Oregon Parks and Recreation Commission

November 7, 2012

Agenda Item: 12 Information

Topic: Reports

Agenda Item: 12a
Topic: South Coast Gorse Removal and Dune Restoration Progress
Prepared by: Jim Morgan, Sherri Laier

Gorse (*Ulex europaeus*) was intentionally introduced into the southern Oregon's coastal ecosystem in the late 1800's. It is now rated one of the top 100 worst invasive species worldwide according to the World Conservation Union. Native to western and central Europe, gorse has become the most successful invasive plant on the Oregon coast. After reviewing the available literature and talking to partners around the world, OPRD determined that the best management practices are to control gorse in three stages: (1) control established plants, (2) control new plants emerging from seeds that are said to last more than 30 years in the soil, and (3) plant the area with the desired species as soon as possible after controlling the gorse.

OPRD's initial project using this strategy controlling a monoculture of invasive gorse was initiated on 10 acres at the northern boundary of Bullards Beach State Park bordering the Bandon Dunes Golf Resort. Treatments implemented over the last four years are described below.

Chronology of Treatments
Year One (2009): Mowed and mulched mature gorse shrubs, followed by broadcast herbicide application on gorse that re-sprouted. Total cost per acre in 2009: $2,470.

Year Two (2010): Broadcast herbicide application on re-sprouted gorse. Native dune grass plugs were planted over the 10 acres project area. Total cost per acre in 2010: $1000.

Year Three (2011): Broadcast herbicide application on resprouts over 10 acres of native dune grass planting.
Total cost per acre in 2011: $370.

Year Four (2012): Broadcast herbicided resprouts over 10 acres of native dune grass planting. Collected seed, dried, and planted various sedge species over ½ acre of wetland area. Spot treated gorse resprouts and seedlings. Total cost per acre in 2012: $438.

Current Conditions and Activities
The monoculture of gorse has been reduced significantly and the native dune grass is proving to be an effective competitor. The native dune grass expands by underground rhizomes and allows for broadcast spraying of broadleaf specific herbicide. This type of herbicide application controls gorse results in no harm to the native dune grass. Native sedges were added this year where the dune grass was planted in wet areas and where the dune grass is not thriving. By 2014, a variety of native shrubs and forbs will be added if this approach to gorse control proves to be effective.

Before Mowing
2009

Before Mowing
2009

Monitoring Photos
2010

2012

Agenda Item: 12b
Topic: Territorial Sea Plan
Prepared by: Laurel Hillman

The Territorial Sea Plan (TSP) is used by the Department of Land Conservation and Development (DLCD) and other state agencies to manage the resources and activities in the state's territorial sea from 0-3 nautical miles. The State of Oregon, with the assistance of a wide range of citizens, communities, and other organizations, is in the process of amending its Territorial Sea Plan. This is the second phase of an amendment process that resulted in the adoption of Part Five of the TSP by the Land Conservation Development Commission in November of 2009. This phase involves the adoption of maps that will designate specific areas for the development of marine renewable energy facilities, and the standards for the use of those areas as needed.

Oregon's Statewide Planning Goal 19 states that agencies, through programs, approvals, and other actions, shall "protect and encourage the beneficial uses of ocean resources such as…recreation [and] aesthetic enjoyment." This is reiterated in Part 5 of the Territorial Sea Plan (TSP). Oregon's Ocean Shore Management Plan, a Federal Energy Regulatory Commission (FERC) approved "comprehensive plan", notes that OPRD "may identify important 'scenic features' that should be protected from development or other impacts for their scenic value (OPRD, 2005)." Ocean Policy Advisory Council (OPAC) TSP Working Group public meetings and DLCD's Territorial Sea Plan Advisory Rules Advisory Committee (TSPAC) meetings emphasized the importance of considering aesthetic (e.g., viewshed) and potential recreational impacts during the TSP amendment process.

As part of the planning process, OPAC has considered and forwarded to TSPAC the proposal to include an overlay over the Territorial Sea requiring the conduct of a Visual Impact Assessment as well as standards for review of potential impacts to recreational users of the Territorial Sea. This will serve as a model framework the state may adopt for the evaluation of impacts of future alternative energy projects in Oregon's Territorial Sea.

Update on Visual Impacts: The visual resource inventory has been completed by OPRD for 96 sites at coastal parks with ocean views along with 47 sites identified by DLCD, local coastal communities and governments at public access points. This inventory, combined with the impact assessment framework, is based on a methodology used by the Bureau of Land Management (BLM) for managing scenic resources.

In the phase of work completed, all sites included in the inventory were given a class rating based on a combination of scenic quality, sensitivity, and distance zones:

- Scenic quality: Measure of visual appeal based on key factors: Seascape, vegetation, color, adjacent scenery, scarcity, and cultural modification. Of the sites surveyed, approximately 52% are rated "A", 38% are "B", and 10% are "C".
- Sensitivity: Measure of public concern for scenic quality: type of users, amount of use, public interest, adjacent land use, special areas, and other factors. Coastal park and beach access users are considered to have high user sensitivity.
- Distance zone(s): Seascapes are divided into distanced zones (foreground/middle ground: 0-5 miles, background: 5-15 miles and seldom seen: 15 miles to the horizon) based on relative visibility from observation points.

Later, the ratings will be used in the regulatory (project) phase for evaluation of impacts to key viewsheds. This will require that visual simulations be developed by the project proponent from which a contrast evaluation can be conducted to determine potential impact of a project on scenic resources. The Joint Agency Review Team (JART) described in the Territorial Sea Plan would help review the contrast evaluation to determine consistency with visual resource class objectives of key viewpoints.

In addition to the Visual Impact Assessment, recreation considerations are being proposed by TSPAC for adoption into the Territorial Sea Plan. To protect recreational resources as a beneficial use of the territorial sea, standards for recreational resources will be applied to all marine renewable energy projects throughout the territorial sea, unless otherwise provided by the plan.

TSPAC has proposed marine renewable energy may not have a significant adverse effect on areas of high or important use for recreational activities. A significant adverse effect occurs when:

- Access is denied or unreasonably impeded.
- The project creates reasonably foreseeable health or safety impacts.
- The project would have reasonably foreseeable significant impacts on the natural environment that the recreational community depends on.

Areas of high or important use for recreational activity occur where there is a:

- Community of historical users;
- High intensity of use, or
- Uniqueness or a special quality associated with the recreational use relative to the state or region.

Next Steps: TSPAC has discussed an outreach process for the review of the inventory and review standards for a local and state level. There was group consensus that there should be an announcement of a 30-day public comment process for review of the final products. That public comment period will coincide with the other public meetings to be held at the request of the TSPAC (3 coastal meetings) along with two OPAC meetings. Presentations and discussion of the inventory results at the county or city level may occur as requested by interested communities.

Agenda Item: 12c
Topic: Snowy Plover Management Plan
Prepared by: Vanessa Blackstone and Laurel Hillmann
Attachment: Draft Site Management Plan

The Pacific coast population of the western snowy plover (*Charadrius nivosus nivosus*) is a state and federally listed (threatened) small shorebird that lives on sandy beach areas along the west coast of the United States and Mexico. Management of the Ocean Shore may negatively affect snowy plovers and their habitat resulting in take of the species as defined under the Endangered Species Act (ESA). OPRD completed a Habitat Conservation Plan (HCP) in August 2010 as part of the requirements to obtain an incidental take permit (ITP). The ITP issued in December 2010 provides OPRD with the long-term regulatory assurance that implementation of its coastal management responsibilities would comply with the ESA, while providing protection for snowy plovers.

The HCP requires OPRD to complete three site management plans, in cooperation with and approved by the USFWS, for Clatsop Spit (Fort Stevens State Park), Necanicum Spit (Gearhart Ocean SRA), and Nehalem Bay (Nehalem Bay SP). Snowy Plover Management Areas (SPMAs) are defined within these three parks, and the goal of the site management plans is to provide guidance for managing the SPMAs that will lead to the conservation and recovery of western snowy plover and their habitat in a manner that balances this effort with human use of the Ocean Shore. Active management of the three areas will begin March 15th, 2014. However, many of the restrictions will not go into place until the sites have western snowy plover breeding adults observed within their boundaries. These plans outline OPRD's activities to (1) protect potential plover nesting areas; (2) reduce recreational disturbance; and (3) implement natural resource management activities. OPRD is coordinating with the Army Corps of Engineers, City of Gearhart, and Tillamook County regarding habitat restoration and public outreach efforts.

Summary of Proposed Management Actions in Draft Site Management Plans
While activities for unoccupied sites begins 2014, activities listed below for occupied sites would begin only after documented occupancy by a breeding Western snowy plover pair.

Unoccupied Seasonal Recreation Restrictions (March 15 – July 15)

- Post access routes and the extent of beach use restrictions within designated areas of the SPMA.
- Vehicles (motorized and non-motorized) prohibited on beach (except for administrative and permitted uses), or as otherwise restricted by existing Oregon Administrative Rule (OAR). Note: this activity is already prohibited at this location.
- Dogs must remain on-leash. (Note: this activity is already required at Clatsop Spit)
- Seasonal interpretive signage will be installed to request visitors to voluntarily conduct recreational activities in the wet sand in designated suitable habitat areas to help shorebirds.
- If a plover nest is discovered, the SPMA will be managed as "occupied" through September 15, and will be considered occupied the following season.
- Conduct detect/non-detect surveys while the site remains unoccupied using trained volunteers.
- Initiate habitat restoration efforts at Clatsop Spit and Nehalem Spit.

Occupied Seasonal Recreation Restrictions (March 15 – September 15) and Commitments

- Post access routes and the extent of beach use restrictions within the SPMA.
- Prohibit vehicles (motorized and non-motorized) on the Ocean Shore and within the SPMA (except for administrative use), or as otherwise restricted by existing Oregon Administrative Rule (OAR).
- Prohibit dogs in the SPMA during nesting season.
- Prohibit flying kites in the SPMA during nesting season.
- Direct recreational activities to the wet sand.
- Conduct breeding population monitoring, and wintering and breeding window surveys during the nesting season.
- Implement predator management efforts, species to be targeted, and the types and frequency of monitoring (if the site becomes occupied).
- Maintain and expand suitable habitat areas at all three SPMAs.

Other Site Management Plan Commitments

- Generate annual compliance report and present to USFWS and the Western Snowy Plover Working Team.
- Provide public interpretation and education efforts.
- Provide three full-time beach rangers, State Park staff, local law enforcement, and additional senior State troopers, as needed, to facilitate informational and enforcement activities.
- Review plan implementation every five years.

A "Draft Western Snowy Plover Site Management Plan for Clatsop Spit at Fort Stevens State Park" is provided as Exhibit A as an example of the site management plans being developed for the three SPMAs currently unoccupied. After submittal of the draft site management plans to USFWS in December 2012, USFWS will provide comments which will be considered for draft revision. A final draft will be presented to the Commission in May 2013 prior to final submittal to USFWS.

Agenda Item: 12d
Topic: Economic Impact Study
Prepared by: Terry Bergerson

State park visitors bring substantial economic activity to the communities around those properties. We used surveys to estimate visitor spending during trips to state parks on the coast and Milo McIver State Park east of Portland. We then combine those estimates of average spending with estimates of the number of recreation visits and an economic model to quantify the magnitude of local economic activity generated from Oregon State Park visitor spending.

The average trip spending of visitors ranges from about $25 per party per trip for local residents on day trips to nearly $300 per party per trip for non-local residents on overnight trips away from home. On average, most local area expenses are for gasoline, groceries, and purchases in restaurants/bars. The reported 23 million visits to Oregon State Parks units in the Coastal Region yield about $575 million in visitor spending in local communities. Non-local residents account for about $507 million of that spending. The reported 400,000 visits to Milo McIver State Park result in total visitor spending in the local area of about $7.7 million.

The economies of local communities are bolstered by the total spending from visitors and from the "chain reaction" of economic activity that results when those businesses and their employees also spend money in the local community. That chain reaction is also referred to as the "multiplier effect." For the Coastal Region, spending in the local areas around Oregon State Park units generates about $465 million in total sales, about 7,480 full and part-time jobs, and generates total labor income of $145 million. Counting only the spending of non-local visitors, the economic impact of visitor spending within the Coastal Region amounts to total sales of $419 million, 6,682 full and part-time jobs, and $129 million in labor income.

The spending of visitors to Milo McIver State Park generates about $7 million in total sales, 94 full and part-time jobs, and $2 million in labor income within the local region. Counting only the spending of non-local visitors, the economic impact of Milo McIver State Park recreation visitor spending amounts to nearly $2 million in total sales and 27 full and part-time jobs.

Agenda Item: 12e
Topic: Department of Energy Mandated Energy Reduction Effort
Prepared by: MG Devereux

In 2000, the Oregon Legislature mandated that all public agencies reduce power consumption by 25 %, by the year 2015. The Oregon Department of Energy (ODOE) was given the task of developing implementation rules, and overseeing this mandate. The mandate requires a 2011 agency check-in and report to the legislature to ensure reductions are on track to meet the 2015 goal. OPRD has been informed that the agency has not met the interim reduction benchmark. Over the past several months OPRD staff have been evaluating the data, to understand why the agency has not met the energy reduction mandate.

Current Efforts
OPRD has been reporting energy usage since 2002, however in researching this issue several problems with that reporting effort have been discovered.

The original reporting metrics were not in line with the energy reduction statute.
The intent of the legislation was to record and reduce energy in office buildings. Since 2002, OPRD has been reporting all energy usage, including campgrounds where OPRD has few ways to control usage.

No adequate baseline was established with ODOE
The database the ODOE uses to track reporting was never normalized to create a baseline. Additionally, the reporting efforts did not take into account new properties or parks that were brought on line since 2000.

Significant Data Entry Errors Compromise Reporting
Evaluation of past data entry has revealed entry errors that have inhibited the ability to reconstruct a baseline for comparison.

Next Step
OPRD staff are working to create an accurate baseline to report back to ODOE. This baseline will focus on buildings that meet the statutory definitions, and will use energy use per square foot as the normalizing factor.

Agenda Item: 12f
Topic: RV Dump Station Business Model Review
Prepared by: Eric Timmons

Park staff has learned of a new technology that could allow OPRD to charge a dump station fee when RV's dispose of waste at OPRD dump stations. The new systems connect to existing dump stations and only allow access once a user has paid the fee or entered a user provided code.

Background - Currently there are 30 active dump stations in use. These are located mainly in or around campgrounds. While the stations are mainly used by campers, a percentage of the users are non-park users and are usually traveling. The actual percentages are not known at this time and will vary based on the

location of the park; the more remote the park, the less non-park influence. OPRD is in the process of installing traffic counters to assist in determining use patterns.

The condition of each dump station varies. Some have been renovated in the past few years, but the majority need upgraded and or expanded. Several have drain fields that have reached or surpassed their useful lifecycles and are scheduled for replacement. Cost for a simple upgrade can be in the $50,000 range, complete replacement on a larger system may be as much as $150,000. Cost for annual septic pumping average around $1000 per unit, additional staffing costs can vary based on system age and user generated issues (dumping solid objects).

OPRD has never charged a fee for dumping waste at dump stations. The service has always been considered a gratis amenity.

Trends – An examination of 16 western and mid-western states show that charging for dump station use is a common practice; however it is predominantly by the private sector. Some state park systems such as Washington charge a fee (average $5) for users who do not purchase a day-use pass or have a valid camping receipt. A few such as California require that a day-use pass be purchased when using their facilities when not camping, and offer no other options.

Public Perspective – A sampling of forums dealing with travel and dump stations show a mixed perception about user fees. In fact, a larger percentage accepts the fees as part of the cost of travelling, as long as the fees are reasonable. There were several comments expressing concern that fees may cause people to avoid using dump stations altogether, and choose less environmentally friendly options such as storm drains and vacant fields.

Acceptance by Oregonians may differ due to the perception that RV licensing fees help support OPRD and are already helping pay for the dump station operational costs. Campers may feel they are being double charged as they have paid camping fees. Full hookup sites would not need the service and may increase in demand as any additional fees would offset the cost of a full service site.

Options – There are three main options that may be worth considering:

1) **No change –** Keep the current fee structure and make no changes specific to dump stations and continue to support dump stations services from RV license fees.

2) **Require a day-use pass or valid camping receipt –** Supplement the RV license fees by requiring all RV's to have a valid camping receipt or purchase a day-use pass. This includes RV's that stopping to solely use the dump station as part of their travels. The additional revenues could be used to offset the dump stations operational costs. This option may be problematic as OPRD's day-use fee is considered a parking fee and not an entry fee.

   A few locations would require the addition of fee collection systems. The additional systems could be in the form of the new technology or the addition of traditional fee collection stations already employed at OPRD for day-use fees**.** This option may require additional signage, hardware and software, and staff to collect and enforce the fees.

3) **Enact a new dump station fee -** Adopt a fee that requires dump station users to pay for the service regardless of other fees they have paid. This option would require the addition of several new collection stations. These could be the new systems that collect at the dump stations or of another type that are stationed nearby that allow for the collection dump station fees and other traditional camp fees such as firewood sales.

Conclusion – Without accurate dump station use data it is difficult to estimate the overall revenue any additional fees might generate. Current estimates based on electrical sites and occupancy rates suggest annual revenue might be closer to $200,000 for a completely new fee, and substantially less if discounted for day-use passes or current camping receipts.

Public perception may be an issue, but to a lesser degree with the current pass option. Additional staffing requirements for fee collection and rule enforcement, new signage, and printing costs should be taken into consideration if changes are made to the current system.

Other non-monetary factors beyond public perception should also be examined; ease of use, ADA accessibility, environmental impact, sanitary issues for both the user and the park staff reconciling the fees, risk of vandalism or theft, and general maintenance.
Use of automated fee collection dump station systems would require the development of a (RFP) to purchase the units and site work to modify the current stations. OPRD is in the process of developing a separate RFP for existing fee stations used in the collection of day-use fees. The new machines may be capable of selling additional items or printing vouchers. Current sales items such as firewood, non-reservation camping, and showers may be able to be processed, as might dump station fees.

OPRD staff will collect data on usage trends and present such findings to the commission at a later date as research warrants.

Agenda Item: 12g
Topic: 2013 Oswald West Declaration Commemoration
Prepared by: Richard Walkoski

Early in the year 1913 Governor Oswald West drafted a bill declaring all of the tidelands from the "Washington line to the California line" a public highway. The bill protected Oregon's beaches from private development and provided a transportation route up and down the rugged coast. Because of that action, Governor West is recognized as the man who led the preservation of Oregon's beaches for public use. The year 2013 marks the 100th anniversary of Governor West's historic action and presents an opportunity for OPRD to focus public attention on Oregon's spectacular coastal resources.

OPRD will coordinate a number of activities in 2013 with partners like ODOT, Travel Oregon, coastal communities and groups dedicated to protecting and enhancing Oregon's beaches. Activities may range from special commemorative signage to local celebrations up and down the coast. The fall beach cleanup could provide a capstone event to wrap up a season of commemoration and focus on a uniquely Oregon resource, our ocean shore. It will also be a great way to inform people that their help is still needed to preserve and protect that resource for future generations.

Coordination of potential partners and events will fall to the Communications and Research Division within OPRD. A steering committee composed of park staff, ODOT representatives, key coastal community representatives and representatives from non-profit groups like SOLV will be formed this fall to begin planning and coordinating the 2013 events.

Agenda Item: 12h
Topic: Rulemaking Status
Prepared by:

Rulemaking Activity Log

OAR & Division	Subject Matter	Rulemaking Process Opened	Hearing Dates	Public Comment Expiration Date	Target Date for Commission Adoption
736-015	Tribal/Foster fee waiver and no-show rules for pre-registration	6/20/2012	NA	Sept. 28, 2012	Nov. 2012
736-010	Alcohol ban at Iwetemlaykin State Park	6/20/2012	NA	August 31, 2012	Nov. 2012

CLATSOP SPIT
FORT STEVENS
STATE PARK

Photo credit: K Castelein

OREGON STATE PARKS Nature History Discovery

Draft Western Snowy Plover Site Management Plan

October 2012

DRAFT Western Snowy Plover Site Management Plan

Clatsop Spit (Fort Stevens State Park)

October 2012

Oregon Parks and Recreation Department: Salem, Oregon

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.

Oregon Parks & Recreation Department
725 Summer St. NE, Ste C
Salem, OR 97301-0792
Info Center: 1-800-551-6949
egov.oregon.gov/OPRD/index.shtml

Title: Western Snowy Plover Site Management Plan for Clatsop Spit at Fort Stevens State Park.

Cover Image: Snowy plover image courtesy of Kathy Castelein, ORBIC. Other photos, OPRD.

Executive Summary

The Pacific coast population of the western snowy plover (*Charadrius nivosus nivosus*) is a state and federally listed (threatened) small shorebird that lives on sandy beach areas along the west coast of the United States and Mexico. In Oregon, the beaches are managed by Oregon Parks and Recreation Department (OPRD) as the Ocean Shore State Recreation Area (Ocean Shore). Management of the Ocean Shore, including recreation management, general beach management, and management of natural resources may negatively affect snowy plovers and their habitat resulting in take of the species as defined under the Endangered Species Act (ESA).

OPRD completed a Habitat Conservation Plan (HCP) in August 2010 as part of the requirements to obtain an incidental take permit (ITP). The ITP (#TE30687A-0), issued in December 2010, provides OPRD with the long-term regulatory assurance that implementation of its coastal management responsibilities would comply with the ESA, while providing protection for snowy plovers (ICF International 2010a).

The HCP requires OPRD to complete a site management plan, in cooperation with and approved by the USFWS, for all of its Snowy Plover Management Areas (SPMAs). A draft plan for the Clatsop Spit SPMA, a currently unoccupied SPMA managed by OPRD, must be completed within two years of ITP issuance. The goal of the site management plan is to provide guidance for day-to-day activities that will lead to the conservation and recovery of western snowy plover and their habitat in a manner that balances this effort with human use of the Ocean Shore. Under the HCP, the Fort Stevens State Park site is identified as the Clatsop Spit SPMA. Active management (depending on occupancy) of the Clatsop Spit SPMA will begin March 15th, 2013. This plan outlines OPRD's activities to protect plover nesting areas; reduce recreational disturbance; and implement natural resource management activities, including habitat restoration. A summary of the proposed actions described in this plan is provided on the following page.

Summary of Proposed Management Actions at Clatsop Spit SPMA

- Unoccupied Seasonal Recreation Restrictions (March 15 – July 15)
    - Post access routes and the extent of beach use restrictions within the SPMA, encompassing designated areas of suitable habitat (suitable habitat areas, SHAs) and habitat restoration areas (HRAs, see Sec 3.1).
    - Vehicles (motorized and non-motorized) prohibited on beach (except for administrative and permitted uses), or as otherwise restricted by existing Oregon Administrative Rule (OAR). *Note: this activity is already prohibited within the boundaries of the State Park and on the ocean shore, unless otherwise marked.*
    - Dogs must remain on-leash. *Note: this activity is already required at all areas within the State Park and on the ocean shore, unless otherwise marked.*
    - Seasonal posts and interpretive signage (but not ropes) will be installed to request voluntary compliance of the following:
        - Visitors voluntarily conduct recreational activities in the wet sand in designated suitable habitat areas. Posts and signs will define the dry sand breeding areas to be avoided.
    - If a plover nest is discovered, the SPMA will be managed as "occupied" through September 15, and will be considered occupied the following season.

- Occupied Seasonal Recreation Restrictions (March 15 – September 15)
    - Post access routes and the extent of beach use restrictions within the SPMA, encompassing SHAs and HRAs.
    - Prohibit vehicles (motorized and non-motorized) on the river beach (except for administrative use), or as otherwise restricted by existing Oregon Administrative Rule (OAR).
    - Prohibit dogs in the SPMA during nesting season.
    - Prohibit flying kites in the SPMA during nesting season.
    - Direct recreational activities to the wet sand. Fences, ropes, and/or signs will define the dry sand breeding areas to be avoided.
    - Possibly lift restrictions early if no nesting occurs by July 15.

- Other Site Management Plan Commitments

- Provide habitat restoration and maintenance. The location and size of the restoration area, when such efforts will be accomplished, and how they will be accomplished is outlined in the plan.
- Implement predator management efforts, species to be targeted, and the types and frequency of monitoring (if the site becomes occupied).
- Conduct detect/non-detect surveys while the site remains unoccupied. If the site becomes occupied, conduct breeding population monitoring, during the nesting season. Assist USFWS in winter and breeding window surveys. Report findings to USFWS annually and work with snowy plover partners to evaluate the effectiveness of the HCP.
- Provide public interpretation and education efforts (e.g., interpretive staffing, signage, and brochures).
- Provide one full-time beach ranger, State Park staff, local law enforcement, and additional senior State troopers, as needed, to facilitate informational and enforcement activities.
- Review plan implementation every five years.

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Acronyms and Abbreviations

ACOE	U.S. Army Corps of Engineers
APHIS-WS	Animal and Plant Health Inspection Service (Wildlife Services)
ATV	All-terrain vehicle
BLM	United States Bureau of Land Management
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
DLCD	Oregon Department of Land Conservation and Development
DSL	Oregon Department of State Lands
FESA	Federal Endangered Species Act
HCP	Habitat Conservation Plan
HRA	Habitat Restoration Area
GLO	General Land Office
ITP	Incidental Take Permit
OAR	Oregon Administrative Rule
Ocean Shore	Ocean Shore State Recreation Area
ODFW	Oregon Department of Fish and Wildlife
OESA	Oregon Endangered Species Act
OPRD	Oregon Parks and Recreation Department
ORBIC	Oregon Biodiversity Information Center
ORNHIC	Oregon Natural Heritage Information Center
ORS	Oregon Revised Statutes
Recovery Plan	Western Snowy Plover Pacific Coast Population Recovery Plan
RMA	Recreation Management Area
Services	U.S. Fish and Wildlife Service and National Marine Fisheries Service
SHA	Suitable Habitat Area
SPMA	Snowy Plover Management Area
SVL	Statutory Vegetation Line
USDA	U.S. Department of Agriculture
USFS	USDA U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

Acknowledgments

OPRD Director:

Tim Wood, Director
John Potter, Assistant Director, Operations

OPRD Staff:

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Mike Stein, North Coast District Manager
Teri Wing, Fort Stevens State Park Manager
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Thanks also to other OPRD staff who contributed information, insight and ideas including Alice Beals, Brady Callahan, John Koch, Justin Helberg and Paula Wills

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Section 1. Background

The Pacific coastal population of the western snowy plover (*Charadrius nivosus nivosus*) is a small shorebird that lives along the west coast of the United States and Mexico. The Pacific coast population of the western snowy plover was listed as threatened under the Federal Endangered Species Act (FESA) in 1993. The species was noted as threatened by the Oregon Fish and Wildlife Commission in 1975 and reaffirmed under Oregon's Endangered Species Act (OESA) in 1989.

In Oregon, the beaches are managed by Oregon Parks and Recreation Department (OPRD) as the Ocean Shore State Recreation Area (Ocean Shore). Snowy plovers forage, roost, nest, and raise chicks on sandy beach areas, which often fall within the boundaries of the Ocean Shore. Management of the Ocean Shore, including recreation management, general beach management, and management of natural resources may negatively affect snowy plovers and their habitat resulting in take of the species as defined under both state and federal ESAs (ICF International 2010a).

OPRD completed a Habitat Conservation Plan (HCP) in August 2010 as part of the requirements to obtain an incidental take permit (ITP). The ITP (TE30687A-0), issued in December 2010, provides OPRD with the long-term regulatory assurance that implementation of its coastal management responsibilities would comply with the ESAs, while providing protection for snowy plovers (ICF International 2010a).

The HCP requires OPRD to complete a site management plan, in cooperation with and approved by the USFWS, for all of its Snowy Plover Management Areas (SPMAs). A draft plan for the Clatsop Spit SPMA, currently an unoccupied SPMA managed by OPRD, must be completed within two years of ITP issuance. Under the HCP, the Fort Stevens site is identified as both the Columbia River South Jetty and Clatsop Spit SPMA. For the purposes of this plan, the site will be referred to as the Clatsop Spit SPMA. Active management of the Clatsop Spit SPMA (depending on occupancy) will begin March 15th, 2013. This plan outlines OPRD's activities to protect and restore potential plover nesting habitat; reduce recreational disturbance; and implement natural resource management activities, including habitat restoration.

1.1 Landownership and Management History

1.1.1. Landownership History

The approximately 3,790-acre property known as Fort Stevens State Park is currently managed by OPRD. The park was established in 1955 with additional lands acquired over the next several years. The northern portion of the spit is currently owned by the Army Corps of Engineers (ACOE) and is under a lease agreement with OPRD for public access and management. OPRD ownership typically goes to mean high water, below which the land is also owned by the state, typically by the Department of State Lands (DSL). In the case of Ft. Stevens, these lands (below those owned by ACOE and managed by OPRD) are vested in the State of Oregon by and through OPRD (ORS 390.230).

1.1.2. Management History

The upland property is currently managed and has been managed (since 1955) as a State Park with an extensive scenic setting and diverse opportunities for recreation, wildlife and cultural resource enjoyment (OPRD 2001). On the ocean-front side (which is not part of this plan), OPRD manages the beach as part of the Ocean Shore State Recreation Area to extreme low water. The park is located within Clatsop County (Figure 1).

1.2 Legal and Site Description

1.2.1. Legal Description

The Clatsop Spit SPMA falls within the boundaries of Fort Stevens State Park and is located within Sections 25, 26 and 27 of T9N, R11W (Figure 1). Figure 1 and Figure 2 show the boundary of the Clatsop Spit SPMA superimposed on aerial photography and a USGS topographic map, respectively. It is important to note that the hydrographic features shown on these maps are highly dynamic and change seasonally and from year to year. Several of the features noted in the figures are likely to move over time; and the aerial and topographic backgrounds may not exactly match current conditions. The dates of the backgrounds are noted in the captions.

1.2.2. Site Description

The Clatsop Spit SPMA is unique in that it encompasses river shore rather than ocean shore habitat. Located at the mouth of the Columbia River, the Clatsop Spit was formed by the deposition of river sediment brought to the coast from river flows occurring primarily after the last ice age 8,500 years ago. The construction of the Columbia River South Jetty,

which was completed in 1917, further altered the shape of Clatsop Spit by altering sediment transport. The jetty caused a major build-out and accumulation of new beach in both directions, including the creation of the portion of the Spit designated as a SPMA. The river shore habitats present within the SPMA are continually unstable as sediment delivery from the river continues to fluctuate and the newly created land stabilizes in some locations and erodes in others. This dynamic environment has created a sandy river shore habitat with frequent overwash that provides suitable habitat for nesting snowy plovers.

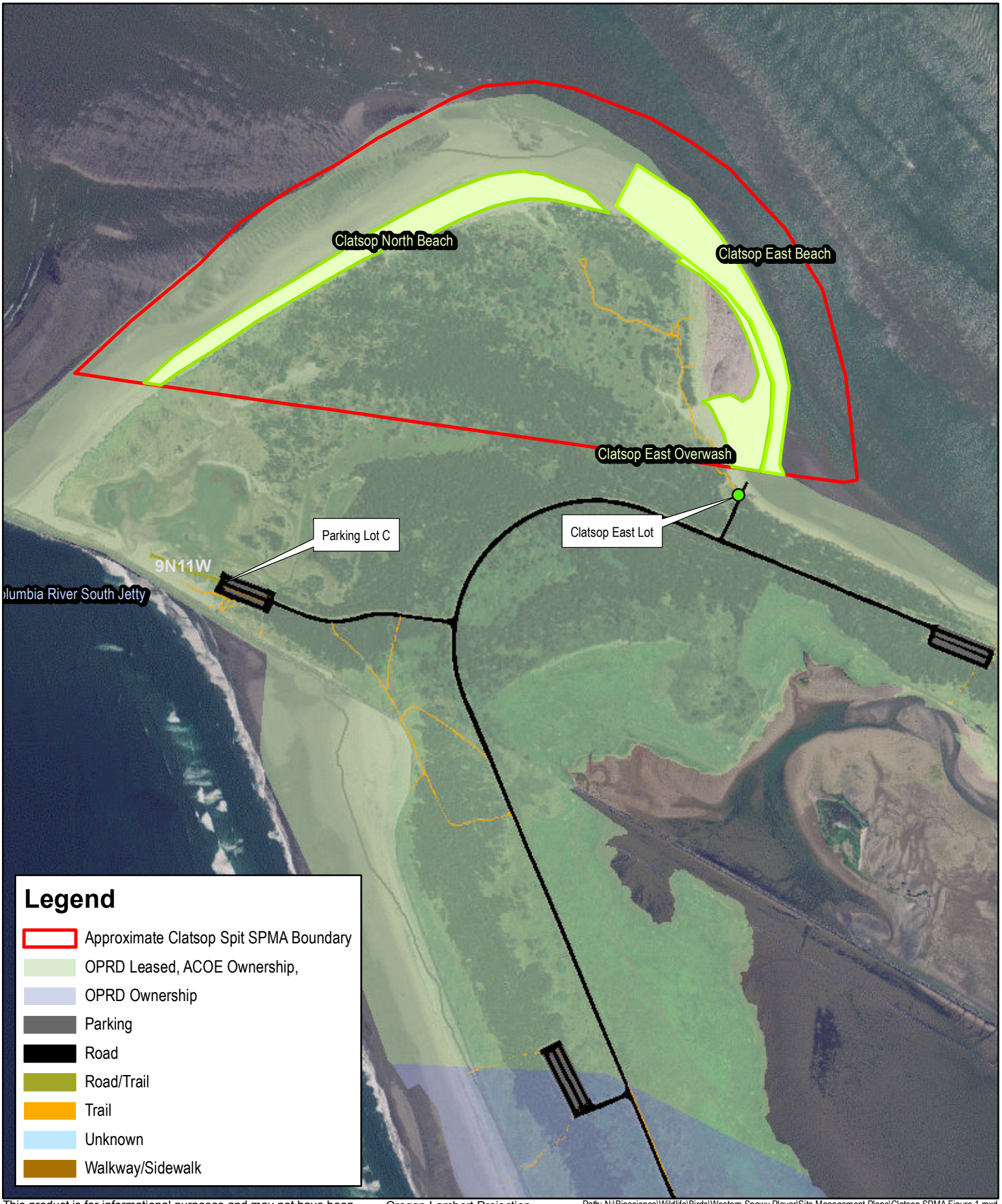
The Clatsop Spit SPMA includes sandy river shore, a foredune, and some inland vegetative dunal areas from the Clatsop East Lot, an unofficial parking area located at the southeastern end of the SPMA, and encompassing the crescent-shaped shoreline north around the point and west to the south jetty, approximately 1.5 miles of shoreline (Figure 1). Clatsop Spit is managed as part of Fort Stevens State Park and is used by the recreating public for beach recreation which is described in more detail in Section 1.5. There are two access points to the spit; the Clatsop East Lot parking area, which is currently accessible to vehicles, and limited beach access via pedestrian use from Parking Lot C, where it is possible during lower tides for park visitors to hike northwest from the parking lot adjacent to the jetty to reach the river beach.

Historic conditions

The terrestrial landscape within the SPMA is relatively new, having formed after the construction of the Columbia River South Jetty due to changes in sediment deposition patterns. After the jetty was completed approximately 100 years ago, large amounts of sand began to accumulate on either side of the jetty, parts of which formed the SPMA over the last century. Historical aerial photography reveals a very differently shaped Clatsop Spit with the SPMA submerged. General Land Office (GLO) surveys conducted in the mid 1800's likewise do not include the area now designated as the SPMA, as it was not yet in existence. Historically, river and ocean beaches in this area that were present prior to settlement were characterized by much lower foredunes or undulating low and relatively flat sand drifts and mounds. Most areas probably consisted of low rounded mounds built up by native sand stabilizing plant species such as American dunegrass (*Leymus mollis*), yellow sand verbena (*Abronia latifolia*), and silver beach-weed (*Ambrosia chamissonis*). On Oregon's sandy beaches, vegetation cover greater than 20% was uncommon (Wilson 1980). More densely vegetated sandy areas formed low dunes that were generally oriented perpendicular to the coast, rather than parallel to the coast as is now generally the case.

Other species commonly present in these sandy barrens include seashore bluegrass (*Poa macrantha*), beach morning glory (*Convolvulus soldanella*), red fescue (*Festuca rubra*), seaside lupine (*Lupinus littoralis*), beach silvertop (*Glehnia littoralis*), yarrow (*Achillea millefolium*), pearly everlasting (*Anaphallis margaritaea*), beach evening primrose

(*Camissonia cheiranthifolia*), beach knotweed (*Polygonum paronychia*), beach strawberry (*Fragaria chiloensis*), salt rush (*Juncus lesueurii*), seaside tansy (*Tanacetum camphoratum*), beach pea (*Lathyrus japonicus*), gray beach pea *(Lathyrus littoralis),* and seaside dock (*Rumex maritima*). An at-risk plant species that may be found in this habitat is the state endangered pink sand verbena (*Abronia umbellata*). Pink sand verbena represents a currently rare species that was more abundant and which may have even been relatively common in this area prior to widespread colonization by European beachgrass (*Ammophila arenaria*).



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 inforrmation.

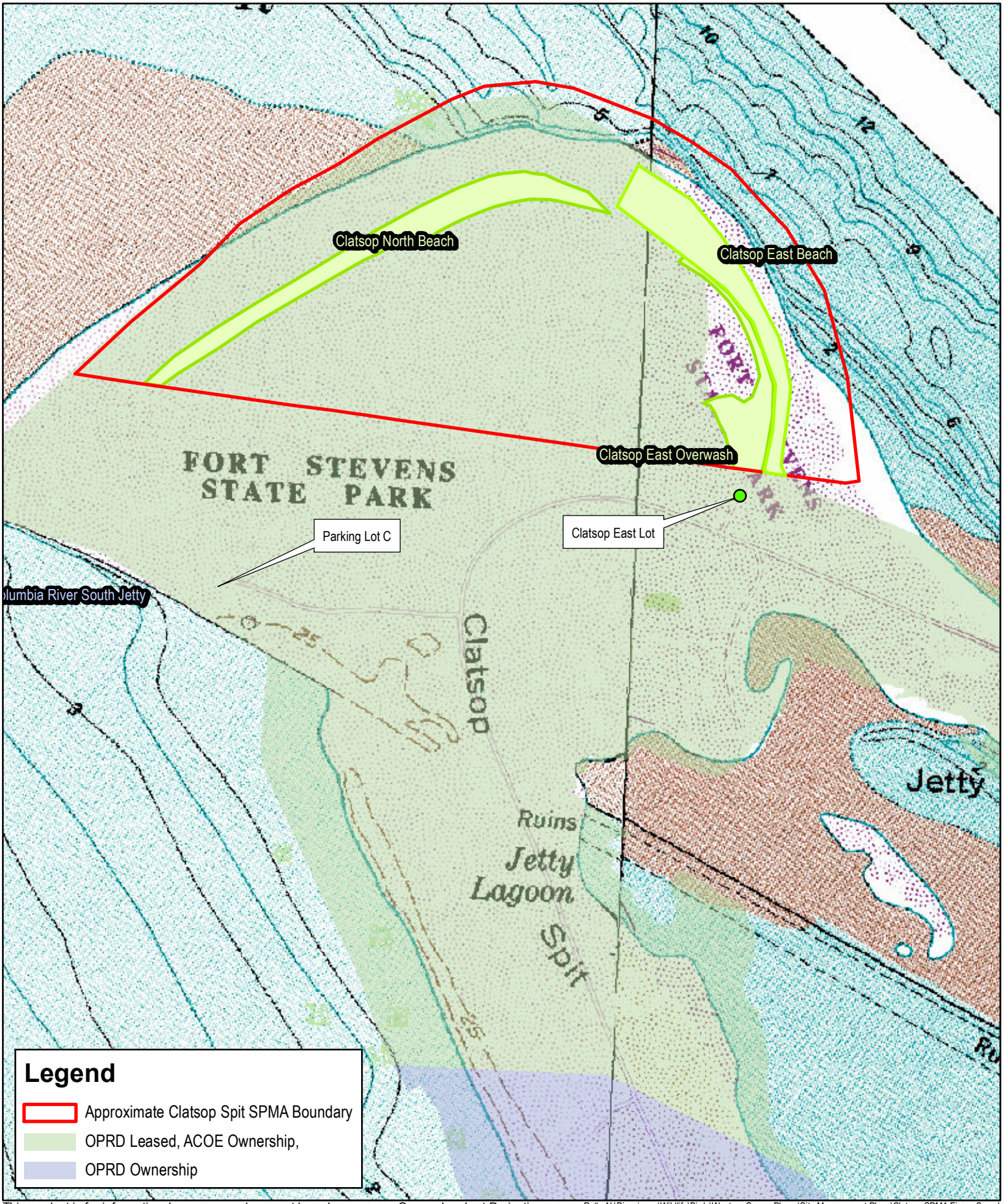
Oregon Lambert Projection
Datum NAD 83
2009 Aerial Imagery

Path: N:\Bioscience\Wildlife\Birds\Western Snowy Plover\Site Management Plans\Clatsop SPMA Figure 1.mxd
Date: 9/24/2012

0 250 500 1,000 Feet

N

Figure 1. Boundary of Clastsop Spit SPMA overlain on a 2009 aerial imagery



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 inforrmation.

Oregon Lambert Projection
Datum NAD 83
USGS Quad Clatsop Spit
USGS Quad Warrenton

Path: N:\Bioscience\Wildlife\Birds\Western Snowy Plover\Site Management Plans\Clatsop SPMA Figure 2.mxd
Date: 9/24/2012

0 250 500 1,000 Feet

N

Figure 2. Boundary of Clastsop Spit SPMA overlain on a USGS Topographic Quadrangle.

Current conditions

Although much of the SPMA is now stabilized with vegetation that has colonized the Spit over the last 100 years, current conditions within the SPMA on the Clatsop Spit continue to be dynamic due to the ever-changing nature of the flow of the Columbia River. A constant cycle of sand aggradation and erosion keeps conditions on the river shoreline changing. The portions of the site most suitable for snowy plover nesting are the sparsely vegetated, flat, wide beaches on the north (Clatsop North Beach) and east (Clastop East Overwash) sides of the SPMA that continually receive river overwash during high flow events, storm surges, and high tides (Figure 1). The shifting sands that accumulated along the south jetty to form the portion of the SPMA have been stabilized by colonizing vegetation, both native and non-native. Non-native beachgrass species have colonized the dunes adjacent to the beaches, creating a foredune. Introduced to the U.S. west coast in the late 1800's, European beachgrass has since fundamentally changed the nature of Oregon's coastal sand dunes (Cooper 1958, Green 1965, Franklin and Dyrness 1973, Wilson 1980, Zarnetske et al. 2010). A sand stabilizing species, European beachgrass has created foredunes not previously evident on the Oregon coast dominated in large part by that species (Wilson 1980). Beachgrass has generally decreased beach width, increased slope, reduced the amount of un-vegetated areas above high tide line and provided more cover for snowy plover predators (Wilson 1980, Zarnetske et al. 2010, ICF International 2010a). Although European beachgrass is mainly responsible for the stabilization of west coast dunes, the closely related American beach grass *A. breviligulata* was also planted on dunes near the Columbia River at Warrenton (McLaughlin 1939).

While the beach itself is sparsely vegetated, foredune and dunal plant communities within the SPMA are dominated by beachgrass. The beachgrass species dominant within many of the foredune areas of the Clatsop Spit SPMA is American beachgrass *(Ammophila breviligulata),* a species native to the east coast of the United States. Proceeding inland from the foredune, non-native pasture grasses start to appear, common velvetgrass *(Holcus lanatus)*, bentgrass *(Agrostis spp.)* and tall fescue *(Festuca arundinacea)* are particularly abundant.

The interior of the SPMA also contains areas of forest, wetland, and shrubland. Forested areas are dominated with shore pine *(Pinus contorta)* with scattered Sitka spruce *(Picea sitchensis)* and red alder *(Alnus rubra).* The understory of the forest and adjacent open shrubland areas contain wax myrtle *(Myrica californica),* Scotch broom *(Cytisus scoparius),* Hooker's willow *(Salix hookeriana),* and evergreen huckleberry *(Vaccinium ovatum).* Several palustrine wetlands ring the dune habitats in the interior of the SPMA, these are characterized by slough sedge *(Carex obnupta)* and Hooker's willow *(Salix hookeriana).*

Inclement stormy weather is relatively common at the Clatsop Spit, especially during late October through May. Storms coming out of the southwest form relatively warm fronts and may create higher tides than predicted in tide tables. From June through August, frequent strong winds come in from the north. Additionally, the area is also dramatically affected by the flood stage of the Columbia River and river currents. The exact amount of wet sand available varies a great deal depending on weather, tides and other environmental factors.

Plovers prefer open sandy habitat for breeding. Habitat modification that has occurred largely due to the spread of European beachgrass has reduced the amount of nesting habitat available at Clatsop Spit SPMA(USFWS 2007). The steep foredunes found within the northwestern portion of the SPMA prevent overwash and scour that could naturally maintain the plover's preferred habitat (ICF International 2010a).

Plovers do not currently nest or raise young at Clatsop Spit, although some suitable habitat is present (Figure 3). Approximately 23 acres of suitable habitat exist along the eastern and northern river beaches within the SPMA (Clatsop North Point, 16 acres, and Clatsop East Overwash, 7 acres); overwash from the Columbia River combined with less steep foredunes creates habitat conditions suitable for snowy plover nesting (Figure 1). These areas currently require no additional management to maintain suitable plover nesting habitat. Additional areas are proposed for habitat enhancement and restoration and are described in Section 3.1.

Figure 3. Suitable habitat at Clatsop East Overwash

Occupancy

Clatsop Spit SPMA is currently unoccupied – no snowy plover breeding has occurred in the past two years. However, the SPMA will be considered occupied if at least two snowy plovers are present and/or nest scrapes are discovered within the SPMA boundaries. The area will then be managed as occupied until July 15th. If a nest is discovered, then the SPMA will continue to be managed as an occupied area and will be recognized the next year as occupied.

Once Clatsop Spit is occupied, it will only become unoccupied when nesting or nesting activity has not occurred in the area for two consecutive nesting seasons.

1.3 Regulations

An U.S. Army Corps of Engineers (ACOE) Section 404, Clean Water Act (CWA) permit is required for discharge of dredged or fill material into waters of the United States. This includes bulldozing sand west of the high tide line on the beach at Clatsop Spit. An ACOE Rivers and Harbors Act Section 10 permit is also required for actions that occur in, under, over or would impact navigable waters (including the Columbia River and Pacific Ocean). Discharges subject to federal permitting must also comply with state water quality standards (CWA Section 401) which are regulated by the Oregon Department of Environmental Quality (DEQ). Currently, OPRD activities are covered by nationwide permit(s).

Oregon's statewide planning goals (namely, Goal 16: Estuarine Resources, Goal 17: Coastal Shorelands and Goal 18: Beaches and Dunes) are relevant to the actions proposed in this site management plan. The goals are achieved through local comprehensive plans completed by counties. Clatsop County has a comprehensive plan and local ordinances which have been acknowledged by the coastal program of Oregon's Department of Land Conservation and Development (DLCD). The HCP and its provisions have been reviewed by DLCD and have been determined to be consistent with the Coastal Zone Management Act (CZMA).

1.4 Historical and Current Status of Plovers

Overall, snowy plover numbers and breeding locations have declined on the U.S. Pacific coast over the past century (ICF International 2010a). Between 1977 and 1980 there were an estimated 2,300 breeding snowy plovers along the coasts of Washington, Oregon, and California (Page et al. 1991). In 1988–1989 this number was estimated to be 1,900

(Page et al. 1991). In 2006, the estimated maximum population was slightly under 2,500 adult birds spread out between the Washington (70), Oregon (177-179) and California coasts and San Francisco Bay (2,231, USFWS 2007). For this west coast bird, the recovery bar has been set at an average of 3,000 breeding adults per year for 10 years. Oregon and Washington combined need to support 250 breeding plovers (USFWS 2007). In 2011, the number of resident plovers in Oregon was estimated at between 247-253 birds (Lauten et al. 2011). During Washington's 2010 breeding window survey, only 38 adult plovers were found, the lowest in the past five years (Pearson et al. 2010). Since intensive recovery efforts and monitoring began in 1993, the Oregon Coast population has been increasing (Figure 4).

Currently, snowy plover monitoring is conducted through the Oregon Biodiversity Information Center (ORBIC) as a joint task between BLM, USFS, USFWS, and OPRD. Distribution and abundance monitoring efforts include breeding and winter window surveys, detect/non-detect surveys, and productivity monitoring. Window surveys provide an index of population size and minimum number of birds, but not complete population counts. Detect/nondetect surveys determine site occupancy at each SPMA, and are described in Section 3.3.3. Productivity monitoring includes locating nests and tracking the outcomes, banding young, and tracking fledgling survival and is further described in Section 1.4.2.

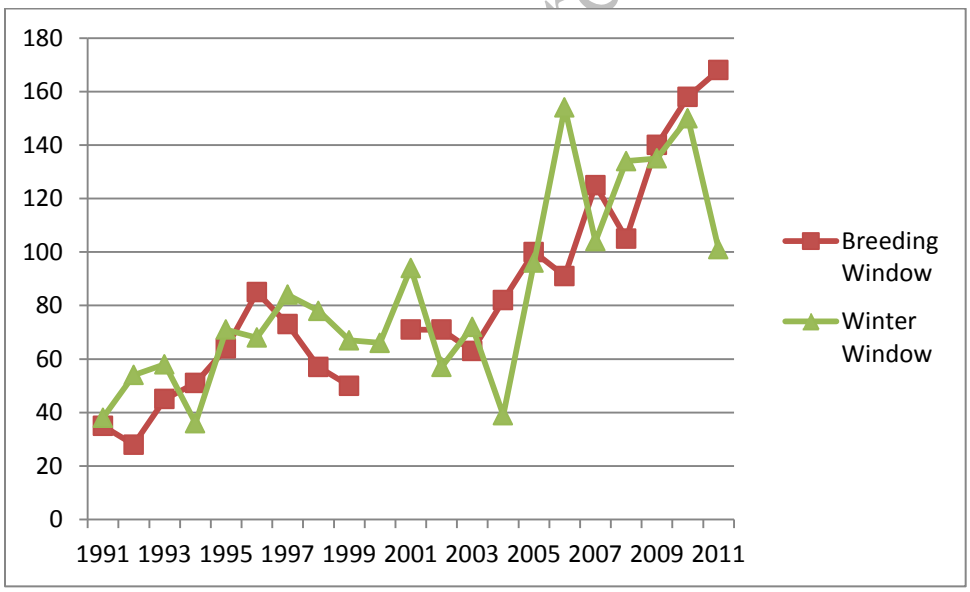


Figure 4. Oregon Coast breeding and winter window survey results

1.4.1. Population Status at Clatsop Spit

Historical records of snowy plover presence at Clatsop Spit date back as far as 1965. The most recent record of a snowy plover at Clatsop Spit SPMA occurred during breeding window surveys in 2012 (USFWS unpublished data).

However, no pairs or breeding behaviors were observed on follow-up surveys and Clatsop Spit SPMA remains unoccupied. Breeding site occupancy is defined as an area where there has been at least one nest or nesting attempt in the previous two years (ICF International 2010a). The most recent confirmed nesting attempt at Clatsop Spit was in 1984. Clatsop Spit does not currently serve as an overwintering site.

Figure 5. Snowy plovers roosting on dry sand at Bandon SPMA

Wintering

Plovers mainly overwinter in coastal areas between southern Washington to Central America (Page et al. 1995), with less than 3% of the total population wintering in Oregon (USFWS unpublished data). Approximately 80% of the Oregon breeding plover population is believed to overwinter on the Oregon coast (ICF International 2010a), where there are eight known overwintering site (ICF International 2010a). Winter surveys at Clatsop Spit have occurred sporadically since 1991, but no birds have been detected (Table 1); however, the most recent incidental wintering record was in 2008 (USFWS, unpublished data). Numbers of snowy plovers counted during winter window vary widely from year to year, in part due to reduced detectability associated with poor weather as well as plovers moving more frequently over a large area during winter. Winter window surveys are intended to provide a range-wide index of the plover population over time; these surveys provide a minimum estimate of plovers at current, historic, and potential breeding sites

(USFWS 2007). Winter window surveys are conducted during a migratory period, when inland and coastal birds can overlap. Since the two populations are visually indistinguishable, the winter survey provides a minimum count of coastal and inland birds combined. While direct comparisons of overwintering sites are not viable, winter surveys identify overwinter sites and detect shifts in distributions. Survey methods are described in Appendix J of the Recovery Plan (USFWS 2007).

Breeding Season

In the early 1970's, the estimated coast wide population estimate was about 300 birds with 216 observed at 19 beaches in Oregon (Wilson 1980). In 1978, annual breeding window surveys began and ranged between 139 in 1981 and 30 birds in 1992 (USFWS 2007). In 2011 the breeding window surveys detected 168 birds, and a minimum of 214 snowy plovers were known to have nested (Lauten et al. 2011).

In addition to lower numbers of breeding pairs when comparing breeding window surveys to historical data, there are also fewer breeding sites. Snowy plovers historically bred at over 20 locations on the coast (USFWS 2007). By 1978, evidence of nesting activity was present at only 12 of these beach sites in Oregon (Wilson 1980). Breeding window surveys have been conducted sporadically at Clatsop Spit since 1992 (Table 1), and while a single adult bird was observed March 31(a banded bird from Washington) and May 25 (an un-banded bird) of 2012, follow-up surveys did not detect the adults again. An incidental observation was also recorded in 2008 (USFWS unpublished data).The most recent confirmed nesting activity was in 1984. No breeding activity has occurred since, leaving Clatsop Spit SPMA unoccupied.

Similar to winter window surveys, breeding window surveys are intended to provide a range-wide index of the plover population over time; these surveys provide a minimum estimate of plovers at current, historic, and potential breeding sites (USFWS 2007). This index of population size also provides regional distribution and abundance data.

Table 1. Fort Stevens State Park breeding and winter window survey results[1]

Year	Breeding Window	Winter Window
2012	1	0
2011	0	0
2010	0	NS[2]
2009	NS	NS
2008	NS	0
2007	NS	NS
2006	0	NS
2005	0	0
2004	NS	0
2003	0	0
2002	NS	0
2001	0	0
2000	NS	NS
1999	0	NS
1998	0	0
1997	NS	NS
1996	NS	0
1995	NS	NS
1994	NS	NS
1993	NS	NS
1992	0	0
1991	NS	0

[1] Surveys were conducted along the ocean beach, the river beach, or both. Not all areas were covered every survey

[2] Not surveyed

Source: USFWS unpublished data

1.4.2. Nest Success and Productivity

Productivity monitoring includes locating nests and tracking the outcomes, banding young, and tracking fledgling survival. This monitoring helps determine estimates of nest abundance, nest fate, fledging success, use of habitat restoration areas, adult populations through marked individuals, and efficacy of predator management methods. Survey methods are described in Castelein et al. 2000a, 2000b, 2001, 2002, and Lauten et al. 2003. Tracking nest success, brood success, and hatch-year returns can help identify factors affecting the recovery of the species and guide management decisions.

Figure 6. Snowy plover nest at Bandon SPMA

Nest Success

Nest success in this site management plan is defined as the number of successful nests divided by total number of nests (apparent nest success; *from* Lauten et al. 2003). Nest success appears to rely on effective predator management, recreation management, and various environmental factors. Since no plovers occupy Clatsop Spit SPMA, nest success is not applicable. Once the site becomes occupied, efforts to increase nest success will be implemented.

Predator Management: Nest success at Clatsop Spit SPMA may be bolstered by lethal and non-lethal predator management methods combined with effective use of exclosures. Predator management is described in more detail in Section 3.2.

Disturbance and Recreation Management: People recreating in the area have the *potential* to impact nest success, including people walking near symbolic fences, illegal fireworks, dog presence, and kite-boarders. Recreation disturbance is discussed in more detail in Section 2.1. Recreation management is described in Section 4.

Habitat variables: The encroachment of vegetation into suitable nesting habitat areas may provide cover to predators, and have an indirect effect on nesting success. Habitat restoration efforts may enhance the success of nests. Habitat management is described in Section 2.2 and 3.1.

Environmental Conditions: Other factors that may limit nest success at Clatsop Spit SPMA include weather, high tides, and weather events (e.g., storms and strong winds that lead to sand inundation).

Productivity

In addition to nest success, the number of young that survive is another important component of snowy plover productivity and imperative to the recovery of the species. Reproductive success, the number of young fledged per adult male, is based on males because they provide post-hatching parental care, and females lay clutches for multiple males (Warriner et al. 1986). Reproductive success provides an index for comparing productivity between sites and years. Fledgling success, the percentage of hatched young that reach flying age, may not be affected by exclosure use since hatched birds quickly vacate the nest area (Lauten et al. 2010).

Food availability, weather, predation, and other unknown potential effects are factors that can influence fledgling success. Snowy plovers forage in the wet sand and wrack line on invertebrates (USFWS 2007). There is often a

wrack line along much of the shoreline at Clatsop Spit SPMA. The exact amount of wet sand and wrack material available varies a great deal depending on weather, tides and other factors. Inclement, stormy weather is relatively common at Clatsop Spit during the nesting season, especially during the early portion of the season. Storms coming out of the southwest form relatively warm fronts and may create higher tides than predicted in tide tables. Later on in the plover nesting season, frequent strong winds from the north occur and may impact fledgling success. The area is also dramatically affected by the flood stage of the Columbia River and river currents. Issues related to predation at Clatsop Spit are described in Section 2.3.

Currently, management techniques to improve fledgling success at occupied sites consist of predator management (Section 3.2), habitat management (Section 3.1) and recreation management (Section 4). Should Clatsop Spit SPMA become occupied, these techniques will be employed in consultation with USFWS and the Western Snowy Plover Working Team.

1.4.3. Survival

A final component to recovery of western snowy plover is survival. Adult survival is important to population dynamics and is addressed in the HCP by focusing on reduction of the identified threats to the snowy plover, discussed in the Recovery Plan (USFWS 2007). Adult survival can vary by site (Mullin et al. 2010). Efforts to assess adult survival on the Oregon coast are in process (E. Gaines pers.comm). In the absence of site-specific adult survival data, strategies to minimize these threats (outlined in this plan) may help improve and maintain survival should Clatsop Spit become occupied.

1.5 Human Use of the Site

1.5.1. Recreation

Participating in beach-related activities is one of the top ten outdoor recreational activities for Oregonians and out of state visitors (OPRD 2003). Approximately six million annual beach visits are estimated to occur to coastal regions every year, with over half of those visits (4.2 million) by Oregon residents (OPRD 2003). Non-coastal Oregonians made up the majority of the visits; however, a smaller number of coastal residents visit the beach many more times than those who travel from elsewhere (OPRD 2003, OPRD 2005). There are more than 40 different recreation-related activities that

occur on Oregon's Ocean Shore, of which 29 are the primary reason people go to the beach (Shelby and Tokarczyk 2002, OPRD 2005). Of course, activities vary seasonally and along the coast.

The Clatsop Spit SPMA falls within the north coast region, and more specifically in beach segment 1 (Columbia River-Nehalem River) in the 2002 Ocean Shore Recreational Survey conducted by OPRD (Shelby and Tokarczyk 2002). Some types of recreation are limited seasonally near and in potential plover habitat and areas at Clatsop Spit. The most popular activities noted in segment 1 were walking (38%), picnicking (27%) and scenic enjoyment (12%, Shelby and Tokarczyk 2002).

Compared to other beaches in the state, particularly on the central and north coast, the Fort. Stevens beaches (on the ocean shore side of the Jetty and not within the SPMA) receive average to slightly higher than average visitation (277/weekend day), however most of those that visit do not experience crowding (68%;Table 2). SPMAs were chosen, in part, because the areas receive relatively lower levels of visitation during peak summer months than adjacent or nearby beaches (ICF International 2010a). The estimated yearly visitation for the Ocean Shore between the Columbia River and the Necanicum River is 67,808 visits (Shelby and Tokarcyk 2002). This estimate includes a much larger section of beach than the target SPMA, so is likely quite a bit greater than actual use for the specific area of interest (ICF International 2010b). Also, beach use information was not gathered for the beach on the river side, where the SPMA is actually located. Anecdotally, use on river side is lower than the ocean shore beach at Fort Stevens State Park.

The most common activities noted at the beach between the Columbia River and Necanicum River, which includes the ocean shore side of the South Jetty at Fort. Stevens State Park (but not the SPMA), is relaxing/scenic enjoyment (67%;Table 2), followed by walking/other exercise (14%). Other activities that are not as common but have the potential to impact plovers include dog walking (5%) and kite-flying (2%). All of the data collected in the area was for the ocean shore beach at Fort Stevens. Anecdotal reports from OPRD staff indicate that recreation on the Columbia River side and within the SPMA is somewhat similar (albeit with lower use numbers) with fishing from shore, walking on the beach, driving on the beach, birding, and dog walking being popular activities. Recreational activities that may occur at and have the potential to cause disturbance to plovers at Clatsop Spit SPMA are described in more detail in section 2.1.1.

Table 2. Columbia River to Necanicum River Use Levels and Recreational Activities

Recreational Activity	Percentage
Walking/other exercise	14
Nearshore Activities	1
Camping	<1
Kite-flying	2
Dog Exercising	5
Relaxing/Scenic Enjoyment	67
Average Number of People/Weekend Day	277 (17/mile)
Average Number of People/Week Day	150 (9/mile)
Percentage reporting some crowding	32

Other Activities: Beachcombing, fishing from beach/jetty, clamming, horseback riding, jet skiing. Anecdotally driving is heavy in the area. Source: Shelby and Tokarczyk 2002. Note: These data are tabulated from the ocean shore beaches and is likely lower on the river side.

1.5.2. Non-recreation uses

Beach Management

The Ocean Shore and the beaches on the river side of Clatsop Spit are a dynamic ecosystem, with constant change brought about by the Pacific Ocean and the Columbia River, both naturally and as a result of the interface between humans and nature. OPRD is responsible for managing other types of non-recreational activities that occur on the Ocean Shore and within state park boundaries, such as marine mammal strandings/removal, boat strandings/salvage operations, public safety, and law enforcement. These activities may require beach disturbance, walking and driving for beach access (including ATVs), operating machinery, and occasionally crowd-control. These activities will be implemented in a manner that minimizes impacts to plovers as described in the HCP (Section 3.3.2: Beach Management Activities).

Marine mammals, boats, and other items wash up on Clatsop Spit beaches at Fort Stevens State Park and sometimes, depending on the situation, require intervention by park and other agency staff (e.g., removal/burial of marine mammals

and other items). In order to help preserve the public's safety while recreating on the beach, OPRD staff also engage in a variety of safety/maintenance activities such as maintaining emergency access points; investigating/removing unsafe drift logs; and investigating/facilitating the removal of hazardous materials on the beach (ICF International 2010a). Law enforcement activities by both OPRD staff and other law enforcement personnel involve investigating crimes and enforcement of rules on the beach.

Natural Resource Management

A variety of natural resource management activities are conducted by OPRD, including snowy plover management and habitat restoration activities for other sensitive species on the Ocean Shore and Clatsop Spit beaches within the state park. In the future, snowy plover management activities at Clatsop Spit may include predator management, managing volunteers who conduct public outreach and education to beach users, habitat restoration and maintenance work, and monitoring and reporting activities (ICF International 2010a). Habitat restoration for other species (although not currently planned), such as the state listed pink sand verbena may also involve dune management or other activities (e.g., removal of exotics, planting native species) to restore native conditions. While these efforts are likely to also benefit the snowy plovers, some incidental impacts may occur (ICF International 2010a).

Section 2. Management Issues

2.1 Human Disturbance

2.1.1. Recreation

Human recreation is often cited as one of the potential threats to the breeding success of the snowy plover (ICF International 2010a). On the Oregon coast, human recreation may contribute to snowy plover reproductive failures and disturbance (ICF International 2010a).

Recreational activities that occur at and have the potential to cause disturbance *in the future* if snowy plovers nest at Clatsop Spit include:

- Disturbance by humans (e.g., hiking, walking, jogging) and/or pets in the dry sand areas. Dogs are currently required to be on-leash within and adjacent to Fort Stevens State Park on the ocean shore side. Visitors and dogs are frequent users of the ocean shore side of Clatsop Spit as well as the river beach side.

- Surf fishing and beach camping could result in prolonged disturbance to nesting or brooding snowy plovers (ICF International 2010a). Beach camping is not allowed on the beaches adjacent to Fort Stevens State Park. Infrequent illegal beach camping occurs at various areas on Clatsop Spit, mainly near Clatsop East HRA and the Clatsop North HRA areas. Shore fishing is a frequent activity at Clatsop East Beach year-round, with peak activity coinciding with fall salmonids runs up the Columbia, usually August through October. There is also some lower level of activity in the spring (April-June) near the Clatsop East Beach and North Beach for surf perch fishing, along with spring chinook and sturgeon.

- Recreational users, including picnickers and campers, might leave behind food or trash, which could attract predators (ICF International 2010a). There is some picnicking near access points, including Parking Lot C.

- Driftwood removal for fire building could disturb incubation, cause accidental crushing of eggs or chicks and remove important components of plover habitat (ICF International 2010a). Occasional collection may occur by illegal campers or by day-users for small beach fires, likely relatively close to the beach access.

- Use of motorized vehicles on beaches could harass nesting plovers, crush nests and young chicks, and destroy sensitive native dune vegetation (ICF International 2010a). There is currently motor vehicle use in the SPMA during the nesting season and may have the potential to disturb future nesting plovers (ICF International 2010a).

- Some kite-flying, kiteboarding/wind-surfing occurs at Clatsop Spit, although there is much less use than on the ocean beaches in the area. Plovers might perceive kites as avian predators and temporarily or permanently abandon nests. The sudden movement of an adult leaving the nest might also attract the attention of corvids or other predators that will then depredate the nest.

- Equestrian use of the beaches could disturb plovers and potentially crush nests and young chicks. Horses are not permitted on the river beach, however, occasionally equestrians use the area illegally. The only equestrian access area in the vicinity is from parking lot A, as well as DeLaura beach access to the south.

- Illegal use of fireworks has been observed on the beach, however use is much lower than on nearby ocean beaches around Sunset Beach and Seaside. Fireworks could disturb plovers during nesting season.

These activities will be managed in a manner that minimizes impacts to plovers as described in the HCP (Section 5.4.2: Public Use/Recreation Management) and this plan (Section 4: Recreation Management). For illegal activities, law enforcement (e.g., beach rangers) will respond to minimize impacts to plovers.

2.1.2. Non-recreation disturbance

Beach Management

OPRD is responsible for managing other types of non-recreational activities that occur on the beach such as marine mammal strandings/removal, boat strandings/salvage operations of boats and other items, public safety, and law enforcement. At Clatsop Spit, the more frequent activities are routine enforcement of park regulations and trash removal. Beach management activities will continue to be conducted in a manner consistent with the requirements of the HCP. OPRD will consult with USFWS regarding these activities, as necessary, within the Clatsop Spit SPMA prior to conducting the activity. Emergency situations such as fires may require immediate actions. Emergency situations are considered to be an unforeseen circumstance, which are addressed in the HCP.

Marine Mammal Strandings and Removal: Marine mammal strandings involves the investigation, reporting, and either burial or removal of the mammal. Activities may involve beach disturbance (in the case of a burial), driving and operating machinery by OPRD staff, and often involves groups of people and vehicles gathered on the beach. These activities may necessarily occur inside, as well as outside, the SPMA. Large animal strandings (e.g., sea lion, whales) occur approximately X times per year and smaller animal strandings (e.g., birds, seals) are more frequent; the carcasses are generally buried. These activities will be implemented in a manner that minimizes impacts to plovers as described in the HCP (Section 3.3.2: Beach Management Activities) and as follows.

If a marine mammal carcass is found, the Marine Mammal Stranding Network (MMSN) will be contacted as soon as possible. If a carcass must be buried immediately, the following information will be collected and conveyed to the MMSN: a photo of the carcass and a record of the date, time, and GPS coordinates. In some cases (e.g., fresh dead small cetaceans), the MMSN will want to retrieve the carcass. As a temporary measure, the carcass will be buried in a shallow pit in order to reduce the threat posed to plovers and prevent scavenger damage until MMSN can arrive at the site. The site will be well-marked to ensure MMSN retrieval. It may be necessary to relocate a large marine mammal carcass (e.g., elephant seal) off-site until MMSN can arrive at the site. Relocations will be coordinated between MMSN and agency representatives (e.g., ocean shore natural resource specialist and/or beach ranger(s).

Public Safety: This activity involves OPRD staff maintaining emergency access points; investigating reports of unsafe drift logs, and where necessary, the removal of those logs; monitoring, photographing, and documenting erosion and storm damage; investigating reports of hazardous materials on the beach; and closure and coordinated cleanup of spilled hazardous materials.

Law Enforcement: This activity involves OPRD staff members supervising and enforcing OPRD rules that include implementing SPMA recreational restrictions, monitoring and checking for valid permits and illegal taking of natural resources, patrolling beaches, compliance monitoring, and conducting outreach. One full-time Beach Ranger conducts these activities at Fort Stevens State Park (along with the rest of the north coast beaches), although most of their time is directed to the Ocean Shore. Certain employees at State parks have citation authority, and occasionally patrol State park beaches and beach access sites. OPRD personnel may also assist law enforcement personnel with injury/death or other crime-related investigations as requested. It involves OPRD staff accessing and moving along the beach by walking, riding horseback, or driving a motor vehicle (including an ATV).

2.2 Habitat

The habitat present within the Clatsop Spit SPMA is itself a product of land and waterway management actions. The SPMA was created relatively recently with the construction of the South Jetty approximately 100 years ago and subsequent sand accumulation. Since this area was submerged until recently, there is no historical basis for habitat presence or baseline conditions documented for restoration efforts. More recently, DESCRIBE FROM GIS ANALYSIS WHEN COMPLETE. The habitat has likely been modified over the years as it has become stabilized by European and American beachgrass species *(Ammophila arenaria* and *A. breviligulata)* making suitable nesting habitat for the snowy plover less viable. Habitat management will monitor the spread of *Ammophila* species to ensure encroachment upon uninvaded areas does not become a concern. Efforts will be made to reduce beachgrass cover where it currently dominates in order to provide for new areas of habitat.

The SPMA is a very dynamic system and is not considered stable, it will likely continue to stabilize or erode depending on river and ocean conditions and sediment transport. This in itself presents habitat management considerations. As snowy plover habitat is not likely to remain static, adaptive management is necessary to work with the variable morphology of the SPMA. Restoration efforts may need to be proactively managed to adjust to new conditions and changing locations of suitable habitat.

Build-up of driftwood/drift-logs within the SPMA may impact plover habitat. Currently, driftwood tends to build up near the southeastern end of the SPMA due to river currents and erosional factors. Driftwood removal activities have been identified as a threat to plovers during the nesting season (USFWS 2007). Not all driftwood is detrimental; smaller amounts can provide plovers protection from the weather and predators (USFWS 2007, ICF International 2010). Managing the beach to maintain suitable levels of driftwood could be an annual task depending on conditions.

Natural Events

Non human-mediated events such as those related to weather (e.g., high tides, strong winds) also lead to nest failure (ICF International 2010). While these occur naturally, cumulative impacts to the plovers, including habitat alteration, increased predation due to introduced species and attraction by human activities, and human recreational activities, plovers have a harder time coping (ICF International 2010). At Clatsop Spit, Columbia River flooding events combined with early spring storm surges may destroy nests and also has management implications for OPRD. Fencing installed early in the season (March-early June) may get inundated and need to be replaced resulting in nests that are temporarily unprotected from pedestrians as well as additional disturbance when fencing is reinstalled.

2.3 Predation

Predation appears to be the main cause of nest failure at monitored sites in Oregon (Lauten et al. 2011), responsible for 45% of failed nests in 2011, and 48% of failed nests when pooled from 2003-2011 (Table 3). In 2011, predation by corvids (20%), unknown predators (22%), and nest loss to unknown causes (18%) are the highest sources of failure (Lauten et al. 2011). Nest failure from mammal predation, such as red foxes and rodents (3%) contribute to nest failure as well as nest abandonment (15%). Should Clatsop Spit SPMA become occupied, it is likely that corvid predation will be the main source of nest failure due to the high density of corvids in the area. Other predators may also pose a threat, such as foxes, coyotes, skunks, feral cats, and raptors that prey on adult plovers.

Predation pressure can be exacerbated by other factors. For example, human or other disturbance causes adult birds to move or flush their nests, which exposes eggs and makes nests more vulnerable to predation. Also, lack of habitat management allows extensive regrowth of vegetation which can create cover for predators and result in higher predation rates in adjacent suitable habitats. Integrated management of these factors is necessary to ensure recovery and survival of plovers.

Table 3. Causes of snowy plover nest failure at monitored sites on the Oregon Coast (2003-2011).

Year	Total Nests	Failed Nests	Adult Plover Predation	Egg Predations				Other Failure					
				Corvid	*Unk Predator*	*Mammal*	*Rodent*	*Weather*	*Abandon*	*1 egg nest*	*Over-wash*	*Infertile*	*Unk. Cause*
2011	289	143	3	28	32	3	1	4	21	23		2	26
2010	261	167	1	8	40	7	23	9	20	25	3	3	28
2009	236	154	0	13	44	2	33	1	11	19	3	2	26
2008	196	127	2	19	36	2	0	7	19	22	7	1	11
2007	202	116	1	20	23	12	0	3	18	23	4	4	8
2006	147	77	5	8	14	1	0	10	10	12	0	3	14
2005	146	73	0	22	12	2	0	6	25	0	0	1	5
2004	117	45	0	5	18	3	0	1	9	0	0	3	6
2003	91	44	0	6	12	2	0	3	5	0	2	5	9
Total	1,685	946	12	129	231	34	57	44	138	124	19	24	133

Source: Lauten et al. 2003-2011

Section 3. Conservation Measures

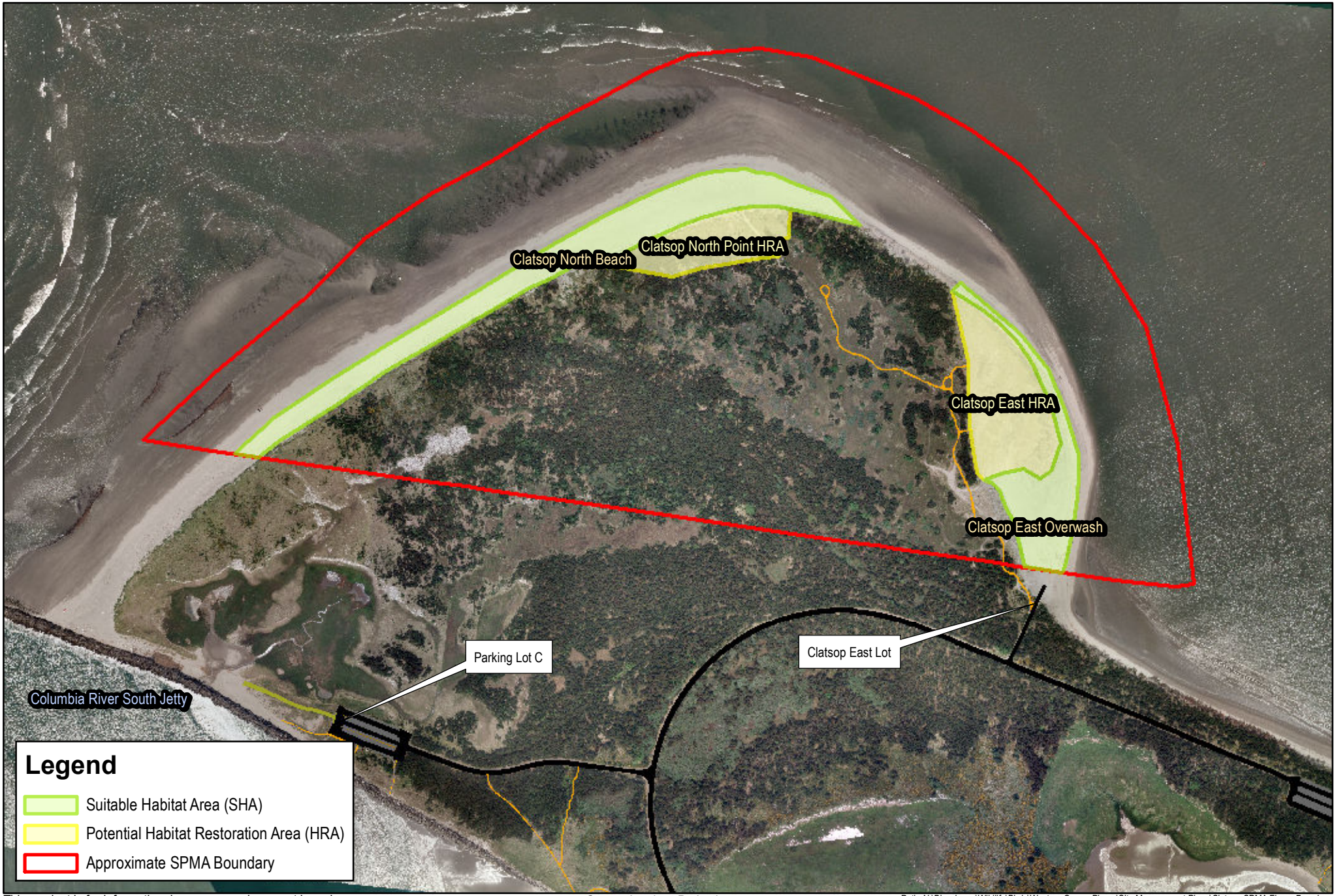
OPRD's management of the Clatsop Spit SPMA will be guided by the principles that OPRD will:

- Contribute to the conservation and protection of the Pacific coast population of western snowy plover in Oregon;
- Manage for conservation and recovery of western snowy plover and their habitat in a manner that balances effort with human use on the park and beaches; and,
- Work in cooperation with partners to increase public awareness and support snowy plover and their habitat needs.
- Meet the requirements of the HCP and associated ITP.

Actions to help achieve these goals are outlined in this plan including the following conservation measures: habitat restoration and maintenance as needed, predator management, and monitoring.

3.1 Habitat Restoration and Management

Goal: Provide and maintain a minimum of 25 acres of quality habitat available for nesting and wintering western snowy plovers at Clatsop Spit. To meet the habitat restoration parameters established by the HCP, OPRD is required to restore and maintain up to 40 acres of habitat at the Clatsop Spit SPMA. Initially, 16 acres of existing suitable habitat will be connected with a new 9 acre habitat restoration area (HRA), for a total of 25 acres of actively managed habitat. Future habitat restoration may be planned in subsequent phases depending on the success of attracting plovers to the site.



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2012 Aerial Imagery

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Figure 7. Snowy Plover Habitat Areas at Clastsop Spit SPMA

3.1.1. Habitat Restoration

Presently the SPMA contains approximately 23 acres of suitable snowy plover habitat located in two suitable habitat areas (SHAs; Figure 7). Clatsop East Overwash is located directly east of Clatsop East Lot along the eastern beach and contains approximately 7 acres of unvegetated sandy river shore that is subject to frequent overwash from the river. Clatsop North Beach SHA is located along the northern stretch of the SPMA and contains approximately 16 acres of suitable habitat, present primarily in a narrow swath of sand adjacent to the foredune. Both habitat areas have been maintained by periodic inundation from the river, which has created relatively level beach morphology in this area and prevented vegetation from establishing. The dominant beachgrass species along this stretch of beach is American beachgrass, *(Ammophila breviligulata),* rather than European beachgrass (*Ammophila arenaria*), which typically dominates foredune areas farther south along the Oregon coast. *A. breviligulata*, while also an introduced species to the Pacific Northwest coast, tends to have a lower foredune height than *A. arenaria* (Hacker et al. 2011). Other vegetation immediately adjacent to the open beach includes pasture grasses, particularly velvetgrass *(Holcus lanatus),* young shore pine *(Pinus contorta var. contorta),* wax myrtle *(Myrica californica),* and scattered smaller Sitka spruce *(Picea sitchensis)* and red alder *(Alnus rubra).* The combination of the plant species composition and the frequent overwash from the Columbia River has created habitat conditions in some areas of the SPMA that are suitable for snowy plovers.

Despite the presence of some suitable habitat with the SPMA, the creation of additional habitat is necessary to make the area more attractive to plovers and increase the likelihood of nest success. The existing habitat is relatively narrow and averages approximately 350 feet in width, which heightens the possibility of potential conflicts with recreational use of the area. The creation of an additional open sand area within the SPMA will provide birds with an increased diversity of nesting sites located off of the immediate beach and further away from recreational uses as well as increases the potential of the area to accommodate more nesting pairs. Initial habitat restoration efforts are proposed at Clatsop North HRA, and will create 9 acres of additional habitat adjacent to the Clatsop North Beach SHA (Figure 7), with the possibility of future habitat creation/restoration as success is evaluated. Another potential location is the Clatsop East HRA (Figure 7), although the dynamic nature of the river may erode this location (for example, in 2009 this area was under water). OPRD and ACOE are coordinating efforts to restore habitat prior to installation of staging areas for the Mouth of the Columbia River Jetty Repair Project, so that plovers will be attracted to the HRA instead of construction locations.

Habitat restoration at Clatsop Spit SPMA involves restoring coastal dune habitat through the removal of invasive plant species as well as lowering the foredune to allow over-wash from storm waves and increased river elevation to occur.

Restoration will include removal and control of beachgrass via bulldozer and/or herbicide, removal of trees and shrubs, possible leveling and re-grading of the habitat directly behind the foredune, and removal of the foredune to allow for winter storm inundation. This work will be conducted in areas that will not impact existing structures, wetlands, or cultural resources.

The proposed Clatsop North Point HRA is located in the northern section of the SPMA, adjacent to existing suitable habitat (Figure 7), and also near the location of two snowy plover sightings in 2012, indicating that if more suitable habitat was restored there would be a good possibility of birds locating the area. The proposed HRA has a similar elevation to that of the beach, reducing the amount of excavation needed (Figure 8). Areas suitable for nesting will be created by removing the foredune and leveling the area behind the foredune in an effort to encourage nesting off the beach while still allowing access to the beach for foraging; at the request of ACOE, if practical, excavated materials will be left as a "berm" around the inland portions of the SPMA to act as emergency fill in case changing conditions threaten to breach the Columbia River South Jetty. Snowy plover nesting in the HRA may experience fewer disturbances from humans and weather than those that nest directly on the beach. Providing dispersed nesting habitat may also reduce the risk of predation, (USFWS 2007, Page et al. 1983). Recent work has shown western snowy plovers ceased incubation and left nests when observers approached within 80 meters (Muir and Colwell 2010). To increase the likelihood of snowy plovers successfully utilizing the SPMA, suitable nesting habitat should be available at a minimum distance of 100 meters from where symbolic fencing can be maintained.

Due to narrow beach widths, it may be desirable to increase the size of available habitat by restoring additional acreage in future phases once recreation management of the SPMA is effectively in place and plovers have occupied the site. An additional habitat restoration area is proposed adjacent to Clatsop East Beach and Clastop East Overwash, the other area of existing suitable habitat. The eastern portion of the SPMA tends to be more dynamic than the northern side, and may be less stable. Exact locations of additional HRAs will be planned based on current conditions at the time.

Figure 8. Proposed Clatsop North Point HRA

3.1.2. Habitat Maintenance

Park managers in cooperation with staff biologists and OPRD natural resource specialists will determine habitat management efforts on a year-to-year basis based on on-site inspections with the objective of maintaining suitable habitat for nesting plovers. While the goal of the initial habitat restoration is to develop a design that has a likelihood of being self-sustaining with regular inundation, it is expected that some vegetation maintenance will be necessary. OPRD will maintain 25 acres of habitat for snowy plover nesting by performing the following activities when necessary:

- Mechanical vegetation removal. The initial method of restoration will utilize a bulldozer to remove the existing beachgrass, shrubs, and small trees that occupy the restoration area. All work will be performed between September 15 and March 15 (after the nesting season). OPRD will determine when restoration will be required by an on-site inspection of the HRA to determine vegetation encroachment. The HRA will be maintained for suitable nesting habitat and vegetation removal will be determined by OPRD management and natural resource staff on a case-by-case basis. Limited re-growth of native species will be acceptable as plovers use some vegetation for cover, but extensive re-growth or re-growth of non-native species will be managed.

Mechanical maintenance work may occur every one to three years depending on habitat condition. Agricultural equipment and tillage may be used in the future as a means of reducing cover of beachgrass.

- Based on results of best available management practices, herbicides may be used as a tool on a small scale experimental basis to reduce thick re-sprouts of beachgrass and determine if a more broad-based spray is appropriate in the future. If successful, a more broad-based spray may be incorporated into habitat management. Herbicide use is currently being employed in Washington state and at OPRD's Bandon SPMA. Results from these areas will help guide herbicide use at Clatsop SPMA.

- Driftwood removal may be needed if driftwood accumulates in areas that block brood movements. Driftwood removal would occur between September 15 and March 15 (after the nesting season).

- It may be necessary to use an excavator to remove logs. Condition of the habitat restoration will determine if log removal is necessary.

On-site inspections by OPRD staff biologists and natural resource specialists will help determine the condition of habitat and whether vegetation removal, herbicide application and log removal is necessary on a year-to-year basis with the objective of maintaining suitable nesting habitat. Recent research indicates vegetative cover should not exceed 40% and be patchy (Muir et al. 2010). A combination of topographic features (beachgrass hummocks, foredune height), vegetation height, vegetative cover, and other cover (driftwood, shells, etc) can affect suitable habitat and maintenance schedules. For example, as beachgrass hummocks build in size, more rapid accumulation and stabilization of sand could occur, and removal of hummocks before this point would be more efficient. OPRD will develop a matrix of these features to help provide an assessment applicable to Clatsop Spit and other SPMAs. Some literature can provide baseline metrics (Muir et al. 2010, Hacker et al. 2011); OPRD will coordinate with USFWS on the development of the matrix.

3.2 Predator Management

Goal: Improve productivity of western snowy plover by reducing predator populations while maintaining adult population numbers.

While Clatsop Spit SPMA is unoccupied, predator management will be limited to trash management and public outreach. This allows available funding to be utilized for actions with a more direct impact on snowy plover recovery, e.g. predator management and habitat restoration at occupied sites and habitat restoration to attract plover at unoccupied sites. During monthly detect/non-detect surveys, monitors will record numbers of predators and sign observed to develop a better understanding of predators at the site. If evidence indicates that Clatsop remains unoccupied due to high predator density, OPRD may consider predator management actions prior to occupancy.

Should Clatsop Spit SPMA become occupied, OPRD will consult with USFWS, ODFW, and the Western Snowy Plover Working Group and ODFW to determine the best methods for encouraging snowy plover nesting success. This will likely include OPRD, in cooperation with partner agencies (e.g., BLM, USFS, USFWS) contracting with APHIS-WS to conduct predator management to encourage snowy plover nesting success. Information on current predator management actions at occupied sites on the Oregon Coast is available in annual reports prepared by APHIS-Wildlife Services (Burrell 2011). OPRD will follow the procedures as outlined in the Western Snowy Plover Integrated Predator Damage Management Program Action Plan (Predator Management Action Plan, USFS et al. 2011). The Predator Management Action Plan is updated annually and provides direction for implementation of the program in the coming year.

Potential predators of snowy plovers that may be targeted for control include red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), river otter (*Lutra canadensis*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), spotted skunk, Virginia opossum, feral cat (*Felix domesticus*), domestic dog (*Canis domesticus*), mink (*Martes vision*), weasel (*Mustela* spp.), rodents, common raven, American crow, gulls, and raptors. A variety of non-lethal and lethal methods may be employed to control corvids and other predators if they are determined to be targeting plovers.

Animals determined to be a threat to nesting plovers will be deterred or removed using the most effective, selective, and humane methods available. OPRD will use the Predator Management Action Plan to manage for predators at Clatsop and will contract with APHIS-WS for predator management work. A variety of tools and definitions in the Predator Management Action Plan are summarized as follows:

Non-lethal tools could include any or all of the following, depending upon the circumstances: increased or improved trash management; removal of carrion; relocation of live trapped animals; aversive methods that harass or deter predators such as pyrotechnics, electronic calls, vehicle harassment, repellents, effigies, electrified or non-electrified exclusionary nest site fencing and exclosures; and habitat modification. A public education program to inform the public

about the effects of cats and dogs, as well as the potential of attracting predators by leaving litter near plover use areas may also be implemented. Trash removal is effective on all predators by reducing food resources. Patrolling is effective mostly for ravens, crows, gulls, raptors, fox, coyote, dogs, and cats. Effigies may be effective for ravens and crows as well as some raptors.

Plover nest exclosures allow passage of adult snowy plovers, but exclude larger predators and can be effective for most predators except weasels, mice, and rats. Nest success of exclosed nests has been higher than non-exclosed nests (Lauten et al. 2011). However, in some cases the use of exclosures may have contributed to increased mortality of adult plovers. When nest success is within expected ranges (41-58%, Colwell et al. 2005, Page et al. 1983, and Powell et al. 2002) or higher, using exclosures may not increase overall productivity since other factors such as fledgling survival also play a role (Lauten et al. 2010). Guidelines have been developed to both appropriately deploy exclosures and minimize adult mortality (ORBIC 2012). Cautious use of exclosures in areas experiencing high predation is encouraged. Since adult plovers tend to return to nesting areas where they successfully hatched a nest (Lauten et al. 2011), using exclosures when plovers first return to Clatsop may increase chances the site will be colonized.

Lethal tools could include any or all of the following depending upon field circumstances: shooting; euthanasia in conjunction with cage traps; padded-jaw leg-hold traps; nets; snares; gas cartridges; DRC-1339 (avicide); nest removal and egg destruction; snap traps; or zinc phosphide bait (rodenticide).

Targeted animals that are live-trapped are humanely euthanized according to standards approved by the American Veterinary Association. APHIS-WS personnel will determine what method or combination of methods is most appropriate and effective for each unique situation using the APHIS-WS Decision Model outlined in the Predator Management Action Plan. Specific actions taken will be based on whether an animal is considered a priority or non-priority species, or if focused attention is observed:

Priority or target species are animals that have the greatest tendency to prey upon plover eggs or nests. The following animals will be prioritized for removal: red fox, American crow, common raven, feral cat, skunks, and rodents.

Non-priority or non-target species are animals that pose a lesser threat as suggested by the data from previous years' control work. These include: raccoons, weasels, mink, Virginia opossums, gulls, dogs, raptors, owls, bobcats, river otters, coyotes, and gray fox among others. These species will only be removed if they exhibit focused attention on plovers or plover nests. However, all Virginia opossums trapped will be euthanized per state law.

Focused attention means a predator is digging under or circling a nest exclosure, pursuing adults or chicks, or depredating nests. A non-priority animal may be targeted for removal if it exhibits these behaviors.

Prior to the removal of non-priority species, the OPRD ocean shore natural resource specialist will be contacted by APHIS-WS. Non-priority species caught incidentally in the pursuit of priority species will be released unharmed unless they are injured and unlikely to survive in the wild. In such cases, the animal will be humanely dispatched. Efforts will be made to take feral cats and domestic dogs to the nearest animal shelter.

APHIS-WS specialists will use animal sign, sightings, and specialized methods to locate, study, deter, capture and dispatch, or release target predators. Predators will be removed if the wildlife specialist in the field determines using the Decision Model and the criteria contained in Action Plan, that the predator is a threat to snowy plovers.

3.3 Monitoring

The three types of monitoring and associated goals for which OPRD is responsible are:

1. Wintering and Breeding Window Surveys

   Goal: Survey for wintering and breeding populations to provide data to USFWS that will assist in developing range-wide comparisons regarding population trends, observing presence, and calibrating seasonal recovery efforts.

2. Snowy Plover Breeding Population Monitoring

   Goal: Determine the productivity of the breeding population of snowy plovers in the occupied SPMAs

3. Snowy Plover Detect/Non-Detect Monitoring

   Goal: Confirm occupancy and determine whether snowy plovers are dispersing to unoccupied SPMAs.

Findings will be reported to USFWS annually and OPRD will work with snowy plover partners to evaluate the effectiveness of the HCP and this site management plan.

3.3.1. Wintering and Breeding Window Survey

OPRD will continue to provide resources to assist with conducting wintering and breeding window surveys at SPMAs. USFWS coordinates these surveys utilizing agency staff and trained volunteers. These surveys will be conducted as indicated in Appendix J: Monitoring Guidelines for the Western Snowy Plover, Pacific Coast Populations (USFWS 2007)

and the results will be compiled annually and submitted to USFWS. The objective of collecting these data is to help partners determine occupancy and detect trends across the range.

3.3.2 Breeding Population Monitoring

OPRD will continue funding to monitor breeding populations at occupied sites via ORBIC (or other monitors agreeable to OPRD and USFWS) and in cooperation with the Western Snowy Plover Working Group. This information will help provide the data necessary for partners (e.g., USFWS) to determine population levels and productivity, and support the productivity goal of one fledgling per male as outlined in the Recovery Plan. The results of breeding population monitoring will be communicated (e.g., via email) to USFWS a minimum of once a month. Monitoring reports will focus on ongoing concerns, such as recreational use violations or predation at a particular SPMA. This information will also be documented in an annual report provided to USFWS for review and will be used to determine the effectiveness of the snowy plover conservation management activities and to make adaptive management decisions.

3.3.3. Detect/Non-Detect Monitoring

Trained OPRD staff and volunteers will continue to participate in detect/non-detect monitoring activities along the Ocean Shore at unoccupied SPMA sites to determine whether nesting populations of snowy plovers are present.

Detect/non-detect surveys (March 15 through July 15) will be conducted to determine occupancy according to the methods outlined in Appendix J: Monitoring Guidelines for the Western Snowy Plover, Pacific Coast Populations (USFWS 2007). Results will be compiled and submitted annually to USFWS. One survey will be required in March and July; in April through June two surveys per month will be conducted. USFWS also performs surveys in April (early season) and May (range wide breeding window surveys), and these may be used in conjunction with OPRD's surveys. Scientific research has shown that 4 surveys per site conducted during May-July successfully determined site occupancy with 99% accuracy (Pearson et al. 2008). OPRD's survey schedule should be sufficient to determine site occupancy.

Surveys will be conducted under OPRD's Recovery Permit (in process), either by the permit holder or by staff or volunteers that meet the requirements listed in Appendix J of the Western Snowy Plover Recovery Plan and are listed as sub-permittees under the OPRD Recovery Permit. OPRD will provide USFWS-approved training to staff and volunteers that will conduct detect/non-detect surveys.

If a survey detects a plover, OPRD will immediately inform USFWS and determine if follow-up surveys are required. If a pair of plovers or evidence of nesting is observed, additional surveys to determine breeding status will be conducted

during the following two weeks (3 visits during the first week if possible). Efforts to identify any color bands will be a priority after determining breeding status. If breeding is confirmed, the SPMA will be managed as an occupied site until September 15, and potential predator management actions will be discussed with USFWS.

Section 4: Recreation Management

Goal: Reduce the potential for disturbance of snowy plover by recreational users during the breeding season by managing recreation uses and beach access within or near SPMAs while continuing to provide public beach access on the Oregon coast.

OPRD's management of the Clatsop Spit SPMA will be guided by the actions outlined in this plan, including recreation management measures to protect nesting areas from the recreating public through access restrictions, outreach and education and continued enforcement. This site management plan will define the geographic area of restricted recreation within the SPMA that will go into effect following USFWS approval.

4.1 Recreation Restrictions

Goal: Reduce potential disturbance to snowy plover by recreational users while providing public beach access.

OPRD will implement recreational-use restrictions in the SPMA for specific activities that pose potential threats to snowy plover and their habitat, including activities that may prevent plovers from establishing. In 2013, OPRD will ask for voluntary compliance with the seasonal recreation restrictions listed below between March 15th – July 15th. Starting in 2014, the following seasonal recreational restrictions will be in effect in the Clatsop Spit SPMA, as long as it remains unoccupied, between March 15th – July 15th:

- Vehicles (motorized and non-motorized) prohibited on the beach west of Clatsop North Point and in designated HRAs (except for administrative and permitted uses), or as otherwise restricted by existing Oregon Administrative Rule (OAR). Vehicle access will be allowed on the wet sand at Clatsop East Beach to preserve the recreational uses in the area.

- Dogs must remain on-leash in designated areas, including SHA and HRAs. *Note: this activity is already prohibited at all areas within and adjacent to the park boundary on the ocean shore side.* Alternative areas where dogs may be off-leash when under voice or signal command are available on the Ocean Shore within the Park.

- Seasonal posts and interpretive signage will be installed requesting voluntary compliance with the following conservation actions within Clatsop North Beach and Clatsop North Point HRA from March 15-July 15th, while the site remains unoccupied.
    - Request visitors to recreate on the wet sand within the SPMA and avoid suitable habitat in the dry sand (HRAs will not be subject to restrictions until restoration work occurs) to help snowy plovers that may use the dry sand area (approximately 30 acres, Figure 9).
    - Clatsop North Beach and Clatsop North Point HRA will be marked with posts and signs asking for voluntary compliance but will not be fenced. Voluntary compliance includes requesting visitors, equestrians and dog-walkers to recreate on the wet sand beach instead of dry sand areas.
- If a nesting plover is discovered, the site will be managed as occupied from Clatsop North Point west to the SPMA boundary, and the following year the SPMA will be managed as occupied. If plovers are active on Clatsop East Overwash the entire SPMA will be managed as occupied.

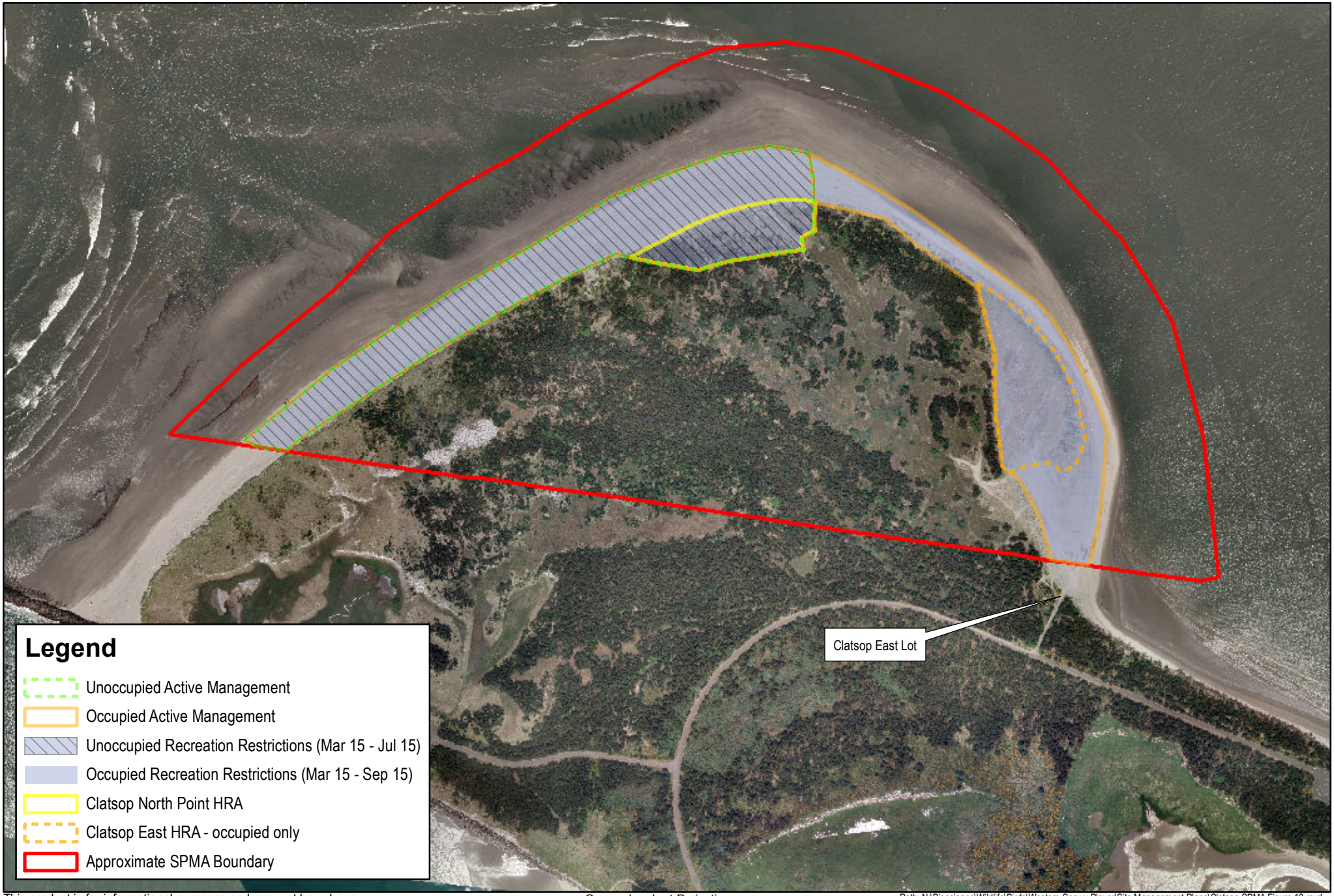
OPRD will implement recreational-use restrictions in the SPMA, if it becomes occupied, for specific activities that pose potential threats to snowy plover and their habitat. The following seasonal recreational restrictions will be in effect in the Clatsop Spit SPMA, between March 15th – September 15th, when it becomes occupied:

- Vehicles (motorized and non-motorized) prohibited on beach (except for administrative and permitted uses), or as otherwise restricted by existing Oregon Administrative Rule (OAR). If juvenile plovers are still present, the vehicular closure will be extended until they are fledged.

- No dogs will be allowed on the wet and dry sand (approximately 52 acres, Figure 9)

- Flying kites prohibited on wet and dry (approximately 52 acres, Figure 9)

- All other recreational activities directed to the wet sand (fences, ropes, and/or signs will define the dry sand breeding areas to be avoided). Visitors may use the upland trails that exist and that may be created to go around the SPMA and reach the wet sand (Figure 9).



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Oregon Lambert Projection
Datum NAD 83
2012 Aerial Imagery

Path: N:\Bioscience\Wildlife\Birds\Western Snowy Plover\Site Management Plans\Clatsop SPMA Figure 10.mxd
Date: 10/8/2012

N

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Figure 9. Recreation Management at Clatsop Spit SPMA

4.1.1. Access

There are two major areas leading to the beach that may impact potential plover nesting habitat: Parking Lot C and Clatsop East Lot (Figure 1). An unimproved road bed leads from Parking Lot C to the Columbia River South Jetty and the river beach west of the SPMA; a wet crossing and steep incline prevent most vehicular access, and depth of water is tidally influenced. Vehicles are able to access the SPMA from Clatsop East Lot. Temporary and permanent regulatory and interpretive signage will be installed at the east and west boundaries of the SPMA, Parking Lot C, and Clatsop East Lot with plans to expand signage where needed.

4.1.2. Symbolic Fencing

Once Clatsop is occupied, OPRD will install symbolic fencing and maintain it through the nesting season. The fencing will be installed by OPRD staff and volunteers between Clatsop East Beach and the west boundary of the SPMA and will include stakes, ropes, and signage. Winter storm activity at Fort Stevens State Park will dictate where initial fencing will occur. Fencing of SHAs and HRAs in areas where storm surges will not damage fencing will occur by March 15. As the snowy plover nesting season progresses and winter storm activity subsides, OPRD will expand the fencing as needed

Later season fencing will need to be done in consultation with plover biological monitors to determine nesting sites so that nesting adults are not disturbed by fencing installation. Fencing may be realigned to encompass plovers that have nests on the beach face.

4.2 Signage

Goal: Use signs to inform the public where and why restrictions occur for protection of the western snowy plover and their habitat.

Sign use will change based on the occupancy status of the SPMA. When unoccupied, signs will inform visitors of potential nesting birds, dogs must remain on leash, and that no vehicles are permitted. Visitors will be encouraged to recreate west of the SPMA where no restrictions will be in place. Once occupied, signs will direct visitors with dogs to the ocean beach on the west side of the park, away from the nesting sites, and other visitors to recreate on the wet

sand. OPRD may utilize volunteer hosts to assist with outreach and access. OPRD will install symbolic fencing and signage to direct people away from nesting areas. Placing directional signs at the roped area pointing people to go around nesting areas is intended to reduce the number of incidents. Weather, beach conditions, and increased traffic and/or violations may dictate the need for additional signs or changing the location of signage.

4.2.1. Interpretive Signs

OPRD will provide signage at access points to inform the public of the potential presence of nesting seabirds, including snowy plovers and the importance of shorebird protection measures. A Capsian tern (*Sterna capsia*) nesting colony is located across the Columbia River, and adults often forage and loaf at Clatsop Spit. In addition, many shorebirds also forage along the spit. The recreation management at the SPMA will benefit these bird species in addition to plover. To provide more awareness about shorebirds and the coastal dune ecosystem, OPRD prefers to use more general information at this site. Western snowy plovers will receive emphasis in the overall interpretive message.

Figure 10. Sanderlings foraging at Clatsop North Beach

Two interpretive panels are proposed; the first panel would be at Clatsop East Lot, and the second at Parking Lot C. These panels will inform the public of the status of the snowy plover and to help instill the “share the beach” message

developed by state and federal partner agencies working on plover management. Panels will likely be similar to interpretive panels at other sites (Figure 11), updated to reflect site specific information.

OPRD will assist with any future interpretive sign design that the Western Snowy Plover Working Group recommends and will dedicate OPRD staff to assist with the design and installation of signage at Clatsop Spit.

Seasonal regulatory signs will be installed at beach access points informing the public on what part of the beach the restrictions occur. Signs at the parking lot pointing to "dog friendly" areas where dogs may be allowed off-leash are recommended. These signs will be installed on an annual basis before the start of nesting season on March 15th. The location of the seasonal signs will depend on variations in weather, tides, and other factors but will generally be near the two major access points. Other temporary regulatory signs will be installed as necessary.

Figure 11. Snowy plover interpretive sign at Bandon SPMA

4.2.2. Boundary Signs

Seasonal boundary regulatory signage will be installed at trail access points and periodically along the SPMA boundary informing the public on applicable recreation restrictions. In addition, while Clatsop Spit remains unoccupied, seasonal boundary signage will be posted around selected suitable nesting habitats and restoration areas. These signs will request visitors voluntarily remain outside of nesting areas to help attract plover to designated sites. Seasonal regulatory signs will be installed by March 15 and removed after July 15 unless breeding plovers are detected at the SPMA.

Once occupied, signage indicating the presence of nesting snowy plovers and the boundaries of dry sand restrictions will be installed at the boundaries of restricted areas within Clatsop Spit SPMA. Symbolic fencing and regulatory signs will be installed by March 15 and removed after September 15 to avoid further impacts to nesting plovers during installation. As with symbolic fencing, winter storm activity at Clatsop Spit SPMA will dictate where the initial fencing/signing will be posted. Signs will be posted along the HRA and the areas where storm surges will not damage signs by March 15. As the snowy plover nesting season progresses and winter storm activity subsides, OPRD relocate and post new signs as needed. OPRD will post signs from the east boundary of the SPMA located at the Clatsop East Overwash to the west boundary. Later season sign posting will need to be done in consultation with plover biological monitors to determine nesting sites so that nesting adults are not disturbed by installation.

Regulatory signage installed with the symbolic fencing will include wording to inform beach visitors that access to dry sand areas is prohibited and legal action will occur if violations are observed.

OPRD will design regulatory signs to be placed on the beach, Parking Lot C, and the East Lot inform the public on the restrictions required to recover the snowy plover.

Figure 12. OPRD beach rangers install plover signage at Bandon SPMA

4.3 Outreach and Education

Goal: Inform park staff, volunteers and the general public about the ecology of western snowy plover, the significance of Oregon's beaches for successful species recovery, and the management actions taken to conserve the species, including responsible beach use in plover areas.

OPRD may recruit and train volunteers to serve as docents for public outreach and education at the two access points to Clatsop Spit SPMA. Volunteers recruited by Fort Stevens State Park may provide valuable on-site education to the public at the beach access. Volunteers will be able to talk to beach visitors and provide brochures informing them of the plover and the restrictions that apply when walking the beach. Fort Stevens State Park will also conduct summer interpretive programs at the campground to educate the public on the plight of the snowy plover. An interpretive park ranger at Fort Stevens is responsible for all interpretive activities at the park and will provide programs (e.g., evening and Junior Ranger programs) directed toward the snowy plover recovery effort.

The beach ranger and natural resource specialists will also provide on-site outreach and education to the public at Fort Stevens State Park.

4.4 Enforcement

Goal: Ensure that the public is aware of and adheres to OPRD rules and regulations governing Oregon's Ocean Shore and the conservation of wildlife within the boundaries of Oregon State Park property, including the public use restrictions that will lead to recovery of the western snowy plover.

OPRD will continue to provide one full-time beach ranger to patrol the Ocean Shore in Clatsop and Tillamook County, including providing enforcement patrols at Clatsop Spit SPMA. Park staff from Fort Stevens State Park will assist in enforcement and coordinate with local law enforcement and Oregon State Police to facilitate enforcement activities. OPRD enforcement staff may attend workshops and other training opportunities that are directly related to plover issues (e.g., law enforcement workshops coordinated by USFWS).

4.4.1. Responsibilities for Enforcement

Patrols will be made by OPRD's beach ranger, Fort Stevens Management Unit state park staff, and Oregon State Police. Local law enforcement (city police departments, county Sheriffs) will be contacted as needed to serve as back-up for OPRD enforcement contacts that may require assistance.

4.4.2. Enforcement Timing

Unoccupied nesting sites will have enforcement patrols of at least once/week during the March 15 to July 15 seasonal recreation restrictions for the designated unoccupied SPMAs. Additional patrols may be scheduled as park and beach staff become available and may include one additional patrol per week or weekend saturation patrols with an emphasis on education. Education will be emphasized for the first two years over enforcement.

Occupied nesting sites will require increased enforcement and education to include patrols and education contacts concentrating on beach and habitat restoration areas of the SPMA. The enforcement season will be extended to September 15 due to the occupied status of the site. Areas with higher recreational use will receive a higher level of enforcement that will depend on staff time and availability times that will include holiday periods during the nesting season, e.g., Spring Break, Memorial Day, Independence Day, and Labor Day. Patrols will need to be varied to include early morning as well as evening depending on the safety needs of staff. Weekends certainly need attention, but a varied schedule throughout the week is advised.

4.4.3. Special Requirements

OPRD beach rangers will be commissioned officers that will have the authority to write citations for OPRD Oregon Administrative Rules (OAR). Contracts with Oregon State Police (OSP) and other local law enforcement may be a tool to increase uniformed presence on the beach and to serve as back-up for OPRD enforcement officers. Past contracts have been with OSP to provide overtime opportunities to troopers to patrol the Ocean Shore and Oregon State Park campgrounds. OPRD will continue to pursue coordination with other enforcement agencies for beach patrols at plover sites, but will depend on availability of staff from those enforcement agencies.

Agreements with ACOE are being developed to ensure that OPRD enforcement staff has authority and jurisdiction to enforce HCP mandates in Fort Stevens State Park where ACOE is the property owner. Currently OPRD and ACOE have an agreement for OPRD to manage land owned by ACOE for recreation. OPRD and ACOE are pursuing a consent letter to grant OPRD the jurisdiction to implement this site management plan.

Section 5. Adaptive Management

Goal: Allow for changing conditions or circumstances and new information in determining management actions at OPRD's SPMAs.

Adaptive Management is a process that allows resource managers to adjust their actions to reflect new information or changing conditions in order to reach a goal (ICF International 2010). OPRD will use adaptive management to minimize take of snowy plover resulting from management of Oregon's beaches and to ensure the long-term survival of the snowy plover along the Oregon coast, while minimizing recreational impacts (ICF International 2010). Future research efforts to inform adaptive management measures will be undertaken through joint efforts with the other entities involved in snowy plover recovery efforts including USFS, BLM, USFWS, and ODFW (ICF International 2010).

To allow for changing conditions, circumstances, and new information, management actions outlined in this site management plan for the Clatsop Spit SPMA will be reviewed annually while the site remains unoccupied, and every five years once occupied. Reviews will likely coincide with the Western Snowy Plover Working Group annual meetings. Information from annual reporting meetings between OPRD and USFWS will be used to review the performance of management efforts (e.g., habitat restoration, predator management, recreational restrictions) per the requirements of the HCP (ICF International 2010). If after five years of recreation restrictions and habitat restoration, no western snowy plovers have occupied the site, the methods outlined in this plan may be changed if data indicates other factors not discussed in this document are limiting snowy plover use of the site.

OPRD will continue to work with the WSP Working Group to achieve more rigorous statistical analysis of nest success, productivity, adult over-winter survival, and the effects of predator management in annual biological monitoring reports to better inform adaptive management decisions. Environmental covariates such as weather and climactic patterns (e.g., el nino, la nina), tides, etc., should be included in statistical analyses. OPRD will continue to work with biological monitors and the Western Snowy Plover Working Group to develop more rigorous analyses.

If biological monitoring indicates consistent snowy plover population declines along the Oregon Coast when compared to population numbers provided in previous biological monitoring reports, OPRD and USFWS will work together to determine if inadequate management actions on the part of OPRD are determined to be responsible, in whole or in part, for such declines (ICF International 2010). In addition, if statistical analysis of snowy plover population data indicates current management methods are detrimental to snowy plover, OPRD will consult with USFWS to adjust techniques. If

new techniques are available for more effectively implementing management actions, then revisions to the management prescriptions outlined in this plan will be considered. Adjustments can be made by consensus agreement as outlined in the HCP. For example, through monitoring of nest success, OPRD may evaluate the use of exclosures and their effectiveness in preventing predation and nest disturbance. Nest exclosure success would then be examined to determine if changes in the management application (e.g., elimination of the exclosure, timing changes for application of the exclosure, design changes) should be considered. An implementation schedule (subject to adaptive management), outlines the management practices, objectives, actions, staff responsibilities, and approximate timeline for this plan (Table 4).

Table 4. Western Snowy plover management plan implementation schedule: Clatsop Spit SPMA

Management Practice	Goal	Management Objective	Action	Timeline	Responsibility
Habitat Restoration and Maintenance (see section 3.1)	Provide and maintain a minimum of 25 acres of quality habitat for nesting and wintering western snowy plovers	Provide plovers at least 1 area to nest off the beach front, behind protective foredunes	Breach foredune and level interdunal area in a 6-acre area	Ongoing, as necessary.	OPRD staff, contractors.
		Maintain the 25 acres of existing suitable habitat in functional condition	1. Spray herbicide based on best management practices and results of experimental spraying 2. Remove heavy infestations of European beachgrass through bulldozing or other mechanical means as necessary	Application will be predicated on industry herbicide application standards, OPRD internal written policy, results of experimental testing and with USFWS input.	OPRD staff
			3. Remove logs	As needed as determined by OPRD in consultation with USFWS. Work will be conducted between Sept. 15-March 14 to avoid impacts to nesting plovers.	OPRD staff

Management Practice	Goal	Management Objective	Action	Timeline	Responsibility
Predator Management (section 3.2)	Improve productivity of western snowy plover by reducing predator populations while maintaining adult population numbers.	Conduct lethal and non-lethal predator management to reduce predation on the breeding population	Contract for predator management with APHIS-WS in coordination with the Snowy Plover Working Group	Ongoing once the site is occupied. Predator management timing will be determined through the Snowy Plover Working Group (as outlined in the annually updated Action Plan).	OPRD staff, APHIS-WS.
Monitoring (Section 3.3)	Monitor status of plovers at Clatsop SPMA to evaluate effectiveness of meeting HCP goals.	1. Wintering and breeding window surveys: Provide data to support rangewide comparisons regarding population trends, observe presence, and calibrate seasonal recovery efforts.	Continue to provide staff time to assist partners	Annually	OPRD staff
		2. Breeding population monitoring: Help provide data to determine productivity of the breeding population in the SPMA.	Continue to provide annual contract funding for breeding surveys.	Once occupied, annually, during the breeding season.	OPRD staff, contractors (ORBIC)

Management Practice	Goal	Management Objective	Action	Timeline	Responsibility
Monitoring (Section 3.3)		3. Detect/non-detect monitoring: Confirm occupancy and determine if plovers are dispersing to unoccupied SPMAs in order to adaptively manage OPRD sites.	OPRD will continue to provide staff time to assist its partners	At the beginning of the breeding season (March) through July 15 as described in the USFWS monitoring protocol.	OPRD staff
Unoccupied Recreation Restrictions (section 4.1)	Increase SPMA attractiveness to snowy plover by reducing disturbance by recreational users while providing public beach access.	1. Seasonal recreational restrictions will be in effect between March 15 and July15 to increase likelihood that prospecting snowy plover are not disturbed by recreational traffic.	1. Vehicles (motorized and non-motorized) prohibited on wet/dry sand 2. Dogs must be leashed 3. All other recreational activities voluntarily directed to the wet sand (signs will define dry sand breeding areas to be avoided)	Recreational restrictions will become voluntarily effective March 15, 2013 and enforced March 15, 2014. Annual restrictions may be lifted early if no nesting occurs by July 15th.	OPRD Staff
Occupied Recreation Restrictions (section 4.1)	Reduce disturbance to snowy plover by recreational users while providing public beach access.	1. Seasonal recreational restrictions will be in effect between March 15 and September 15 to ensure that nesting snowy plover are not disturbed by recreational traffic.	1. Vehicles (motorized and non-motorized) prohibited on wet/dry sand 2. Dogs and flying kites prohibited on wet/dry sand 3. All other recreational activities directed to the wet sand (fences, ropes, and/or signs will define dry sand breeding areas to be avoided)	All recreational restrictions will become effective the season a pair of western snowy plovers are located on the SPMA, or a nest scrape is discovered. Annual restrictions may be lifted early if no nesting occurs by July 15th.	OPRD staff

Management Practice	Goal	Management Objective	Action	Timeline	Responsibility
Occupied Recreation Restrictions (section 4.1)		2.Symbolic fencing/ regulatory signage to notify and educate the public on restricted nesting areas	Symbolic rope fencing with signage will be installed from the west SPMA boundary to Clatsop East Overwash	Annually from March 15 to September 15	OPRD staff
Signage (Section 4.2)	Use signs to inform the public where and why restrictions occur for protection of the snowy plover and their habitat.	Regulatory (i.e., boundary) and interpretive signage to notify and educate the public on restricted nesting areas.	Regulatory signage will be installed around HRAs and the SPMA as natural processes permit	Annually from March 15 to July 15 if unoccupied, from March 15 to September 15 if occupied	OPRD staff
			OPRD will assist with any future interpretive sign design that the Snowy Plover Working Group recommends and will dedicate OPRD staff to assist with the design and installation of signage at Clatsop Spit SPMA	As funding permits	OPRD staff in coordination with Snowy Plover Working Group
Outreach and education (section 4.3)	Inform park staff, volunteers and the general public about the ecology of western snowy plover, the significance of Oregon's beaches for successful species recovery, and the management actions taken to conserve the species.	Provide on-site interpretation and education. Engage in appropriate outreach efforts with neighbors and others as practicable.	Distribute brochures to neighbors (e.g., KOA Campground) and visitor's centers. Provide interpretive programs at Fort Stevens State Park.	Seasonally	OPRD staff and volunteers

Management Practice	Goal	Management Objective	Action	Timeline	Responsibility
Enforcement (section 4.4)	Ensure that the public is aware of and adheres to OPRD rules and regulations, including the public use restrictions that will lead to recovery of the western snowy plover	Provide patrols during critical snowy plover nesting periods.	Patrol the Clatsop Spit SPMA during busy periods, with a focus on the critical snowy plover nesting period from March 15-September 15.	Annually, focused on snowy plover nesting season ((from March 15 to July 15 if unoccupied, from March 15 to September 15 if occupied)March 15-September 15) and high traffic time periods (e.g., holidays)	OPRD staff, OSP, local law enforcement

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Spending and Economic Activity from Recreation at Oregon State Park Units—Coastal Region and Milo McIver State Park

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Cover photo: Heceta Head Lighthouse State Scenic Viewpoint. Photo by Anita Morzillo.

Figures and tables

Executive summary

The spending of visitors to Oregon State Parks units generates economic activity in the communities located around those units. We use a survey of visitors to Oregon State Parks units located in the Coastal Region and at Milo McIver State Park to estimate the average trip spending of visitors. We then combine those estimates of average spending with estimates of the number of recreation visits and an economic model to quantify the magnitude of local economic activity generated from Oregon State Parks visitor spending.

The average trip spending of visitors ranges from about $25 per party per trip for local residents on day trips to nearly $300 per party per trip for non-local residents on overnight trips away from home. On average, most local area expenses are for gasoline, groceries, and purchases in restaurants/bars. The reported 23 million visits to Oregon State Parks units in the Coastal Region yield about $575 million in visitor spending in local communities. Non-local residents account for about $507 million of that spending. The reported 400,000 visits to Milo McIver State Park result in total visitor spending in the local area of about $7.7 million.

The economies of local communities are bolstered by the total spending from visitors and from the "chain reaction" of economic activity that results when those businesses and their employees also spend money in the local community. That chain reaction is also referred to as the "multiplier effect." For the Coastal Region, spending in the local areas around Oregon State Parks units generates about $465 million in total sales, about 7,480 full and part-time jobs, and generates total labor income of $145 million. Counting only the spending of non-local visitors, the economic impact of visitor spending within the Coastal Region amounts to total sales of $419 million, 6,682 full and part-time jobs, and $129 million in labor income. The spending of visitors to Milo McIver State Park generates about $7 million in total sales, 94 full and part-time jobs, and $2 million in labor income within the local region. Counting only the spending of non-local visitors, the economic impact of Milo McIver State Park recreation visitor spending amounts to nearly $2 million in total sales and 27 full and part-time jobs.

Introduction

The units of the Oregon State Parks system provide a valuable recreation resource for residents of and visitors to Oregon. Additionally, the towns and cities around Oregon State Parks units benefit economically from government spending for unit operations and from the spending of visitors recreating at Oregon State Parks facilities. In many cases, the economic activity generated from recreation visitors is an integral component of local economies. This report describes the spending, and associated economic activity, of recreation visitors to Oregon State Parks Units within the Coastal Region and at Milo McIver State Park in the Valley Region.

This report relies on survey data collected from visitors to a subset of units (Box 1) located in the Coastal Region and at Milo McIver State Park between July and August, 2011 (Bergerson 2012). More than 9,000 completed surveys were collected. A portion of those surveys are used in this analysis. Day use areas of units were sampled via on-site visitor surveys. Overnight use areas (i.e., campgrounds) were sampled through an online survey of visitors using the Oregon State Parks reservation system. The survey was designed to measure visit and visitor characteristics, visitor satisfaction, and visitor trip spending in the local area around the recreation unit. The questions used to elicit local recreation trip spending were consistent with those used in the USDA Forest Service recreation monitoring program (Zarnoch et al. 2011).

Measuring how the spending of recreation visitors affects the economies of local communities requires 1) an estimate of total recreation visitation within different trip types, 2) an estimate of the average spending of recreation visitors engaged in different trip types, and 3) a model of the local economy.

Box 1—Oregon State Parks Units sampled in 2011

North Coast
Cape Lookout SP
Cape Meares SSV
Fort Stevens HA
Nehalem Bay SP

Central Coast
Beverly Beach SP
Devil's Lake SRA
Devil's Punch Bowl SNA
Jessie Honeyman SP
South Beach SP

South Coast
Bullards Beach SP
Harris Beach SRA
Samual Boardman SSC
Sunset Bay SP
William M. Tugman SP

Valley Region
Milo McIver SP

Average trip spending

Spending averages were estimated using data collected from visitors to all of the units sampled in 2011. Survey respondents reported trip expenditures made by their entire travel party within 30 miles of the visited facility. Trip expenses were reported within 10 expenditure categories, such as spending for hotels/motels/B&Bs, campground fees, restaurants, and gas and oil. Because they were interviewed in the middle of the trip, respondents interviewed in day use areas were asked to report expenses already made as well as anticipated expenses. Expenses at home in preparation for the trip and expenditures traveling to, but beyond 30 miles of the unit, were not reported. The visitor spending reported here does not represent spending for equipment, gear, or other durable goods that might be used for recreation.

Our goal is to estimate spending averages for meaningful groups of visitors. In developing the approach to grouping visitors, we recognize that visitor spending is mostly influenced by the type of recreation trip taken (day or overnight) and whether the individual lives in the immediate area of the recreation destination (White and Stynes 2008). In general, the recreation activity of the trip has little influence over trip spending once the type of trip is taken into account. In our approach, we have grouped visitors into five distinct types of trips to Oregon State Parks:

- **Non-local day trips**: non-local residents on day trips to the area,
- **Non-local overnight**: non-local residents staying overnight at the unit or in the area,
- **Local day trips**: local residents on day trips to the area,
- **Local overnight**: local residents staying overnight at the unit or in the area,
- **Non-primary**: visits where recreating at the unit is not the primary reason for the trip away from home.

Local residents were identified as those who travelled 30 miles or less from home to reach the facility. Visitors were classified as overnight visitors if they reported a night spent away from home in the local area, reported local expenses on lodging or camping, or claimed to be participating in camping at the unit. Visitors not classified as overnight were classified as day visitors. In some cases, an individual may be on an overnight trip away from home but on only a day trip to the local area. Those individuals are classified as “day” visitors. Finally, visitors were classified as non-primary visitors if their stated reason for traveling away from home was something other than recreation or if the unit was not the main recreation destination. In some analyses, it is desirable to exclude the recreation trip spending of non-primary visitors. Note that for the Coastal Region, about 90% of non-primary visits are associated with non-locals.

The spending averages developed for year 2011 are based on a sample of 6,295 visitors; 5,752 in the Coastal Region and 543 in the Valley Region at Milo McIver State Park. Spending estimates were developed separately for the North Coast, Central Coast, South Coast and Milo McIver (Valley Region). We report separate spending averages for each zone for use in measuring the

affects to local economies. However, the spending averages estimated for each zone are not statistically unique from one another.

Average trip spending for parties recreating at Oregon State Parks North Coast units ranges from about $44 for those parties on local day trips to about $280 per trip for non-local parties on overnight trips to the area (Table 1). Most of the expenditures of parties on day trips are for food and gasoline. For non-local overnight visitors, camping fees, gasoline, and food account for nearly all of the locally-made recreation spending. Local overnight visitors spend most of their money on groceries and camping fees.

Table 1—Average spending of visitors to Oregon State Parks North Coast units, $ per party per trip

Spending categories	Non-local Day	Non-local Overnight	Local Day	Local Overnight[a]	Non-primary
Lodging	0.00	17.48	0.00	1.92	58.94
Camping	0.00	70.34	0.00	2.85	25.04
Restaurant	25.98	43.60	11.18	29.05	42.07
Groceries	30.58	52.76	16.00	37.94	33.90
Gasoline	36.35	55.05	11.22	39.52	43.82
Entry Fees	15.76	8.81	3.58	17.04	6.62
Recreation & entertainment	3.70	4.84	1.82	4.32	3.43
Souvenirs and other expenses	10.76	26.85	0.45	16.08	18.77
Total	**123.13**	**279.74**	**44.25**	**148.72**	**232.59**
Sample size	310	587	55	733	605
Std. dev. of total	122	223	71	145	336
Percent error (95% level)	11%	7%	43%	7%	12%

All figures expressed in 2011 dollars.

[a] The sample size for local overnight visitors was insufficient and here we substitute the local overnight averages for all Coastal Region units combined.

Average trip spending for parties recreating at Oregon State Parks Central Coast units ranges from about $29 for those parties on local day trips to about $310 per trip for non-local parties on overnight trips to the area (Table 2). Most of the expenditures of parties on day trips are for gasoline and food. For non-local overnight visitors, food, camping fees, and gasoline account for nearly all the recreation spending. Local overnight visitors spend most of their money on groceries and gasoline.

Table 2—Average spending of visitors to Oregon State Parks Central Coast units, $ per party per trip

Spending categories	Non-local Day	Non-local Overnight	Local Day	Local Overnight[a]	Non-primary
Lodging	0.00	18.34	0.00	1.92	29.13
Camping	0.00	65.97	0.00	2.85	26.33
Restaurant	29.99	54.82	6.75	29.05	40.21
Groceries	28.15	57.00	9.24	37.94	30.87
Gasoline	31.55	66.40	7.99	39.52	40.71
Entry Fees	11.30	12.45	2.68	17.04	7.03
Recreation & entertainment	5.44	7.84	1.67	4.32	7.26
Souvenirs and other expenses	14.56	27.32	1.11	16.08	19.20
Total	**120.99**	**310.14**	**29.44**	**148.72**	**200.74**
Sample size	373	733	142	733	744
Std. dev. of total	133	312	57	145	266
Percent error (95% level)	11%	7%	32%	7%	10%

All figures expressed in 2011 dollars.

[a] The sample size for local overnight visitors was insufficient and here we substitute the local overnight averages for all Coastal Region units combined.

Average trip spending for parties recreating at Oregon State Parks South Coast units ranges from about $26 for those parties on local day trips to about $286 per trip for non-local parties on overnight trips to the area (Table 3). Most of the expenditures of parties on day trips are for food and gasoline. For non-local overnight visitors, gasoline, camping fees, and groceries account for the majority of the recreation spending. Local overnight visitors spend most of their money on groceries and gasoline.

Table 3—Average spending of visitors to Oregon State Parks South Coast units, $ per party per trip

Spending categories	Non-local Day	Non-local Overnight	Local Day	Local Overnight[a]	Non-primary
Lodging	0.00	19.83	0.00	1.92	28.97
Camping	0.00	60.85	0.00	2.85	23.75
Restaurant	26.31	50.93	4.37	29.05	37.23
Groceries	24.10	54.21	10.11	37.94	30.80
Gasoline	34.15	61.07	8.96	39.52	45.52
Entry Fees	13.81	8.46	0.63	17.04	6.31
Recreation & entertainment	3.58	6.42	0.85	4.32	3.40
Souvenirs and other expenses	13.92	23.77	0.93	16.08	13.91
Total	**115.88**	**285.54**	**25.85**	**148.72**	**189.89**
Sample size	318	549	249	733	1,001
Std. dev. of total	132	213	48	145	229
Percent error (95% level)	13%	6%	24%	7%	8%

All figures expressed in 2011 dollars.

[a] The sample size for local overnight visitors was insufficient and here we substitute the local overnight averages for all Coastal Region units combined.

Average trip spending for parties recreating at Milo McIver State Park (Valley Region) ranges from about $43 for those parties on local day trips to about $179 per trip for non-local parties on overnight trips to the area (Table 4). Most of the expenditures of parties on day trips are for groceries and gasoline. For non-local overnight visitors, camping fees, groceries, and gasoline account for nearly all the recreation spending. Local overnight visitors spend most of their money on groceries and camping fees.

Table 4—Average spending of visitors to Milo McIver State Park, $ per party per trip

Spending categories	Non-local Day	Non-local Overnight	Local Day	Local Overnight[a]	Non-primary
Lodging	0.00	2.59	0.00	0.40	2.29
Camping	0.00	51.95	0.00	54.34	19.06
Restaurant	3.13	19.98	4.39	7.88	14.63
Groceries	14.76	42.13	16.62	56.69	23.66
Gasoline	17.65	38.17	12.18	28.40	37.07
Entry Fees	7.27	5.39	7.79	10.86	6.50
Recreation & entertainment	3.17	10.47	2.06	5.92	1.46
Souvenirs and other expenses	4.52	8.58	0.11	0.88	5.74
Total	**50.51**	**179.25**	**43.14**	**165.36**	**110.40**
Sample size	63	111	142	120	107
Std. dev. of total	80	181	57	101	158
Percent error (95% level)	40%	19%	22%	11%	28%

All figures expressed in 2011 dollars.

Recreation visits

According to Oregon State Parks' figures, units in the Coastal Region received nearly 23 million recreation visits in 2011. Along the coast, the Central Coast zone received the greatest number of visits (11.5 million)—approximately double the number of recreation visits of the North and South zones (about 5 million and 6 million visits, respectively). Milo McIver State Park received slightly more than 400,000 visits in 2011.

Information from visitor surveys was used to determine the types of recreation trips taken to Oregon State Parks units (Table 5). Along the Coast, the majority of visits are non-primary visits; non-local overnight visits are the second most common type of visit. The high rate of non-primary visits at Oregon State Parks Coastal Region units likely reflects the Oregon Coast as being a recreation destination facilitated by the presence of Oregon State Parks units rather than those units being the specific trip destination. The North Coast zone has the greatest number of non-primary visits. The Central Coast zone experiences the greatest number of visits by non-locals involving an overnight stay inside or outside the unit. The South Coast zone has the greatest share of visits from local users on day trips. Day trips by local residents are the most frequent type of visit at Milo McIver State Park. Non-primary trips, at nearly ¼ of visits, are the second most common type of visit.

Table 5—Trip-type distribution of visits to Oregon State Parks units

Location	Non-local Day	Non-local Overnight	Local Day	Local Overnight	Non-primary	Sum
North Coast	8%	17%	5%	4%	66%	100%
Central Coast	15%	21%	11%	3%	50%	100%
South Coast	9%	15%	16%	5%	55%	100%
Coastal Average	**12%**	**18%**	**11%**	**4%**	**55%**	**100%**
Milo McIver State Park	13%	7%	46%	10%	24%	100%

Total visitor spending

Because visitor spending is on a party basis, we first convert the reported number of visits to party visits based on average party sizes estimated from the visitor survey data. The nearly 23 million visits to Oregon State Parks units on the Oregon Coast generate about $575 million in visitor trip spending within the communities around the units (Table 6). Non-local overnight visitors have the greatest total spending ($310 million) of any visitor group. Spending for gasoline ($139.1 million) and groceries ($137.1 million) constitute the greatest total expenses for recreation groups (Figure 1). Including the 90% of non-primary visits from non-locals, visitors from outside the area (non-locals) spent about $507 million in communities around Oregon State Parks units in the Coastal Region.

Table 6—Total trip spending by visitors within 30 miles of Oregon State Parks units in the Coastal Region ($ millions)

Spending category	Non-local Day	Non-local Overnight	Local Day	Local Overnight	Non-primary[a]	Total
Lodging	$0.0	$19.3	$0.00	$0.4	$0.0	$19.7
Camping	$0.0	$68.4	$0.00	$0.6	$0.0	$69.0
Restaurant	$20.4	$53.7	$5.00	$6.2	$27.9	$113.2
Groceries	$19.7	$57.8	$8.10	$8.1	$43.4	$137.1
Gasoline	$23.3	$65.4	$6.90	$8.4	$35.0	$139.1
Entry Fees	$8.9	$11.2	$1.60	$3.6	$9.0	$34.3
Recreation & entertainment	$3.4	$7.2	$1.10	$0.9	$5.7	$18.3
Souvenirs & other expenses	$9.9	$27.5	$0.80	$3.4	$3.4	$44.9
Total	**$85.6**	**$310.3**	**$23.50**	**$31.8**	**$124.3**	**$575.5**

All figures expressed in 2011 dollars.

[a] We apply the average spending for local day trips to non-primary visits. Local day trip spending is a conservative estimate of the additional marginal expenses associated with visiting an Oregon State Parks unit when already in the area for some other reason.

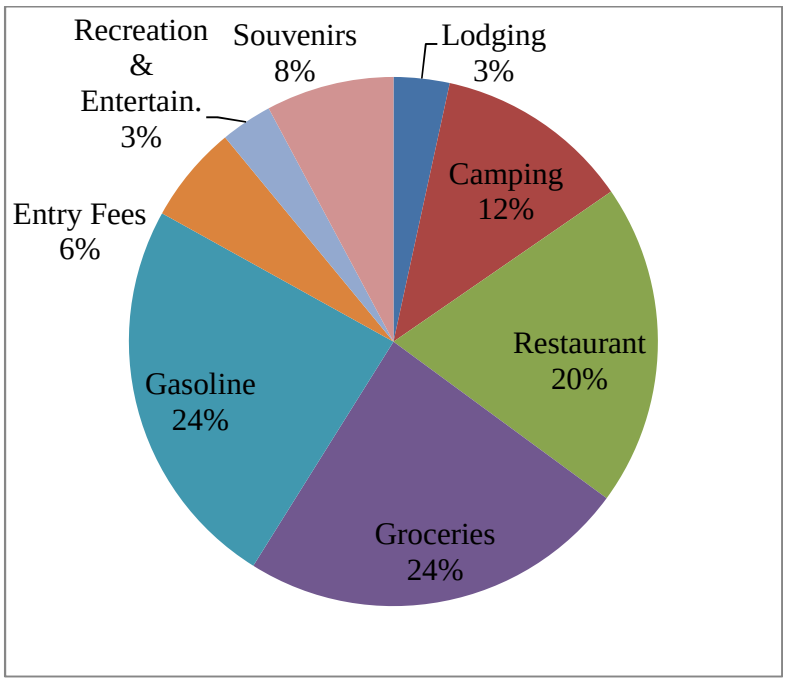

Figure 1—Expenditure pattern of visitors to Oregon State Parks Coastal Region units.

Local day visits are the most common type of trip to Milo McIver State Park and those visits generate the greatest total visitor expenditures for that unit (Table 7). Local resident overnight visits generate the second greatest amount of total spending. Expenses for groceries and gasoline account for most of the visitor spending in the local area around Milo McIver State Park. Including the 50% of non-primary visits associated with non-locals, non-resident visitors to Milo McIver State Park spend about $2.9 million in the local area.

Table 7—Total trip spending by visitors within 30 miles of Milo McIver State Park ($000's)

Spending category	Non-local Day	Non-local Overnight	Local Day	Local Overnight	Non-primary[a]	Total
Lodging	$0.0	$20.3	$0.00	$4.3	$0.0	$24.7
Camping	$0.0	$408.2	$0.00	$584.4	$0.0	$992.5
Restaurant	$52.7	$157.0	$237.00	$84.7	$142.8	$674.3
Groceries	$248.7	$331.0	$897.30	$609.6	$540.8	$2,627.4
Gasoline	$297.3	$299.9	$657.60	$305.4	$396.3	$1,956.6
Entry Fees	$122.5	$42.3	$420.60	$116.8	$253.5	$955.7
Recreation & entertainment	$53.4	$82.3	$111.20	$63.7	$67.0	$377.6
Souvenirs & other expenses	$76.1	$67.4	$5.90	$9.5	$3.6	$162.5
Total	**$850.7**	**$1,408.4**	**$2,329.70**	**$1,778.4**	**$1,404.0**	**$7,771.2**

All figures expressed in 2011 dollars.

[a] We apply the average spending for local day trips to non-primary visits. Local day trip spending is a conservative estimate of the additional marginal expenses associated with visiting an Oregon State Parks unit when already in the area for some other reason.

Economic contribution of Oregon State Parks visitors

Spending by recreation visitors for the purchase of goods (e.g., souvenirs) and services (e.g., restaurant meals or guided trips) creates economic activity in the communities around Oregon State Parks units. To provide a good or service to a visitor, a business typically must hire employees and buy goods and services (e.g., fuel) from other businesses in the local area. Additionally, the employees of businesses serving visitors use their income to make their own household purchases in town. This "chain reaction" of economic activity in local communities resulting from visitor spending is quantified by a metric referred to as an "economic multiplier." The economic activity resulting from the initial spending by visitors is referred to as the "direct effect;" the activity associated with businesses and employees interacting because of visitor spending are "secondary effects." The combination of direct and secondary effects is referred to as the "total effects."

There are several important considerations for interpreting the estimates of the economic contribution of visits to Oregon State Parks. First, in traditional economic impact analysis, the spending of those who live within the impact area of the park (within 30 miles—local residents) would be excluded from the analysis because their spending does not represent "new" money to the region. Because we have included the spending of locals, we refer to this analysis as an economic contribution analysis. Second, we have included only a portion of the spending of those visits where the stated reason for the trip away from home was something other than visiting the Oregon State Parks unit (e.g., business, visiting friends and relatives, recreating elsewhere). Economic contribution or impact analyses attempt to estimate the economic activity associated strictly with the presence of the recreation site. Because the recreation facility did not cause the trip away from home in those "non-primary" visits, much of the spending by those individuals cannot be attributed strictly to the unit. We have applied the average spending of

local resident day visitors to those visits where the trip was caused by something other than recreating at the unit. Local resident day visitor spending is considered a conservative estimate of the additional cost of recreating at the unit for someone who is already in the local area. Third, we have relied on the economic multipliers included in Money Generation Model-version 2 estimated for generic rural and small metro areas throughout the United States. Those economic multipliers adequately characterize the economies of rural and small metro communities within the U.S., but were not estimated using data only from Oregon communities.

We characterize the economic contribution of recreation visitor spending in terms of business sales, full- and part-time jobs, labor income, and value added.

- **Sales** are the sales of firms within the region associated with visitor spending.
- **Jobs** are the number of jobs in the region supported by the visitor spending. Job estimates are not full time equivalents, but include part time and seasonal positions.
- **Personal income** includes wage and salary income, proprietor's income and employee benefits.
- **Value added** is a commonly used measure of the contribution of an industry or region to gross national or gross state product. Value added is personal income plus rents and profits, plus indirect business taxes. As the name implies, it is the "value added" by the region to the final good or service being produced. Value added can also be defined as the final price of the good or service minus the costs of all of the non-labor inputs to production.

Note that the values for direct effect sales are less than total visitor spending. This occurs because for some types of purchases (e.g., gasoline, sporting goods, and souvenirs) only the retail and wholesale margin portions of visitor expenditures will accrue to the local economy. For those purchases, the expenditure associated with the cost of producing the product (e.g., refining gasoline) immediately "leaks" out of the region because that product (refined gasoline) is not made within the region. The "capture rate" describes what portion of total spending results in direct sales of products and services produced in the region. In this analysis, regional capture rates are 64% to 69%.

The economic contribution of recreation visitor spending in the North, Central and South zones is reported in tables 8 through 10. The magnitudes of economic contribution in the North and South zones are similar—given similar levels of total spending. The economic contribution of recreation at units in the Central zone is greater (Table 9). Economic contribution and impact for individual Coastal Region units are reported in a subsequent table.

Table 8—Economic contribution to local communities from Oregon State Parks visitor spending, North Coast zone, 2011

Sector/Spending category	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Direct Effects				
Motel, hotel cabin or B&B	3,161	41	805	1,678
Camping fees	12,557	181	3,314	5,238
Restaurants & bars	23,392	468	7,823	12,171
Admissions & fees	7,688	187	1,877	4,280
Recreation & entertainment	6,157	150	1,503	3,428
Grocery stores	7,658	150	3,770	5,549
Gas stations	4,843	75	1,827	3,304
Other retail	3,394	72	1,473	2,509
Wholesale trade	2,908	22	1,010	2,159
Local production of goods	1,424	5	187	322
Total Direct Effects	**73,183**	**1,351**	**23,589**	**40,639**
Secondary effects	25,066	249	6,900	14,620
Total Effects	**$ 98,249**	**1,600**	**$ 30,490**	**$ 55,259**
Multiplier	1.34	1.18	1.29	1.36

Table 9— Economic contribution to local communities from Oregon State Parks visitor spending, Central Coast zone, 2011

Sector/Spending category	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Direct Effects				
Motel, hotel cabin or B&B	10,596	138	2,699	5,627
Camping fees	37,765	543	9,965	15,752
Restaurants & bars	61,683	1,235	20,628	32,094
Admissions & fees	19,696	479	4,809	10,965
Recreation & entertainment	11,005	268	2,687	6,127
Grocery stores	16,791	329	8,266	12,167
Gas stations	13,080	202	4,934	8,925
Other retail	12,923	274	5,608	9,554
Wholesale trade	7,376	56	2,563	5,477
Local production of goods	3,182	11	420	722
Total Direct Effects	**194,097**	**3,536**	**62,580**	**107,409**
Secondary Effects	67,085	669	18,508	39,111
Total Effects	**$ 261,183**	**4,205**	**$ 81,088**	**$ 146,520**
Multiplier	1.35	1.19	1.30	1.36

Table 10— Economic contribution to local communities from Oregon State Parks visitor spending, South Coast zone, 2011

Sector/Spending category	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Direct Effects				
Motel, hotel cabin or B&B	5,016	65	1,278	2,663
Camping fees	15,151	218	3,998	6,320
Restaurants & bars	24,192	484	8,090	12,587
Admissions & fees	6,197	151	1,513	3,450
Recreation & entertainment	3,600	88	879	2,004
Grocery stores	8,198	161	4,036	5,940
Gas stations	6,274	97	2,367	4,281
Other retail	5,061	107	2,196	3,742
Wholesale trade	3,451	26	1,199	2,562
Local production of goods	1,541	5	203	349
Total Direct Effects	**78,679**	**1,403**	**25,758**	**43,898**
Secondary Effects	27,310	272	7,534	15,910
Total Effects	**$ 105,990**	**1,675**	**$ 33,293**	**$ 59,808**
Multiplier	1.35	1.19	1.29	1.36

Collectively, the direct spending of visitors to Oregon State Parks units in the Coastal Region supports about 6,300 full and part time jobs, $112 million in labor income, and $192 million in value added (Table 11). The secondary activity generated from visitor spending yields increases sales by about $119 million, supports an additional 1,200 full and part-time jobs, and $33 million in income.

Table 11— Economic contribution to local communities from Oregon State Parks visitor spending, Coastal Region total, 2011

Effect	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Direct Effects	**345,960**	**6,289**	**111,928**	**191,945**
Secondary effects	119,462	1,191	32,942	69,641
Total Effects	**465,422**	**7,480**	**144,870**	**261,586**

The more than 400,000 visits to Milo McIver State Park generate about $4.5 million in direct sales and support 70 full and part-time jobs in the communities around the Park (Table 12). The secondary economic activity from spending by visitors to the Park generates an additional $2.8 million in sales and supports an additional 24 full and part-time jobs.

Table 12— Economic contribution to local communities Oregon State Parks spending, Milo McIver State Park, 2011

Effect	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Total Direct Effects	4,526	70	1,629	2,703
Secondary Effects	2,778	24	930	1,748
Total Effects	7,304	94	2,559	4,451

Economic impact of Oregon State Parks visitors

The primary difference between economic contribution and economic impact analyses is the inclusion of spending by local residents in the former analysis. Economic impact analysis attempts to quantify the economic activity generated from "new" money brought to the region. Economic impact analysis attempts to quantify the amount of economic activity that would be lost to the region were the attraction not present. In this analysis, we include the 90% of non-primary visits that are associated with non-locals. As in all other analyses, we apply the average spending of day visitors already in the area to non-primary visits. The economic impact of Coastal Region visitation results in about $311 million in direct sales, supports 5,605 full and part-time jobs, and generates about $100 million in labor income (Table 13). Secondary economic activity from non-local visitor spending generates an additional $108 million in sales and supports an additional 1,077 full and part-time jobs.

Table 13— Economic impact to local communities from Oregon State Parks visitor spending, Coastal Region total, 2011

Effect	Sales $000's	Jobs	Labor Income $000's	Value Added $000's
Total Direct Effects	**310,746**	**5,605**	**100,055**	**171,271**
Secondary Effects	108,033	1,077	29,842	62,956
Total Effects	**418,779**	**6,682**	**129,897**	**234,227**

Unit-level reporting

Unit-level estimates of economic activity are desirable for a variety of local management purposes. In 2011, only a portion of the Oregon State Parks units within each of the Coastal Region zones underwent visitor sampling. Lacking survey data for each individual unit, we assume that the average spending of visitors and the distribution of trip types at unsampled units is similar to that observed at nearby sampled units. Average spending, within trip type, likely varies little across sites located within the same coastal zone. For example, the average spending of local day visitors at an unsampled unit is likely similar to the average spending of local day visitors at a nearby sampled unit. The distribution of trip types is more likely to differ meaningfully between sampled and unsampled units. In computing unit-level spending, we assume that the trip-type distribution at unsampled units is represented by the zonal average trip type distribution (e.g., the North Coast zone) estimated from nearby sampled units. The transferability of trip-type distribution may be limited for sites such as waysides and small facilities used primarily as intermediate stops on recreation trips. We control for differences across all units related to the presence of a campground within the unit.

Unit-level estimates represent the economic activity generated in the local communities around the individual units (Table 14). Results for individual units can be summed to represent the regional totals. Economic activity generated in communities around units is reported both in terms of economic contribution and economic impact. The economic impact results are computed based only on the spending of non-local visitors. The magnitude of economic activity generated around individual units traces mostly to the amount of recreation use at the unit and the presence of a campground.

Table 14—Unit-level economic activity generated from recreation visitor trip spending, 2011

Unit	Day visits	Overnight visits	Total spending ($000's)	Total spending—non-locals ($000's)	Economic contribution			Economic impact (non-local visitors only)		
					Jobs	Labor income ($000's)	Value added ($000's)	Jobs	Labor income ($000's)	Value added ($000's)
North Coast zone										
ARCADIA BEACH SRS	287,292		5,881	5,456	84	1,592	2,891	78	1,483	2,689
BOB STRAUB SP	128,808		2,637	2,446	38	714	1,296	35	665	1,206
BRADLEY SSV	96,956		1,985	1,841	28	537	976	26	500	908
CAPE LOOKOUT SP	132,484	108,002	8,354	7,095	120	2,349	4,231	103	2,023	3,633
CAPE MEARES SSV	421,352		8,625	8,001	124	2,335	4,240	115	2,174	3,944
CLAY MYERS SNA AT WHALEN ISLAND	54,660		1,119	1,038	16	303	550	15	282	512
DEL REY BEACH SRS	89,468		1,831	1,699	26	496	900	24	462	837
ECOLA SP	331,866		6,794	6,302	97	1,839	3,339	90	1,713	3,106
FORT STEVENS HA	144,884	213,677	2,966	2,751	42	803	1,458	39	748	1,356
FORT STEVENS SP	877,424		17,962	16,662	257	4,863	8,829	239	4,528	8,213
HUG POINT SRS	210,084		4,301	3,989	62	1,164	2,114	57	1,084	1,967
MANHATTAN BEACH SRS	69,164		1,416	1,313	20	383	696	19	357	647
MUNSON CREEK FALLS SNS	42,786		876	813	13	237	431	12	221	401
NEHALEM BAY SP	390,024	139,217	16,437	14,020	236	4,581	8,269	202	3,957	7,122
OCEANSIDE BEACH SRS	280,156		5,735	5,320	82	1,553	2,819	76	1,446	2,622
OSWALD WEST SP	418,150	0	10,810	9,298	155	2,963	5,368	133	2,573	4,652
SADDLE MOUNTAIN SNA	55,778	1,663	1,142	1,059	16	309	561	15	288	522
SUNSET BEACH	77,700		1,591	1,476	23	431	782	21	401	727
TOLOVANA BEACH SRS	547,584		11,210	10,399	161	3,035	5,510	149	2,826	5,126
Central Coast zone										
AGATE BEACH SRS	205,262		5,105	4,690	74	1,420	2,565	68	1,314	2,371
ALSEA BAY HIP	0		0	0	0	0	0	0	0	0
BEACHSIDE SRS	60,992	35,562	2,851	2,425	41	797	1,440	35	688	1,239
BEAVER CREEK SNA	32,235		802	737	12	223	403	11	206	372
BEVERLY BEACH SP	164,184	149,623	10,030	8,565	145	2,817	5,084	125	2,441	4,392

Table 14 (cont.)—Unit-level economic activity generated from recreation visitor trip spending, 2011

Unit	Day visits	Overnight visits	Total spending ($000's)	Total spending—non-locals ($000's)	Economic contribution			Economic impact (non-local visitors only)		
					Jobs	Labor income ($000's)	Value added ($000's)	Jobs	Labor income ($000's)	Value added ($000's)
BOILER BAY SSV	533,320		13,264	12,186	191	3,689	6,666	176	3,414	6,161
CARL G WASHBURNE/PONSLER VP	220,628	31,530	6,071	5,102	87	1,674	3,030	74	1,426	2,575
D RIVER SRS	1,024,584		25,481	23,410	367	7,088	12,806	339	6,559	11,836
DEPOE BAY	0		0	0	0	0	0	0	0	0
DEVIL`S LAKE SRA	132,240	37,929	4,470	3,777	64	1,241	2,243	55	1,063	1,917
DEVIL`S PUNCH BOWL SNA	458,760		11,409	10,482	165	3,174	5,734	152	2,937	5,300
DRIFTWOOD BEACH SRS	133,596		3,323	3,052	48	924	1,670	44	855	1,543
ELLMAKER STATE WAYSIDE	287,224		7,143	6,563	103	1,987	3,590	95	1,839	3,318
FOGARTY CREEK SRA	210,230		5,228	4,803	75	1,454	2,628	70	1,346	2,429
GLENEDEN BEACH SRS	177,812		4,422	4,063	64	1,230	2,222	59	1,138	2,054
GOV PATTERSON MEMORIAL SRS	215,264		5,354	4,919	77	1,489	2,691	71	1,378	2,487
H B VAN DUZER FOREST SSC	421,326		10,478	9,627	151	2,915	5,266	139	2,697	4,867
HECETA HEAD LIGHTHOUSE SV	719,280		17,888	16,435	258	4,976	8,990	238	4,604	8,309
JESSIE M HONEYMAN MEMORIAL SP	529,976	144,670	17,595	14,861	253	4,880	8,825	216	4,180	7,539
LOST CREEK SSR	149,694		3,723	3,420	54	1,036	1,871	50	958	1,729
NEPTUNE SSV	455,332		11,324	10,404	163	3,150	5,691	151	2,915	5,260
NESKOWIN BEACH SRS	173,564		4,316	3,966	62	1,201	2,169	57	1,111	2,005
ONA BEACH SP	174,886		4,349	3,996	63	1,210	2,186	58	1,120	2,020
OTTER CREST SSV	484,072		12,039	11,060	174	3,349	6,050	160	3,099	5,592
ROADS END SRS	407,360		10,131	9,308	146	2,818	5,091	135	2,608	4,706
ROCKY CREEK SSV	178,056		4,428	4,068	64	1,232	2,225	59	1,140	2,057
SEAL ROCK SRS	185,046		4,602	4,228	66	1,280	2,313	61	1,185	2,138
SIUSLAW NORTH JETTY	503,268		12,516	11,499	181	3,482	6,290	166	3,222	5,814

Table 14 (cont.)—Unit-level economic activity generated from recreation visitor trip spending, 2011

Unit	Day visits	Overnight visits	Total spending ($000's)	Total spending—non-locals ($000's)	Economic contribution			Economic impact (non-local visitors only)		
					Jobs	Labor income ($000's)	Value added ($000's)	Jobs	Labor income ($000's)	Value added ($000's)
SMELT SANDS SRS	297,224		7,392	6,791	107	2,056	3,715	98	1,903	3,434
SOUTH BEACH SP	614,706	140,803	19,229	16,217	277	5,325	9,630	235	4,553	8,215
STONEFIELD BEACH SRS	23,400		582	535	8	162	292	8	150	270
WB NELSON SRS	50,800		1,263	1,161	18	351	635	17	325	587
YACHATS OCEAN ROAD SNS	239,872		5,966	5,481	86	1,659	2,998	79	1,536	2,771
YACHATS SRS	394,050		9,800	9,004	141	2,726	4,925	130	2,522	4,552
YAQUINA BAY SRS	1,166,906		29,021	26,662	419	8,073	14,585	386	7,470	13,480
South Coast zone										
ALFRED A LOEB SP	94,594	18,008	2,696	2,133	37	722	1,300	30	587	1,053
ARIZONA BEACH	20,020		352	314	5	92	164	4	83	148
BANDON SNA	306,412		5,391	4,804	70	1,401	2,511	63	1,269	2,272
BULLARDS BEACH SP	395,960	97,060	12,141	9,639	165	3,263	5,870	134	2,657	4,769
CAPE ARAGO SP	292,136		5,140	4,580	67	1,336	2,394	60	1,210	2,166
CAPE BLANCO SP	207,972	32,389	5,644	4,454	76	1,509	2,715	62	1,222	2,194
CAPE SEBASTIAN SSC	205,484		3,615	3,222	47	940	1,684	42	851	1,524
CRISSEY FIELD SRS	173,692		3,056	2,723	40	794	1,423	36	719	1,288
FACE ROCK SSV	267,364		4,704	4,192	61	1,223	2,191	55	1,107	1,982
GEISEL MONUMENT SHS	15,834		279	248	4	72	130	3	66	117
GOLDEN & SILVER FALLS SNA	17,326		305	272	4	79	142	4	72	128
HARRIS BEACH SRA	930,904	88,858	23,052	18,097	311	6,133	11,041	249	4,948	8,887
HUMBUG MOUNTAIN SP	68,796	23,810	2,383	1,902	33	643	1,158	26	526	944
MCVAY ROCK SRS	130,332		2,293	2,043	30	596	1,068	27	540	966
OPHIR REST AREA	117,440		2,066	1,841	27	537	962	24	486	871
OTTER POINT SRS	27,124		477	425	6	124	222	6	112	201
PARADISE POINT SRS	64,282		1,131	1,008	15	294	527	13	266	477
PISTOL RIVER SSV	124,116		2,184	1,946	28	568	1,017	26	514	920
PORT ORFORD HEADS SP	112,496		1,979	1,764	26	515	922	23	466	834
SAMUEL H BOARDMAN SSC	726,192		12,776	11,386	166	3,321	5,951	150	3,007	5,384

Table 14 (cont.)—Unit-level economic activity generated from recreation visitor trip spending, 2011

Unit	Day visits	Overnight visits	Total spending ($000's)	Total spending—non-locals ($000's)	Economic contribution			Economic impact (non-local visitors only)		
					Jobs	Labor income ($000's)	Value added ($000's)	Jobs	Labor income ($000's)	Value added ($000's)
SEVEN DEVILS SRS	58,592		1,031	919	13	268	480	12	243	434
SHORE ACRES SP	216,072		3,801	3,388	49	988	1,771	45	895	1,602
SUNSET BAY SP	530,778	63,179	13,637	10,728	184	3,635	6,543	148	2,938	5,276
TSERIADUN	40,554		713	636	9	185	332	8	168	301
UMPQUA LIGHTHOUSE SP	322,200	26,002	7,791	6,108	105	2,070	3,727	84	1,668	2,997
UMPQUA SSC	28,800		507	452	7	132	236	6	119	214
WILLIAM M TUGMAN SP	206,516	36,412	5,772	4,562	78	1,545	2,780	63	1,253	2,250
WINCHUCK SRS	66,900		1,177	1,049	15	306	548	14	277	496
Valley Region										
Milo McIver State Park	381,264	29,532	7,036	2,744	94	2,559	4,451	37	1,055	1,799

Limitations

This analysis incorporates a large volume of data collected from a variety of Oregon State Parks units. The estimates of average visitor spending are computed from several thousand survey responses. To estimate average visitor spending and total spending attributable to Oregon State Parks units, we follow the framework adopted by the USDA Forest Service and the National Park Service. Many of the uncertainties and errors in recreation economic impact studies tend to inflate impact estimates (Stynes and White 2006). To counter that general pattern, we have adopted a conservative approach to estimating visitor spending and the attribution of visitor spending. The estimates of average spending found in this study are consistent with those reported for the USDA Forest Service and National Park Service (White and Stynes 2010, Stynes 2011). The numbers of recreation visits at each unit are Oregon State Parks estimates developed using established internal procedures.

In some cases, visitors may enter and exit units multiple times in a single day during a single visit or may complete visits to a single unit on consecutive days in conjunction with an overnight stay (e.g., at a hotel) in the local area. Multiple entries and exits on a given day during a single visit have the potential to inflate the estimate of the number of actual visits, and thereby the estimates of total spending, received at a unit. To the extent re-entry is not corrected for in the existing visit estimates, the estimates of total spending may be inflated. The spending averages for overnight visitors represent spending in the local area during the entire trip. To the extent that some visitors might stay overnight in hotels or motels (a single trip), but enter the same unit on multiple consecutive days (multiple visits), the estimate of total spending may be inflated. Re-entry to the same unit on consecutive days during the same trip likely presents little issue for the units considered here.

There are numerous Oregon State Parks units located along the Oregon Coast. Given the proximity of units to one another, it is possible for individuals to complete visits to multiple units during a trip to the coast. When multiple units are visited on a single trip, it makes it difficult to attribute visitor spending across the units. In addition, in some cases when the units are within 30 miles of each other, visits to multiple units on the same trip could lead to double-counting of trip expenditures, i.e., average visitor spending for the trip is applied to each unit's visit. From the current survey data, we are unable to determine the extent of multi-unit visitation. There is the potential for some double counting of expenditures. However, our conservative treatment of non-primary visits (where multi-unit visits would likely be classified) dampens the potential magnitude of double counting.

A subset of units along the coast was sampled in 2011. To develop estimates for all units collectively and for units not sampled, we assume the distribution of trip types at units not sampled can be represented by the sampled units. The trip-type distributions for the North,

Central, and South coast zones are generally similar. Given that stability, we expect the trip-type distributions to be stable across most units along the coast. For some distinct types of units, such as waysides or historical sites, the trip-type distribution may not fully represent the types of trips those units receive. Likely, the standard trip-type distribution underestimates the share of non-primary trips to those locations.

To estimate the economic activity in rural communities associated with Oregon State Parks visitor spending, we must rely on models of the economies of those communities. In any application, the extent to which the model is an adequate representation of reality influences the accuracy of model results. In this study, we have relied on an established modeling system, the Money Generation Model-version 2. That modeling system has been used for a variety of applications at the federal, state, and local levels.

To estimate the average spending of recreation visitors, we rely on data collected from a sample of recreation visitors. The percent errors (or size of the 95% confidence intervals relative to the estimated means) of our estimated figures are in most cases 10% to 20% (tables 1 – 4). The interpretation of the percent error is that we are 95% confident that the true average spending is, in most cases, within 10% to 20% of our estimated mean. For three spending averages, small sample sizes lead to percent errors of more than 30%. The percent errors found in this study are fairly typical of those found for outdoor recreation visitor spending.

It is not common practice to place confidence intervals on estimates of economic contribution or impact. Regardless, we are not able to do so in this case because variance estimates were not provided for Oregon State Parks visitation figures. Further, the variance patterns around the spending averages reported above do not trace though linearly to the contribution and impact estimates from the economic model. The reasonableness of the estimated economic affects are frequently judged based on the statistical confidence regarding the inputs (i.e., average visitor spending and recreation use estimates). In this analysis we have relied on response coefficients to estimate economic activity (see Appendix). Because we do that, one could estimate economic activity across a range of visitation figures. This allows a user to get some idea of how sensitive estimates of economic activity are to changes in input assumptions.

Expenditures by Oregon State Parks to operate and staff units also creates economic activity in local communities. We have not estimated that economic activity here. However, we do model the economic activity generated from expenditures for campground fees. The fees we estimate here are collected by Oregon State Parks as well as private campgrounds and other public campgrounds. Campground fees collected by Oregon State Parks are largely spent in the local area by the same unit for campground operation. Because of how we have handled campground fees, those “operation” expenditures by Oregon State Parks are represented partially in this analysis. Because it would lead to some double counting, the economic activity results reported here should not be added directly to any estimates of economic activity developed for Oregon State Parks operations and staffing.

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Appendix—Analytical methods

Data for estimating visitor spending

We adopted a variety of rules for data cleaning and exclusion in developing visitor spending averages. The rules we have adopted in this analysis are consistent with those used in estimating visitor spending for the USDA Forest Service and National Park Service. The data contained 2,769 observations where expenditures in all cateogries were blank. When presented with missings across all spending variables one must decide if those missings represent zero spending or a respondent who did not wish to report their spending. In these spending averages, we have filled all missing spending variable observations with zeros. All else being equal, that will reduce estimated average spending. However, we have also identified 1,130 observations where the spending responses were missing because the respondent appeared to stop taking the survey (based on their non-response to a series of questions). We have not included those 1,130 cases in these estimates.

In addition to handling missings, we also adopted rules to minimize the influence of contaminant and outlier observations. Contaminants are observations that do not belong to the population or are erroneous observations. An observation that includes spending that actually occurred outside the 30-mile radius around the recreation site or an observation that misplaces the decimal point when reporting an expense (i.e., 1,000.00 dollars versus 10.00) are both examples of contaminants. An outlier is an observation that does belong to the population under study but has undue influence on the estimation of the sample mean given the size of the sample. For example, some day visitors may spend $800 during an outdoor recreation trip, but such spending is uncommon and the vast majority of visitors spend substantially less or nothing at all (Stynes and White 2006). When sample sizes are small, outlier observations can significantly influence the estimate of the sample mean.

In these spending averages, we excluded observations under the following conditions:

- The number of nights spent away from home in the local area was greater than 30,
- The reported size of the group was greater than 10 individuals,
- Spending per day/night was greater or equal to $500 or spending on recreation and equipment rental was greater or equal to $500 in total,
- Cases we could not classify as local or non-local or if the respondent did not state if nights were spent in the local area.

Table 15—Cases excluded from analysis

All surveyed cases	**9,953**
Respondents only partially completing survey	**1,130**
Outlier and contaminant cases	**2,185**
Nights spent locally > 30	30
Group size > 10	1,140
Spending per night >= 500 or recreation equipment expenses >= 500	1,015
Unable to classify into a visitor segment	**343**
Did not answer if any nights were spent locally	235
Could not classify as local or non-local	108
Cases for economic analysis	**6,295**

Determining trip-type distribution and average party size

Visit estimates for year 2011 were provided for individual units by Oregon State Parks. Visits were reported separately for day use areas and overnight facilities of individual units. In the sampling effort, visitors within day use areas were surveyed on-site via intercept sampling; visitors using overnight facilities were surveyed online using reservation records. From those separate samples of day use area and overnight visitors, we determined the shares of survey respondents completing day and overnight trips, the share of local and non-local visitors, and the share of non-primary visitors. For day-use-only units, we distributed visits into trip types using only responses from those individuals sampled at day use units. For units with both day- and overnight-use areas, we apportioned day visits across trip types using the day use area sample and overnight visits across trip type using the overnight use sample. In determining the trip-type distribution, we assumed that we have a representative sample of visits to Oregon State Parks units.

To estimate total spending, the estimates of recreation use and average visitor spending must be placed in the same units. For this study we have converted visits to party visits using estimates of average party size, within trip type. Average party size estimates were computed for Milo McIver State Park and each coastal zone using the collected survey data (Table 16).

Table 16—Average number of visitors per party, by trip type

Area	Non-local Day	Local Day	Non-local Overnight	Local Overnight	Non-primary
Milo McIver SP	3.2	3.5	3.7	3.8	3.0
North Coast	3.9	3.7	4.0	4.1	3.3
Central Coast	3.7	2.9	4.2	4.2	3.4
South Coast	4.0	3.3	3.8	3.8	3.1

Response coefficients for economic analysis

To accommodate a range of options for completing analyses for individual units or in aggregate and to facilitate excluding particular trip types (e.g., visits from local residents) we used response coefficients to estimate economic activity generated by visitor spending. Response coefficients relate a given number of visits (e.g., 10,000 party visits) or amount of spending (e.g., $1 million in spending) to the response in the local economy. Separate sets of response coefficients were estimated for each coastal zone and Milo McIver State Park within the Money Generation Model—version 2. Year 2010 multipliers representing generic rural economies were used for analyses of Coastal Region units. Year 2010 multipliers representing generic small metro areas were used for analyses of Milo McIver State Park. To match the multiplier year, average spending figures were deflated to 2010 dollars using Bureau of Labor Statistics price indices for the economic sectors related to visitor spending. The response coefficients (on a 10,000-party-visit basis) used for this analysis are reported in tables 17 through 20. The availability of the response coefficients allow for revision of the economic contribution or impact analysis given revised visitation estimates or with changes in the types of trips included (e.g., only overnight trips).

Table 17—Response coefficients by trip type for Milo McIver State Park, per 10,000 party visits in each trip type

	Non-local Day	Local Day	Non-local Overnight	Local Overnight	Non-primary[a]
Direct Economic effects					
Sales ($000's)	274	243	1,218	910	243
Jobs	4	4	17	14	4
Personal Income ($000's)	99	86	450	329	86
Value added ($000's)	169	148	684	546	148
Total Economic Effects					
Sales ($000's)	$ 435	$ 388	$ 2,052	$ 1,458	$ 388
Jobs	6	5	24	19	5
Personal Income ($000's)	$ 152	$ 134	$ 735	$ 511	$ 134
Value added ($000's)	$ 271	$ 239	$ 1,209	$ 890	$ 239

[a] The spending averages for local day trips are applied to non-primary visits.

Table 18—Response coefficients by trip type for the North Coast zone, per 10,000 party visits in each trip type

	Non-local Day	Local Day	Non-local Overnight	Local Overnight	Non-primary[a]
Direct Economic effects					
Sales ($000's)	684	268	1,856	840	268
Jobs	14	5	31	16	5
Personal Income ($000's)	229	88	580	281	88
Value added ($000's)	403	154	978	493	154
Total Economic Effects					
Sales ($000's)	$ 904	$ 354	$ 2,538	$ 1,114	$ 354
Jobs	16	6	38	19	6
Personal Income ($000's)	$ 288	$ 112	$ 770	$ 355	$ 112
Value added ($000's)	$ 532	$ 205	$ 1,374	$ 653	$ 205

[a] We apply the average spending for local day trips to non-primary visits. Local day trip spending is a conservative estimate of the additional marginal expenses associated with visiting an Oregon State Parks unit when already in the area for some other reason.

Table 19—Response coefficients by trip type for the Central Coast zone, per 10,000 party visits in each trip type

	Non-local Day	Local Day	Non-local Overnight	Local Overnight	Non-primary[a]
Direct Economic effects					
Sales ($000's)	699	163	2,038	840	163
Jobs	14	3	35	16	3
Personal Income ($000's)	237	55	639	281	55
Value added ($000's)	411	95	1,086	493	95
Total Economic Effects					
Sales ($000's)	$ 923	$ 216	$ 2,773	$ 1,114	$ 216
Jobs	16	4	43	19	4
Personal Income ($000's)	$ 297	$ 69	$ 844	$ 355	$ 69
Value added ($000's)	$ 543	$ 126	$ 1,513	$ 653	$ 126

[a] We apply the average spending for local day trips to non-primary visits. Local day trip spending is a conservative estimate of the additional marginal expenses associated with visiting an Oregon State Parks unit when already in the area for some other reason.

Table 20—Response coefficients by trip type for the South Coast zone, per 10,000 party visits in each trip type

	Non-local Day	Local Day	Non-local Overnight	Local Overnight	Non-primary[a]
Direct Economic effects					
Sales ($000's)	657	115	1,871	840	115
Jobs	13	2	32	16	2
Personal Income ($000's)	221	41	588	281	41
Value added ($000's)	388	70	995	493	70
Total Economic Effects					
Sales ($000's)	$ 868	$ 153	$ 2,548	$ 1,114	$ 153
Jobs	15	2	39	19	2
Personal Income ($000's)	$ 278	$ 52	$ 776	$ 355	$ 52
Value added ($000's)	$ 512	$ 92	$ 1,389	$ 653	$ 92

[a] We apply the average spending for local day trips to non-primary visits. Local day trip spending is a conservative estimate of the additional marginal expenses associated with visiting an Oregon State Parks unit when already in the area for some other reason.