

# Chapter 5 Human Environment



Chapter 1  
Introduction and  
Background

Chapter 2  
Management  
Direction

Chapter 3  
Physical  
Environment

Chapter 4  
Biological  
Environment

Chapter 5  
Human  
Environment

Appendices



## **Chapter 5. Human Environment**

### **5.1 Cultural Resources**

#### **5.1.1 Native American Cultural Landscape**

For thousands of years, people living on the Oregon coast relied upon resources obtained from estuaries (Minor and Toepel 1983, Draper 1988, Ross 1990, Lyman 1991 as cited in Byram 2002). Fish, shellfish, terrestrial and marine mammals, avian species, and edible plants all provided the means for sustenance. With its dense food value and predictable runs, salmon in particular were of high value. This is reflected in the ethnographic accounts and archaeological evidence. Major river drainages are known to have been well populated and have many major archaeological sites. However, smaller estuaries without a major stream to support a strong salmon run had smaller populations and fewer major archaeological sites.

The concentration of preferred resources in the productive interface of ocean and land led to numerous stable and distinct groups of Native people on the Oregon coast. These are recorded in early written records and later ethnographic studies. Each estuary and bay was associated with a unique group that broadly shared the same cultural habits, beliefs, and sometimes language with other coastal groups.

#### **Bandon Marsh National Wildlife Refuge**

The Coquille River native people (the Nasomah) hunted, fished, and created river shoreline settlements for thousands of years (Byram and Shindruk 2010, Tveskov and Cohen 2007). The Coquille River provided Native people a convenient transportation route to inland resources and access to the sea. Tributary streams and river side marshes were ideal locations for the use of fish traps or weirs (Byram 2002). Marsh and estuarine habitats have abundant waterfowl; dry uplands were suitable for constructing living quarters, hunting of land mammals and gathering of roots and berries.

The lower reaches of the Coquille River traverses the traditional territory of two Native American tribes. Broadly speaking they are separated by two language phylums. The Miluk, or Lower Coquille, were speakers of the Coosan language family of the Penutian phylum. To the east were the Upper Coquille who spoke Tututuni out of the Athapaskan phylum. The separate languages and numerous dialects belie the intermingled cultures that shared many traits. Bilingualism and intermarriage were common. Trade between groups was wide and extensive largely due to river and oceangoing canoe travel.

Maximizing the depth and breadth of available resources, these early inhabitants developed collection strategies in sync with the seasonal availability of prized food. In spring, various plants and marine fish, including herring, became abundant, and the tides were low on the shore for shellfish harvests. Spring and fall runs of salmon were harvested. Much of the harvest was dried and stored for use throughout the year. Lamprey, sturgeon, flounder, and many other fish were also caught. Spring and summer, being seasons of vigorous vegetative growth, were times to gather roots, tender greens, berries, and nuts. As with most of the Northwest, the bulb of the camas plant provided a staple starch. Harvested in great quantities, camas was baked in rock-lined earth ovens and processed into dried cakes for future use.

Ocean resources tend to be available throughout the year. Seaweed, flounder, crab, seals, sea lions, sea otters, and the occasional drift whale were procured. Clams and mussels were also common food items. Many of these would be cooked in rock-lined earth ovens or boiled in baskets using hot rocks to heat water. Both techniques fracture the rock with use.

Permanent housing was built of cedar logs and split planks. These cedar plank houses could house several families and several fire pits. The roof pattern, style of entry and internal layout may vary but remained within the typical Northwest coast pattern. Center posts held a ridge beam, which supported rafters that lead to the sides. The roof and siding were of split planks.

Evidence of the above activities and items has been found along the coast. Shell middens, or layers of shell, bone, charcoal and fire-cracked rocks that accumulate at occupation sites, are common on the coast. Large quantities of fire-cracked rock with charcoal indicate a roasting pit location. A plank house may be identified by a large rectangular depression with indications of post holes and fire pits. The banks of the lower Coquille River provided prime locations for prehistoric Native American villages and food procurement locations.

### **5.1.2 Post-settlement Overview**

The earliest Euro-American inhabitants of the Coquille watershed were believed to be fur trappers, traders, and explorers. The first settlers established the present town site of Bandon in 1853. As the Euro-American population increased, it moved away from fur trading and diversified into fishing, forestry, and agriculture. In the early 1880s, the first cranberry bogs were planted in the area. Riparian timber was logged and the lowland areas were diked, drained, and then cleared for pasture and crop production. Upland forested areas were harvested and logs were transported by splash damming and on roads. The hydrology of the riverine and tidally influence portion of the Coquille River was altered by dredging and maintenance for commerce and travel. Historic commerce activities in the lower Coquille River, in the proximity of the town of Prosper, south of Bandon Marsh NWR's Ni-les'tun Unit, consisted of shipyards, lumber mills, salmon canneries, schools, and residential buildings (Byram and Shindruk 2010, Reid and Stroud 2003).

### **5.1.3 Archaeological Sites, Surveys, and Research**

Within the approved boundary of the Bandon Marsh National Wildlife Refuge there are thirteen recorded archaeological sites (Tables 5-1 and 5-2). Two of the sites are documented long-term occupation locations. Three sites have major midden components that may indicate occupation or food processing locations. The rest are single fish weirs or a complex of weirs in a discrete location. This pattern and density of sites extends both up and down river from the Refuge.

#### **Archeological Research**

Research is currently underway building on Dr. Scott Byram's PhD dissertation and the work of others describing human responses to major tsunami events and the slow, but inexorable, physical changes of sea level rise and anthropogenic effects. Portions of Bandon Marsh NWR have proved rich with data showing human adaptation to dramatic estuary changes. The same work may provide insight to the effects of human actions on the marsh itself.

**Table 5-1. Known Archaeological Sites within Bandon Marsh National Wildlife Refuge**

Trinomial	Common Name	Attributes
CS1	Philpott Site	Midden & Fish Weirs
CS61	Blue Barn	Occupation site
CS108	Culvert Site	Fish Weir
CS115		Midden
CS116		Midden & Fish Weirs
CS118	Fish Traps	Fish Weirs
CS130	Osprey Weir	Fish Weirs
CS147	Bandon Marsh Weirs	Fish Weirs
CS158	Bussmann	Occupation site
CS159	Rip Rap	Fish Weir
CS160	Philpot Jr.	Fish Weir
FWS-09-1		Fish Weir
FWS-09-2		Fish Weir

**Table 5-2. Archaeological Surveys and Excavations within Bandon Marsh National Wildlife Refuge**

SHPO Number	Survey Title	Author
18188	Coquille Cultural Heritage	Ivy & Byram
8507	Ocean Disposal Site	M. Martin
2425	Geo-Pacific/Bullards Beach	S. Snyder
	Osprey Site Project	Byram & Erlandson
	Coquille River Archaeological Mapping Project	Coquille Indian Tribe
#07-2209	Pedestrian Survey of North Bank Lane	N. Norris
	The Blue Barn Site	M. Tveskov
	The Bussmann Site	M. Tveskov, Z. Rodriques, D. Ivy & S. Byram
	Ni-les'tun Archaeology, Bussmann, Blue Barn and Old Town Bandon Sites	M. Tveskov & A. Cohen
In progress	Ni-les'tun Restoration	S. Byram
FWS-PA FY2000	Riverside Drive Interpretive Facility	A. Bourdeau
FWS-PA FY2001	Ni-lae-tun – Barns & Silos Removal	A. Bourdeau
FWS-PA FY2001	Philpott Ranch	L. Speulda
FWS-PA FY2005	Replace Refuge Residence #2	L. Speulda
FWS-PA FY2005	Ni-lae-tun – Building Removal	A. Bourdeau

### **5.1.4 Threats to Cultural Resources**

A variety of natural and human-caused activities can threaten cultural resources, including:

- Fire, both naturally-occurring and prescribed for habitat restoration, can cause significant damage to historic structures and archaeological sites as can the activities to suppress and manage fire (such as creating fuel breaks, etc.)
- Erosion, whether the byproduct of fire, wind, waves or another natural or manmade agent
- Habitat restoration and other land management activities.
- Vandalism or “pot hunting”

Any activity identified in the CCP (see Chapter 2), including construction of new facilities or changes in public use, could have a potential impact to cultural resources. The greatest threats may be posed by earthmoving, removal of structures, or alteration of the current erosion patterns occurring during habitat restoration, construction, or other land management activities.

The Service is committed to protecting valuable evidence of plant, animal, and human interactions with each other and the landscape over time. These may include previously recorded or yet undocumented historic, cultural, archaeological, and paleontological resources as well as traditional cultural properties and the historic built environment. Protection of cultural resources is legally mandated under numerous Federal laws and regulations. Foremost among these are the National Historic Preservation Act (NHPA) as amended, the Antiquities Act, the Historic Sites Act, the Archaeological Resources Protection Act (ARPA) as amended, and the Native American Graves Protection and Repatriation Act (NAGPRA). The Service’s Native American Policy (USFWS 1994) articulates the general principles guiding the Service’s relationships with Tribal governments in the conservation of fish and wildlife resources. Additionally, the Refuge seeks to maintain a working relationship and consult on a regular basis with the Tribes that are or were traditionally tied to lands and waters within the Refuge.

## **5.2 Refuge Facilities**

The infrastructure and facilities discussed in this section include boundary signs, public entrances, roads, trails, and administrative buildings. Facilities associated with specific public use programs are discussed in Section 5.5. All public and administrative facilities, with the exception of boundary signs, are depicted on the map located in Chapter 2.

### **5.2.1 Boundary Signs**

Approximately 50% of the Refuge is posted with official refuge boundary signs. Boundary signs are located primarily where refuge lands are adjacent to roads. The majority of the Bandon Marsh Unit was posted in the mid-1980s and the perimeter boundary signs are gradually being replaced. Additional signage denoting the south boundary of the hunting area is being updated as well. The Niles’tun Unit boundary along Highway 101, Fahys Road, North Bank Lane, and the Coquille River is posted. There is posting on the north boundary of the Smith Tract.

## **5.2.2 Public Entrances, Roads, Launches, Access Points, and Parking**

### **Bandon Marsh Unit**

There is one official public entrance to the Bandon Marsh Unit and it is located on the west side of Riverside Drive within the city limits of Bandon. There are no additional official entrances to this unit. The Bandon Marsh Unit is marked with a standard National Wildlife Refuge entrance sign at the Riverside Drive entrance and near the northern end of the unit within the high salt marsh. There is a paved parking lot associated with this unit and it is located on the west side of Riverside Drive. The parking lot runs parallel with the road and contains spaces for 10 vehicles. It includes one accessible parking space for people with disabilities. An elevated boardwalk and deck runs from the parking lot west to the edge of the marsh. These public use facilities were completed in February 2002.

The public may also access the Bandon Marsh Unit by boat during higher tides from the Coquille River. There are two boat launches nearby that waterfowl hunters occasionally use to launch their watercraft. One launch is at Bullards Beach State Park directly across the river and another one is located further south at the Port of Bandon. Boating provides access to the high marsh area in the northwest portion of this unit where hunters set up temporary hunting blinds.

### **Ni-les'tun Unit**

There is one official public entrance for visitors to the Ni-les'tun Unit and it is located on the south side of North Bank Lane adjacent to the South Coast Refuge office, bunkhouse, and shop facilities. The Unit is marked with a standard refuge entrance sign and provides visitors with access to a parking lot and viewing deck. There is an automatic gate located at the public entrance to the Ni-les'tun Unit's visitor parking lot, which closes daily at sunset and opens at sunrise. The paved parking lot has 22 spaces for passenger vehicles, room for bus/RV parking and two accessible passenger vehicle spaces. As part of the North Bank Lane Improvement project, completed 2011, a trail and pedestrian underpass was constructed that leads visitors from the parking lot at the viewing deck to the refuge office.

There is an additional entrance to the Refuge on the north side of North Bank Lane, which leads to the refuge office and storage garage that is marked with a U.S. Fish and Wildlife emblem sign. The entrance road to the office was relocated as part of the North Bank Lane Improvement project and moved a little further to the east while former entrance road was incorporated into the trail from the viewing deck parking lot. A non-striped parking area at the office is open to the public but is used primarily by refuge staff, volunteers, and researchers. Finally, there is an additional administrative use only refuge access point and associated gravel parking area at the Smith Tract used by refuge staff, friends group members, and volunteers.

## **5.2.3 Trails**

### **Bandon Marsh Unit**

There are no official trails on the Bandon Marsh Unit. However, there is a short elevated boardwalk that leads to a set of stairs that allows the public to gain access from the observation deck into the marsh. From the stairs, there is an unofficial 50-foot long foot trail that leads through the high salt marsh to the low tidal mudflats. Once visitors reach the open mudflats they are able to hike anywhere on the refuge unit.

## **Ni-les'tun Unit**

There is one official trail off of the Ni-les'tun Unit overlook deck leading west along a concrete/gravel path into the restored salt marsh. This 300-foot long trail allows the public to get to the level of the highest tides and small meandering tidal channels. In addition, a trail from the parking lot/overlook deck to the office was completed in 2011.

### **5.2.4 Administrative Buildings and Other Infrastructure**

The south coast administrative facility is located on the Ni-les'tun Unit of Bandon Marsh NWR approximately five miles north of the city of Bandon. Specifically, the South Coast Refuge Office is located on the north side of the Coquille River and North Bank Lane. The administrative facilities consist of an office, a three bay garage, a maintenance shop, and a volunteer bunkhouse with an associated detached two bay garage. The bunkhouse has five bedrooms and serves refuge staff, volunteers, biologists, and/or researchers. On the Smith Tract there is a double-wide manufactured home that is used as office space by the Friends of Southern Oregon Coastal Refuges/Shoreline Education for Awareness and a three bay maintenance shop. The Smith Tract also has two full hook-up Recreational Vehicle (RV) sites and two small outbuildings used for storage and laundry facilities for refuge volunteers.

## **5.3 Wildlife-dependent Public Uses**

The National Wildlife Refuge System Improvement Act of 1997 defined six wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) and required that they receive priority consideration in refuge planning when they are compatible with the refuge mission.

The Bandon Marsh Unit of Bandon Marsh NWR currently offers all six wildlife-dependent public uses. The purpose of this CCP and public involvement is to determine if public uses on the Bandon Marsh Unit are in need of updating and to address compatible public use opportunities on the Ni-les'tun Unit of the Refuge. Currently, refuge visitation is relatively low though it has increased in recent years with the installation of visitor use facilities (e.g., wildlife viewing decks and parking lots) at Riverside Drive and at the Ni-les'tun Unit. Visitors from outside of the area usually visit the Refuge as a destination either to observe birds and other wildlife or to clam or hunt. Their visits are often seasonal as birders time their trips to coincide with the seasonal migration of shorebirds in late April/early May and again in late August/early September and waterfowl hunters time their trips with the arrival of migratory waterfowl within the early portion of the ODFW regulated waterfowl hunting season. Local residents tend to visit the Refuge year-round with most visitations occurring during the height of shorebird migration in the spring and again in the fall.

### **5.3.1 Waterfowl Hunting**

#### **Bandon Marsh Unit**

The northern-most section of the Refuge, outside of the city of Bandon limits, is open to waterfowl hunting during State of Oregon waterfowl hunting seasons and follows Oregon Department of Fish and Wildlife regulations; the remaining southern section falls within city limits and is closed to all hunting. The hunt program allows the take of waterfowl species such as geese, ducks, and coot. The

site is used by small number of regular and visiting hunters and the waterfowl hunt program has been in place since acquisition occurred in 1983. Access for hunting parties is either via boat or walk-in through the southern closed hunting area from the Riverside Drive parking lot. There are no blinds or designated hunting spots. Only portable blinds or blinds constructed of on-site dead vegetation or driftwood may be used and they must either be removed or disassembled at the end of each day.

### **Ni-les'tun Unit**

This unit is currently closed to hunting.

### **5.3.2 Fishing and Clamming**

Fishing is allowed on the Bandon Marsh Unit, but consists primarily of clamming. The state of Oregon regulates the take of clams and this activity currently takes place just downstream from the U.S. Highway 101 Bridge and on the mudflats southwest of the Riverside Drive viewing deck.

### **5.3.3 Wildlife Observation and Photography**

These two wildlife-dependent public use activities are popular with birders and wildlife enthusiasts on the Refuge. Participation in both of these occurs year-round and the number of public participants peaks during the bi-annual migration of shorebirds, waterfowl, and raptors. Local and out of town wildlife observers and birders travel to Bandon Marsh in April/May and again in August/September to witness and/or photograph the abundance of coastal and shorebirds using the marsh as a migration stop-over site. The Refuge is a co-sponsor of the annual Oregon Shorebird Festival, usually held in late August, which attracts between 70 to 130 birders. This festival is one of the longest running bird festivals in Oregon and has repeat attendees accounting for approximately 50% of the participants. The festival is a collaborative effort between the Service, the Cape Arago Audubon Society, South Slough National Estuarine Research Reserve, Oregon Institute for Marine Biology, Friends of Southern Oregon Coastal Refuges/Shoreline Education for Awareness, and Oregon Field Ornithologists.

Wildlife observation facilities include two viewing decks, one at the Bandon Marsh Unit and the other at the Ni-les'tun Unit. There are no photography blinds on the Refuge.

### **5.3.4 Environmental Education**

The Refuge offers environmental education (EE) programs both on and off-site to help promote an understanding of fish and wildlife, their habitats, and the mission of the U.S. Fish and Wildlife Service. Current refuge EE programs have been developed with the State of Oregon's educational requirements and benchmark standards. The largest and most requested EE program for the Refuge Complex is the Shorebird Sister Schools Program (SSSP). Since 2002, the Refuge Complex has expanded and delivered this shorebird ecology program to students in grades 4-6. The SSSP has grown to be one of the largest within the National Wildlife Refuge System. Annually, the program's teachers, interns, and volunteers reach approximately 700 students from schools in three participating school districts that span half of the Oregon coast. Through the assistance and dedication of the schools' teachers, interns, community, and Friends Group volunteers, the program offers lessons that are fun, interactive, and educational from January to June. Using activities and lessons from the USFWS endorsed SSSP curriculum, individual lessons teach about the need for quality shorebird and wildlife habitat and the role the USFWS plays in managing it. The field component of the five-week

program brings students to Bandon Marsh NWR or other estuaries where they spend two hours rotating through three field experience stations. It is during this trip that all of the hands-on lessons from the classroom become real when the students are able to use binoculars and field guides to identify the birds they have been learning about as they walk the perimeter of the marsh. In another field activity, students are immersed in the diet of shorebirds as they dig on the edge of the tidal mudflat for invertebrates and view shorebird prey items in magnified boxes. Finally they participate in helping maintain the marsh during an estuary debris cleanup hike within the high tide wrack line.

Since 2008, interns and volunteers with the Free Flight Bird and Wildlife Education and Rehabilitation group have developed an EE program for wildlife conservation using live non-releasable birds of prey. The pilot program in 2008 was developed using State of Oregon educational benchmarks and curriculum standards (e.g., bio-accumulation, biodiversity). This highly desired classroom or field program involves various ages of student (K-12) with hands-on activities and up close and personal experiences with wildlife.

### **5.3.5 Interpretation**

Bandon Marsh NWR is represented in an Oregon Coast National Wildlife Refuges brochure that is stocked at the Refuge Complex headquarters in Newport, the South Coast Refuge Office in Bandon, and at multiple visitor centers along the Oregon coast. The Refuge Complex maintains a website ([www.fws.gov/oregoncoast](http://www.fws.gov/oregoncoast)) where current information regarding the Refuge can be obtained at any time. The Refuge further involves the public through social media and maintains a Facebook account and a Flickr site.

#### **Bandon Marsh Unit**

All lands within the Bandon Marsh Unit are open to public use. The Unit contains a viewing deck with stairs leading to the marsh, a bench, and two interpretive panels. The interpretive panels were installed in the spring of 2010 and tell visitors the story of wildlife ecology of the salt marsh and the role this estuary plays as critical migratory stop-over habitat for tens of thousands of migrating shorebirds.

#### **Ni-les'tun Unit**

A small portion of the Ni-les'tun Unit is open to public use. The open area contains a parking lot, a short marsh trail, and a viewing deck with a series of five interpretive panels about the National Wildlife Refuge System, marsh restoration, local history and culture, wildlife management, and the role natural forces play in shaping land. All other lands on this unit are currently closed to public use.

## **5.4 Other Refuge Uses**

### **5.4.1 Non-recreational Public Uses**

Right-of-ways on record relate to Coos County maintained road and utilities (phone/electric/cable) on the Refuge to serve refuge and public facilities.

## **5.4.2 Illegal/Unauthorized Uses**

The Oregon Coast NWR Complex has one full-time Wildlife Law Enforcement (LE) Officer. LE assistance is also provided to the Refuge Complex by the Zone LE officer, along with the Coos County Sheriff, officers from the Bureau of Land Management and the U.S. Forest Service, and Bandon Police Department on an as needed basis. Refuge law enforcement deals with issues that include enforcement of the waterfowl hunt program, litter, vandalism, archaeological theft and damage, illegal harvest of plants or animals, and trespass. The Riverside Drive access area is located away from the refuge office area and within the city limits of Bandon which creates an infrequent number of law enforcement issues associated with vandalism, drug use, disorderly conduct, and litter.

## **5.5 Surrounding Area Outdoor Recreational Opportunities and Trends**

### **5.5.1 Nearby Recreational Opportunities**

Bandon Marsh NWR is located within and adjacent to the small coastal city of Bandon, which has a population of approximately 3,250. Local, state, and federal governments have all developed recreational opportunities for both residents and visitors within 25 miles of the Refuge. The City of Bandon manages one park, while Coos County manages three day-use parks and three boat ramps. Oregon Parks and Recreation Department (OPRD) manages five day-use parks, and two additional parks with campgrounds and they provide and maintain multiple locations for beach access. Both the state and federal government manage the South Slough National Estuarine Research Reserve (Reserve), a 5,000-acre natural research and public use area located in the Coos estuary and a short drive from Bandon Marsh NWR. The Reserve is comprised of a network of estuarine habitats protected and managed for the purposes of long-term research, education, and coastal stewardship. The Reserve manages a series of hiking trails, a non-motorized boat launch, and a visitor center that offers year-round environmental education and interpretation programs.

The Port of Bandon has developed the city waterfront near the mouth of the Coquille River for public use. It includes marina facilities for boat launching and sport fishing, a crab dock, a boat ramp and roofed fish cleaning station, an interpretive riverwalk, public restrooms, and a glassed-in picnic shelter and amphitheater.

The Bureau of Land Management manages the New River Area of Critical Environmental Concern. The New River runs parallel to the Pacific Ocean for nine miles and is separated from the ocean by a thin foredune of sand. Many rare birds, animals, and plants depend on the New River's estuarine, forest, meadow, wetland, and shrub habitats for survival. The site is dedicated almost exclusively to Watchable Wildlife providing nature enthusiasts with short, rustic, self-guided loop trails to view wildlife.

Coquille Point, a mainland unit of Oregon Islands NWR, is located in Bandon and provides visitors with a spectacular place to observe seabirds and harbor seals as well as explore the tidepools and the beach with its rocks, islands, and reefs. A paved trail winds over the headland and features interpretive panels that share stories about the area's wildlife and its rich Native American history. Stairways to the beach are located on opposite sides of the headland and allow visitors to make a loop on the beach.

Waterfowl hunting occurs on many privately-owned lands within Coos County. In addition, there are a few public opportunities for waterfowl hunting including a large portion of Coos Bay, even though it is within the City Limits of Coos Bay. Also portions of the South Slough National Estuarine Research Reserve are open to hunting (ODFW 2011b).

### **5.5.2 Outdoor Recreation Trends**

OPRD is responsible for providing guidance, information and recommendations to federal, state, and local units of government, as well as the private sector, in making policy and planning decisions regarding outdoor recreation in Oregon. They do this in the Statewide Comprehensive Outdoor Recreation Plan or SCORP (OPRD 2008). The latest SCORP is a five-year plan covering outdoor recreation in Oregon from 2008 through 2012.

The OPRD began the SCORP planning process in September 2005. The agency took a more proactive approach in addressing a limited number of previously identified and defined issues. Key findings from the 2003-2007 SCORP and the 2005-2014 statewide trails planning efforts identified a number of important demographic and social changes facing outdoor recreation providers in the coming years including: (1) a rapidly aging Oregon population, (2) fewer Oregon youth learning outdoor skills, and (3) an increasingly diverse Oregon population. Key findings for each of these issues are:

#### **Aging Oregon Population**

- On average across all activities, respondents expect to spend 28% more days recreating 10 years from now than they currently do.
- The most popular outdoor recreation activities for Oregonians between the ages of 42 and 80 included walking, picnicking, sightseeing, visiting historic sites, and ocean beach activities. A comparison across age categories for top five activities by participation intensity leads to the following conclusions: Walking is the top activity across all age categories (40- 79); jogging is a top activity between the ages of 40-59, but is also popular for those in their 70s; bicycling is a top activity between the ages of 40-64; sightseeing is a top activity between the ages of 45-74; bird watching is a top activity between the ages of 55-79; and RV/trailer camping is a top activity between the ages of 55-74.
- The top five activities in terms of future participation intensity 10 years from now included walking, bicycling, jogging, bird watching, and day hiking.
- Over one-third of Oregon Boomers and Pre-Boomers volunteered in their community, with an average time commitment of 5.3 hours per week. Of those who volunteered, 43% expect future changes in their volunteer activities, with most of the changes involving greater volunteerism: more time, more projects at current volunteer opportunities, and new volunteer opportunities.

#### **Youth Learning Outdoor Skills**

- The most popular outdoor activities for parents were walking, viewing natural features, and relaxing/hanging out. For children, the most popular were walking, followed by outdoor sports/games, relaxing/hanging out, and general play at neighborhood parks/playgrounds.
- The more a parent engages in an outdoor recreation activity, the more their child does. Participation varies across child age, with both the number of activities and the number of activity-days peaking amongst 12-14 year olds and decreasing for 15-17 year olds.

- Rural children spend more days, on average, in outdoor activities relative to urban and suburban children.
- Outdoor sports programs and day camps were the most popular types of outdoor recreation programs with respect to past participation. Many parents indicated that it would be very likely for their children to participate in outdoor sports programs (62%), multi-day camps (49%), outdoor adventure trips (45%), and day camps (45%) in the future.

### **An Increasingly Diverse Oregon Population**

- Walking for pleasure was the most common favorite activity for both Hispanics and Asians, with fishing and soccer being the next most common for Hispanics and hiking and fishing the next most common for Asians.
- Both Hispanic and Asian respondents most commonly did their favorite activity with members of their immediate family. Asians were more likely than Hispanics to do activities alone, as were older respondents relative to younger respondents.
- The most common location for Hispanic and Asian respondents to do their favorite activity was in a park or other area outside one's town or city. Males were more likely than females to engage in their favorite activity further from home.
- Walking for pleasure was also the activity respondents spent the most days engaged in during the past year. Hispanics engage more intensely than Asians in jogging/running, day hiking, picnicking, fishing, viewing natural features, visiting nature centers, and visiting historic sites.
- The most common activities respondents would like to do more often, or start doing were walking for Asians and walking and camping for Hispanics. The factor that would most help make this happen is availability of partners, followed by more time.
- For the Hispanic population, being in the outdoors, relaxing and having fun were the most important motivators or reasons for participating in outdoor activities. For the Asian population, relaxing, fitness, and having fun were the top motivators.

A summary of management recommendations, that are relevant to the types of outdoor recreation that the Service is engaged in, resulting from the SCORP are as follows:

- Develop a statewide youth outdoor programming framework and funding source to focus youth programming efforts across Oregon to address a specific set of key measurable objectives.
- Create a new Outdoor Recreation Section within OPRD addressing the areas of outdoor recreation and environmental education.
- Develop a strategy to strengthen the role of park and recreation agencies in the state's Safe Routes to Schools grant program.
- Plan and develop regional trail systems in areas having highest relocation intensity in the 40 to 79 age range (Coastal, Southern and Central Oregon communities).
- Provide design assistance for innovative park designs connecting kids with nature.
- Encourage organizational cultural change within public recreation agencies/organizations to effectively address the diversity issue.
- Develop recommendations for addressing language barriers to encourage underrepresented population use of outdoor recreation facilities and programs
- Create a customer service training module related to serving the outdoor recreation needs of an increasingly diverse population.

## 5.6 Socioeconomics

### 5.6.1 Population and Area Economy

Oregon’s population of approximately 3,825,700 ranks 27th in the nation. State land area covers 95,997 square miles compared to 3,537,438 square miles in the United States with a population density of 40 persons per square mile compared to 87 nationwide.

The two units of the Bandon Marsh NWR, Bandon Marsh Unit and Ni-les’tun Unit, are located along the southern Oregon coast in Coos County. The Refuge is situated along the lower Coquille River and just north of the city of Bandon. Coos Bay is the largest city in the county with a population of approximately 16,670.

Table 5-3 provides a summary of area population and economy. The county population remained constant from 1999 to 2009, compared with an 11 percent increase for the state of Oregon and a 10 percent increase for the U.S. as a whole. County employment increased by 2 percent from 1999 to 2009 but was outpaced by the state of Oregon showing an 8 percent increase and the U.S. an 8 percent increase. Per capita income in Coos County increased by 13 percent over the 1999-2009 period, while the state of Oregon and the U.S. increased by 4 and 9 percent respectively.

**Table 5-3. Bandon Marsh NWR: Summary of Area Economy, 2009 (population & employment in thousands; per capita income in 2010 dollars)**

	Population		Employment		Per Capita Income	
	2009	Percent Change 1999-2009	2009	Percent Change 1999-2009	2009	Percent Change 1999-2009
Coos County, OR	62.8	-0.3%	31.2	2%	\$32,133	13%
Oregon	3,825.7	11%	2,202.7	8%	\$36,785	4%
United States	307,006.6	10%	173,809.2	8%	\$40,285	9%

Source: U.S. Department of Commerce 2011.

The largest industry sectors of Coos County include Local Government, Health Care and Social Assistance, and Retail Trade. The Coos County economy is also dependent on forestry products, fishing, agriculture, and tourism. As the economy shifts away from manufacturing forestry products, it is moving toward the service industry in support of its tourism industry.

The largest industry sectors for Coos County are ranked below by employment (Table 5-4). The largest employer is the State and local government. Natural resource-based industries (logging, sawmills, and support activities for agriculture and logging) totaled 1,890 jobs. Food services, retail stores, and hotels, which are impacted by refuge visitation, are also important contributors to the economy (3,899 jobs).

**Table 5-4. Industry Summary for Coos County (dollars in thousands)**

Industry	Employment	Output	Employment Income
State and Local Government	5,005	286,196	252,681
Health Care	1,957	143,914	58,779
Food Services	1,757	92,280	28,909
Retail Stores	1,609	100,470	41,396
Employment Services	881	30,963	21,092
Commercial Logging	830	208,710	29,035
Individual and Family Services	746	24,463	10,761
Private Household Operations	725	4,238	3,698
Religious Organizations	576	82,356	10,846
Sawmills and Wood Preservation	539	132,943	27,826
Hotels and Motels	533	44,487	14,017
Support Activities for Agriculture and Forestry	521	15,591	16,990

Source: Minnesota IMPLAN Group, Inc. 2008.

### 5.6.2 Economic Benefits of Refuge Visitation to Local Communities

From an economic perspective, Bandon Marsh National Wildlife Refuge provides a variety of environmental and natural resource goods and services used by people either directly or indirectly. The use of these goods and services may result in economic impacts to both local and state economies. The various services the Refuge provides can be grouped into five broad categories: (1) maintenance and conservation of environmental resources, services and ecological processes; (2) production and protection of natural resources such as fish and wildlife; (3) protection of cultural and historical sites and objects; (4) provision of educational and research opportunities; and (5) outdoor and wildlife-related recreation. People who use these services benefit in the sense that their individual welfare or satisfaction level increases with the use of a particular good or service. One measure of the magnitude of the change in welfare or satisfaction associated with using a particular good or service is economic value. Aside from the effect on the individual, use of the good or service usually entails spending money in some fashion. These expenditures, in turn, create a variety of economic effects collectively known as economic impacts.

A comprehensive economic profile (baseline) of the Refuge would address all applicable economic effects associated with the use of refuge-produced goods and services. However, for those goods and services having nebulous or non-existent links to the market place, economic effects are more difficult or perhaps even impossible to estimate. Some of the major contributions of the Refuge to the natural environment, such as watershed protection, maintenance and stabilization of ecological processes, and the enhancement of biodiversity would require extensive on-site knowledge of biological, ecological, and physical processes and interrelationships even to begin to formulate economic benefit estimates. This is beyond the scope of this section. Consequently, this section focuses on economic effects which can be estimated using currently available information. As a result, benefits represent conservative estimates of total social impacts.

The following section focuses on a limited subset of refuge goods and services, primarily those directly linked in some fashion to the marketplace, such as recreation use and refuge budget expenditures. It should be kept in mind that the emphasis on these particular market-oriented goods and services should not be interpreted to imply that these types of goods and services are somehow more important or of greater value (economic or otherwise) than the non-market goods and services

previously discussed. To estimate the total economic activity, employment, employment income and federal and state taxes generated by refuge activities, this report uses IMPLAN, a regional input-output model and software system (Minnesota IMPLAN Group, Inc. 2004).

**Regional Economic Impacts of Recreational Activities**

Two types of information are needed to estimate the economic impacts of recreational visits to the Refuge: (1) the amount of recreational use on the Refuge by activity; and (2) expenditures associated with recreational visits to the Refuge. Recreational use is estimated by refuge staff. Expenditure patterns used were obtained from the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (USFWS 2007). With this information, total expenditures for each activity can be estimated. These expenditures, in turn, can be used in conjunction with regional economic models to estimate industrial output, employment, employment income and tax impacts associated with these expenditures.

Bandon Marsh NWR currently offers a variety of wildlife-dependent public uses. Refuge visitation is relatively low though it has increased in recent years with the installation of visitor use facilities. Refuge visitors are a blend of both local residents and visitors. Visitors from outside of the area usually visit the Refuge as a destination either to observe birds and other wildlife or to hunt. Local residents tend to visit the Refuge year-round with peak visits around shorebird migrations.

Table 5-5 shows the recreation visits for Bandon Marsh NWR. The Refuge had an estimated 4,772 recreation visits in 2010. In addition to recreation visits, the Refuge also had 2,900 environmental education visits for the Shorebird Sister Schools Program and the Free Flight Bird Programs. The environmental education program provides education opportunities to the community. However, these types of opportunities do not contribute to the local economic impacts because the events do not bring visitors who are spending money toward travel-related goods and services. Therefore, only visits associated with recreational activities are used to estimate economic effects.

**Table 5-5. Bandon Marsh NWR: FY2010 Recreation Visits**

Activity	Residents	Non-Residents	Total
<b>Non-consumptive:</b>			
Pedestrian	1,760	1,760	3,520
Photography	225	75	300
Other recreation	752	0	752
<b>Hunting:</b>			
Waterfowl	150	50	200
<b>Total Recreation Visitation</b>	<b>2,887</b>	<b>1,885</b>	<b>4,772</b>

**Regional Economic Analysis**

Visitor recreation expenditures for 2010 are shown in Table 5-6. Total expenditures were \$73,600 with non-residents accounting for \$46,900 or 64 percent of total expenditures. Expenditures on non-consumptive activities accounted for 85 percent of all expenditures, followed by hunting at 15 percent.

**Table 5-6. Bandon Marsh NWR: Visitor Recreation Expenditures (2010 dollars in thousands)**

Activity	Residents	Non-residents	Total
<b>Non-Consumptive:</b>			
Pedestrian	\$10.7	\$38.9	\$49.6
Photography	\$1.8	\$2.2	\$4.0
Other recreation	\$9.1	\$0.0	\$9.1
<b>Total Non-Consumptive</b>	<b>\$21.6</b>	<b>\$41.1</b>	<b>\$62.7</b>
<b>Hunting:</b>			
Waterfowl	\$5.1	\$5.8	\$10.9
<b>Total Hunting</b>	<b>\$5.1</b>	<b>\$5.8</b>	<b>\$10.9</b>
<b>Total Expenditures</b>	<b>\$26.7</b>	<b>\$46.9</b>	<b>\$73.6</b>

Input-output models (Minnesota IMPLAN Group, Inc. 2004 and Miller and Blair 1985) were used to determine the economic impact of expenditures on the Refuge's local economy. The estimated economic impacts are expected to occur in the local area of Coos County, Oregon. It is assumed that visitor expenditures occur primarily within this county. Table 5-7 summarizes the local economic effects associated with recreation visits. Final demand totaled \$99,400 with associated employment of 1 job, \$29,100 in employment income and \$13,800 in total tax revenue.

**Table 5-7. Bandon Marsh NWR: Local Economic Effects Associated with Recreation Visits (2010 dollars in thousands)**

	Residents	Non-residents	Total
Final Demand	36.6	62.8	99.4
Jobs	0.4	0.6	1.0
Job Income	10.8	18.3	29.1
Total Tax Revenue	5.0	8.7	13.8

The economic impacts from recreation expenditures estimated in this report are gross area-wide impacts. Information on where expenditures may occur locally and the magnitude and location of resident and non-resident expenditures (resident and non-resident relative to the geographical area of interest) is not currently available. Generally speaking, non-resident expenditures bring outside money into the area and thus generate increases in real income or wealth. Spending by residents is simply a transfer of expenditures on one set of goods and services to a different set within the same area. In order to calculate net economic impacts within a given area derived from resident expenditures, much more detailed information would be necessary on expenditure patterns and visitor characteristics. Since this information is not currently available, the gross area-wide estimates are used as an upper-bound for the net economic impacts of total resident and non-resident spending in the two and six county areas. The economic impacts of non-resident spending in Table 5-7 represent a real increase in wealth and income for the area (for additional information, see Loomis 1993 p. 191).

### **Regional Economic Impacts of the Refuge Budget**

In addition to impacts from recreational visitors, there are also economic effects related to the refuge expenditures that contribute to local and regional economies. In 2010, the refuge budget totaled about \$367,000. Approximately \$296,000 (81 percent) is allocated to salaries while the remaining \$71,400

is allocated to goods and services supporting the Refuge. Table 5-8 summarizes the Refuge’s expenditures in 2010.

**Table 5-8. Bandon Marsh National Wildlife Refuge Annual Expenditures, 2010 (2010 dollars in thousands)**

Expenditure	Annual Expenditures
Salary – Permanent Employees	\$295.5
Non-Salary	\$71.4
<b>Total</b>	<b>\$366.9</b>

Table 5-9 shows the jobs, job income, and tax revenues generated by refuge expenditures. The Refuge’s annual budget generates approximately 4 jobs and \$165,100 in job income. Overall, refuge expenditures result in about \$459,200 in final demand.

**Table 5-9. Local Annual Economic Effects Associated with 2010 Refuge Budget (2010 dollars in thousands)**

	Salary	Non-salary	Total
Final Demand	\$340.3	\$118.9	\$459.2
Jobs	3	1	4
Job Income	\$97.1	\$68.0	\$165.1
Total Tax Revenue	\$44.3	\$18.6	\$62.8

### 5.6.3 Refuge Revenue Sharing

National wildlife refuges, like other Federal, State, and County-owned lands are not subject to property taxes. However, under provisions of the Refuge Revenue Sharing Act, the Service annually reimburses counties for revenue lost as a result of acquisition of fee title. Payments to the county are based on the highest value as determined by one of the following three equations: three-fourths of 1 percent of the fair market value of the land; 25 percent of net receipts; or \$.75 per acre, whichever is greater. Refuge lands are re-appraised every 5 years to ensure that payments are based on current land values. The revenue sharing fund consists of net income from the sale of products or privileges such as timber sales, grazing fees, permit fees, mineral royalties, etc. If this fund has insufficient funds to cover payments to local counties, Congress is authorized to appropriate money to make up the deficit. Should Congress fail to appropriate such funds, payments to counties will be reduced accordingly.

Table 5-10 summarizes Refuge Revenue Sharing payments made to Coos County from 2006 to 2010.

**Table 5-10. Refuge Revenue Sharing Payments to Coos County for Bandon Marsh National Wildlife Refuge**

Year	Fee Acres	Total Payment
2006	889	\$5,667
2007	889	\$5,480
2008	889	\$5,503
2009	889	\$5,171
2010	889	\$3,643

## **5.7 Special Designation Areas**

The Bandon Marsh Unit of Bandon Marsh NWR has been designated as an Important Bird Area (IBA) by the National Audubon Society. Oregon's IBA program recognizes sites of outstanding importance to birds in the state (Audubon Society of Portland 2011). Sites with IBA designation are extremely important to Oregon's birds, though the IBA program by itself does not ensure the continued productivity of selected sites and certainly cannot guarantee continued avian diversity throughout the state. Most species of birds within IBAs are at least partially migratory, and most of the waterfowl, shorebirds, and seabirds of Oregon's IBAs are highly migratory or at least make extensive flights between the recognized IBAs and other areas. In Oregon, this non-regulatory global program is coordinated by The Audubon Society of Portland (2011) with a mission to identify places in Oregon that are important for birds and to promote the restoration and conservation of important bird values at these sites through partnerships, education, observation, and hands-on efforts.

**This page left blank intentionally.**