
WILDLIFE ASSESSMENT FOR THE BANDON LAND EXCHANGE PROPOSAL

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1. INTRODUCTION

An inventory of the wildlife of a portion of Bandon State Natural Area, an adjacent privately-owned property, and a privately-owned inholding at Bullards Beach State Park was done to provide information on the species present within the boundaries of three exchange properties: an approximately 280-acre property to be transferred from the Oregon Parks and Recreation Department (OPRD) ownership to Bandon Biota, LLC. (Bandon SNA parcel), a 111-acre parcel to be transferred from Bandon Biota, LLC. to OPRD ownership (Oceanfront parcel), and an approximately 97-acre parcel to be transferred from Bandon Biota, LLC to OPRD ownership (Coquille parcel). Together these parcels are considered the study area. Additional property associated with the Bandon Land Exchange (Grouse Mountain) are not included in this assessment. The Bandon SNA and Oceanfront properties were assessed for wildlife species presence through existing data sources, and focused on state and federally-listed wildlife species. The Coquille parcel was assessed by a third party (Christy 2007). This assessment includes:

- 1) Review of published or archived biological data for the site
- 2) Identification of at-risk wildlife species
- 3) Assessment of impacts to at-risk wildlife species
- 4) Development of management recommendations

A botanical assessment that provides greater detail on plant communities was also conducted and can be found in “Vegetation Inventory and Botanical Resource Assessment for the Portion of Bandon State Natural Area under Potential Land Exchange Consideration” (Bacheller 2013a) and “Approximate and Assumed Vegetation of the Former County Park Property on Fourmile Lane, Bandon, Oregon” (Bacheller 2013b).

2. SITE DESCRIPTION

2.1 OCEANFRONT PARCEL

The 111-acre oceanfront parcel contains significant natural habitats as well as highly degraded areas. For a complete description, see Bacheller 2013b. This privately-held parcel is largely unmanaged, and is utilized by beach visitors via a closed road and trail. Bandon Biota seeks a service road easement through the oceanfront parcel (“Oceanfront Parcel Service Road Access Agreement”, Exchange Agreement 2013) that will require road building to reach the Bandon SNA parcel.

2.2 BANDON SNA PARCEL

The 280-acre Bandon SNA parcel is located within the Bandon State Natural Area and is currently managed by OPRD. This parcel also contains significant natural habitats as well as highly degraded areas. For a complete description, see Bacheller 2013a. Upon transition to private ownership, the exchange parcel will likely be developed into a walking-only championship golf course, including a clubhouse, caddie house, putting course, short-game facility with par-3 course and practice range, and related facilities (Exchange Agreement 2013). An undeveloped, natural trail across the Bandon SNA parcel will be retained by OPRD (“Bandon SNA parcel Natural Corridor Access Easement”, Exchange Agreement 2013). Currently, this is an existing trail that begins at a BLM parking area (Lost Lake Trail, Figure 1). The easement will provide unlimited, non-motorized public access at all times, with a minimum width of 20 feet, from the BLM parking area to the oceanfront parcel (Exchange Agreement 2013). A Bandon SNA parcel Shoreline Access Restriction will be developed into the deed that establishes rights and restrictions relating to access to the ocean shoreline through the Bandon SNA parcel (Exchange Agreement 2013).

2.3 COQUILLE PARCEL

The approximately 97- acre Coquille parcel is a privately-held inholding surrounded by Bullards Beach State Park (Figure 2). An assessment of its habitats and wildlife can be found in the Biological Assessment: Coquille Spit, Coos County, Oregon (Christy 2007). Bandon Marsh National Wildlife Area lies across the river, and is considered an Important Bird Area. In general, the spit is predominantly stabilized sand flats, low dunes, deflation plan, river beach, and tidelands. Most features are less than 15 feet above sea level (Christy 2007).

3. METHODS

Data and analyses for this document were conducted by using remote sensing and existing databases. Existing data provide a loose framework to determine wildlife management strategies; however, development of specific wildlife management actions would require additional surveys.

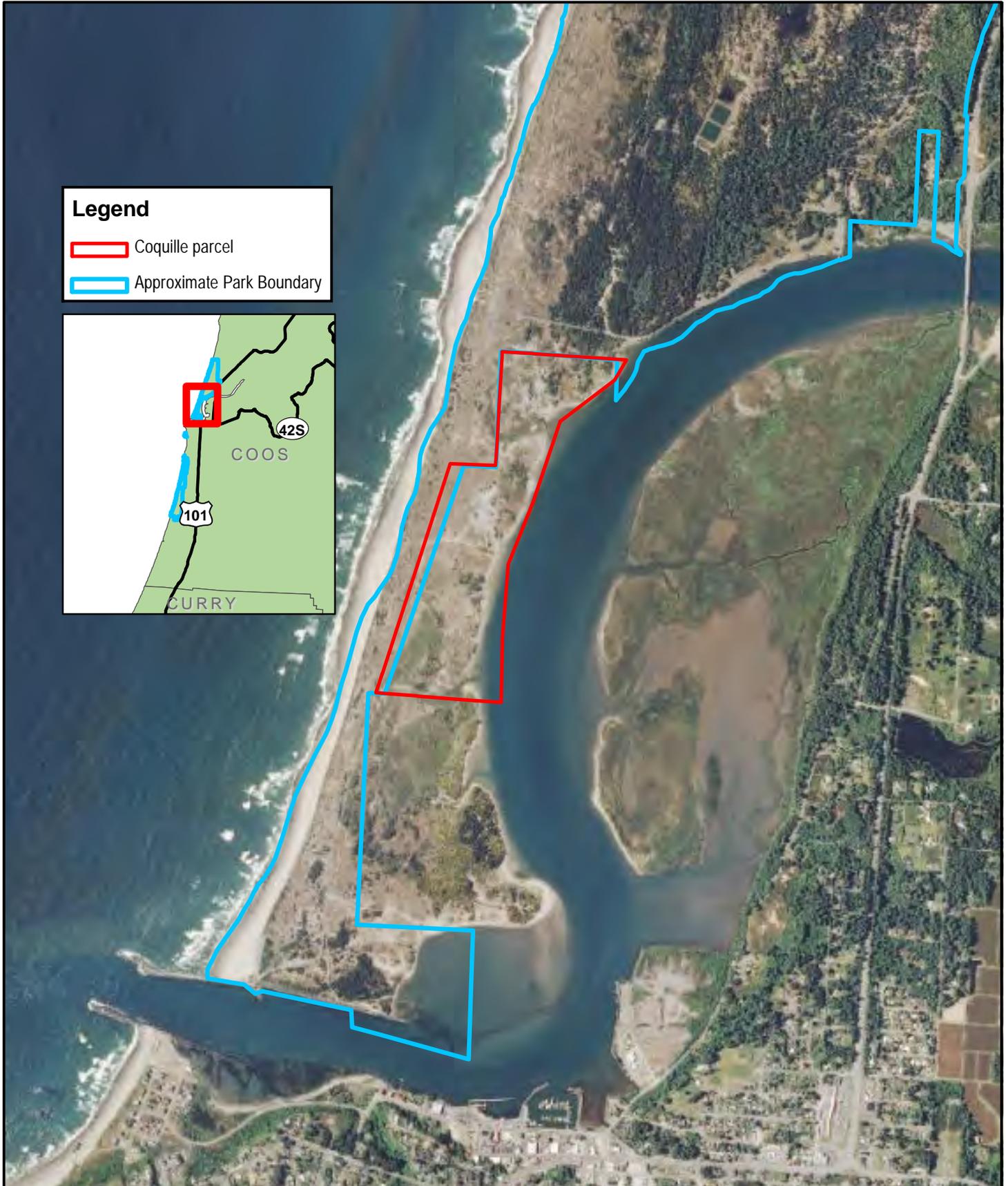
Historic and current wildlife data was retrieved from the Oregon Biodiversity Information Center (ORBIC) Natural Heritage Database (ORBIC 2011), Rare, Threatened and Endangered Species of Oregon (ORBIC, 2010), eBird (eBird 2011), Oregon Department of Fish and Game (ODFW) Oregon Conservation Strategy (ODWF 2006) and species lists from Dave Lauten (ORBIC) and the Bureau of Land Management (BLM). In addition, OPRD biologists collected vegetation data, described in the Vegetation Inventory and Botanical Resource Assessment for the Portion of Bandon State Natural Area under Potential Land Exchange Consideration” (Bacheller 2013a) and “Approximate and Assumed Vegetation of the Former County Park Property on Fourmile Lane, Bandon, Oregon” (Bacheller 2013b).

Figure 2. Coquille Site Map

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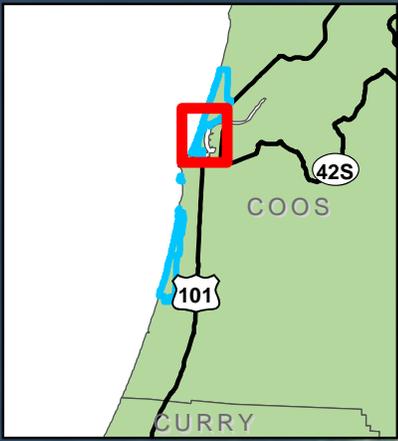


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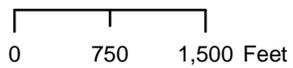


Legend

- Coquille parcel
- Approximate Park Boundary



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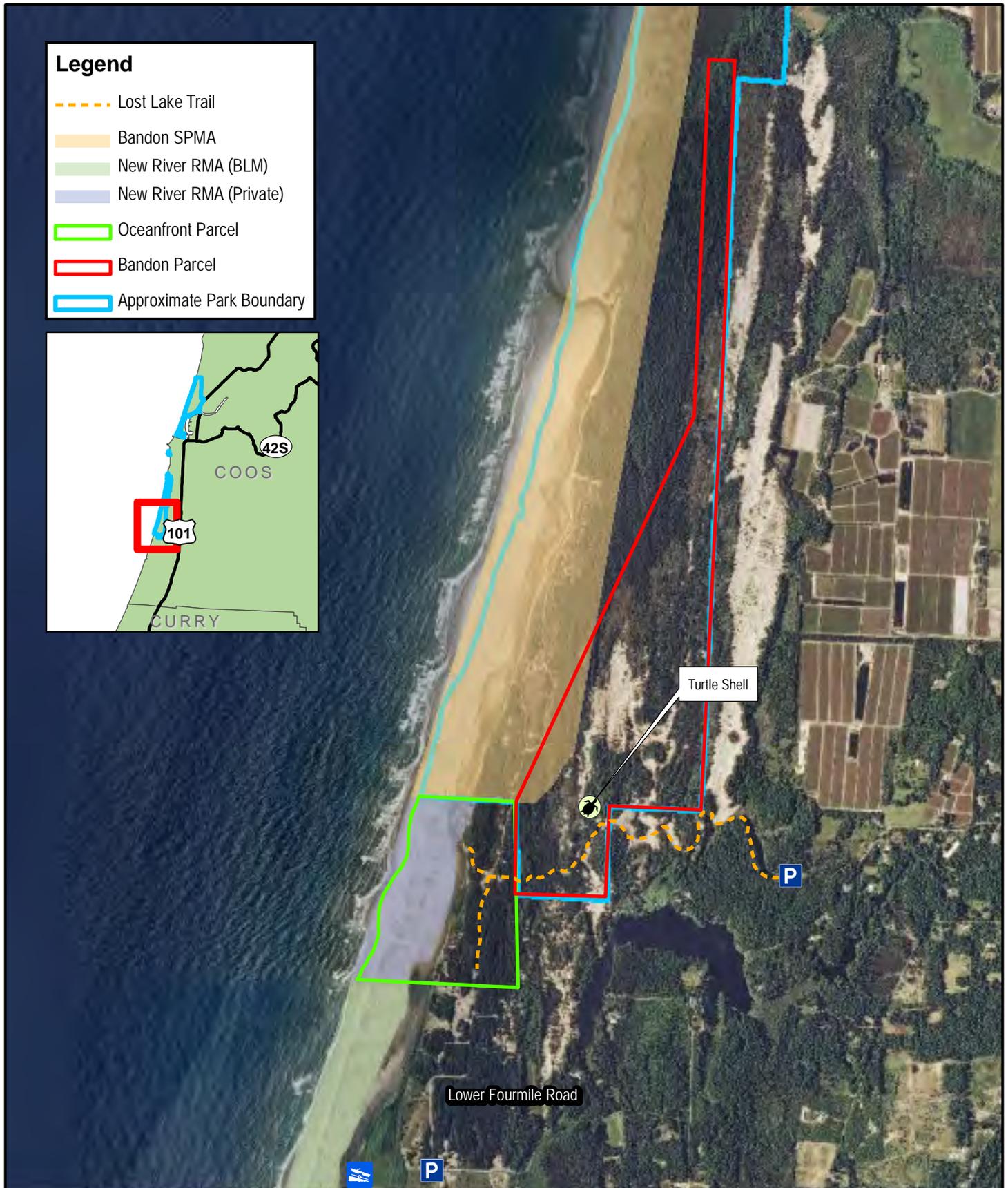
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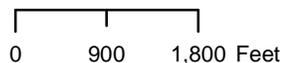
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Figure 1. Bandon SNA and Oceanfront Site Map

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Species sensitivity rankings were taken from federal and state lists. Federal and state threatened status means the species could become endangered within the foreseeable future within all or a significant portion of its range. State critical species are imperiled with extirpation from a specific geographic area of the state because of small population sizes, habitat loss or degradation, and/or immediate threats. State vulnerable species are facing one or more threats to their populations and/or habitats. Vulnerable species are not currently imperiled with extirpation from a specific geographic area or the state but could become so with continued or increased threats to populations and/or habitats.

4. WILDLIFE SPECIES

At-risk wildlife species are those that are experiencing population declines or are otherwise at risk. They include federal endangered, threatened, candidate species and species of concern; state endangered, threatened, and candidate species; state critical and vulnerable species; and ODFW Conservation Strategy species. Since wildlife species move between suitable habitats, species in the vicinity of the study area may also occur within the study area. Federal and state endangered status means the population is at risk of going extinct.

Currently, five species listed under the Federal and/or state Endangered Species Acts, and 12 federal and/or state sensitive species have the potential to occur or do occur in the study area (Table 1). Inventories of the property identified three federal or state threatened species present in the study area (coho salmon, bald eagle and western snowy plover, Table 1).

One species guild and three at-risk species are most likely to be most negatively affected: beach and wetland obligate birds, western toad, western pond turtle, and western snowy plover.

4.1 BEACH AND WETLAND OBLIGATE BIRDS

Many species of migratory birds utilize both the oceanfront and exchange properties. Some are year-round residents, while others migrate up the Oregon coast by the thousands, foraging and resting on the beach and adjacent wetlands as they go. Shorebirds use a variety of habitats during spring and fall migrations, with the most critical being wetlands (Drut and Buchanan 2000). The migration flyways are determined by the size and distribution of wetlands, estuaries, beaches, and rocky shorelines across the landscape (Drut and Buchanan 2000), which results in “migratory bottlenecks” (Myers 1983) that hundreds of thousands of birds navigate twice a year. Even abundant shorebird species can be impacted by wetland loss, since shorebirds congregate in large numbers in limited areas (Drut and Buchanan 2000). In addition, several at-risk species are present within the study area, including Caspian tern, rock sandpiper, and western snowy plover. Coastal wetland types are declining nationally; shorebirds have experienced high levels of habitat alteration over the past two centuries, with additional habitat loss from the spread of exotic plants.

4.1 WESTERN TOAD

Western toad (*Anaxyrus boreas*) is a state vulnerable and Conservation Strategy species that relies on wetlands to breed. Adults can live in a variety of habitats, but in the spring they migrate to ponds and shallow lakes with slow moving water to lay eggs, usually in water less than 0.5 meters deep (Corkran and Thom 2006). Wetlands can include freshwater systems as well as brackish waters (Storer 1925, Slough and Mennel 2006). Western toads return to the same wetlands in successive years (Bull and Carey 2008), and this site fidelity combined with aggregate breeding may result in only a few of the potential breeding sites in a relatively large area being utilized (Slough 2004). Once tadpoles metamorphose into toadlets, they often shelter under rocks or logs near ponds. Western toads in the United States have been decimated by diseases, with extirpation of local populations (Hammerson et al. 2004). The exact cause of the decline is unknown, and may be site specific. Females mature slowly and reproduction is infrequent, which limits the ability of western toad populations to recover from declines. No western toads have been observed at any of the parcels under consideration; however, the species was listed as a potential occurrence in the Biological Assessment Coquille Spit, Coos County, Oregon (Christy 2007).

4.2 WESTERN POND TURTLE

The western pond turtle (*Actinemys marmorata*) is one of two turtle species native to Oregon. The turtle is a USFWS species of concern, a sensitive species with the United States Forest Service (USFS) Region 6, Bureau of Land Management (BLM), and listed as a sensitive-critical and Conservation Strategy species by Oregon Department of Fish and Wildlife (ODFW). It occupies habitats in Oregon west of the Cascades. The species is declining due to loss of nesting and hatchling habitat. Slow-moving permanent water with deep and shallow areas, hiding and basking sites, and nearby undisturbed nesting habitat are key factors; travel corridors are also a limiting factor due to isolated adult populations. Hatchlings may use ephemeral water sources with extensive emergent vegetation cover (Rosenberg et. al 2009). Nesting habitat is usually in sandy areas with compact soil, sparse vegetation, and solar exposure (Rosenberg et. al 2009) close to water where turtles can dig out a nest bowl.

Western pond turtles are thought to breed within the boundaries of the Bandon SNA parcel. A hatched turtle egg shell was located by OPRD staff in suitable turtle nesting habitat near to one of the wetlands (Figure 1 and Figure 3); the identification of the shell remnants is most likely western pond turtle due to size. Little data exists on the size of the population, prevalence of basking and overwintering habitat, and extent of suitable nesting habitat.

4.1 WESTERN SNOWY PLOVER

The Pacific coast population of the western snowy plover (*Charadrius nivosus nivosus*) is a state and federally threatened shorebird that lives on sandy beach areas along the west coast of the United States and Mexico. The small bird utilizes the ocean shore for nesting, feeding, rearing of chicks, roosting, and overwintering (ICF International 2010). The plover population has declined primarily due to human interactions – development, increased predation, habitat modification, and recreational activities (ICF

Table 1. At-risk Species Occurrences at the Study Area

Common Name	Scientific Name	Federal Listing	State Listing	Occurrence	Potential for Impacts
Robust walker	<i>Pomatiopsis binneyi</i>		CS	Vicinity	Low
Western toad	<i>Anaxyrus boreas</i>		SV, CS	Potential	Unknown
Coho salmon (Oregon Coast ESU)	<i>Oncorhynchus kisutch pop. 3</i>	FT	SV	Present	Low
Steelhead (Oregon Coast ESU, winter run)	<i>Oncorhynchus mykiss pop. 31</i>	SOC	SV	Vicinity	Low
Western pond turtle	<i>Clemmys marmorata marmorata</i>	SOC	SC, CS	Present	High
Aleutian Canada goose	<i>Branta hutchinsii leucopareia</i>			Vicinity	Low
Bald eagle	<i>Haliaeetus leucocephalus</i>		ST, CS	Present	Low
Band-tailed pigeon	<i>Patagioenas fasciata</i>	SOC	CS	Vicinity	Low
Black oystercatcher	<i>Haematopus bachmani</i>	SOC	SV, CS	Present	Low
California brown pelican	<i>Pelecanus occidentalis</i>		SE, CS	Vicinity	Low
Caspian Tern	<i>Sterna caspia</i>		CS	Present	Low
Marbled murrelet	<i>Bracyramphus marmoratus</i>	FT	ST, CS	Vicinity	Low
Olive-sided flycatcher	<i>Contopus cooperi</i>	SOC	SV, CS	Present	Low
Peregrine Falcon	<i>Falco peregrinus</i>		SV, CS	Present	Low
Rock Sandpiper	<i>Calidris ptilocnemis</i>		CS	Potential	Medium
Tufted puffin	<i>Fratercula cirrhata</i>		SV	Vicinity	Low
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FT	ST	Present	High
California myotis	<i>Myotis californicus</i>		SV, CS	Potential	Low
Fringed bat	<i>Myotis thysanodes</i>	SOC	SV, CS	Potential	Low
Long-legged myotis	<i>Myotis volans</i>	SOC	SV, CS	Potential	Low
Silver-haired bat	<i>Lasionycteris noctivagans</i>	SOC		Potential	Low
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SOC	SC, CS	Potential	Low
Yuma myotis	<i>Myotis yumanensis</i>	SOC		Potential	Low

FT: Federally threatened

SOC: Federal species of concern

SE: State-endangered

ST: State threatened

SC: State critical

SV: State vulnerable

CS: Conservation Strategy

Figure 3. Western pond turtle habitat on Bandon SNA parcel



Nesting habitat in vicinity of turtle egg shell



Wetland adjacent to nesting habitat



Turtle egg shell discovered by OPRD staff

International 2010). Plovers utilize all areas of the beach. They nest, roost, and shelter their chicks above the high tide line in the dry sand, and forage for small invertebrates along the wrack-line and wet sand.

Western snowy plovers are present on the Oceanfront parcel. Some birds still utilize the area for nesting, and two nests were located on the parcel in 2013 (ORBIC monitoring data), but it is no longer a major nesting location without restoration efforts. The Bandon SNA and Coquille parcels do not contain suitable nesting habitat for western snowy plover.

5. EFFECTS ANALYSIS

5.1 BEACH AND WETLAND OBLIGATE BIRDS

No beachfront property is leaving OPRD's management; the oceanfront property will add beach acreage to OPRD's management, which will result in either no change to the land use or restoration efforts that will positively affect migratory shorebirds. Botanical inventories have approximated wetland acreages, depicted in Figures 4 and 5 (Bacheller 2013a, 2013 b, Christy 2007). While these assessments can provide a general comparison of wetland types, exact acreages can only be determined by wetland delineation. Some areas are identified as partial wetlands that contain a matrix of upland and wetland habitat (Figure 4), therefore true wetland acreage in these areas is a percentage of the total mapped acreage. The approximately 40 acres of wetland and 53 acres of partial wetland that will leave OPRD management are primarily composed of freshwater wetland types (Bacheller 2013a), and the 61 acres of wetland and 43 acres of partial wetland that would be gained by OPRD from the oceanfront and Coquille properties include some saltmarsh and other brackish wetland types (Bacheller 2013b, Christy 2007). If the land exchange proceeds, wetland acreage under OPRD management will increase. Once the exchange is completed, wetlands on the Bandon SNA parcel may be lost to development, but this action is outside of OPRD's jurisdiction. Depending on the development and mitigation actions taken by Bandon Biota on the Bandon SNA parcel, the land exchange is likely to result in a loss of functional freshwater wetlands to wetland obligate birds.

5.1 WESTERN TOAD

Since there are no direct observations of western toad on any of the three properties, any negative impacts would be to potential habitat. If present, western toads could be negatively impacted by new roads and loss of habitat. Western toads experience mortality on road crossings (COSEWIC 2012), especially during their dispersal to and from breeding sites. Wetlands leaving OPRD's ownership are primarily composed of freshwater wetland types (Bacheller 2013a), and the wetlands that would come into OPRD ownership include some saltmarsh and other brackish wetland types (Bacheller 2013b, Christy 2007). Freshwater and saltwater habitats may not provide the same functionality for breeding and rearing activities, but without information on western toad presence, determining negative impacts are unknown.

Figure 5. Approximate wetlands at Coquille parcel

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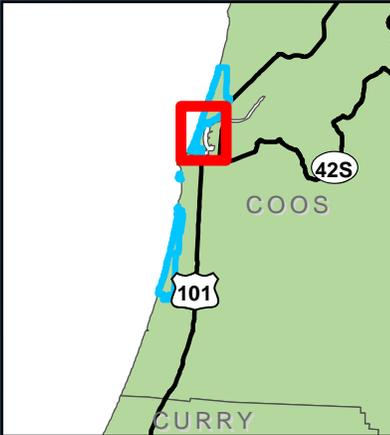


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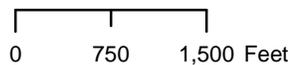


Legend

- Wellands Gained by OPRD
- Approximate Park Boundary



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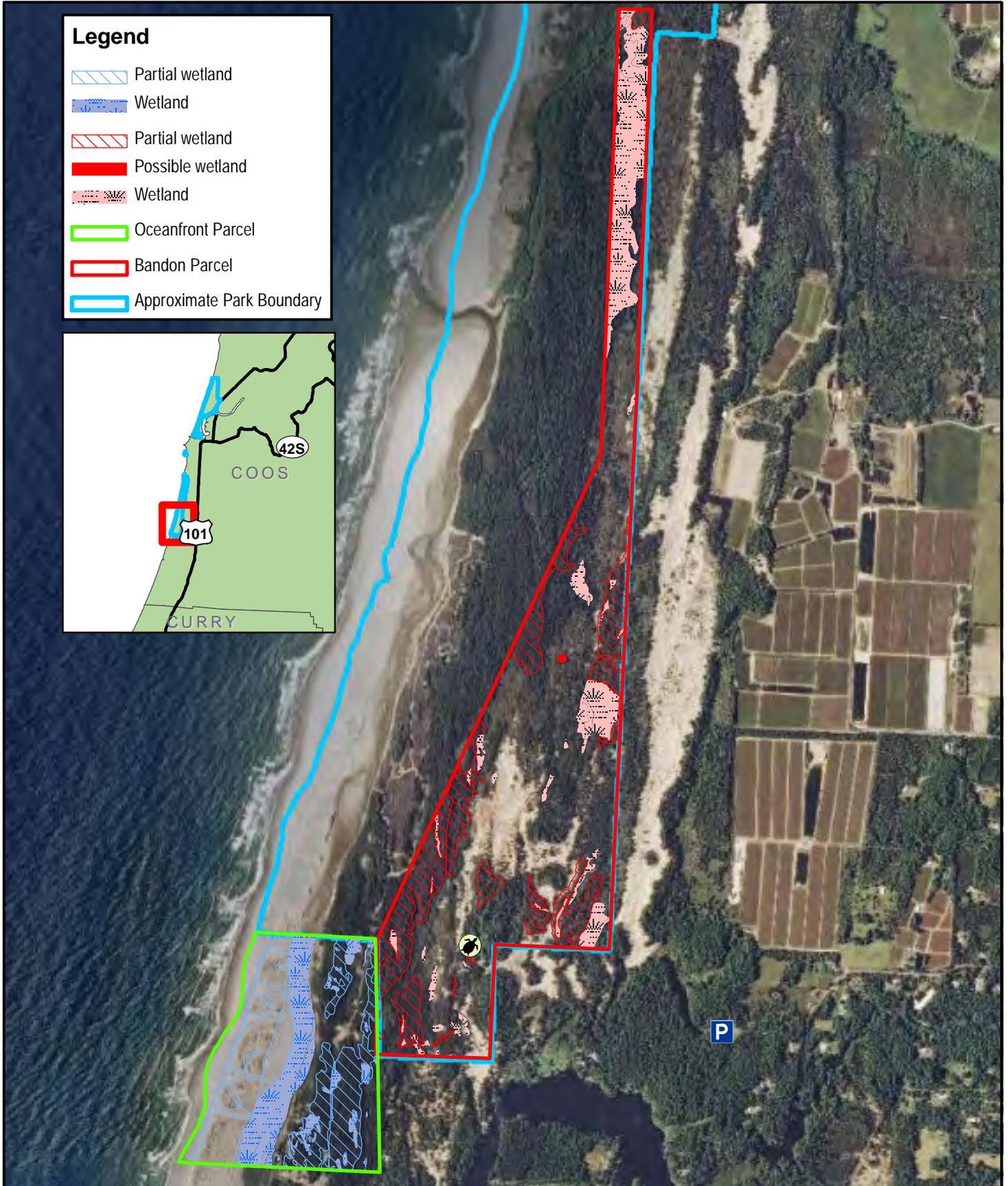
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Figure 4. Approximate wetlands at Bandon SNA and Oceanfront

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5.2 WESTERN POND TURTLE

Negative impacts to western pond turtle are likely due to changes in land use, although the magnitude cannot be predicted without additional population information and habitat assessments. Mortality on road crossings, loss of breeding and rearing habitat, and disturbance to adult female turtles on nesting grounds are primary concerns. As discussed in Section 5.2, wetlands leaving OPRD's ownership are primarily composed of freshwater wetland types (Bacheller 2013a), and the wetlands that would come into OPRD ownership include some saltmarsh and other brackish wetland types (Bacheller 2013b, Christy 2007). As with western toad, freshwater and saltwater habitats may not provide the same functionality for breeding and rearing activities. In addition, soils at the oceanfront and Coquille property may not provide the same suitable nesting habitat for western pond turtles that exists at the Bandon SNA parcel. Negative impacts are therefore likely, but cannot be fully assessed without more information on species use of the three sites.

5.3 WESTERN SNOWY PLOVER

The beach acreage of the oceanfront parcel is currently in fairly poor condition (D. Lauten personal communication, Bacheller 2013b); prior to large dune stabilization from European beachgrass, western snowy plovers nested in the dry sand. The incoming acreage of the oceanfront parcel under OPRD's management will either have no effect or a positive impact on western snowy plover, depending on whether OPRD implements restoration of coastal dune habitat. The topography of the beach habitat on the oceanfront parcel may allow for easier restoration than other sections of Bandon State Natural Area due to New River bounding the east side of the dunes. No negative direct impacts to western snowy plover are anticipated.

However, multiple negative indirect impacts to western snowy plover are likely. These include increased disturbance from people attracted by the golf course, unofficial beach access from the Bandon SNA parcel; plover avoidance of suitable habitat, and increased usage of the Lost Lake trail; increased predation pressure; and increased predation during disturbance events. Specifically, negative indirect effects to plover are highly likely from the Oceanfront Parcel Service Road Access Easement as well as the development of golf facilities on the Bandon SNA parcel. Both of these developments will likely result in increased disturbance and predator density if no mitigation actions are taken (see discussion below; Ruhlen et al. 2003, Anthony 1985, Saul 1982, Persons and Applegate 1997, Stenzel et al. 1994, Gotmark 1992, Fox 1990).

The proposed western boundary of the Bandon SNA parcel is approximately 700 feet from the edge of the beach and plover nesting habitat at the nearest edge (Figure 1). In part to mitigate disturbance to western snowy plover from unofficial access to the beach, the boundary between OPRD property and Bandon Biota will be symbolically fenced (Exchange Agreement 2013) to discourage human travel between the exchange property and the SPMA. Symbolic fencing will not prevent human passage, however. No new beach access will be developed, but existing access may be encouraged from the Bandon SNA parcel. While there is no official beach access from either parcel, people do cross New River from the Lost Lake Trail and the closed road on the Oceanfront parcel into the dry sand where western

snowy plover breed. Should development on the Bandon SNA parcel include a trail tie-in to the existing Lost Lake Trail (also the Bandon SNA parcel Natural Corridor Access Easement), then the number of people that cross New River and cross into the SPMA will likely increase, especially if lodging or parking facilities are nearby. Compliance challenges with the existing recreation restrictions during the breeding season (March 15 – September 15) will be compounded by this new, easier access. Concentrations of people and intense activity have been found to deter plovers from using suitable habitat (Anthony 1985, Fox 1990). In addition, people (and their dogs, kites, etc.) can directly harm plovers by stepping on nests, and indirectly by flushing adult plovers from their nests; this separation can cause mortality through exposure to predators, heat, cold, and blowing sand (USFWS 2007). Disturbance from predators or people can also adults and young chicks to become separated as they forage along the wrack-line. Numerous studies have shown that overall chick survival goes down when recreation activities intensify (Ruhlen et al. 2003, Persons and Applegate 1997, Saul 1982).

Indirect mortality may also increase due to increased predation from corvids (crows and ravens), coyotes, and other species that are attracted to refuse and other human-related disturbance (Gotmark 1992). Predator density is a significant factor affecting western snowy plover nesting habitat quality (Stenzel et al. 1994). Predation results in the loss of eggs, chicks, adults, and the presence of predators can cause the separation of chicks from adults (USFWS 2007). For the past 6 years, predation has been the largest cause of known nest failure at Bandon State Natural Area (Lauten et al. 2013, Lauten et al. 2012, Lauten et al. 2011, Lauten et al. 2010, Lauten et al. 2009, Lauten et al. 2008). Plovers use anti-predator adaptations focused primarily on escaping notice; including camouflage of adults, young, and eggs; adults engage in a skulking retreat from the nest when predators approach; young are mobile and elusive (Page et al. 1993). In addition, plovers space their nests at a distance from one another, resulting in low nest density (Page et al. 1993). Corvids and many mammalian predator populations increase in density in proximity to human activities. Food sources from trash cans and other waste receptacles artificially inflate predator populations (Gotmark 1992). In addition, change in habitat from high shrubs and other vegetation to short grasses common on golf courses may increase rodents in the area, and in turn support a higher density of foxes. In a balanced system, a healthy population can withstand predation pressures. With the drastic alteration of the Oregon Coast, including loss of habitat that concentrates breeding plovers together, predation is a major threat to the continued survival of the species.

OPRD has an Incidental Take Permit with United States Fish and Wildlife Service (USFWS) for activities that may cause take of western snowy plover. As part of this permit, OPRD engaged in a Habitat Conservation Plan (HCP, ICF International 2010). The Bandon SNA parcel includes approximately 16 acres that are designated as Snowy Plover Management Area (SPMA) in the Habitat Conservation Plan (HCP) and the Bandon State Natural Area Western Snowy Plover Site Management Plan (OPRD 2012). This acreage is composed of a shore pine (*Pinus contorta*) dominated plant community (Bacheller 2013a), which is not suitable breeding habitat for plover. Since half the acreage is native vegetation relatively free of invasives (Bacheller 2013a), these 16 acres are a very low priority to receive any treatments to convert to plover breeding habitat. Prior to a final sale, OPRD will need to submit to USFWS a minor modification to the HCP to redraw the boundaries of the SPMA. A commitment by OPRD or Bandon Biota, LLC. to restore a minimum of 16 acres of coastal dune habitat within the SPMA would

provide more benefit to the plover than retaining the 16 acres of shore pine. Alternatively, the Bandon SNA parcel could exclude the acreage designated as SPMA.

Approximately 58.7 acres of the oceanfront parcel are designated as a snowy plover Recreation Management Area (RMA). RMAs and SPMAs have the same set of recreation restrictions; the difference is ownership (SPMA is OPRD-owned or managed; RMA is managed by another entity). By definition, acquisition of this property will change its status from occupied RMA into occupied SPMA, and this will also require a minor modification submittal to USFWS. The newly acquired SPMA would then need a site management plan developed within one year, or to be annexed into Bandon State Natural Area Western Snowy Plover Site Management Plan (OPRD 2012). OPRD will need to address symbolic fencing, signage, and recreation restrictions on the new properties, if acquired.

OPRD currently engages in predator management to reduce predation pressure in cooperation with other agencies. As discussed previously, any increase in predator density will negatively impact the plover population. To compensate, predator management actions will need to be increased and expanded beyond OPRD's current spending allotments, and may increase costs to partner agencies. Funds that would have otherwise gone to habitat restoration or environmental education may have to be reallocated to predator management, and this could negatively affect OPRD's compliance with the HCP.

6. MANAGEMENT RECOMMENDATIONS

Overall, the land exchange will have a demonstrable negative impact to at-risk species in the area without mitigation actions, especially the western snowy plover. The exchange will also directly affect the western snowy plover HCP, and will require modifications. HCP modification is a formal consultation process that OPRD would initiate with USFWS. It is preferable from an at-risk wildlife perspective to avoid the land exchange or modify the existing terms. Should the exchange occur, the management recommendations in the Botanical Assessment would benefit wildlife; in addition, the following recommendations will help reduce negative effects on wildlife resulting from the exchange:

1. No additional developments that would have significant negative impacts to western snowy plover should occur on the oceanfront property, including road-building or maintenance.
2. The boundary between the Bandon SNA parcel and OPRD property should be fenced with materials that physically bar human passage rather than symbolic fencing materials.
3. To ascertain the extent of increases in impacts from predators, a monitoring program should be implemented. This program could focus on predator density directly, or on the nest and reproductive success of western snowy plovers. OPRD currently engages in a partnership to monitor reproductive success; expanding this program via cooperative funding would provide information on any increases in predation events and disturbance.

4. Develop an effective method to control beach access from Lost Lake Trail and any other roads across the Oceanfront parcel or Bandon State Natural Area during western snowy plover breeding season (March 15 – September 15).
5. Allow for seasonal trail restrictions on trails that connect the Bandon SNA parcel to New River. The need for restrictions should be linked with disturbance in an adaptive management decision matrix developed in conjunction with the USFWS, BLM, OPRD, and Bandon Biota, LLC.
6. To mitigate increases in corvid density, a trash management plan should be developed in conjunction with USFWS. Consolidating waste containers to a central location and using wildlife-proof containers will help reduce access to a food source.
7. Avoid planting trees adjacent to the SPMA; avian predators will use these as roosts and nest locations. Implement actions to discourage corvid nesting across both properties.
8. Assess western pond turtle habitat and population status on all three properties and retain important nesting and rearing areas. Use creative naturescaping to encourage visitors to avoid turtle nesting areas during egg laying and hatching periods (May through October). Avoid driving vehicles over turtle nesting areas.
9. Assess western toad habitat and population status on all three properties and retain important nesting and rearing areas.
10. Develop outreach and education programs, including signs, for the public and users of the golf course related to the at-risk species.

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