Lower Calapooia-Santiam

Conservation Strategy






September 2014

Overview

The development of this report was coordinated by The Nature Conservancy with extensive input from the Lower Calapooia-Santiam Planning Partnership, and identifies high priority conservation targets and recommends strategies to focus on-the-ground conservation activities in the years and decades to come. The Conservation Strategy will provide a high-level framework for coordinated efforts of various partners within the Calapooia-Santiam planning area and identifies priority conservation areas. The Conservation Strategy is non-regulatory and will be implemented through voluntary participation of landowners and partner organizations.

Lower Calapooia-Santiam Planning Partnership

The development of this Conservation Strategy was guided by a 'Planning Team', which provided local knowledge and expertise and input on the content. The Planning Team consisted of local representatives from the following agencies and organizations:

- Calapooia Watershed Council
- Greenbelt Land Trust
- North Santiam Watershed Council
- South Santiam Watershed Council
- The Nature Conservancy
- USDA Natural Resources Conservation Service
- US Fish and Wildlife Service

Technical Analysis

Descriptions of the data and analysis used during this planning process have been summarized in this report and documented in detail in various technical reports that are available from The Nature Conservancy upon request.

For More Information, Please Contact

Calapooia Watershed Council
136 Spalding Avenue
P.O. Box 844
Brownsville, Oregon 97327
www.calapooia.org

North Santiam Watershed Council
284 E Water Street
Stayton, Oregon 97383

www.northsantiam.org

South Santiam Watershed Council
4431 U.S. 20
Sweet Home, Oregon 97386

www.sswc.org

Cover photos: Greenbelt Land Trust, Calapooia Watershed Council, Kyle Smith, Cary Kerst, and Jeff Krueger

Report Produced By
The Nature Conservancy, with assistance from Jeff Krueger Environments

Section 1: Project Purpose and Background

1.1 Project Purpose

The purpose of this report is to describe a landscape-scale Conservation Strategy for the 715,000-acre Lower Calapooia-Santiam planning area. It is intended to identify high priority conservation targets and recommends strategies to focus on-the-ground conservation activities in the years and decades to come. The Conservation Strategy will provide a high-level framework for coordinated efforts of various partners within the Calapooia-Santiam planning area including state and federal agencies, tribes, local governments, land trusts, watershed councils, soil and water conservation districts, and private land owners. The Conservation Strategy is non-regulatory and will be implemented through voluntary participation of landowners.

1.2 The Lower Calapooia-Santiam Planning Area

In many respects, the planning area typifies the conditions found throughout much of the Willamette Valley ecoregion. The foothills of the Cascade Range give way to the broad alluvial plain of the valley bottom, which is interspersed with scattered groups of low basalt hills and buttes, as well as major Willamette River tributaries including the Santiam and Cala-

Contents

The agricultural-dominated valley floor transitions to low basalt hills and buttes covered with oak woodland and forest.

Photo: Jeff Krueger

Photo: Jeff Krueger

North Santiam River

Photo: Jeff Krueger

Oak savanna and woodland in the South Santiam watershed

pooia River systems. Although these rivers and their tributaries have in many cases been modified or ecologically degraded, they provide important habitat for native anadromous fish including Chinook salmon, winter steelhead, and Pacific lamprey and resident species such as cutthroat trout, Oregon chub, and book lamprey. The valley floor, with its fertile soils, is largely dominated by agricultural uses with widely-spaced small cities. The adjacent slopes of the Cascade foothills are typically forested and sparsely populated, with much of this area managed for timber production.

1.3 The Vision

The vision for the Lower Calapooia-Santiam planning area is for the preservation and restoration of an interconnected web of habitats that will provide viable conditions in which native fish, wildlife, and plant species can thrive over the long term. In addition to habitat benefits, preservation of the native landscape will help the area retain its sense of place, provide an educational and recreational resource for the community, and protect the area's outstanding visual quality. Priority native habitats for this area include grasslands (oak savanna and upland and wetland prairie), oak woodland, riparian forest, and aquatic (riverine and wetland) zones.

1.4 Partnership

The development of this Conservation Strategy was guided by a 'Planning Team', which provided local knowledge and expertise and input on the content. The Planning Team consisted of local representatives from the following agencies and organizations:

- Calapooia Watershed Council
- Greenbelt Land Trust
- North Santiam Watershed Council
- South Santiam Watershed Council
- The Nature Conservancy
- USDA Natural Resources Conservation Service
- US Fish and Wildlife Service

Section 2: Process Overview

Over a period of approximately 18 months, representatives from the Planning Team participated in a collaborative process intended to identify and describe conservation opportunities and strategies for the Lower Calapooia-Santiam planning area. This process included field reconnaissance, analysis, mapping, and collaborative planning as described below.

2.1 Field Reconnaissance

In April and August of 2013, members of the Planning Team conducted four days of visual assessment of the Lower Calapooia-Santiam planning area, visiting areas that had been previously highlighted through The Nature Conservancy's (TNC) Willamette Synthesis Project (Synthesis). During the reconnaissance trips, the group noted general land use patterns and trends, the general condition of native habitats, and opportunity areas. They compared priority Conservation Opportunity Areas (COAs) identified on the Synthesis maps with on-the-ground conditions.

2.2 Analysis and Mapping

Staff from TNC took the lead on compiling existing spatial data and conducting analysis for use in this planning effort. Key mapped data included:

- Synthesis Conservation Opportunity Areas (COAs) – See ***Conservation Context Map***
- Watershed Council Restoration Project Areas – See ***Conservation Context Map***
- Watershed Council 'Priority Basins' for the Santiam and Calapooia watersheds - See ***Watershed Council Priority Basins Map***
- Historical Vegetation Patterns (ca. 1850s from the GLO surveys, compiled by the Oregon Natural Heritage Information Center) – See ***Historical Vegetation Map***
- Species of Conservation Concern (USFWS – Threatened, Endangered, and Species of Concern)
- Conserved and Protected Lands (public, tribal, and land trust properties managed for species or quality of natural resources) – See ***Conservation Context Map***
- Urban Growth Boundaries – See ***Conservation Context Map***
- Rivers and Streams – See ***Conservation Context Map***
- 100-Year Floodplain
- River and Stream Revetments

Photo: Jeff Krueger

Locations of key oak parcels were mapped in 2010 and refined in 2013.

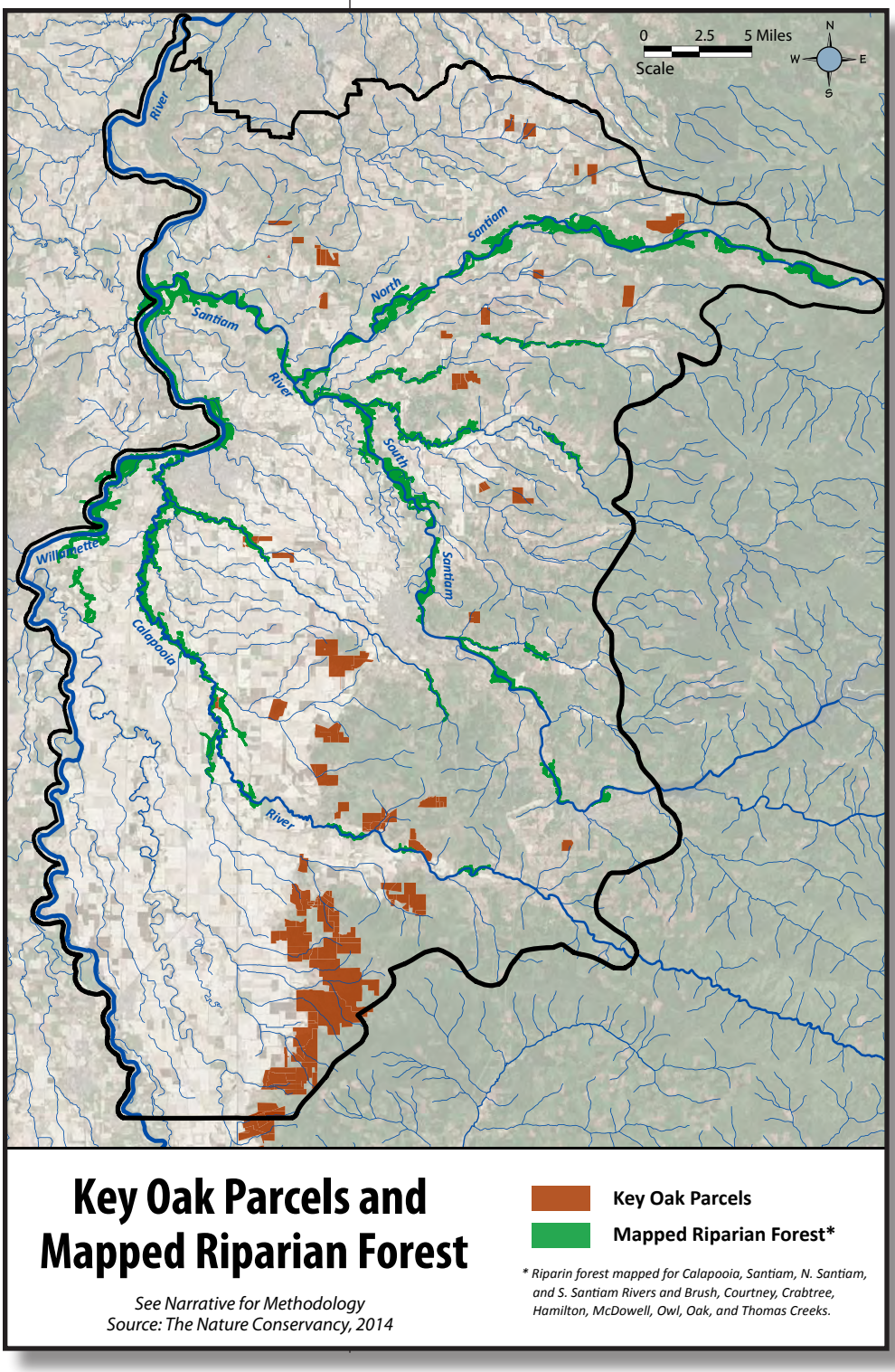
Additionally, two new map layers were created by TNC to help identify concentrations of large intact oak and riparian habitats:

Key Oak Parcels: The identification of 'key oak parcels' was initially done by TNC in 2010 using aerial photo interpretation to assess potential oak habitats. The 2010 mapping had used the following size criteria when defining key oak parcels:

- More than 60 acres of oak savanna, woodland, or forest;
- At least 40 acres of oak and at least 80 acres of oak and prairie/pasture combined;
- At least 40 acres of oak and at least 100 acres of 'natural' vegetation

The 2010 data included a total of 406 key oak parcels covering 57,090 acres in the planning area. In 2013, TNC staff conducted field reconnaissance to ground-truth the extent to which mapped parcels represented existing oak habitat. Reconnaissance consisted of viewing key oak parcels accessible or visible from public roads and/or interpretation using Google Earth's historical imagery tool. Based on this reconnaissance, parcels that had been converted to Douglas-fir plantations, Christmas tree farms, or agricultural fields, or parcels that had recently been logged or cleared were removed from the 'key oak parcels' data layer. Several parcels not included in the original analysis, but identified in the reconnaissance, were added. Only parcels containing oak savanna, woodland, or forest were retained. After these revisions, the total area of key oak parcels dropped by about half to approximately 24,000 acres on 148 parcels (See *Key Oak Parcels and Mapped Riparian Forest Map*).

Figure 1: ***Key Oak Parcels and Mapped Riparian Forest Map***



Intact Riparian Forest: In the summer of 2013 and fall of 2014, TNC staff mapped significant areas of intact riparian forest within the Calapooia, Santiam, North Santiam, and South Santiam Rivers and Brush, Courtney, Crabtree, Hamilton, McDowell, Owl, Oak, and Thomas Creeks using aerial photo interpretation. Intact riparian forest was defined as patches of forest ≥30 acres occurring within one kilometer of these river segments. Through this mapping effort, approximately 13,750 acres of riparian forest were identified (See *Key Oak Parcels and Mapped Riparian Forest Map*).

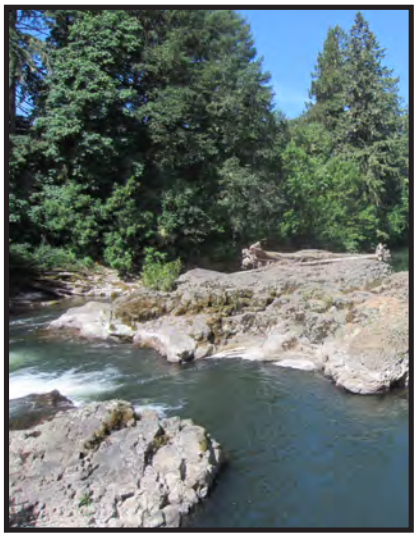


Photo: Jeff Krueger

Riparian forest

2.3 Planning Charrette

On May 16, 2014, representatives from NRCS, USFWS, TNC, Greenbelt Land Trust, Calapooia Watershed Council, South Santiam Watershed Council, and North Santiam Watershed Council met for a planning charrette (work session) in Albany. The goal of the charrette was to assist in developing a draft map or plan, which in this case was a Conservation Strategy Map for the Lower Calapooia-Santiam planning area. The participants were asked to highlight the following categories on a single base map:

- Existing Conservation Anchors: Major blocks of protected land (public and land trust ownership or easements) that are currently being managed to benefit habitat including riparian, oak, and prairie.
- High Priority Conservation Areas: Relatively large (500 acres +) blocks of land containing significant concentrations of priority habitats (riparian, oak, etc.) or land with high potential for restoration.
- Key Habitat Connectors: Potential corridors that could be used to connect Conservation Anchors and High Priority Conservation Areas if enhanced.

The outcome of the charrette was the integration of on-the-ground knowledge provided by the participants with previously mapped conservation data collected by TNC and the other Planning Partners. The *Conservation Strategy Map* included later in this report is to a large extent based on results from the charrette.

Photo: Jeff Krueger

Photo: Jeff Krueger

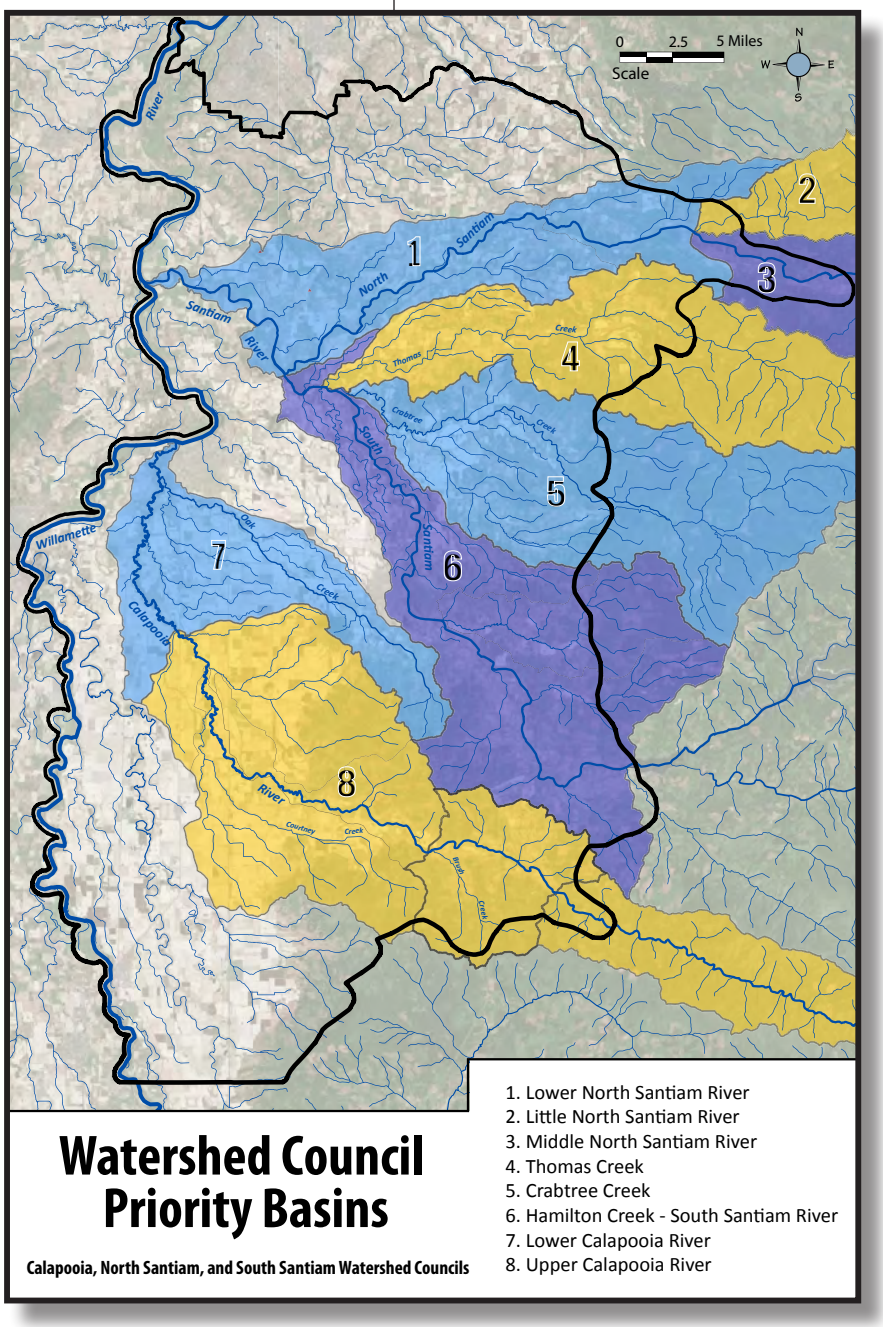
Planning charrette in progress

Section 3: Lower Calapooia-Santiam Planning Area

3.1 Planning Area Boundary

The planning area boundary extends eastward from the Willamette River and includes mainstem Santiam River and the lower portions of the South Santiam River, North Santiam River, Oak Creek, and Calapooia River and covers approximately 715,000 acres. The eastern boundary of the planning area is defined by the edge of the Willamette Valley ecoregion and extends southward to the Lane County line and northward toward Turner and Aumsville. The planning area boundary was established to focus the mapping and data collection for the project and is not intended for any regulatory purpose.

Figure 2: ***Watershed Council Priority Basins Map***



3.2 Working with Defined Priority Areas

Two previous planning efforts identified geographic areas of conservation interest and priority in Linn and Marion Counties. Results from these planning projects were used to help focus the geographic extent of this Conservation Strategy. The planning efforts included:

Watershed Council Priority Basin Identification: A total of eight Priority Basins have been identified by the Calapooia, North Santiam, and South Santiam Watershed Councils (see *Watershed Council Priority Basins Map*). These basins were selected based on a number of factors including presence or potential for salmon and steelhead habitat; presence of intact native habitats such as riparian forest and prairie; DEQ water quality prioritization areas; and the presence of active floodplain conditions and a dynamic river system. More information about the selection criteria for the priority basins can be found in the Watershed Restoration Action Plans developed by each watershed council.

Synthesis Mapping of Conservation Opportunity Areas (COA): The Nature Conservancy's Synthesis Project is a collaborative effort to delineate priority sites within the Willamette Valley where investment in conservation or restoration would best contribute to the health of historically significant and functional habitats. Partners in this effort included numerous local, state, and federal government agencies, academic institutions, landowners, and non-profit organizations.

In 2005, the Synthesis Project combined six existing major Willamette Valley conservation assessments into a single Union Portfolio, which depicts the mapped locations of key strategy habitats within the Willamette Valley Ecoregion. These assessments included:

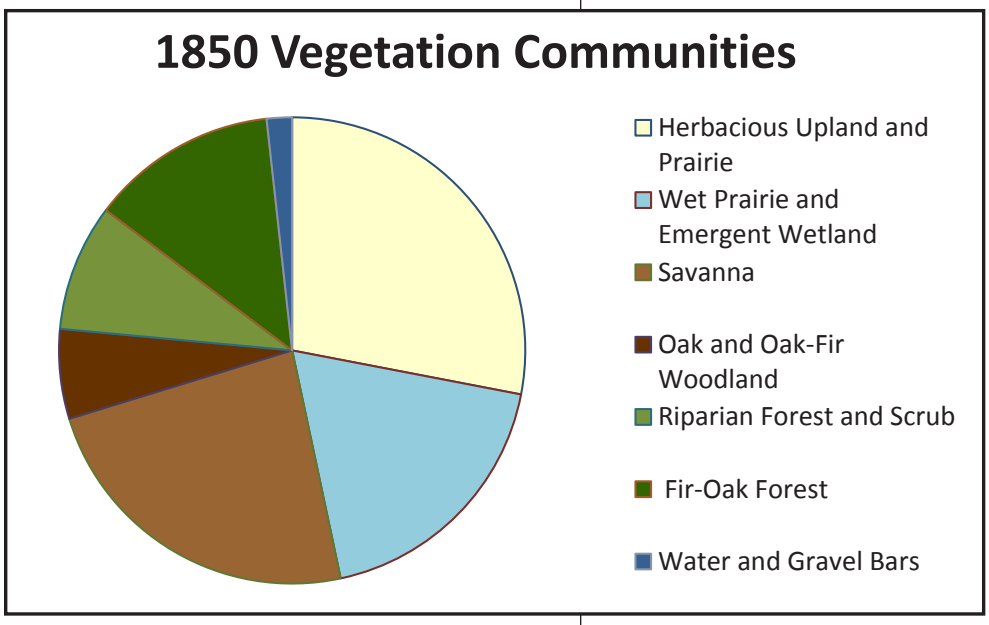
- The Nature Conservancy's Willamette Valley Ecoregional Assessment
- The Pacific Northwest Ecosystem Research Consortium's Willamette River Basin Alterative Futures Project
- ODFW's Oregon Conservation Strategy
- Critical Habitat Designations and Recovery Plans for Willamette Valley Fish and Endemics
- The Wetlands Conservancy Priority Wetlands
- Oregon Biodiversity Project

Within the Lower Calapooia-Santiam planning area, the Synthesis COA map identified significant areas of aquatic, riparian, and oak habitats as portfolio sites, which are shown in blue on the *Conservation Context Map* on page 9.

3.3 Historical Vegetation

One of the best records of pre-settlement vegetation patterns for the Willamette Valley is derived from the General Land Office (GLO) survey notes of the 1850s that recorded vegetation communities and other significant features present at the time. These detailed notes, which documented generalized vegetation types and locations of major landforms, were developed into digital map form in the 1990s. This data was utilized to generate the Historical Vegetation Map shown on the next page. This data, along with historical account by early explorers and settlers, indicate that much of the planning area was covered with large expanses of grasslands including upland and wetland prairie and savanna with widely scattered oak, Douglas-fir, and Ponderosa pine. These open habitats covered a combined area of approximately 500,000 acres, or 70 percent of the total planning area. Along the rivers and streams, wide swaths of riparian forest were present and a mixture of oak woodland and oak-fir forest was found in the higher slopes.

Figure 3: *Historical Vegetation Data*



Nearly all of the native prairie and savanna that dominated the planning area in the 1850s when the GLO surveys were conducted has been replaced by agricultural uses and urban development or colonized by woody vegetation.

3.4 Changes in Vegetation and Land Uses

Since Euro-American settlement began in the mid-1800s, nearly all native prairie and savanna habitats that once dominated the landscape have been converted to agricultural uses, including cropland and pasture, used for urban or exurban development, or colonized by woody and/or non-native invasive vegetation. Oak woodland persists in portions of the planning area, but they have been greatly reduced in extent due to conifer encroachment, commercial logging operations, and the absence of fire. Although much of the planning area still remains in rural, undeveloped condition, changes in land use and/or land management, in many cases, have led to a decline

Photo: Jeff Krueger

The Nature Conservancy's Kingston Prairie Preserve is one of the few remnants of this once common native vegetation community.

in the habitats and associated species compositions that once thrived in this area. The broad swaths of riparian forest that historically lined the rivers and streams have also been greatly reduced from conversion to agricultural uses or through the reduction of frequent floodplain innundations that helped to regenerate riparian vegetation. Bank hardening, channelization, large wood removal, and flood control projects have significantly simplified and limited natural hydrologic and geommorphic processes, degrading the functionality of the river systems and associate floodplains throughout the planning area. This has greatly reduced historical interaction between rivers and streams and the complex back channels and sloughs that provided vital habitat for native fish.

Although much of the native landscape has been significantly altered, urban development in the planning area has been limited due to statewide land use planning laws aimed at preserving high quality agricultural soils and forest lands. The lack of widely dispersed development provides opportunities for targeted habitat restoration and enhancement over time and presents opportunities for the creation of significant blocks of interconnected habitat as part of future conservation work.

Photo: Jeff Krueger

The lack of widely dispersed development throughout much of the planning area presents opportunities for the preservation and restoration of significant blocks of interconnected habitat as part of future conservation work.

Silverton
Silverton
Dallas
Salem/Keizer
Monmouth
Independence
Turner
Aumsville
Sublimity
Stayton
Lyons
Mill City
Santiam River
North Santiam River
Willamette River
Jefferson
Scio
Millersburg
Adair Village
South Santiam River
Albany
Corvallis
Tangent
Calapooia River
Lebanon
Waterloo
Sodaville
Sodom Ditch
Brownsville
Sweet Home
Halsey
Harrisburg
Junction City
Coburg
Eugene
Springfield

Lower Calapooia - Santiam Historical Vegetation Map (ca. 1850)

Figure 4

Legend

- Study Area Boundary
- Rivers and Streams (current)
- Urban Growth Boundaries

General Vegetation Class

- Herbacious Upland and Prairie (200,417 Ac)
- Woodland Fir and Fir - Oak (44,481 Ac)
- Savanna, Mixed Oak and Oak - Conifer (168,747 Ac)
- Upland Forest, Fir, Oak and Oak - Conifer (92,749 Ac)
- Unvegetated Sand and Gravel Bars (205 Ac)
- Water as mapped by GLO (12,321 Ac)
- Riparian Forest, Ash Savanna, Scrub, Brush and Thicket (62,925 Ac)
- Wet Prairie, Mounded Prairie, Emergent Wetland, Shrub Swamp (133,261 Ac)

N W E S

0 2.5 5 Miles

Data Source: Christy, J.A., E.R. Alverson, M.P. Dougherty, S.C. Kolar, C.W. Alton, S.M. Hawes, L. Ashkenas & P. Minear. 2008. Historical vegetation of the Willamette Valley, Oregon, 1851-1910. ArcMap shapefile, Version 2008_02. Oregon Natural Heritage Information Center, Oregon State University.

Lower Calapooia-Santiam
Conservation Context Map

Figure 5 September 2014

Legend

- Study Area Boundary
- Rivers and Streams
- Urban Growth Boundaries
- Highways
- Conserved Lands*
- Land Trust Ownership/Easements
- Watershed Council Projects**
- NRCS Conservation Easements
- Synthesis Conservation Opportunity Areas***

Scale: 0 2.5 5 Miles

= One Square Mile

* Conserved lands include public lands, tribal lands, and NRCS conservation easements.

** *Restoration projects completed by the North Santiam, South Santiam, and Calapooia Watershed Councils since 2000.*

*** *Synthesis Conservation Areas were derived by TNC in 2012 and combines a total of six existing major Willamette Valley conservation assessments into a single union portfolio.*

The Nature Conservancy
Protecting nature. Preserving life.

Map prepared by
Jeff Krueger Environments LLC

4.1 Conservation Targets

A primary goal of this planning effort is to devise a Conservation Strategy that guides long-term preservation, restoration, and management of priority target systems along with the associated rare and imperiled plants and wildlife. These target systems include habitats and the native species associated with them that represent the full array of biodiversity found in the planning area. The conservation targets listed below have been highlighted in the Oregon Conservation Strategy (ODFW, 2006) as 'strategy habitats' and identified by the Planning Team as being high priority for conservation and restoration within the Lower Calapooia-Santiam planning area:

Grassland (Kingston Prairie)

Photo: The Nature Conservancy

Grasslands

Includes upland and wetland prairie, herbaceous balds, and savannas that contain widely scattered trees such as Oregon white oak, valley ponderosa pine and/or Douglas-fir. Prior to Euro-American habitation, these open habitats covered over 70 percent the planning area (500,000 acres). The vast majority of these lands have since been converted to agricultural uses including cropland and pasture or colonized by woody vegetation. Remnants exist, but are often badly degraded and highly fragmented.

Photo: Jeff Krueger

Oak woodland and savanna

Oak Woodland

Includes areas dominated by Oregon white oak with lesser quantities of valley ponderosa pine, Douglas-fir, bigleaf maple, and incense cedar. Healthy woodlands typically have a canopy of 31-70 percent, which allows sun-dependent oaks to thrive and sunlight to reach the woodland floor to support an herbaceous understory. Significant quantities of oak woodland remain in the planning area but are under threat from conifer encroachment, invasive species, urban and exurban growth, and potential conversion to industrial timberland.

Riparian Forest and Aquatic

Includes the riparian forest and aquatic habitats associated with the major river and stream corridors such as the Santiam River mainstem, lower North Santiam River, lower South Santiam River, lower Calapooia River, Oak Creek, Crabtree Creek, Thomas Creek. Additionally, the main stem

Figure 6: ***Conservation Targets and Important Nested Targets***

Priority Habitat Target	Priority Species Targets (Threatened or Endangered ESA species in bold)		Primary Threats
Systems	**Plants**	**Animals**	
Grasslands (Upland prairie, wetland prairie, herbaceous balds, and savanna)	**Bradshaw's lomatium** **golden paintbrush** Hitchcock's blue-eyed grass **Kincaid's lupine** **Nelson's checkermallow** **white-topped aster** **Willamette daisy** Dominant System Vegetation: Camas Oregon white oak (savanna) popcorn flower Roemer's fescue tufted hairgrass	**Fender's Blue Butterfly** Northern Harrier Oregon Vesper Sparrow Short-Eared Owl Western Burrowing Owl **Streaked Horned Lark** **Taylor's Checkerspot Butterfly** Western Bluebird Western Meadowlark Native pollinators (bumblebees, solitary bees, butterflies, moths, and hummingbirds)	• Habitat fragmentation • Conversion of remnant grasslands to intensive agriculture • Woody vegetation and conifer encroachment (upland prairie, savanna) • Elimination of surface waterways and vernal pools • Change from historic fire management regime • Invasive plant species
Oak Woodland	thin-leaved peavine **wayside aster** **white-topped aster** **white rock larkspur** Willamette Valley larkspur Dominant System Vegetation: Douglas-fir Oregon white oak Pacific madrone ponderosa pine snowberry	Acorn Woodpecker Chipping Sparrow Pileated Woodpecker Western Bluebird Western Gray Squirrel Western Wood-Pewee Slender-billed Nuthatch Townsend's Big-eared Bat	• Habitat fragmentation • Conifer encroachment • Change from historic fire management regime • Quarries (isolated buttes) • Invasive plant species • Loss of oak during commercial timber harvest operations • Urban growth
Riparian Forest and Aquatic Habitat (Rivers, streams, wetlands, and associated riparian forest)	Tall Bugbane Dominant System Vegetation: alder bigleaf maple black cottonwood creek dogwood Douglas' spiraea Douglas-fir Oregon ash Oregon oak slough sedge valley Ponderosa pine willow	American Beaver American Dipper Bald Eagle Cutthroat Trout Foothill Yellow-legged Frog Northern Red-legged Frog Northwestern Pond Turtle **Spring Chinook Salmon** Oregon Chub Pacific and Brook Lamprey River Otter **Winter Steelhead** Yellow-billed Cuckoo	• Habitat fragmentation • Lack of riparian vegetation for habitat and shading • Altered floodplain (lack of river/floodplain connectivity, loss of channel complexity, and constraints to river migration) • Limited flood regime due to upstream dams (Santiam system), channel incision • Limited in-stream habitat features (large wood, basking logs) and entrapment of gravels behind upstream flood control dams. • Barriers to fish passage • Aggregate mining (active and abandoned pits) • Invasive plant and animal species • Elevated water temperature • Sediment, nutrient, and chemical pollution to aquatic system

of the Willamette River forms the western edged of the planning area and includes significant riparian and aquatic resources. Clearing of riparian forest for agricultural cropland, removal of large wood habitat structure, and reduced floodplain-river interaction have all contributed to the decline of these systems over time.

Photo: Jeff Krueger

Riparian forest along the Calapooia River

4.2 On-the-Ground Efforts Underway

Over the past several decades, organizations such as the three local watershed councils, land trusts, the Natural Resource Conservation Service, Soil & Water Conservation Districts, U.S. Fish & Wildlife Service, Oregon Department of Fish & Wildlife, and other organizations have been actively engaged in implementing restoration and enhancement projects on both private and public lands. Because much of the land in the planning area is in private ownership, partnering with land owners on projects such as riparian tree planting, removal of barriers to fish passage, livestock fencing, prairie restoration, oak release, eradication and control of non-native species, and prescribed fire has been essential. In some cases, these projects have resulted in the establishment of permanent conservation easements, which ensure that these sites will be managed to benefit native fish and wildlife habitat and related conservation values over the long-term. The general locations of many of these project areas are shown on the Conservation Context Map. This Conservation Strategy is intended to build upon these past efforts.

Photo: Sarah Dyrdahl

Riparian Restoration Project

4.3 Habitat Loss and Threats

As is the case with much of the Willamette Valley ecoregion, the native habitats of the Lower Calapooia-Santiam planning area have been significantly impacted over the century and a half following Euro-American settlement. The term 'threat' is used to describe the various factors that immediately affect the ecological integrity of target habitats, which in this case include grasslands, oak woodland, riparian forest, and aquatic habitats. Primary threats identified for the Lower Calapooia- Santiam planning area are listed on the next page.

Photo: Jeff Krueger

Thompson's Mills State Heritage Site on the Calapooia River is an example of how elements of the area's rich human history can be preserved and used for educational purposes.

4.4 Other Conservation Values

In addition to the target ecological systems and associated plant and wildlife listed above, implementation of the Conservation Strategy will also support the following important conservation values:

- Cultural Resources: The planning area contains significant pre-historic (prior to Euro-American settlement), and historic (post-settlement) artifacts and other cultural resources. The Calapooia Watershed has the highest concentration of surveyed archeological sites in the Willamette Valley including numerous burial mounds and legacy camas oven sites belonging to the Kalapuyan tribes.
- Scenic Quality: The natural and cultural landscape of the Lower Calapooia-Santiam planning area gives the region its uniqueness and sense of place. Rolling hills and oak-covered buttes provide a unique scenic backdrop for area residents and visitors alike. The picturesque valley bottoms contain a mosaic of agricultural lands, grasslands and pastures, and lush riparian forests.
- Highly Productive Soils and Agriculture: The lower Calapooia and Santiam watershed contains highly productive agricultural soils that produce a broad array crops. Land use regulations have generally protected these agricultural areas from fragmentation and urban sprawl.
- Public Access: Providing public access to natural areas for recreational and educational purposes is important for promoting awareness and appreciation of this unique landscape. Providing additional public access opportunities to a range of natural areas in the future will be important for promoting stewardship of these resources.
- Drinking Water: The North and South Santiam Rivers provide drinking water for the cities of Albany, Lebanon, Salem, Stayton, and Sweet Home. Restoring and conserving riparian vegetative buffers helps protect the drinking water for over 200,000 Oregonians.

Photo: Jeff Krueger

Preservation of the area's high quality agricultural soils, native ecosystems, and outstanding scenic vistas will be key to maintaining the area's unique sense of place into the future.

Section 5: Conservation Strategies and Priority Areas

5.1 Conservation Strategies

A set of recommended strategies is listed below to help focus the implementation of the Lower Calapooia-Santiam Conservation Strategy. Implementation will require the coordinated efforts of a broad partnership of stakeholders including federal, state, and local agencies, land trusts, watershed councils, and most importantly, private land owners. Each strategy is intended to address primary threats (See Figure 6), preserve and restore priority habitats, and support other conservation values.

Coordination and Prioritization

- Formalize the Lower Calapooia-Santiam Partnership (LCSP) to help coordinate actions, share resources, pool technical knowledge, and take advantages of organizational strengths (define partner roles-and responsibilities).
- Continue to refine the extent of priority conservation units (yellow polygons on map) and priority river reaches (blue and green on map) to help focus partner resources.

Land Protection

- Develop a suite of conservation tools (short-term contracts, Farm Bill programs such as the Conservation Reserve Enhancement Program, landowner technical assistance, conservation easements, fee title acquisition, restoration agreements, etc.) that are available for landowners through assistance of the LCSP.
- Use fee title acquisition and purchase of conservation easements to provide permanent protections of key parcels, implemented through voluntary participation on landowners. Concentrate acquisition on parcels within key geographic areas (see Conservation Strategy Map) with an emphasis on properties in close proximity to existing conservation anchors and areas containing high quality grassland, oak woodland, and riparian habitat.

Outreach and Demonstration

- Recruit private landowners in priority areas to secure commitments for habitat management and restoration projects.
- Promote existing pasture/prairie and oak management guidelines and resources such as *A Landowner's Guide for Restoring and Managing Oregon White Oak Habitats* (BLM 2004) and provide technical assistance to property owners.
- Implement and highlight habitat restoration demonstration projects.
- Maintain the ability to use prescribed fire for management of prairie and oak savanna habitats and inform the public and landowners of associated benefits.
- Develop stewardship plans for private lands using watershed council, NRCS, and SWCD expertise and technical assistance.
- Explore use of voluntary conservation easements as a tool for habitat protection where appropriate.

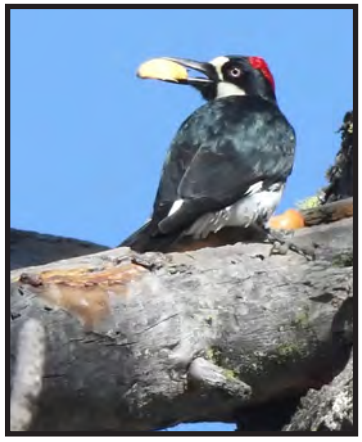


Photo: Cary Kerst

Acorn woodpecker

Photo: Bruce Newhouse

Nelson's checkermallow

Establishing partnerships with landowners is a key implementation strategy

Photo: Kyle Smith

Photo: Cary Kerst

Western gray squirrel

Photo: Cary Kerst

Slender-billed nuthatch

Photo: Lauri Holts

Western Pond Turtle

Photo: Carrie Karl

Outdoor education

- Develop a one-stop shopping set of conservation materials that outlines the services of the LCSP and describes a list of opportunities for landowners.

Ecological Treatment in Priority Areas

- Concentrate habitat preservation and restoration activities in key geographic areas (see *Conservation Strategy Map*) to protect larger contiguous landscapes that include interconnected networks of prairie, oak savanna, and oak woodland. For example, large blocks of prairie and savanna habitat of adequate size to support grassland birds such as western meadowlark, streaked horned lark, Northern harrier, Oregon vesper sparrow, and short-eared owl and integrate nectar producing forbs for native pollinators such as bumblebees, solitary bees, butterflies, moths, and hummingbirds would be restored.
- Restore channel complexity and floodplain connectivity to improve fish passage and habitat conditions for native fish and wildlife species such as Chinook salmon, steelhead, cutthroat trout, lamprey, Oregon chub, western pond turtle, river otter, and American beaver by reconnecting and restoring side channels and backwater alcoves. Focus on priority reaches and confluence areas (see *Conservation Strategy Map*).
- Continue to remove barriers to fish passage where they exist and enhance habitat through placement of large wood structure and establishment of riparian forest.
- Encourage implementation of the Corps of Engineers and TNC-sponsored Sustainable Rivers Project. This effort is evaluating flow requirements on the entire Willamette River system and could ultimately result in modifications to dam releases on the Santiam River system to mimic a more natural hydrologic condition and river temperature.
- Promote timber harvest that will result in oak release and thinning of conifers encroaching on oak habitats.
- Work to control invasive species and increase native species, with an emphasis on early detection and rapid response to emerging threats.

Photo: Lance Wyss

Pacific lamprey

Education, Stewardship, and Scenic Quality

- Work with willing property owners to establish public access to areas of native habitat for recreational and educational purposes. Opportunities are currently limited in the planning area.
- Discourage development and quarrying activities on highly visible buttes and hill slopes through establishment of conservation easements.
- Establish publicly accessible viewpoints that allow visitors to enjoy sweeping vistas of the Lower Calapooia-Santiam area as a way of promoting understanding and appreciation of this scenic landscape.
- Develop and improve public awareness of restoration and enhancement projects by using various media and demonstrations such as public events, tours, social media, and landowner spotlights.
- Continue delivery of and secure long-term financial sustainability for environmental education programs within local school districts that focus on the natural and cultural history of the area.

5.2 Conservation Strategy Map Key

The Conservation Strategy Map was developed by the Lower Calapooia-Santiam Partners and refined through a combination of GIS analysis, field surveys, and aerial photo interpretation. The map depicts existing conservation areas (anchors), generalized opportunity areas for grassland and oak habitats, and priority river and stream corridors. The map is intended to help the partners focus their future conservation and habitat management resources, with the long-term goal of preserving, enhancing, and connecting large viable patches of contiguous habitat. The map defines broad target areas and is not intended to be property-specific. The following is a brief description of the legend categories from the Conservation Strategy Map:

Conserved Lands

Generally includes public and tribal lands managed for species, habitats, or quality of natural resources and include NRCS Agricultural Conservation Easement Program (ACEP) conservation easements. Not all lands in this category are being managed primarily for habitat values, but likely will remain in an undeveloped condition in the future.

Land Trust Ownership and Easements

Displays areas in land trust (Greenbelt Land Trust, The Nature Conservancy, McKenzie River Trust) ownership or with established conservation easements.

Existing Conservation Anchors

Includes relatively large areas of land that are currently preserved and actively managed for conservation values. This includes Ankeny NWR (USFWS), Kingston Prairie (TNC), Bowers Rock (OPRD), Horseshoe Lake/Little Willamette (GLT), and Coburg Ridge (TNC). These areas would continue to be managed for conservation benefits and habitat protection and are potential core sites for larger conservation zones.

Intact Riparian Forest

Displays large blocks (≥30 acres) of existing riparian forest along the Calapooia, Santiam, North Santiam, and South Santiam Rivers and Brush, Courtney, Crabtree, Hamilton, McDowell, Owl, Oak, and Thomas Creeks (see Section 2.2). The goal for these areas is to protect the intact forested habitats and restore associated riparian floodplains.

Build Upon Watershed Council Restoration Project Areas

Areas along the Calapooia River, Courtney Creek, Brush Creek, McDowell Creek, Hamilton Creek, Crabtree Creek, and the North Santiam River where the watershed councils have implemented significant habitat restoration projects. These areas will be maintained to protect existing investments and used as building blocks for future restoration projects where feasible.

Priority River Restoration Opportunity Areas

These river and stream reaches, many of which are degraded, have been identified as being high priority for future conservation and habitat restoration. They have potential to provide high quality aquatic habitat for native species such as Chinook salmon, steelhead, cutthroat trout, and lamprey or could provide connectivity between high quality areas if restored. Future actions in these areas include restoration of riparian forest and reestablishment of dynamic floodplain areas. These areas, which total nearly 200 miles of river and stream channel include the following (segment lengths are approximate):

- North Santiam River: Covering approximately 12 miles between Stayton and the confluence with the South Santiam River, this reach includes relatively dynamic and complex channels that provides important side channel and backwater habitats for a large diversity of native species.
- Thomas Creek: Covering approximately 30 miles, this large tributary to the South Santiam River supports runs of spring Chinook salmon, Pacific lamprey, and winter steelhead. Restoration of this reach will improve rearing habitat within the historic spawning grounds of the Cascades. Important substrate (gravel) transport occurs in this system, which is downstream of the major dams.
- Crabtree Creek: Covering approximately 30 miles, this large tributary to the South Santiam River supports runs of spring Chinook salmon, Pacific lamprey, and winter steelhead. Restoration of this reach will improve rearing habitat within the historic spawning grounds of the Cascades.
- South Santiam River: This 36-mile reach from Sweet Home to the confluence with the North Santiam River supports anadromous fish species, with the majority of the current spring Chinook spawning in the South Santiam occurring in Sweet Home area. This river also provides drinking water for Sweet Home, Lebanon, and Albany.
- Oak Creek: Covering approximately 19 miles from Lebanon to the confluence with the Calapooia River, this reach

includes significant wetlands, intact riparian forest, and oak savanna. Protection and restoration of riparian and oak habitats, with a special focus on the confluence of Calapooia River and Oak Creek, will preserve and improve conditions for native fish and wildlife.

- Calapooia River: This key 25-mile reach of the Calapooia River from the Courtney Creek confluence to the confluence with the Willamette River provides an important link between the middle Calapooia River where significant restoration efforts have occurred and the Willamette River. Focus will be on preserving intact riparian corridors that have high ecological function, improving side channel connectivity and function, and habitat enhancements such as wood placement projects to benefit native fish and turtles.
- Owl Creek: This 8-mile tributary to the Willamette River offers opportunities to preserve intact riparian forests and significant wetland and slough habitats to support native fish, diverse avian populations, and large turtle populations.
- Courtney Creek: This 13-mile reach of Courtney Creek is a key tributary to the Calapooia River and offers special opportunities to connect oak savanna and wetland prairie areas with riparian and aquatic habitats and builds upon previous agency and watershed council projects.
- Brush Creek: Covering approximately 10 miles, this reach is the coldest tributary to the Calapooia River. Enhancement and preservation efforts such as stream structure enhancement, riparian easements and acquisition, and large-scale planting would be implemented through private and public partnerships.

Key Confluence Areas

Key confluence areas have high potential for the restoration of dynamic floodplain interactions including reestablishment of active floodplain, side channels, alcoves, and backwater areas to benefit native fish and wildlife. Key confluence areas include:

- North Santiam River and South Santiam River confluence
- Santiam River and Willamette River confluence
- Thomas Creek and South Santiam River confluence
- Crabtree Creek and South Santiam River confluence
- Oak Creek and Calapooia River confluence
- Courtney Creek and Calapooia River confluence
- Calapooia River and Willamette River confluence
- Hamilton Creek and South Santiam River confluence
- McDowell Creek and South Santiam River confluence
- Brush Creek and Calapooia River confluence
- Owl Creek and Willamette River confluence

Priority Oak and Prairie Conservation Units

Oak and prairie conservation units contain large contiguous areas of grassland (prairie, savanna, herbaceous balds) and oak woodland habitats and/or have significant potential for restoration or enhancement of these target habitats. Opportunities exist within these units to create significant blocks of grassland and oak woodland that would provide viable habitat conditions for target plant and animal species. The majority of land contained in these units is in private ownership, so establishment of partnerships with land owners for management of these areas will be essential. Targeted acquisition could be used to preserve key parcels, particularly in proximity to other protected lands and existing conservation anchors. Combined, these units cover approximately 71,000 acres, or 10 percent of the total planning area. Each unit is described briefly with the geographic extent shown on the Conservation Strategy Map:

1. Ankeny Unit: Covering approximately 9,800 acres, this unit builds upon the 1,800-acre Ankeny National Wildlife Refuge and includes lands on and around Looney Butte and Miller Butte and presents opportunities for management and restoration of oak savanna, oak woodland, and prairie.

2. Kingston Prairie Unit: Covering approximately 3,000 acres, this unit builds upon the 150-acre Kingston Prairie and includes opportunities for oak woodland, oak savanna, and prairie habitat management and restoration in proximity to the North Santiam River.

3. Scio Unit: Covering approximately 1,800 acres of oak savanna and woodland habitat, this unit includes Franklin Butte and the surrounding area.

4. Buttes Unit: Covering approximately 16,000 acres, this unit includes five major isolated buttes (Peterson Butte, Ward Butte, Saddle Butte, Lone Pine Butte, and Washburn Butte). These buttes contain outstanding areas of grassland and oak woodland habitat and present opportunities for further management, restoration, and connectivity. These buttes are highly visible scenic landmarks and could offer excellent vantage points of the valley below.

6. Coburg Hills Unit: Covering approximately 40,500 acres, this unit spans the slopes of the Coburg Hills extending from the Coburg Ridge Preserve near the McKenzie River to Courtney Creek and Brush Creek. This area contains the most significant concentrations of oak savanna and woodland habitat within the planning area.

The Nature Conservancy
Protecting nature. Preserving life.

Map prepared by
Jeff Krueger
Environments LLC

The *Conservation Strategy* depicted on this map was developed by the *Lower Calapooia-Santiam planning partners* and refined through GIS analysis, ground truthing, and aerial photo interpretation. The *Conservation Strategy* is non-regulatory and subject to voluntary landowner participation.

Lower Calapooia-Santiam
Conservation Strategy Map

Legend

- Study Area Boundary
- Rivers and Streams
- Urban Growth Boundaries
- Highways
- Conserved Lands*
- Land Trust Ownership/Easements
- Willamette River Oriented COAs**
- Watershed Council Projects***
- NRCS Conservation Easements

Figure 7 September 2014

0 2.5 5 Miles
Scale

N W E S

One = Square Mile

* Conserved lands include public lands, tribal lands, NRCS conservation easements, and major land trust ownership/easements.

** The Conservation Strategy did not specifically include the main stem Willamette River, but river-related COAs are shown for context.

*** Restoration projects completed by the North Santiam, South Santiam, and Calapooia Watershed Councils since 2000.

**** Riparin forest mapped for Calapooia, Santiam, N. Santiam, and S. Santiam Rivers and Brush, Courtney, Crabtree, Hamilton, McDowell, Owl, Oak, and Thomas Creeks (13,750 acres total).

Proposed Conservation Actions (see legend narrative for detail)

- Existing Conservation Anchors - Manage for Habitat Values, Look for Opportunities to Expand
- Intact Riparian Forest (green)**** – Preserve/Expand and Improve Floodplain Interaction
- Build Upon Past Watershed Council Restoration Project Areas – Maintain/Expand Investment
- Priority River Restoration Opportunity Areas – Restore Riparian and Floodplain Interaction
- Priority Oak and Prairie Conservation Units – Preserve and Manage
- Key Confluence Area