to provide potential high quality habitat for Coho salmon, and juvenile Coho have been observed using the system as rearing habitat. The park's core area (where most park facility development is located) is contained within the subwatersheds of Jackson Creek and Netarts Creek.

Jackson Creek

The park's core area is primarily contained within the Jackson Creek subwatershed, a small coastal watershed encompassing just over 1.6 square miles. The watershed drains the Tillamook Highlands and is primarily composed of Miocene age basalts that have been fractured through folding and faulting. The upper Jackson Creek watershed is steep and Jackson Creek forms a deep, narrow canyon east of the park. A pronounced transition to a low gradient stream occurs as Jackson Creek exits the mountain front and enters the coastal plain. This transition occurs just downstream of the creek's crossing under Whiskey Creek Road (the county road) where the stream enters the park.

Jackson Creek historically flowed directly into the ocean. In the middle part of the twentieth century, a diversion channel was constructed and the creek was diverted into Netarts Bay just downstream of the box culvert under Whiskey Creek Road. Anecdotal evidence suggests the reasoning for the diversion was to introduce additional fresh water into the bay, potentially improving habitat conditions for oysters and clearing out some of the accumulated silt in the bay. Ultimately it is not believed that the diversion accomplished either of those objectives. Today, flow remains divided between the two forks of the creek. The diversion channel continues to aggrade as large amounts of gravel are carried downstream.

In 2011, OPRD conducted a hydrology study of the Jackson Creek subwatershed with the purposes of developing a restoration plan to address limiting factors within the stream. **(cite this report)** The Netarts watershed does not have any gages on any of the streams, so flow information from Jackson Creek has been extrapolated from regional regression equations developed by the Oregon Department of Water Resources. With current conditions, roughly 60% of the stream discharge is drained by the diversion channel and roughly 40% of the discharge is carried by the original Jackson Creek. The flow ratio between the two forks fluctuates depending on gravel recruitment in the diversion channel and the presence of material near the flow split. The diversion channel is typically completely dry during periods of low flow in August and September.

Jackson Creek is also the water source for Cape Lookout State Park which holds a 5 cfs water right. The park facilities currently derive all of their potable water from the original Jackson Creek channel. There is a diversion structure located approximately 700 feet downstream of the flow split and it consists of a grated intake pipe along the south bank of the creek. Water flowing into the intake pipe discharges into a concrete settling basin which then flows into a perforated pipe that carries water to a sand filter system. Water sent through the sand filter is pumped up to a storage tank that gravity feeds the park facilities. Excess water is discharged through a pipe near the mouth of Jackson Creek. Currently, the park diverts more water than it uses and is using only a fraction of the 5 cfs water right.

Netarts Creek

The Netarts Creek watershed, a small subwatershed draining just over 0.5 square miles, functions in a similar way to the Jackson Creek subwatershed. The upper portion of the watershed consists of a narrow, steep canyon the opens up onto a broad debris flow at the lower end of the watershed before entering Netarts Bay. In the creek's lower reach, it connects to a forested and scrub-shrub wetland complex located on the east side of the campground road. This wetland complex is approximately 6 acres in size and is characterized by channels associated with Netarts Creek. Runoff from the Jackson Creek diversion channel, generated from the undersized and often gravel clogged culvert that passes under the campground road, also feeds into this wetland complex.

Netarts Creek is confined by undersized and failing culverts that restrict the movement of this naturally dynamic stream system. Culverts under the county road frequently become plugged and require maintenance during high flow events. Netarts Creek then crosses through another culvert under the campground entrance road before exiting into the bay. The campground road itself creates a dike, restricting the connectivity of the wetland complex east of the entrance road from that of the bay.

Wetlands

Low-lying portions of Cape Lookout State Park are generally very wet. Wetland extents and distribution as currently known or presumed within and near the park's core area have been mapped at a relatively coarse level of detail based on above ground indicators, mainly based on plant communities (see Map 3-5). This coarse wetland inventory was not conducted for the larger park. No formal wetland delineations were completed for the plan resource assessments, although a few previous project-related delineations were incorporated into the coarse inventory for the core area.

While the core area of the park is relatively flat over much of its extent, the topography is surprisingly complex. Natural features such as perennial and intermittent streams and flow channels, hummocky ground, low lying marshland, beaver dams and ponds, elevated organic soils derived from woody debris, and the complicated interfacing of porous and impervious layers in the soils all play major roles in the locations of wetlands and water features. Wetlands and non-wetlands often intermingle in unmappable mosaics of habitat. This patchwork is often made up of small patches of upland within an area predominantly wetland, or the converse – small wetlands in a matrix of upland. In this assessment, where true wetland extents were not mappable for reasons of habitat complications or "mosaicing", the outer extents of the upland/wetland mosaics were mapped.

A number of wetlands present in the study area are artificial, having been created both intentionally and passively. Actively created artificial wetlands and water features include the Jackson Creek diversion channel and numerous drainage and storm water diversion ditches. Passively created wetlands include areas adjacent to or supplied with water by the actively created water features. A large area of wet alder and mixed conifer forest adjacent to the Jackson Creek diversion channel appears to have been made much wetter than it would have been prior to creation of the diversion. Other areas of mature to late-seral coniferous forest also appear to be influenced by subsurface leaking of water from the diversion channel, but it is difficult to determine how much was wet before the diversion was created. If the diversion channel were to be plugged or otherwise decommissioned, some areas of wetlands or portions of wetland mosaics would likely be converted to upland. This is especially true of the alder dominated types adjacent to the channel and south of the park entrance road. However, it is almost certain that some portions of this area would remain wetland, and it is not possible at present to map areas that would change status.

Much of the existing campground is within or very near wetlands. Construction of the campground predated wetland fill and removal laws. Many of the campsites and roads are constructed out of fill deposited in the wetlands and are thus elevated and no longer wetlands. Other campsites are still wetlands and are dominated by obligate wetland vegetation where not paved. Further construction or modifications within the existing campground may still require wetland permits from the Department of State Lands (DSL) and/or the US Army Corps of Engineers (USACE).

Because of the limited scope and detail of the wetland assessment completed for the plan, any use of this assessment should only be for general planning purposes. Specific construction designs that overlap with or closely approach these areas will need official wetland determination and delineations, and DSL and USACE wetland permits where required.

(3-5 Hydrology Map here) 11 x 17

Hazards

Stream Flooding

Stream flooding of both Jackson Creek and Netarts Creek presents hazards for the park. Both creeks have the tendency to cause flooding in the park during storm events and periods of high flow, threatening park infrastructure and the safety of park visitors. The flooding hazard could be mitigated with the replacement of culverts, adjustments to road crossings, and the reconnection of floodplain. Flooding on the campground entrance road presents a significant hazard, as this is currently the only road providing access to the park.

The most significant flooding hazard associated with Jackson Creek is derived from the diversion channel flooding a portion of the campground. The diversion channel is carved through an alluvial fan, creating an unstable system which moves large amounts of gravel downstream. The aggrading of the gravel at the mouth of the channel's exit into Netarts Bay causes the creek to change its course as gravel builds up. A boulder weir has been constructed along the south side of the creek to prevent the stream from jumping the channel and flowing directly through the campground. The aggrading gravel is also a problem for the culvert which passes the channel under the campground entrance road. The culvert is undersized and often clogged with gravel. The continual plugging of this culvert with debris periodically causes the creek to flood over the entrance road.

Netarts Creek is a dynamic stream which changes channels frequently and presents a flooding hazard due to severely undersized and inadequately placed culverts. Netarts Creek flows through culverts under both Whiskey Creek Road and the campground entrance road. Culverts at Whiskey Creek Road are blocked during flood events when water has been observed flowing across the road. Farther downstream, Netarts Creek flows into a large wetland complex and then under the campground entrance road. The campground entrance road bisects the wetland, and exchange between the Netarts Creek wetland and Netarts Bay is limited by the presence of undersized culverts which serve as flow impediments. The culverts are inadequately sized and do not align with the stream channel. As a result, flooding on the campground entrance road can occur during the winter months and during times of high flow.

Progressive Shoreline Erosion

For several decades, the ocean shoreline that fronts the park's core area and sand spit has been receding, causing OPRD to abandon or relocate some of the park facilities and to artificially stabilize a reach of shoreline that fronts most of the campground. Major shoreline erosion has been sporadic, mostly occurring during the more intensive winter storm events set up by El Nino and La Nina weather patterns.

Major winter storms, especially successive storms, tend to alter the normal seasonal pattern of beach sand displacement within a littoral cell. Under normal conditions, beach sand is displaced southward during the summer, driven by waves from the northwest. During the winter, sand is moved northward, driven by waves from the southwest. Over a period of several years to a few decades, the net transport of beach sand within the littoral cell tends to be balanced. In the more intensive winter storms, waves from the southwest tend to be larger, transporting larger volumes of beach sand northward than are replaced by summer waves. This leads to a sand deficit at the

southern end of the cell, such as where the park facilities are located. When the extent of the beach is reduced by sand removal, storm wave energy that is normally dissipated as waves break on the beach reaches farther inland causing the dunes to erode and the shoreline to retreat landward. Once the beach is changed in this way, waves generated during normal winter storm activity may continue to erode these “hot spots” that were set up by the major storms.

Until the El Nino of 1982-83, a wide sandy beach existed along the park shoreline, and there had been no documentation of significant erosion of the high natural foredune. However, during the 1960’s a log seawall supported by vertical I-beams was constructed along the shoreline fronting most of the campground area, which suggests that this reach of shoreline had been susceptible to previous phases of storm wave erosion. The northward shift of sand during the 1982-83 El Nino greatly reduced the expanse of beach fronting the park, allowing storm waves to attack the dunes while causing the seawall to begin failing at its south end. In subsequent years, continued failure of the wall, coupled with loss of the dunes, progressed northward until the wall was completely destroyed and finally eliminated after the storms of the late 1990’s. Shoreline retreat and damages to the park resulting from storms during the successive winters of 1997-98 and 1998-99 caused OPRD to abandon and remove 25 campsites, an amphitheater and 2 restroom buildings that were either damaged or would be at risk of total loss in subsequent storm seasons.

Between 1999 and 2000 an experimental artificial dune fronted by a cobblestone revetment, designed to mimic natural conditions, were constructed along the reach of shoreline formerly protected by the seawall. The dune was constructed of sand bags covered with a layer of sand planted with native beach grass. A berm of beach cobble was placed against the dune to dissipate wave energy. The cobblestone revetment is dynamic, being displaced over time by wave action, and needs to be replaced periodically. Unless the cobblestone protection is maintained, the artificial dune will be undermined by storm wave action and will fail. Storm waves sometimes wash over the dune and into the campground.

While the shoreline fronting most of the campground has been stabilized by the artificial dune and revetment at least for now, shoreline retreat has continued elsewhere in the park. In the winter of 2007-08, excessive shoreline retreat occurred along the narrow spit north of the campground where the park’s three main sewage drainfields are located. One of the drainfields was irreparably damaged, and the entire drainfield system had to be relocated. The natural dune height through this area has been reduced to a point where the spit may soon be breached by wave overwash.

In assessing past trends and future risks to park facilities, studies of the park’s receding shoreline conducted by the Department of Geology and Mineral Industries (DOGAMI), and other reports produced by DOGAMI that provide indicators of potential future erosion and related hazards were reviewed **(cite reports)**. Historic aerial photos were also reviewed to assess the historic changes in the shoreline. These data indicate that natural rebuilding of the beach and dunes, which usually follows a period of erosion, is not occurring along the park shoreline. According to DOGAMI scientists, because of the extent of erosion that has taken place, it appears doubtful that this reach of shoreline may ever fully recover, particularly when one considers the affects of climate change and rising sea levels. Since the early 1980’s, the rate of shoreline retreat has averaged 3 to 6 feet per year along the section of shoreline fronting the campground and day use area. Erosion has been sporadic, with major changes occurring in the more intensive storms.

Until the artificial dune and revetment were constructed to protect a portion of this reach, a similar erosion rate was also occurring along the now-protected reach. Map 3-6 depicts the changes in the shoreline and related loss of park facilities over time.

South of the artificial dune, shoreline retreat is undermining the group tent camp parking lot and reducing the size of the picnic area. At the current average erosion rate, shoreline retreat could reach the picnic shelter in as few as 15 years, and the corner of the day use parking lot in as few as 23 years. However, one or more major storm events could cause much more rapid shoreline retreat.

The north end of the campground (Loop A/B) is at risk where it extends beyond the artificial dune and onto the spit. The remaining natural dune in this area will continue to be reduced in height as the shoreline recedes landward, increasing the likelihood of waves overwashing into the campground. Near the north end of the campground, the natural dune height has been reduced to as low as 25 feet elevation, only 4 feet higher than a low point in the artificial dune where wave overwash now occurs occasionally in winter storms. As the past has shown, major shoreline retreat can occur in a single storm, such as the storm of March 2-3, 1999. A storm of this magnitude could breach this natural dune.

Map 3-7 depicts future flooding scenarios that could occur as conditions worsen over time. Three scenarios are represented. One scenario represents, in very conceptual way, flooding that could occur in a major storm surge that causes a breach of the dune at its low elevation where the artificial dune abuts the natural dune. (Note, this is a conceptual depiction that is not based on scientific modeling.) The second scenario represents future flooding up to 20 feet elevation. The third scenario represents future flooding up to 30 feet elevation.

Catastrophic Storms and Tsunamis

The Department of Geology and Mineral Industries (DOGAMI) has also modeled the extent of possible erosion in unusual, but potentially catastrophic events. Scenarios representing conditions of tidal elevation, storm surge and peak wave height, run-up and frequency have been developed to determine low, moderate and high risk zones based on the likelihood of waves of different heights occurring offshore. **(cite report)** Possible inland expansion of the active shoreline erosion zone based on three catastrophic event scenarios is depicted by Map 3-8 based on the DOGAMI modeling.

The “high-risk” zone is based on a storm event occurring under conditions similar to the March 1999 storm, which produced waves reaching 47 feet in height that washed into Loop A/B and caused considerable damage. This scenario represents conditions also referred to as a “50-year storm.” According to DOGAMI, this scenario could cause erosion as far inland as 275 feet from the current shoreline. The “moderate risk” zone is based on a more unusual but more catastrophic storm event, with waves up to 52 feet in height causing erosion as far inland as 430 feet from the current shoreline. This scenario represents conditions also referred to as a “100-year storm.” The “low risk” zone represents extremely rare conditions resulting from an off-shore earthquake occurring simultaneously with a 100-year storm, which could cause erosion as far as 475 feet from the current shoreline. **(cite report)**

In addition, DOGAMI has modeled the possible inland extent of ocean flood inundation (inundation beyond the extent of active erosion) in tsunami events. (See Map 3-9.) This mapping also includes DOGAMI's recommended area of evacuation in such an event. Map 3-9 is based on outdated information, however. DOGAMI is currently updating this information, and republished maps will be forthcoming.

(3-6 Historic Erosion Map, 11 x 17

3-7 Future Ocean Flooding Scenarios Map, 11 x 17

3-8 Catastrophic Erosion Map 8.5 x 11

3-9 Tsunami Map here) 11x17

Plant Communities

The inventory of plant communities and their conditions conducted for the plan serves as a basis for assessing the natural resource values of the plant communities themselves, as well as their values for wildlife habitat. Discussions of both the botanical and the habitat values of the plant communities present in the park are provided in this chapter. Map 3-10, included in the Plant Communities section, illustrates the broad vegetation types and associated habitat types parkwide. The related discussion of Fish and Wildlife in the park follows this section.

Inventory for Botanical and Habitat Assessments

Two different levels of inventory were used to assess the types and conditions of plant communities and associated habitat types. Most of the inventory work focused on the park's core area where most of the existing park facilities and nearly all of the future recreational development opportunities are likely to be located. (The core area is where changes to the park are needed to address hazards associated with ocean shore erosion and flooding and related risks to park visitors and facilities.) Botanical research for the core area included field surveys and detailed mapping of plant community types following review of areal photos, background reports, and other pertinent literature. In contrast, outside the core area the assessments were based mostly on review of aerial photos and background reports and literature, and more limited field surveys. As such, the mapping and descriptions of plant communities and habitats outside the core area are less detailed.

However, information on the botanical and habitat values outside the core area was derived from previous reports produced in support of the park's two dedicated State Natural Heritage Areas that encompass the larger share of the park outside the core area. The Cape Lookout headland and the Netarts Sand Spit are recognized as outstanding natural areas, and are both managed as Natural Heritage Areas under Dedication Agreements formerly established with the Department of State Lands and overseen by the State Land Board. Allowable activities in the Natural Heritage Areas were predetermined by the Dedication Agreements for purposes generally associated with protection, management and interpretation of the natural resource values. Steep topography on and around the cape, and ocean hazards along the spit, also limit future uses outside the core area, both inside and outside the Heritage Areas. Given the overall limitations on use, any further assessments needed to support resource management or possible trail development decisions outside the core area can be deferred and addressed through follow-up work after completion of this plan.

Overview of Botanical & Habitat Conditions

Highly significant natural habitats are present almost throughout the park, including some areas in close proximity to developed sites. Most of the property south of the campground, reaching to the southern extent of the park and to the end of the cape, is late-seral, mature to old-growth forest. Most of the virgin forest away from roads, trails and other development is nearly pristine. In the northern area of the park, salt marsh communities are generally in excellent condition, while the conditions of plant communities on the sand spit are variable. Much of the area in close proximity to park development is in poorer condition. At-risk plant species are known from the park as a whole, but not from the core area.

The majority of the core area landscape is characterized by Sitka spruce, western hemlock, and red alder forest, with smaller portions characterized by marshland, dunal grassland and woodland, and shrub-scrub wetland. A substantial amount of the Sitka spruce-western hemlock forest is late successional, with large diameter trees. There is some evidence of salvage logging in a limited portion of the remaining late-successional forest, but the majority of what remains has never been logged. There are larger areas of younger forest, also dominated by spruce and hemlock where coniferous, but alder is dominant in wetter areas of the younger forest types. The largest share of young conifer forest in the core area is densely overstocked and in need of thinning. Much of the forested ground is marbled with wetlands and water features. Expanses of marshland occur primarily in close proximity to Netarts Bay. Smaller marshes are scattered in the forested areas. Shrub-scrub wetland types occur in association with the shoreline and the area behind the foredune at the west end of the campground. Dunal grassland and woodland occur in the thin strip of dunes that separates the campground from the beach.

(3-10 Parkwide Plant Communities and Habitat Types Map here) 11 x 17

Historic Vegetation and Change

Historic and prehistoric vegetation cover can be inferred from a variety of sources, including early surveyors' notes, soil types, slope, aspect, elevation, known fire history, known fire return intervals, and other environmental parameters. Several large-scale habitat modeling efforts have assessed environmental parameters in conjunction with early vegetation accounts to characterize pre-settlement vegetation. In the case of the Cape Lookout, five sources of historic information or modeling are available:

- General Land Office surveyors' notes from the mid to late 1800's
- Oregon Biodiversity Information Center (ORBIC) interpretation based on early surveyors' notes
- the IMAP Potential Natural Vegetation model
- the US Forest Service LANDFIRE Biophysical Settings model
- typical natural vegetation associations reported in the Natural Resources Conservation Service's NASIS soils data.

These sources effectively indicate a general picture of past vegetation cover, although each source varies somewhat from the others. This general, composite picture provides a starting point for analysis of change in vegetation over time, which can be roughly deduced by comparing present vegetation to the presumed past vegetation, and especially by taking into consideration known and presumed post European-American settlement land management events and practices.

The broad vegetation types presumed to be present over much of the park prior to and soon after European-American settlement are reported in all sources as historically dominated by several types of coniferous forest, each composed of various relative abundances of Sitka spruce, shore pine, western hemlock, western red cedar, red alder, and Douglas fir. All indicate a change from forested types to marshland and dunal types, but none are very specific. All of the models under-represent the historic diversity due to limitations of scale. The ORBIC data provides the best and most easily applied approximation of pre-European settlement vegetation patterns across Cape Lookout State Park (see Map 3-11). Overall pre-European settlement patterns of vegetation and anthropogenic change are best broken out into three zones: dunal environments, marshland, and coniferous forest.

<u>Dunal Environments</u>

Dunal extent and composition has changed significantly over the last 150 years due to two main factors: erosion, and colonization by non-native plant species. There are extreme differences between the vegetation of the year 1800 and that of the year 2000. This habitat has probably built up and eroded away several times over the millennia depending on storm and weather cycles.

<u>Marshland</u>

Salt marsh habitats of Netarts Bay adjacent to the park have changed significantly in the period of European-American settlement, but not entirely due to human actions. There is evidence that the outlet of Netarts Bay once was situated at the south end of the bay rather than in the north as is now the case. It has also been theorized that Netarts Bay was once a freshwater lake with no permanent outlet to the ocean. Under both of these scenarios the vegetation would have been drastically different in the vicinity of the park compared to today. The Jackson Creek diversion channel and other creeks at the south end of the bay have probably had some influence on both

the bay depth and water brackishness of the salt marsh. Because of the diversion channel there is now a system of freshwater channels that braid through the wetland. Influence over brackishness has probably shifted plant communities slightly, but more influence from the diversion and creek are probably due to the sediment influx that the water carries. Decreasing water depth has potentially radically altered the composition of the marshland, both because of shift in the outlet of the bay to the north, and because of the diversion of Jackson Creek. It is possible that past Native American activity was a factor in the vegetation composition of the saltmarsh, but little information is available. Presumably, the marsh was used for hunting and collection of shellfish, but plant species may have been collected in large amounts as well. Invasive plants are not currently known to have had major influence on the ecology of the saltmarsh.

Coniferous Forest

Much of the park as a whole is virgin forest, but there are some areas that have been logged as well. Approximately 80 acres of the core area were clearcut logged around 1960, and perhaps 10 additional acres may have been high-graded or salvaged adjacent to the clearcut boundary at that time. Salvage logging has also taken place at the southwestern extent of the core area at a site that appears to have suffered from blowdown or other disturbance. Historic aerial photos reveal evidence a blowdown event around the 1930's.

Fire has not been a major influence in the park as a whole or within the core area, but there are several indicators of past minor fires. The ORBIC data show an area of burnt over land on the south face of the cape in the 1800s. Other evidence of fire is sparse, but one very old cedar snag with evident burn scars is present in the vicinity of the day use parking lot. It is possible that this was the result of a lightning strike or a careless park visitor. Fire in general is evidently a rare occurrence in this area because of the advanced forest ages in unlogged areas, the amount of rain the areas receives, and the profusion of wetlands through the area.

The Jackson Creek diversion channel may have increased wetland extents within adjacent forested areas. The banks and sidecast berms are somewhat permeable. This leakiness and increased hydrology has likely shifted forest composition slightly towards alder instead of conifers, particularly in areas recovering from the 1930s blowdown.

(3-11 Historic Vegetation Map here) 11x17

Plant Communities Present in the Core Area

Assessments of the plant communities and associated habitat types present in the park emphasize the park's core area. General plant community types present in the core area, and their corresponding coarse mapping unit codes, are listed below and depicted on Map 3-12. A more detailed summary of each coarse mapping unit is provided in Appendix A.

The coarse mapping units have been aggregated from more detailed mapping and descriptions provided in the background report titled "Vegetation Inventory and Botanical Resource Assessment for the Cape Lookout State Park." (Bacheller, 2010.) The coarse plant community names used in this section are simple descriptions that encompass the broader group of fine-scale plant communities described in the background report. Coarse scale plant community descriptions (see Appendix A) are organized according to the habitat type categories of forest, shrubland and herbaceous communities. Sites where there is little or no native vegetation present, described in the background report as non-vegetated, developed and disturbed areas, have been omitted from the list below and the descriptions in Appendix A, but are depicted on Map 3-12.

Map 3-13, also included in this section, provides a general picture of the conditions of the core area plant communities. Deterioration of plant community condition and ecology is largely due to weed infestation and human trampling. In some areas, young conifer forests planted following recent logging are overstocked and are approaching minimum crown ratios due to density, and are lacking in understory vegetation. At the west and northwest edges of the campground, trees are dying from increased soil salinity caused by waves overwashing the foredune.

Forest Types (F)Present in the Core Area

Forest associations within the park's core area are described in broad groupings based on overstory species composition and age class. Most of the forest within the core area is coniferous, but there are also large amounts of red-alder dominated forest, particularly in wetter and younger portions. Younger forests typically arise from two sources: from loss of established forest cover through logging, blow-down, or fire; or from trees encroaching into previously non-forested areas due to changes in disturbance patterns, planting by humans etc. Following is a list of the forest types and corresponding mapping units (see Map 3-12) in the core area.

F01: Late-seral mixed conifer forest
F02: Late-seral spruce forest
F03: Late-seral to mature mixed conifer forest
F04: Mature alder forest with emerging young to mid-aged mixed conifers
F05: Mature mixed conifer and alder forest
F06: Mature mixed conifer forest
F07: Mature spruce forest
F08: Mature spruce-alder forest
F09: Mid-aged alder forest
F10: Mid-aged cedar-alder forest
F11: Mid-aged hemlock-alder forest
F12: Mid-aged mixed conifer and alder forest
F13: Mid-aged mixed conifer forest
F14: Mid-aged spruce forest

F15: Mid-aged spruce-alder forest
F16: Mid-aged spruce-douglas fir forest
F17: Uneven-aged mixed conifer and alder forest
F18: Uneven-aged spruce-alder forest/shrubland
F19: Young alder forest
F20: Young mixed conifer and alder forest
F21: Young spruce-alder forest
F22: Mid-aged spruce-shore pine forest

Shrubland Types (S) Present in the Core Area

Shubland communities are prominent within the core area, especially in areas with the harshest or wettest growing conditions. These areas are often characterized by willow, salmonberry, black twinberry, salal, and evergreen huckleberry thickets that are underlain by slough sedge, skunk cabbage, water parsley, deer fern, sword fern, lady fern, or combinations of these species. The driest of the shrublands in the study area are dominated by salal, evergreen huckleberry, and swordfern. The wettest are dominated by salmonberry, black twinberry, slough sedge, and skunk cabbage. Two shrubland types are present in the core area:

S1: Shrub-scrub wetland
S2: Mesic shrubland

Herbaceous Types (H) Present in the Core Area

The herbaceous plant communities present in the core area fall within three broad categories: dunal grassland environments, sparse beach vegetation, and emergent marshlands/wet meadows. Each has a distinct conservation value, ranging from none to extremely high. Three herbaceous types are present in the core area:

H1: Dunal grassland
H2: Emergent marsh
H3: Sparse beach vegetation

(3-12 Core Area Plant Communities Map 11 x 17

3-13 Core Area Plant Community Conditions Map here) 11 x 17

At-Risk Plants

The Oregon Biodiversity Information Center (ORBIC) database and OPRD's records were reviewed for prior botanical data, including review for previous records of at-risk species for Cape Lookout State Park and its immediate vicinity. The ORBIC database did not reveal any specific known sites of protected species within the park's core area; however, several at-risk plant species were reported within a short distance of the boundary of the core area, and from within the park property as a whole. A number of at-risk plants, lichens, and fungi are known from the park property as a whole, as well as from the local vicinity. No occurrences of at-risk botanical species were previously known from the core area, and none were located in the course of this assessment. There is, however, abundant potential habitat for a number of such species. It was not within the scope of this assessment to survey exhaustively for at-risk species throughout the core area. At-risk species surveys should be performed on a site-specific basis prior to implementation of park development projects.

A map depicting known occurrences of at-risk plants in the park and in the vicinity, and a map depicting potential habitat for at-risk plants, can be reviewed in the background report titled "Vegetation Inventory and Botanical Resource Assessment for the Cape Lookout State Park." (Bacheller, 2010.)

Table 3.1 At-risk Plants Known From Within Park Boundaries (Outside of Core Area) and the Vicinity

Scientific Name	Rarity	Location
Ahnfeltiopsis leptophylla	ORBIC list 3	vicinity
Calypogeia sphagnicola	ORBIC list 2	vicinity
Cordylanthus maritimus ssp. palustris	Listed	In park
Cortinarius depauperatus	ORBIC list 3	vicinity
Filipendula occidentalis	Candidate	vicinity
Heterodermia japonica	ORBIC list 2	In park
Heterodermia leucomela	ORBIC list 2	In park
Heterodermia sitchensis	ORBIC list 2	In park
Hypotrachyna revoluta	ORBIC list 2	In park
Lophozia laxa	ORBIC list 2	vicinity
Neogastroclonium subarticulatum	ORBIC list 3	vicinity
Niebla cephalota	ORBIC list 2	vicinity
Pohlia sphagnicola	ORBIC list 2	vicinity
Puccinellia pumila	ORBIC list 3	In park
Sidalcea hirtipes	Candidate	vicinity
Silene douglasii var. oraria	Listed	In park
Teloschistes flavicans	ORBIC list 2	In park
Usnea rubicunda	ORBIC list 3	In park
Vaccinium oxycoccos	ORBIC list 4	vicinity

Of the at-risk species known to occur in the park or in the vicinity, habitat within the core area is present for *Cortinarius depauperatus, Filipendula occidentalis, Heterodermia japonica, Heterodermia leucomela, Heterodermia sitchensis, Hypotrachyna revoluta, Niebla cephalota, Teloschistes flavicans,* and *Usnea rubicunda*.

Potential habitat is also present in the core area for the listed species *Abronia umbellata ssp. breviflora* (pink sandverbena). This is the only state or federally listed species to have suitable habitat present in the core area. However, outside the core area there is suitable habitat for two other listed species, *Cordylanthus maritimus ssp. palustris* (Pt. Reyes bird's-beak) and *Silene douglasii var. oraria* (Cascade Head catchfly).

A range of lichen species that typically occur in coastal fog zone forests and shrublands should be considered high probability species. None of these are listed under either the state or federal Endangered Species Act, but are considered at-risk species that should be preserved where possible to prevent a trend toward listing.

Exotic Plants

Exotic plants are only widespread and abundant in developed areas and sparsely vegetated upland environments in the core area. Wetlands and late-seral forests are mostly spared from significant invasions of weeds, with a few exceptions. Prominent, high priority weed infestations are depicted on Map 3-14.

Most of the late seral forest is nearly pristine from an exotic plant standpoint. Within these late-seral stands, weeds are mainly along trails or on the immediate shoreline where more sunlight reaches the ground. The weeds that are most problematic are English ivy, evergreen blackberry, and Himalaya/Armenian blackberry. Trails and forested shoreline also contain other typical disturbed site species such as coastal burnweed and weed species typical of lawns and developed areas.

Wetlands are occasionally infested with creeping buttercup, and reed canarygrass occurs in a single known patch in one of the wettest parts of the campground. These species can potentially spread from relative insignificance to highly abundant and widespread.

Commonly, beaches and dunes, and their interface with other habitats, are infested with European beachgrass.

Table 3.2 State Listed and High Priority Noxious Weeds Identified in the Core Area

Common Name	Scientific Name	ODA List
English ivy	*Hedera helix*	B
Evergreen blackberry	*Rubus lacinatus*	Not listed (crop species)
Herb Robert	*Geranium robertianum*	B
Himalaya/Armenian blackberry	*Rubus armeniacus*	B
Reed canarygrass	*Phalaris arundinacea*	Not listed (cattle forage species)

Other Possible Exotic Plants in the Park

The entirety of Cape Lookout State Park was not field surveyed, so this assessment does not account for weeds outside the core area. Given the habitat types present in the park as a whole, there are a number of additional species, listed below, that should be on the park's list of species to be aware of:

Wetlands, salt marsh, and transition zones

Purple loostrife, *Lythrum salicaria*
Common reed, *Phragmites australis ssp. australis*
Reed canarygrass, *Phalaris arundinacea*
Creeping buttercup, *Ranunculus repens*
Japanese knotweed, *Fallopia japonica (Polygonum cuspidatum)*
Giant knotweed, *Fallopia(Polygonum) sachalinense*
Bohemian knotweed, *Fallopia (Polygonum) x bohemicum*

Netarts Spit, meadows/openings on the cape

Gorse, *Ulex europea*
French broom, *Genista monspessulana*
Portuguese broom, *Cytisus striatus*
Spanish broom, *Spartium junceum*
Scotch broom, *Cytisus scoparius*
Meadow knapweed, *Centaurea pratensis*

Forests

Shining gernanium, *Geranium lucidum*
False brome, *Brachypodium sylvaticum*
Old man's beard, *Clematis vitalba*
English ivy, *Hedera helix*

(3-14 Invasive Plants Species Map here) 11x17

Fish and Wildlife

Habitat values and the potential for fish and wildlife species occupying various areas of the park were determined on the basis of assessments of existing plant communities, historic wildlife data, and limited field surveys. Historic fish and wildlife data were obtained from the Oregon Biodiversity Information Center (ORBIC, 2011), E-Bird (www.ebird.org), previous planning documents for Cape Lookout State Park (OPRD, 1981), the Netarts Bay Watershed Habitat Study, Restoration Plan, and Limiting Factor Analysis (Demeter Design, 2008), and the Oregon Conservation Strategy (ODWF, 2006). Additional data were gathered through preliminary wildlife assessments by OPRD. These data provide a loose framework to make decisions on wildlife management strategies; however, development of specific wildlife management actions will require additional surveys. Survey needs will be determined based on adaptive management strategies, focal wildlife species, and consultation with United States Fish and Wildlife Service (USFWS), Oregon Department of Fish and Wildlife (ODFW), and other local interest groups.

Habitat Types

The place where an animal lives is defined as a habitat type, and includes the physical and biotic conditions of the environment. Habitat types are usually defined by the dominant vegetation or a physical feature. The habitat types for Cape Lookout State Park have been categorized into seven broad-level habitat groups following the Wildlife Habitat Relationships of Oregon and Washington (WHRO; Johnson and O'Neil 2001) and more specific habitat types adapted from Oregon GAP Analysis (Kagan et. al 1998). This level of habitat typing allows for the use of more detailed vegetation components valuable in wildlife management strategies.

Map 3-10 in the previous section depicts plant communities and associated habitat types parkwide. More detailed vegetation communities in the core area are illustrated by Map 3-12 and are described in Appendix A, which is correlated to Map 3-12, and in the background report on the park's plant communities and conditions (Bacheller, 2010).

Coastal Beaches and Dunes: Coastal dunes and beaches are characterized by sands and sandy soils. This habitat group ranges from non-vegetated beaches to dense shrublands.

> Beaches: Beaches are non-vegetated or sparsely vegetated with herbaceous plants and forbs. This habitat is of prime importance to wintering shorebirds foraging along the tidal zone and could potentially support breeding of western snowy plover.
>
> Dunes: Vegetation of the coastal dunes include shrublands and dunal grasslands. Invasion of European beachgrass tends to stabilize dunes; however ocean patterns and erosion restructure the shoreline and change the location and structure of dunes, such as is occurring at Cape Lookout.

Coastal Headlands and Islands: Located within the marine nearshore, cliffs, salt-spray, and high winds generally limit vegetation to rocky islands, forblands, grasslands, or shrublands. At Cape Lookout State Park, rocky islands and basalt cliffs line the cape. Steep slopes and nearshore islands devoid of vegetation provide ample refuge for seabirds and marine mammals, including nesting seabird colonies and harbor seals.

Herbaceous Wetlands: Herbaceous wetlands have saturated soils with floating or rooting aquatic vegetation, grasses, sedges, and other plants. When connected to stream systems, herbaceous wetlands can provide fish rearing habitat. Amphibians and macro invertebrates also utilize herbaceous wetlands.

Open Water – Lakes, Rivers and Streams: Cape Lookout State Park is crossed by many streams that feed into a complex of wetlands, ocean, and Netarts Bay. These streams range from high-flow during rain events to low-flow during dry months. Streams provide habitat for numerous macro invertebrates, fish, and amphibians.

Bays and Estuaries: Bays and estuaries are strongly influenced by tidal patterns, resulting in a fluctuating water level and salinity. Netarts Bay is considered an Important Bird Area by the Audubon Society, harboring wintering waterfowl such as black brant as well as shorebirds and invertebrates.

Westside Riparian – Wetlands: Riparian-wetland is comprised of mesic shrubland and shrub-scrub wetland vegetation communities, with dense shrub cover, woodland, or forest. Characterized by wetland hydrology with periodic flooding or perennial freshwater, riparian-wetlands tend to occur in linear strips across the landscape. Large woody debris is common in late seral forests and adjacent streams.

Westside Lowland Conifer – Hardwood Forest: Westside lowland conifer-hardwood forest is extensive on the Oregon coast, dominated by evergreen conifers, deciduous broadleaf trees, or both. Late seral stands have an abundance of large diameter trees, multi-layered canopies, large snags, and downed wood. Forest understory is structurally diverse. Composition varies widely, and four habitat types within this group are present at Cape Lookout State Park:

> Mixed Conifer Forest: Mixed conifer forest at Cape Lookout State Park is comprised of mature mixed conifer forest. Late seral coniferous forests are a Conservation Strategy habitat (ODFW, 2005). As this habitat type ages, its importance will increase.
>
> Mixed Conifer – Deciduous Forest: Mixed conifer-deciduous forest is comprised of the following vegetation communities: mature mixed conifer and alder forest, mid-aged cedar-alder forest, mid-aged hemlock-alder forest, uneven aged mixed conifer and alder forest, uneven aged spruce-alder forest/shrubland, young mixed conifer and alder forest, and young spruce-alder forest. Late seral coniferous forests are a Conservation Strategy habitat (ODFW, 2005). As this habitat type ages, its importance will increase.
>
> Red Alder Forest: Red alder forest is comprised of the following vegetation communities: mature alder forest with some emerging young to mid-aged mixed conifers, mid-aged alder forest, and young alder forest. Red alder forest is an early successional habitat type in upland areas, converting to coniferous canopy with a sub-canopy of alder and maple. In riparian and wetland areas, red alder forest is the late successional stage.

Sitka Spruce Forest: Sitka spruce forest is comprised of the following vegetation communities: late seral mixed conifer forest, late seral spruce forest, late seral to mature mixed conifer forest, mature spruce forest, mature spruce-alder forest, mid-aged mixed conifer forest, mid-aged spruce forest, mid-aged spruce-alder forest, mid-aged spruce-douglas fir forest, and mid-aged spruce-shore pine forest. This habitat type occurs in a narrow band along the coast. Late seral coniferous forests are a Conservation Strategy habitat (ODFW, 2005).

Disturbed Habitats: Disturbed habitats have experienced severe impacts to natural communities such that natural function is not sustainable. Vegetation is usually non-native. Disturbed habitats can sometimes provide limited foraging opportunities for small mammals, reptiles, deer and elk as well as nesting opportunities for ground-nesting songbirds; however, few native species are associated with disturbed habitats.

Developed Areas: Developed habitats are those altered by man, including paved roads and structures. Developed areas contain few vegetation communities; vegetation is usually non-native. Few species are associated with these areas.

Desired Future Habitat Conditions

Cape Lookout State Park is surrounded by ocean to the west, Siuslaw National Forest at the southwestern corner, Boy Scouts of America property to the south, and private ownership abutting the remaining boundaries. Land use around the park is mostly commercial timber management, with small areas used for recreation and residences. Timber harvest can produce wildlife habitat ranging from early seral stand initiation to mature forest. However, riparian and wetland features, structural diversity and late seral characteristics are generally not common or managed for under conventional silviculture, which tends to emphasize mid-seral coniferous forest. The surrounding environs will likely remain in various states of forest succession due to timber harvest, providing a mosaic of young and mature forest habitats. The park can act as a reserve amidst this mosaic, providing forest structure uncommon to conventionally harvested forest stands. Future forest conditions in the park should include greater expanses of late seral forest, forest floor complexity, multiple canopy layers, and large trees and snags. Future conditions in streams and wetlands should include improved fish passage and spawning and rearing habitat for fish and amphibians. Netarts Bay and Netarts Spit are invaluable areas for seabird breeding colonies as well wintering grounds for seabirds and shorebirds, and these conditions should remain present, in an improved state where appropriate, as part of future habitat conditions

Focal Species

Based on the desired future habitat conditions, a number of key habitat attributes are of management importance within the park. Managing and monitoring all species that utilize these attributes is costly and time-intensive; however, certain species are closely associated with important attributes and can be used as focal species for describing desired conditions. While conservation is directed towards focal species, maintaining habitat attributes favorable for focal species will benefit a wider group of species with similar requirements. Ideally, the list of focal species would include representatives of all guilds of wildlife; however, due to the difficulty in monitoring some species, this may not be feasible.

Focal species associated with the park's plant community types are listed in the table below, and their habitat locations are illustrated by Map 3-15. Species were selected based on regional conservation plans, conservation status, value for wildlife observation, degree of association with important habitat attributes, and detectability. These species are associated with habitat characteristics of the desired future habitat conditions for the park. Focal species may change based on adaptive management strategies, changes in conservation status, and other factors.

Table 3.3. Fish and Wildlife Focal Species of Cape Lookout State Park

Species	**Vegetation Cover Groups (See Map 3-10)**	**Associated Attribute**
Brown creeper *(Certhia Americana)*	5, 6, 7, 8	Large diameter trees
Coho salmon (Oregon Coast ESU) (*Oncorhynchus kitsutch)*	1, 4	Streams with gravel beds
Marbled murrelet *(Brachyramphus marmoratus)*	5, 6, 7, 8, 9, 10, 28, 29	Large, open grown conifers
Pacific wren *(Troglodytes pacificus)*	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 28, 29	Complex forest floor
Pileated woodpecker *(Dryocopus pileatus)*	5, 6, 7, 8, 9, 10, 28, 29	Large snags
Red crossbill *(Loxia curvirostra)*	5, 6, 7, 8	Conifers
Varied thrush *(Ixoreus naevius)*	9, 10, 11, 12, 13, 14, 28, 29	Mid-story tree layers
Vaux's swift *(Chaetura vauxi)*	5, 6, 7, 8	Large snags
Western snowy plover *(Charardius alexanrinus nivosus)*	24	Sparsely vegetation dry sands

(3-15 Focal Species Map here) 11 x 17

At-Risk Fish and Wildlife

At-risk fish and wildlife species are those experiencing population declines or that are otherwise at-risk. They include federal endangered, threatened, and candidate species; state endangered, threatened, and candidate species; as well as state critical and vulnerable species. Currently, 8 species listed under the federal and/or state Endangered Species Acts, and 34 federal and/or state sensitive species, have the potential to occur or do occur within the park. Research of existing data identified 3 federal or state threatened or endangered species, as well as 9 at-risk species present in the park (see Table 3.4). Species of particularly high conservation concern are discussed below.

Marbled murrelet: This federal and state-threatened bird species spends most of its time at sea in open water. Approximately the size of a robin, this small seabird nests on large diameter limbs in coastal forests. These limbs, covered in moss, form nesting platforms where the birds will lay a single egg. Nest platforms have been found in old growth forests as well as in large, remnant trees in mature forests and on western hemlock trees infested with dwarf mistletoe. Preserving nest trees with appropriate cover to camouflage nests from potential predation is essential for management of this species. Corvids such as American crow (*Corvus brachyrhynchos*) and Steller's jay (*Cyanocitta stelleri*) depredate murrelet nests. Corvids are naturally attracted to food waste and trash at recreation areas like campgrounds and trails, and their presence can increase predation on nearby marbled murrelet nests. Recovery of marbled murrelet populations requires preservation and creation of habitat supporting nest platforms safe from increasing predator populations. Marbled murrelet were detected at the park during protocol surveys in 1998. In the absence of more recent data, OPRD is assuming continued presence of this species. Protocol surveys are recommended prior to initiation of development projects.

Coho salmon: This is a federally threatened and state vulnerable anadramous salmonid. Coho spend most of their adult lives at sea and migrate up river and stream channels to spawn in stable gravel substrates. Young fry and juveniles feed and grow in streams and wetlands, migrating out to estuaries and ocean. Coho are spawning in Jackson Creek and accessing the creek from both the ocean and Netarts Bay. Juvenile Coho are present throughout the Jackson Creek complex, but survival is substantially higher in the ocean going channel, as the diversion channel typically dries up in the summer months. Coho have also been documented throughout the Netarts Creek complex, and elsewhere outside the park boundaries. Continuing salmon surveys, both juvenile and spawning, are planned for 2011.

Western snowy plover: The Pacific coast population of the western snowy plover is federally and state threatened. This shorebird nests on sandy ground by making a small depression and laying its eggs directly on the sand. These nests are cryptic and easily disturbed by human presence and predators. In 2009 OPRD developed a Habitat Conservation Plan (HCP) in cooperation with USFWS to better manage and aid in the recovery of western snowy plover. While no plovers currently frequent Cape Lookout State Park, the HCP identifies Netarts Spit as a Snowy Plover Management Area (SPMA) where management actions could potentially be implemented in the future. No development is planned within or near the SPMA.

Table 3.4. Known and Potential At-Risk Fish and Wildlife Species at Cape Lookout State Park

Species	Scientific Name	Federal Status	State Status	Occurrence
Clouded salamander	*Aneides ferreus*		SV	Potential
Coastal tailed frog	*Ascaphus truei*	SOC	SV	Historic
Columbia torrent salamander	*Rhyacotriton kezeri*		SV	Potential
Cope's giant salamander	*Dicamptodon copei*		SV	Historic
Red-legged frog	*Rana aurora*	SOC	SV	Potential
Southern torrent salamander	*Rhyacotriton variegatus*	SOC	SV	Potential
Western redback salamander	*Plethodon vehiculum*	SOC		Potential
Western toad	*Anaxyrus boreas*		SV	Potential
American peregrine falcon	*Falco peregrinus*		SV	Present
American white pelican	*Pelecanus erythrorhynchos*		SV	Low Potential
Bald eagle	*Haliaeetus leucocephalus*		ST	Present
Band-tailed pigeon	*Patagioenas fasciata*	SOC		Present
Black oystercatcher	*Haematopus bachmani*	SOC	SV	Present
California brown pelican	*Pelecanus occidentalis*	FE	SE	Historical
Cassin's auklet	*Ptychoramphus aleuticus*		SV	Potential
Common nighthawk	*Chordeiles minor*		SC	Potential
Franklin's gull	*Larus pipixcan*		SV	Potential
Harlequin duck	*Histrionicus histrionicus*	SOC	SV	Present
Long-billed curlew	*Numenius americanus*		SV	Potential
Marbled murrelet	*Brachyramphus marmoratus*	FT	ST	Present
Northern goshawk	*Accipiter gentilis*	SOC	SV	Potential
Northern spotted owl	*Strix occidentalis caurina*	FT	ST	Low Potential
Olive-sided flycatcher	*Contopus cooperi*	SOC	SV	Potential
Pileated woodpecker	*Dryocopus pileatus*		SV	Present
Purple martin	*Progne subis*	SOC	SC	Potential
Red-necked grebe	*Podiceps grisegena*		SC	Present
Rhinoceros auklet	*Cerorhinca monocerata*		SV	Present
Tufted puffin	*Fratercula cirrhata*		SV	Present
Western snowy plover	*Charadrius alexandrinus nivosus*	FT	ST	Historical
Willow flycatcher	*Empidonax traillii adastus*	SOC	SV	Potential
Chum salmon (Pacific Coast ESU)	*Oncorhynchus keta*		SC	Present
Coho salmon (Oregon Coast ESU)	*Oncorhynchus kisutch*	FT	SV	Present
Pacific lamprey	*Lampetra tridentata*	SOC	SV	Potential
Steelhead (Oregon Coast ESU, winter run)	*Oncorhynchus mykiss*	SOC	SV	Present
Western brook lamprey	*Lampetra richardsoni*		SV	Potential
Oregon silverspot butterfly	*Speyeria zerene hippolyta*	FT		Historical
American marten	*Martes americana*		SV	Potential
California myotis	*Myotis californicus*		SV	Potential
Fringed myotis	*Myotis thysanodes*	SOC	SV	Potential
Long-eared myotis	*Myotis evotis*	SOC		Potential
Long-legged myotis	*Myotis volans*	SOC	SV	Potential
Red tree vole	*Arborimus longicaudus*	SOC	SV	Potential
Sea otter	*Enhydra lutris*	FT	ST	Potential
Silver-haired bat	*Lasionycteris noctivagans*	SOC	SV	Potential
Townsend's big-eared bat	*Corynorhinus townsendii*	SOC	SC	Potential
White-footed vole	*Arborimus albipes*	SOC		Historical
Yuma myotis	*Myotis yumanensis*	SOC		Potential

FE: Federally endangered ST: State threatened FT: Federally threatened SC: State critical
SOC: Federal Species of Concern SV: State vulnerable SE: State endangered

Threats to Fish and Wildlife

The park's core area, where nearly all existing and future facility development will be located, is approximately 200 acres of forested habitat. Adding new facilities changes the existing land-use, and changes that result in higher concentrations of people generally cause increased stress and disturbance to wildlife currently using the development area. The potential for direct mortality is generally limited to the initial construction phase of a project. Indirect mortality commonly increases with increased predation from corvids, disturbance from human activities, and loss of habitat. Specific threats are described below.

Loss of Habitat: While the core development area will be designed to avoid encroachment on high quality habitats, development will convert lower quality habitat and render these areas less useable by wildlife. The lower quality habitat is currently being used by deer, elk, and other wildlife species. It is likely these species will alter their use of the area once facilities are under construction and in use by humans. Elsewhere in the park, habitat conditions will likely be restored or otherwise improved with future changes, although much of the future restoration will involve different habitat types that, while beneficial to species that use them, will not help offset the loss of the forest habitat. However, the forest habitat is well represented, on other surrounding lands as well as within the park, so the conversion of core area forest to facility development is expected to be relatively insignificant.

Increased Predation on Nesting Birds: Corvid species such as American crow and Steller's jay often occupy recreational areas due to the presence of trash and food left by visitors and easier access to the forest habitats. An increase in corvid density also increases the likelihood of corvids locating and preying upon the nests and young of other bird species in the area, including seabird colonies and marbled murrelet. Controlling corvid populations requires careful management of trash, public education, and use of other effective corvid control actions.

Juvenile Salmon Stranding: The Jackson Creek diversion channel experiences irregular flow. Flood events relocate juvenile salmonids from the channel into shallow pools in the existing campground, and reduced flow in the channel often results in salmonid entrapment in pools that gradually dry up, resulting in juvenile mortality. This is an ongoing issue unrelated to proposed development of new facilities for the park. Potential solutions to this problem include returning the diverted flow back to the natural channel.

Invasive Fish and Wildlife Species: Invasive species are considered to be one of the primary causes of species becoming threatened and endangered, next to habitat loss (ODFW, 2006). Non-native and invasive fish and wildlife pose threats to native species by predation and outcompeting for valuable resources. In the Coast Ecoregion, there are 30 documented invasive, non-native species and another 19 non-native, potentially invasive species that have not yet been observed but have the potential to pose serious threats to native species should they establish populations. Lists of both the documented and undocumented invasive fish and wildlife species for the Coast Ecoregion are provided in Appendix B.

Habitat Connectivity

Due to changing land uses and needs, native habitat patches across the Oregon Coast are becoming increasingly fragmented. The ability for a species to move from one habitat patch to another can be defined as habitat connectivity. Assessing habitat connectivity is complex and depends on the needs of individual species. For example, to disperse to a different habitat patch a

songbird may need to visually see the patch, while a salamander may require a corridor of appropriate vegetation between the two patches. Without habitat connectivity, individuals may be unable to move between patches, and the population is more susceptible to disease, population pressures, predation, and extirpation from natural events such as fires. Continuing land-use changes, as well as the emerging threat of climate change, make the need for habitat connectivity even more critical, as many species will need to adapt to a changing landscape.

Most of Cape Lookout State Park is bordered by private ownership. Providing habitat connectivity across private lands would involve extensive planning and agreements with land owners, and may not be feasible. However, approximately 2,317 acres of federal lands are directly accessible southwest of the park. This connection provides an outlet for dispersal for most terrestrial species in the park. Cooperative management strategies involving Siuslaw National Forest should be investigated. Additional connections by land-use agreements with adjacent land owners would also increase population sustainability within the park.

Composite Natural Resource Value Assessment

To help guide planning decisions for the park, key findings of the natural resource assessments summarized in this chapter were mapped and layered to produce a geographic representation of the collective natural resource values of various areas of the park as these values relate to decisions on resource management and recreation access. The composite natural resource values for the park derived from these assessments are represented by the Composite Natural Resource Values Maps in this chapter (see Maps 3-16 and 3-17).

The assessments used for this purpose are the assessments of botanical values based on native plant community types and their conditions, fish and wildlife habitat values, the presence (or not) of surface water features, presence (or not) of at-risk species, and presence (or not) of a special natural resource designation. Discreet areas of the park were given separate ratings representing each of the above factors found to be applicable. Where multiple factors are applicable to a site, the highest applicable value is assigned as the composite rating.

The rating system used to represent composite natural resource values has four levels ranging from highly valued (1) to very low value (4) natural resources. Each of the four levels indicates an appropriate level of resource management and the level of recreation that can occur for each corresponding area of the park. Areas of the highest natural resource value (1) also have the highest protection of natural resources applied in making planning decisions.

Plant Community and Condition Ratings for the Composite

Plant communities were mapped and coded by multiple characteristics and assigned numeric ratings representing their botanical values. Each plant community polygon was assessed based on species composition, the rareness of each community type and the corresponding conservation rank in Oregon, and the relative condition of the native community based on the extent of weed infestations and other disturbance. For forested communities, the age class of the forest was also factored into the rating. (For a more detailed description of the botanical rating methodology, see the background report, “Vegetation Inventory and Botanical Resource Assessment for the Cape Lookout State Park.” Bacheller, 2010.) Botanical ratings resulting from the assessment are shown in the table below.

Table 3.5. Botanical Value Ratings (Value 1, 2, 3 or 4)

	Condition of Native Plant Community			
	Excellent	**Good**	**Marginal**	**Poor**
Non-forest plant communities:				
High conservation rank	2	2	2	3
Mod-high conservation rank	2	2	3	4
Low conservation rank	3	3	4	4
Forested plant communities:				
High conservation rank	2 if age A, B, C 3 if age D	2 if age A, B, C 3 if age D	2 if age A, B, C 3 if age D	3
Mod-high conservation rank	2 if age A,B 3 if age C,D	2 if age A,B 3 if age C,D	3	3 if age A 4 if age B,C,D
Low conservation rank	2 if age A,B 3 if age C,D	2 if age A 3 if age B,C,D	3 if age A 4 if age B,C,D	3 if age A 4 if age B,C,D

Forest Age Classes: A = Old B = Mature C = Mid-age D = Young

Conservation ranks are based on state conservation status reported in ORBIC, "Classification of Native Vegetation in Oregon." High = S1 or S2 Mod-high = S3 Low = S4 or S5

Fish and Wildlife Habitat Value Ratings for the Composite
Habitat values were rated based on desired future habitat conditions. Each plant community identified in the botanical assessment was also assessed and rated for its current habitat value in relation to desired future habitat conditions. Ratings were applied as follows:

Value Rating 2: High priority habitat. Currently meets desired future conditions.
Value Rating 3: Medium priority habitat. Contains structural components of desired future conditions, and with minimal management will reach desired conditions within 25-50 years.
Value Rating 4: Low priority habitat. Will not reach desired future conditions within 25-50 years without intensive management.

Surface Water Feature Rating for the Composite
A value rating of 2 was assigned to natural surface water features and areas where the presence of wetland plants indicates probable wetlands. Wetland plant communities were identified as part of the botanical assessment.

At-Risk Species Rating for the Composite
A value rating of 1 was assigned to sites known to be occupied by at-risk plant, fish or wildlife species.

Special Designation Rating for the Composite
A value rating of 1 was assigned to areas within the boundaries of a special natural resource protection designation. The park has two large areas dedicated as Natural Heritage Areas, which in and of itself, reflects their conservation importance.

(Composite Natural Resource Values Maps 3-16 11 x 17

Composite Natural Resource Values Maps	3-17	11 x 17

Scenic Resources

The park resource assessments included field surveys of the park's scenic resources, including key views, vistas and scenic settings, to determine whether any measures would be needed to protect or enhance the scenic qualities of these features.

Views and Vistas

Spectacular views and vistas of the coastal landscape are seen from the beaches and dunes, the Netarts Spit, the bay shoreline, the Oregon Coast Trail, the Cape Trail and viewpoint turnouts along the county road. From the ocean shore, beach and foredune, the views are panoramic of the ocean, Cape Lookout to the south, and the spit shoreline and distant offshore rocks and prominent sea cliffs to the north. Views from the spit along the bay shoreline are of the bay and the distant community of Netarts with the coast range in the background. The Oregon Coast Trail, from the day use area southward, offers views of the coastline, the cape and the ocean through the forest edge before ascending the steep terrain toward the cape. Along the Cape Lookout Trail, views looking south along the coastline to the distant Cape Kiwanda and Nestucca River Spit are seen, screened by forest in most places before the trail emerges from the tree cover. A screened northward view of the Netarts Spit and distant coastline is seen at one location where the Cape Trail crosses to the north facing side of the ridge. The western section of the Cape Trail continues along the south facing side of the ridge to its destination, offering south and west panoramic views of the ocean and coastline. Where visitors travel the county road southward to the park entrance, and into to the park along the entrance road, views to the west open up to the bay with Netarts Spit in the background. Passing through the park, the county road reaches Anderson Viewpoint where visitors can stop for the northward view of the ocean, Netarts Spit, distant offshore rocks and sea cliffs, the coast range in the background, and hang gliders that may be launching from this point. Farther south along the county road, beyond the Cape Trailhead turnoff, a new roadside viewpoint now offers a southward view of the ocean and coastline to Cape Kiwanda and the Nestucca River Spit.

In all cases, protection of key views and vistas from the affects of park activities is related primarily to the placement and design of structures such as signage, fencing and other barriers located in the view foreground, and the management of vegetation to maintain views in a way that also maintains a natural appearing foreground landscape. In general, all of the key views and vistas are outward views, where major park development is not part of the view or is visually blended as a result of topography, vegetation and/or distance.

Significant impacts on key views and vistas can potentially occur as a result of offsite activities, such as clearcut logging on neighboring lands. The distance and extent of clear cutting would largely determine the relative visual impact. Installation of offshore wave energy structures, an activity currently under study in Oregon, could potentially cause significant impacts on views from the park, especially from the high elevation viewpoints, depending on the relative viewing distance.

Scenic Settings

Scenic settings of the forest and interdune areas, although more subtle than the coastline views and vistas, are also an important factor in the quality of recreation experience. Visitors enjoy camping, picnicking, hiking, biking, and other activities where the surroundings offer the beauty and tranquility of nature. The visual qualities of the park's forest and interdune settings are

affected by two primary factors: 1) The quality of the setting's natural elements, and 2), the extent to which the built environment is blended with the natural elements. Scenic qualities of the natural elements can be managed through appropriate measures that promote habitat health and diversity while also promoting visually pleasing environments. Visual impacts of the built environment on natural settings can be managed through appropriate location, design, materials, colors and landscaping of structural development, such that development blends with and appears subordinate to the natural setting.

High quality and visually appealing natural resource settings cover most of the northern and southern areas of the park and reach into the park's core development area. However, certain settings that are important to the quality of recreation experiences have been degraded or could otherwise be improved, some ecologically as well as from a recreation setting standpoint. These are discussed among the Key Findings below.

Key Findings

The following summarizes the key findings of the scenic assessment that pertain to potential strategies for enhancing the park's scenic resources:

- In and around the eastern part of the core area, a large block of densely overstocked conifer plantation and natural regeneration forest covers nearly all of the area where future recreational development may occur. This forest is badly in need of commercial and pre-commercial thinning to promote healthy succession of the forest habitat and to create a desirable recreation setting. Similar forest management is needed at two existing recreation development areas, the hiker biker camp and the program area, and two non-developed areas east of Cape Lookout road.
- The drainfield that serves most of the park facilities, located in the eastern part of the core area where recreational development is being planned, has not yet been revegetated. This large landscape feature will have a significant affect on the scenic quality of the future recreation setting. Groundcover planting over the drainfield surface is needed in a way that enhances the recreation setting while maintaining the drainfield's primary function.
- At the west and northwest edges of Loops C and D, saltwater intrusion caused by waves washing over the foredune is killing trees, creating a less desirable recreation setting at affected campsites.
- At the Cape Trail destination viewpoint is a safety barrier of chain link fencing. This fence could be replaced with a barrier constructed of materials that blend with and complement this otherwise spectacular viewpoint.
- Near the south end of the park, an opportunity may exist to build a short trail to a new destination viewpoint at the highest elevation in the park, which could potentially offer views of the coastline looking both north and south.
- The recreation settings of existing core area development could potentially be enhanced somewhat through measures that help blend development with the natural setting. While the existing exterior colors of development are not offensive, blending with the natural surroundings could potentially be improved by changing colors. In some cases, adding more landscaping could also help blend facilities with the surroundings.

Cultural Resources

Cape Lookout State Park and the north coast region have a rich cultural history, although relatively little evidence remains in and around the park. The master planning process included review of previous research on the area's history and pre-history in order to assess opportunities for enhancing the park's interpretive features and programs. Below is a brief summary highlighting time periods and events in the history and pre-history of the park and the Netarts area.

In addition, the planning process included an inventory of documented archeological sites on file with the State Historic Preservation Office (SHPO) in order to avoid disturbance of important sites in locating and developing recreation uses and facilities. Pursuant to state law, and in order to prevent possible looting or other disturbance, OPRD does not disclose the locations of archeological sites to the general public. This information is kept on file at the OPRD headquarters office in Salem among other background information for the plan.

Native American Occupation

The Netarts Area was home to the Tillamook Indians, formerly known as numerous other variations of the name, beginning around the year 1400. (Newman, 1959.) "Tillamook" means "Land of Many Waters." Their territory reached from the Tillamook Head to the Nestucca River area, between the ocean shore and the Coast Range crest. Their main village was near the mouth of the Kilchis River. The Tillamooks were coastal representatives of a large linguistic family called the Salish which occupied much of Washington, Idaho, Western Montana and British Columbia.

As hunters and gatherers, these people lived in well established villages with dwellings of cedar planks, bark, and soil. Their diet, especially in the Netarts Bay settlements, relied heavily on shell fish and salmon. While relatively little archaeological evidence of their occupation exists today, the remains of fishing weirs and other evidence of the lifeways of the Tillamook Tribe can be seen in the Cape Lookout area.

Introduced diseases from European explorers and settlers greatly reduced local Tillamook populations. As settlement by Euro-Americans proceeded, Native Americans eventually signed treaties with the US Government that set aside land for reservations. The Confederated Tribes of Grand Ronde and the Confederated Tribes of the Siletz Indians today represent the original local people known as the Tillamooks.

European Settlement

The first settlers arrived in the Netarts area in the early 1860's, claiming lands under the Homestead Act passed a few years earlier. The first areas to be claimed were the tidelands along the eastern shore of Netarts Bay. Tidelands were desirable because they provided access to salmon and oysters in the bay, and because the marshes could be managed for grazing and production of marsh hay. The shallow waters of the bay were quickly claimed. A prosperous oyster export industry developed on the bay in the late 1860's, with harvest of native oysters eventually giving way to growing of non-native Pacific oysters.

Early settlers had to pack all supplies in from the north over Neahkahnie Mountain. Thirty-two shipwrecks between Nestucca and Neahkahnie occurred while trying to ship supplies to this dangerous area of the coast. Evidence of one of these shipwrecks can be seen today, a mile south of Cape Lookout where the Straun, a Norwegian shipping vessel, crashed on the beach in 1890.

The seemingly inhospitable Netarts Spit supported its first white settlers prior to 1880, and virtually all of the spit and most of the bay shoreline were claimed and occupied by 1903. Transportation on the spit was by trail to the south across Cape Lookout, and by ferry across the mouth of the bay to the mainland. Residential use of the spit declined rather quickly and had mostly disappeared around 1920. Development since that time was concentrated on the northeast shore of the bay.

Settlement and development in the Netarts area increased with more automobile traffic. The first automobile trip was made from Newberg to Tillamook in 1910, and automobiles first arrived in the Netarts area in the 1920's, with roads connected to Tillamook and Oceanside. Then, most roads could only be used under the drier summer conditions.

The timber industry supported the local economy beginning in the late 1800's. The first mill opened in the Netarts area in the 1890's. In 1917 the second mill was established at Whiskey Creek. This mill cut Sitka spruce for building WWI bi-planes. Through most of the 1900's logging was a significant contributor to the economy of the north coast, and today continues on a somewhat smaller scale. Some of the land within Cape Lookout State Park was clearcut logged as recently as the 1960's.

Cape Lookout State Park Established

Land for Cape Lookout State Park was initially acquired in 1935 during Sam Boardman's tenure as Superintendent of the Parks Division of the Oregon Highway Department. The U.S Lighthouse Service donated 935 acres on the cape for park use. Shortly following, Louis W. Hill Family Foundation donated the Netarts Spit, including the current campground site. The Hill property had once been purchased for possible development of a coastal railway.

Plans for the park were prepared by EWC (Emergency Conservation Work), which eventually became the CCC (Civilian Conservation Corps), a federal program that employed out of work young men during the Great Depression of the 1930's. By 1939 the CCC had a camp near Jackson Creek while constructing a five-mile long hiking trail from what is now the day use area to the end of the cape.

WWII

During WWII Camp Meriwether, directly south of the park, was a lookout location used by the US Navy. The Navy placed pill boxes along the bluff and ran patrols on the beach. Pill boxes were used as triangulation stations to track the movement of ships, and some were used as radar stations to track ships and planes. Radar was installed in the early part of World War II.

On a foggy day in 1943, an Army Air Corps B17 bomber from the base in Pendleton crashed on Cape Lookout just beyond the Cape Trail roughly half a mile from the trailhead parking lot. The plane was lost in the fog, avoiding using radio or radar equipment for fear that Japanese subs might use its signals for navigation. After the shelling of the beach at Fort Stevens the year before, the entire coast was on high alert. Attempting to get their bearings, the crew brought the plane lower hoping to get below the fog. They never made it out of the fog. Only one crew member survived the crash.

Recreational Expansion at Cape Lookout State Park

The early 1950's saw major changes at Cape Lookout State Park. First envisioned by Sam Boardman as a natural area preserve with only minimal development, the park became a popular coastal destination for day use and overnight camping with development of the access road, large parking area, beach access, picnic area and campground.

Efforts to Protect the Park From Storm Waves

By the 1960's it was apparent that the ocean shore fronting the Cape Lookout campground was receding in winter storms, and campground facilities were at risk. A log seawall was constructed in the early 60's along the windward side of the foredune to hold off storm waves. Major storms in the winter of 1982-83 began to breach the wall, allowing erosion of the dunes behind the wall. By the end of the winter of 1998-99, which was the second of two successive major storm seasons, the wall was completely destroyed along with a long reach of the natural foredune that fronted the campground and some of the campground facilities closest to the shore.

A second effort to protect the campground occurred in 2000. An artificial dune designed to mimic a natural foredune, fronted by a dynamic revetment of natural beach cobble, were constructed along the shoreline reach formerly protected by the seawall. The artificial dune remains in intact, but requires regular replenishment of the cobble to prevent undermining and erosion of the dune and eventual loss of more facilities. Beyond the reach of the artificial dune, the natural shoreline continues to erode, eventually threatening more park facilities. Today, OPRD is considering the long term practicality of maintaining facilities closest to the shoreline that are most threatened by hazards associated with winter storms and a gradually rising sea level.

Chapter 4

Agency Mandates and Approach

The Agency Mission

The mission of the Oregon Parks and Recreation Department is to provide and protect outstanding natural, scenic, cultural, historic and recreational sites for the enjoyment and education of present and future generations. This gives the agency a dual mandate: serve people by operating the state park system and protect park resources so future generations may also understand and enjoy them.

State parks are places where people play, picnic, camp, exercise, rest and rejuvenate. They are an everyday reminder of the things that make Oregon great, and their very existence is a testament to what Oregonians collectively value. Oregon's outdoor recreation and cultural heritage values are explained in state laws; Oregon Revised Statute Chapter 390 opens by stating the well-being of Oregonians is in large part dependent upon access to the state's outdoor recreation resources for their physical, spiritual, cultural and scientific benefits.

The Oregon Parks and Recreation Department is empowered by state laws to provide outdoor recreation and heritage programs and plans. The Oregon State Parks and Recreation Commission (the department's citizen oversight body), positions the agency to function at a high level by aligning programs to the powers and duties granted by state laws, and by observing and planning for emerging trends. Those laws direct the department to focus on four areas:

1. State Park System: Create and run a state system of parks that protects and manages resources and provides recreation opportunities.
2. Natural resources: Exercise forward-thinking, sustainable land stewardship in state parks and along ocean shores and state scenic waterways. Protect state park soils, waters, plants and animals.
3. Statewide recreation: The agency supports outdoor recreation across the state. Through research, financial and technical assistance, OPRD provides an Oregon context for federal, state and local governments to collectively fulfill their outdoor recreation-oriented missions.
4. Heritage Programs: Work to preserve and protect Oregon's heritage and historic resources.

The Centennial Horizon

The Centennial Horizon is a vision document that looks ahead to 2022 and the 100th anniversary of the state park system. It is a series of principles developed to guide the work and priorities of the Oregon Parks and Recreation Department in fulfillment of its mission. The Centennial Horizon is composed of eight principles:

- Principle One – Save Oregon's Special Places
- Principle Two – Connect People to Meaningful Outdoor Experiences

- Principle Three – Taking the Long View
- Principle Four – Engage People Through Education and Outreach
- Principle Five – Build the State Park System with Purpose and Vision
- Principle Six – Attract and Inspire Partners
- Principle Seven – Prioritize Based on the Vision
- Principle Eight – Oregon's Parks will be Tended by People Who Love Their Work

Principles One, Two Three, Five and Seven play substantial roles in park acquisition, planning and development. Principles Four, Six and Eight support the others by offering more specific direction for park operations and programs. Each principle is more fully defined by a series of strategies and actions that change over time as opportunities arise. The full document is available at the department web site (http://www.oregon.gov/OPRD/).

The State Park System

Parks managed by OPRD are often different than those managed by federal agencies and the county and city parks. Federal agencies often either focus on multiple uses, for example, extracting economic value from resources at the same time they attempt to provide recreation, or on a single overriding use such as natural resources in a wilderness area or cultural resources at a historic site. County and city parks generally focus on local recreation for their communities, with smaller-scale natural resource protection. State parks are positioned to provide natural and cultural resource based recreation for local, state and national visitors. The agency has an important mandate to manage resources, often in the context of the recreational use such as hiking, biking, picnicking, camping, etc. Development is designed to be appropriate to the intent and capacity within each park, but facilities for major state parks tend to be more extensive than those found in many county and city parks. This unique mixture, resource-based recreation usually in rural areas, guides acquisition, development, planning and programming behind the visitor experience. Three criteria define different kinds of state parks: the natural setting, facilities and primary purpose. These criteria help OPRD plan the management and visitor experiences at each park, and combine to create nine types of state park system properties: parks, recreation areas and sites, scenic corridors and viewpoints, greenways, heritage areas and sites, natural areas, trails, and waysides. State scenic waterways are a special category; the state doesn't own scenic waterways, but works cooperatively with property owners to preserve certain waterways' scenic and recreational qualities.

The Oregon state park system contains more than 100,000 acres, nearly all natural resource-based. There are more than 300 properties in the system, including 174 developed for day-use, 50 campgrounds, and 110 undeveloped parcels along the Willamette River Greenway.

Resource Management Role

The natural resources staff of the Oregon Parks and Recreation Department is responsible for land stewardship, marine conservation and the rocky intertidal shores, several permit programs, department-wide resource policies, and park plants and animals. The Department strives to provide safe environments while maintaining the natural beauty and historic importance of the parks.

The Department is committed to managing the natural, scenic and cultural resources within the Oregon State Park system, writing plans and conducting management actions to balance resource protection with recreation use. Healthy, high quality resources are the essential foundation for nearly all forms of recreation.

The following categories best sum up OPRDs approach to resource stewardship:

- Forest Health
- Fish & Wildlife
- Ecosystems
- Invasive Species
- Protected Species
- Natural Heritage Sites
- National Register of Historic Places, Sites and Districts
- Historic Buildings
- Cultural Landscapes
- Iconic Oregon Views and Scenic Corridors

Role as Recreation Supporter

OPRD connects people to meaningful outdoor experiences by protecting Oregon's special natural and historic places. This inherent tension between recreation and preservation, between the needs of today and tomorrow, has always defined the mission of Oregon State Parks. ORS 390.010 declares the state's broad policy toward outdoor recreation. In summary:

1. Present and future generations shall be assured adequate outdoor recreation resources coordinated across all levels of government and private interests.
2. The economy and well-being of the people are dependent on outdoor recreation.
3. Outdoor recreation opportunities should be increased commensurate with growth and need in the following:
    - Oregon's scenic landscape
    - Outdoor recreation
    - Oregon history, archaeology and natural science
    - Scenic roads to enhance recreational travel and sightseeing
    - Outdoor festivals, fairs, sporting events and outdoor art events
    - Camping, picnicking and lodging
    - Tourist hospitality centers near major highway entrances to Oregon
    - Trails for hiking, horseback riding, bicycling and motorized recreation
    - Waterways and facilities for boating, fishing and hunting
    - Developing recreation in major river basins
    - Access to public lands and waters having recreation value
    - Development of winter sports facilities
    - Recreational enjoyment of mineral resources.

Planning Framework

In a critical first step for a park-specific plan, OPRD staff compile data from department and other statewide or regional plans. This background information is used as a lens through which a plan for an individual park is first shaped. The data is used to inform and develop a framework for the park plan, and then taken to the public for comment and discussion. Public advice and goals of the statewide system are then synthesized to produce the values, goals, strategies, and management actions to become the long term plan for the park. A park-specific plan therefore includes information on the following, which help define the context for a state park plan:

- Mission and mandates that define the role of OPRD (Oregon Constitution, Oregon Revised Statutes, and Oregon Administrative Rules.)
- OPRD goals and objectives (Centennial Horizon, Commission Investment Strategy, Legislative Performance Measures, and Oregon Benchmarks.)
- Existing OPRD organizational structure and roles of visitors, volunteers, staff, external parkland managers, and other partners.
- Statewide Comprehensive Outdoor Recreation Plan, State Trails Plans, Regional Interpretive Frameworks

Values Based Approach

A critical component to the planning process is identifying the interests of the public and of the stakeholders and partners that have interests in the park. In balancing today's expressed desires with possible needs in the future, the Department seeks to engage the community in discussions to develop a sense of public interests, concerns, and desired experiences. The Department looks to the community to help identify potential opportunities, conflicts, and desired outcomes for the park, and the Department's own intra-agency planning core team also has input to these discussions. The values developed in the process help relate a sense of place to potential outcomes for management actions. These values help to develop an analysis framework to view the resource inventories and recreation assessments, so that a better sense of future conditions and experiences can be defined in a way that is relevant to the landscape.

The values statements identified for Cape Lookout are:

Value 1: We value Cape Lookout State Park as a unique and predominantly natural place.
Value 2: We value Cape Lookout's history, forces that have shaped the landscape and its inhabitants, and features that represent these dynamics.
Value 3: We value outdoor recreation at Cape Lookout and the contribution it makes to happy, healthy, stress-reducing lifestyles
Value 4: We value Cape Lookout's landscape, its natural character and the enjoyment it brings to the lives of those who experience it through recreational pursuits.
Value 5: We value the cultural history of the Cape Lookout setting and the traditional lifestyles that have shaped the place and the people, including the outdoor recreation activities supported by the park for generations.
Value 6: We value the stories, traditions, and experiences that have been part of Cape Lookout's unique landscape for thousands of years
Value 7: We value how Cape Lookout can strengthen local communities and benefit their economies.

These values have close ties to the elements of the OPRD mission that relate to natural, cultural, scenic and recreational resources. The values, explored further in Chapter 8, provide another layer of analysis to interpret the existing conditions and future potential of the park.

Summary

The Oregon Parks and Recreation Department is continually involved in the long-range review of state park system properties. The master plan for a park summarizes the assessment of the park's resource and recreation opportunities, and sets forth management recommendations for the park's future, including management guidelines to address the park's natural, cultural, scenic, and recreation resource values, goals, strategies and actions. In the following chapters, the layers of analysis are developed and discussed in greater detail.

Chapter 5

Recreation Needs Assessment

To help park providers know what kinds of recreation facilities might be needed at a park, studies are undertaken to understand recreation trends and demands. These include assessments of the future recreational demand for different types of activities, how that demand changes over time, and surveys of those interested or involved in outdoor recreation activities. Understanding regional needs provides a broad picture among all parks, public lands and park providers of the type of activities that will meet public demand in the region. To understand Cape Lookout's particular visitor characteristics and preferences, surveys of the park's day use and overnight visitors were conducted for this plan. The potential for meeting recreation needs at Cape Lookout was evaluated in relation to the park's resource values and constraints and the well-established recreational character of the park. Final recommendations about what will be provided with changes to the park are outlined in Chapter 9, and are described in greater detail in Chapter 10.

Recreation in the Park and the Region

Cape Lookout State Park has been a destination park for many years, with many returning visitors seeking the styles of camping and other recreational opportunities and amenities the park offers. The park also serves as a base for visiting other attractions within reach of the park, and a highlight attraction for visitors staying elsewhere in the vicinity.

Recreation at Cape Lookout, and in the larger north coast region, is largely a product of the natural resource setting. Most of the draw for recreational visitors is attributable to the ocean shore and the spectacular scenery of the coastline, although the rivers, bays and forests also attract a large share of the activity. While the outdoor activities are many and varied, many visitors also come for other attractions in the area such as the museums, cultural and historic features, seasonal events and the character of the coastal towns. A large portion of the visitation is from the Portland Metropolitan Area, but many visitors come from neighboring states, and a significant portion come from Canada. The area attractions are vacation destinations for many of the visitors. For some they are highlights along the way while traveling Highway 101. The local community is largely recreation based even though most of the recreation activity occurs during the summer.

Visitors are coming to the park to go to the beach, camp and picnic next to the ocean and hike on the cape. Some are there mainly to relax, enjoy the scenery, and socialize with friends and family. Some go crabbing, clamming, fishing, boating, bird watching and whale watching. They drive the Three Capes Scenic Loop, visit Cape Meares lighthouse, the Air Museum, the Maritime Museum, the Pioneer Museum, the cheese factories and the local restaurants and shops. Some of

the more adventurous body surf, kayak in the nearby estuaries or around the cape, or hang glide from Anderson Point. Some bring their bicycles to ride the roads, and some are towing OHVs to ride the dunes of nearby Sand Lake Recreation Area. The park is a welcome stopover for cyclists traveling the Oregon Coast Bike Route and backpackers travelling the Oregon Coast Trail which runs through the park.

The park supports a wide range of camping styles with facilities near the beach. Drive-in camping with tents is most popular. Most of the sites are designed for medium sized vehicles and room for tents, and with only fire rings and tables for site amenities, but close to potable water spigots and restrooms with showers. The campground also has sites with RV utility hookups, yurts, deluxe cabins, a group tenting area and primitive sites for hikers and bikers. A small enclosed group shelter is available for campers. The picnic area has sites for small and large groups and a sizable picnic shelter, also next to the beach, offering spectacular views of the ocean shore and the cape. Camp talk presentations are offered at a small amphitheater in the program area, which also serves as a base for other ranger-led programs. Hiking trails connect the park's core area to a long sand spit between the ocean beach and Netarts Bay, and to the Cape Trail along the route of the Oregon Coast Trail.

Recreation Need Indicators for the Region and State

In planning for the future of Cape Lookout, an assessment of recreation opportunities and needs must include consideration of activities in the region as well as the park itself. The available regional data provide contextual information on recreational activity participation, trends and needs. These data supplement other indicators of what may be appropriate for the park, but are variable in how well they represent the park's particular circumstances. For example, much of the information for the coast region on recreation participation, trends and needs does not differentiate the circumstances along the ocean shore or at this particular park from those further inland.

Regional Activity Participation, Demand and Supply

Data from the 2003-2007 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP) were examined as indicators of activity participation, trends and needs for activities that commonly occur at, or could be based at, Cape Lookout State Park. These data pertain to SCORP Region 1, which includes Clatsop, Tillamook, Lincoln and coastal Lane Counties. Recreation participation estimates are measured in "user occasions." A user occasion is defined as each time an individual participates in a single outdoor recreation activity. Table 5.1 shows 2002 and 2007 estimates of activity participation relative to the supply of existing facilities to indicate shortages or surpluses of facilities for selected activities in Region 1. Pertinent supply data were not available for all activities.

Table 5.1. 2002 and 2007 Needs by Activity for SCORP Region 1
(OPRD, 2002. Oregon Statewide Comprehensive Outdoor Recreation Plan 2003-2007)

Activity	2002 Demand: user occasions	2002 Demand: peak user occasions	2007 Demand: peak user occasions	Inventoried facilities	111annual peak days: supply in user occasions	2002 Need (peak days) = demand - supply	2007 Need (peak days) = demand - supply	2002 (peak days) facilities shortage	2007 (peak days) facilities shortage
Ocean Beach Activities	4,693,793	3,004,027	3,304,430	None	No data	No data	No data	No data	No data
Picnicking	637,321	420,632	462,695	Picnic tables	1,095,792	-675,160	-633,097	-760.3	-712.9
RV/Trailer Camping	3,728,795	2,759,308	3,035,239	RV/trailer campsites	3,337,359	-578,051	-302,120	-651.0	-340.2
Car Camping with Tent	348,762	265,059	291,565	None	No data	No data	No data	No data	No data
Bicycle Camping	23,041	16,129	17,742	None	No data	No data	No data	No data	No data
Biking surfaced trails	112,931	48,561	53,417	Bike trail miles	208,680	-160,119	-155,263	-36.1	-35.0
Biking unsurfaced trails	35,663	15,335	16,868	Bike trail miles	75,480	-60,145	-58,612	-13.5	-13.2
Hiking surfaced trails	92,083	52,487	57,736	None	No data	No data	No data	No data	No data
Hiking unsurfaced trails	581,430	331,415	364,556	Hiking trail miles	137,085	194,330	227,471	350.1	409.9
Running/walking for exercise surfaced trails	149,143	38,777	42,655	Jogging trail miles	166,500	-127,723	-123,845	-11.5	-11.2
Running/walking for exercise unsurfaced trails	63,918	16,619	18,281	Jogging trail miles	88,800	-72,181	-70,519	-6.5	-6.4
Backpacking	56,301	34,906	38,397	Hiking trail miles	34,271	635	4,126	4.6	29.7
Sea kayaking	77,532	48,070	52,877	None	No data	No data	No data	No data	No data
Fishing from bank / shore	757,909	462,325	508,557	None	No data	No data	No data	No data	No data
Crabbing from bank /shore	10,181	6,516	7,168	None	No data	No data	No data	No data	No data
Clamming	312,421	146,838	161,522	None	No data	No data	No data	No data	No data
Bird watching	1,943,404	757,927	833,720	None	No data	No data	No data	No data	No data
Nature/ wildlife observ.	1,797,447	844,800	929,280	None	No data	No data	No data	No data	No data
Outdoor photography	460,141	230,070	253,077	None	No data	No data	No data	No data	No data
Tracking animal signs	218,106	109,053	119,958	None	No data	No data	No data	No data	No data
Orienteering	14,072	7,177	7,895	None	No data	No data	No data	No data	No data
Visiting cultural/ historical sites	353,733	205,165	225,682	Cultural/Historical Sites	757,020	-551,855	-531,338	-22.6	-21.8

Notes: Peak days are weekends and holidays.
Negative numbers indicate a surplus exists.
2007 user occasion estimates are based on Oregon population projections, assuming user occasions grow at a similar rate as overall population.

Regional Trails

Oregon's Pacific Coast Scenic Byway runs the length of the Oregon coast along the Pacific Coast Highway (Hwy 101). Many people taking this route take the short side trip from Tillamook to visit Cape Lookout State Park on the Three Capes Scenic Route. Some camp at the park.

The Oregon Coast Bike Route primarily follows the Highway 101 corridor. Many people bicycling on the Coast Bike Route enjoy taking the alternate Three Capes Scenic Route and stop for a visit at Cape Lookout State Park. Many of those on multi-day trips camp at the park's hiker biker camp, which is the most popular campground of its kind on the Oregon Coast.

The Oregon Coast Trail (OCT) runs through the park. It extends from the county road along the main park road to the picnic area and the hiker biker camp before continuing southward toward the cape as a hiking trail only. The trail crosses over the cape headland before crossing the southern park boundary and descending to the beach. The park's hiker biker camp is a welcome stopover for those travelling the OCT.

Water trails are being established for Tillamook County's five major estuaries and their tributary rivers through the cooperative efforts of multiple partners coordinated by the Tillamook Estuaries Partnership. So far, guidebooks have been published for the Nehalem and Tillamook Bay waterways. The third of these projects is now underway for the Nestucca Bay – Sand Lake – Neskowin Water Trail. Cape Lookout State Park is commonly used as a base for both flat water and white water paddlers exploring the water trails.

Numerous sites in Tillamook County that are known for bird watching opportunities are identified as part of the Oregon Coast Birding Trail. Cape Lookout State Park is one of the sixteen sites located in Tillamook County's coastal area, most of which are between Tillamook Bay and the Three Capes Scenic Loop. Many of the park visitors enjoy the birding opportunities in the park itself, as well as other sites in the immediate vicinity.

Priorities for Tillamook County

The 2008-2012 Oregon SCORP planning effort included a county-level analysis to identify priority projects for distribution of Land and Water Conservation and Local Government Grant Program funds for both close-to-home areas (located within an urban growth boundary or unincorporated community boundary) and dispersed areas (located outside of these boundaries). Data were collected and analyzed to identify statewide and individual county needs.

Statewide dispersed-area priorities include:

- Non-motorized trails
- Group campgrounds and facilities
- Nature study/wildlife watching sites
- Overnight camping facilities
- Interpretive displays.

For Tillamook County, the dispersed area priorities include:

- Non-motorized trails
- Overnight camping facilities

Aging Population

Within the next decade, 15 percent of Oregon's population will be over the age of 65, and by 2030 that number will grow to nearly 20 percent. To address the health and economic challenges of an aging society will require greater focus on promoting and preserving the health of older adults. Of critical importance is how to keep Baby Boomers, those born between 1946 through 1964, actively involved in outdoor recreation as they move into and through retirement.

The 2008-2012 SCORP included a statewide mail survey designed to identify current outdoor recreation participation among Oregon's Boomer and Pre-Boomer (born between 1926 and 1945) populations and how they expect to recreate in the coming years. A comparison across age categories for the top five activities by participation frequency (days of participation in a year) revealed the following:

- Walking was the top activity across all age categories (40-79).
- Jogging was a top activity between ages 40-59, but is also popular for those in their 70s.
- Bicycling was a top activity between the ages of 40-64.
- Sightseeing was a top activity between the ages of 45-74.
- Bird watching was a top activity between the ages of 55-79.
- RV/trailer camping was a top activity between the ages of 65-74.

Respondents also forecasted how many days they would participate in each activity 10 years from now. Table 5.2 shows the top ten activities in terms of future participation, as well as the change in the number of days relative to the present. For example, walking will be the most popular activity in terms of average days spent, and those days (83.1) will represent an increase of 17.7 days (25%) over current average days. Of the top 10, only bird watching was forecast to have a decrease in participation.

Table 5.2. Anticipated Change in Activity Participation Among Baby Boomers and Pre-Boomers, Mean Days Per Year.

Recreation Activity	Future Days/Year	Increase Days/Year
Walking	83.1	17.7
Bicycling (Road/Path)	17.5	6.9
Jogging	16.9	0.4
Bird Watching	15.6	-2.4
Day Hiking	14.1	8.1
Sightseeing	13.1	4.4
RV/Trailer Camping	12.8	7.7
Children/Grand Children to Playground	12.0	6.8
Fishing From a Boat	11.7	7.2

Increasingly Diverse Population

By the year 2020, Oregon's combined Hispanic, Asian, and African-American population will make up 22% of the state's population. From 2000 to 2020, Oregon's Hispanic population will double to 551,314, an increase from 8% to 13.1% of the state's population. Asian-Pacific Islander population will increase 77% to 252,750.

The 2008-2012 Oregon SCORP included a statewide mail survey designed to identify the factors limiting minority outdoor recreation participation in Oregon and opportunities to increase this participation. The survey was conducted using a random sample of Oregon Hispanic and Asian households. The findings lead to the following conclusions:

- Both Hispanic and Asian populations in Oregon engaged in outdoor recreation less than the general population.
- Walking for pleasure was the most common favorite activity for Hispanics and Asians. Fishing and soccer were the next most common for Hispanics, and hiking and fishing were the next most common for Asians.
- Walking for pleasure was also the activity respondents spent the most days engaged in during the past year. Hispanics engaged more intensely than Asians in jogging/running, day hiking, picnicking, fishing, viewing natural features, visiting nature centers, and visiting historic sites.
- The most common park facilities recommended by survey respondents include group day-use facilities, recreational trails, outdoor sports fields, and close-to-home camping opportunities.

The 2008-2012 SCORP identified high-priority counties and cities which are projected to experience higher levels of increases in their populations of Hispanics, Asian and African-Americans in the coming years. Tillamook County was identified as a high-priority county for addressing an increasing Hispanic population.

Fewer Oregon Youth Learning Outdoor Skills

Although Oregon is a state with abundant natural resources, there is growing evidence that Oregon's youth are gravitating away from outdoor experiences and towards a virtual indoor reality. A statewide survey of Oregon's parents and youth revealed that the state's children are spending considerably less time than their parents did in outdoor play when not at school. To address this issue, some public recreation providers are incorporating natural play areas into park systems. Natural play areas are outdoor spaces designed for play that are made of natural components such as plants, logs, water, sand, mud, boulders, hills and trees. These components represent the larger wild environment in a way that feels safe and manageable to young visitors. An example of a natural play area with a stream component is illustrated in the image below.

Example of a natural play area with stream

Cape Lookout Visitor Characteristics and Preferences

To better understand visitor characteristics, visitation patterns and preferences as they pertain specifically to the park, OPRD conducted surveys of Cape Lookout's day use and overnight visitors (OPRD 2010, Cape Lookout State Park Visitor Study). Information was gathered over a period from July 23 to September 6, 2010. The day use visitor survey involved on-site intercepts at two park locations. A 66% response rate resulted from contacts with 736 day use visitors. The overnight visitor survey involved an internet survey of visitors who stayed overnight at the park during the survey period and made a reservation through Reservations Northwest. A 52% response rate resulted from contacts with 759 overnight visitors. The following summary highlights key findings of this study.

Place of Residence

- Of the day use visitors, 57.3% are Oregon residents, 39.2% come from other states, and 3.5% are international visitors. The majority of Oregon resident day use visitors (72.5%) come from the three-county Portland metropolitan area.
- Of the overnight visitors, 46.8% are Oregon residents, 40.1% come from other states, and 13.1% are international visitors. Of all overnight visitors, 12.5% are from Canada. Most of the Oregon resident overnight visitors (78.3%) come from the three-county Portland metropolitan area.

Returning Visitors

- Most day use (57.0%) and overnight visitors (53.4%) had previously visited the park at least once before.
- The majority of day use (88.9%) and overnight (87.7%) visitors reported either very likely or likely to return to the park in the future.

Visitor Attachment to Cape Lookout

Six items were used to measure overnight visitors' attachment to Cape Lookout. The majority of respondents either agreed or strongly agreed with the statement that Cape Lookout State Park is one of the best places for doing what the visitor likes to do (67.2%), and that Cape Lookout is very special to the visitor (57.9%).

Table 5.3. Overnight Visitor Agreement with Place Attachment Statements by %

Statement	% Strongly agree or disagree
Cape Lookout State Park is one of the best places for doing what I like to do.	67.2%
Cape Lookout Sate Park is very special to me.	57.9%
I am very attached to Cape Lookout State Park.	45.4%
I identify strongly with Cape Lookout Sate Park.	37.2%
No other place compares to Cape Lookout State Park.	33.4%
I would not substitute any other area for doing what I do at Cape Lookout State Park.	24.2%

Group Size

The average day use visitor group size was 6.3 people. The average overnight visitor group size was 4.9 people. The most common group size was 2 people for both day use (23.1%) and overnight visitors (26.4%).

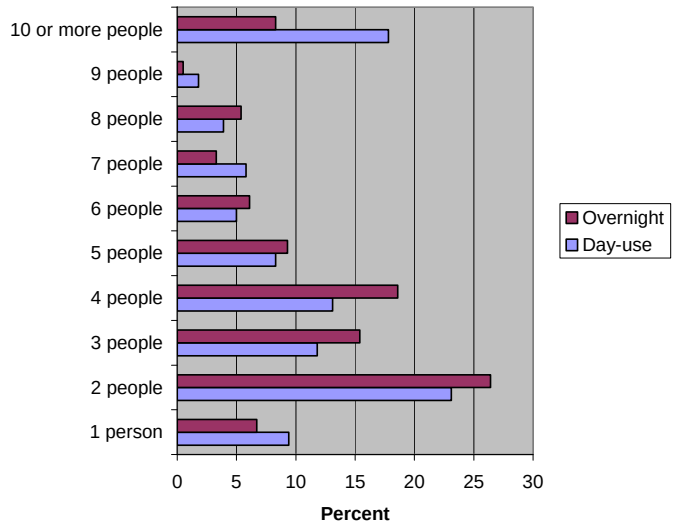


Figure 5.1 Group Size by % of Day Use and Overnight Visitors
(OPRD 2010, Cape Lookout State Park Visitor Study)

Length of Stay

- Among the day use visitors who had previously visited the park, their average visit time was 4.4 hours.
- For the overnight visitors, the average length of stay for their trips during the survey period was 2.5 nights.

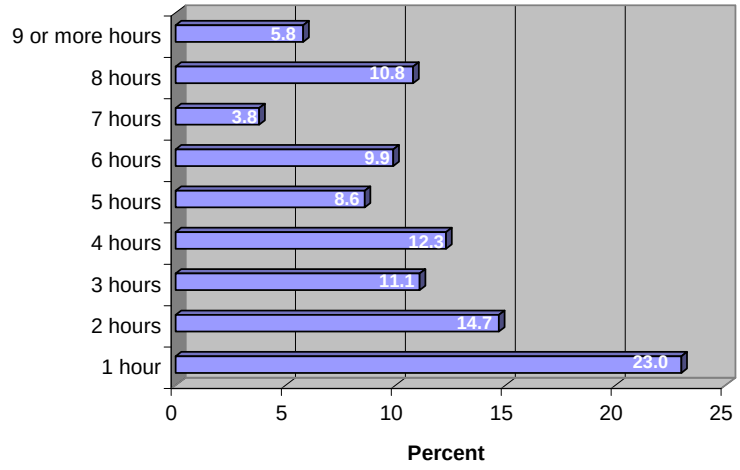


Figure 5.2. Length of Stay by % of Day Use Visitors
(OPRD 2010, Cape Lookout State Park Visitor Study)

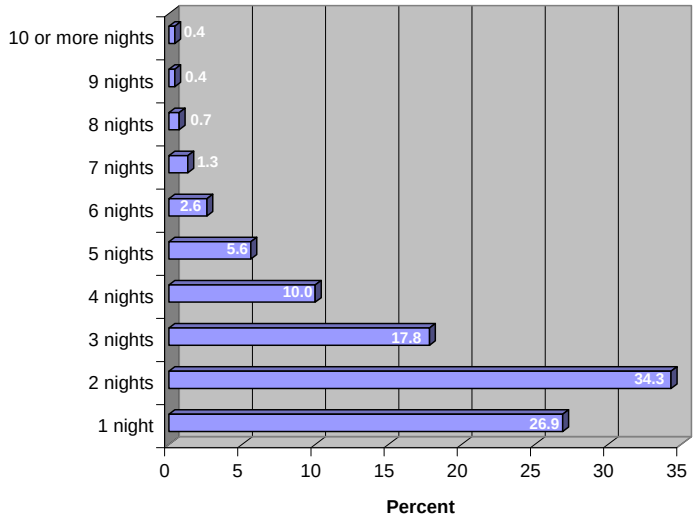


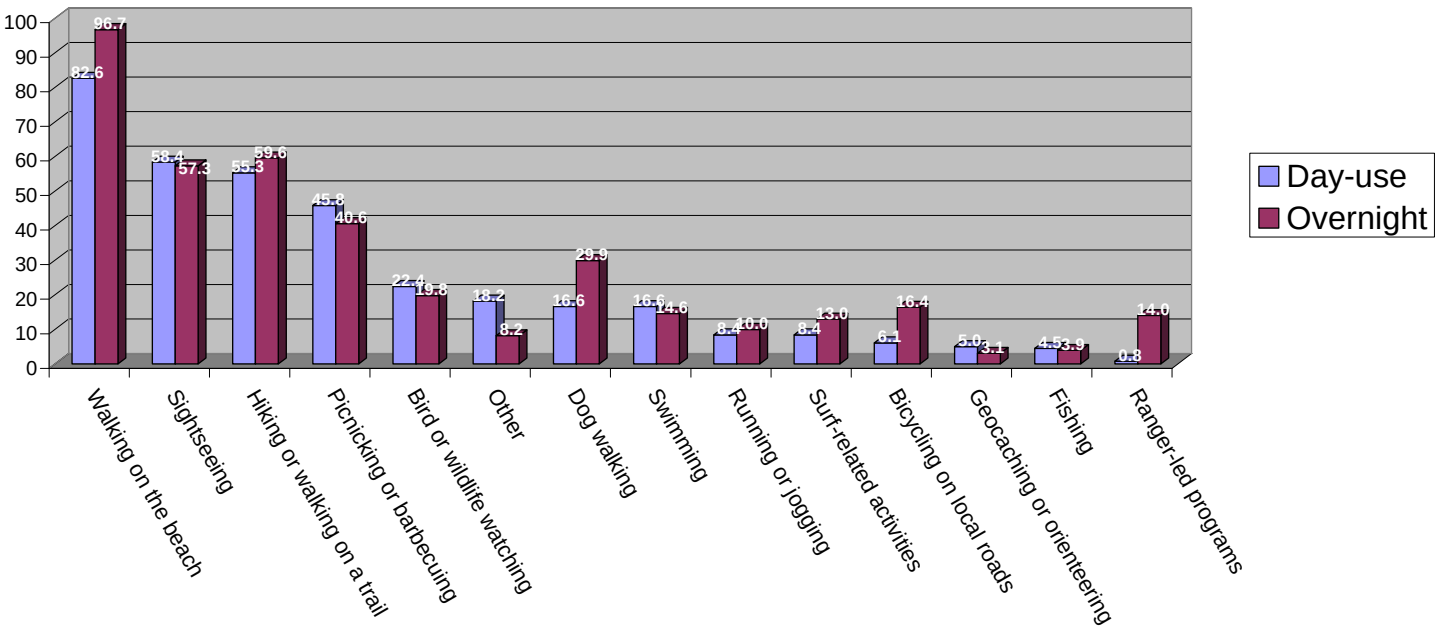
Figure 5.3. Length of Stay by % of Overnight Visitors
(OPRD 2010, Cape Lookout State Park Visitor Study)

Activity Participation

Day use and overnight respondents were asked what kind of recreation activities they engaged in during this park visit.

- The top five most popular activities among day use visitors were walking on the beach (82%), sightseeing (58.4%), hiking or walking on a trail (55.3%), picnicking (45.8%), and bird or wildlife watching (22.4%).
- The top five most popular activities among overnight visitors were walking on the beach (96.7%), camping (95.3%), hiking or walking on a trail (59.6%), sightseeing (57.3%), and picnicking or barbequing (40.5%).

Figure 5.4. Activity Participation by % of Day Use and Overnight Visitors
(OPRD 2010, Cape Lookout State Park Visitor Study)



Primary Activities

Respondents were also asked to report what their one primary activity was at the park.

- Among the day use visitors, walking on the beach was the top primary activity followed by picnicking or barbecuing, hiking or walking on a trail, sightseeing, and other activities.
- For the overnight visitors, picnicking or barbecuing was the top primary activity followed by walking on the beach, hiking or walking on a trail, dog walking, and bicycling on local roads.

Table 5.4. Primary activities by % of day-use and overnight visitors
(OPRD 2010, Cape Lookout State Park Visitor Study)

Day-use	%		Overnight	%
Walking on the beach	29.0		Picnicking or barbecuing	62.5
Picnicking or barbecuing	18.9		Walking on the beach	23.5
Hiking or walking on a trail	17.0		Hiking or walking on a trail	5.1
Sightseeing	14.4		Dog walking	2.0
Other	13.3		Bicycling on local roads	2.0

Camping Styles
Most overnight respondents reported staying in tent campsites (77.2%), while another 19.7% stayed in RV campsites, 6.8% in yurts, and 1.6% in group tent campsites.

Visitors with Disabilities
Ten percent of overnight respondents reported having someone in their group with a disability. Walking was the most common type of disability (42.6%), followed by hearing (21.3%).

Future Park Management Strategies: Visitor Support and Opposition
The survey asked visitors the extent to which they supported or opposed five different potential management alternatives related to shoreline retreat and park planning.

- The most popular management alternative among both day use and overnight visitors was, if shoreline retreat continues, to maintain the current proportions of day use capacity and camping capacity.
- The second most popular management alternative was to maintain or increase campground capacity even if day-use capacity must be downsized, which showed support among overnight visitors and mild opposition among day use visitors.
- There was considerable opposition among overnight visitors to either phasing out or downsizing camping capacity. Conversely, there was considerable opposition among day use visitors to phasing out day use.

Table 5.5. Mean scores for Management Alternative (day-use and overnight visitors)

Scenario Description	Day-Use Visitor Scenario Mean Score	Overnight Visitor Scenario Mean Score
Scenario 1: If shoreline retreat continues, maintain or increase day-use capacity (beach access and picnicking), and phase out overnight camping.	0.1	-2.0
Scenario 2: If shoreline retreat continues, maintain or increase day-use capacity (beach access and picnicking), even if campground capacity must be downsized.	0.7	-0.8
Scenario 3: If shoreline retreat continues, maintain the current proportions of day-use capacity (beach access and picnicking), even if all must be downsized.	1.0	0.8
Scenario 4: If shoreline retreat continues, maintain or increase campground capacity, even if day-use capacity (beach access and picnicking) must be downsized.	-0.1	1.3
Scenario 5: If shoreline retreat continues, maintain or increase campground capacity, and phase out day-use (beach access and picnicking).	-1.3	0.5

-4=very unacceptable 0=neither 2=acceptable
-2=unacceptable 4=very acceptable

The survey also asked, “If you believe camping should continue to be offered at this park if shoreline retreat continues, how important is it to you that each of the following types of camping be available?”

- Among the overnight visitors, the strongest level of support was for tent sites located a short walk from parking areas, with access to central restrooms and potable water. Their support was only slightly lower for drive-in campsites designed for small or medium-sized vehicles with no RV utility hookups.
- The day use visitors expressed an equal level of support for tent sites located a short walk from parking areas, with access to central restrooms and potable water. Their support for drive-in campsites designed for small or medium-sized vehicles, with no RV utility hookups, was somewhat lower than that of overnight visitors.
- Among both day use and overnight visitors, the least support was for large RV sites with utility hookups.

Table 5.6. Mean Scores for Overnight Camping Preferences (Day Use & Overnight Visitors

Scenario Description	Day-Use Visitor Camp Type Preference Mean Score	Overnight Visitor Camp Type Preference Mean Score
Tent sites located a short walk from parking areas, with access to central restrooms and potable water.	0.9	1.0
Drive-in campsites designed for small to medium-sized vehicles, with no RV utility hookups, but with central restrooms and potable water.	0.5	1.0
Drive-in campsites designed for large RVs, with electrical hookups, but no other utility hookups and with central restrooms and potable water.	-0.6	-0.7
Drive-in campsites designed for large RVs, with full service utility hookups.	-0.5	-9.0
Yurts or camper cabins with electricity, with access to central restrooms and potable water.	0.3	0.0
Yurts or camper cabins with electricity and internal bathrooms and kitchens.	0.0	-0.5
Group tent camping with access to central restrooms and potable water.	0.6	-0.1
Hiker/biker camping with access to central restrooms and potable water.	0.7	0.4

-2=not important 0=neither +2=extremely important

Interpretive Opportunities and the Park

Cape Lookout is rich in the types of resources that attract recreational visitors, and rich in opportunities to elevate visitor awareness and appreciation of those resources through interpretation. The main purpose of resource interpretation is to create or strengthen visitors' emotional and intellectual connections to the park and its resources so they will be inspired to become lifelong stewards of the natural, cultural, and historic places found in the parks. Interpretation is communication that goes beyond information. It reveals what things mean and why they matter. It helps connect people to a place.

The interpretive assessment for the park was developed using an adaptation of the "5-M" model of interpretive planning endorsed by the National Association for Interpretation (NAI). The 5-M interpretive planning method involves first considering the management issues, intended messages, markets, and mechanics of the site before selecting the media used to deliver the messages.

This chapter identifies the potential features to be interpreted, potential audiences, other interpretation within the region, potential partners interested in participating in interpretation at Cape Lookout, and issues related to the site and features that need consideration. Chapter 8 identifies the goals for park resource interpretation in the context of the broader set of park goals and the values they support. Chapter 9 describes the interpretive themes, safety messages, guidelines for delivery of messages, recommended interpretive service level, and media that will be used to communicate the themes as well as orientation and wayfinding information.

The Park's Existing Interpretive Facilities and Programs

Currently the park features a nature trail, several interpretive panels, a Junior Ranger Program, evening programs at the camp talk amphitheater, and ranger-led hikes to the end of the cape.

- The nature trail is located between the campground and day use area next to the hiker biker camp. This is a self guided tour that highlights plants that are native to the Oregon Coast.
- In the day use area, several interpretive panels are built into stone walls along the Coast Trail route. Included here are panels conveying information on the coastal geology, native birds, and the history and prehistory of the Tillamook County area highlighting Native American occupation and pioneer days. A memorial to the park's first manager is included in this set of panels.
- Near the stone walls is an interpretive panel with information of the geology of the coastal headlands.
- An interpretive panel with tide pool information is located near the picnic shelter.
- A panel with information on tsunamis is located near the day use parking lot.
- Along the Cape Trail is a plaque memorializing soldiers who died when a WWII plane crashed into the cape in bad weather.
- An interpretive panel accompanied by park rule signage at the Cape Trailhead provides orientation for the Coast Trail and Cape Trail routes. Another trail orientation sign is located along the Coast Trail Route near the day use area.
- The Junior Ranger Program, based at the interpretive yurt near the camp talk amphitheater, features programs on subjects such as animal adaptations, tide pool habitat, the water cycle, parts of a tree and how trees survive, ocean wave formation and beach safety, the dynamics of beach erosion, and bird watching and identification. There is currently a program on animal tracks being developed.
- The evening programs at the amphitheater currently address subjects such as hiking in the Cape Lookout area, gray whales and their history and migration, the history of Cape Lookout and problems of shoreline erosion, raccoons and how people's actions around them cause problems, and beavers and their ability to change the environment. A new program now under development will feature raptors.
- Evening programs also feature various guest presentations.
- The park also features scheduled hikes to the end of the cape led by an interpretive ranger.

Features with Interpretive Potential

Natural Resources

- Cape Lookout's dedicated State Natural Areas, on the park's headland the Netarts Spit, reflect the significance of the area's natural resources.
- Cape Lookout was formed by one of the Columbia River Basalt flows, the most extensive basalt flows on the planet.
- Sea lions and seals can be observed on shore.
- Seabirds, peregrine falcons, and bald eagles can be observed from the park.
- The park habitats include old growth temperate rainforest, young stands of temperate rainforest, alder forest, wetlands (including freshwater marsh salt marsh, shrub-scrub wetland, estuarine mud flat) streams, ocean beaches, sand dunes, and tidepools.
- The park is one of the few old growth temperate rainforests on the Oregon coast that has a hiking trail.
- There are listed wildlife species using, or potentially using, some of the habitats. Coho salmon are present in Jackson Creek and can be observed using the Creek to spawn and rear. Marbled murrelets are known to have nested in the old growth forest, and may still be present. Snowy plovers once nested on the Netarts Spit, and this site could potentially be managed to attract plovers.
- Whales can be observed from the park.
- There are currently at least two beaver dams.
- Located in the Pacific flyway, Cape Lookout State Park is a great site to observe bird migration.
- The park is an excellent site to observe and study succession of plant communities.
- The dynamic nature of beaches and dunes is seen along Cape Lookout's shoreline.

Historic and Cultural Resources

- The area was used for thousands of years by Native Americans.
- The park includes a history of development by the Civilian Conservation Corps.
- Thirty-two shipwrecks between Nestucca and Neahkahnie occurred while trying to ship supplies through this dangerous area.
- The first settlement of Netarts Bay occurred in 1863; settlers claimed grazing land through the Donation Land Law, which was used mostly for dairy cows.
- Timber was an important industry in the area.
- In 1935 the US Lighthouse Service donated 935 acres of land for a park on Cape Lookout; the Netarts Sand Spit was later donated by the Louis W Hill family foundation.

Recreational Resources

- The Cape and the beach are highlights among the park's recreational opportunities.
- The park offers outstanding opportunities for hiking, fishing, camping, birding, kayaking, hang gliding, and marine mammal observation.
- Recreation has been a major part of the cultural landscape for many years.

Potential Audiences

Families make up a significant portion of the visitors. They are predominantly summer visitors, however. After school starts, the park visitors are largely retirees during the week and families on weekends. Some families will visit during periods of clamming or crabbing. In the winter, family attendance drops and seniors become more predominant.

While a lot of visitors stay at Cape Lookout, many stay at the other camping and lodging facilities in the vicinity. RV parks on the bay are popular for seniors. Second home owners make up half of the local summer population. There are a large number of vacation rentals in Tillamook County. Reservations for lodging are generally made online.

Motor-homers come to this area at certain times of the year to escape the heat of the Southwest. A lot of them will come and stay, some for a week at a time.

School groups from local schools visit the area museums on day trips. School groups from greater distances will stop at the attractions, but these are rarer, maybe less than 10 a year. The Air Museum sees a lot of Boy Scouts from Camp Meriwether which is just south of Cape Lookout.

Seasonal events tend to draw groups of visitors. A lot of the families and others are coming for specific attractions, such as fishermen in the fall for the salmon coming into the bay, the Oregon Tuna Classic in the fall, etc. Most people coming for the clamming events are from the Willamette Valley, although some are locals.

Highway 101 brings a lot of drive-by drop-in visitors to area museums. The Tillamook Cheese Factory is a major area attraction. Many visitors coming for specific attractions are unfamiliar with other area attractions, and will ask about other opportunities. Some aren't coming with a clear idea of what they want to do, and are making up their trips as they go.

Oregonians are not the only visitors to the Tillamook area. The majority of visitors are from the Pacific Northwest, Western Canada, and Alaska. Most of the Oregonians are from the Northern Willamette Valley. However, visitors come from all over the US, and some from foreign countries.

Bilingual and multi-lingual resources are becoming increasingly important. There is a need for information in multiple languages: Spanish, Russian, Romanian, and Asian languages.

The most common group size visiting the park is 2 people among both day use and overnight visitors. But many day use visitors come as families. The average group size is about 6 people for day use visitors and about 5 people for overnight visitors. The smallest percentage of both day use and overnight visitors is over the age of 65. The most common length of stay for overnight visitors is two nights; the average stay is 2.5 nights. The average stay for day use visitors is about 4 hours. Over 50% of both day-use and overnight visitors are returning visitors. A third of the overnight visitors bring dogs.

Some of the top reasons overnight visitors stay at Cape Lookout are to rest and relax, to spend time in nature, to have fun and excitement, to socialize with friends and family, and because they like the activities at the park. Over 80% of day use visitors and over 90% of overnight visitors are walking on the beach. Over 50% of both day-use and overnight visitors sightsee and hike or walk the park trails.

Scouting groups —both boy and girl scouts—occasionally come and stay in the park. YMCA and church groups also visit. Park staff don't always know ahead of time who is coming, but whenever possible, they offer interpretive opportunities to those groups. They offer hikes for environmental groups, as well as kayak trips on Nestucca Bay. They offer talks on topics of interest to the groups that pertain to the park. When they give talks to visiting groups, they also offer these to the larger park population. Depending on the weather, staff may or may not advertise group hikes. Some groups will come to help with beach cleanup, invasive species removal, or other service projects that lend themselves to interpretation.

Interpretation in the Region

Other interpretive opportunities in the region generally focus on the cultural and historic resources, but there are a few groups that offer in-depth natural resource education. Several groups conduct programs off-site.

History and culture are interpreted by several of the area museums. They focus on the Native American history, early exploration and maritime history, and World War II coastal defense history. Agricultural production is a major focus of the interpretive attractions in the Tillamook area.

Ecology is a popular topic among non-profit organizations in the Tillamook area.

During the major clamming events, some groups have volunteers out on the bay educating people on clamming limits and related rules.

Several groups are working with teachers in the local schools to bring kids outside to teach them about ecology and the environment. Some have environmental monitoring projects underway in local watersheds.

The U.S. Fish and Wildlife Service stations volunteers at Cape Meares to talk to the public about the birds. Often, they will hear visitors comment about not seeing whales while completely missing the birds. The volunteers step in and help the visitors see the wildlife. They set up spotting scopes, and have a "Falcon cam" that feeds to a monitor in the lighthouse, focusing on the peregrine falcon nest or the common murres. They get a lot of good feedback from this program.

Public program opportunities relating to natural resources are not as common. There are a couple groups that offer community education on the natural resources of the area. One group holds community workshops on whales, birding, Native American history and life ways, and other topics at the community center. They also participate in community events. Another group gives public presentations before their counsel meetings, but those are usually attended by their counsel members and occasionally the local students involved in various environmental quality projects through their school.

Volunteers and members of local non-profit organizations make up the majority of the current natural history interpretive force in the immediate Tillamook area. The Marine Mammal Stranding network is hoping to train volunteers in the Tillamook community to act as initial contacts for reports of stranding. Volunteers for the US Fish and Wildlife Service stationed at Cape Meares stay at Cape Lookout State Park for the season.

Potential Partners

The following groups are potentially interested in participating in resource interpretation at Cape Lookout State Park:

- Friends of Netarts Bay Watershed, Estuary, Beach & Sea (WEBS)
- Tillamook Bay Watershed Council
- US Fish and Wildlife Service – Oregon Coast National Wildlife Refuge Complex

Pertinent Issues

Sensitive Interpretive Areas

The Oregon Parks and Recreation Department works with the Confederated Tribes of Grand Ronde, Confederated Tribes of Siletz Indians and the OPRD Archeologist in the interpretation of the Native American history of the park.

Interpretation of rare plants and wildlife species documented in the park helps the public understand their significance while avoiding disturbance that would be detrimental to sensitive species.

ADA Issues

The design of interpretive media must strive to reach the widest audience possible through the use of ADA design guidelines. Where needed, alternate methods of communicating interpretive messages must be provided if feasible, such as Smart Phone applications or video clips on the internet. The design of interpretive trails must strive to be universally accessible in regards to grade, surface, and media placement.

Site specific issues

Some visitors are not able to travel all trails. Interpretation helps all visitors experience the more remote portions of the park through the use of communication methods such as Smart Phone applications, video clips on the web, or other media.

Summary: Implications for Cape Lookout

The studies and other indicators summarized in this chapter lead to the following conclusions about existing and potential recreation activities and facilities at Cape Lookout.

Camping Styles and Amenities

It's no surprise there is a high demand for camping opportunities at Cape Lookout. This reflects the overall camping demand at parks along the ocean shore. The need for more campsites along the coast is without question, and Cape Lookout has long been known for its popularity for camping at the beach. The different styles of camping offered at Cape Lookout are all popular, although some are better suited than others to this particular park, in part because of the park's physical limitations and in part because of a long tradition of particular camping styles that attract visitors.

The majority of the park's existing campsites are traditional drive-in sites designed for medium size vehicles with minimal site amenities. This kind of campground mostly attracts campers that use tents, tent trailers or small recreational vehicles, and who typically prefer these camping styles. The large majority of tent campers at Cape Lookout, and the popularity of primitive campsites among the visitors, is evident in the findings of the recent visitor study for park (Cape Lookout State Park Visitor Study, 2010). The preferences expressed in the Visitor Study suggest that this style of camping should continue as a prominent feature in the recreational character of the park.

The findings of the 2010 Visitor Study also demonstrate the popularity of walk-in campsites, primitive tent sites located a short distance from a common parking area. Among all of the camping styles mentioned in the surveys, responses showed the most support for walk-in sites. This finding was particularly interesting, since there are currently no camp sites of this type at the park. This suggests a strong preference among the park visitors for maintaining a particular campground character and low amenity camping style. Because walk-in sites only accommodate tent campers, it also suggests that tent camping is the most preferred camping style at this park. A walk-in campground assures that tent campers are among other tent campers. Additionally, and unknown to most visitors, the terrain over much of the park's suitable area for potential new development is best suited for walk-in campsites that fit the landscape with lesser disturbance than drive-in sites. As such, and in keeping with visitor's preferences, accommodating the demand for walk-in campsites fits well with future plans for campground development.

This is not to suggest that larger RV sites with utility hookups are not in demand at the coast, or that this style of camping should not be continued at Cape Lookout. The 2010 Visitor Study intentionally targeted Cape Lookout's visitors, not the larger recreating population across the region or state. Statewide and regional data indicate that RV camping, like other types of camping, is also growing in popularity. (OPRD, 2003-2007 SCORP.) According to the 2008-2012 SCORP, RV/ trailer camping is one of the top 10 expected growth activities among the State's Baby Boomer and Pre-Boomer populations. Approximately 18% of the park's conventional drive-in campsites have utility hookups. The various studies indicate that some accommodations for this style of camping should be continued at Cape Lookout.

The yurts and cabins are in very high demand, and like at other parks, are typically fully reserved for the entire peak season and off season weekends in advance of other campsites. The cabins at Cape Lookout are the most popular in the state park system. Demand will continually exceed the supply of these features. Consideration should be given to adding more cabins or yurts at a suitable location.

The park's group tent camp area, located next to the ocean shore, is also very popular. There are two adjacent group camps, each with a capacity of 25 people, which may be rented separately or together. Available overnight use data for the park indicate that, during the peak season when weather is favorable, both group camps are rented on most days, only one is rented on some days, and there are few days when neither is rented. This suggests a need to continue providing a group area at the park. The existing group camp area is particularly susceptible to loss with continued shoreline erosion.

Ocean Shore Activities

The ocean shore is unquestionably the largest draw for the park visitors. In the 2010 Visitor Study, 97% of the overnight visitors and 83% of the day use visitors reported walking on the beach, and this was reported as the primary activity for 29% of the day use visitors and 24% of the overnight visitors. Smaller percentages of day use and overnight visitors reported swimming, fishing and other surf related activities. Other popular activities are also directly related to the ocean shore, such as picnicking along the beach front, much of the trail activity, as well as camping. Collectively the visitor survey responses confirmed the demand for beach access and various other activities related to the ocean shore. This is also consistent with visitor opinions concerning future management alternatives if shoreline retreat continues. The most popular management alternative among both day use and overnight visitors was, if shoreline retreat continues, to maintain the current proportions of day use capacity and camping capacity even if both must be downsized. (OPRD, Cape Lookout Visitor Study, 2010.) Consideration should also be given to the existing capacity of the day use parking lot, which mostly serves shore-related day use. Currently, this lot is underused most of the time for the various day use activities it supports.

Picnicking

Picnicking or barbecuing is one of the most popular activities at Cape Lookout among both day use and overnight visitors according to the 2010 Visitor Study. While this activity is generally expected of campers at their campsites, the proportion of day use visitors who are picnicking may be more telling with regard to an assessment of need. 46% of the day use visitors reported picnicking or barbecuing on their visit, and 19% reported this as their primary day visit activity, second only to walking on the beach. Considering the setting of the picnic area, this is not surprising. The picnic sites come with a spectacular view of the park coastline and the cape.

Cape Lookout's group day use area and picnic shelter are very popular, also owing to the spectacular oceanfront setting in addition to the overall demand for this group activity. Notably, group day use is one of the activities reported in the 2008-2012 SCORP as being important for providing facilities to serve the recreation needs of growing minority populations. Tillamook County was identified as a high priority county for addressing the needs of the growing Hispanic population.

The popularity of picnicking along the park oceanfront, for various group sizes, indicates a need to maintain sufficient day use parking capacity and picnic grounds and facilities. Consideration should be given to possible expansion of the picnic area to offset continued loss of picnic grounds and facilities with shoreline retreat.

Trail Activities
Most of the trail activity at the park occurs on the Cape Trail, and the southward reach of the Oregon Coast Trail (OCT) to the beach, from the Cape Trailhead. Some use occurs on the OCT route leading from the park's core area to the Cape Trail, and a lesser portion occurs on the Netarts Spit.

Non-motorized trail uses are among the most popular and growing recreation activities, as reported in various studies. The 2010 Cape Lookout Visitor Study showed that 55% of the day use visitors and 60% of the overnight visitors were hiking or walking on trails, and for both groups this activity was reported as the third most popular primary activity after walking on the beach and picnicking. Day hiking is a high growth activity in Region 1 according to the 2003-2007 SCORP. The 2008-2012 SCORP reported that non-motorized trails are among the highest priorities for meeting recreation needs in Tillamook County. Also in the 2008-2012 SCORP, among the Boomer and Pre-Boomer populations, walking, jogging and day hiking were reported among the top activities expected to increase. The 2008-2012 SCORP also reported walking for pleasure as the favorite activity among the Hispanic population, which is growing in Tillamook County.

Bicycling is also a popular and growing trail activity, and is underrepresented by suitable facilities at Cape Lookout. Currently, park visitors who ride are generally riding on the roads, as there are no bike trails in the park. 16% of the park's overnight visitors and 6% of the day use visitors reported biking on local roads, and among the overnight visitors this was the fifth most popular primary activity. (OPRD, Cape Lookout Visitor Study, 2010.) Biking is the second most popular activity expected to grow among the Boomer and Pre-Boomer populations. (OPRD, 2008-2012 SCORP.)

Opportunities for adding trails are mostly limited to the area around the park's core facilities. Trail development in and around the core area could serve multiple purposes, addressing the growing demands for hiking, walking and jogging trails, and providing surfaced trails for biking. A well developed trail system through the core area would also connect potential new campground development areas with the existing campground and day use areas and the beach. This would also provide multiple routes for emergency evacuation from the shoreline area to high ground. And finally, a well developed trail system in the core area, especially bike trails, could help make potential new camping areas more attractive, especially to families.

Hiker Biker Camp
The hiker biker camp at Cape Lookout is the most popular campground of its kind on the Oregon Coast and in the state park system, primarily because of the forested beachfront setting. This is a key node along the route of the Oregon Coast Trail, which runs through the park, and along the Oregon Coast Bike Route's alternate Three Capes Scenic Route. While this campground is already wildly popular, especially among the bikers, there are opportunities for improvements that would better serve its users. Comments from these visitors suggest providing greater separation from other trail uses and between some campsites, restrooms located closer to the campsites, and a place to recharge cell phones. A small shelter for cooking and gathering has also been suggested.

Interpretation and Education

Visiting cultural and historic sites is among the numerous growing recreational activities in Region 1. Related activities such as nature and wildlife observation, bird watching, outdoor photography and tracking animal signs are also growing in popularity among region's recreational visitors. (OPRD, 2003-2008 SCORP) Results of the 2010 Visitor Study for the park showed that 22% of the day use visitors and 20% of the overnight visitors were watching birds or other wildlife, and 14% of the overnight visitors participated in ranger-led programs.

The interpretive assessment in this chapter indicates numerous interpretive opportunities associated with the natural and cultural history and features of the park and the region. In addition, because there is a need to redesign and replace park facilities to address continued problems of shoreline erosion and ocean flooding, opportunities to develop new park facilities farther from the shoreline are now under consideration. With new development and redevelopment of the park's core area, there is an opportunity to develop a new interpretive program area designed to address the array of features with interpretive potential, their audiences and related program activities, and to serve as a hub for interpretation throughout the park. A new design for future park development should include a new and improved program area together with appropriately located interpretive sites along the park's travel routes, coupled with a detailed Interpretive Plan. Further guidance for the park's interpretive planning is found in Chapters 9 and 10.

Natural Play

Considering that families comprise a large share of the summertime visitation at Cape Lookout, the development of a natural play area, as described above, may be a valuable feature to include in future designs for the park. Potentially this could be associated with the park's interpretive and educational features.

Chapter 6

Issue Scoping

Opportunities for Input

Understanding public concerns and expectations related to park use and management is essential in formulating a park plan. During the planning process OPRD held meetings with a plan Stakeholder Committee and the general public to ask for input on issues and ideas related to the future of the park. Meetings with the Stakeholder Committee were held in the local community of Netarts. Public meetings were held in two locations, in Netarts and in Wilsonville. Each round of meetings was followed by a 30-day comment period during which written comments were accepted. Meetings were also held with OPRD's Planning Core Team to hear the ideas of agency staff with experience and expertise related to the park. (A list of the Stakeholder Committee members and their affiliations, and a list of the OPRD Core Team members and their positions, can be found at the front of this document.)

Comments from the General Public, Stakeholders and Core Team

The following is a summary of key issues and ideas raised in verbal and written comments from the Stakeholder Committee, general public, and OPRD's Core Team.

Ocean Shoreline Protection
Questions regarding the existing artificial dune and dynamic revetment generated much discussion among members of the Committee and the general public as well as Department staff. This feature is key to the longevity of the campground facilities it protects. Its design, intended to mimic a natural foredune, seeks a balance between its long term effectiveness and its similarity to the appearance and function of a natural dune. With its dynamic function, it requires periodic replenishment of cobble that dissipates wave energy and prevents waves from destroying the dune structure. The maintenance is expensive and represents an on-going cost for protection of roughly (two thirds?) of the existing campground. Its effectiveness is also limited; storm waves sometimes wash over the top and into the campground edge. The increased salinity in the affected area is killing trees, making some campsites less desirable. With the erratic storm activity coupled with a rising sea level, the length of time the dune will provide its current level of protection is a key question that cannot be answered with reasonable certainty, and as such, the life of campground is uncertain. Potentially this structure could be enlarged in length and/or in height to provide better, and perhaps longer lived protection.

North of the artificial dune, the remaining natural dune continues to erode during winter storms. This dune protects one of the most popular areas of the campground. The location at the neck of the narrow spit also makes this the most vulnerable area of the camp loops. With continued erosion, the dune will eventually be breached. Based on elevations along the dune crest, the most likely locations for blowouts are immediately north of the campground, and at the juncture of the

artificial dune and natural dune. Artificial measures to stabilize the natural dune could potentially prolong the life of this part of the campground. However, because this area is particularly vulnerable, long term protection is probably less practical than the area behind the artificial dune.

Comments received in the issue scoping process varied between using a harder approach to shore protection to others that suggested letting the natural process run its course, at least north of the artificial dune where long term protection appears least practical. Most comments seemed to support a balanced approach, generally suggesting that campground facilities be protected using artificial measures that appear natural until ocean hazards finally make protection too costly and impractical. Some comments mentioned that, when facilities must be abandoned, these sites should be restored to natural conditions. Where restored to wetlands, these sites can be used for wetland mitigation for other projects.

Some comments noted that, if the spit is breached, this will also allow storm wave energy to reach farther into the bay and to the mainland. This may increase the extent of wetlands and flooding at the edge of the campground that abuts the end of the bay. A couple of comments raised concerns that other properties along the mainland bay shore would be more threatened by storm waves if the spit is breached.

Emergency Preparedness

The Department is aware, and some comments noted, that additional routes for emergency access and evacuation are needed in the park. Currently there is only one road into the park, and that road is subject to shallow flooding in storm surges along its lowest elevation reach next to the bay shore. Another road connection to the county road is needed for emergencies. The access road to the campground is also vulnerable to flooding because of its location directly behind the artificial dune, which is sometimes overtopped by waves. Emergency routes are needed at the east ends of the campground that would connect to the main park road. In general, there is a need to provide more direct trail routes from the ocean shoreline area to higher ground to facilitate more efficient evacuation in a catastrophic event such as a tsunami.

Certain facilities that are critical to the continued operation of the park are now, or will eventually be, threatened by ocean flooding. As mentioned, the campground access road is vulnerable in its location directly behind the artificial dune. In Loop A/B, the sewage lift station that serves most of the park facilities is threatened by a potential spit breach and flooding. Over time, the park entrance road will likely be more prone to flooding in storm surges. These facilities all need relocation, as noted in the issue scoping discussions.

Limited Area for New Development

The suitable area for new park facilities is limited to an area east of the existing park development. Other areas of the park are either too steep, vulnerable to ocean hazards, or have natural resource values that are important to preserve. Most of the suitable development area is a densely overstocked plantation forest badly in need of thinning to promote healthy forest succession and create a desirable recreation setting. This area is also located farther from the ocean shore, which makes it less attractive to visitors than the existing campground. The

hummocky topography and interspersed wetlands will present some challenges in siting facilities. Several comments noted what a disappointment it would be to lose the existing campground only to have it replaced with this less desirable setting. A couple of comments noted also that mosquitoes are likely to be more bothersome with the proximity to wetlands and less wind to mitigate.

Timing of New Development

Some comments suggested it would be prudent to be proactive in developing new campground facilities rather than waiting until more loss of existing facilities occurs. Most importantly, the Department should begin restoring the forest conditions by pre-commercial thinning as soon as possible, because it will take considerable time after thinning for this forest to evolve to a desirable setting for a campground. Constructing the new campground soon would help absorb some of the demand during the peak season. As discussed above, projects that address visitor safety and critical facilities will be higher priorities.

Camping Style Preferences

Some comments suggested that, in creating a new campground, it may be appropriate to take a lighter approach than the existing campground in the extent of development and amenities. These comments are consistent with the majority of opinions expressed in a recent survey of park visitors. The survey revealed a strong preference for a combination of walk-in tent sites and conventional drive-in sites designed for tent campers and small to medium sized vehicles and with no site utilities, only central sanitary facilities. While a minority of survey respondents favored full service hookups at campsites, comments in issue scoping meetings noted there is a need for some higher amenity sites, especially to serve disabled and senior citizen visitors. It was also noted that the existing campground has mostly primitive drive-in sites, and the full service sites are only partially used by RV campers who want these utilities, however, this is mainly because some full service sites are difficult for large RVs to use. The overall preference for tent sites, both walk-in and drive-in, is more consistent with the landscape limitations of the development area than a campground involving larger campsites and more road surface.

Existing Drainfield

There was considerable discussion about the existing drainfield and its place in the new recreation setting. It occupies a large area surrounded on three sides by the suitable area for new development, and has not yet been revegetated. Planting is needed to enhance its appearance, control weeds, and blend it into the surrounding forest; however, the active drainfield units must remain free of intrusive roots. Suggestions were made for planting the drainfield surface with turf grasses and making it a play area for campers. Given its location, it could also serve as a refuge and gathering place in emergency evacuation operations. In the course of staff discussions, it was suggested that the drainfield be downsized with the addition of pretreatment facilities, allowing the reclaimed area to be used for campground development.

Trails

Existing and new trails were discussed in the issue scoping process. The Cape Trail and the Coast Trail at certain locations need regular maintenance and are somewhat difficult to maintain given the terrain and limited staff resources. The trail along the Netarts Spit apparently sees minor use, although it provides access to the bay tidelands. This trail is planned to become an alternate route for a segment of the Oregon Coast Trail if a ferry crossing to Netarts can be established.

Development of a new loop trail system for pedestrians and bikes in the core development area was discussed at length. This could be a key part of the new design. Trail use opportunities would be an attraction for the visitors and provide connections to the ocean shore and between the existing and new park development.

Hiker Biker Camp
The hiker biker camp, described in issue scoping discussions as "unique and outstanding," is reportedly the most popular of its kind on the Oregon Coast, mostly because of its forested setting at the ocean shore. Comments from trail and biking enthusiasts strongly emphasized the need to retain this facility, and suggested improvements. A cooking and gathering shelter was recommended, along with a place to recharge phones and other electronic devices. Other comments mentioned a desire to have restrooms and showers closer to campsites. Greater separation is needed between some of the campsites. The trail serving the campsites needs reconfiguration to separate other trail uses from the hiker biker camp access.

Day Use Area
Clearly, the day use beach access and picnicking opportunities are equal in popularity to camping at this park, and this is reflected in issue scoping comments as well as recent visitor survey results. However, the parking lot serving these uses is oversized for typical peak season weekend use, according to day use pass sales, traffic counts and observations of park staff. On occasion, such as a warm summer holiday weekend, the parking lot fills up and overflows to the roadside. Typical use on most warm summer weekends generally fills the lot to around 40% of its capacity. There was substantial discussion around reallocating and landscaping some of the parking lot space and redistributing some of the parking to other locations.

The day use area, especially the parking lot, is on higher ground as compared to most of the campground, and most of the lot is also farther from shore, which make it somewhat less vulnerable to ocean hazards absent an extreme event. A portion of the lot could be used to replace picnicking space previously lost to erosion, allowing the group picnic shelter to be relocated to safer ground where it is less vulnerable to continued shore erosion. Some suggested using part of the lot for camping facilities, such as adding more cabins.

Sea Kayaking
The day use parking area serves as a base for sea kayakers who kayak around the cape. Representatives of this user group talked mainly about their experiences kayaking along the cape shoreline and the associated wildlife viewing opportunities.

Paragliding
Anderson Viewpoint is a popular place for launching paragliders. This group talked about the optimum conditions associated with flying from this location. There is some concern about traffic safety at the turnoff to the viewpoint, as people travelling the county road often stop to watch the gliders. This viewpoint is also popular for its scenic coastline view, which by itself accounts for a large share of the traffic. Opportunities for improving the turnout to address traffic safety should be explored in cooperation with the county. Representatives of this group also expressed an interest in identifying new locations for launching and landing.

Uses on the Spit
Some trail use occurs on the Netarts Spit, mostly for access to the ocean beach and the bay tidelands. This trail corridor is proposed to become an alternate route for the Oregon Coast Trail if a ferry crossing is established across the bay to Netarts. The north end of the spit is also the location of possible future habitat restoration for western snowy plover. Development of the ferry crossing and trail route will need to be reconciled with the possible use of this area for plover nesting. A breach of the spit near the north end of the campground is likely in the near future, which could alter plans for the trail connection.

In issue scoping meetings, a question was raised about possibly allowing bird hunting along the spit, and providing hunting blinds along bayshore, provided that access for hunting would be by boat only. Hunting would occur only during the off season. This type of use would need to be reconciled with the restrictions of the Dedication Agreement for the Natural Heritage Area that covers most of the spit. Possible conflicts with other uses such as shellfish gathering would also need to be reconciled.

Potential Stream Habitat Restoration
There are two stream systems flowing through the core area that support salmon, both of which have been altered by road development and intentional diversion. Jackson Creek's flow is divided between its natural channel, which flows to the ocean, and its diversion channel flowing to the bay. The diversion channel flow dries up each summer, leaving juvenile fish stranded in pools that also eventually dry up. The channel needs a lot of maintenance to control flow that often changes course and flows through the campground. Its sediment and gravel bed load clogs culverts and fills in the bay over time. There is substantial interest among resource agencies and interest groups in restoring Jackson Creek to its ocean going channel only, and plugging the diversion channel. Some comments recommended that the Department make sure that any decision to proceed with this project be supported by thorough research demonstrating the need and benefits. Because of the channel location, a decision either way will not affect the conceptual park design.

Netarts creek flows to the bay through culverts under the county road and the park entrance road. The culverts are undersized and have altered the natural flow, and the roads have fragmented the associated wetland habitat. A potential project to restore the hydrologic and habitat connections is being explored. Restoration involving the county road will require cooperation with the county.

Marbled Murrelet Habitat
Old growth forests extend from within the core area to the end of the cape and the south end of the park. In some areas the forests have suitable nesting trees for marbled murrelet. Limited trail development is planned at the edges of old growth. The trail corridors need to be surveyed for possible nesting trees before trail alignments are finalized to avoid conflicts. Careful management of garbage throughout the park is a key issue with regard to murrelets, in order to help control predation on murrelet nests by corvid species (such as crows and jays), since corvids are attracted to places where human garbage is present.

Forest Management
Densely overstocked plantation forests are present in and around the core area and in the south east part of the park. These forests need thinning as soon as possible to promote succession to healthy forest conditions, and to create desirable recreation settings in and around existing and planned recreation areas. Thinning the forest must be the first step in preparing for development of the new campground and related facilities. In the existing program area, thinning is needed in conjunction with conversion of this area to the new Loop C access road corridor. The hiker biker area also needs thinning.

Weed Control
Weed control, and eradication where possible, is needed in a number of places in and around existing developed areas. Preventing the spread of weeds is most important, by managing the perimeters of infestations, and by regular maintenance along avenues of dispersal such as streams, ditches, trails and roads, and around parking areas and campsites. This is a key issue that often requires the help of inmate crews or volunteer groups.

Park Character
Several comments alluded to the unique character of this park, in terms of its natural habitat and scenic values as well as its recreational character. While most of those participating in the issue scoping discussions recognized the need for changes to address the threats of ocean hazards, they also strongly expressed the desire to retain the long standing character. One of the key challenges will be to maintain as much of this character as possible while relocating some of the recreation uses farther from the ocean shore as these actions become necessary over time.

Chapter 7

Landscape Opportunities and Constraints

Understanding the Site

Strategies for a successful park arise from understanding the park's opportunities and constraints. This chapter describes the park by its characteristics for separate but related geographic areas, characteristics that affect opportunities and/or constraints related to park development, use and management. The separate areas are considered collectively to determine how they can be managed as a whole to protect or improve the integrity of important park resources while providing recreation access to the park. On the basis of opportunities and constraints, this plan defines areas of the park that will be set aside for resource protection or restoration versus areas where the focus will be on recreational use and facility development. A successful park plan blends resource protection and recreation, sometimes overlapping them, in a way that sustains the quality of both.

Opportunity Areas

The Opportunity Areas discussed below are correlated to Map 7-1 and Map 7-2 located at the end of this chapter.

Area 1—Cape Lookout Headland - (Natural Resource Focus)
Area 1 covers all of the park property south of the core area, and includes the dedicated Natural Heritage Area, high quality mature forest adjacent to the Heritage Area, and a large patch of young replanted forest.

1.a—Most of the park's headland is in sub-area 1.a, which covers the dedicated State Natural Heritage Area. The Natural Heritage Area was established under State Land Board authority as provided for in the Oregon Natural Heritage Act and under agreement with OPRD; and was recently transferred to OPRD and the Oregon Parks and Recreation Commission. The purpose of this dedication is to promote natural diversity of native species and ecosystems, more specifically to protect the dedicated area as a primary representative site for the natural ecosystem elements it contains. Opportunities for this area are limited to the purposes outlined in the Dedication Agreement for natural resource protection, research, education and interpretation, weed control, and continued recreational use and maintenance of the existing hiking trail.

1.b.—This sub-area covers the high quality mature native forest outside of, and adjacent to, the Natural Heritage Area, reaching from the southern boundary of the park to the core area. The county road extends through part of this sub-area, which also includes the cape trailhead access road and parking lot. A section of the Coast Trail also extends through this area, connecting the park's core area to the cape trailhead before descending the south slope of the cape. In addition to natural resource preservation, opportunities are generally limited to maintenance of the hiking trails, cape trailhead and roadside viewpoints, and possible new trail development.

1.c.—This sub-area extends Area 1 to the eastern boundary of the park. This is relatively young conifer plantation forest of moderate botanical value. The terrain is steep, making it generally unsuitable for facility development other than trails. Through succession and any needed forest management, this area will eventually become part of the higher value forest that covers the rest of Area 1.

Area 2 – Core Area Old Growth Forest – (Natural Resource Focus)
Area 2 is a patch of high quality mature native forest covering the south end of the core area and abutting the northern extent of Area 1. It is distinguished from the Area 1 mature forest mainly by its location within the core area versus outside, and its closer association with potential core area impacts. Otherwise, it is an extension of the mature forest to the south. Much of this area is forested wetlands. Jackson Creek's natural channel flows westward to the ocean through this area. The east boundary is defined by the Jackson Creek diversion channel. South of the picnic area, the Coast Trail extends southward through Area 2 following the shoreline for a distance before ascending the steep slope on its way to the cape. In the past, this forest was known to support nesting of marbled murrelet. It is currently unknown whether murrelets still nest here, but the habitat remains suitable for nesting. The botanical, wetland and habitat values make this area well suited for preservation, and unsuitable for facility development other than carefully located trails.

Jackson Creek supports spawning and rearing of coho salmon, steelhead and chum salmon. A study is currently underway to assess the merits of returning stream flow historically diverted to the bay back to the natural channel. Ecological restoration opportunities associated with the stream and its diversion will be determined based on that study.

Recreational development opportunities are particularly limited by the significant botanical and habitat values of the forest surrounding Jackson Creek's natural channel. For most of the natural stream corridor, extensive wetlands adjacent to the stream and steep slopes along its south bank, in addition to the natural sensitivity of the aquatic habitat, generally discourage all development, even trails. Recreation opportunities near the stream are generally limited to what now exists near the stream mouth, where the Coast Trail bridges the stream and picnicking opportunities exist nearby.

Area 3 – Core Area Plantation Forest Buffer– (Natural Resource Focus)
Within the park's core area, most of the land east of the Jackson Creek diversion channel, southeast of the park entrance road and west of the park boundary is characterized by fairly young age and overstocked conifer plantation forest in need of thinning and long-term management. About half of the overstocked forest is described as Area 10, which is distinguished from Area 3 by its development suitability. Area 3 includes residual parts of this forest that are mostly considered unsuitable for facility development because of interspersed wetlands, variable topography or close proximity to the county road. Area 3 is suitable primarily for forest habitat enhancement and also serves as a buffer zone between future development areas and between development areas and the county road. A portion of this area, located on the opposite side of the county road, is useful for visual management of the road corridor among other forest management objectives.

Netarts Creek flows through the north part of Area 3, and crosses the county road and park entrance road through undersized culverts on its way to the bay. This creek is also being considered for potential restoration, to restore the natural hydrology and improve fish passage. Two locations within Area 3 are particularly important for future road development, and a third location may also be important. As discussed under Area 10, a new park entrance road connection to the county road will be needed. At the southeast corner of the drainfield, a short road connecting the alignment of the existing drainfield service road to the county road is needed for emergency service and evacuation. At a third location, an alternate road connection to the existing park road may be needed.

Area 4 – Bay Marshlands – (Natural Resource Focus)
Area 4 includes the marshlands at the south end of Netarts Bay, including that part of the bay within the Netarts Spit Natural Heritage Area, and the connected marsh outside the Heritage Area that reaches across the existing park entrance road.

4.a.—This sub-area is the bay marshland portion of the dedicated Netarts Spit Natural Heritage Area, which also covers most of the spit described as Area 5. Opportunities for this area are limited to the purposes outlined in the Dedication Agreement for natural resource protection, research, education and interpretation, weed control, and shellfish gathering in the tidelands that may reach into this area.

4.b.—Sub-area 4.b is the adjacent salt marsh outside the Heritage Area, which reaches across the existing park entrance road. Multiple small streams, and the Jackson Creek diversion channel, flow to the bay through the marsh. The entrance road dissects the marsh and interrupts the hydrologic and habitat connections. A part of this area, characterized by mixed wetlands and uplands, reaches the edges of Camp Loops C & D and the maintenance yard. The wetlands and ground saturation reach into the low lying camp loops at some sites. Except as discussed below, the botanical and wetland values make this sub-area suitable only for natural resource preservation and unsuitable for facility development other than limited trails.

Shallow flooding over the park entrance road typically occurs a couple of times each winter in storm events. The low point along the road is about 14’ elevation. With continued sea level rise, the road will eventually need relocation to a new entrance. An opportunity exists to enhance the hydrologic connection between the bay and the disconnected marshland with larger culverts or bridging, while narrowing the road bed and restoring wetland area. The narrowed road may remain seasonally functional for an undetermined length of time, during which it could function as a service road and bike trail.

The road intersection at the park entrance, and the grassy area adjacent to the entrance, are at a somewhat higher elevation than where the road extends toward the park facilities. The elevation is around 20’. This area has low botanical value and only minor wetlands, and could potentially be developed as a way finding site.

Area 5 – Netarts Spit – (Natural Resource Focus)
Area 5 is the Netarts Spit, including the larger portion within the dedicated Netarts Spit Natural Heritage Area, and a smaller portion outside the Heritage Area and directly north of Camp Loop A/B.

5.a.—This sub-area covers the spit portion of the Natural Heritage Area. (The dedicated area also includes the salt marsh at the south end of Netarts Bay, discussed under Area 4.) Opportunities for this sub-area are limited to the purposes outlined in the Dedication Agreement for natural resource protection, research, education and interpretation, weed control, and the hiking trail and beach activities that now occur.

The Western Snowy Plover Habitat Conservation Plan (HCP) identifies the far north end of the spit as a potential site for restoration of nesting habitat for this federal and state endangered bird species. Opportunities for this area of the spit include potential management actions that implement the HCP.

5.b.—Sub-area 5.b is the portion of the spit located outside the Heritage Area and adjacent to Loop A/B. This is the narrowest, and lowest elevation, part of the spit. With the continuing shoreline erosion trend, this part of the spit is likely to be breached by storm waves in the near future. The erosion and flooding hazards, together with the beach and dune habitat values, make this area suitable for natural resource protection and management activities and unsuitable for recreation facilities other than the existing trail.

Area 6 – Ocean Shoreline – (Recreation and Natural Resource Focus)
Area 6 covers the shoreline from the north end of Loop A/B to the south end of the day use parking lot, and includes the remaining natural foredune fronting the camp loop, the artificial dune, and shoreline south of the artificial dune where there is no foredune.

6.a.—This sub-area is the natural dune fronting Camp Loop A/B. It is eroding landward, being reduced in height and gradually becoming less effective in protecting the campground from storm waves. The average rate of erosion has been 3 to 6 (horizontal) feet per year, occurring sporadically in major storms. North of the campground, the dune has been reduced to the extent that the narrow spit between the open ocean and the bay could be easily breached in a major storm. Although the dune elevation is significantly higher where it fronts the camp loop, currently ranging from 25 to 36 feet elevation, continued landward erosion of the shoreline and corresponding reduction in dune height will eventually allow frequent wave over wash, which could cause a breach of the spit through Loop A/B. Without intervention to slow the erosion, maintenance of campground facilities in Loop A/B will likely become unrealistic over time due to damages and clean up costs from storms. Opportunities for this area are related to the potential for stabilization of the shoreline to protect the existing campground facilities, such as by placing cobble against the dune face to dissipate wave energy and/or planting stabilizing vegetation.

6.b.—Sub-area 6.b. is the artificial dune and cobble revetment that control wave erosion along an 1100’ reach of shoreline fronting Loops C & D, a small portion of Loop A/B, the campground entrance road and about half of the group tent camp. This structure was purposefully designed to mimic a natural dune by its appearance and the dynamic nature of the cobble. The cobble helps dissipate wave energy, but is gradually displaced by wave action. Continued protection of the facilities relies on regular maintenance of the artificial dune and revetment, mainly by periodic replenishment of the cobble. The dune height ranges from 21 to 29 feet elevation. At the lower points, waves commonly wash over during major storms, which cause flooding behind the dune and salt water intrusion in the campground. Trees in the campground are gradually dying as a result of the increased salinity. Potentially, the artificial dune could be extended for a longer distance and/or raised in height to offer more protection of the facilities.

6.c.—Sub-area 6.c. is the shoreline area south of the artificial dune, as far south as the southern extent of the day use parking lot. Along this reach of shoreline, there is no remaining natural dune formation to hold off storm waves, although this shoreline reaches elevations similar to the lower points along the artificial dune. The elevation at the top of the shoreline scarp ranges generally between 22 and 24'. This shoreline is eroding sporadically, at an average rate of 3 to 6 feet per year. At the north end of this area, half of the group tent campground is at risk, unprotected by the artificial dune. The rest of the area is predominantly wetland, and is undeveloped except for hiking trails. A section of trail along the shore previously undermined by erosion has since been realigned farther inland. Area 6.c. is suitable for preservation or enhancement of natural resource values. It is not suited for development other than trails because of the natural values and its vulnerability to storm surges and shoreline erosion. Other opportunities are related to the potential for shoreline stabilization such as with cobble and/or planting stabilizing vegetation, or by extending the artificial dune farther south.

Area 7 - Camp Loop A/B – (Recreation and Natural Resource Focus)
Area 7 covers most of Camp Loop A/B. Most of this loop is situated on the spit between the open ocean and Netarts Bay. A small part of the loop lies behind the artificial dune between Loop D and the dune. The access road serving all of the camp loops, located directly behind the artificial dune, is part of this area. Also included is an isolated wetland directly west of Loop C that is subject to ocean flooding when storm waves wash over the artificial dune.

The majority of Loop A/B is fronted by the eroding natural dune discussed above as 6.a. This camp loop is popular for its close proximity to the ocean shore. There are currently 81 campsites in the loop, which include 79 sites with no utility hookups, one site with sewer, water and electric hookups and one site with water and electric hookups only. Eight or nine of the no hookup sites are located behind the artificial dune, and are discussed below as 8.b. In addition to most of the campsites, a restroom and shower building and the park's main sewage lift station are susceptible to future loss. Formerly there were an additional 25 campsites in this loop, which were abandoned together with a camp talk amphitheater and restroom building following storm damage in the late 1990s prior to construction of the artificial dune. The park's main sewage drainfield system, located farther out on the spit, was irreparably damaged by storm wave erosion in 2008 and had to be entirely relocated.

Loop A/B is regarded as a transitional area. It is vulnerable to future damage with the continued erosion of the natural dune. Without major intervention, future storm damage and possible breaching of the spit will likely necessitate eventual abandonment of most of this loop. A transition from developed recreation to natural area may occur gradually, as sporadic storm damage necessitates removal of facilities. Eventual abandonment of most of the campsites may occur in phases, depending on the erosion and flooding pattern as conditions progressively result in more and more loss of facilities. Facilities will likely be kept in operation until such time as continued maintenance is unrealistic due to the extent and frequency of damage and cleanup costs. Where facilities are abandoned, these sites can be restored to natural conditions. With the threat of continued ocean flooding, the access to Loops C and D will need relocation farther from the shoreline.

Area 8- Park Headquarters and Camp Loops C and D - (Recreation Focus)
Area 8 covers the park headquarters area including the office and maintenance yard, RV dump station, program area, registration area, group tent camp and Camp Loops C and D.

8.a.—The sub-area includes Camp Loops C & D. These loops have a total of 144 campsites, which include 94 sites with no utility hookups, 37 sites with sewer, water and electric hookups, and 13 yurts. The full hookup sites include 7 sites for campground hosts. Also located within Loops C and D are two restroom / shower buildings, one additional restroom building without showers and a meeting hall with restrooms. The entrance road to these loops branches from the road serving Loop A/B directly behind the artificial dune. Wetland areas are interspersed with campsites in both loops, especially the northern part of Loop D which fronts the bay. Numerous campsites in this area were developed on fill. Stream flow in the Jackson Creek diversion channel contributes to wetness in the campground area where the channel approaches the bay.

Continued operation and maintenance of these camp loops depend on regular maintenance of the artificial dune and cobble revetment. Even with this structural protection, waves that wash over the dune during winter storms create clean up costs and are increasing soil salinity that is killing trees and shrubs in the campground. With potential breach of the spit through Loop A/B, coupled with the rising sea level and increasing impacts of storm surges, over time wetland conditions will likely be expanded further into the campground from the bay. Although the artificial dune is expected to help keep these loops in operation for many years, in the long term it may be unrealistic to maintain this part of the campground due to its low elevation and cost of protection. However, maintaining this part of the campground is believed to be feasible for a much longer time than Loop A/B. The dune height could potentially be raised and its length could be extended to offer better protection and keep the campground in operation longer. The entrance road to the camp loops will need relocation to a safer ground further from shore. Native vegetation that is more tolerant of saline conditions could potentially be planted to replace dying species.

8.b.—Sub-area 8.b. includes eight or nine campsites in Loop A/B that could potentially be merged into Loop D with reclamation of most of Loop A/B as discussed under Area 7 above. These sites are somewhat less vulnerable to ocean flooding than the rest of Loop A/B because of their position on the back side of the loop, mostly behind the artificial dune.

8.c.—Sub-area 8.c. includes the park office and maintenance facilities, campground registration booth, interpretive yurt, camp talk amphitheater and RV dump station. This area is more protected from storms than most of the campground because of the somewhat higher elevation, distance from shore and location behind the artificial dune. Some small wetlands are interspersed, including a wet forest patch with significant botanical value in the dump station loop. The botanical values are marginal to poor over most of the area. In the program area, the forest is in marginal condition and needs thinning. The program area is suitable for redevelopment to slightly expand Loop C and relocate the campground entrance to safer ground. The program facilities and registration area would need to be relocated.

8.d.—Sub-area 8.d. is the north portion of the group tent camp located partially behind the south end of the artificial dune. Shoreline erosion is undermining the parking lot where this lot reaches beyond the dune. Ocean flooding occurs in storm surges, especially south of the artificial dune where there is no remaining natural dune. The disturbed area where parking and tenting occur has low botanical value. Bordering the disturbed area, wetlands and native forest communities

with significant botanical value limit development suitability. As such, the suitable area for recreation facilities is small, limited to the disturbed area behind the dune, and also limited in potential use due to vulnerability to occasional flooding. With some wetland mitigation, this area could be redeveloped as a small beach access parking lot.

Area 9 – Day Use Area, Cabins and Hiker Biker Camp – (Recreation Focus)
Area 9 includes the existing picnic area, cabin area, hiker biker camp, the large parking lot used mainly for beach access and picnickers, and the Coast Trail corridor where it crosses Jackson Creek and extends toward the cape.

9.a.—This sub-area is the large parking lot used mainly for beach access and picnicking. A minor portion is allocated to parking for cabin occupants. A day use fee booth is located at the entrance to the lot. The lot is oversized for its current uses, only filled on very few summer weekend days, and typically used to roughly 40 percent of its capacity on summer weekends. Its maximum capacity, minus cabin parking, is 300 cars. The west corner, located roughly 125 feet from the shoreline, has the lowest elevation in the lot at about 26 feet. Most of the lot is above 30 feet elevation, and the highest and farthest corner from shore reaches 36 feet elevation.

Potentially, part of the parking lot could be redeveloped for other uses while retaining a sufficient amount of parking for picnicking and beach access activities and cabin parking. The adjacent picnic area could be expanded into a portion of the lot, making room to relocate the picnic shelter farther from the shoreline on higher ground. Additionally, a small grouping of campsites, yurts or cabins could potentially replace a portion of the lot.

9.b.—Sub-area 9.b. is the picnic area, which reaches along the ocean shore from the hiker biker camp to a point south of Jackson Creek. At the north end of this area, a few picnic sites situated among small wetlands are dispersed through the forest west of the parking lot. From the parking lot southward, picnic sites are dispersed through the variable topography and forested areas along the route of the Coast Trail where it extends toward the cape. An interpretive site built into stone walls is also located along the trail just south of the parking lot. One larger open grassy area with a large picnic shelter is located between the parking lot and the ocean shore. The shelter is located roughly 75 feet from the eroding shoreline at an elevation of about 24 feet.
Erosion along this shoreline is occurring at variable rates, attributable to the variable surface geology. South of the parking lot, the semi-consolidated sedimentary material is somewhat more resistant to erosion than the unconsolidated material to the north. The northern end of the picnic area, including the picnic shelter site, is fronted by a shoreline with the conditions described above for Area 6.c., where the erosion is occurring at a faster rate (sporadically) averaging 3 to 6 feet per year. Ocean flooding in storm surges is naturally most prevalent at the lower elevation sites. Except for the grassy openings, most of this area is characterized by fairly young native forest communities in marginal to poor condition with some interspersed wetlands. Numerous trails and weed patches add to the overall degraded condition. This area is in high demand for its current use as a picnic area because of its proximity to the beach and the spectacular views of the ocean and the cape. Dispersed, primitive walk-in camp sites would also be an appropriate use of this area if not for the presence of the highly used trail. Potentially, as discussed below, the picnic shelter could be relocated to higher ground farther from shore with expansion of the picnic area into the area currently occupied by the day use parking lot.

9.c.—Sub-area 9.c. is the hiker biker camp, located between the ocean shore and the north end of the day use parking lot. This is the most popular hiker biker camp on the Oregon Coast, mainly because of its wooded setting near the beach. It is south of the area protected by the artificial dune, and as mentioned elsewhere, there is no remaining natural dune to protect this area from shoreline erosion and ocean flooding. Because of the distance from the shore, most of the 16 existing hiker biker sites will probably not be threatened for many years, absent a catastrophic event. The camp site nearest to the shoreline is roughly 100 feet away. Other sites range from about 140 to 300 feet away. This area is a mosaic of wetlands interspersed with uplands with marginal botanical values. The forest is in marginal condition and needs thinning. Camp sites are located where they fit between the wetlands. The primitive design and minimal amenities make the camp sites a low risk investment. This area is highly valued for its current use, and site characteristics limit most other possible uses. Minor redesign of this area would be appropriate to provide greater separation between campsites and from unrelated trail activity. It may be feasible to add a few more camp sites. Consideration should also be given to amenities such as a small gathering shelter for hikers and bikers, provided such development is located at an optimal elevation and distance from shore.

9.d.—This sub-area is the cabin cluster located south of the day use parking lot and east of the picnic area and Coast Trail. Parking for the six cabins occurs in a designated section of the day use parking lot. Because of the elevation and distance from shore, under current conditions the cabins are beyond the reach of storm waves and ocean flooding absent a catastrophic event. These are the most popular cabins in the state park system, mainly owing to the ocean views and proximity to the beach. Expansion of this cabin area is constrained by the high resource values of the native forest to the east and south, and by the trail corridor and picnic area to the west, although a nearby cabin cluster could potentially be developed at a suitable location as discussed under 9.a. above. This area is highly valued for its current use.

Area 10 – Potential New Development Area – (Recreation Focus)
Most of Area 10 is within the overstocked plantation forest discussed under Area 3, located east of the Jackson Creek diversion channel, southeast of the park entrance road and west of the park boundary. The forest is in need of thinning and long-term management. The commonness and age class of the forest make it suitable for facility development as well as forest management. Area 10 is the only sizable area of the park that is suitable for new facility development, offering potential replacement of campground facilities threatened by, or previously lost to ocean hazards. The drainfield that serves most of the existing park facilities is part of this area.

10.a.—This sub-area is east of the Jackson Creek diversion channel between the park entrance road and the long straight section of county road where it extends southward from the park entrance. A narrow wetland channel divides this area and drains toward the marshlands.

Over the portion of 10.a. nearest the county road, the slope averages 8 to 10 percent, becoming steeper near the road. Despite the slope, this is a logical place to develop a new park entrance road, because of the sight distance where a new entrance road could connect with the county road. An entrance road developed at this site would descend from its connection with the county road at about 60 feet elevation to its crossing over the narrow wetland at an elevation of about 30 feet over a distance of roughly 700 feet at an average grade of less than 5 percent.

The ground is nearly level over the part of 10.a. located farther from the county road, just east of the creek diversion channel. This is where the drainfield service road connects with the existing park road. This part of 10.a. is a logical access corridor between the existing park road and suitable areas for new campground development discussed below as 10.b. and 10.c. Together, the two parts of 10.a. (on both sides of the wetland channel) could connect a new park entrance to the existing park development and to potential new development areas to the south while bypassing the low elevation section of the existing park road described under Area 4. A road along this corridor would reach its lowest elevation of about 25 feet near its connection with the existing park road.

A new registration area could potentially be developed at one of the two sites in 10.a. (on either side of the wetland channel). The elevation of the registration area would be similar at either location, above 30 feet. Because of the comparative slopes, the part of 10.a. farthest from the county road and nearest to the existing park road would probably be the least expensive to develop.

10.b.—Sub-area 10.b. is located northeast of the drainfield. Wetlands are present on nearly all sides of 10.b., and it is also divided by a narrow wetland channel. The terrain over both portions (on both sides of the wetland) is variable, with slopes generally ranging from 5 to 10 percent. One portion is located along the drainfield service road corridor, while the other is located closer to the County Road. Area 10.b. is probably best suited for walk-in campsites served by a common parking area. Walk-in sites would be easier and less expensive than drive-in sites to fit around the wetlands and the variable terrain.

10.c.—This sub-area is a horseshoe shape that joins three sides of the drainfield clearing. The west edge of 10.c. abuts the creek diversion channel corridor. Wetlands are interspersed over a portion of the area at the north end of the drainfield. The slopes generally range from 3 to 10 percent. The terrain would accommodate road access, making the area suitable for either drive-in or walk-in camping with some wetland mitigation.

10.d.—Sub-area 10.d. is the drainfield that serves most of the park facilities. It has not yet been revegetated. This area must remain free of root systems that potentially interfere with the drain lines, and must also remain free of park use activities that would compact the soil and interfere with effluent absorption. However, with appropriate soil preparation and seeding with grasses, this area could potentially be used as an open play area, allowing foot traffic only, without compromising its primary function. Strategies should be explored for revegetating the drainfield area in a way that protects the drain lines and controls weeds, and is suitable for open play, while enhancing the appearance of this feature as it relates to the surrounding forest and recreation setting. The open play area could also double as a refuge area in emergency evacuation operations. Potentially, a portion of the active drainfield could be decommissioned by adding pretreatment to the sewage system, which could free up space for campground development.

10.e.—Sub-area 10.e., located directly east of the RV dump station between the creek diversion channel and the park road, is a forested mosaic of wetlands and uplands where the uplands have marginal botanical values. In addition to forest management, it may be suitable for a limited number of dispersed walk-in campsites carefully sited between the wetlands. The camp sites would need to be buffered from the park road and the dump station by adequate distance in addition to forest vegetation. Parking for camp sites could be located just off the existing park road next to the dump station drainfield.

10.f.—This sub-area is located across the road from the park office, generally southeast of the RV dump station, between the park road and the creek diversion channel. Unlike the rest of Area 10, the forest plant communities are in excellent condition, although the forest type is fairly common and of a young age class. Like the rest of Area 10, this area is suitable for facility development as well as natural resource management. Its central location, between the existing campground and suitable areas for new campground development discussed above, make it an optimal place for a new program area, allowing the existing program area to be redeveloped for camping. Its location adjacent to mature native forest provides an opportunity for forest habitat interpretation and wildlife observation among the program activities. Because this area connects the existing park road and suitable areas for new campground development, it also provides an opportunity for development of a new road connection between existing and new park development areas.

Opportunities and Constraints, 7-1

7-2

Chapter 8

Park Values and Goals

This chapter outlines the Goals for the future use and management of the park. The Goals are formatted around the "Values Based Approach" to planning described in Chapter 4, and address three fundamental elements of state park management --- natural resources, cultural resources and recreation --- found throughout the Department's mandates. The first six Value statements and their respective Goals address natural resources, cultural resources, recreation and the overlaps that inevitably occur between these elements. The seventh Value statement and its respective Goals address the relationship of the park to the local community.

Natural Resources

Value 1: We value Cape Lookout State Park as a unique and predominantly natural place. A top priority for the park is to understand, respect and preserve the integrity of its outstanding natural resources, and to improve the natural qualities of the resources where appropriate.

Goal 1.1: Use professional and citizen science assessments of natural resources as a basis for preserving the integrity of important resources in designing and implementing park use and management.

- Continue to manage the park's dedicated Natural Heritage Areas consistent with the general purposes outlined in the Dedication Agreements for these areas.
- Continue to study the park's natural resources over time to increase understanding of resource conditions and management needs.
- Natural resource assessments completed for this plan focus mainly on the park's core area where significant changes in recreation facilities are planned. These assessments will be used as a basis for locating and designing new recreational uses and facilities and managing natural resources in and around the core area. More detailed follow-up assessments to identify any needed refinements to development and management plans will be conducted for particular sites prior to implementing projects, for example, to refine wetland mapping and search for any previously undetected at-risk species.
- For outlying areas of the park where the primary management emphasis is natural resource protection and management, additional assessments will be conducted where needed to supplement existing information and identify any needed management actions.
- Where at-risk species are present or may be present, applicable guidelines set out by fish and wildlife agencies and experts will be followed as appropriate to prevent impacts on such species and their habitats.
- Consider organizing a citizen science weekly bird survey to gain seasonal information on birds in the park for interpretive purposes and to help guide park management.

Goal 1.2: Identify and implement viable projects for restoring natural resources to optimal conditions.

- Implement projects for restoration of aquatic habitats in the park that are important to the life cycles of salmonid species.
- Thin densely overstocked plantation forests to promote healthy succession of forest communities and create desirable recreation settings. In areas where natural resource management is the primary management emphasis, forest management objectives will focus on improving structural diversity, encouraging growth and diversity of understory vegetation, and expanding and connecting high quality habitats through the core area and for the length of the park. In recreational development areas, forest health, diversity and habitat objectives will be coupled and balanced with objectives for improving recreation settings and managing hazard trees.
- Revegetate the drainfield to control weeds and create a more aesthetically pleasing open meadow setting and place for low impact recreation. Remove the wood chips and seed with grasses. Sparsely plant native trees and shrubs in the reserve drainfield areas.
- Explore and implement feasible measures for reestablishing vegetation in the existing campground where soil salinity caused by wave over wash is killing trees. Consider under planting with salt tolerant wetland tree and tall shrub species.
- Follow applicable guidance provided in the Western Snowy Plover Habitat Conservation Plan for any management actions at the north end of the Netarts Spit.
- Implement weed eradication and control measures to the extent feasible. Solicit help from volunteer groups and inmate crews. These efforts should first focus on control of weeds along avenues of dispersal, including roads, trails, ditches and streams and around parking areas and campsites. Eradication efforts should prioritize areas in the best ecological condition with the highest conservation rankings in order to prevent their rapid deterioration. In the absence of sufficient manpower to eradicate entire infestations, control the perimeters to prevent spread.
- Where park facilities area removed, restore these sites to natural conditions.

Goal 1.3: Preserve and enhance the park's natural scenic character through appropriate management of views and settings and careful placement and design of park uses and facilities.

- Create a new trail destination with views of the coastline looking north and south from the top of the 1200'+ hilltop in the southern end of the park.
- Manage existing views of the coastline as seen from the Coast Trail, Cape Trail and viewpoints along the county road by pruning lower trees limbs and shrubs as needed. Avoid removal of mature healthy native trees.
- Locate and design park structures to avoid unwanted visual impacts on scenic views and settings.
- Create and enhance aesthetically pleasing recreation settings through appropriate management of the natural resource settings.

Goal 1.4: Manage natural resources in an adaptive manner, adjusting management strategies to take advantage of professional research, expertise, innovations and practical experience to achieve desired outcomes.

Goal 1.5: Promote visitor understanding and support of natural resource protection and restoration.
Raise visitor awareness of natural resource protection and management efforts by developing onsite media including interpretive panels, brochures, and an interpretive trail, and by developing interpretive programs presented by OPRD rangers and interested partners. Use photo documentation of natural resource restoration progress to aide in telling these stories.

Cultural Resources

Value 2: We value Cape Lookout's history, forces that have shaped the landscape and its inhabitants, and features that represent these dynamics.
In order to assist visitors in discovering the valuable resources at Cape Lookout, we must understand and respect the history of the place and its people.

Goal 2.1: Preserve the integrity of sites that are significant in representing the history and prehistory of Cape Lookout.

- Follow protocols for investigating potential archeological sites and preserving the integrity of significant sites prior to and during ground disturbing activities within the framework of OPRD's Cultural Resources Policy.
- Explore possible historic significance of the park office and the stone walls along the Coast Trail corridor, and consider implementing any applicable measures to preserve or restore their cultural integrity.

Recreation

Value 3: We value outdoor recreation at Cape Lookout and the contribution it makes to happy, healthy, stress-reducing lifestyles.
Outdoor recreation and interaction with outstanding natural settings promote and revitalize physical and mental health.

Goal 3.1: Support a range of traditional outdoor recreation activities that easily coexist with the park's natural and recreational setting and character.
Continue the park's traditional recreational activities and amenities, making needed adjustments in facility locations, designs and operations to respond to increasing hazards associated with the coastal environment. Any changes in the mix of recreation uses and amenities will be in keeping with the natural and recreational character of the park.

Goal 3.2: Revitalize and improve the park's core area as a gateway to recreational opportunities in the park and the larger coastal setting.

- Most of the park property outside of the core area will continue to be managed for preservation of natural resource values and will remain free of development except trails, trailheads and roadside viewpoints. The core area will continue to provide developed day use and overnight facilities that support recreation activities in the park and the vicinity.
- Cape Lookout will continue to be is a key node along the Oregon Coast Trail and the Oregon Coast Scenic Bikeway. Continue to support the use of these regional trails with appropriate amenities.

Goal 3.3: Adapt recreational uses to changes occurring with the rising sea level, increased storm activity, coastline erosion and ocean flooding.

- Consider lengthening and raising the height of the artificial dune to better protect existing campground facilities from storm waves. Explore possible ways to stabilize the eroding shoreline beyond the extent of the artificial dune. To the extent feasible, use methods and materials that retain the appearance and function of a natural shoreline.
- Gradually relocate or redesign park facilities at risk of damage or loss from shore erosion and ocean flooding due to their proximity to the shoreline, focusing first on facilities critical to visitor safety and continued operation of the park.
- Develop new campground facilities in suitable areas to replace facilities previously lost or susceptible to future loss due to shore erosion and ocean flooding.

Goal 3.4: Promote and facilitate visitor safety in recreation activities, including more efficient evacuation in extreme hazard conditions.

- Develop alternative routes for emergency access and evacuation.
- Designate a refuge area for major emergencies requiring evacuation from campground and day use areas.
- Communicate safety messages to visitors using a variety of media.

Natural + Recreational Resources Overlap

Value 4: We value Cape Lookout's landscape, its natural character and the enjoyment it brings to the lives of those who experience it through recreational pursuits.
This value describes the importance of providing recreational access to Cape Lookout in order to instill appreciation of its remarkable natural beauty, balanced with the importance of protecting the natural and scenic qualities that visitors come to experience.

Goal 4.1: Provide opportunities for visitors to experience the natural character and beauty of the park through compatible and carefully managed recreational activities.
Continue to support traditional coastal recreation while providing the necessary direction, education and management to protect natural resources from overuse.

Goal 4.2: Create and maintain a high level of natural resource quality and character in and around recreational use areas.
Implement measures needed to improve recreation settings through improvement of the natural settings.

Goal 4.3 Expand and maintain projects for protection of existing recreation facilities from ocean hazards where feasible, and prepare for transition from developed recreation to natural area where long term protection appears unlikely.

- Explore and implement feasible measures for stabilizing the eroding shoreline that fronts the core area's recreation facilities using methods and materials that retain the appearance and function of a natural shoreline.
- Continue maintaining the artificial dune to protect recreation facilities from storm waves and deterioration of the campground setting. Explore the merits of extending the artificial dune length and/or raising its height to better protect facilities.

- Prepare for changes to recreation facilities along the shoreline that will likely become necessary in the future with continued sea level rise, increased storm activity, shoreline erosion and ocean flooding.

Goal 4.4: Create opportunities for visitors to learn about and respect the park's natural resources in the context of natural processes.

- Incorporate interpretive media and programs into recreation use areas that help educate visitors about the natural resources, their importance and sensitivity, the dynamics of the coastal environment, and actions undertaken to intervene in natural processes. Develop onsite media including interpretive panels, brochures, and an interpretive trail with an accompanying brochure, and interpretive programs presented by OPRD rangers and interested partners. Continue to offer guided interpretive hikes on the Cape Trail.
- Support environmental education programs for school groups offered by interested partners in the park setting.
- Continue Junior Ranger programs for youth offered by OPRD staff or volunteers.
- Develop a wildlife observation blind in a suitable area of the park.

Cultural + Recreational Resources Overlap

Value 5: We value the cultural history of the Cape Lookout setting and the traditional lifestyles that have shaped the place and the people, including the outdoor recreation activities supported by the park for generations.

Goal 5.1: Create opportunities for visitors to learn about and appreciate Cape Lookout's cultural history and prehistory in the context of the north coast setting.

- Incorporate interpretive media and programs into recreation use areas that tell the stories of the cultural history of the park and the north coast.
- Work with the Confederated Tribes of the Grand Ronde and the Confederated Tribes of the Siletz Indians to highlight traditional ways of life in the area in interpretive media and programs.
- Develop a Cape Lookout Trail Guide highlighting old growth forests, sea birds, marine mammals, and events that happened near the cape.

Goal 5.2: Continue the recreational traditions of Cape Lookout in the way recreation uses are supported through park design and management.

Recreational development and redevelopment in the park will emphasize the traditional types and styles of camping and day use activities and amenities that visitors to this park enjoy.

Natural + Cultural Resources Overlap

Value 6: We value the stories, traditions and experiences that have been part of Cape Lookout's unique landscape for thousands of years.

Understanding the relationships between Cape Lookout's natural resources and cultural history is an essential part of instilling visitor understanding and appreciation of the park setting.

Goal 6.1: Create opportunities for visitors to understand the historic relationships between the natural resource setting and human interventions for subsistence, employment and recreation, and the importance of land stewardship in sustaining the natural resources and protecting important cultural resources.

Community

Value 7: We value how Cape Lookout can strengthen local communities and benefit their economies.
The park is a valuable resource to local communities as well as the people of the state, for its contribution to happy, healthy lifestyles as well as the local economic benefits derived from recreational tourism.

Goal 7.1: Provide opportunities for local communities to keep a close relationship to the park.

- Develop interpretive programs presented by OPRD rangers and interested partners.
- Seek out local partners for fishing workshops, backcountry hiking guides, bird watching guides, etc.

Chapter 9

Parkwide Management Strategies

This chapter provides an overview of proposed strategies for fulfilling parkwide values and goals outlined in Chapter 8 for management of the park's natural, scenic and cultural resources and recreational uses, including strategies for resource interpretation. Certain operational strategies needed to address key management issues are also identified in this chapter. Following this chapter, Chapter 10 expands on key strategies by describing Management Zones and specific projects planned for each Zone. The Management Zones roughly correspond to the Opportunity Areas described in Chapter 7.

Natural Resource Management Strategies

The park's natural resources are its most valued assets. Over most of the park property the natural resource values, together with constraints associated with steep terrain, wetlands and ocean hazards, preclude opportunities for new recreational facilities except for limited trail development. Only a small part of the park, in and around the developed core area, can support major facility development without significant disturbance of natural values.

Rare and highly valued old growth forest habitats characterize the Cape Lookout headland and the largest share of the southern part of the park, and reach northward to meet the park's developed core area. The northern part of the park is the five mile long Netarts Spit, highly regarded for its natural dune habitat, and forming the natural barrier between the open ocean and Netarts Bay, which is regarded for its relatively pristine estuarine habitat. High quality salt marsh reaches into the north end of the core area to the edges of park development. Important habitats connect the northern and southern areas through the core area, although much work is needed in and around the core area to improve habitat conditions.

Eight types of strategies will be used to manage natural resources:

1. Avoidance: Protecting the most valuable natural resources is foremost among the resource management strategies for the park. Significant impacts on important resources are avoided in the way recreational uses and facilities are located, designed and managed. Avoidance as a strategy applies broadly in high quality resource areas of the park where the management emphasis is primarily on natural resources. For example, avoidance is a primary strategy used to protect natural values of two dedicated State Natural Heritage Areas that cover the Cape Lookout headland and the Netarts Spit, and the old growth forests and salt marsh outside of these Heritage Areas. In areas of the park where the natural values are lower and the management emphasis is on recreation, avoidance as a strategy is applied more narrowly to particular sites, for example, significant wetlands and small patches of mature native forest within recreation development areas.

2. Prescribed treatments: Where natural resource values have been degraded by previous disturbance, prescribed treatments are sometimes necessary to jump start their recovery. (This is also referred to as restoration.) Prescribed treatments for natural resources at Cape Lookout (specific projects are described in Chapter 10) include the following types of projects.
   - Projects to promote healthy succession of replanted and regenerating young conifer forests, thereby connecting quality forest habitats through the core area and for the length of the park.
   - Projects to restore aquatic habitat conditions through restoration of natural surface water hydrology in previously altered ocean going and bay going streams and associated wetlands.
   - Projects to prevent further decline and promote recovery of identified at-risk species.
   - Projects to eradicate or control significant infestations of invasive weeds.

3. At-risk species management guidelines: Two at-risk fish species, coho salmon and winter run steelhead, currently occupy aquatic habitats in the park. The state threatened bald eagle breeds on the headland, and the federal and state-threatened marbled murrelet may inhabit the park's mature and old growth forests. Beach and dune habitat on Netarts Spit has been identified as a potential site for habitat restoration for the federal and state threatened western snowy plover. Many songbirds protected under the Migratory Bird Treaty Act also utilize the park. In planning, developing and managing park resources, OPRD follows applicable guidelines and regulations set out by affected state and federal fish and wildlife agencies for preventing impacts on, and in some cases promoting recovery of at-risk species. Prior to implementing development projects, OPRD routinely conducts site surveys where needed to supplement information already gathered on the presence of potential presence of at-risk wildlife and plant species.

4. Supplemental natural resource assessments and planning: While natural resource assessments guide the development of the park plan, more detailed follow-up studies and planning for natural resource management commonly extend beyond completion of the plan. For Cape Lookout, follow-up assessments will be needed for certain areas outside the core area, such as dune habitat on Netarts Spit. A study currently underway for potential aquatic habitat restoration in Jackson Creek will likely extend beyond master plan completion and a similar study for Netarts Creek will also follow this plan.

5. Consultations: When planning and implementing projects and maintenance activities, OPRD will first review the proposed actions internally with Natural Resources section staff. In addition, OPRD will consult with appropriate regulatory agencies, and may seek additional input from members of the local community.

6. Adaptive management: OPRD uses an adaptive management approach, adjusting management strategies as needed to take advantage of professional research and expertise, innovations, and practical experience in project development and implementation to achieve desired outcomes.

7. Key operations: Routine maintenance and visitor management operations are used to prevent or control impacts that can gradually degrade natural resource conditions, and to assure that visitor safety is maintained. These activities at Cape Lookout include the following:

- Weed control along avenues of dispersal, including roads, parking areas, trails, campsites, ditches, streams and beaches.
- Trail maintenance to control runoff and erosion.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.
- Hazard tree management.

8. Visitor information: Through various media, information is conveyed to the visitors on the importance and sensitivity of the resources and how visitors' actions can preserve, benefit or degrade resource conditions. Visitor information strategies will be articulated in the Interpretive Plan for the park to be completed following the plan completion. The Interpretive Strategies section below outlines the anticipated content of the Interpretive Plan.

Key Natural Resource Management Issues

Forest Management

Mature and late successional forest communities cover the majority of the forested areas of the park, and reach from the park's southern boundary to within the core area. However, large areas of young plantation forest are also present in and outside the core area. These forests are densely overstocked and need intervention by thinning to promote healthy succession. Outside the core area the emphasis of managing overstocked forests will focus on improving structural diversity and encouraging growth and diversity of understory vegetation, thereby improving habitat conditions. In the core area, forest health, diversity and habitat objectives will be coupled and balanced with objectives for improving recreation settings and managing hazard trees. Overall, thinning and management of these areas will eventually expand and connect the high quality habitats through the core area and for the length of the park.

Riparian Areas and Streams

OPRD will manage riparian habitats, using professionally accepted management practices, to protect habitat, water quality and floodwater detention functions. Removal of mature native trees, snags, and shrubs from viable riparian habitats will occur only as prescribed for purposes related to visitor safety or forest health. Snags and fallen trees will be left in place to benefit riparian and aquatic habitat, except as needed to remove obstructions or address safety concerns. While opportunities for new facility development are limited, new trails and facilities should be located to avoid riparian areas to the greatest extent possible. New trails should be placed outside of riparian areas, primarily limited to crossings that do not impede fish passage. If visitor access to stream banks results in bank erosion or degradation of fish habitat, restricting access should be pursued. Redesigning and replacing culverts and other facilities that impede fish passage or could result in impacts will be a priority.

Hydrology and Fish Habitat Restoration

Jackson Creek complex: The complex of creeks and tributaries associated with Jackson Creek has been identified as having significant potential for restoration by the 2008 Netarts Bay Watershed Habitat Study, Restoration Plan, and Limiting Factors Analysis and the Tillamook Estuaries Partnership. Jackson Creek provides habitat for fish species including the Oregon Coast Evolutionary Significant Unit (ESU) of coho salmon, which is listed as State Threatened and federally Proposed Threatened. Under the current circumstances, juvenile salmonids are

being stranded in the diversion channel under low flow conditions, portions of Jackson Creek are disconnected from the floodplain and potential rearing habitat, and a ford across Jackson Creek in the day use area presents a barrier to juvenile fish. Construction of the diversion channel has also resulted in the transport of a significant amount of bedload to the marshes and wetlands that historically occupied the fringes of Netarts Bay. The diversion channel currently experiences aggradation of gravel along the lower channel, which reduces habitat for salmonids and contributes to flooding in Camp Loops C/D. The flooding also strands young salmonids, in unsustainable pools in the campground. Previous actions to redirect flooding have not been successful. The impacts caused to the creek system by the constructed channel are compounded by the county road that was built to access the park. Restoration is needed to improve and protect fish habitat that Jackson Creek provides, and address flooding caused by the ongoing hydrology issues. Potential restoration projects could potentially include:

- Restoration of historic flows to the ocean going channel of Jackson Creek by plugging the diversion channel, or allowing partial flow through the diversion channel and realigning the channel with Netarts Creek upstream of the park access road. Selecting an action will involve consultations with regulatory agencies and interested local groups.
- Placement of large wood in the ocean going channel to reestablish connections with the floodplain and provide more rearing habitat for coho salmon.
- Replacement or reconstruction of the ford across Jackson Creek to allow juvenile fish passage.
- Improvement of the existing water diversion and intake system to meet ODFW fish screening requirements and improve efficiency.

Netarts Creek: Existing park infrastructure currently impacts aquatic and geomorphic function along lower Netarts Creek. An extensive channel and wetland system along lower Netarts Creek appears to provide potential high quality habitat for coho salmon, and restoration opportunities have been identified that could enhance salmon spawning habitat along the lower portion of the creek. Netarts Creek is constricted by a series of undersized culverts under both the county road and the campground entrance road. The culvert under the county road is insufficiently sized and inadequately placed to pass spawning gravels down to the lower reaches of the creek. Portions of the creek run in a roadside ditch along the county road before passing through this culvert. Downstream of the culvert, Netarts Creek flows into large wetland complex which is bisected by the campground entrance road. Historically, lower Netarts Creek fanned out into multiple channels before entering Netarts Bay, resembling a series of deltaic channels that changed annually. When the park access road was constructed it was placed on fill and a single crossing was built consisting of a small culvert, constricting the network of channels to one small opening. This culvert is insufficiently sized for both hydrologic function and fish passage, and creates a backwater condition that causes fine sediment to deposit upstream of the park access road with negative impacts on salmonid spawning and rearing habitat. Netarts Creek and the associated wetland complex have the potential to provide both spawning and rearing habitat for coho salmon. During field work for the Netarts Bay Watershed Habitat Study, Restoration Plan, and Limiting Factors Analysis, juvenile coho salmon were observed in both the creek and in the wetland. The intent is to improve connectivity in the Netarts system by improving or removing and relocating the campground entrance road. Specific projects include:

- Park access road culvert modification, enlarging the culvert opening and/or create multiple openings to improve salmonid spawning and rearing habitat and restore the connection of the creek to the bay.

- Improve the county road crossing by replacing it with a large enough culvert to handle water, sediment, and debris while still addressing the potential for the active channel to move across the fan upstream of the crossing.

Netarts Bay
Hydrology in Netarts Bay continues to change with sea level rise and overwash of the dune due to increased wave heights and shoreline erosion. Restoration opportunities exist as campground facilities are strategically relocated to higher ground elsewhere in the park. Primarily, abandoned campsites in A and B loop could be removed and the area restored to native marsh habitat. All fill material from the camping pads should be removed to restore wetland hydrology, and the areas replanted with native estuarine shrub and emergent species.

Beaver Ponds
The presence of beavers may require future management actions. Beavers tend to alter aquatic habitat and hydrology in a positive way by creating refuge for coho and other native fishes, slowing water movement which reduces downstream flooding and erosion, and improving water quality. Issues related to unwanted flooding caused by beaver activities should be addressed using current wildlife management techniques. Options such as using a beaver deceiver – a device that allows water flow through a beaver dam in conjunction with the natural behaviors of the beavers – should be a priority.

At-Risk and Focal Wildlife Species
OPRD will develop actions and avoidance measures to promote the recovery of selected at-risk and focal wildlife species. These measures include restoring habitat, trash management, invasive predator management, and increasing public awareness through outreach and interpretive materials. Addressing corvid populations attracted by visitor use is a priority, as is improving fish passage and habitat for juvenile and spawning salmonids. In cooperation with ODFW, OPRD will explore ways to ensure recreational use does not impact native fish populations, such as by reducing accessibility to spawning habitat or restricting access during critical spawning periods. Where compatible with other uses, OPRD will also enhance foraging and reproductive locations for large mammals.

Invasive Species
Infestations of invasive weeds are a problem in numerous areas of the park, mainly in and around park development. The weeds that are most problematic are English ivy, evergreen blackberry, and Himalaya/Armenian blackberry. Weed eradication and control measures will be implemented to the extent feasible, focusing first on preventing the spread of weeds along avenues of dispersal such as streams, ditches, trails and roads and around parking areas and campsites. Efforts to eradicate significant infestations will focus on controlling the spread at the perimeters. These efforts will prioritize areas in the best ecological condition with the highest conservation rankings in order to prevent their rapid deterioration. OPRD will seek the help of volunteer groups and inmate crews in implementing feasible weed control and eradication projects. Map 9-1 illustrates the locations of significant weed infestations in and around the core area.

(Map 9-1 Native Plant Community Restoration Concepts Map here)

Scenic Resource Management Strategies

The park's most prominent natural resource features are rich in scenic resource values. This goes without saying for the Cape Lookout headland, the Netarts Spit and the ocean and bay shorelands, where spectacular views and vistas of the coastal landscape are a major attraction for visitors. Views and vistas are seen from the Cape Trail, the Oregon Coast Trail, the beach and dunes, the Netarts Spit, the bay shoreline, and viewpoint turnouts along the county road.

In other park use areas, the scenic settings of the forest and interdune areas, while more subtle than the coastline views and vistas, are nevertheless an important factor in the quality of recreation experience. Visitors enjoy camping, picnicking, hiking, biking, and other recreational activities where the surroundings offer the beauty and tranquility of nature, where the built environment is carefully blended with, and appears subordinate to the natural setting.

Three types of strategies will be used to manage scenic resources:

1. Avoidance: As with other natural values, impacts on existing high quality views, vistas and settings are avoided in the way recreational uses and facilities are located, designed and managed. The need for this type of strategy is most obvious along the Cape Trail and Oregon Coast Trail corridors, the beach and dunes, the Netarts Spit, the bay shore, and viewpoints along the county road, which are all within areas where the management emphasis is primarily on natural resources. The potential for park activities degrading scenic qualities of these areas is related mainly to the design and placement of structures within view. While development within these areas will be restricted, even structures such as interpretive and informational signage, fencing and other barriers need to be carefully designed and located to avoid unwanted impacts on scenic views. Potentially, impacts on scenic views could also be caused by offsite activities, for example, clear cuts on adjacent lands or installation of offshore hydrokinetic (e.g. wave) energy structures. In-depth analysis of potential scenic resource impacts as seen from key viewpoints at Cape Lookout and other coastal parks should be conducted if and where off-shore energy projects are proposed.

   Avoidance is also a strategy used to prevent impacts on the scenic qualities of areas where the management emphasis is on recreation. Through appropriate location, architectural design, materials, colors and natural landscaping, new facilities will be designed to blend with, and appear subordinate to the natural setting in order to preserve the quality of the recreation setting.

2. Prescribed treatments: This type of strategy is applicable in circumstances where scenic resources are being created or enhanced. At Cape Lookout, such projects are proposed in areas where the management emphasis is on natural resources as well as areas where the emphasis is on recreation. Prescribed treatments (specific projects are addressed in Chapter 10) include the following types of projects:
   - Creating a new destination hiking trail to a hilltop offering views of the coastline looking both north and south.
   - Enhancing the visual character of the Cape Trail destination viewpoint.
   - Enhancing recreation settings in degraded forest areas in and around existing and new development through appropriate treatment and management of the forest vegetation.

- Enhancing the recreation setting in the existing campground by planting salt tolerant vegetation where saltwater intrusion is killing trees.

3. Key operations: Maintenance of existing scenic views and certain improvements to existing recreation settings are part of park maintenance operations. These include the following activities:
   - Maintaining existing views by pruning lower tree limbs and shrubs.
   - Taking advantage of opportunities to blend existing development with natural surroundings when replacing, rehabilitating and maintaining facilities. Cosmetic improvements can be made simply by changing colors or materials. More extensive changes may involve architectural redesign, or new design in the case of facility replacement. In some cases adding landscaping will help blend facilities with natural surroundings.

Cultural Resource Management Strategies

The park has a rich cultural history and prehistory, although little evidence remains. Management strategies related to the park's cultural resources mainly involve the opportunities for interpretation, which are addressed in the Interpretive Strategies section of this chapter. There are a couple of potentially significant historic structures in the park, discussed below, that need further study to determine their significance. Several archeological sites in and around the park have been documented, although most of these have not been investigated in depth. The probability of finding artifacts is significant for all planned development. The Department takes great care in assuring that park activities do not harm significant cultural resource sites, and relies on archeological staff expertise to ensure such sites are protected.

Four types of strategies potentially apply to management of cultural resources at Cape Lookout:

1. Confidentiality: Pursuant to state law, and in order to prevent looting and vandalism, the Department does not disclose the locations of identified archeological sites to the general public.

2. Avoidance: Cultural resource sites that are particularly vulnerable to looting or other disturbance are protected by avoiding such sites when locating recreational facilities. The Department consults with the OPRD Archeologist regarding the need to avoid certain sites.

3. Prescribed treatments: This type of strategy is used to stabilize or restore a historic structure that has deteriorated, or restore a historic structure that has been modified to its original condition. Two structures that need further study to determine their historic significance are present in the park, both of which could potentially be candidates for prescribed treatments.
   - The park office may be eligible for listing on the National Historic Register, and such listing could depend on the extent of modifications.
   - Stone walls in the picnic area may have been constructed by the Civilian Conservation Corps, and later modified with imbedded interpretive panels.

4. Cultural resource protocols prior to and during construction: The Department consults with archeology staff prior to any ground disturbance in all areas of the park where construction projects are planned. For each project, archeology staff recommends protocols based on likelihood of encountering significant artifacts at the construction site. The protocol may involve a surface survey prior to construction groundbreaking followed by monitoring during construction, or in certain cases, subsurface testing prior to construction groundbreaking followed by monitoring during construction.

Recreation Management Strategies

The Park's Recreation Tradition and Character

Cape Lookout has a long standing recreational tradition and character, and this will be a key factor guiding changes to the park. Visitors come for the natural character of the coastal environment, mainly the beach, and the recreation and relaxation opportunities. Families make up a large share of the visitation during the peak season. Many seek out and return repeatedly for the low key character of this park. As revealed in recent visitor surveys, visitors want to see this recreational character continued, including the traditional mix of day use and overnight opportunities and related amenities.

The park will continue to have two primary locations from which most recreational use will be based, and the large majority of the park will remain free of facility development. The core area is the main recreational hub, which supports beach access, picnicking, camping and most of the resource interpretation, and serves as a key node along the Oregon Coast Trail and Oregon Coast Bike Route and a base for various other activities in the vicinity. The Cape Lookout trailhead is the second location. Most of the park's existing trail activity is concentrated along the Cape Trail corridor. Outside the core area, only one new trail is proposed, extending from the county road east of the Cape Lookout trailhead to a hilltop viewpoint destination. The Netarts Spit will continue to be used for passive and dispersed activities mainly associated with the bay and its opportunities for shellfish harvesting. Only the core area of the park offers opportunities for new recreation support facilities other than the one proposed trail mentioned above. As such, the largest share of activity will continue to be concentrated mostly in the core area.

Park Headquarters and Camp Loops C and D

Efforts to control erosion and flooding will continue to emphasize protection of Loops C and D and park headquarters facilities. Proposed changes to these facilities are mainly related to removal and relocation of the existing registration area, program area and group tent camp, development of a new campground access road and emergency access routes, and merging a minor part of Loop A/B into Loop D. As discussed under the Natural Resource Management Strategies, efforts will also be made to replace vegetation killed by salt water intrusion at the edge of the camp loops.

Camp Loop A/B

The greatest potential future loss is the northernmost part of the campground, Loop A/B, located directly behind the remaining natural dune. Because of its vulnerable location at the neck of the spit, protecting this camp loop from an eventual breach of the spit is believed to be unfeasible in the long term without a major and successful effort to stabilize the shoreline fronting the natural dune. The Department must be prepared for a likely transition for this area, from developed camping to eventual reclamation. Through this transition, maintenance of the existing access to

this loop will be a high priority to continue serving whatever recreation uses and facilities can be maintained in this area, and to provide service access along the back of the dune. The loop road could eventually become a bike trail and service road only. Transitional uses could include a lower capacity primitive camping area and/or beach access parking.

Day Use, Cabins, Hiker Biker and Picnic Area

Erosion and flooding will also eventually threaten more facilities south of the artificial dune. At the north end of this area, part of the group tent camp is currently eroding away, and this facility needs to be relocated. Most of the day use parking and most of the hiker biker camp are located farther from the shoreline, but in the long term these facilities could also be threatened without shoreline stabilization. The picnic shelter could be threatened in as few as 15 to 20 years at the current average rate of erosion, or much sooner with unusual storm activity or a faster erosion rate. The existing cabins are probably the least vulnerable facilities in the shoreline area, because of their elevation, distance from shore and the somewhat harder surficial geologic material.

This plan proposes redesign of this area to reallocate space. Day use records and staff observations have shown that the existing day use parking lot is oversized for typical peak use periods, only occasionally filling up, and seldom overflowing to the roadside. While adequate day use parking is needed, it is also prudent to make the best use of available space, especially considering the gradual loss of facilities closer to the shoreline. This plan proposes redistributing some of the parking capacity to other shoreline areas, retaining and redesigning part of the existing lot, and landscaping a large share of the lot for the beachfront activities. This is particularly important for replacement of adjacent picnic grounds gradually being lost to erosion, including relocation of the picnic shelter farther from the eroding shoreline and on higher ground. Part of this area could be used for additional cabins. Some of the existing parking capacity will be relocated to new beach access areas, and some will be relocated to an overflow parking area.

New Facility Development Areas

The suitable area for development of new campground and related facilities away from the shoreline is a setting characterized by dense plantation forest in need of intervention and management. To create a desirable recreation setting in this area will require thinning operations and understory plantings followed by passage of enough time for diversification of forest structure and understory development. The area is also fragmented by wetlands and variable topography, which presents additional challenges to facility development. Creation of a desirable natural setting, together with the addition of more trails and other amenities, will help compensate for the greater distance from the ocean shore while continuing to provide a family friendly recreation setting.

Camping Styles and Amenities

Between existing and proposed new overnight facilities, the park will continue offering a range of camping styles in similar proportions as now provided at this park, with some variation based on the results of recent visitor surveys, and also considering what the suitable area for new development can reasonably accommodate. The majority of overnight facilities will continue to serve campers who prefer low amenity camping, most of whom camp in tents. Where the new development area can accommodate drive-in campsites, the majority of these sites will be designed for visitors using tents, tent trailers or small to medium sized travel trailers or RVs, with no utility hookups. Existing full service campsites will continue to be offered in the existing

campground, and some may be added in the new campground. Yurts will continue to be offered in the existing campground, and although none are proposed for the new campground, yurts are not prohibited as a substitute for some campsites. As mentioned above, a few cabins may be added near the existing cabins. Providing some higher amenity camping facilities such as full service campsites, yurts and cabins is particularly important to elderly and disabled visitors, and for camping during the shoulder seasons, which is common for retirees. Walk-in tent sites have been found to be the most popular camping style among the visitors, even though this park currently has no such sites aside from the hiker biker camp. This preference fits well with much of the suitable development area, because walk-in sites are easier to fit in around variable topography, wetlands and forest vegetation. The hiker biker camp, the most popular facility of its kind in the state park system, will also be continued and improved. One or more walk-in tent camps will be designed to accommodate either group tent camping or individual camping parties, to replace the existing group tent camp area already partially lost to shoreline erosion.

Program Area

The new campground development area includes a place for relocation of the park's program facilities, which will be displaced by new road access to the existing campground. The new program area location is central between the existing and new park facility areas. Program area grounds and facilities will be designed based on a detailed Interpretive Plan that will follow completion of this plan. Basic facilities proposed in concept for this area include a small program center building, a camp talk amphitheater, a wildlife viewing structure and an interpretive loop trail linked to the larger core area trail system.

Core Area Trail System

Development of a greatly expanded trail system in the core area is a key part of this plan. Much of the camping capacity close to the beach must eventually be relocated to a more distant and currently less interesting location. Over time, treatment and management of the forest will create a desirable campground setting in and around the new camping area. The addition of a multiple loop trail system, with most trails designed for bicycling, will be a key feature that links the new park development area to the ocean shore and other park facilities. The trails will be an attraction to many visitors who love to walk, run, bicycle or wheel chair through the forest and to the beach, and a key addition to the park's family friendly activities.

Changes in Visitor Capacities

Table 9.1 below summarizes changes in day use and overnight visitor capacities expected to result from planned development and redevelopment of recreation facilities (described in Chapter 10) and from anticipated loss of more facilities over time caused by continued affects of shore erosion and ocean flooding. Table 9.1 also shows historic visitor capacities, before some facilities were lost in the late 1990's, relative to existing and future capacities.

Table 9.1 – Comparison of Historic, Existing & Planned Overnight & Day Use Visitor Capacities

Facility Type	Historic Number	Existing Number	Anticipated Reduction	Anticipated Number Added		Anticipated Net Future Number	
				Design Concept 1	Design Concept 2	Design Concept 1	Design Concept 2
Drive-In Campsites							
Full Service Sites	55	38	- 1	8	5	45	42
Electric Service Sites		1	- 1	10	10	10	10
Primitive Sites	182	173	- 69	33	20	137	124
Total Drive-in Campsites	**237**	**212**	**- 69 (anticipated eventual loss from Loop A/B)**	**51**	**35**	**194**	**178**
Walk-in Campsites	**0**	**0**		**47**	**30**	**47**	**30**
Hiker Biker Campsites	**16**	**16**		**4**	**4**	**20**	**20**
Yurts	**3**	**13**		**0**	**0**	**13**	**13**
Cabins		**6**		**6**	**6**	**12**	**12**
Total Individual Camping Units	**256**	**247**	**- 69**	**108**	**75**	**286**	**253**
Group Tent Camps	**2 group areas**	**2 group areas**	**- 2 group areas**	**(walk-in camps usable for groups)**	**1 group area (walk-in camps also usable for groups)**	**(walk-in camps usable for groups)**	**1 group area (walk-in camps also usable for groups)**
Day Use Parking	**300 cars**	**300 cars**	**- 170 cars (with parking area rehab)**	**135 cars (expandable)**	**135 cars (expandable)**	**265 cars (expandable)**	**265 cars (expandable)**
Picnic Tables	**87 approx**	**72**				**72**	**72**

Critical Facilities

Certain development projects, briefly discussed below, are needed to address visitor safety or to relocate facilities critical to the continued operation of the park that are vulnerable to storm surges, shoreline erosion and ocean flooding. Projects addressing these issues are needed despite efforts to stabilize the shoreline and hold back storm waves. Table 9.2 outlines priority projects needed to address visitor safety and critical facilities.

Emergency access and evacuation routes: New routes for emergency access and evacuation need to be developed, providing alternate routes out of the campground and out of the park. Proposed locations are included in this plan.

Campground access: The existing campground access road behind the dune needs relocation to avoid potential ocean flooding and blockage in major storm events. A new access serving Loops C and D is proposed as part of this plan.

Sewage lift station: Also susceptible to flooding, the sewage lift station serving most of the park needs to be moved from its current location in Loop A/B. Potential new locations are being explored.

Park entrance: A new entrance road into the park will eventually be needed due to susceptibility of the existing entrance road to flooding. Replacement of the park entrance also offers an opportunity to provide centralized park registration. This plan proposes a new location for the park entrance together with new registration facilities.

Shoreline protection: Shoreline erosion and ocean flooding continue to threaten existing popular day use and overnight facilities close to the ocean shore, some of which have been lost due to damages caused in past storm events. The artificial dune and dynamic revetment were constructed to hold off the erosion and protect high investment facilities in Camp Loops C and D and the park headquarters area. While the artificial dune structure is expected to control the erosion for many years if properly maintained and possibly enlarged, the shoreline continues to recede elsewhere, threatening eventual loss of more facilities. Possible enlargement of the artificial dune, and other possible strategies for stabilizing the shoreline in unprotected shoreline areas, will be explored. Despite these efforts, it is imperative that the Department prepare for further changes where facilities are most vulnerable to erosion and ocean flooding.

Table 9.2 - Project Priorities For Addressing Visitor Safety and Critical Facilities

Zone & Project # (See Chapter 10)	**Project**	**Risk**	**Priority without regard to cost**	**Comments**	**Rough Cost**
Zone 10/R10.1	Emergency service road connect to county road	1	1	Lack of alternate access to/from the park threatens visitor safety.	$125,000
Zone 8/R8.1	Emergency service road connect to Loops C&D	1	1	Lack of alternate access to/from camp loops threatens visitor safety.	$175,000
Zone 8/R8.2	New campground access road	2	2	Waves overtopping dune threaten existing campground access.	$150,000
Zone 7/R7.1	Lift station relocation	2	2	Potential spit breach & ocean flooding threaten lift station.	$325,000
Zone 6/NR 6.1	Artificial dune: Alternative 1: Raise height 4'. Alternative. 2: Raise height 4' & extend length 350'.	2	2	Waves overtopping artificial dune threaten campground access & campsites. Vertical / horizontal enlargement using same method as existing artificial dune.	Alternative 1: $175,000 Alternative 2: $550,000
Zone 6/NR 6.2	Natural dune stabilization for 1000' (length of Loop A/B)	2	2	Potential spit breach & ocean flooding threaten Loop A/B. Stabilization using cobble.	$100,000
Zone 6/NR 6.3	Day use /hiker biker shoreline stabilization for 1000'.	3	3	Eroding shoreline & ocean flooding eventually threaten picnic shelter & hiker biker camp. Stabilization using cobble.	$100,000
Zone 10: R 10.2 & R10.5 or R10.2 & R10.6	New entrance road & connector road: Alternative 1: With connector road 1 Alternative 2: With connector road 2.	3	3	Eventual threat to existing entrance road with increased ocean flooding.	Alternative 1: $800,000 Alternative 2: $1,200,000
Zone 3 / N3.1 Zone 8 / N8.1 Zone 9 / N9.2 Zone10 / N10.1	Forest thinning in core area.	4	2	Needed to save forests threatened by tree density and improve forest settings in preparation for needed changes in facility locations.	(Potential $57,000 revenue)
Zone 10 / R10.12	New program area with basic facilities (site prep, landscape, trail access, amphitheater, standard yurt)	4	2	Needed to replace displaced program area with relocation of campground access.	$325,000

Risk rating criteria:
1. Threat to visitor safety.
2. Proximity to hazard poses threat to critical facility or high investment facility.
3. Long term hazard poses eventual threat to critical facility, or proximity to hazard poses threat to important traditional facility.
4. Long term hazard poses eventual threat to important traditional facility, or eventual threat to park resource important to traditional facility.

Priority rating criteria:
1. Needed to protect visitor safety.
2. Needed to protect or relocate at-risk critical facility or high investment facility, or to prepare for protection or relocation of at-risk critical facility or at-risk traditional facility.
3. Needed to protect or relocate at-risk traditional facility, or to protect or relocate eventually-threatened critical facility.
4. Needed to protect or relocate eventually-threatened traditional facility, or to replace traditional facility already lost.
5. Needed for general improvement of park facilities or resources.

Key Operational Strategies

Park operations play a vital role in achieving the goals and strategies for the park. The following summary highlights operational activities that apply to key issues present at Cape Lookout.

Emergency Response and Evacuation
This plan includes new road and trail connections for emergency response and evacuation. Equally important are the actions that park staff take in preparing for and carrying out response and evacuation operations. OPRD will conduct timely updates to the park's emergency and evacuation plan and procedures, related staff training and visitor information, and maintenance of related facilities and equipment. OPRD will maintain good relations with affected emergency service providers and county emergency planning staff.

Campground Closures
Unusual storm events pose significant risks to off season campers, especially those using campsites located close to the shoreline where storm waves can wash over the dune. Storm conditions will sometimes necessitate campground closures. Eventually, regular seasonal closure of Loop A/B may be necessary to avoid safety risks associated with increased storm frequency and intensity. As discussed elsewhere in this plan, conditions may eventually necessitate removal of campsites from this loop.

Weed Control
Proliferation of invasive weeds is a major problem facing state parks and land management in general. This plan identifies numerous places in the park where weeds have overtaken native plant communities. Major weed infestations often require treatments for removal and restoration that are beyond the capabilities of regular park operations. Generally, OPRD employs the assistance provided by inmate crews and volunteers for these activities.

Absent the ability to eradicate major weed infestations, efforts should focus on controlling the spread of weeds. Periodic monitoring and maintenance activities can help control weeds along avenues of dispersal, including roads, trails, streams and ditches, and around parking areas and campsites. Existing infestations can be contained by controlling spread at the perimeters in the absence of sufficient manpower to attack the whole infestation. With limited resources, controlling the spread may be all that can be reasonably accomplished. Efforts to control the spread of weeds should concentrate first on areas in the best ecological condition and highest conservation ranking to prevent their rapid deterioration. Activities needed to control the spread without eradicating the infestations can also overwhelm staff resources without the help of inmates or volunteers. OPRD will continue soliciting help from such groups to management invasive weeds.

Trail Maintenance

While trail maintenance is important to the recreation experience of the trail users, at some locations the erosion that accompanies deteriorating trail conditions can eventually affect the water quality in nearby streams. In extreme circumstances, a deteriorating trail can become a safety hazard. Keeping up with trail maintenance can be challenging with limited staff resources. OPRD commonly employs the help of inmate crews and volunteers to help with trail maintenance, and will continue doing so at Cape Lookout.

Refuse Management

For aesthetic reasons, management of human refuse is important to the recreation experiences of park visitors in general. But it is also a key concern regarding the declining populations of bird species such as the endangered marbled murrelet, which likely inhabit certain parts of the park. Suitable nesting habitat for marbled murrelet exists over much of the park, including the old growth forest within the core area. Problems for the survival of such species are commonly associated with corvids (such as crows and jays) which raid nests and feed on the eggs and the young. The populations of corvids commonly increase with human activity, because of the increase in human refuse which corvids also feed on. Management of refuse is therefore important wherever humans are present. OPRD will carefully manage refuse through placement and regular maintenance of trash receptacles, clean up activities where needed, and related visitor information on the importance of this issue.

Hazard Tree Management

Management of hazard trees is mainly a concern within and near campgrounds, day use and cabin areas where human activity is concentrated. This is a particular concern at Cape Lookout because of the extensive areas where forest conditions are marginal to poor due to years of growth in an overstocked condition and the nature of regeneration occurring on old stumps and down logs in and around areas with development potential. Forest conditions in and around the existing development is also of concern due to extensive salt water intrusion and older, larger trees adjacent to these facilities. OPRD will conduct hazard tree assessments as needed for all forested areas where recreation facilities exist and as new facilities are built.

Visitor Information

Raising visitor awareness is a key strategy that applies to many park management issues, a strategy that has a significant place in park operations. Many important messages concerning management of the park resources are conveyed to the visitors through various media, which include for example, camp talk programs and other ranger led activities. As mentioned

repeatedly in this document, visitor information strategies will be articulated in the Interpretive Plan to be completed following the plan completion. The Interpretive Strategies section below outlines anticipated content of that plan.

Interpretive Strategies

Cape Lookout is rich in the types of resources that attract recreational visitors, and rich in opportunities to elevate visitor awareness and appreciation of those resources through interpretation. The main purpose of resource interpretation is to create or strengthen visitors' emotional and intellectual connections to the park and its resources so they will be inspired to become lifelong stewards of the natural, cultural, and historic places found in state parks. Interpretation is communication that goes beyond information. It reveals what things mean and why they matter. It helps connect people to a place.

Below is a summary of proposed interpretive themes, subthemes, possible supporting stories, safety messages, guidelines for delivery of messages, the recommended interpretive service level for the park, and media proposed for communicating interpretive, safety, orientation and wayfinding information to the visitors. The proposed strategies herein are intended to guide the development of a more detailed Interpretive Plan for the park that will follow completion of this plan.

Overarching Interpretive Theme for the Park: *Cape Lookout State Park features the dynamic interface between the ocean and land, inspiring visitors with spectacular scenery and offering opportunities to explore diverse natural habitats and a rich cultural heritage.*

Theme 1. *The power of geologic forces, wind, and water are shaping this landscape.*

Subtheme 1.1: *The coast is like a recycling machine.*

Examples of Supporting Stories
Uplift and erosion are like a "dynamic duo". They create and maintain dramatic coastal landscapes like the one at Cape Lookout. The ongoing subduction of the Juan de Fuca Plate is balanced by the uplift and erosion of the coast.

Over millions of years, a grain of sand might be washed out to sea by erosion and buried, then moved east back beneath the coast range and forced upward, to be eroded again and washed out to sea.

Subtheme 1.2: *Beneath your feet lies rock from the ancient lava flows which form the cape itself.*

Examples of Supporting Stories
The headlands of both Cape Lookout and Cape Meares were formed from volcanic lava that flowed to the surface from submarine and subaerial local vents, intruding and capping the older sedimentary rocks and cooling to form a more resistant bedrock surface. Over time, as the surrounding sedimentary rocks were eroded away, the more resistant basalt headlands were left standing as the promontory features seen today. These ancient lava flows are part of

the Columbia River Basalt group, the most extensive basalt flows on the planet, which date back 16 million years and range from a few feet to miles thick.

Subtheme 1.3: *Sand and rocks travel the coast with the help of strong ocean currents.*

Examples of Supporting Stories
The cycle of ocean currents and how they build beaches: the water loses energy as it hits the shoreline and deposits sand, which is eventually moved by wind or more water to new, somewhat predictable, locations. Currents are dictated by global patterns based on the temperature and pressure of both air and water, and they generally move in consistent patterns.

Subtheme 1.4: *As wind patterns and currents change, so do the ancient patterns of beach-building and erosion.*

Examples of Supporting Stories
As temperatures and pressures change seasonally or throughout time, wind patterns and ocean currents shift with them. These changes in currents bring sand and rocks to new places. At the same time, they begin to slowly erode beaches, like the one here at Cape Lookout. For several decades, storm waves have been eroding the beach and dunes at Cape Lookout State Park, causing the ocean shoreline to move farther inland toward the camping and day-use facilities. As a result, Oregon State Parks has had to abandon 25 campsites, restroom buildings, an amphitheater, part of the picnic area, and the park's sewage drain field system had to be completely relocated to higher ground. Despite efforts to stabilize the shoreline, studies indicate that the erosion trend along this shoreline is unlikely to be reversed.

Theme 2: *This dynamic and varied environment is full of life.*

Subtheme 2.1: *A wide range of habitats means a diverse flora and fauna.*

Examples of Supporting Stories
There is excellent biological diversity present at Cape Lookout. Habitats include old growth temperate rainforest, young stands of temperate rainforest, alder forest, wetlands (including freshwater marsh salt marsh, shrub-scrub wetland, estuarine mud flat) streams, ocean beaches, sand dunes, tidepools and near shore kelp beds. Most of the forest on the cape is pristine, having never been cut. This is one of the few old growth temperate rainforests on the Oregon coast that has a hiking trail available. There are listed wildlife species using some of the habitats, including (possibly) marbled murrelets as well as coho salmon in Jackson Creek and other tributaries. The end of the Netarts Spit has snowy plover habitat, which could tie into the story about human impacts & invasive dune grasses. The area has prime bird and whale watching viewpoints, and there are currently two beaver dams. Other species of interest include bald eagles, peregrine falcons, and a variety of shore and seabird species as well as harbor seals, California sea lions, black ear, black-tailed deer, and Roosevelt elk. Major tree species include Sitka spruce, western hemlock, shore pine, red alder, and western red cedar. Shrubs include salmonberry, salal, red elderberry, hooker willow, and evergreen huckleberry. Skunk cabbage, slough sedge and other native plants are found in wetland areas.

Subtheme 2.2: *Forces of nature change habitats, creating conditions for new life.*

Examples of Supporting Stories

Succession in all habitat types allow for new communities to grow. Alder trees scattered along the coast tell a story of storms, logging, fire, and landslides; they are one of the first species to colonize an area after a disturbance. Inland, periodic fires clear extra brush and debris from the understory, allowing for different types of plants to grow. Streams like Jackson Creek weave pathways through the forest and flood occasionally, creating patches of new growth on the rich floodplains. There are currently two beaver dams that have formed ponds along Jackson Creek. Beaver ponds are an important habitat type for juvenile coho salmon. They provide slow water refuge during high water events. Fallen logs and other debris from such events end up in the stream itself, turning what would be an aquatic raceway into a meandering trail through the forest. Water-loving plants are attracted to stream banks, creating yet another type of habitat around them (riparian areas). Beach erosion and landslides are also disturbance events, leading to patches of open soil waiting to be repopulated by the next generation of forest.

Subtheme 2.3: *The edge of land and ocean is a migration zone for wildlife.*

Examples of Supporting Stories

Located in the Pacific Flyway, Cape Lookout State Park is a great site to observe the migration of birds. Birds use the geography of the west coast to help them navigate in migration. Some birds known as neo-tropical migratory bird's nest in the park or farther north in summer and migrate south to the tropics in the fall. Some birds that nest in Canada overwinter here. Sea birds can be observed on offshore islands and cliffs. Marine mammals migrate just off the coast and can be observed from the park. Seals and sea lions occasionally haul out on the beach. Gray whales summer in the Arctic and winter in Baja, the longest migration route of any mammal on earth. About 200 gray whales don't continue to Alaska, but stay along the Oregon Coast to feed for the summer. The Oregon coast produces lots of phytoplankton (small marine plants) which are eaten by zooplankton (small marine animals) including bottom dwelling amphipods and mysid shrimp - primary food of the gray whales.

Theme 3: *Human actions throughout history have shaped the landscape you see today.*

Subtheme 3.1: *This land supported Native Americans for countless generations.*

Examples of Supporting Stories

Evidence of fishing weirs and other life ways of Native American communities can be seen around Cape Lookout. They begin to tell the story of the area's rich cultural history and show how those societies used the land to survive. The culture of these Tribes is focused on the area's resources; lush forests with salmon-filled rivers and rich shellfish beds. Clothing, housing, and utensils for daily life were made of natural materials such as cedar and rushes Housing was often cedar plank style homes. Due to the decomposition rates of natural materials in a wet climate, very little archaeological evidence exists on Oregon's coastal Native Americans. Introduced diseases from European explorers and settlers greatly reduced local populations. As settlement by Euro-Americans proceeded, Native Americans eventually signed treaties with the US Government that set aside land for reservations.

The Confederated Tribes of Grand Ronde and the Confederated Tribes of the Siletz Indians today represent the original people of this area.

Subtheme 3.2: *As Euro-American settlement increased, the cape and surrounding areas were witness to a growth in industry, both on land and in the bay.*

Examples of Supporting Stories

In 1850, the Donation Land Law was passed by congress granting settlers free land along the coast (up to one square mile per married couple). Tillamook County was created in 1853. Settlers packed supplies from the north over Neahkahnie Mountain. Thirty-two shipwrecks between Nestucca and Neahkahnie occurred while trying to ship supplies to this dangerous area. Evidence of shipwrecks can be seen today, specifically the shipping vessel "The Struan", which crashed on Christmas Day in 1890 a mile south of the Cape (on the beach in front of what is now Camp Meriwether property). The first settlement of Netarts bay occurred in 1863; settlers claimed grazing land through the Donation Land Law, which was used mostly for dairy cows. On the bay, a prosperous oyster industry was developing using non-native Pacific oysters. Schooners from San Francisco came regularly and the shallow waters of the bay were quickly claimed. A Toll Road to Tillamook opened in 1872. By 1903 most of the Netarts Bay shoreline was settled. Another important industry was timber, with several mills operating near the bay and shipping up and down the coast. In 1910 the first automobile trip was undergone from Newberg to Tillamook. Settlement and development increased with more automobile traffic. In 1935 the US Lighthouse Service donated 935 acres of land for a park on Cape Lookout; the Netarts Sand Spit was later donated by the Louis W Hill family foundation. (Netarts Steering Committee. William J Hawkins III. July 1994)

Subtheme 3.3*: A once booming timber industry has impacted some parts of the landscape here.*

Examples of Supporting Stories

Logging offered opportunities to many Oregonians in the early days of American settlement, and is still one of our state's biggest industries. As is the story with so many things, too much too fast may have impacted many forest species as habitats shrank and mature forests, upon which many animals depend, became scarcer. As we learn more about our forest ecosystems, efforts have been made to help protect them. Cape Lookout offers an example of how clear-cuts act as disturbance events (much like fires, floods, etc.) which can be beneficial on a small scale, and commercial thinning can speed succession with lower impact than clear-cuts alone. As you travel through the different habitats at Cape Lookout, you can see how each habitat patch was affected by its natural and cultural history. Springboard notches and old growth stumps can be seen in some areas of the park.

Subtheme 3.4: *We restore the shores of the past in order to preserve the future of coastal parks like Cape Lookout.*

Examples of Supporting Stories

Invasive dune grass, roads, houses, jetties, and other man-made structures have changed natural dune accumulation and beach erosion patterns, leaving less room for adjustment by the environment as winds and currents change. We make efforts to stabilize the shoreline but the question remains; do we fight the inevitable or adjust our plans accordingly?

Because of our dependence on stability along the shoreline, humans have taken steps to slow this inevitable geologic process and keep things as they were when we developed the landscape. Dune protection, artificial seawalls, and other restoration efforts have been put in place since the Cape Lookout campground was built in the 1950s to alleviate the effects of shoreline erosion. While costly, these efforts have maintained habitats that would have been otherwise lost, and delayed the destruction of campgrounds, as well as homes, roads, and businesses.

Subtheme 3.5: *Young men in the Civilian Conservation Corps helped to build for the future at Cape Lookout State Park.*

Examples of Supporting Stories

The Civilian Conservation Corps was a Federal program that employed out of work young men in public works projects around the country during the Great Depression of the 1930's.The Civilian Conservation Corps (CCC) had a camp near Jackson Creek at Cape Lookout while constructing a five-mile hiking trail through the forest to the point of the cape. They also built an access road to parking and picnic facilities near Jackson Creek; this greatly improved recreation opportunities in the area and resulted in a spike in visitation. The park, which was originally envisioned as a natural area preserve, became a popular destination for visitors to the Oregon coast in the 1950s.

Subtheme 3.6*: During World War II, Cape Lookout was a hub of activity as we prepared to defend our shores.*

Examples of Supporting Stories

From the Cape trail, all of the forested land that can be seen south along the shoreline (until Sandlake) is owned by the Boy Scouts of America. This is Camp Meriwether, which was used in 1941 and 1942 as a lookout location for the US Navy. The Navy placed pill boxes along the bluff, and ran patrols on the beach during fair weather. The pill boxes were used as triangulation stations to track the movement of ships. Others were used as radar stations to track ships and airplanes. Radar was installed in the early part of World War II, and was initially installed in secret.

The most action seen on this stretch of coast was accidental; in 1943 on a fairly typical foggy August 2nd, a B17 bomber crashed just beyond the trail just over half a mile from the trailhead parking lot. The plane had become lost in the fog as it was not able to use radio or radar due to fear that Japanese subs might use its signals for navigation. After the shelling of Fort Stevens the year before the entire coast was on high alert. In an attempt to get their bearings, the crew brought the plane lower hoping to get below the fog. Unfortunately, with the Cape being about 600 high at this location, they never made it out of the fog. There was one survivor from the crash. It took 3 years for the survivor to recover from his broken hip, but he lived to tell the tale.

Safety Messages

Overall Communication Message: *Visitors are advised to be prepared for coastal hazards and wildlife visitors.*

Message 1: *A tsunami can occur here, know what to do.*

Supporting Information
Move to higher ground quickly. The park has a siren that is tested every Monday at 1 pm. If you hear the siren any other time, move to the hilltops immediately. If you feel the ground shaking, move to the highest possible location as soon as it is safe to do so.

Message 2: *Seals and sea lions on the beach can be hazardous.*

Supporting Information
It is normal for seals and sea lions to rest on the beach. They can transmit diseases to pets and humans. They have sharp teeth for eating fish and can bite. Federal and state laws prohibit touching, feeding, or disturbing marine mammals. There is a $25,000 fine for taking or possessing marine mammal parts. Report violations or beached animals to the Oregon State Police at 1-800-452-7888.

Message 3: *Keep a clean campsite to prevent problems for you and wildlife.*

Supporting Information
It is important to keep a clean campsite with no food or trash left out. Raccoons are masters at opening latches to get into containers. Gulls can leave some interesting signs of their visit. Jays and crows are on the increase, while marbled murrelets are on the decrease. Jays and crows benefit from food scraps. They also kill young marbled murrelets, a threatened species.

Message 4: *Think safety when hiking.*

Supporting Information
Some trails in the park have extreme drop offs. Create a trip plan for longer hikes: destination, estimated time of return, time at which to assume an emergency came up, emergency contact information, next-of-kin contact information, any pertinent health information, and number in party. Leave trip plan with a family member, or with park staff.

Message 5: Playing at the beach is fun, but can also be very dangerous.

Supporting Information
There are many hazards at the beach that can threaten life and safety, including rip currents and sneaker waves that can drag you out to sea, drift logs that roll around in the surf, incoming tides that can unexpectedly strand you, and cliffs and rocks that can be slippery or unstable. Be aware of these hazards and pay attention to warning signs and safety brochures.

Interpretive Service Level
Interpretive Service Level 4 is recommended for Cape Lookout. A park of this service level may have a dedicated interpretive building, large or small, but will only be seasonally open. It may also have outside interpretive structures that can be self-guiding for both high and off-season use. Dedicated interpretive staff are present on a seasonal basis.

Interpretive Media

Publications / Brochures

General Park Brochure:
Basic park information including an overview of attractions, facilities, and services provided.

Self Guided Interpretive Trail Brochure:
- Cape Lookout Trail guide highlighting the old growth forest, sea birds, marine mammals, and events that happened along the cape (WWII History, Bomber Crash, The Straun shipwreck)
- Short Nature Trail guide describing the ecosystems present in the park, how they interact with each-other, and why they're worth protecting. Nature trail loops around the Junior Ranger yurt and amphitheater area.

Bird checklist:
Once data are available (a bird census could compile the data needed)

Native American Uses of the Land brochure:
This might include uses of plants and fishing techniques, for example. This needs to be developed in cooperation with the Confederated Tribes of Grand Ronde and the Confederated Tribes of the Siletz Indians.

Wayside Exhibits

The locations where various interpretive displays can best be presented to support interpretive themes and supporting stories will be determined as part of the Interpretive Plan to be developed following the plan completion. Suggested locations are included in descriptions of projects by Management Zones in Chapter 10.

Seals / Sea Lions
- Describe behavior that may be seen on the beach
- Identify key species that could be spotted
- Identify safety issues

Marbled Murrelets and Snowy Plovers
- Highlight what campers can do to help marbled murrelets found in the forest
- Highlight what campers can do to help Snowy Plovers on the beach

WWII crash and shipwreck Panel
- Describe local WWII history
- Supplement existing plaque about the bomber crash
- Include information about the shipwreck(s)

Geology I
- Most extensive basalt flows on the planet
- The ongoing subduction of the Juan de Fuca Plate is balanced by the uplift and erosion of the coast.

Geology II
- Describe wave action and beach formation/erosion
- Restoration measures taken to stabilize beaches

Native American History
- Salmon species/fishing techniques
- Description of what weirs are used for
- Local Native American history
- This needs to be developed in cooperation with the Confederated Tribes of Grand Ronde and the Confederated Tribes of the Siletz Indians.

Cultural/Park History
- Tell the story of the CCC and the work they did at Cape Lookout
- Details on park history & further development

New Media

Website Downloads
Provide downloadable PDFs of interpretive trail guides and maps that people could print on their own or, preferably, download to a smart phone for use in the park – additional sustainability angle if people don't have to use a printed copy of trail maps and brochures, and printed versions of interpretive messages or audio tours (see below) could also be provided for the deaf & hard of hearing.

Audio Tours
Available to download on the web; these audio versions of interpretive signage or guided tours could be used in-park in place of, or supplementing, a live interpretive talk/tour. Additional accessibility angle for low readers, ESL visitors (tour could be offered in several languages if needed), or blind visitors. Also provides interpretive information during the off-season.

Social Media
OPRD can utilize our current Facebook and Flickr pages to promote the park through stories and pictures shared on the web. Encouraging visitors to share park experiences through social media will promote visitation and highlight the recreational opportunities offered at Cape Lookout.

Video
YouTube video of Cape Lookout already exists and highlights the facilities at the cape. Dialogue could be added to this video describing the features seen in the park (yurt, picnic area, cabins, trails, Jackson Creek, and different coastal habitats) to enhance this interpretive tool. Ranger talks could also be filmed and provided on the web for those interested in park features but who cannot access them. Video should be subtitled for accessibility.

Programs/Events
Interpretive presentations will be led for visitors seasonally from Memorial Day through Labor Day. Most programs will be based out of the amphitheater or meeting hall. Some programs will take place at other locations in the park. Possible presenters include a mix of OPRD staff, volunteers, and other agency staff. Program types will include Junior Ranger programs for youth

ages six to twelve years, family programs, environmental education programs for school groups, and adult outdoor skills programming.

Wayfinding / Orientation

The best places for locating features that display specific wayfinding/orientation information will be determined as part of the Interpretive Plan to be developed following the plan completion. Chapter 10 includes suggested locations for some of these features.

Web Site
The web site will provide directions to the site and offer a PDF of the trail brochure and general park brochure. A video could give visitors an introduction to the park attractions and suggestions for planning a trip.

Main Kiosk (5)
- Design with CCC rustic style.
- Large park map, include dog on leash and off leash areas
- Provide all brochures to take if needed
- Regulations on day-use, camping, & beach safety

Trail Signs

- Posts with trail names and distances
- Allow visitors to plan their hikes and destinations (beach, cape, forest, etc.)
- Mark distances to picnic areas

Trail Head Displays

Detailed trail map highlighting viewpoints and interpretive panels of note

Infrastructure
Amphitheater with suggested 100 person capacity.

Hard-sided yurt to serve as the meeting location for Junior Ranger programs. Features should include storage space for interpretive supplies, and an office for the summer naturalist.

Wildlife observation blind with suggested capacity up to 30 people. Viewing windows at various heights for various age groups. Located with views into multiple habitat types.

Future Planning
An Interpretive Plan will be developed detailing concepts needed to fully communicate identified interpretive themes. This would include not only Cape Lookout State Park, but all parks within the management unit.

Chapter 10

Park Management by Zones

Management Zones

This chapter describes planned projects and resource management activities for the park by geographic Management Zones. There are 10 Management Zones, which generally reflect the opportunities and constraints identified early in the planning process for geographic areas of the park. The Management Zones roughly correspond with the identified Opportunity Areas discussed in Chapter 7. This chapter presents specific projects and management activities that respond to identified opportunities and constraints, and that address the goals for the park outlined in Chapter 8 for management of natural, scenic and cultural resources and for support of compatible recreation activities including resource interpretation. The 10 Management Zones are listed below. Maps 10-1 and 10-2 illustrate the Management Zones parkwide and for the core area.

Table 10.1 - Cape Lookout State Park Management Zones

Zone #	Zone Name	Management Emphasis
1	Cape Lookout Headland	Natural Resource Management
2	Core Area Old Growth Forest	Natural Resource Management
3	Core Area Forest Buffer	Natural Resource Management
4	Bay Marshland	Natural Resource Management
5	Netarts Spit	Natural Resource Management
6	Ocean Shore Protection	Natural Resource / Recreation Management Crossover
7	Loop A/B Transition	Natural Resource / Recreation Management Crossover
8	Headquarters and Campground Rehab	Recreation
9	Day Use Area Rehab	Recreation
10	New Campground	Recreation

Core Area Design Concepts (Maps 10-3 & 10-4)

At the end of this chapter, two design concepts are presented (Maps 10-3 and 10-4) that illustrate the recreational development proposals for the park's core area as described in the textual project descriptions for each of the core area Management Zones. These two concepts are identical except in the proposals for Zones 9 and 10. The differences are explained in the project descriptions for these Zones.

Conceptual Designs for Park Development Projects

The development concepts illustrated by Maps 10-3 and 10-4 are conceptual, however, these conceptual designs are based on the opportunities and constraints identified and described in Chapter 7. Reasonable flexibility to make changes in the conceptual layouts and designs of project components when completing final designs is expected, provided the changes are not contrary to the Values and Goals for the park outlined in Chapter 8, or to intentions for the park expressed elsewhere in this Plan. OPRD is dedicated to proposing outdoor recreation facilities that are appropriate for the setting and OPRD's roles as a recreation provider. Proposed facilities are selected, located and designed to avoid causing significant impacts on important natural, cultural and scenic resources, and to avoid causing significant conflicts between incompatible recreation uses or with surrounding land uses. Preliminary and final project designs will be reviewed in cooperation with the local land use approval authority as needed to ensure compliance with the intent of the plan.

(10-1 and

10-2 parkwide and core area Management Zones maps here.)

Zone 1: Cape Lookout Headland Zone

Most of the Cape Lookout headland is protected as a dedicated State Natural Heritage Area. The purpose of this dedication is to promote natural diversity of native species and ecosystems, more specifically to protect the dedicated area as a primary representative site for the natural ecosystem elements it contains. Opportunities for this area are guided by the purposes outlined in the Dedication Agreement for natural resource protection, research, education and interpretation, weed control, and continued recreational use and maintenance of the existing hiking trail.

Outside the dedicated Heritage Area, this Zone includes additional high quality mature native forest to the east and along the shoreline to the north reaching as far as the park's core area. Along the eastern extent of the park property in this Zone is a young replanted forest. The county road corridor south of the core area, including the Cape Trailhead, is within these areas of Zone 1.

Management Emphasis: Major emphasis on protecting natural and scenic resource values. The old growth forests inside and outside of the Heritage Area are likely used by marbled murrelet. The Cape Trail is a highly visited recreational use area, second to the park's core area. Recreational use is contained within the corridors of the Cape Trail and the Oregon Coast Trail, which cross near the trailhead. The planned trail (project R1.3 below) will extend the activity along the new trail corridor. Park operations for this zone are mostly focused on these corridors.

Zone 1: Natural Resource Management Projects
N1.1 - Cape Lookout Natural Heritage Area & adjacent old growth forest:
Conduct an assessment of natural resource conditions in the mature forests outside the Heritage Area, and as needed inside the Heritage Area, to identify any need for treatments or management. Any activities in the Heritage Area must be consistent with the purposes outlined in the Dedication Agreement.

N1.2 - Young replanted conifer forest:
Thin the young forest along the eastern extent of this Zone to promote healthy forest succession and add to the expanse of adjacent old growth forest habitat.

N1.3 – Conduct a survey for at-risk species along the corridor of the proposed new coastline viewpoint trail (R1.3 below) prior to its construction.

Zone 1: Cultural Resource Management
- Follow protocols set out under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 1: Scenic Resource Management Projects
- Replace the chain link fence barrier at the Cape Trail destination viewpoint with an aesthetically pleasing barrier (described below under Recreation Facility Project R1.2).
- Create a new trail destination viewpoint at the terminus of the proposed new trail (described below as R1.3).

Zone 1: Key Operations
- Weed control along roads, parking areas and trails.
- Trail maintenance to control erosion and runoff.

- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10.2 - Zone 1 Recreation Facility Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
R1.1	**Cape Trailhead (minor rehab):** - Designate parking spaces in trailhead lot by striping or installing wheel stops to define capacity. - Install vault toilet to replace portable toilet.			SHPO
R1.2	**Cape Trail destination (rehab):** Replace existing chain link fence barrier with aesthetically pleasing barrier at end of Cape Trail.	This trail destination is worthy of a stone wall barrier, although transport of such materials to this site could be expensive. Explore options.		SHPO
R1.3	**Coast Viewpoint Trail (new construction):** Develop hiking trail to 1200'+ hilltop east of county road. Hilltop destination will potentially provide views of coastline looking north and south. Work with the County to develop trailhead parking turnout along the county road.	- Follow USFW guidelines for potential marbled murrelet habitat.		SHPO USFW ODFW County
R1.4	**Informational and interpretive signage (new construction):** Informational and interpretive signage will be guided by the interpretive plan to follow the plan completion. At the Cape Trailhead, consider installing interpretive panel interpreting role of Cape Lookout in WWII, and crash of WWII bomber on the cape. Consider installing interpretive panel describing coastal geology and historic shipwrecks, either at the new coastline viewpoint or at Anderson Viewpoint along the county road.			

Zone 2: Core Area Old Growth Forest Zone

This Zone extends the old growth forests of Zone 1 into the park's core area. It contains many wetlands. Like the old growth of Zone 1, this Zone also contains suitable habitat for marbled murrelet. Jackson Creek, which runs through the southern end of this Zone, supports spawning and rearing of Coho salmon. With development of proposed new campground facilities in the core area, this Zone will be bordered on three sides by recreational facilities. Some trail development will reach into this Zone at its northern and eastern ends, in part to support natural resource interpretation associated with the park's new program area.

Management Emphasis: Major emphasis on protecting natural resource values. No new development will occur in this Zone other than trails and a wildlife viewing blind associated with the program area at the north edge. Recreational activity will occur at the edges and along the trail corridors.

Zone 2: Natural Resource Management Projects
N2.1 – Jackson Creek restoration:
Jackson Creek is currently the subject of a hydrologic study to assess the merits of restoring natural stream flow, currently diverted to Netarts Bay through a diversion channel, back to the natural channel which flows to the ocean. The project is believed to have net benefits for spawning and rearing of coho salmon and other species.

Zone 2: Cultural Resource Management
- Follow protocols set out under OPRD's Cultural Resource Policy for any ground disturbing activities.

Zone 2: Scenic Resource Management
- Any interpretive panels and trail signs, and the new wildlife viewing blind, will blend aesthetically with natural surroundings.

Zone 2: Key Operations
- Weed control along, trails, Jackson Creek, the adjacent road and creek diversion channel.
- Trail maintenance to control erosion and runoff.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10.3 - Zone 2 Recreation Facility Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
R2.1	**Trails (new construction):** - New trail development in this zone will be limited to area between existing day use parking lot, new program facilities, and group camp to be converted to beach access. New bike trail system will include connections through this zone, along west side of existing park road north of day use parking between new program area and existing day use parking, and along west side of stream diversion channel. - New interpretive trail beginning at new program area will include a hiking trail segment connected to bike trail system at both ends, forming interpretive loop.	- Trail development and use must follow USFW protocol for marbled murrelet habitat. - Bike trail paved. Trail width through this forest may need to be variable and narrower than standard 10' width to minimize disturbance to valuable habitat. - Some wetland mitigation likely needed.		SHPO USFW ODFW
R2.2	**Wildlife viewing blind (new construction):** This feature is part of the new program area described under Zone 10 but will likely be situated barely within the edge of Zone 2 where it abuts the program area.	Location and design to be determined as part of the interpretive plan following the plan completion.	Following completion of interpretive plan.	SHPO
R2.3	**Informational and interpretive signage (new construction):** Interpretive panels to interpret natural resource features. Locations and designs to be determined as part of the interpretive plan following the plan completion. Trail signs at trail junctions.			

Zone 3: Core Area Forest Buffer Zone

Zone 3 covers more than half of the overstocked plantation forest in the park's core area (the remaining part of this forest is in Zone 10). It connects the old growth forest habitat in the southern area to the bay marshland habitat in the northern area of the park. This forest is important as connecting habitat as well as a buffer between the county road and park facilities and between park use areas. Netarts Creek flows to the bay through culverts under the county road and park entrance road from a disconnected part of this Zone on the east side of the county road.

Management Emphasis: Major emphasis on natural resource restoration. The forest needs thinning to promote healthy succession of forest vegetation and improve habitat conditions, and create a pleasing natural setting around future recreation areas. Restoration of natural stream flow and fish passage is needed for Netarts Creek, which requires cooperation with the County where the creek passes under the county road. Recreational use in this Zone will be contained along trail corridors and road connections.

Zone 3: Natural Resource Management Projects
N3.1 – Dense plantation forest (restoration):
Thin the overstocked plantation forest to promote forest health, improve structural diversity and encourage understory growth. Maintain dense but healthy forest screening between county road and park development, and between park development areas. Initial thinning operations are needed as soon as possible to start long term recovery to healthy forest conditions.

N3.2 – Netarts Creek (restoration): Netarts Creek crosses an isolated part of Zone 3, on the east side of the county road, before flowing to the bay through culverts under the county road and park entrance road. Enhance hydrologic connection and fish passage under the roads in cooperation with the county.

N3.3 - Park entrance: At new park entrance junction with county road (described under Zone 10), create small sparsely treed forest opening for open view of new registration building from county road.

N3.4 - Invasive plant removal (restoration):
Remove blackberry infestation along existing park entrance road. Remove English ivy and Armenian blackberry infestation near southeast corner of drainfield.

Zone 3: Cultural Resource Management
- Follow protocols set out under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 3: Scenic Resource Management
- At new park entrance junction with county road, create small sparsely treed forest opening for open view of registration building from county road (described above as project N3.3).
- Any signage should blend aesthetically with natural surroundings.

Zone 3: Key Operations
- Weed control along roads, trails, streams and diversion channel, and adjacent parking areas.
- Trail maintenance to control erosion and runoff.

- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10.4 - Zone 3 Recreation Facility Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
	New park entrance road: (This road will extend through this zone, but is addressed as part of Zone 10 discussed below.)			
	Park connector road 1: (This new road will also extend through this zone, but is addressed as part of Zone 10 discussed below.)			
	Emergency county road access: (This new road will also extend through this zone, but is addressed as part of Zone 10 discussed below.)			
R3.1	**Trails (new construction):** - Most trail development in this zone will skirt edges between this zone and New Campground Zone discussed below, and will include bike trails and hiking trails.	- Bike trail width 10', paved. - Hiking trail width: 3-5'.		SHPO
R3.2	**Informational and interpretive signage (new construction):** Install trail signage at trail junctions.	- Blend signage with natural surroundings.		SHPO

Zone 4: Bay Marshland Zone

Zone 4 includes the OPRD-owned south end of the bay, which is within the Netarts Spit Natural Heritage Area (described under Zone 5), and the adjacent salt marsh outside the Heritage Area. A part of this Zone adjacent to Camp Loops C & D and the maintenance yard is characterized by mixed wetlands and uplands. Multiple small streams, and the Jackson Creek diversion channel, flow to the bay through the marsh. The existing park entrance road dissects the marsh and interrupts the stream and wetland hydrologic and habitat connections. Higher ground at the park entrance (county road intersection) may be suitable for development of a way finding site.

Management Emphasis: Major emphasis on natural resource protection and restoration. Most recreational activity will be confined to the roadway, trails and way finding site. Shellfish gathering occurs in the tidelands, and may reach into the area covered by the Natural Heritage Area.

Zone 4: Natural Resource Management Projects
N4.1 – Existing park entrance road (rehab & restoration):
Following development of new entrance road, remove half of the existing entrance road bed and restore as marshland (See R4.1 below). Improve hydrologic connection under narrowed road bed with box culverts or bridging.

N4.2 - Invasive plant removal (restoration):
Remove blackberry infestations along existing park entrance road.

Zone 4: Cultural Resource Management
- Follow protocols set out under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 4: Scenic Resource Management

- Signage should blend aesthetically with natural surroundings.

Zone 4: Key Operations

- Weed control along roads, trails, streams, diversion channel, and adjacent campground and maintenance yard.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10. 5 - Zone 4 Recreation Facility Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
R4.1	**Existing park entrance road (rehab & restoration):** With development of new entrance road, convert existing entrance road within a quarter mile of existing entrance to service road and bike trail. Remove half of road bed, narrowing surface to one lane and reclaiming other half as marshland as discussed under Natural Resources section above.	- Retain 12' wide travel surface for bike trail / service road.	Decommissioning entrance road must follow completion of new entrance road, and will eventually become necessary with increased flooding of the existing road. Timing of road bed removal and conversion to trail and service road may be determined based on park wide funding priorities. However, wetland restoration may be needed to meet mitigation requirements for other projects. Timing may also be determined based on grant funding opportunities for enhancing wetland hydrology.	County DSL/ACOE DEQ ODFW NOAH SHPO
R4.2	**Informational and interpretive signage (new construction):** Locations and designs of interpretive signage to be determined as part of Interpretive Plan following the plan completion. Consider developing interpretive site along entrance road converted to bike trail/service road, interpreting marsh habitat and restoration project. Trail signs at trail junctions.			SHPO
R4.3	**Way finding site (new construction):** Consider developing way finding site on bay side of existing park entrance, which would function with either existing or proposed new entrance. Merits of this project may be determined as part of Interpretive Plan.	- Consider longevity of this project relative to site elevation (roughly 20') and likelihood of future ocean flooding. - Some wetland mitigation may be necessary.	Timing determined by project merits and other funding priorities.	County DSL/ACOE DEQ SHPO
R4.4	**Bike trail (new construction):** Where this zone abuts existing park road between proposed Connector Road 1 and maintenance yard, develop a bike trail along west edge of park road connecting to section of park entrance road converted to bike trail and service road discussed above.	- Bike trail 10' wide, paved. - Wetland mitigation likely needed.		DSL/ACOE SHPO

	Loops C&D emergency access: (These trail/service road connections will extend through this zone, but are discussed as part of Zone 8 discussed below.)			

Zone 5: Netarts Spit Zone

Zone 5 includes the Netarts Spit, most of which is protected as a dedicated State Natural Heritage Area. The dedicated area also includes the OPRD-owned salt marsh at the south end of Netarts Bay, which is part of Zone 4 discussed above. The purposes of the Heritage Area are natural resource protection, research, education and interpretation, weed control, and the hiking trail and beach activities that now occur. Part of Zone 5, the sand spit area directly north of Camp Loop A/B, is outside the Heritage Area. The spit is undergoing changes with shoreline erosion, to the extent it is likely to be breached by storm waves near the south end of the bay in the near future. The Western Snowy Plover Habitat Conservation Plan (HCP) identifies the far north end of the spit as a potential site for restoration of snowy plover nesting habitat.

Management Emphasis: Major emphasis on natural and scenic resource protection. Potentially, the far north end of the spit could become a priority for snowy plover habitat restoration. Currently, recreation on the spit is limited to a minor amount of hiking, and activity related to shellfish gathering in the adjacent tidelands. An alternate route along the spit for the Oregon Coast Trail is planned for implementation if a ferry crossing from Netarts is established.

Zone 5: Natural Resource Management Projects:
N5.1 - Natural Heritage Area & adjacent spit:
Conduct an assessment of natural resource conditions on the spit outside of Heritage Area, and as needed inside Heritage Area, to identify any need for treatments or management.

N5.2 - Invasive plant removal (restoration):
Remove blackberry infestations north of Camp Loop A/B.

N5.3 - Debris pile removal (restoration):
Remove asphalt and other debris north of Camp Loop A/B.

N5.4 – Implement relevant parts of the Western Snowy Plover HCP under guidance from USFW. Any management actions for the north end of the spit must be consistent with the HCP.

Zone 5: Cultural Resource Management
- Follow protocols set out under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 5: Scenic Resource Management
- Signage should blend aesthetically with natural surroundings.

Zone 5: Key Operations
- Weed control along the trail corridor.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Zone 5: Recreation Facility Projects

R5.1 – Consider establishing an alternate route for the Oregon Coast Trail along the spit if a ferry crossing to Netarts is established. This project must be compatible with any habitat management projects implemented pursuant to the Western Snowy Plover Habitat Conservation Plan (HCP). Long term trail maintenance feasibility should be considered in relation to the likelihood of the spit being breached.

Zone 6: Ocean Shore Protection Zone

Zone 6 is the ocean shoreline area from the north end of Loop A/B to the south end of the day use parking lot. The northern part is the natural dune fronting Loop A/B, which is eroding landward, being reduced in height and becoming less effective in protecting the campground from storm waves. North of the campground, the dune has been reduced to the extent that the narrow spit between the open ocean and the bay could be easily breached in a major storm. Although the dune elevation is significantly higher where it fronts the camp loop, continued erosion of the shoreline and corresponding reduction in dune height will eventually allow frequent wave over wash, which could cause an eventual breach of the spit through the camp loop. Without intervention to slow the erosion, maintenance of these campground facilities will likely become unrealistic over time due to damages and clean up costs from ocean flooding in storms.

The central portion of Zone 6 is the artificial dune and cobble revetment that control wave erosion along the reach of shoreline fronting Loops C & D, a small portion of Loop A/B, the campground entrance road and about half of the group tent camp. Continued protection of facilities relies on regular maintenance of the dune and revetment. At the lower points along the dune crest, waves commonly wash over during major storms, which cause flooding behind the dune and salt water intrusion in the campground. Trees in the campground are gradually dying as a result of the increased salinity.

Along the Zone 6 shoreline south of the artificial dune, there is no remaining natural dune to protect against flooding in storm surges, although this shoreline reaches elevations similar to the low points of the artificial dune crest to the north. This shoreline is also eroding. At the north end of this area, half of the group tent campground is at risk, unprotected by the artificial dune. The rest of this area is predominantly wetland, and is undeveloped except for hiking trails. A section of trail along the shore previously undermined by erosion and has since been realigned farther inland.

Management Emphasis: The management emphasis is a crossover between natural resource management and recreation management. Management efforts involve intervention with a natural process to stabilize the shoreline, using materials that are natural or appear somewhat natural, to protect recreation facilities.

Zone 6: Natural Resource Management Projects:
N 6.1 - Invasive plant removal (restoration):

Remove blackberry infestations along natural dune.
(Possible projects for rehabilitating the artificial dune and stabilizing the natural dune and other unprotected shoreline are described below under Natural Resource Intervention Projects.)

Zone 6: Cultural Resource Management

- Follow protocols under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 6: Scenic Resource Management

- Use methods and materials that retain the appearance and function of a natural shoreline in efforts to stabilize the shoreline.
- Signage should blend aesthetically with natural surroundings.

Zone 6: Key Operations

- Timely maintenance of the artificial dune and cobble revetment and any future projects to stabilize the shoreline.
- Weed control along the adjacent camp loop, roads, parking and trails.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10.6 - Zone 6 Natural Resource Intervention Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
NR 6.1	**Artificial dune (rehab):** Consider extending artificial dune length and/or raising its height to better protect park facilities. Minimally, extend length northward far enough to match northern extent of Camp Loop D. Consider raising dune height to match height of adjacent natural dune. Try planting hooker willow through cobble revetment that fronts the dune to resist displacement by wave action.	- Optimally extend artificial dune length northward for minimum 350'. - Raise dune height by at least 4 feet to match lowest elevations of adjacent natural dune where it fronts Loop A/B. -Continue to use methods and materials that retain an appearance and function similar to a natural dune.	ASAP. Natural shoreline is eroding (sporadically in winter storm events) at average 3-6' per year.	County DSL/ACOE DEQ SHPO
NR 6.2	**Natural dune (stabilization):** Try stabilizing natural dune fronting Loop A/B by planting hooker willow. Consider fronting this dune with cobble, similar to artificial dune. Consider doing both, using willow to resist cobble displacement by wave action.	Use methods and materials that retain an appearance and function similar to a natural dune.	ASAP. Shoreline is eroding (sporadically in winter storm events) at average 3-6' per year.	County OPRD DSL/ACOE
NR 6.3	**Shoreline south of artificial dune (stabilization):** Try stabilizing natural shoreline using cobble and/or hooker willow as described above.	Use methods and materials that retain an appearance and function similar to a natural shoreline.	ASAP. Shoreline is eroding (sporadically in winter storm events) at average 3-6' per year.	County OPRD DSL/ACOE

Zone 7: Loop A/B Transition Zone

Zone 7 includes most of Loop A/B, situated on the spit between the ocean and the bay. The majority of this loop is fronted by the eroding natural dune discussed under Zone 6. A small part lies behind the artificial dune between Loop D and the dune. (Part of Loop A/B is in Zone 8 discussed below.) The access road to all of the camp loops, directly behind the artificial dune, is

part of Zone 7. Also included are wetlands directly west of Loop C and D that are subject to ocean flooding when storm waves wash over the artificial dune. Salt water intrusion that occurs with wave over wash is killing trees between Loop A/B and Loops C & D.

Zone 7 is regarded as a transitional area. It is vulnerable to future damage with continued erosion of the natural dune. Without major intervention, storm damage and possible breaching of the spit will likely necessitate eventual abandonment of most of this loop. A transition from developed recreation to natural area may occur gradually, as sporadic storm damage necessitates removal of facilities. Eventual abandonment of most of the campsites may occur in phases, depending on the erosion and flooding pattern as conditions progressively result in more and more loss of facilities. Facilities will likely be kept in operation until such time as continued maintenance is unrealistic due to the extent and frequency of damage and cleanup costs. With the threat of continued ocean flooding, the road access to Loops C & D, which is part of this Zone, will need relocation farther from the shoreline.
Management Emphasis: Zone 7 is a crossover between recreation and natural resource management, with recreation transitioning over time to a natural resource emphasis.

Zone 7: Natural Resource Management Projects:
N 7.1 - Camp loop transition (restoration):
Phase out camping in most of Loop A/B as needed, removing hardstands and part of road width (see 7.1 below). Restore abandoned facility sites to natural condition and use for wetland mitigation.

N 7.2 - Dying vegetation (restoration):
Replace dying trees with salt tolerant species where this zone meets Loops C&D. Consider planting hooker willow. Explore possible options.

N 7.3 - Invasive plant removal (restoration):
Remove blackberry infestations along natural dune.

Zone 7: Cultural Resource Management
- Follow protocols under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 7: Scenic Resource Management
- As facilities are removed, restore to natural condition.
- Replace dying trees with salt tolerant species where this zone meets Loops C&D. Campsites losing tree and shrub cover have become less desirable.
- Blend any new or relocated facilities with natural surroundings.

Zone 7: Key Operations
- Consider camp loop closure during storm season for optimum visitor safety.
- Timely updates to emergency and evacuation procedures and related facilities, visitor information and staff training.
- Weed control along roads, parking, trails and around campsites.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10.7 - Zone 7 Recreation Transition Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
(See N.1 above)	**Camp loop transition (rehab):** Phase out camping in most of Loop A/B as needed depending on extent and frequency of storm damage and related risks and maintenance costs, and on pattern of storm damage. Remove hardstands and part of road width.. While feasible, retain campsites with tree cover behind highest part of remaining natural dune as campsites are removed from other parts of loop.		Depending on pattern of progressive ocean flood damage, implement in phases as needed over time. Implementation may also be proactive. Removal of access road to Loops C&D must follow completion of new road to Loop C.	SHPO DSL/ACOE
R7.1	**Sewage lift station (rehab):** Replace lift station with multiple lifts at suitable locations. Remove lift station from Loop A/B.	- Relocate to sites less prone to ocean flooding. - Wetland mitigation may be needed depending on new locations.	ASAP. Existing lift is prone to ocean flooding. Timing is critical for continued park operation.	County DSL/ACOE SHPO
R7.2	**Restrooms (rehab):** Replace restroom/shower building with vault toilet building.		After disconnection of sewage system from Loop A/B.	County SHPO
R7.3	**Convert some of campground to beach access parking (rehab):** Convert some campsites along west side of loop to beach access parking.	- Paved or gravel, 30 cars. - Minor wetland mitigation.	Should be completed with downsizing of day use parking in Zone 9.	County DSL/ACOE SHPO
R7.4	**Convert camp loop road to trail (rehab):** Convert Loop A/B road to bike trail / service road. Remove, add, realign trail as needed for Loops C & D connections.	- Reduce west side of loop to 12' width, and east side to 10' width. - Wetland mitigation likely for realignments.	Following removal of most or all Loop A/B campsites.	County DSL/ACOE SHPO
R7.5	**Informational and interpretive signage (new construction):** Install informational signage per detailed Interpretive Plan to follow the plan completion. Consider this location for interpretive panels describing dynamic coastline, shoreline erosion, and stabilization efforts. At head of trail onto Netarts Spit, consider interpretive panel describing snowy plover, efforts to promote their recovery, and potential habitat restoration site on the spit.		Following completion of Interpretive Plan.	SHPO

Zone 8: Headquarters and Campground Rehab Zone

Zone 8 includes the existing park office, maintenance yard, RV dump station, Camp Loops C & D, group tent camp, registration booth and program area. A minor portion of Loop A/B is also included in this Zone.

Continued operation and maintenance of many facilities in this Zone, mainly the camping areas, depends on regular maintenance of the artificial dune and cobble revetment. Even with this structural protection, waves that wash over the dune during winter storms create clean up costs and are increasing soil salinity that is killing trees and shrubs in the campground. With potential breach of the spit through Loop A/B, coupled with the rising sea level and increasing impacts of storm surges, over time wetland conditions may be expanded further into the campground from the bay. Although the artificial dune is expected to help keep Loops C & D in operation for many years, in the long term it may be unrealistic to maintain this part of the campground due to its low elevation and cost of protection. However, maintaining this part of the campground is believed to be feasible for a much longer time than Loop A/B. The dune height could potentially be raised and its length could be extended to offer better protection and keep the campground in operation longer.

Facilities that are closest to shore are most vulnerable. The entrance road to Loops C & D will need relocation to a safer ground further from shore, and alternate routes for emergency access and evacuation will be needed. The group tent camp, located partially outside of the artificial dune protection, is immediately vulnerable.

Management Emphasis: Major emphasis on continued recreation with some redesign and rehab to address ocean hazards.

Zone 8: Natural Resource Management Projects
N 8.1 - Forest management:
Thin the forest in the existing program area to improve the recreation setting and visitor safety, promote forest health and encourage understory growth. Implement in conjunction with conversion of this area to new Loop C access, discussed below under Recreation Facility Projects. Thinning is needed as soon as possible to begin long term improvement of recreation setting and recovery to healthy forest conditions. Plant understory vegetation in key areas to enhance the setting, provide visual screening for planned campsites and other facilities, help direct foot traffic flow and enhance botanical diversity.

N 8.2 - Replace dying vegetation (restoration):
Replace dying trees with salt tolerant species at west and northwest edge of Loops C&D.

N 8.3 - Invasive plant removal (restoration):
Remove blackberry and reed canarygrass infestations along south side of Loop D. Remove English ivy and blackberry infestations along north side of existing campground access road and next to dump station.

Zone 8: Cultural Resource Management
- Explore possible listing of the park office on the National Historic Register.
- Follow protocols under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 8: Scenic Resource Management

- Replace dying trees with salt tolerant species. Campsites losing tree and shrub cover have become less desirable.
- Consider changing colors of building exteriors to blend better with natural surroundings.
- Replace exterior lighting with hooded lighting to improve night sky viewing.

Zone 8: Key Operations

- Timely updates to emergency and evacuation procedures and related facilities, visitor information and staff training.
- Weed control along roads, parking, trails and around campsites.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10.8 - Zone 8 Recreation Facility Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
R8.1	**Loop C&D emergency access (rehab):** Develop bike trails doubling as emergency service roads between east ends of Loops C&D and park road. At connection to Loop C, one yurt may need relocation, replacing one campsite lost. At connection to Loop D, one additional campsite may be lost. Install gates that allow passage of bikes and pedestrians.	- Trails / service roads 10' wide. - Wetland mitigation needed.	ASAP. Important alternate accesses for emergency response and evacuation.	County DSL/ACOE SHPO
R8.2	**Campground entrance & Loop C expansion (rehab):** Develop new campground entrance road near park office, through existing program area to southwest corner of Loop C. Relocate program area to new location (discussed below). Develop campsites, including a host site, along new road. Develop gated driveway connection to maintenance yard by existing garage. One campsite may be lost at new road connection to Loop C.	- Paved road, max. 20' double travel lane width. - Max. 11 campsites, including at least one host. - Hardstands sized for medium size vehicles, except larger host site. - Host site utilities: Full service. - Visitor site utilities: May have electric hookups only. Visitors will use existing restrooms and showers in this loop. Central water and gray water disposal. - Wetland mitigation likely.	Facility conversion may need to occur in conjunction with forest thinning. Campground access replacement is important due to threat of flooding or blockage of existing entrance road behind dune. Needed prior to removal of existing access road from Loop A/B road. Should follow construction of new program area.	County DSL/ACOE DEQ SHPO
R8.3	**Merge Loop A/B campsites with Loop D (rehab):** Merge about 12 campsites closest to Loop D on back side of A/B into Loop D.	- Wetland mitigation needed.	When removal of other campsites on back side of Loop A/B becomes necessary.	County DSL/ACOE SHPO
R8.4	**Convert registration & group camp to beach access (rehab):** Reduce registration road width, retain double lane width along its south edge, and remove booth. Reclaim north edge of road and plant as buffer between this road and new	- Road: Max. 20' double travel lane width, paved. - Parking loop: up to 40 cars, paved or gravel. - Confine parking loop to area behind artificial dune. Restore/plant group camp	Following completion of new registration area. Road rehab could occur in conjunction with development of new Loop C access.	County DSL/ACOE DEQ SHPO

	Loop C access discussed above. Convert group tent camp to beach access parking loop served by rehabilitated registration road. Install restroom at parking loop.	area beyond dune reach. - Restroom: Vault toilet. - Wetland mitigation needed.	Conversion of group camp to beach access should be completed with downsizing of day use parking in Zone 9, and should follow new group camp development.	
R8.5	**Office & maintenance area (rehab):** Remove office parking lot, reclaim and landscape. Relocate some parking along rehabilitated road in front of office, some to edge of maintenance yard, and some to new registration area. Storage garage may need remodeling to access from north side.		In conjunction with development of new Loop C access.	SHPO
R8.6	**Trails (new construction):** Develop bike trail connections from Loops C & D and new beach access parking to existing day use area and new campground area.	- 10' trail width, paved.		SHPO
R8.7	**Informational & interpretive signage (new construction):** Install informational and interpretive signage per detailed Interpretive Plan to follow the plan completion. Consider campground area for interpreting local Native American occupations and life ways. Install signage at existing program area site informing visitors about forest restoration project.			SHPO Siletz & Grand Ronde Tribes

Zone 9: Day Use Area Rehab Zone

Zone 9 includes the existing the picnic area, cabin area, hiker biker camp and large parking lot used mainly for beach access and picnicking. The Oregon Coast Trail extends southward through this Zone from the parking lot toward the cape. An interpretive site built into stone walls is located along the trail just south of the parking lot. Two trail bridges cross Jackson Creek where it flows to the ocean through this zone.

Erosion along this shoreline is occurring at variable rates, attributable to the variable surface geology, some of which is more resistant to erosion than the area to the north. Without successful intervention to control erosion, facilities closest to shore will eventually need to be moved to higher ground and a greater distance from shore. The most vulnerable facility is the picnic shelter. At the current average rate of erosion at this site, the shelter could be threatened in 15 to 20 years, or sooner with unusual storm activity.

Rehab of the oversized parking lot offers an opportunity to relocate or expand shoreline area facilities on higher ground, provided adequate day use parking is provided through redistribution of the parking capacity. Two alternative designs for rehab are presented for consideration.

Alternative 1 makes the most of opportunities to locate facilities for the best ocean views.
Alternative 2 makes the most of opportunities to locate major facilities to the highest ground.

Management Emphasis: Major emphasis on continued recreation with redesign and rehab to address ocean hazards and make the best use of limited shoreline area.

Zone 9: Natural Resource Management Projects
N 9.1 – Jackson Creek ford:
Replace the stream ford with a bridge and restore aquatic habitat conditions at this site.

N 9.2 - Forest management:
Thin the forest in and around the hiker biker camp to improve recreation setting and visitor safety, promote forest health and encourage understory growth.

N 9.3 - Invasive plant removal (restoration):
Remove English ivy and blackberry infestations from south end of picnic area. Remove English ivy infestation next to hiker biker camp.

Zone 9: Cultural Resource Management
- Follow protocols under OPRD's Cultural Resources policy for any ground disturbing activities.
- Explore possible historic significance of stone walls along trail corridor.

Zone 9: Scenic Resource Management
- Create aesthetically pleasing open green space from converted parking, designed in conjunction with facility siting.
- Blend structures with natural surroundings.

Zone 9: Key Operations
- Timely updates to emergency and evacuation procedures and related facilities, visitor information and staff training.
- Weed control along roads, parking, trails and Jackson Creek.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.

Table 10.9 - Zone 9 Recreation Facility Projects

Project #	Project / Action	Key Parameters & Guidelines	Timing	Reviews/ Approvals
R9.1	**Parking lot redesign (rehab):** Reduce parking lot size to capacity needed for typical summer weekend days, enough to serve full picnic area use. Reconfigure remaining parking area consistent with larger day use area redesign making room for expansion of adjacent facilities discussed below (2 concepts shown). Landscape area where pavement is removed.	- Retain at least 130 car spaces for day use activities. 16 of these should be double pull-through spaces to accommodate long vehicles. - Retain 24 additional car spaces for cabin occupants. - Plant reclaimed area with turf grass.	Timing will likely depend on other funding priorities for the park. However, expansion of picnic area and development of new cabin area, discussed below, must follow parking lot redesign.	County DEQ SHPO
R9.2	**Host site (new construction):** Develop host RV site at edge of the redesigned day use parking.	- Full service hookup site. - Screen with landscaping. - Wetland mitigation may be needed.	Timing will likely depend on other funding priorities for the park.	County DSL/ ACOE SHPO
R9.3	**Cabins (new construction):** Construct a new group of cabins over part of reclaimed day use parking lot, screened from redesigned parking with vegetation. Landscape cabin area with grass, trees and shrubs. (2 concepts shown.) Alternative 1 places cabins in southeast corner of reclaimed parking where the best ocean views are possible. A protective berm is shown on this illustration. Alternative 2 places the cabins in the northeast corner where the elevation is highest.	- Up to 6 deluxe cabins with internal bathrooms and kitchenettes. - Parking for all cabins along east edge of redesigned day use lot, 2 spaces per cabin. - Depending on potential views, orient cabins toward ocean or forest. - For better protection consider elevating cabins and/or constructing low landscaped berm between cabins and shore. Cabins will be designed for accessibility.	Timing likely depends on other funding priorities for the park. However, cabin development must follow redesign of day use lot.	County SHPO
R9.4	**Picnic area expansion (rehab):** Expand picnic area into northwest corner of reclaimed day use parking lot. Landscape with turf grass and sparse trees. Relocate picnic shelter to this site.	- Either move existing shelter or replace with new shelter. If replaced, new shelter should be at least as large as existing. Replaced shelter may be designed open sided for warm weather and enclosed for inclement weather.	Relocation of picnic shelter to higher ground must follow redesign of day use parking. Shelter could be threatened by shore erosion within 15 to 20 years, or sooner with increased storms.	County SHPO
R9.5	**Hiker biker camp (rehab):** Redesign part of hiker biker camp for better separation from day use parking and between some campsites, to add a few campsites, to make room for host site discussed above, and to add a gathering shelter. Construct small gathering shelter for hikers and bikers. Redesign and simplify trails through the area to improve hiker biker privacy. Relocate nature trail use to relocated program area (which includes interpretive trail). In addition to existing day use restrooms, hikers and bikers may use	- Up to 20 total campsites (15 or 16 currently exist). - Relocate 4 campsites closest to existing parking lot to make room for new shelter and host site. - Realign trails for better separation from other trail uses. Sign trail junctions encouraging others to respect camper privacy. - Locate shelter at edge between hiker biker area and picnic area. - Shelter size should accommodate up to 20 people.	Timing of this project will likely depend on other funding priorities for the park.	County DSL/ ACOE SHPO

	closer vault toilets at redesigned day use parking area or at new beach access parking loop discussed above. They will continue using showers in existing campground.	Should include fireplace or wood stove. - Provide lockers with plug-ins for recharging cell phones. - Minor wetland mitigation may be needed.		
R9.6	**Bike trails (new construction):** Develop bike trail loop around redesigned day use area. This will be terminus of core area bike trail system. Coast Trail and hiking trails in hiker biker area will connect to bike loop.	- 10' wide trail paved.		SHPO
R9.7	**Informational & interpretive signage (new construction):** Install informational and interpretive signage per Interpretive Plan to follow the plan completion. Consider interpretive panels near the picnic area describing the dynamic coastline, shoreline erosion, and stabilization efforts. At existing stone wall interpretive site, consider interpretive panels describing CCC and their contribution to the park in addition to other elements of park history.			SHPO

Zone 10: New Campground Zone

Zone 10, located mostly east of the Jackson Creek diversion channel and between the park entrance road and the county road, is the suitable area for new recreation facility development including new park entrance facilities, campsites, program area, and major expansion of the core area trail system. This is part of the overstocked plantation forest discussed under Zone 3. A wetland system divides this area, and the topography is variable, which adds to the challenges of fitting new facilities with site limitations. Thinning of the overstocked forest is a vital project for creating a desirable recreation setting while improving forest health and diversity.

The large existing drainfield that serves most of the park facilities is included in this Zone. This a key feature affecting new campground design and capacity. Two alternatives for campground design are presented, based on two different assumptions regarding the drainfield.

The preferred alternative (Alternative 1) involves downsizing the drainfield with the addition of pretreatment facilities and using part of the drainfield area for campground development. The second alternative assumes that the entire drainfield area will be retained, and all development will be sited to avoid encroachment. For both alternatives, the drainfield will be revegetated to function as an informal play area for campers.

Zone 10 will play a key role in circumstances involving emergency evacuation, with a new emergency access connection to the county road, and the drainfield converted to play area also designated as a gathering place in such emergencies.

Management Emphasis: Major emphasis on recreation with new facility development coupled with forest management.

Zone 10: Natural Resource Management Projects
N 10.1 – Dense plantation forest:
Thin the overstocked plantation forest to improve the setting for recreation, promote forest health, improve structural diversity and encourage understory growth. Plant understory vegetation in key areas to enhance recreational setting, provide visual screening for campsites and other facilities, help direct foot traffic flow and enhance botanical diversity. Initial thinning operations needed as soon as possible to begin long term improvement of recreation setting and recovery to healthy forest conditions.
N 10.2 - Program area grounds:
Thin the young forest where the new program area is planned, creating some open area with sparse tree cover. Program facilities discussed below will be located at the edges of the open area.

Plant understory and groundcover species in open area to improve botanical diversity and habitat conditions, discourage weed growth, enhance recreational setting, provide visual screening where needed and help direct foot traffic flow. Site planning for program area grounds will include design of forest opening and understory and groundcover plantings. Intent is to enhance visual setting and potentially attract wildlife species that frequent forest openings.
N 10.3 - Drainfield:
Remove wood chips covering drainfield area and plant with species appropriate for recreation setting and drainfield function. Intent is to create desirable visual setting and informal open play area compatible with drainfield operation. Active drainfield units should be planted with turf grass. Any other vegetation over active units must be shallow rooted to avoid interference with drain lines. Reserve areas should also be planted with grasses. Planting some tree and shrub clusters in reserve areas is desirable for shade.

Zone 10: Cultural Resource Management
- Follow protocols under OPRD's Cultural Resources Policy for any ground disturbing activities.

Zone 10: Scenic Resource Management
- Blend structures with natural surroundings. Use vegetation screening where needed.

Zone 10: Key Operations
- Timely updates to emergency and evacuation procedures and related facilities, visitor information and staff training.
- Weed control along roads, parking, trails and stream diversion channel, and around camping areas.
- Management of human refuse through placement and regular maintenance of trash and recycling receptacles and periodic clean up activities.
- Hazard tree management.

Table 10.10 - Zone 10 Recreation Facility Projects

Project #	Project / Action	Key Parameters& Guidelines	Timing	Reviews/ Approvals
R10.1	**Emergency county road access (new construction)** Construct gated emergency service road from end of drainfield service road to county road at southeast corner of drainfield. (Existing drainfield service road already reaches from park road to within 200' of county road.) With new campground development discussed below, this access will connect new campground road to county road and double as part of bike trail system.	- Paved, 12' width. - Minor wetland mitigation may be needed.	ASAP. Currently there is no road access to park's core area other than main entrance road.	County DSL/ ACOE DEQ SHPO
R10.2	**Park entrance road (new construction):** Develop new park entrance road from straight stretch of county road south of existing entrance, to new registration area discussed below. New road will cross and descend moderate slope, requiring significant cut and fill, and cross narrow wetland system. Install entrance sign and gate.	- Locate entrance for optimal sight distance looking south, optimally 500'. - Paved, max. 20' double travel lane width. - Some wetland mitigation needed.	Prepare engineering design for replacement of existing entrance when need or opportunity arises. Construction will become necessary with increased flooding of existing entrance road.	County DSL/ ACOE DEQ SHPO
R10.3	**Registration area (new construction):** Develop new registration area along new entrance road discussed above. Could be designed with drive-through booth, or walk-up booth or welcome center with parking. (Welcome center with parking concept shown.) Include express check in station. Welcome center may include staff offices, restrooms, lunch room, information display, reception and registration area.	- Welcome center option would include parking for 20 cars & 6 long vehicles. May be less with walk up booth. - Include 4 additional car spaces for staff. - Offices for 2 staff with welcome center option.	Develop with new campground discussed below. However, interim registration area discussed below could be functional prior to construction of new park entrance road, with access from the existing park entrance road via connector road 1 discussed below.	County DEQ SHPO
R10.4	**Overflow parking / interim registration area (new construction):** Develop overflow parking lot at junction of new entrance road, new campground access road and Connector Road 1. The site is along the existing drainfield service road corridor. This lot's long term purpose should be for overflow day use parking. Could be designed to function as interim registration area until new entrance road and permanent registration area are developed. Develop a host site next to parking lot.	- Up to 50 car spaces. 10 of these should be double pull-through spaces to accommodate a total of 5 long vehicles. - This lot is potentially expandable if more parking capacity is needed over time. - Full service hookups at host site. - Minor wetland mitigation may be needed.	Optimally develop for overflow parking prior to downsizing existing day use parking. If used for interim registration, develop with new campground and prior to removal of existing registration area.	County DSL/ ACOE DEQ SHPO

R10.5	**Park Connector Road 1 (new construction)** Develop a connector road from existing park road to new park entrance road and to new campground access road along an alignment near drainfield service road. Could serve as connector between existing park facilities and new park development without completion of Connector Road 2 discussed below.	- Paved, 20' double travel lane width. - Minor wetland mitigation may be needed.	Needed if new campground is opened prior to construction of new park entrance, using interim registration area discussed above. Also needed if new park entrance is developed, existing park entrance is decommissioned and Connector Road 2, discussed below, is not developed. Not needed if new park entrance and Connector Road 2 are both developed, but could still serve as interim or alternate connection.	County DSL/ ACOE DEQ SHPO
R10.6	**Park Connector Road 2 (new construction):** Develop connector road from existing park road by park office to new road serving new campground discussed below. This road could serve as connector between existing and new park development without completion of Connector Road 1 discussed above. This road would be at higher elevation than Connector Road 1. As such, with development of new park entrance road discussed above, would serve as long term reliable connection through park if problems with ocean flooding reach Connector Road 1.	- Paved, 20' double travel lane width. - Wetland mitigation likely needed.	Needed with development of new park entrance if Connector Road 1 is not developed, or if ocean flooding reaches elevation of Connector Road 1.	County DSL/ ACOE DEQ SHPO
R10.7	**Drive-in campground (2 concepts presented) (new construction):**			
	Alternative 1: In this concept, drive-in campground would be developed around north, northwest and northeast edges of drainfield, partially occupying existing drainfield area with upgrade of sewage pretreatment and reduction in drainfield size. Campsite amenities will generally reflect visitor preferences expressed in 2010 Cape Lookout Visitor Study, also considering mix of campsite types in existing campground and campsites of each type likely to be lost in future.	- Campground road: 20' double travel lane width. - Campsites: Max. 42 sites including at least 1 host site. - Hardstands: Most sized for small or medium size vehicles. Approximately 20% may be sized for large RVs. - Utilities at host sites: Full service hookups. - Utilities at visitor campsites: Approximately 20% of new drive-in sites may have full service hookups. Remainder will have no utility hookups. - Central restrooms with flush toilets and showers.	- Campground construction preceded by initial thinning of dense forest. Following that, construction timing depends on funding priorities.	County DSL/ ACOE DEQ SHPO

		- Central potable water and gray water disposal. - Minor wetland mitigation may be needed.		
	Alternative 2: In this concept, drive-in campground would be developed on west side and north end of drainfield, located to avoid encroachment on drainfield area. Campsite amenities will generally reflect visitor preferences expressed in 2010 Cape Lookout Visitor Study, also considering mix of campsite types in existing campground and numbers of campsites of each type likely to be lost in future.	- Campground road: 20' double travel lane width. - Campsites: Max. 26 sites, including at least 1 host site. - Hardstands: Most sized for small or medium size vehicles. Approximately 20% may be sized for large RVs. - Utilities at host sites: Full service hookups. - Utilities at visitor campsites: Approximately 20% of new drive-in sites may have full service hookups. Remainder will have no utility hookups. - Central restrooms with flush toilets and showers. - Central potable water and gray water disposal. - Minor wetland mitigation may be needed.	Campground construction should be preceded by initial thinning of dense forest. Following that, construction timing depends on funding priorities.	County DSL/ ACOE DEQ SHPO
R10.8	**Group tent camp (with drive-in campground Alternative 2 only) (new construction):** (This group camp works with drive-in campground Alternative 2 only. In Alternative 1, this area would be occupied by part of drive-in campground.) Develop walk-in tent campground with common parking area on east side of drainfield, with campsites situated around open gathering area, optimally spaced to accommodate either group camping or separate camping parties.	- Campsites: Max. 15 sites. - Common parking area: 20 car spaces. - Utilities: Central restroom building with flush toilets. Central potable water & gray water disposal facilities. - Wheel barrow & firewood storage: At parking area.	Campground construction should be preceded by initial thinning of dense forest. Optimally, complete prior to conversion of existing group camp to beach access.	County DEQ SHPO
R10.9	**East walk-in camp (new construction):** Develop walk-in campground with common parking area northeast of drainfield. A narrow wetland system extends through this area. For part of campground, situate campsites around cleared opening, optimally spaced to serve either groups or individual camping parties.	- Campsites: Max. 20 sites. About half of these should be situated around cleared opening for group use. - Parking: Max. 40 car spaces, or 2 per site. - Utilities: Central restroom building with flush toilets. Central potable water & gray water disposal facilities. - Wheel barrow & firewood storage: At parking area. - Minor wetland mitigation may be needed.	Campground construction should be preceded by initial thinning of dense forest. Following forest thinning, timing of campground construction depends on funding priorities.	County DSL/ ACOE DEQ SHPO
R10.10	**South walk-in camp (with drive-in campground Alternative 1 only) (new construction):**	- Campsites: Max. 17 sites . - Parking: Max. 34 car spaces, or 2 per site.	Campground construction should be preceded by initial	County DSL/ACO E

	(This campground works with drive-in campground Alternative 1 only. With Alternative 2, this area would be occupied by part of drive-in campground.) Develop walk-in campground with common parking area on west side of drainfield, with campsites situated around cleared opening, optimally spaced to accommodate either group camping or separate camping parties.	- Utilities: Central restroom building with flush toilets. Central potable water & gray water disposal facilities. - Wheel barrow & firewood storage: At parking area. - Minor wetland mitigation may be needed.	thinning of dense forest. Following forest thinning, timing of campground construction depends on funding priorities.	DEQ SHPO
R10.11	**Central walk-in camp (new construction):** Develop walk-in campground with common parking area north of proposed new program area discussed below. Campsites will be located where they fit between interspersed wetlands. Access will be from proposed connector road 2 discussed above.	- Campsites: Max. 10 sites. - Parking: Max. 10 car spaces, 1 per site. - Utilities: Central restroom building, probably vault toilet. Central potable water & gray water disposal. - Wheel barrow & firewood storage: At parking area. - Minor wetland mitigation probably needed.	Campground construction should be preceded by initial thinning of dense forest. Following forest thinning, timing of campground construction depends on funding priorities.	County DSL/ ACOE DEQ SHPO
R10.12	**Program area (new construction):**			
	Program area grounds: Develop new program area to serve both existing and new park use areas, located southeast of park office between existing park road and creek diversion channel. Proposed Connector Road 2, discussed above, shirts north edge of grounds. Develop limited parking for program area near west end of new Connector Road 2. Specific design of grounds, the facilities described below, programs, media, etc. will be based on detailed Interpretive Plan to be developed followed completion of the plan.	- Per project N10.2 above, thin forest and create open area with sparse tree cover, strategically designed in conjunction with facility locations based on interpretive plan. Intent is to enhance recreation setting of grounds, and potentially attract wildlife that use forest openings. - Retain wide forested buffer, at least 100' and preferably more, between program area facilities and Connector Road 2.	Basic facilities of new program area should be developed in early phase of the plan implementation, to prepare for conversion of existing program area.	SHPO
	Program center: Construct a building designed for program area activities. May include space for meetings, interpretive displays, volunteer office, restrooms and storage. Should include covered outdoor gathering area. Develop limited parking for program area near west end of new Connector Road 2.	- May be a yurt, preferably hard sided. - Parking for program facilities: 15 car spaces. - For interim use prior to construction of this facility, the existing program area yurt may be relocated to this site.	Optimally develop in early phase of the plan implementation, to prepare for conversion of existing program area.	County SHPO
	Camp talk amphitheater: Develop a camp talk amphitheater, either a new structure or relocation of existing amphitheater.	- Amphitheater capacity, at least equal to existing amphitheater, should be determined based on interpretive plan. - Locate and orient amphitheater to minimize potential for disturbance from traffic on Connector Road 2.	Should be developed in early phase of the plan implementation, to prepare for conversion of existing program area.	County SHPO

	Wildlife viewing blind: Construct wildlife viewing structure at edge of mature native forest adjacent to program area.	- Locate at optimal distance from other facilities and orient for viewing of birds and other wildlife that use adjoining habitats including mature forest, wetlands and forest opening.	May be developed in conjunction with or following construction of other program facilities.	County SHPO
	Natural play area Consider developing a natural play area as one of the program area features. Optimally the natural play area should include a stream feature.			
	Interpretive trail: Develop interpretive trail loop beginning at program center and extending through adjacent mature forest.	- Part of trail loop will double as part of bike trail system, and part will allow only pedestrian access. - Locate west segment of interpretive loop at least 150 feet from existing day use parking area.	May be developed in conjunction with or following construction of other program facilities.	County DSL/ ACOE DEQ SHPO
R10.13	**Trails (new construction):** Trails in this zone will mostly skirt edges of new campground area, connecting to new park entrance and existing campground and day use areas. Main trails will be bike trails. Hiking only trails will mainly serve walk-in camps and segment of interpretive loop.	- Bike trails 10' wide, paved. - Hiking trails 3-5' wide.		SHPO
R10.14	**Informational & interpretive signage (new construction):** Install informational and interpretive signage per detailed Interpretive Plan to follow the plan completion. Along interpretive trail, install panels interpreting marbled murrelets and other species closely associated with or potentially using this forest habitat type. Trail signage at junctions.			SHPO

(10-3 &

10-4 Design Concept maps here)

Chapter 11

Reviews and Approvals

Land Use Authority

Development of the park uses and facilities described in this Plan is governed by Tillamook County under the provisions of County's Comprehensive Plan, which is acknowledged by the Land Conservation and Development Commission (LCDC) pursuant to the statewide land use goals, statutes and related administrative rules.

This Plan serves as the "master plan" for the park as defined under OAR 736 Division 18 and OAR 660 Division 34, and has been formulated through the planning process described under those rules. The planning process includes procedures for coordinating with affected local governments to assure that the Plan is compatible with the County's Comprehensive Plan.

Land Use Review

Prior to OPRD's adoption of this Plan, a land use approval by Tillamook County is required unless all of the planned park projects are determined by the County to be compatible with the local comprehensive plan and zoning ordinance. "Compatible" means that development permits may be approved for all of the planned park projects without first amending the County's comprehensive plan or zoning ordinance, or that the language of this Plan specifically states that a local plan or ordinance amendment will be needed prior to construction of any project that is not compatible. Before adopting this Plan, OPRD will request that County planning staff review the draft Plan for the park for land use compatibility.

Development Permits for Park Projects

Development permits will be required for most of the development projects described in this Plan. Prior to beginning construction of any project, the project manager is responsible for consulting with County planning staff and obtaining the necessary development permits. The specific requirements for obtaining development permits for a project, and the kind of local permitting process required, will vary from one project to another. The time required for completing the development permitting process will also vary, and the project manager should assure the permitting process is completed prior to the target date for beginning construction. Prior to issuance of development permits, the County will review the project plans and specifications to assure the project proposed for construction is consistent with the description of the project in this Plan and with any applicable development standards in the County's ordinances.

Variations from this Plan

Under the provisions of OAR 736-018-0040, OPRD may pursue development permits for a state park project that varies from this Plan without first amending the Plan provided that the variation is minor, unless the Plan language specifically precludes such variation. Any specific project design elements that cannot be changed by applying the "Minor Variation" rule are indicated in the design standards for the projects in the Plan. The OPRD Director must determine that a proposed variation from the Plan is "minor" using the criteria in OAR 736-018-0040. A minor variation from the Plan, which is approved by the Director, is considered to be consistent with the Plan contingent upon the concurrence of the affected local government.

Rehabilitation of Existing State Park Uses

State laws allow OPRD to continue any state park use or facility that existed on July 25, 1997. (See ORS 195.125 and OAR 660-034-0030(8).) The laws allow the repair and renovation of facilities, the replacement of facilities including minor location changes, and the minor expansion of uses and facilities. Rehabilitation projects are allowed whether or not they are described in a plan for the park. These projects are subject to any clear and objective siting standards required by the affected local government, provided that such standards do not preclude the projects. Prior to applying for development permits for a project involving a minor location change of an existing facility or minor expansion of an existing use or facility, the OPRD Director must determine that the location change or expansion is "minor" using the criteria in OAR 736-018- 0043. A determination by the Director that a proposed location change or expansion is minor is contingent upon the concurrence of the affected local government.

Cultural Resource Reviews and Approvals

Management of historic and archeological resources in state parks is carried out in accordance with OPRD Commission Policy 20-02. In the planning process, OPRD involves the State Historic Preservation Office (SHPO) and interested Native American Tribes in identifying any potential conflicts with important cultural resource sites and in formulating appropriate strategies for avoiding or mitigating impacts. When implementing park projects, OPRD works with SHPO to secure project approval for any project that has a potential impact on a cultural resource site. OPRD will also continue working with the Confederated Tribes of Grand Ronde and Confederated Tribes of Siletz Indians, as well as any local interests, to ensure any important cultural resources of Cape Lookout are preserved and protected.

Emergency Management

OPRD strives to provide recreation experiences that are safe for staff, visitors, and the surrounding community. The life-safety aspects of facility and infrastructure development are reviewed during the county land use permitting process.

OPRD has additional responsibility beyond the local land use jurisdiction. Park managers are responsible for developing and updating emergency management plans under OPRD policy 70-04. A review of Cape Lookout's emergency management plan for any needed updates will occur as one of the first steps in implementing the new Plan for the park. This will be completed in consultation and coordination with affected state and local emergency service providers.

Appendix A

Plant Community Coarse Mapping Unit Descriptions

The following descriptions of coarse level plant community mapping units for the core area of the park are correlated to Map 3-12 in Chapter 3.

Mapping Unit F01: Late-seral mixed conifer forest

This forest type occurs south of the day use parking lot between Jackson Creek's natural channel and diversion channel. It has never been logged and is in excellent ecological condition. Tree diameters are generally large, some as large as 7 feet at breast height. Sitka spruce is the primary species of the dominant canopy layer. Western hemlock is the primary second cohort, growing in the shade of the older sitka spruce trees. Understory shrub composition is primarily evergreen huckleberry and salal with patches of salmonberry. The shrub layer is sometimes extremely dense. In other areas, the understory is very sparsely vegetated. Naturally fallen trees are generally abundantly. Root tip-ups are common, and the resulting holes are often wetlands. The terrain has hummocky topography that results both from the soil's historical origin as a landslide, as well as from the root tip-ups and rotten stumps and platforms of woody debris in advanced states of decay that function as elevated platforms of soil. The elevated platforms of decayed logs and stumps are usually densely vegetated with species identical to those of the mineral soils. Significant portions of this forest type are wetlands, either in troughs of the hummocky topography or along channels and draws. Part of the area has terraced wetlands along the major draw that appear to have been formed by log dams that are now in advanced stages of decay. Some areas of water seepage may be a result of leakage from the creek diversion channel. Within this late-seral forest type it is difficult to say where or how significantly this is a factor, especially since adjacent beaver ponds and Jackson Creek's natural channel also contribute seepage. In addition, the landslide-derived soils may contain a patchy permeable layer of rock or gravels that allow for percolation from nearby higher ground. Overall, this type is an unmappable mosaic of wetlands. Most of the wet areas have very little understory vegetation due to the dense shade of the overstory. This forest type is of extremely high conservation priority as defined by combined factors of age class, condition, and plant community conservation ranking.

Mapping Unit F02: Late-seral spruce forest

This forest type, located south day use parking lot, has never been logged and is in excellent ecological condition except in close proximity to trails and roads. Tree diameters are generally large, some as large as 5 feet at breast height. Sitka spruce is the primary species of the dominant canopy layer. Western hemlock is the primary second cohort, growing in the shade of the older sitka spruce trees. Western red cedar is present in the wetter areas. Understory shrub composition is a complicated mix depending on wetness of soils. Salmonberry, red elderberry, salal and evergreen huckleberry are common. The shrub layer is mostly extremely dense. Naturally fallen trees are generally abundantly. Root tip-ups are common, and the resulting holes are often wetlands. The terrain has a hummocky topography that results both from the soil's historical origin as a landslide, as well as from the root tip-ups and rotten old stumps and platforms of woody debris in advanced states of decay that function as elevated platforms of soil.

The elevated platforms of decayed logs and stumps are usually densely vegetated with species identical to those of the mineral soils. Wetter portions of this type are usually colonized by slough sedge, skunkcabbage, small-fruited bulrush, and/ water parsely. Drier parts are usually swordfern and deerfern dominated in the herb layer. Some of the mesic ground is colonized by devils club. Much of this cover type is on a relatively flat stream terrace with abundant microtopography from root tip-ups. Microtopography results in rice-paddy terraces, ponds, channels, and swamp. These features house patches of locally dominant salmonberry, slough sedge, red elderberry, western swordfern, and devilsclub. The habitat is a complicated mosaic. Fallen trees and tip-ups cause pockets of diverse seral stages and allow for a very uneven canopy age distribution. Significant portions of this type are wetlands, either in the troughs of hummocky topography or along channels and draws. Two adjacent beaver ponds and Jackson Creek's natural channel also contribute to the hydrology. In addition, the landslide-derived soils may contain a patchy permeable layer of rock or gravels that allow for percolation from nearby higher ground. This forest type is of extremely high conservation priority as defined by combined factors of age class, condition and plant community conservation ranking.

Mapping Unit F03: Late-seral to mature mixed conifer forest

Forest type F03, located east of and adjacent to the day use parking lot, has also never been logged and is in excellent ecological condition. Tree diameters are generally large, as much as 6 feet at breast height. Sitka spruce is the primary species of the dominant canopy layer. Western hemlock is the primary second cohort, growing in the shade of the older sitka spruce trees. Understory shrub composition is primarily evergreen huckleberry and salal with patches of salmonberry, but there are significant areas of red huckleberry and fools huckleberry, as well as some isolated areas of waxmyrtle. The shrub layer is extremely dense. Naturally fallen trees are generally abundantly. Root tip-ups are common, and the resulting holes are sometimes wetlands. The hummocky topography results both from the soil's historical origin as a landslide, and from the root tip-ups and rotten old stumps and platforms of woody debris in advanced states of decay that function as elevated platforms of soil. The elevated platforms of decayed logs and stumps are usually densely vegetated with species identical to those of the mineral soils. Some of the troughs in the hummocky topography contain possible wetlands. There are quite a few large diameter snags, some in advanced stages of decay. This forest type is of extremely high conservation priority as defined by the combined factors of age class, condition, and plant community conservation ranking.

Mapping Unit F04: Mature alder forest with emerging young to mid-aged mixed conifers

This forest type primarily occurs as a successional stage in what will eventually become coniferous forest in the absence of repeated disturbance. The age class is recorded as mature based on the age of the alder overstory. The emerging conifer component is young and somewhat suppressed by the alder. Understory composition varies widely with soil wetness. Drier representatives are dominated by swordfern, wetter areas are dominated by slough sedge and skunk cabbage. Some portions of this type are wetlands, and others are uplands. The driest representatives are always in previously logged areas.

Areas mapped within this type that have not been logged are either wet or subject to repeated disturbance. Weeds are seldom prominent in these communities, and condition ranges from good to excellent. Conservation rankings are not very high.

Mapping Unit F05: Mature mixed conifer and alder forest

Plant communities within this forest type are characterized by a mixed canopy of sitka spruce, western hemlock, western redcedar, and red alder. The prominence of red alder indicates wetness. Some areas occur along streams and draws, others along the shore of Netarts Bay. In the wettest areas, this type usually includes slough sedge, skunk cabbage, and/or water parsely. In the somewhat drier areas, or where a mosaic of uplands and wetlands occur within this type, swordfern, deer fern, lady fern, youth on age, and coltsfoot are more prominent. Salmonberry is generally the predominant shrub, although salal, evergreen huckleberry, red elderberry, and black twinberry co-occur variably. The age class is mature based on the age and size of the conifer component, which is usually over 20” in diameter. The alder component is smaller and younger, but often mature.

Mapping Unit F06: Mature mixed conifer forest

This forest type has never been clearcut, and is in excellent ecological condition. Tree diameters are generally large and can be as much as 6 feet at breast height. Sitka spruce is often the primary species of the dominant canopy layer. Western hemlock is the primary second cohort, growing in the shade of the older sitka spruce trees. Western red cedar is patchily prominent, and some of the largest trees and snags in the study area (south of the office and day use parking lot) are of this species. Understory shrub composition is primarily a mix of evergreen huckleberry, salal, and salmonberry. The shrub layer is usually extremely dense. Naturally fallen trees are generally abundant. Root tip-ups are common, and the resulting holes are sometimes wetlands. The topography is hummocky. Root tip-ups, rotten stumps and logs, and platforms of woody debris in advanced states of decay function as elevated platforms of soil. The elevated platforms of decayed logs and stumps are usually densely vegetated with species identical to those of the mineral soils. Significant portions of this type are wetlands, either in the troughs of hummocky topography or along channels and draws. A small portion of this type south of the office and day use parking lot appears to have been salvage logged after a storm event more than 50 years ago. There are scattered springboard stumps, but not many. The canopy of the older tree cohort is mostly intact. An area near the dump station has a relatively sparse cover of the older cohort of trees and a dense growth of the mid-aged conifer 2nd cohort. Ecological condition within this cover type ranges from marginal in some areas (due to trampling) to essentially pristine in others. This vegetation type is of generally of significant conservation priority as defined by the combined factors of age class, condition, and plant community conservation ranking.

Mapping Unit F07: Mature spruce forest

Forest type F07 occurs around the cabins and day use area and includes riparian area associated with Jackson Creek. This type is composed of nearly even aged mature spruce with average diameters in the 15-25” DBH range. There are some scattered larger remnants and some areas where the diameters are slightly smaller, but these stands exhibit mature forest character. Understory vegetation is densely shrubby, and consists largely of salal, but there are areas of black twinberry, evergreen huckleberry and salmonberry prominence. Wet areas are commonly colonized by slough sedge and skunk cabbage. Nootka reedgrass is often prominent on drier ground. Conservation rankings are high, and condition ratings are decent. Where condition is degraded, it is often due to weeds such as English ivy or trampling.

Mapping Unit F08: Mature spruce-alder forest

This forest type occurs in wetlands in several locations along the interface between forested habitat and Netarts Bay salt marsh. Slough sedge and skunk cabbage are dominants of the herb layer. Salmonberry, salal, black twinberry, and evergreen huckleberry are prominent in some areas. The swampiest areas have light shrub cover and dense slough sedge and skunk cabbage. Small-fruited bulrush and ladyfern are sometimes prominent. Conifer overstory trees are generally of relatively large diameter. These wetland communities are of high conservation ranking. Condition is generally good, but the westernmost instance is being encroached upon by Armenian blackberry.

Mapping Unit F09: Mid-aged alder forest

Forest type F09 occurs in wet areas of forest that were clearcut logged or otherwise disturbed. Wetter soils favored the establishment of alder over conifers. Alder age and size in these areas is not yet that of a mature alder stand. Conifers are present in the understory of the alders. Alder diameter averages 10 inches DBH.

Mapping Unit F10: Mid-aged cedar-alder forest

Forest type F10 occurs in two very small pockets near the Jackson Creek diversion channel. Both are dominated by western red cedar which is relatively uncommon in the study area. Understory composition is dominated by evergreen huckleberry deer fern and sword fern. Average western red cedar diameter is 12” DBH. The hydrology of this community may be primarily influenced by seepage from the diversion channel.

Mapping Unit F11: Mid-aged hemlock-alder forest

This forest type occurs in an area that was clearcut logged approximately 50 years ago. The forest is even aged and overstocked in conifer dominated areas, where crown ratios are mostly less than 35%. Alder dominated patches are prominent, and the densest understory composition occurs in these areas. Average tree diameter is approximately 12” DBH. Evergreen huckleberry and salal are the primary shrubs, although salmonberry, red huckleberry, and fools huckleberry are occasionally prominent. Swordfern and deer fern are the dominant herbs. The understory is very sparse and open over most of the area covered by this forest type. Small diameter down woody debris is abundant, as suppressed trees are beginning to die, fall, and form low jack-straw webs in some places. There are many large stumps and old logs and logging slash. The terrain is relatively flat, but somewhat benchy and hummocky. Conservation priority and rankings are low. Forest stand management is needed to salvage stand structures and steer the stand’s trajectory toward a healthy structure. Under planting may be necessary. Forest stand management should begin soon, before crown ratios dip consistently below 25%.

Mapping Unit F12: Mid-aged mixed conifer and alder forest

This forest type occurs primarily in previously clearcut areas where conditions were such that conifers did not easily out-compete alders. Many of these areas are riparian or wetland, or mosaics of wetland and upland. Portions of the area mapped as this type are spruce-alder swamp. Stand age is approximately 50 years old over much of the area. Average coniferous tree

diameter is approximately 12-18" DBH. Evergreen huckleberry and salal are the primary shrubs in the upland portions. Salmonberry is dominant in the wetland areas. There are some areas that are densely colonized by red elderberry. Swordfern and deer fern are the dominant herbs. There are many large stumps and old logs and logging slash. The terrain is relatively flat, but somewhat benchy and hummocky. Portions near the county road can be somewhat steeply sloped. Conservation priority and rankings are low. Forest stand management is needed to salvage stand structures and steer the stand's trajectory toward a healthy structure. Underplanting may be necessary. Forest stand management should begin soon, before crown ratios dip consistently below 25%.

Mapping Unit F13: Mid-aged mixed conifer forest

Much of the area within this forest type is around the new drainfield. This forest was clear cut logged approximately 50 years ago. The forest is primarily even-aged and densely overstocked. Species composition is mixed to patchily dominant sitka spruce, western hemlock, and western redcedar. Crown ratios are mostly less than 35%. Average tree diameter is approximately 12-15" DBH. Evergreen huckleberry and salal are the primary shrubs, although salmonberry is sometimes prominent, especially on the edges of alder types and near wetlands. Swordfern and deer fern are the dominant herbs. Over most of the area the understory is very sparse and open. Small diameter down woody debris is prominent as suppressed trees are beginning to die, fall, and form low jack-straw webs in some places. In areas of this type adjacent to the campground and office grounds, there are some remnant larger diameter trees, but the stands are mostly densely stocked with smaller trees. Portions of the area within this forest type contain wetlands. The wettest areas approach developing spruce swamp, with slough sedge, skunk cabbage, and water parsely as dominants in the herb layer. There are many large stumps and old logs and logging slash. English ivy is present in a few areas and appears to be spreading. The terrain is relatively flat, but somewhat benchy and hummocky. Conservation priority and rankings are low. Forest stand management is needed to salvage stand structures and steer the stand's trajectory toward a healthy structure. Under planting may be necessary. Forest stand management should begin soon, before crown ratios dip consistently below 25%.

Mapping Unit F14: Mid-aged spruce forest

This type occurs in both previously logged and natural forest stands. In both cases it is characterized by densely stocked, even-aged spruce forest with average diameters in the 12-17" DBH range. Understory composition varies substantially between previously logged and natural stands. The previously logged stands have generally very depauperate understories characterized by sparse salal and evergreen huckleberry in the shrub layer and sparse sword fern and deer fern in the herb layer. Where the previously logged sites are wetlands or at least have higher soil moisture, hedge nettle, seaside bittercress, golden saxifrage, and spreading wood fern become more prominent. Skunk cabbage and slough sedge patches are occasional in wetter areas. Natural stands within this type tend to be more richly vegetated in their understories, especially where sunlight is able to enter from the side (where the forest has a sharp edge abutting the ocean shore). In the non-wetland representatives of the more richly vegetated sites, salal and blacktwinberry are prominent in the shrub layer and Nootka reedgrass, swordfern, and false lily of the valley are prominent in the herb layer. Wetland representatives of the type are characterized by increased stocking of salmonberry, along with a shift of the herb layer to skunkcabbage, water parsely, and slough sedge. Interestingly as shade increases, slough sedge

fades but skunk cabbage remains prominent. In some wetlands within densely shaded areas, the forest composition approaches sitka spruce with a depauperate understory of skunk cabbage, with sword fern, deer fern, salal, and evergreen huckleberry sparsely showing on raised hummocks and non-wetland edges. Previously logged portions of this type are decidedly in need of forest management to salvage stand structures and steer the stand's trajectory toward a healthy structure. Under planting may be necessary. Forest stand management should begin soon, before crown ratios dip consistently below 25%. Areas that have not been previously logged may also benefit from forest management, but since these sites are along the shoreline, increased exposure to additional wind penetration and risk of blowdown make forest operations slightly more complicated. Additionally, these areas contain day use facilities, trails, and hiker-biker campsites. Condition within previously logged areas is degraded primarily by evidence of logging, overstocking of the canopy, and depauperate understories. Condition within natural stands is often degraded by networks of trails, trampling, and infestations of common "lawn weeds", as well as English ivy and occasional blackberry.

Mapping Unit F15: Mid-aged spruce-alder forest

Most of the area mapped as this forest type is spruce-alder swamp. One area is upland adjacent to wetland, and has moist soils that support mesic herb species not seen at dry sites. Swamp habitat within this type is characterized by prominence of black twinberry in the shrub layer, and by slough sedge, water parsely, and skunk cabbage in the herb layer. The mesic site within this type is characterized by red elderberry in the shrub layer, and by sword fern, seaside bittercress, Siberian miner's lettuce, and lady fern in the herb layer. One area of this type's swamp variant is changing due to recent alterations of hydrology and perhaps influx of salinity. Many of the spruce trees in the overstory are dying. This stand will likely convert to an alder stand type in the relatively near future as spruce continue to die out. The swamp variant is of very high conservation significance. The mesic site is of low significance.

Mapping Unit F16: Mid-aged spruce-douglas fir forest

Forest type F16 is represented by a single polygon that occurs in association with a draw and small seasonal stream channel. It differs from neighboring forest primarily in the prominence of douglas-fir in the overstory. This polygon is a gradient from upland to wetland. The upland portion is characterized by a depauperate understory of swordfern and deer fern, and the wetland is characterized by prominence of water parsely, hedge nettle, and Siberian miners lettuce. Lady fern, golden saxifrage, and seaside bittercress are variably prominent in wetter portions.

Mapping Unit F17: Uneven-aged mixed conifer and alder forest

This type is represented by a single polygon that represents a swale and system of mosaic wetlands. The canopy is uneven-aged due to the impact of a past blowdown event and varies between mature and old forest. Spruce diameters average 36" DBH. Hemlock diameters average 25" DBH. Alder is younger and smaller, but is mature. The blow down event took place at least 73 years ago as it is visible on 1939 aerial photographs. Alder became established in large quantities after the blow-down event opened up the conifer canopy and allowed increased light penetration. Due to the wet growing conditions here and fast rate of growth of alder, the alder was able to out-compete conifers in the initial colonization. As alders age and senesce, conifers should again regain dominance. The hydrology of this area may have been made wetter by the

Jackson Creek diversion channel, specifically because of subsurface leakage from the channel into the lower ground of the swale. However, since this area is a swale with defined channels and well developed swamp characteristics in some areas, this community certainly contained wetland elements prior to the creation of the diversion channel. Despite general wetland character, this area contains hummocks and terraces of upland, some of which are perched on elevated platforms of decayed logs, stumps, and root tip-ups. Conservation priority for this type is very high.

Mapping Unit F18: Uneven-aged spruce-alder forest/shrubland

This forest type is represented by a single wetland polygon. Like type F17, this area was heavily modified by a disturbance event that removed much of the tree canopy. Unlike F17, this disturbance was recent. Pre-2005 aerial photography showed this area to be densely forested with conifers. 2005 and 2009 aerial photography show the current sparse forest canopy. This polygon is mostly wetland, but with some hummocks of upland, particularly on elevated platforms of decayed woody material. Wetland areas are commonly colonized by slough sedge and water parsely, but skunk cabbage, common rush, pacific reedgrass, giant horsetail, and lady fern also make prominent showings. Salal, black twinberry, salmonberry, and hooker willow are common shrubs. Red alder is becoming increasingly prominent in this area, as are shrubs in general. Trampling and common weeds have degraded the condition.

Mapping Unit F19: Young alder forest

Forest type F19 occurs in the younger, previously logged forest of the eastern portion of the study area, as well as in an area of marshland, where stunted alders are beginning to become established. The understory composition of these areas differs significantly, but the types are united by their overstory composition. The marsh/swamp variant occurs adjacent to the park access road. Emergent marsh of slough sedge, skunk cabbage, small-fruited bulrush, water parsely, and common rush is intermixed with uplands of salal, evergreen huckleberry, black twinberry, salmonberry, sword fern, lady fern, deer fern, youth on age, and seaside bittercress. Upland portions are primarily found on elevated hummocks that are sometimes formed from decayed woody debris. Alders tend to be larger and older near the edges of this area, but are generally small and younger in the wettest portions. It is possible that relatively recent hydrologic changes are influencing the vegetation composition. There are netted channels and islands in the northern portion. The other two areas mapped within this type are not as wet, but contain portions that are possibly, if not likely, wetlands. These communities are located in the area clearcut logged approximately 50 years ago. One of these sites is adjacent to the county road. This site is characterized by a shrub layer of red elderberry with patches of salal and/or evergreen huckleberry, and an herb layer of sword fern and deer fern. The other site is between the new drainfield and Jackson Creek. This site is strange due to the degree of past disturbance and its effect on the ecology of the area. This site contains remnants of a gravel road and densely compacted soils suggestive of a landing. Compaction may have resulted in increased surface water ponding, which in turn favors wetland plants. The understory vegetation is a patchwork of intermixed wetland and mesic species including water parsely, sword fern, creeping buttercup, common rush, youth on age, hedge nettle, coltsfoot, dewey sedge, and slough sedge. Condition in the southernmost representative of this type is seriously degraded by compaction, gravel, creeping buttercup, English ivy, and Armenian blackberry. Sitka spruce, becoming established in the dryer variants, will presumably eventually gain dominance, and these areas will then be

classed as some sort of spruce forest type. Conservation priority for the swamp variant is high. The other two variants are of low conservation priority for their plant community value, but wetland status plays a role in their suitability ratings.

Mapping Unit F20: Young mixed conifer and alder forest

Forest type F20 occurs in wet areas and wetland mosaics. Alder tends to be the dominant species, but conifers are beginning to grow up through the understory. These forests will eventually convert to conifer types as conifers gain height dominance and alders senesce. Salmonberry and red elderberry are common shrubs for this type in general, but portions of this type have depauperate shrub understories.

Sword fern, deer fern, lady fern, giant horsetail, youth on age, slough sedge, seaside bittercress, hedge nettle, and redwood sorrel are all variably prominent in the herb layers within the stands of this type. Sitka spruce, western hemlock, and western red cedar are variably present in the emerging conifers.

Mapping Unit F21: Young spruce-alder forest

This type occurs on compacted, previously logged ground adjacent to the new drainfield. Alder and spruce are both relatively small. The shrub layer is composed of red elderberry and salmonberry. The herb layer is composed primarily of swordfern. Red alder tree diameters average 8” DBH, and Sitka spruce diameters average 6”DBH. Ecological condition within this type is marginal, and conservation priority is low.

Mapping Unit F22: Mid-aged spruce-shore pine forest

Forest type F22 occurs on the leeward face of the ocean foredune. Its vegetation composition is variable and erratic, but is unified by the presence of Sitka spruce and shore pine. Vegetative ecology here is likely in transition due to rapid changes in the foredune’s size and position relative to the sea. Some areas of the dune face exhibit substantial hydrophytic vegetation that is normally indicative of wetlands. Species in this group include crabapple, black twinberry, and slough sedge. Other areas seem decidedly upland. The wetland plants are interpreted in this assessment NOT to indicate the presence of wetlands; rather they are interpreted as indicators of high moisture availability in the absence of the water table and soil features required for wetland definition. Where hydrophytic species are absent, species such as sword fern, bracken fern, Nootka reedgrass, salal, Armenian blackberry, English ivy, and coastal manroot are prominent. Blackberry and English ivy are a major threat to the vegetative ecology.

More significant, however, is the threat of obliteration from erosion. The seaward face of the foredune is rapidly eroding and often forms fragile cliffs of sand, with vegetation weakly holding the top edge of the cliffs. Recent slumps are visible in many locations. It is evident that the dune is becoming narrower and the leeward face of the dune is becoming increasingly exposed to light, wind, and erosion.

Shrubland Associations (S)

Shetland communities are prominent within the study area, especially in areas with the harshest or wettest growing conditions. These areas are often characterized by willow, salmonberry, black twinberry, salal, and evergreen huckleberry thickets that are underlain by slough sedge, skunk cabbage, water parsely, deer fern, sword fern, lady fern, or combinations of these species. The driest of the shrublands in the study area are dominated by salal, evergreen huckleberry, and swordfern. The wettest are dominated by salmonberry, black twinberry, slough sedge, and skunk cabbage.

Mapping Unit S1: **Shrub-scrub wetland**

This type occurs at the shore and in areas of transition between emergent marsh/wet meadow and forested types. Hooker willow, salmonberry, and black twinberry are the major shrubs, although salal and evergreen huckleberry are often interspersed on hummocks, old logs, and other raised features. Slough sedge, skunk cabbage, giant horsetail, water parsely, and lady fern are common and characteristic forbs. Herbaceous species more indicative of drier conditions, such as swordfern, bracken fern, and coastal burnweed, occur on isolated portions of raised topography. Creeping buttercup and reed canarygrass are sometimes present in this type and constitute a significant invasive species threat. Many of the shrub communities that are grouped under the heading of scrub shrub wetland are considered relatively high conservation priority. Botanical suitability ratings reflect wetland status and the intrinsic conservation value of some of the component communities. A smaller number of these communities are not of high intrinsic value aside from being wetlands. Types within this latter category include recovered ditches and minor artificial unintentional impoundments. Condition is variable in this aggregated community type, ranging from poor to excellent.

Mapping Unit S2: Mesic shrubland

This aggregated type is not wetland. It occurs mostly in areas recovering from some sort of disturbance or on the edge of a more open habitat type. Conservation rankings are not high, but condition ratings range from good to excellent. Dominant shrub species are salal, salmonberry, blacktwinberry, red elderberry, and evergreen huckleberry. The dominant herbaceous species is swordfern.

Herbaceous Associations (H)

The herbaceous plant communities present in the study area fall within three broad categories: dunal grassland environments, sparse beach vegetation, and emergent marshlands/wet meadows. Each has a distinct conservation value, ranging from none to extremely high.

Mapping Unit H1: Dunal grassland

The dunal grassland environments are ocean foredunes characterized by dense stands of American dunegrass and European beachgrass, with lesser amounts of forb species such as beach pea, seashore lupine, beach knotweed, coastal burnweed, and false dandelion. Some portions of these foredune environments are natural, and some were constructed to protect the park facilities from shoreline erosion. The artificial and natural dunal environments are not extremely different on the surface, being composed mostly of the same species. The difference is that the artificial dune is built upon an engineered dune of contained sand. These foredunes are still threatened by

storm waves and at risk of failure. The sheltering effect of the dune has been periodically bolstered in recent past by placement of angular rock along the seaward face. Natural American beachgrass communities are of high conservation ranking. Artificial versions of these communities, while ecologically important and of similar to identical functional value, do not have the same high conservation ranking. Areas of open sand within this type may provide potential habitat for pink sandverbena, a state-listed threatened plant species.

Mapping Unit H2: Emergent marsh

Emergent marshland types are variable, but are generally at least seasonally inundated with surface water. Characteristic species include slough sedge, small-fruited bulrush, water parsely, skunkcabbage, beach silverweed, and deer fern. These wetland types are of moderate conservation ranking and are generally in good to excellent condition. Portions of the campground are within this overall cover type. Two instances of this community type appear to be artificial. One instance might not actually be wetland even though the vegetation is considered to be of obligate wetland species. Reed canarygrass, creeping buttercup, and trampling are the biggest threat to this community type where it occurs in proximity to the campground and intensive use areas.

Mapping Unit H3: Sparse beach vegetation

Sparse beach vegetation is characterized primarily by bare sand with scattered patches and hummocks of vegetation such as sea rocket, European beachgrass, American dunegrass, and beach morning glory. Portions of this community have been covered with angular rock to stabilize the eroding foredune. This is a very early seral plant community type that tends to come and go at the seaward edge of the foredune. This type provides potential habitat for the state-listed threatened plant species pink sandverbena.

Appendix B

Invasive Fish and Wildlife of the Coast Ecoregion

Documented Invasive Fish and Wildlife Species in the Coast Ecoregion:

Asian clam (*Corbicula fluminea)*
Bluegil (*Lepomis macrochirus)*
Brook trout (*Salvelinus fontinalis)*
Brown Bullhead (*Ameiurus nebulosus)*
Bullfrog (*Lithobates catesbeianus)*
Carp (*Cyprinus carpio)*
Channel catfish (*Ictalurus punctatus)*
Crappie (*Pomoxis spp.)*, Documented
Eastern snapping turtle (*Chelydra serpentine)*
European green crab (*Carcinus maenas)*
European Starling (*Sturnus vulgarus)*
Fathead minnow (*Pimephales promelas)*
Feral Swine (*Sus scrofa)*, Documented
Goldfish (*Carassius auratus auratus)*
Grass carp (*Ctenopharyngodon idella)*
Griffen's isopod (*Orthione griffensis)*
House Sparrow (*Passer domesticus)*
Japanese mitten crab
Largemouth Bass (*Micropterus salmoides)*
Mosquito fish (*Gambusia*)
New Zealand mudsnail
Norway Rat (*Rattus norvegicus*)
Nutria (*Myocastor coypus*)
Smallmouth bass (*Micropterus dolomieu*)
Striped bass
Virginia Opossum (*Didelphis virginiana*)
Wiper (*Morone saxatilis* x *chrysops*)
Yellow Perch (*Perca flavescens*)
Walleye (*Sander vitreus*)

Potential, Undocumented Invasive Fish and Wildlife Species in the Coast Ecoregion:

Asian Carp (bighead, Silver) (*Hypophthalmichthys nobilis, H. molitrix*)
Banded killfish (*Fundulus diaphanous*)
Black Carp (*Mylopharyngodon piceus*)
Fishhook Waterflea (*Cercopagis pengoi*)
Chinese mitten crab (*Eriocher sinensis*)
Japanese oyster drill (*Ocinebrellus inornatus*)
Leidy's comb jelly (*Mnemiopsis leidyi*)
Muskelluge and Northen Pike (*Esox spp.*)
Quagga mussel (*Dreissena rostriformis*)
Rainwater killfish (*Lucania parva*)
Round Goby (*Neogobius melanostomas*)
Ruffe (*Gymocephalus cernuus*)
Rusty Crayfish (*Orconectes rusticus*)
Sea Squirt (*Didemnum vexillum*)
Shimofuri goby (*Tridentiger bifasciatus*)
Snakehead (*Channa spp.*)
Spiny waterflea (*Bythotrephes cederstroemi*)
Threadfin Shad (*Dorosoma petenense*)
Veined rapa whelk (*Rapana venosa*)
Zebra mussel (*Dreissena polymorpha*)