

## Strategic Private Lands Conservation in Coos & Curry County



*Natural Resources Conservation Service*

*Updated March 2019*

USDA NRCS

Ph. 541 396-2841, 382 N Central Blvd; Coquille, OR 97423-1244

[www.or.nrcs.usda.gov](http://www.or.nrcs.usda.gov)

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## EXECUTIVE SUMMARY

The Natural Resources Conservation Service (NRCS) in Coos and Curry Counties consulted with conservation partners, and with local, state and federal agencies to determine high priority resource concerns and strategies best suited to our agency's resources to address those concerns. The priorities reflect the fact that NRCS works with private land owners in a voluntary capacity.

The highest priority resource concerns identified in Coos and Curry Counties include:

- ✓ Water quality. Temperature, dissolved oxygen, bacteria, sedimentation and pH levels reduce the value of water for wildlife while also not adequately satisfying human needs.
- ✓ Water quantity. Seasonal low water levels affect all beneficial uses.
- ✓ Healthy plant communities. Forests are crowded and densely stocked, increasing fire intensity and danger and increasing vulnerability to insects and disease. Invasive species and poorly managed pastures reduce productivity and diversity of plant communities.
- ✓ Wildlife populations. Populations are at risk due to declining habitat and inadequate water quality; especially wetlands and estuaries.

With further input and guidance from partners, the following strategies will be focused where our efforts can be coordinated with and added to the efforts of conservation partners and where our impact can be measured.

### ***Annual Local Work Group:***

The Local Work Group meeting is an annual forum for NRCS to gather input regarding natural resource opportunities and priorities. The Coos County Local Work Group was held on February 20<sup>th</sup>, 2019. The Curry County Local Work Group was held on February 22<sup>nd</sup>, 2019. With guidance from partners, the NRCS investments are strategically focused in areas where we can coordinate our efforts with those of others and where our impact can be measured. Participants in the 2019 annual Local Work Group meetings included:

Christopher Clair, ODFW  
Brett Harris, FSA  
Fred Messerle, L.O./Beaver  
Slough Drainage District  
Cyndi Park, CWA  
Greg Erb, ODF  
Kelly Foster, ODF So OR  
Darcy Grahek, Go Native  
Barbra Grant Curry SWCD  
Kate Jackson, DEQ-Regional  
Solutions

Becky Crockett, Land Owner  
Pat Jones, L.O./ NRCS  
Jim Seeley, WRCA  
Cassie Bouska, OSU Ex - Ag  
Madeleine Vander Heyden,  
USFWS  
Stacey Savona, ODF  
Michael Crotteau, USFS  
Powers

Caley Sowers, Coos SWCD  
Heather Medina, NRCS  
Darren Cagley, Coquille Tribe  
Annie Young-Mathews  
NRCS-PMC  
Greg Stow Land Owner  
Kay Clayburn, Powers H.S  
Cathy Bounds, BLM Coos  
Bay

## **Strategic Priorities**

### **1. Surface Water Quality & Quantity- Agricultural**

Provide landowners technical and financial assistance to implement conservation measures to reduce delivery of nutrients, organics and sediment to surface waters through the reduction in surface water runoff.

- Improve irrigation system efficiency with a minimum of 15% increase in overall efficiency; reduce runoff, reduce over-saturation of the soil, and reduce irrigation water withdrawal rate
- Improve health of riparian areas
- Improve growth and vigor of pasture to promote sustainable permanent cover of desired vegetation
- Installing livestock watering facilities and heavy use areas to promote improved grazing management and to protect stream corridors and sensitive areas.

### **2. Forest Health**

Provide land managers with technical and financial assistance to manage forest lands to be productive and provide important ecosystem services.

- Provide wildlife habitat through correct stocking levels, healthy stands and invasive species control
- Reduce soil erosion through forest cover, stocking rates and structure
- Reduce threat of forest fire through correct stocking levels, invasive species control and biomass removal
- Build forest resiliency and minimize the impact of pathogens

### **3. Irrigation Automation: Cranberry/Blueberry Production**

Provide land managers with technical and financial assistance to implement irrigation, frost protection and energy efficiency measures through improved equipment, infrastructure and management practices.

- Energy savings through upgraded equipment and efficient pump utilization
- Water savings through irrigation and frost protection efficiency
- Improve nutrient management and nutrient cycling, crop health and productivity
- Improve water quality through management enhancements requiring less pesticides, insecticides and herbicides
- Improve sustainability of cranberry production and economic viability of agricultural production

### **4. Wetlands, Estuary Enhancement**

Provide landowners with technical and financial assistance to manage wetlands, estuaries and adjacent lands in ways that improve the capacity of the wetlands to provide ecosystem services such as clean water and wildlife habitat.

- Minimize contaminated runoff and sediment delivery from surrounding agricultural and forestry activities

- Improve habitat and food for wildlife and livestock through restoration of healthy, diverse native vegetation

### **5. Vegetation Management & Pollinator Enhancement**

Provide landowners with technical and financial assistance to restore native and beneficial vegetation which support wildlife, agricultural productivity and watershed function.

- Improve and restore diverse, native vegetation on agricultural and forestry land including providing habitat and food for wildlife and pollinators
- Improve health of riparian areas
- Improve growth and vigor of pasture to promote sustainable permanent cover of desired vegetation

### **6. Local Food Systems**

Provide landowners with technical and financial assistance to help them produce for local markets and feed local communities including transitioning to organic production and high tunnel systems.

- Improve soil health and fertility on small farm and organic operations through best management practices
- Expand production and market seasons by utilization of high tunnel systems
- Increase food availability to local communities through enhanced local marketing and sustainability
- Water savings through upgraded equipment and improved management

### **7. Drainage, floodwater management and ‘harvesting’ sediment from flood waters**

Provide landowners with technical and financial assistance to manage drainage systems and flood waters to minimize the delivery of sediment into open waters, minimize temperature gains as water moves through the system and improve the capacity of drainage systems to provide wildlife habitat.

- Capture sediment and minimize its travel through drainage systems and into open waters
- Improve shading and wildlife habitat through restoration of healthy, diverse native vegetation
- Improve and update drainage water control devices (tidegates, dikes, etc.) to allow fish passage, beneficial control of water and reduce sedimentation

### **8. Agricultural Conservation Easement Program**

Provide landowners with technical and financial assistance to conserve agricultural lands and protect working croplands and grasslands. Protect working agricultural lands and limit non-agricultural uses of the land to provide additional public benefits, including environmental quality, historic preservation, wildlife habitat and protection of open space.

- Protect the long-term viability of the nation’s food supply by preventing conversion of productive working lands to non-agricultural uses and conserving vital grazing land, including rangeland, pasture and shrub land.

## **NRCS PRINCIPLES & BACKGROUND**

### **The Natural Resources Conservation Service: Who We Are**

With the mission of “Helping People Help the Land,” the Natural Resources Conservation Service (NRCS) provides products and services that enable people to be good stewards of the Nation’s soil, water, and related natural resources on non-Federal lands. With our help, people are better able to conserve, maintain, or improve their natural resources. As a result of our technical and financial assistance, land managers and communities take a comprehensive approach to the use and protection of natural resources in rural, suburban, urban, and developing areas.

### **Our guiding principles are service, partnership, and technical excellence.**

Since 1935, the Natural Resources Conservation Service (originally called the Soil Conservation Service) has provided leadership in a partnership effort to help America's private land owners and managers conserve their soil, water, and other natural resources.

NRCS employees provide technical assistance based on science and that is suited to a customer's specific needs. We provide financial assistance for many conservation activities. Participation in our programs is voluntary. Our Conservation Technical Assistance (CTA) program provides voluntary conservation technical assistance to land-users, communities, units of state and local government, and other Federal agencies in planning and implementing conservation systems.

We reach out to all segments of the agricultural community, including historically underserved (including beginning farmers, limited resource and socially disadvantaged farmers and ranchers), to ensure that our programs and services are accessible to everyone. We also provide technical assistance to foreign governments, and participate in international scientific and technical exchanges.

We manage natural resource conservation programs that provide environmental, societal, financial, and technical benefits. Our science and technology activities provide technical expertise in such areas as animal husbandry and clean water, ecological sciences, engineering, resource economics, and social sciences.

We provide expertise in soil science and leadership for soil surveys and for the National Resources Inventory, which assesses natural resource conditions and trends in the United States.

## INTRODUCTION

The purpose of this document is to assist in directing the use of technical and financial resources by strengthening partnerships to more effectively address priority natural resource concerns in Coos and Curry Counties. The goals and objectives identified for the long range strategy will be accomplished over a five year timeframe beginning in the 2018 federal fiscal year and ending in 2023. This strategic approach involves local, state and federal agency partners as well as local stakeholder participation to provide detailed guidance to identify problems and treatment opportunities important to the sustained use and management of natural resources. This approach will include the following tasks:

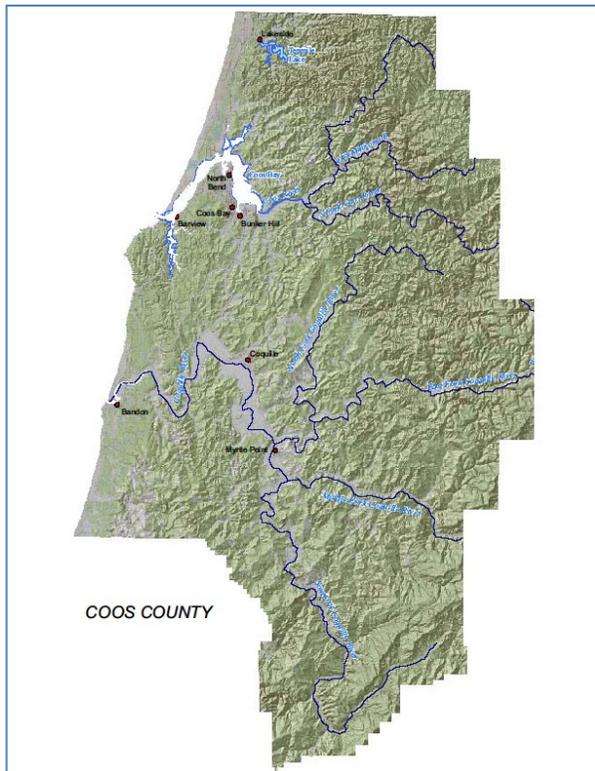
- Analyzing existing conditions of soil, water, air, energy, plants and animals
- Identifying natural resource problems and desired future outcomes
- Prioritizing problems
- Developing a portfolio of potential actions
- Implementing on-the-ground conservation by investing technical and financial assistance
- Outreach to guarantee diverse and equitable participation

**Vision:** *Shared responsibility and commitment to local action achieves effective land stewardship.*

**Mission:** *To build alliances and strategically invest to effectively solve natural resource problems in Coos & Curry County.*

### OVERVIEW OF REGION

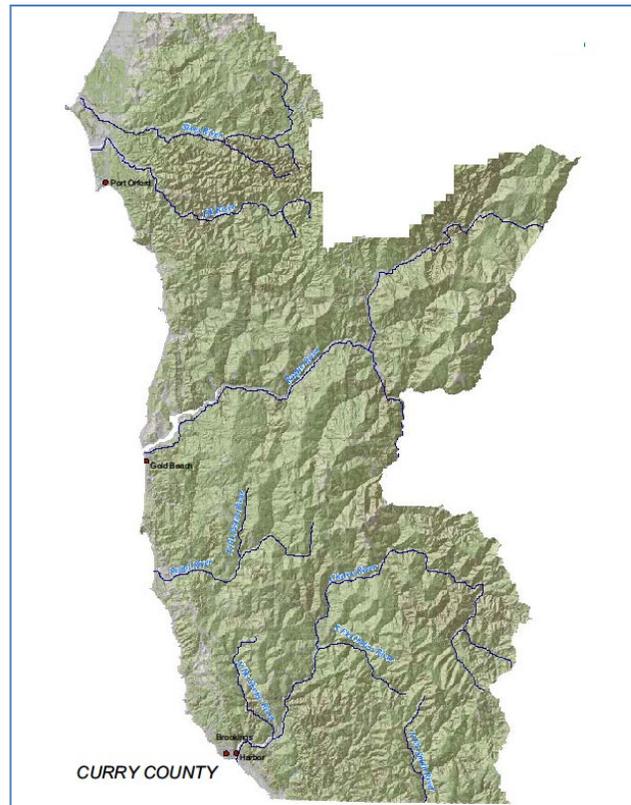
Coos and Curry Counties are served by the one NRCS field office in Coquille, have very similar conditions, and are therefore considered together here.



**Coos County** has a total area of about 1,027,648 acres and a population of 63,655. Coos County falls within the Coast Range ecoregion. The county is drained by two main rivers, the Coos and Coquille, and their tributaries. Interior flood plains are typically flooded in winter, resulting in conspicuous standing water. It has a cool, wet coastal climate, with warm dry summers. The mean rainfall of 60 inches falls mostly in winter. Elevations range from sea level to 4,319, with marine terraces, dunes, steep slopes and inland valleys. There are over 46 different named soils which are mostly well drained, loamy or clayey. Timber is produced on about 82% of the area with pasture, hay production and urban use covering the bulk of remaining acres. About 69% of the land is privately owned. Specialty crops such as cranberries are significant economically despite relatively smaller acreages.

**Curry County** is characterized by coastal terraces, very narrow river valleys and rugged mountains. There are 1,054,528 acres, of which only 34% is privately owned. Curry County falls within both the Coast Range and Klamath Mountain Ecoregions. It is drained by two main rivers, the Rogue and Illinois and several smaller rivers and creeks which drain directly to the Pacific, including the Winchuk, Chetco, Pistol, Elk and Sixes Rivers and Floras, Euchre and Hunter Creeks.

Temperatures are mild throughout the year and rain is concentrated in the winter ranging from 70-160 inches from the coastal area to the higher elevations. More than 180 different kinds of soil have been defined. The natural resources in the area support forestry, recreational and commercial fishing, sheep and cattle ranching and specialty crop production. The population is 21,941 with only two towns of significant size.



# NATURAL RESOURCE INVENTORY AND ANALYSIS

*This section will evaluate the major resources in the area and identify the best opportunities for strategic investment and improvement. The resources are categorized as human, soil, water, air, energy, plants and animals to facilitate this discussion.*

## HUMAN RESOURCES

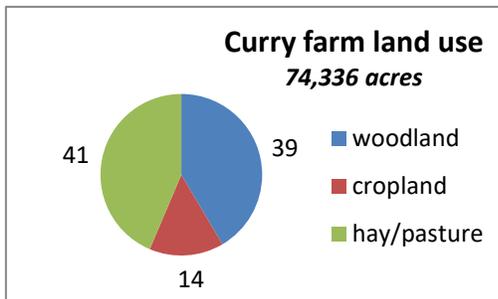
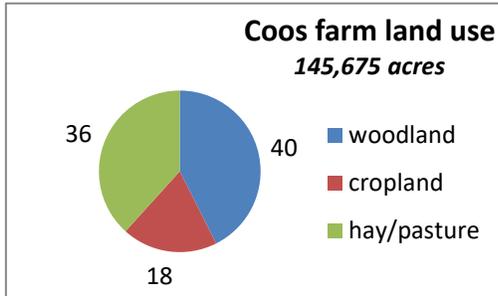
**Population.** Both counties are relatively unpopulated with more than 80% of the population living in rural, unincorporated areas. The population growth is below the state average, although there has been marked growth and urbanization in the Brookings area. More than 20% of the population is 65 years or older. Private sector wages are 24% lower than the statewide average. Forestry, logging and wood products manufacturing have the highest employment concentration, with the region showing a concentration in this area six times higher than the state as a whole. There is little ethnic diversity in the region. There are two, small federally-recognized tribes, neither of which has large tribal land holdings (8,897 acres total)

**Community outlook.** Communications and outreach in the region are complicated by very localized media markets, with one large daily newspaper being printed in Coos County and weekly papers serving Curry and parts of Coos counties. Transportation and commerce are also impacted by the isolation of the region which can be cut off from other regions by road conditions and road/vehicle restrictions.

**Farm characteristics.** The average farm size is 195 acres in Coos County and 381 in Curry County. In Coos County the farm land use is almost equally split between woodland, crop and pasture. Curry County is similar, but shows less crop land and more pasture. Two thirds of the farms are between 10 and 179 acres. There is little turnover of larger management units of private property, however many family-run farms are approaching a time of transition from one generation to the next. There is localized interest in developing support for intergenerational transition through easements and other support programs. There is a small but growing trend toward small farms growing for local foods systems, natural or organic production methods and young /beginning famers. Coos County is in the top third in value of production of Oregon Counties for berries

Agriculture Quick Facts: 2007 Ag census		
	<u>Coos</u>	<u>Curry</u>
Total no. farms	746	195
Avg. farm size	195 ac	381 ac
Cropland	18%	14%
Woodland	40%	39%
Pasture	36%	41%
Net cash income avg. per farm	\$16,629	\$39,860
Value of sales in state top 1/3	Berries, milk/ dairy, sheep/ goats, aquaculture	Fruits/berries, sheep/goats
Crops in state top one third by acreage	berries	Berries, bulbs, rhizomes
Livestock inventory in state top 1/3	sheep	sheep
Century farms	38	17

(cranberries), dairy /milk, sheep and aquaculture. They are among the top third in the state for acres of berries in production. Curry County is in the top one-third of crop value for berries and sheep. Curry has crop acreage in the top third in Oregon for berries, bulbs/rhizomes and among the top one-third in sheep inventory.



**Land use.** Specialty crops such as cranberries and lily bulbs are an important contribution to agricultural economics in the region. Cranberry and blueberry acreage continue to increase. On the other hand, the number of farms and total acres of Easter lily bulbs grown commercially on the Harbor Bench area south of Brookings has declined. There are 15 active dairies of which 13 are producing organic milk products. Sheep and cattle ranching are also profitable because of the year-round growing season for pasture grasses. The pressures of urbanization on natural resources and ranching are minimal on the whole, but there are localized pressures in southern Curry County, and in southern Coos and northern Curry Counties where destination golf resorts are being developed.

**Importance of natural resources.** Tourism, recreation and wildlife viewing are important activities tied to the natural resource base in both counties. Recreational and commercial fishing in the Pacific Ocean and in coastal rivers is of tremendous economic importance, and it is tied directly to the health of the land and the ocean. Salmon is the most sought-after and valuable species.

**Conservation participation & activity.** More than half of the principle operators in Coos County list farming as their primary occupation; in Curry County almost two-thirds of the operators are full time. Land managers show a general willingness to participate in programs for conservation activities; government payments average around \$12,500 for those who have participated in programs. In 2005 the region was targeted for the Conservation Security Program, which recognized and provided incentives for good stewardship practices. The program resulted in 89 contracts covering over 30,000 acres, with payments over \$6.5 million. In the region of Coos County known for dairying, 13 of the 15 commercial dairies converted to organic production in 2004-2005 due to economic considerations.

In keeping with the trend across Oregon, the average age of the principal operator is around 60 years old. Promoting intergenerational exchange, facilitating farm succession (passing management to the next generation) and improving the availability of skilled labor are important factors in the ability of operators to implement long term conservation. Other social challenges for conservation include an influx of newcomers who are new to land management and absentee landowners.

**Conservation Partners areas of strength and/or involvement**

<b><u>Conservation Partners</u></b>	<b>Project partner</b>	<b>Technical assistance</b>	<b>Project funding</b>	<b>Outreach, tech. transfer</b>	<b>Resource priorities</b>
<b>Federal Agencies, Tribes</b>					
Bureau Land Management	×	×	×		Forest, fuels
Coquille Indian Tribe	×	×		×	All resources
Farm Service Agency	×		×	×	All resources
National Marine Fisheries Service	×	×	×		Wildlife
US Fish & Wildlife Service	×	×	×	×	Wildlife
USDA Forest Service	×	×	×		Forest, fuels
<b>State Agencies &amp; Organizations</b>					
Dept. of Agriculture	×		×		Water quality, weeds
Dept. of Energy		×	×		Energy
Dept. of Environmental Quality	×	×	×		Water, Air
Dept. of Fish & Wildlife	×	×	×	×	Wildlife
Dept. of Forestry/Coos Forest Protective Assoc.	×	×	×	×	Forest, fuels
OSU Extension Service	×	×		×	Human resources
Oregon Watershed Enhancement Board			×		Salmon
South Slough Nat'l Estuarine Reserve	×	×			All resources
Water Resources Department	×	×			Water quantity
<b>Local Agencies &amp; Organizations</b>					
Cape Blanco Challenge	×				Ag sustainability, generational transfer
Coos & Curry Soil & Water Conservation Districts	×	×		×	All resources
Coos & Curry Weed Boards	×		×		Plants; noxious weeds
Curry Community Wildfire Protection Planning	×		×		Forest, fuels
Drainage Districts	×			×	Water
Gorse Solutions Project Team	×			×	Invasives - Gorse
The Nature Conservancy	×	×	×		All resources
Watershed Councils: Coos, Coquille, Tenmile Lakes Basin Partnership, South Coast Watershed Council	×	×	×	×	Water quality, quantity, wildlife
Wild Rivers Coast Alliance	×		×		Regional ecologic, social, economic
Wild Rivers Coast Land Trust	×		×		All resources

**Unique/local organizations.** In addition to state and federal partner agencies (see appendix for complete partner list), there are a few organizations somewhat unique to or particularly active in our region. For a full list of partners please look in the appendix.

- Sudden Oak Death Task Force
- South Slough National Estuarine Research Reserve. A 5,000-acre reserve protected and managed for the purposes of long-term research, education, and coastal stewardship.

- Wild Rivers Coast Alliance. A well-funded local effort to promote natural resources and livability

**Progress to date.** Considerable work has been done to educate local residents about natural resources in the area. Watershed councils, OSU Extension and Soil and Water Conservation Districts reach out to the public to provide more awareness and promote better stewardship. There are also significant efforts being made in local school systems, notably well-developed education programs conducted by Curry SWCD and Coos Watershed Association.

**Future needs.** Goals for improving the human element in the natural resources equation will involve continuous outreach and education to remind new and old residents of the importance of natural resource management. Education efforts need to keep pushing beyond fostering awareness and strive for changing behaviors which support healthy watersheds and ecosystems. Conservation partners also noted the need to improve interagency coordination to simplify the delivery of programs and enhance leverage of funding and resources.

**Importance of economics.** Another important factor influencing conservation activity and private lands management is economics. Private land managers are often willing to implement conservation, but are limited in their ability to do so due to economic constraints such as access to markets and capitol. Incentives will continue to be necessary as well as efforts to help make private land management activities more cost effective and economically viable. Efforts are being made to improve marketing options and increase local support for food production through extending growing seasons and market windows with high tunnels, expanding farmers’ markets, and encouraging direct sales and local meat processing. Continued support for the development of markets and improving the economic viability of food and fiber production will be needed to support active conservation by private landowners.

**HUMAN RESOURCES OUTLOOK SUMMARY**  
**HIGH PRIORITY**  
*Important ongoing need to recognize human factors*

<b>What has been accomplished:</b>	<b>What is left to do</b>
<ul style="list-style-type: none"> <li>• Tours for land managers, policy makers, etc.</li> <li>• Extensive partnering and networking</li> <li>• Curry SWCD, Coos Watershed Assoc. education programs</li> <li>• Landowner, contractor workshops for best management and fire preparedness</li> <li>• Marketing assistance for cranberry producers</li> <li>• Conservation work has provided employment and revenue stream for merchants, contractors and landowners</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Continue to evaluate, adjust tools, messages, methods to audiences; specialty crops, historically underserved &amp; small acreage landowners</i></li> <li>• <i>Workshops, tours, demonstration projects</i></li> <li>• <i>More youth/education activities</i></li> <li>• <i>Continued consideration for economics &amp; incentives</i></li> <li>• <i>Continue effective partnering, regional coordination</i></li> <li>• <i>Update landowner resource guide</i></li> <li>• <i>More activity to facilitate generational transfer and succession of farm lands.</i></li> <li>• <i>More local &amp; and specialty crop marketing options</i></li> </ul>

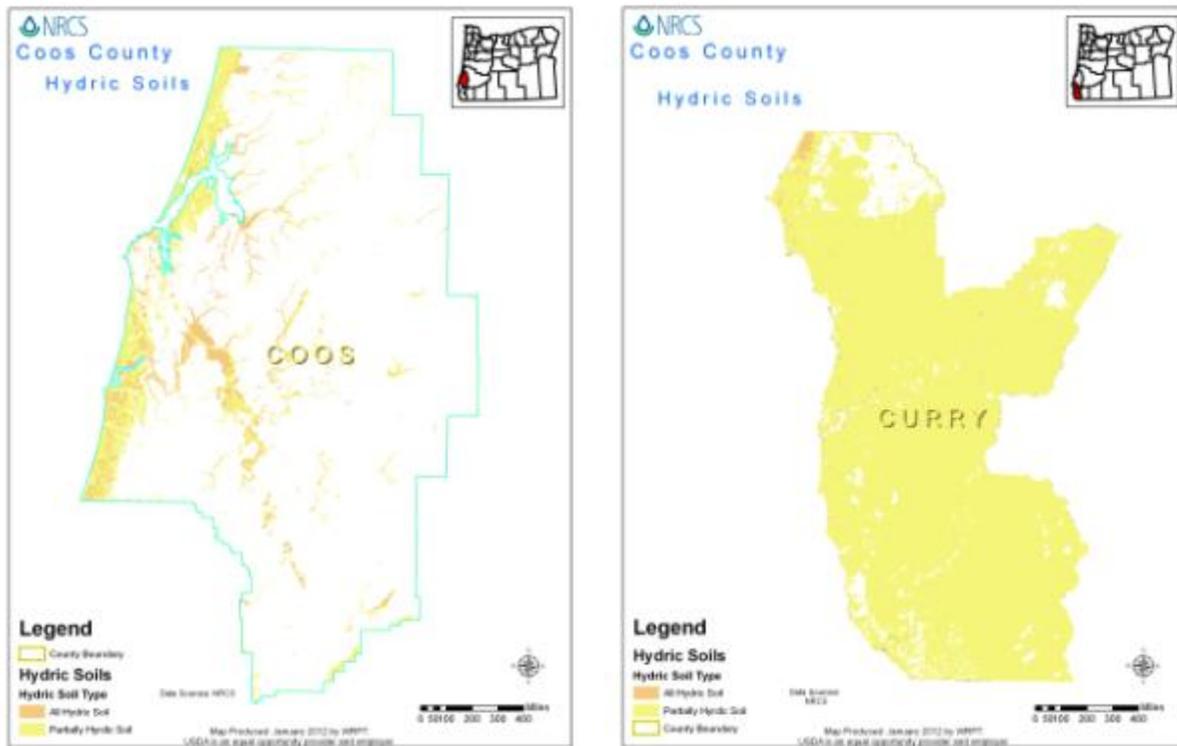
<ul style="list-style-type: none"> <li>• Over \$6.5 M in support of conservation provided to land managers through Conservation Security Program</li> <li>• Watershed Friendly Stewardship recognition to 58 owners, 21,750 acres.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Locally available USDA meat inspection</i></li> <li>• <i>More outreach to historically underserved</i></li> <li>• <i>More field tours for agency partners and public</i></li> <li>• <i>More analysis and action on economic factors</i></li> </ul>
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**Roles and priorities for NRCS.**

NRCS programs provide an opportunity to work closely with landowners delivering direct technology transfer and financial assistance to implement conservation measures. Staff also participates regularly in trainings, tours, seminars and workshops organized by partners. Working effectively with partners to provide outreach and education will continue to be a priority for NRCS as well as expanding efforts to reach out to diverse audiences and historically underserved producers. NRCS will contribute to agricultural sustainability and support intergenerational transfer and succession by helping landowners implement conservation practices and practices that contribute to sustainability. Working lands easement programs can also be utilized to support local efforts to keep agricultural land in production.

## SOIL RESOURCES

**Soil characteristics.** Coos County has a wide variety of soils that have potential for a range of land uses. Soil scientists determined that there are about 46 different named kinds of soil in Coos County and in Curry County more than 180 different kinds of soil formed in various kinds of parent material. The soils have a wide range in texture, natural drainage, and other characteristics. In Coos County the northern and eastern soils are mostly well drained and loamy or clayey. Steepness of slope is the main limitation of these soils. The soils are well suited to timber. In the southwestern part of the county the soils are steep, wet, and clayey. They are subject to landslides. When managed properly, the soils are well suited to pasture and timber. Along the coast the soils are gently sloping, well drained, and sandy throughout. Floodplain areas along the two major rivers are frequently flooded which typically results in standing water during the wettest months. In Curry County the soils in the Klamath Mountains formed in colluvium and residuum derived from sedimentary rock and altered igneous rock. Coastal terrace soils formed in marine sediment deposited in an oceanic environment and river valley and alluvial soils formed in recent alluvium derived from mixed sources.



**Soil condition.** Soil health and soil quality concerns are generally associated with agricultural and forestry management practices and high rainfall. Those concerns include soil compaction, stream bank erosion, mass slumping and negative impacts to water quality from poor soil condition including sedimentation and nutrient loading. Poor pasture management results in exposed soils, compaction and increased sedimentation and nutrient runoff. Some erosion and sedimentation is closely associated with forestry practices including timber harvesting and road building. Pasture and timber production are predominant, but specialized small-scale row crops, lily bulb, and blueberries do leave some soil exposed and more vulnerable to sedimentation and erosion.

**Progress to date.** The primary accomplishments associated with soil health have been in reducing sedimentation through increasing use of forestry best management practices and improved nutrient, livestock and pasture management. Rotational grazing systems and heavy use area protection have also reduced soil compaction. Irrigation improvements have reduced overwatering and waterlogging of soils and encouraged healthy plant communities.

**Future needs.** Soil health will be considered as foundational to all other resource concerns and conservation practices. Widespread implementation of improved management practices would improve soil health and condition. There will be an ongoing need to promote management practices that reduce compaction of soils such as rotational grazing of livestock and heavy use area protection. Application of a wide range of practices must be promoted to increase microbial activity, reduce surface erosion, reduce compaction, improve cover, minimize runoff, and to support healthy and diverse vegetative cover.

**SOIL RESOURCES OUTLOOK SUMMARY  
MEDIUM PRIORITY**

*Foundational element influences all others.*

<b>What has been accomplished</b>	<b>What is left to do</b>
<ul style="list-style-type: none"> <li>• Soil erosion has been decreased through road repairs, restricting livestock access to waterways, improved management practices</li> <li>• Erosion prevention through riparian fencing and plantings</li> <li>• Implementation of improved irrigation systems and irrigation water management</li> <li>• Soil health improvements through nutrient management and other management practices</li> <li>• Ongoing soil health tool trials being conducted</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Improve soil health by implementing practices that incorporate the four NRCS basic soil health principles</i></li> <li>• <i>Promote riparian buffer improvements to minimize erosion</i></li> <li>• <i>Continue to mitigate erosion, sedimentation, and compaction at the project level by implementing good livestock, forage, forestry, and crop management practices</i></li> <li>• <i>Continue to implement improved irrigation systems and irrigation water management</i></li> <li>• <i>Encourage reduction of road and ditch failures which contribute sediment</i></li> <li>• <i>Develop more outreach and handout materials</i></li> </ul>

**Role and priorities for NRCS.**

Soil health will be a **MEDIUM PRIORITY** for NRCS assistance in Coos and Curry Counties. Soil health is a foundational issue that will be considered in the implementation of all strategies and conservation efforts. NRCS will promote soil health through a wide variety of financial and technical assistance to private landowners. All NRCS efforts will incorporate the four basic principles of soil health 1) using plant diversity to create diversity in the soil; 2) managing soils by minimizing disturbance; 3) keeping plants growing throughout the year to feed the soil; and, 4) keeping soil covered as much as possible.

Emphasis will be placed on promoting practices that improve management of livestock, forage, and irrigation. Vegetation management and diversification will be promoted through a variety of practices including cover cropping, tree planting, pollinator enhancement and nutrient management. We will work with partners to integrate soil health considerations in all projects and to implement work that will complement work being undertaken by partners.

**WATER RESOURCES**

**Heavily altered ecosystems.** Historically, much of Coos County was impacted by frequent flooding and seasonal standing water. Early settlers to the region created road systems and made room for farming operations and settlement by building dikes, ditching and installing tide-gates. Over 50,000 acres of wetland area has been converted to pasture. This settlement has significantly altered natural ecosystems and serves to elevate the importance of the remaining unaltered habitat.

**Main features.** Coos County is drained by two main rivers, the Coos and Coquille, and their tributaries. Narrow interior flood plains are typically flooded in winter, resulting in conspicuous standing water. Curry County is characterized by nine smaller river systems or drainages which

drain directly into the ocean. In addition, the lower end of the Rogue River system traverses Curry County.

**Estuaries.** This highly complex, productive habitat is critical for many fish and wildlife species, including salmon, crabs and other shellfish, marine mammals and seabirds. By some estimates, estuaries support up to three-quarters of all harvested fish species, and this is largely due to the high productivity of sea grass beds. Sea grasses grow underwater in estuaries and have the highest productivity of any plant. Efforts to maintain and restore estuaries will benefit many wildlife and commercially important species. Estuaries provide wintering habitat for waterfowl, migration stopover feeding areas for shorebirds, and mineral sources for band-tailed pigeons.

Estuarine habitats have been impacted by human development and uses, such as dredging, hydrologic modifications, and urbanization. Salt-marshes and other tidal wetland types have been diked, drained, and converted to pasture, resulting in substantial habitat loss. Coos Bay is considered the second most important estuary in Oregon after the Columbia and boasts the largest oyster production. Other smaller estuaries and wetlands serve important water quality and fish habitat functions. Historically there were considerably more wetlands and estuary on the southern coast.

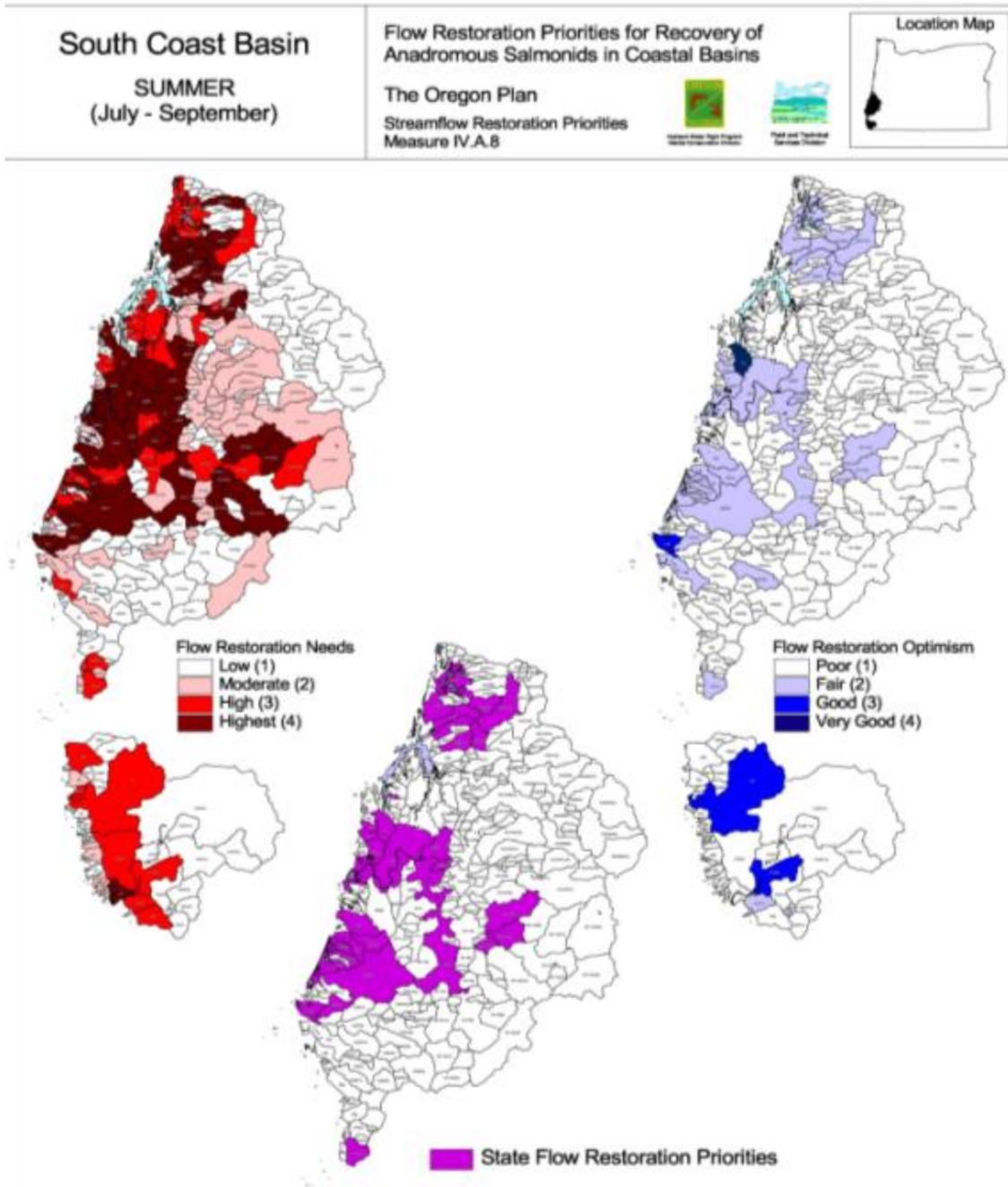
**Wetlands.** Wetlands provide important habitat for migrating and breeding waterfowl, shorebirds, water birds, songbirds, mammals, amphibians and reptiles. In addition to being critical for birds and many kinds of wildlife, floodplain wetlands and backwater sloughs and swamps are important rearing habitats for juvenile salmon. Wetlands have direct value for people because they improve water quality by trapping sediments and toxins, recharge aquifers, store water, and reduce the severity of floods. Restoration and careful management of wet meadow systems and other wetlands can increase sustainable production of forage for livestock, can increase late-season stream flows and can improve water quality.

Most wetland habitat loss has occurred during European settlement at lower elevations and in valley bottoms. During that time many wetlands were drained and converted to agriculture. Prior-converted wetlands represent significant areas in Coos County, where the majority of these lands are currently being managed for livestock production. Coast Range wetlands are vulnerable to development as more people relocate to the coast. Continuing development is a threat to some remaining wetlands. In addition, the ecological processes that create coastal wetlands (such as landslides, beavers, or logjams blocking streams) often are not compatible with current land uses, especially in more developed areas.

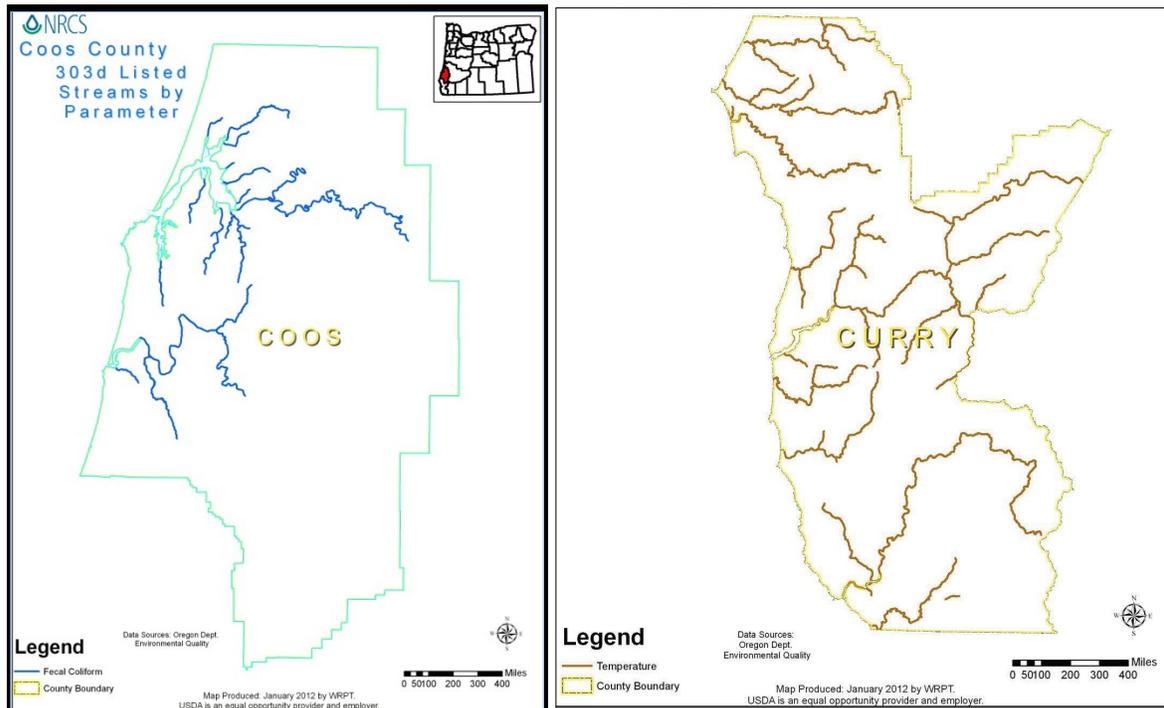
**Condition and priority.** Water concerns in Coos and Curry County are a high priority. High winter rainfalls naturally aggravate water quality problems associated with surface runoff. The watersheds are important for the supply of domestic drinking water supplies and to support critical fish and wildlife populations. Localized areas also use water for irrigation and frost protection of sensitive crops like cranberries and irrigated forage. Irrigation systems use older technology which does not optimize water usage or crop coverage.

The region suffers from over-allocation of water rights. Drainage and water management are also seasonal problems. Other contributors to water quality problems and sediment include antiquated

and poorly maintained drainage systems, failing tidegates, unprotected water crossings, inefficient irrigation water management, poorly managed access roads, undersized and failed culverts. The state departments of Fish and Wildlife and Water Resources have designated the following mapped streams as high priority for flow restoration.



**Water quality factors.** Many of the streams have been designated as water quality limited by DEQ. The following factors have contributed in varying degrees to the listed status: temperature, dissolved oxygen, pH, conductivity, nitrates, turbidity, bacterial content, biological oxygen demand and more. In addition to other possible sources of pollution, the current lack of alternatives for disposing of animal carcasses creates a potentially significant water quality problem.



*Coos: Fecal coliform, Curry: temperature; See more water quality data in appendix.*

**Progress to date.** Considerable work addressing water quality has been completed in both counties. The following are highlights of progress in Coos and Curry counties:

- The majority of dairies converted to organic production methods lowering the exposure/use of chemicals on substantial acreages, in years 2004 and 2005.
- OWEB has invested over \$21.1 million in Coos County and \$6.4 million in Curry County on projects implemented between 1999 to present; (including projects relating to fish passage, habitat restoration and water quality).
- Federal grants and special programs such as the Jobs in the Woods and Hire the Fishermen supported extensive riparian fencing work implemented in the 1990s.
- Conservation Reserve Enhancement Program (CREP) has over 59 active contracts with over 1000 acres enrolled in riparian protection; this represented 9% of the total acres enrolled in Oregon at this time
- Curry Watershed Partnership and Coos Watershed Association have extensive water quality monitoring programs
- A tidal marsh restoration project in Bandon doubled the acreage of habitat in the estuary, restored more than 400 acres of tidal wetlands, and created over 5 miles of new tidal channels and important habitat for young salmon and shorebirds.

- NRCS managed 6 permanent easements to provide wetland function and benefit water quality and wildlife habitat. There are 287 acres in the Coquille watershed and 113 acres in the Coos watershed.
- An action Plan has been developed for the south Fork of the Coquille River.

<b>Highlights of agricultural water quality accomplishments.</b>
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**Coos Agricultural Water Quality Management Area:**

- On the ground: 10,468 acres of practices applied, 1209 acres wetlands enhancement, 287 stream restoration, 240 miles in stream habitat improvement, 39,925 feet riparian fencing, 1,605 feet riparian restoration, 13 livestock off stream watering systems, 54 acres riparian plantings, 11 culvert replacements
- Planning: 2 comprehensive nutrient management plans, 1,846 acres conservation plans written, 9 irrigation improvement projects encompassing 612 acres

**Curry County Agricultural Water Quality Management Area:**

- On the ground: 3,054 acres of practices applied: 8 livestock off stream watering systems, 13,295 feet of fencing, 4 stream crossings, 7 fish passage improvements, 3,369 acres of practices applied, 26 acres and 19 stream miles treated for noxious weeds, 17,879 trees planted in riparian areas, 16 irrigation improvement projects encompassing 526 acres.
- Planning: farm/conservation plans on 3,912 acres, 29 miles of roads inventoried for sediment contribution

**Future needs.** A wide range of management activities can be demonstrated to improve water quality and reduce the contribution of agriculture and forestry to water quality problems. Improvements to management activities have excellent potential to make a positive impact on water quality, especially in riparian and wetland areas. There will be an ongoing need to promote management practices that reduce sediment such as rotational grazing of livestock (including cross fencing and water systems), water use/storage and irrigation efficiency projects, riparian buffers, heavy use area protection and forest/woodland road management. Practical and economically viable alternatives for animal carcass disposal, such as composting, will also help protect water quality. Continued support for best management of wetlands habitat is needed. Need to develop improvements to drainage systems to reduce sedimentation and provide increased shading, such as detention ponds, sumps and vegetating one side of ditches. Need to promote improved livestock watering systems to reduce bacterial and sediment loading. Need to promote implementation of South Fork Action Plan. Help identify and implement economically viable actions in Coho Business plan on Elk River.

**WATER RESOURCES OUTLOOK SUMMARY**  
**HIGH PRIORITY**  
*Significant water quality & quantity concerns*

<b>What has been accomplished</b>	<b>What is left to do</b>
<ul style="list-style-type: none"> <li>• Watershed councils have evolved as effective outreach and implementation players</li> <li>• Ag Water Quality plan in place, BMPs identified, outreach being conducted</li> <li>• Large-scale coordination &amp; project development underway</li> <li>• Water quality monitoring being conducted in both counties</li> <li>• Reduction in turbidity, temperature and delivery of e. coli to open waters through improved management practices</li> <li>• Large-scale tidal marsh restoration</li> <li>• Wetlands Reserve Program easements in place =400 acres</li> <li>• Significant participation in Conservation Reserve Enhancement Program</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Continue outreach and technical assistance to landowners to reduce sediment from uplands:</i></li> <li>• <i>Continue improvement of infrastructure, roads, heavy use areas, fences, etc.</i></li> <li>• <i>Expand adoption of improved irrigation water management practices</i></li> <li>• <i>Upgrade irrigation delivery systems to optimize water use</i></li> <li>• <i>Continue &amp; improve monitoring</i></li> <li>• <i>Continue support for best management practices of wetland habitat areas</i></li> <li>• <i>Promote enhanced drainage management; increase shade of drainage ditches, reduce sedimentation delivery through drainage systems</i></li> <li>• <i>Expand adoption of improved stock watering</i> <ul style="list-style-type: none"> <li>○</li> </ul> </li> </ul>

**Role and priorities for NRCS.**

Water quality and quantity will be a **HIGH PRIORITY** for NRCS assistance in Coos and Curry Counties. Strategies targeting water quality and quantity are outlined in the strategic approach section of this plan. Targeting assistance to help landowners improve livestock management and animal waste management practices will minimize possible contributions of livestock to water quality problems. Increased installation of stream buffers on forest and agricultural land will improve water filtering capacity significantly. Forestry work will include efforts to reduce runoff and sediment from forest roads. Upgrading irrigation water management and system improvements will contribute significantly to reducing irrigation return flows and reducing the amount of water drawn for irrigation and frost control, helping to leave more in-stream, as well as more efficient use of stored water. Continued support for best management of prior-converted wetlands, functioning wetlands and estuaries on private lands will provide water quality and wildlife benefits. These elements will be most effective if implemented in concert with partners and in a focused manner in specific areas. Initial steps will be to develop focus areas and concentrate efforts to maximize the benefit to the resource.

## AIR RESOURCES

Air quality in Coos and Curry County is generally good, with few associated risks to human health. There is currently no designated Air Quality nonattainment Area. One noteworthy exception to relative air quality is open burning of forest debris and wildfires. Due to the steep terrain and relatively low value of biomass, the most economical way to dispose of forest biomass is open burning. Recent programs to subsidize biomass utilization have helped slightly, but handling and transportation of forest waste is rarely economically viable. Large-scale wildfire events have been known to pose serious risks to people with breathing-related illnesses, for whom the only recourse is to stay indoors when fires occur.

Although there are numerous dairies in Coos County, odors are not reported as a serious problem. **Progress to date.** Community wildfire planning efforts which aim to minimize fire danger are in progress in Coos and Curry Counties.

**Future needs and opportunities.** Measures to reduce catastrophic wildfire will serve to promote air quality and reduce risks to human health. Alternatives to open burning of forest residues have the potential to improve air quality and contribute to renewable energy development in the area.

### AIR RESOURCES OUTLOOK SUMMARY

#### LOW PRIORITY

*Fairly good condition overall*

What has been accomplished	What is left to do
<ul style="list-style-type: none"> <li>• Decreased wildfire danger through fuels reduction</li> <li>• Subsidizing removal of biomass from forest</li> <li>• Community Wildfire Protection Planning</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Continue to minimize agricultural contributions through best management practices</i></li> <li>• <i>Fuels reduction and forest health improvement to minimize risk and severity of wildfire events</i></li> <li>• <i>Increase biomass utilization and promote economic incentives for fuels reduction</i></li> </ul>

#### Role and priorities for NRCS.

Forest management improvements and fuels reduction work have the potential to reduce air quality concerns across the region and minimize human health concerns from wildfire. NRCS will continue to address the issue of air quality through assistance to private landowners to integrate air quality concerns into all conservation activities.

## ENERGY RESOURCES

**Energy resources.** The main energy sources in the agricultural and forestry sectors are electric power and gas/diesel fuels. Other sources of energy include natural gas and biomass-generated electricity. Most of the region is served by the Pacific Power and Coos Curry Electric Cooperative which purchases all of its power from Bonneville Power Administration. The power lines coming south into the region are oversized for their current load due to the unfulfilled expectation that the system would connect with California. This translates into potential to put power back into the grid from southwestern Oregon (a factor which limits power production in other parts of the state). Solar energy is not widely utilized in these sectors locally.

**Wind energy.** Coastal storms in winter commonly have high-velocity, southwesterly or westerly winds. The winds commonly reach 40 miles per hour. Occasional gusts of more than 120 miles per hour have been recorded at Cape Blanco. There has been some local activity to develop large scale wind energy which has met with social resistance due to concerns for esthetics, tourism and potential impact to wildlife. Smaller scale wind energy may be more socially acceptable and viewed as a viable opportunity for individual or small scale needs.

**Biomass potential & resources.** Biomass from forest waste represents an important energy resource which is not being utilized. The Coquille Indian Tribe conducted an in-depth feasibility study for the development of a biomass plant to generate electricity, but large scale development has not proven economically feasible. Considerable interest for the development of biomass alternatives has also been demonstrated in the Curry Biomass/Sudden Oak Death Working group. Local entrepreneurs are working toward developing alternatives for field-based manufacturing of woody biomass and the development of products like bio char. The potential to convert boilers in the region to wood energy sources has also been under discussion. Biomass is used to offset energy needs in local mills; so-called hog fuel is used to produce heat and locally used energy.

**Needs and opportunities.** Due to high and fluctuating prices, most producers are motivated to limit their overall production costs and their energy dependence. In the agricultural sector, the opportunities predominantly come from reducing demand through energy conservation. Conservation achieved through improved management and system upgrades can provide economic advantages over time. Irrigation and livestock systems represent the largest opportunity to upgrade energy systems in this region. Promoting local food systems and decreasing transportation will reduce energy consumption in the agriculture sector.

**ENERGY RESOURCES OUTLOOK SUMMARY  
LOW PRIORITY**

*Biomass utilization and energy conservation best opportunities.*

<b>What has been accomplished</b>	<b>What is left to do</b>
<ul style="list-style-type: none"> <li>• Subsidizing removal of biomass from forest</li> <li>• Biomass feasibility study</li> <li>• Irrigation projects improve energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Promote biomass utilization, support innovations</i></li> <li>• <i>Increased use of management practices which reduce energy consumption:</i> <ul style="list-style-type: none"> <li>❖ <i>Irrigation management</i></li> </ul> </li> <li>• <i>Facility, equipment upgrades based on energy audits to reduce consumption:</i> <ul style="list-style-type: none"> <li>❖ <i>Irrigation systems</i></li> <li>❖ <i>Lighting, pumping, heating systems</i></li> <li>❖ <i>alternative stock water, irrigation power systems</i></li> </ul> </li> </ul>

**Role and priorities for NRCS: ENERGY.**

NRCS technical and financial assistance are among some of the few resources available to private land managers to design and install upgraded systems in agricultural operations. NRCS can provide support for evaluating and designing energy improvements, as well as working collaboratively with utility companies to implement projects. NRCS will also continue to support biomass reduction and removal from forestland through forest stand improvement and fuels reduction projects.

**PLANTS**

Oregon’s Coast Range is known for extremely diverse habitats, ranging from open sandy dunes to lush forests and from tidepools to headwater streams. The ecoregion is dominated by coniferous forests. Large forest fires are very infrequent, but are severe when they occur. The infamous Bandon Fire (1936) was fueled by forest and weeds species, eventually destroying 484 structures. The Coast Range includes the highest density of streams found in the state, and deciduous riparian vegetation is distinct from surrounding coniferous forests. The neighboring Klamath Mountains ecoregion, which includes the eastern portion of Curry County, is renowned for unique native plant populations including numerous endemic, rare and endangered species. The Klamath Mountain region is noted as an Area of Global Botanical Significance, one of only seven in North America. Federal land management agencies, state agencies and private organizations have designated several critical and sensitive habitat areas to protect these unique plant communities. The predominant use of lower elevation agricultural lands is livestock grazing. These managed lands are particularly important because of their potential to help buffer and filter water. The discussion in this section is divided into forests, pasture lands and native plant communities.

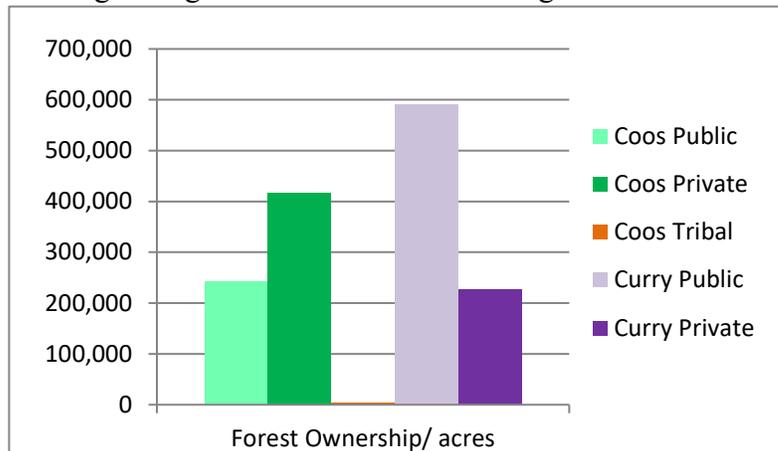
Threatened & Endangered Plant Species  
Coos & Curry County

Listed as of March 11, 2014

- Western lily *Lillium occidentale* E  
E: endangered

**Forests**

Coos and Curry Counties are both heavily forested. There are over 1.8 million acres of prime forestland, including some of the best timber-growing areas in southwestern Oregon. About three-fourths of the commercial forest land is government owned/managed and one fourth is owned privately. Of this, about 20 percent is composed of large industrial holdings held by a handful of companies. The remaining four percent represents smaller units owned by nonindustrial interests and is often associated with other land uses such as livestock production and residential use.



**Utilization & management trends.** Lumber, plywood, and wood chips are produced for domestic use and for export. Forest products from private and public land historically generated significant employment for many of the residents and forest products have represented a major source of revenue for the region. Harvest levels have fluctuated dramatically on federally managed lands (Bureau of Land Management & Forest Service) since the 1980s when endangered species listings impacted management. Harvest levels and management have remained more consistent on private and state-owned lands.

**Forest characteristics & condition.** The principal forest cover type is the Douglas fir/tanoak/Pacific madrone type, which is found throughout the majority of the area. Sitka spruce in association with Western Hemlock is common within the coastal fog belt. These forest types provide habitat and forage for significant wildlife populations. Invasive species and overstocked stands limit the potential productivity, health and vigor of desired plants. Dense and overcrowded forest stands also have the potential to become a fuel source for wildfires. At the same time there is a concern of under-stocked stands where brush, weeds and undesirable species choke out desirable species, making regeneration difficult and reducing the quality of habitat.

**Forest health concerns.** Forest health on non-industrial private land is declining due to the lack of capital which limits effective management. This situation leads to conditions where both reforested areas and naturally established areas are overstocked, exhibiting declining productivity, increased wildfire danger, reduced health, and vigor. Other forest health concerns include: under-stocked or non-stocked areas, invasive brush species, fragmentation, limited wildlife habitat and air quality degradation during slash and brush-pile burning. Some of the forest diseases impacting the productivity of forests in the area include Swiss Needle Cast, Port Orford Cedar Root Disease, and Sudden Oak Death. Focusing on younger stands, the following practices would be beneficial: brush removal, reforestation, thinning, weed management, pest management and use of disease-resistant stock.

**Special forest needs & opportunities.**

- Restoration and management of declining and sensitive Oak Woodland and Savannah habitat is a localized small-scale resource concern in both counties.
- A quarantine has been imposed in Curry County by Oregon Department of Agriculture for *Phytophthora ramorum*, known as Sudden Oak Death or SOD. SOD in Curry County is characterized by rapid and fatal infection of tanoak, as well as non-fatal infection in a number of other species. The quarantine imposes restrictions on management and considerable economic hardship by limiting movement of bark, leaves and twigs from infected areas. The restrictions have severely limited firewood sales and commercialization of other forest products. If left unchecked, the disease itself could have dramatic impact on the ecosystem due to its lethal effect on tanoak, which plays a central role in this ecosystem. Landowners need assistance with reforestation and dealing with runoff after treatment. Outreach is needed to the full range of publics affected by this disease.
- Port Orford Cedar Root Disease is of localized concern in the region and requires particular attention to sanitation measures to prevent the spread of the disease. Resistant stock is now available and its use should be promoted.

**Contribution of forest to ecoregion.** Forest management practices can impact a wide range of resource concerns. Improved forestry practices benefit soil health, fish passage, control of invasive species, reduce fuel loading, reduced fire danger, wildlife habitat and wildlife corridor establishment. Forest land owners have shown interest and willingness in implementing thinning and other management practices.

**Progress on forest health to date.** Forest management practices have made up a good share of the historic workload of conservation programs in Coos and Curry Counties. Practices commonly implemented include stocking level controls, pre-commercial thinning and brush removal. Forest landowners have demonstrated interest in managing their private forest lands for a range of different goals including wildlife habitat, forest productivity and other cultural and economic forest products. Many small woodland owners have forest plans in place in preparation for implementing forest stand improvement practices. The Community Wildfire Protection Planning process has helped bring about awareness of the need for active forest management to protect forest health and reduce the threat to human safety.

### **Hay and Pasture lands**

Hay and pasture represents more than one third of the farm land use in Coos and Curry Counties and livestock is an important source of income and economic support in the region. Coos County has 15 dairies, the majority of which are producing under organic certification standards. In these intensively managed production systems, the livestock represent an important opportunity for applying best management practices. Curry County also has considerable grazing of sheep, goats and cattle. Most grazing takes place at lower elevations and close to important riparian areas where the application of best management practices has been shown to have a positive effect on improving and maintaining surface water quality and quantity.

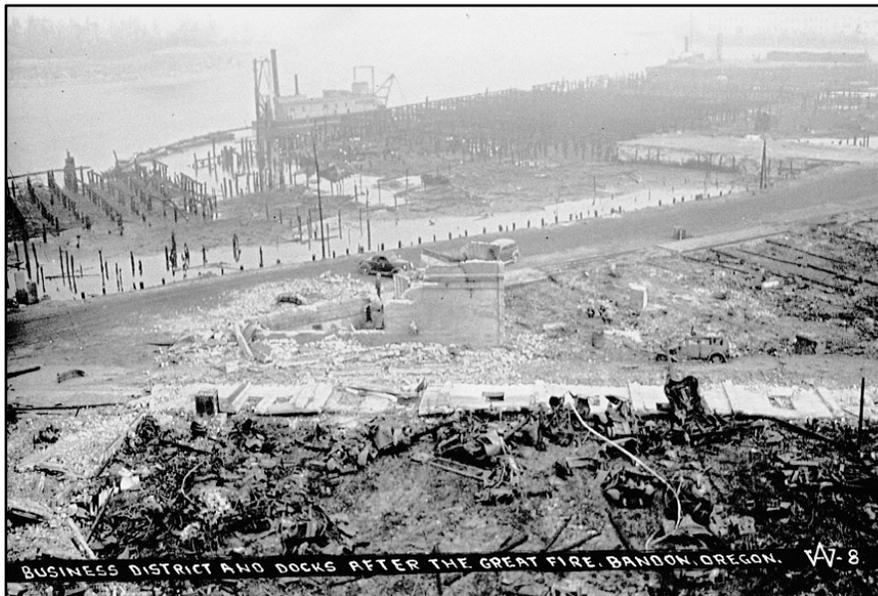
**Hay and pasture progress.** A number of programs in the region have shown progress addressing management of livestock, pasture, and riparian areas. Many livestock management practices such as rotational grazing have had a positive benefit on the control of invasive species. Another program that has contributed to improved flora are the Conservation Reserve Enhancement Program which promotes planting of native species in the riparian areas and restricting grazing to facilitate plant establishment. Extensive projects conducted by watershed councils and SWCDs have resulted in significant stream fencing and riparian plantings.

**Native Plant communities**

Invasive species thrive in the coastal climate and some species have been particularly successful at crowding out native species as well as lowering productivity and raising production costs on working lands. Invasive species displace natives and have a detrimental impact on habitat and forage for wildlife. A diverse population of native species is important to support pollinator species.

Known invasive plants of Coast Range & Klamath Mountains			
American beach grass	Elodea	Knotweeds	Reed canary grass
Armenian blackberry	English holly	Leafy spurge	Rush skeleton weed
Black locust	English ivy	Matgrass	Scotch broom
Bull thistle	Eurasian milfoil (aquatic)	Meadow hawkweed	Silver wattle
Butterfly bush	European beachgrass	Meadow knapweed	Spanish Broom
Canada thistle	False brome	Mediterranean sage	Spotted knapweed
Carolina fanwort	Fennel	Medusa head	St. John's wort
Common Cordgrass	Foxglove	Pampas grass	Tansy ragwort
Common reed	Fragrant water lily	Parrot's feather	Watercress (aquatic)
Curly leaf pondweed	German (Cape) ivy	Portuguese broom	Wooly distaff thistle
Dalmation toadflax	Gorse	Puncture vine	Yellow flag iris
Dogtail	Iberian thistle	Purple loosestrife	Yellow starthistle
Dyers woad	Japanese eelgrass	Quack grass	Yellow toadflax

Scotch Broom and gorse are particularly noteworthy invasive species due to their extensive coverage, the wildfire hazard they pose and the difficulty in controlling them. In 1936, the City of



Bandon was severely damaged by a wild fire fueled by these two species. Oregon Department of Agriculture estimated that the economic impact of gorse if left unchecked exceeds \$200 M. Other important invasive species include: blackberries Japanese & giant knotweed, purple loosestrife, thistles, giant hogweed, biddy-biddy, yellow flag iris, tansy ragwort and reed canary grass (where it is not properly managed).

**Progress on native species to date.** Each county has recently renewed interest in and coordination of invasive species management by developing weed control boards and/or Cooperative Weed Management Areas. These groups coordinate treatment across land ownerships and share information. They are supporting the development of Early Detection systems to prevent new invaders from quickly taking hold and promoting more inventory and prioritization work. An interagency group is forming to focus on the gorse problem to promote better control and treatment of gorse infested areas.

**PLANT RESOURCES OUTLOOK SUMMARY  
HIGH PRIORITY**

*Forest health, plant populations in poor condition, threatened.*

What has been accomplished	What is left to do
<ul style="list-style-type: none"> <li>• Forest management plans have been developed for some landowners</li> <li>• Community Wildfire Protection Plans (CWPPs) developed</li> <li>• Pasture management improvement and Conservation Reserve Enhancement program activity</li> <li>• Collaborative groups coordinating weed control efforts</li> <li>• Knotweed and gorse control efforts</li> <li>• Tribal management of forest lands to promote wildlife and native plants of cultural significance</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Reducing intensity of forest fires: through reduction of fuels</i></li> <li>• <i>Address needs of private lands impacted by Sudden Oak Death</i></li> <li>• <i>Improve management of young forest stands</i></li> <li>• <i>Expand adoption of improved pasture management and use of riparian programs like CREP</i></li> <li>• <i>Weed outreach &amp; education</i></li> <li>• <i>Promote diverse and healthy plant populations able to support pollinators and wildlife</i></li> <li>• <i>More/ongoing control of Scotch broom, gorse, Japanese knotweed, riparian invasives</i></li> <li>• <i>Promote adoption of green certification</i></li> </ul>

**Role and priorities for NRCS.**

Plant resources will be a **HIGH PRIORITY** for NRCS assistance in Coos and Curry County. Strategies targeting forest health, noxious weeds, and pasture health are outlined in the strategic approach section of this plan. NRCS programs provide financial and technical assistance to private landowners to address plant resource concerns primarily through improved forest and livestock management. Good livestock management is an effective tool to manage many noxious weeds and prevent new infestations.

Best management practices will reduce fuel loading, reduce weed infestations, and reduce overstocking and under-stocking to generate a healthier forest condition needed to support clean water, fish and wildlife populations. These resource concerns will be addressed in concert with partners and using every opportunity to leverage other resources to increase the impact of conservation efforts.



Gorse infestation, Bandon.  
Photo by Forest Health Unit, Oregon Department of Forestry

## ANIMAL RESOURCES

The Klamath Mountain and Coast Range ecoregions provide important habitat for birds and terrestrial wildlife species. Salmon and other fisheries stand out as highly significant in these two counties. ODFW has completed a thorough statewide analysis of critical habitats and the species that they support. The habitats, limiting factors and suggested approaches to improve the situation concluded by ODFW are summarized here.

### **Summary of important habitat types**

#### **Riparian and freshwater aquatic.**

*Freshwater aquatic systems provide essential habitat to many at-risk species, including important spawning and rearing habitat for salmonids, breeding habitat for amphibians, and habitat for freshwater mussels and other invertebrates. Barriers and diversions can*

*reduce flow and interfere with hydrology and fish and wildlife migration. Channelization and development can restrict meander, limiting the quality and availability of these habitats, and affecting floodplain function. Limiting factors include water quality, water quantity, water temperature, invasive species, passage barriers, sedimentation, and degradation of habitat.*

**Coastal Dunes.** *Coastal dunes include beaches, foredunes, sand spits, and active to stabilizing back dunes. The vegetation varies from sparse to forested, as influenced by sand scour, deposition, movement, and erosion. With plant succession, dunes convert over time to shrub lands dominated by salal and evergreen huckleberry and forests. Dunes have been dramatically altered by the introduction of European beach grass. Limiting factors include invasive species, recreational impacts and development.*

**Coastal bluffs and montane grasslands.** *Habitat for unique plant communities and invertebrates such as butterflies, includes Coastal bluffs and headlands. Limiting factors include encroaching conifers and shrubs and invasive plants*

**Late successional mixed conifer forests, oak woodlands.** *Late successional forests are defined by plant species composition, overstory tree age and size, and forest structure. They include multi-layered tree canopy, shade-tolerant tree species growing in the understory, large-diameter trees, and a high volume of dead wood such as snags and logs. Historically, fire was the major natural disturbance in all but the wettest climatic areas. Fires were moderate- to high-severity with fire return intervals averaging 100 to more than 400 years. The historic fire regime created a complex mosaic of stand structures. Limiting factors include loss of structural habitat elements, loss of stand size and connectivity and altered fire regimes.*

### Threatened & Endangered Animal Species Coos & Curry Counties

#### Listed by USF&W as of March 11, 2014

- Marbled murrelet *Brachyramphus marmoratus* CH T
- Western snowy plover *Charadrius alexandrinus nivosus* CH T
- Short-tailed albatross *Phoebastria albatrus* E
- Northern spotted owl *Strix occidentalis caurina* CH T
- Loggerhead sea turtle *Caretta caretta* E
- Green sea turtle *Chelonia mydas* T
- Leatherback sea turtle *Dermochelys coriacea* E
- Olive (=Pacific) ridley sea turtle *Lepidochelys olivacea* T

#### Candidate Species

- Fisher *Martes pennant* (Curry County only)  
CH: Critical habitat, T: threatened, E: endangered

#### Critical habitat for the following species listed by NOAA as of March 11, 2014

- Oregon Coast Coho Salmon *Oncorhynchus kisutch*,

**Freshwater wetlands, estuaries.** *Highly complex and productive habitats for many fish and wildlife species. Strategy Species associated with estuaries include black brant and salt-marsh bird's beak. Estuaries also provide wintering habitat for waterfowl, migration stopover feeding areas for shorebirds, and mineral sources for band-tailed pigeons. Wetlands provide important habitat for migrating and breeding waterfowl, shorebirds, water birds, songbirds, mammals, amphibians and reptiles. In addition to being critical for birds and many kinds of wildlife, floodplain wetlands and backwater sloughs and swamps are important rearing habitats for juvenile salmon.*

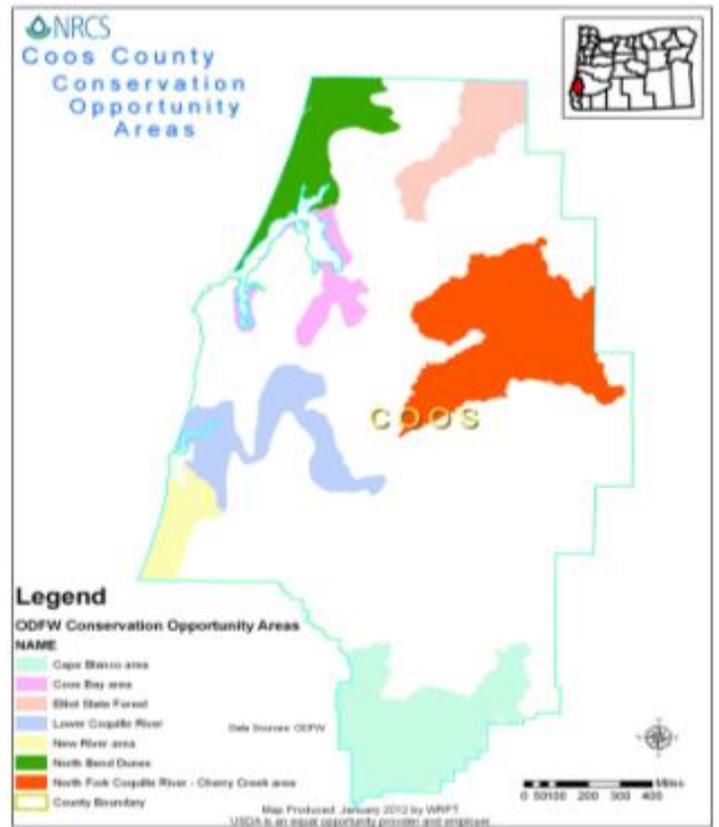
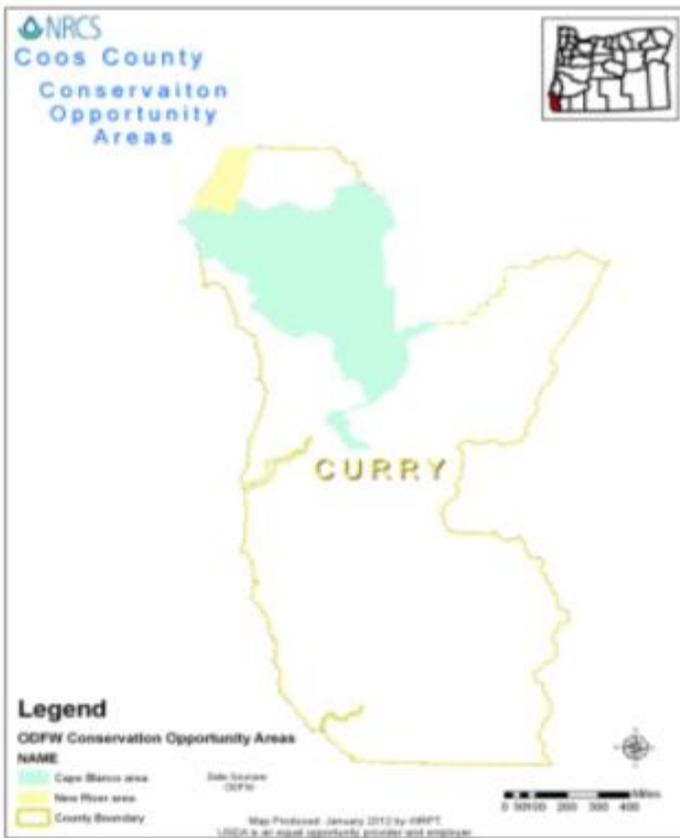
**Ecosystem approaches recommended by ODFW**

- voluntary easements and financial incentives to preserve and restore key habitats
- restore ecological function of riparian areas and wetlands and off channel habitats
- connect key habitats, prevent fragmentation, provide incentives to private owners
- integrate fuels and fire management
- maintain flows and reduce runoff
- maintain open-structured habitats, i.e., with mowing & controlled grazing
- restore and maintain ecosystem processes; more eco-friendly management
- early detection, prevention of invasive species
- ODFW identified a number of Conservation Opportunity areas in the region where it will be the most effective for the key species to target preservation and restoration efforts. The Conservation Opportunity areas and the key species are summarized here in a table.

Critical Habitats identified by ODFW

<b>Coos &amp; Curry Coastal Region</b>	<b>Key species</b>
<b>North Bend Dunes: Coastal dunes</b>	Snowy Plover, Black Oystercatcher, Coho, Winter Steelhead
<b>Coos Bay Coastal bluffs, grasslands, estuary and wetlands</b>	Important for Wintering and Migrating Waterfowl, Coho, Winter Steelhead
<b>North Fork Coquille, Cherry Creek Late successional forest, aquatic</b>	Northern Goshawk, Northern Spotted Owl, Coho Salmon, Winter Steelhead
<b>Lower Coquille River Coastal bluffs, dunes, estuary, wetlands; large nesting bird populations, largest number of wintering waterfowl on Oregon coast, important salmon</b>	Black Oyster Catcher, Shorebirds, Waterfowl, Western Snowy Plover, Coho Salmon, Winter Steelhead
<b>New River Coastal lowlands with diverse habitat</b>	Aleutian Goose, Black Oystercatcher, Tufted Puffin, Western Snowy Plover, Coho Salmon, Fall Chinook Salmon, Winter Steelhead,
<b>Cape Blanco Area Coastal bluffs, freshwater wetlands, oak woodlands</b>	Marbled Murrelet, Northern Goshawk, Peregrine Falcon, Western Snowy Plover, Coho Salmon, Fall Chinook Salmon, Winter Steelhead, Pallid Bat
<b>Rogue River Estuary Coastal bluffs and montane grasslands, estuary, riparian</b>	Tufted Puffin, Fall Chinook Salmon, Summer Steelhead, Winter Steelhead
<b>Chetco River Estuary</b>	Northern Goshawk, Fall Chinook Salmon, Winter Steelhead
<b>Winchuk River Estuary</b>	Coho Salmon, Fall Chinook Salmon, Winter Steelhead

Estuary



Livestock represent another critical component of animal resources in both counties. In both counties the pasture component of farming represents over one third of the total farm use. The health and vigor of cattle and sheep is directly tied to food production and the economic viability of farming and ranching in the region.

Domestic animal component, 2007 Ag Census		
	Coos	Curry
Acres in farm land	145,675	74,336
Acres in pasture	52,443	30,178
# cows and calves	22,258	9,694
# sheep	8,485	16,710

**Progress to date.** Watershed councils have been focused on activities to improve salmon habitat and increase populations including considerable in-stream work. OWEB has invested over \$14 million in overall support for Oregon Salmon Plan activities (including support for councils, etc.) in these two counties. While the habitat and spawning needs of fish species are complex, they all benefit from improved water quality and the ability to move freely within their habitat.

Many of the commonly implemented conservation practices include positive benefits for fish and wildlife, including improving water quality, improving habitat and providing forage and food sources. Additionally, practices are planned with particular care to minimize damage or avoid restricting movement and access to existing populations if they are not able to specifically benefit them. Wetlands restoration and easements have increased available quality habitat for fish and wildlife.

**ANIMAL/WILDLIFE RESOURCES OUTLOOK SUMMARY**

**HIGH PRIORITY:**

*Fish & wildlife populations in poor condition and threatened*

What has been accomplished	What is left to do
<ul style="list-style-type: none"> <li>• Grazing management improvements have improved habitat</li> <li>• Water quality and fish passage have benefitted as a result of efforts by a wide group of partners</li> <li>• Forest habitat has been improved and the forest made more resilient through forest stand improvement and fuels reduction work</li> <li>• Wetland restoration and easements have increased quality habitat for fish and wildlife</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Promoting water quality through</i> <ul style="list-style-type: none"> <li>❖ <i>Improving grazing management</i></li> <li>❖ <i>Improving forest management</i></li> <li>❖ <i>Reducing runoff from irrigation</i></li> </ul> </li> <li>• <i>Improve forest habitat through stand improvement</i></li> <li>• <i>Protect habitat from catastrophic fire</i></li> <li>• <i>Improve water quality through improved drainage/tidal systems design &amp; maintenance</i></li> <li>• <i>Restore riparian areas on critical reaches</i></li> <li>• <i>Improve management of wetland habitats and estuaries</i></li> </ul>

	<ul style="list-style-type: none"><li>• <i>Promote late seral forest habitat</i></li><li>• <i>Incentivize practices that support wildlife</i></li><li>• <i>Promote pollinator populations by improving habitat and food sources</i></li></ul>
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**Role and priorities for NRCS.**

Animal resources will be a **HIGH PRIORITY** for NRCS assistance in Coos and Curry County. Strategies targeting improving habitat for threatened and endangered species as well as the productivity of domestic livestock are outlined in the strategic approach section of this plan. NRCS can play a critical role in supporting habitat improvements for wildlife on private lands by working with willing landowners. Improvements to water quality through the application of BMPs will benefit all animal populations especially fish. Forest stand improvement practices on private lands will complement work already being done on public and industrial lands. Tidewater maintenance and riparian restoration can enhance water quality and provide essential aquatic habitat in a variety of settings including riparian areas, wetlands and estuaries. Continued management of wetland easements will contribute to water quality and habitat benefits for wildlife. Pasture management and watering facilities for domestic livestock will maintain their health, vigor and productivity. Pollinators can be promoted through improving native vegetation, tree and brush planting. Strategies outlined in the later section will maximize opportunities to work with partners and leverage other resources to improve the overall impact of these efforts.

## CONSERVATION STRATEGIES AND INVESTMENTS

*This section will explore the best strategies to make measurable progress on resource issues and outline the tools, strategies and investments needed to complete priority conservation work.*

The major resource priorities for the two counties are summarized as follows:

<b>Resource</b>	<b>Importance</b>	<b>NRCS Priorities</b>
<i>Humans</i>	<b>High</b>	<i>Increase awareness; work in concert with partners to provide technical expertise and individual technology transfer</i>
<i>Soil</i>	<i>Medium</i>	<i>Promote healthy soils through implementation of soil health principles, reduce sediment transport through expanding buffers, irrigation water management and reducing road failures,</i>
<b>Water</b>	<b>High</b>	<i>Reduce contaminated runoff through irrigation, nutrient &amp; livestock management improvements</i>
<i>Air</i>	<i>Low</i>	<i>Reduce agricultural contributions to air quality problems</i>
<i>Energy</i>	<i>Low</i>	<i>Reduce energy use through conservation practices and equipment upgrades</i>
<b>Plants</b>	<b>High</b>	<i>Promote healthy and productive plant communities, develop and maintain habitat for sensitive species through forest, livestock and crop management and invasive species control</i>
<b>Animals</b>	<b>High</b>	<i>Develop, restore and maintain aquatic and terrestrial habitat for sensitive species and pollinators</i>

The preceding analysis detailed the situation for each resource individually, however, it is widely recognized that the condition of the resources is inter-related and that most conservation measures have the potential to have impacts on multiple resource concerns at one time.

In Coos and Curry Counties, we determined the highest priority resource concerns by convening partners and members of the public to discuss the state of resources in the region. Information regarding the state of the resources was also gleaned from extensive interviews and discussions with many individuals working in natural resources and conservation.

For each resource concern we have reviewed the state of the resource, the progress that has been made to date and the needs and opportunities for improvement. This strategic planning process has helped to inform and clarify what needs to be done and has helped us to focus the programs and technical assistance available through the Natural Resources Conservation Service to best address natural resources through private lands conservation.

This plan has analyzed the resource needs and the progress of current efforts in order to identify the most strategic opportunities for the involvement of NRCS programs and resources. The following

priorities are focused on conservation work most likely to produce results on the specified land uses managed by private landowners in Coos and Curry Counties.

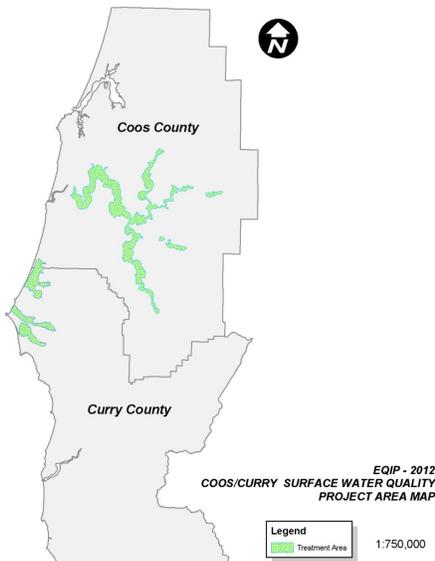
## Strategic Priorities:

### 1. Surface Water Quality and Quantity - Agricultural

Provide landowners technical and financial assistance to implement conservation measures to reduce delivery of nutrients, organics and sediment to surface waters.

- Improve irrigation system efficiency with a minimum of 15% increase in overall efficiency; reduce runoff, reduce over-saturation of the soil, and reduce irrigation water withdrawal rate
- Improve health of riparian areas
- Improve growth and vigor of pasture to promote sustainable permanent cover of desired vegetation
- Installing livestock watering facilities and heavy use areas to promote improved grazing management and to protect stream corridors and sensitive areas

Resource Benefits	
Humans	✓
Soil	✓
Water	✓
Air	
Energy	✓
Plants	✓
Animals	✓



This strategy will be focused on livestock operations and hay and crop operations within one half mile of streams currently listed on the 303(d) list maintained by Oregon Department of Environmental Quality. Partners have been involved in the prioritization of this activity and will continue to play an active role with outreach and technical assistance. Some possibilities also exist to leverage funding and plan complementary work with other partner strategies at the project level of implementation.

The Natural Resources Conservation Service will target Environmental Quality Incentive Program (EQIP) funding to support the following conservation practices identified below.

#### **Proposed NRCS conservation practices to be applied** (list not complete or exclusive)

Brush Management	Fence	Critical Area Planting
Forage Harvest Management	Heavy Use Area Protection	Aquatic Organism Passage
Spring Development	Pasture and Hay Planting	Pipeline
Prescribed Grazing	Pumping Plant	Watering Facility
Riparian Forest Buffer	Tree & Shrub Site Prep	Tree & Shrub Establishment
Irrigation systems	Irrigation water management	

Additional support for these and other complementary activities will come from Conservation Reserve Enhancement Program (CREP) the Oregon Watershed Enhancement Board, DEQ 319 funding, other funding sources, donations, in-kind assistance and volunteer contributions.

Key Partners include: Curry SWCD, DEQ, OSU Extension, Farm Service Agency, Oregon Department of Fish & Wildlife, Coquille Watershed Association, Coos Watershed Association, South coast Watershed Council, Coos SWCD

**2. Irrigation Efficiency and Automation in Cranberry Production**

Provide land managers with technical and financial assistance to implement irrigation, frost protection and energy efficiency measures through improved equipment, infrastructure and management practices.

- Energy savings through upgraded equipment and efficient pump utilization
- Water savings through irrigation and frost protection efficiency
- Improve nutrient management and nutrient cycling, crop health and productivity
- Improve water quality through management enhancements requiring less pesticides, insecticides and herbicides
- Improve sustainability of cranberry production and economic viability of agricultural production

Resource Benefits	
Humans	✓
Soil	
Water	✓
Air	
Energy	✓
Plants	✓
Animals	

This strategy will be focused on 25% of the 150 cranberry farms in the two-county area.

The Natural Resources Conservation Service will target Environmental Quality Incentive Program (EQIP) funding to support the following conservation practices identified below.

<u>Proposed NRCS conservation practices to be applied</u>	
Irrigation system evaluation	Irrigation water management
Retrofit Irrigation Automation	Irrigation sprinkler renovation

Important partners include: OSU County Extension Service, Curry Soil and Water Conservation District, Pacific Ag Systems, Oregon Cranberry Farmers Alliance, Oregon Cranberry Network, Oregon Cranberry Growers Association, and South coast Watershed Council.

Other potential funding sources include: Energy Trust of Oregon, City of Bandon, Coos Curry Electric Cooperative, DEQ, Oregon Department of Energy, FSA and USDA Rural Development, private grants, donations, in-kind assistance and volunteer contributions.

**3. Forest Health**

Provide land managers with technical and financial assistance to manage forest lands to be productive and provide important ecosystem services.

- Provide wildlife habitat through correct stocking levels, healthy stands and invasive species control
- Reduce soil erosion through forest cover, stocking rates and structure
- Reduce threat of forest fire through correct stocking levels, invasive species control and biomass removal
- Build forest resiliency and minimize the impact of pathogens

Resource benefits	
Humans	✓
Soil	✓
Water	✓
Air	
Energy	
Plants	✓
Animals	✓

This strategy was focused initially in the Myrtle Creek/Bridge area. That successful CIS has led to a second CIS partnership with Coquille Tribal on Fee land called Sek Wet Se in the Sixes sub-basin.

A Sudden Oak Death Task Force has been convened by Senator Jeff Merkly to develop a collaboration based action plan, including the securement of adequate resources, to contain the NA1 pathogen and eradicate the EU1 pathogen using the best available science.

The Natural Resources Conservation Service will promote the conservation practices identified below to improve forest health.

**Proposed NRCS conservation practices to be applied**

- |                          |                                    |
|--------------------------|------------------------------------|
| Forest Slash Treatment   | Forest Stand Improvement           |
| Tree/Shrub Establishment | Tree/Shrub Site Preparation        |
| Tree/Shrub Pruning       | Upland Wildlife Habitat Management |
| Forest Mgt. Plan         |                                    |

Oregon State University Extension and Oregon Department of Forestry are key partners in the outreach and technical aspects of implementing forest health strategies. Other important partners include: Coquille Indian Tribe, ODFW, OSU County Extension Service, Coos and Curry Soil and Water Conservation Districts, and area watershed councils.

Other potential funding sources include: invasive species grants, private grants, donations, in-kind assistance and volunteer contributions.

**4. Wetlands, Estuary Enhancement**

Provide landowners with technical and financial assistance to manage wetlands, estuaries and adjacent lands in ways that improve the capacity of the wetlands to provide ecosystem services such as clean water and wildlife habitat.

- Minimize contaminated runoff and sediment delivery from surrounding agricultural and forestry activities
- Improve habitat and food for wildlife through restoration of healthy, diverse native vegetation

Resource Benefits	
Humans	✓
Soil	✓
Water	✓
Air	
Energy	
Plants	✓
Animals	✓

The wetlands strategy will work in wetlands and estuaries as well as in seasonally wet working lands at low elevations in the river systems. Estuary

and wetland efforts will be targeted where there is an opportunity to effectively partner with other organizations and create a larger impact. Management of existing Wetland Reserve Program easements will also be served under this strategy.

The Natural Resources Conservation Service will target Environmental Quality Incentive Program (EQIP) and Wetland Reserve Program (WRP) funding to support the following conservation practices identified below.

<b>Proposed NRCS conservation practices to be applied</b>		
Tree/Shrub Site Preparation	Tree/Shrub Establishment	Brush Management
Critical Area Planting	Forage Harvest Management	Heavy Use Area Protection
Riparian Forest Buffer	Water Control Structure	Wetland Habitat Management
Nutrient Management	Pest Management	Fencing
Crossings	Access control	Wetland Restoration

The potential partners include: ODF, USF&W, The Nature Conservancy, Trout Unlimited, Bandon Biota, Beaver Slough Drainage District, Coos Watershed Association, other watershed councils, soil and water conservation districts, and NOAA Fisheries.

Potential sources of support include: OWEB, private grants, donations, in-kind assistance and volunteer contributions.

### 5. Vegetation Management & Pollinator Enhancement

Provide landowners with technical and financial assistance to restore native and beneficial vegetation which support wildlife, agricultural productivity and watershed function.

- Improve and restore diverse, native vegetation on agricultural and forestry land including providing habitat and food for wildlife and pollinators
- Improve health of riparian areas
- Improve growth and vigor of pasture to promote sustainable permanent cover of desired vegetation

<b>Resource Benefits</b>	
Humans	✓
Soil	✓
Water	✓
Air	
Energy	
Plants	✓
Animals	✓

Vegetation management will be targeted to areas where there has been significant disturbance to natural and desirable vegetation and where there is an opportunity to work with willing landowners, effectively partner with other organizations and create a larger impact and a long-term benefit.

The Natural Resources Conservation Service will use Environmental Quality Incentive Program (EQIP) and other available program funding sources to support the following conservation practices identified below.

<b>Proposed NRCS conservation practices to be applied</b>		
Tree/Shrub Site Preparation	Tree/Shrub Establishment	Brush Management
Critical Area Planting	Forage Harvest Management	Heavy Use Area Protection
Riparian Forest Buffer	Fencing	Spring Development
Pasture and Hay Planting	Prescribed Grazing	Watering Facility
Conservation Cover	Hedgerow planting	Field borders
Buffer strips	Shelter belts	Watering facilities (for wildlife)

The partners we hope to work with include: County weed boards, OSU Extension Service, soil and water conservation districts, Oregon Department of Forestry, Oregon Department of Agriculture, USFS, BLM, and Oregon State Parks, Xerxes Society, Gorse Action Group.

Potential sources of support include: OWEB, private grants, donations, in-kind assistance and volunteer contributions.

**6. Local Food Systems**

Provide landowners with technical and financial assistance to help them produce for local markets and feed local communities including transitioning to organic production and high tunnel systems.

- Improve soil health and fertility on small farm and organic operations through best management practices
- Expand production and market seasons by utilization of high tunnel systems
- Increase food availability to local communities through enhanced local marketing and sustainability

Resource Benefits	
Humans	✓
Soil	✓
Water	✓
Air	✓
Energy	✓
Plants	✓
Animals	✓

Local food systems efforts will be targeted to producers who direct market their produce or market a significant portion of their produce within 100 miles and where there is an opportunity to work with willing landowners, effectively partner with other organizations and create a larger impact and a long-term benefit.

The Natural Resources Conservation Service will use Environmental Quality Incentive Program (EQIP) and other available program funding sources to support the following conservation practices identified below.

<u>Proposed NRCS conservation practices to be applied</u>		
Conservation cover	Hedgerow planting	Field borders
Buffer strips	Shelter belts	Watering facilities (for wildlife)
Seasonal high tunnels	Conservation crop rotation	Pollinator habitat,
Cover crop	Mulching	Irrigation systems
Heavy use area protection	Critical area planting	Nutrient management
Grassed waterways	Irrigation water management	Residue management

**7. Drainage, floodwater management and ‘harvesting’ sediment from flood waters**

Provide landowners with technical and financial assistance to manage drainage systems and flood waters to minimize the delivery of sediment into open waters, minimize temperature gains as water moves through the system and improve the capacity of drainage systems to provide wildlife habitat.

- Capture sediment and minimize its travel through drainage systems and into open waters
- Improve shading and wildlife habitat through restoration of healthy, diverse native vegetation
- Improve and update drainage water control devices (tidegates, dikes, etc.) to allow fish passage, beneficial control of water and reduce sedimentation

Resource Benefits	
Humans	✓
Soil	✓
Water	✓
Air	
Energy	
Plants	✓
Animals	✓

This strategy will improve management of water in low gradient parts of the river systems. Efforts will be targeted where there is an opportunity to effectively partner with other organizations and create a larger impact. This strategy will pursue opportunities to combine a package of best practices to facilitate permitting for the ongoing maintenance necessary for the proper functioning of drainage systems.

The Natural Resources Conservation Service will target Environmental Quality Incentive Program (EQIP) and Wetland Reserve Enhancement (WRE) funding to support the following conservation practices identified below.

<b>Proposed NRCS conservation practices to be applied</b>		
Tree/Shrub Site Preparation	Tree/Shrub Establishment	Brush Management
Critical Area Planting	Forage Harvest Management	Heavy Use Area Protection
Riparian Forest Buffer	Water Control Structure	Wetland Habitat Management
Nutrient Management	Pest Management	Fencing
Crossings	Access control	Wetland Restoration

The potential partners include: ODF& W, USF&W, Drainage Districts, watershed councils, soil and water conservation districts, ACOE and NOAA Fisheries.

Potential sources of support include: OWEB, private grants, donations, in-kind assistance and volunteer contributions.