



SAUVIE ISLAND & MULTNOMAH CHANNEL BOTTOMLANDS CONSERVATION OPPORTUNITIES:

A Resource for Landowners & Land Managers



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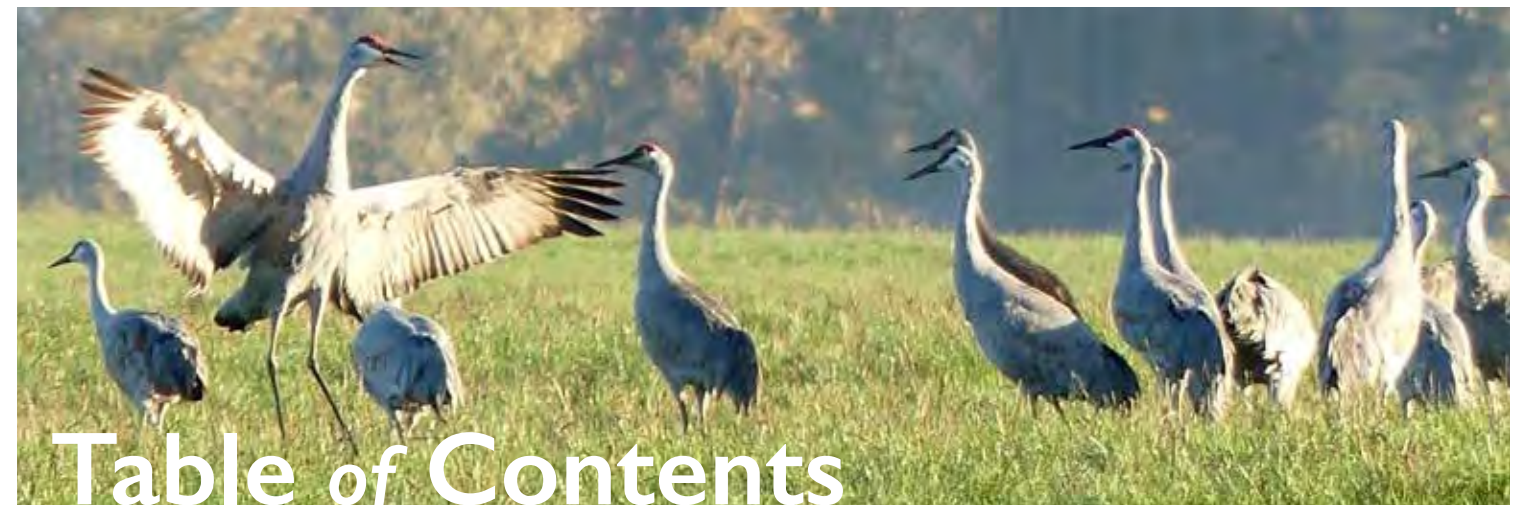


Table of Contents

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COVER PHOTO

Camas, the Western meadowlark – our state bird, and Oregon white oaks are all iconic species for Sauvie Island and the Multnomah Channel Bottomlands.

INTRODUCTION AND PURPOSE	4	CONSERVATION OPPORTUNITIES	30
SAUVIE ISLAND AND MULTNOMAH CHANNEL BOTTOMLANDS	5	Native Vegetation	31
SAUVIE ISLAND'S PAST – HOW IT SHAPES THE PRESENT	5	Invasive Species	32
Island Formation and Historic Flooding	5	Oak Savannah and Woodland	35
Native-American and Early Euro-American Settlers	8	Riparian Buffers and Canals	36
HISTORIC AND CURRENT CONDITIONS; SIGNIFICANT CHANGES	10	Hedgerows	38
Ownership and Land Use Patterns	10	Grasslands	39
Private Land Ownership	11	Pollinator Habitat	40
Sauvie Island Wildlife Area	11	Wetland and Aquatic Habitat	41
Other Public Lands	11	Water Quality	43
Soils and Geology	13	Soil Health and Diversity	44
Soil Types Within the Plan Area	13	Community Science	46
Hydrology and Water Quality	14	Land Use Planning	47
Hydrology on Sauvie Island	14	Sturgeon Lake Restoration	50
Sauvie Island Drainage and Irrigation District (SIDIC)	17	APPENDIX 1: WILDLIFE	53
Hydrology on the Western Lowlands	17	APPENDIX 2: PLANT SPECIES	59
Water Quality on Sauvie Island	18	APPENDIX 3: SPECIES OF CONCERN	76
Water Quality in Scappoose Bay, the Bottomlands and along Multnomah Channel	18	APPENDIX 4: INVASIVE SPECIES	90
Plant Communities (Land Cover)	20	APPENDIX 5: PLANT COMMUNITIES	97
Plant Community Descriptions	21	APPENDIX 6: CONSERVATION PROJECTS	103
Wildlife	24	REFERENCES	108
Conservation Projects	25	RESOURCES	108
Sauvie Island Rural Area Plan and Zoning	29	ACRONYMS USED IN THIS DOCUMENT	109



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INTRODUCTION AND PURPOSE

Sauvie Island and the surrounding bottomlands are home to a vibrant farming and residential community, plus large public wildlife and recreation areas, that all benefit from rich natural resources. The area was once a vast complex of wetlands and prairies with pockets of mostly deciduous forests and savannahs. Although the hydrology and geographical features have been greatly altered by dams, dikes, agriculture and invasive species, the area still provides habitat to an amazing diversity of waterfowl, songbirds and other wildlife. These wild lands provide beauty and a place of respite for residents as well as urban visitors.

Recognizing this area as the treasure it is, and realizing the importance of maintaining and improving its natural assets, multiple agencies as well as many private landowners have engaged in conservation and restoration practices.

This Conservation Opportunities document shares information pulled together from the combined knowledge of many scientists and ecology professionals as well as the knowledge of residents working the land. It catalogs the natural assets of the area and most importantly, intends to inform and inspire future conservation and restoration efforts.

The document was authored by Sauvie Island Habitat Partnership, Scappoose Bay Watershed Council, West Multnomah Soil & Water Conservation District and The Wetlands Conservancy. Other partners include Oregon Department of Fish and Wildlife, Sauvie Island Drainage Improvement Company, Natural Resources Conservation Service and Metro.



Goals of this document are to:

Inform

Provide detailed information on the unique ecological features of the area, its landscape history, current land uses, ongoing conservation efforts and those involved in them; catalog its natural assets and assemble information useful to agencies, organizations and landowners involved in conservation efforts; identify potential threats and promote understanding of the ecological importance of conservation efforts.

Identify Opportunity

Describe and prioritize conservation opportunities in terms of ecological importance, landscape location (including proximity to related habitats), likelihood for success and other relevant conservation actions.

Inspire

Outline conservation opportunities to enlist landowners, agency land managers, conservation organizations and others to continue to provide stewardship and enhance the conservation values of the area; promote cooperation on these efforts and sharing of information.

Implement

Lay out a blueprint for conservation projects to be accomplished by multiple agencies, organizations and landowners, along with monitoring actions to objectively measure environmental changes.



Wetlands cover a large part of Sauvie Island.

SAUVIE ISLAND AND MULTNOMAH CHANNEL BOTTOMLANDS

The conservation opportunities laid out in this document encompass all of Sauvie Island, plus the low-lying mainland areas that run the length of Sauvie Island, between Highway 30 and Multnomah Channel. For the purposes of this document, this area will be called the Plan Area. The Plan Area includes portions of land west of Scappoose Bay, north to St. Helens and south to Miller Creek near Harborton Road (Figure 1 – Plan Area Map), the base of the Tualatin Mountains on the east side, and the Scappoose Bay Bottomlands.

The Plan Area was selected due to the unique qualities of Sauvie Island and the physical, biological and hydrologic similarity of the included lowlands on the mainland. The Plan Area boundary nearly follows the Oregon side of the floodplain area of Hydrogeomorphic Reach F, as defined in Columbia River Ecosystem Classification – Concept and Application (Simenstad, 2011). This “Middle Tidal Floodplain Basin” of the Columbia River Estuary (CRE) is the widest floodplain reach of the upper CRE and is characterized by wetlands, circuitous sloughs and seasonal ponds within bar-and-swale deposits, terraces and rocky outcroppings.

Sauvie Island takes up the largest portion of the Plan Area. It holds significance in terms of history, culture, and natural

resource conditions but has not been well represented in other watershed plans. The adjoining sub-watersheds of Scappoose Creek and Milton Creek are addressed in the Scappoose Bay Watershed Strategic Action Plan, which was completed in June, 2018.

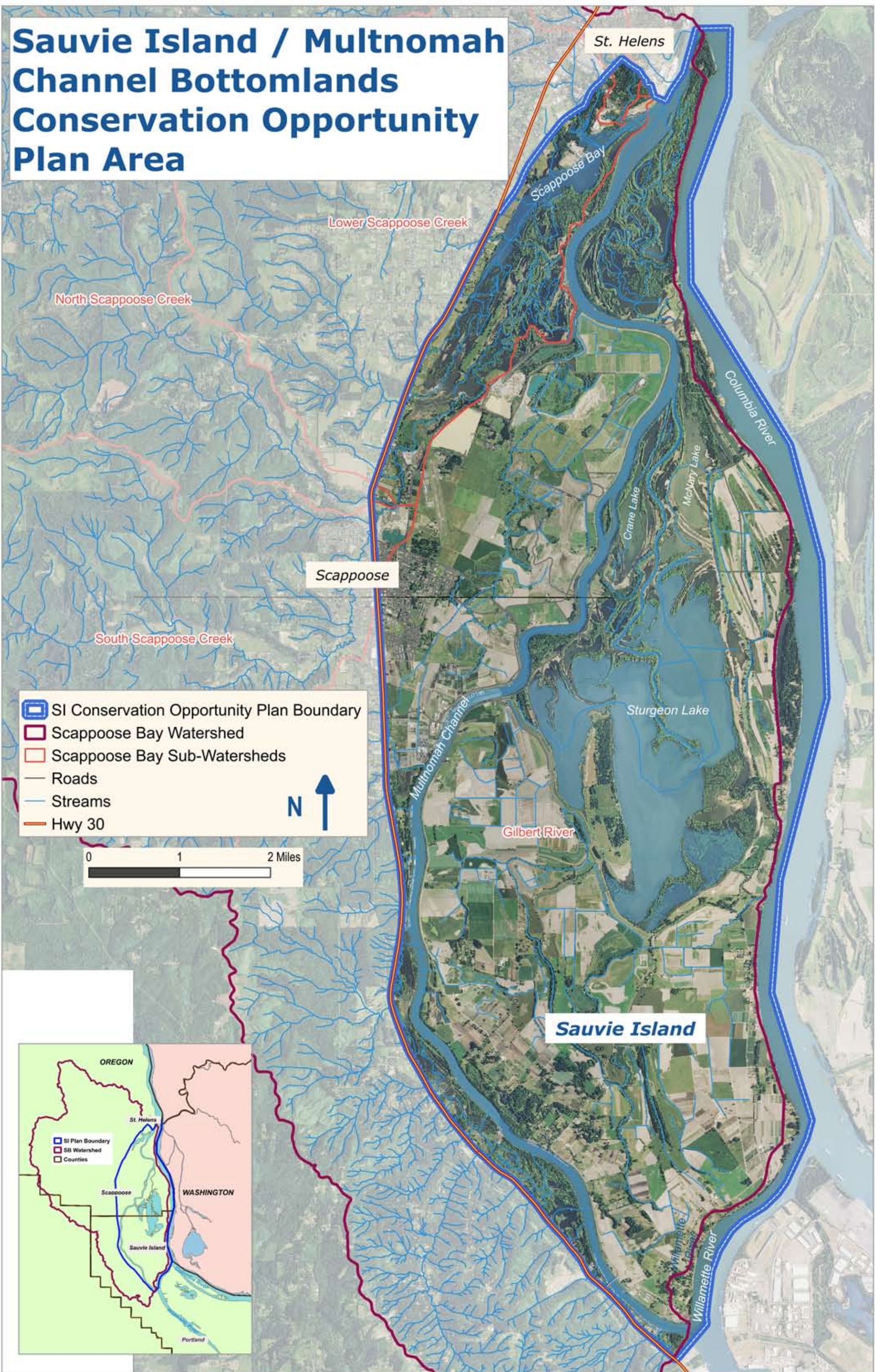
SAUVIE ISLAND'S PAST – HOW IT SHAPES THE PRESENT

Island Formation and Historic Flooding

Sauvie Island is located northwest of Portland and is approximately 21,000 acres – running 17 miles long and almost 5 miles wide. Multnomah Channel borders the island on the west, the Columbia River on the north and east, and the Willamette River on the south (Figure 1).

The island was formed in the Pleistocene era through sediment accumulation behind a ledge of large rocks, now known as Warrior Rock, on the island's north end (Sauvie Island Community Association). Historically, the island was influenced by seasonal flooding events from Columbia and Willamette River freshets as well as daily tidal patterns. Construction of dams along the rivers and flow regulation

Sauvie Island / Multnomah Channel Bottomlands Conservation Opportunity Plan Area



- SI Conservation Opportunity Plan Boundary
- Scappoose Bay Watershed
- Scappoose Bay Sub-Watersheds
- Roads
- Streams
- Hwy 30



have significantly reduced spring flooding and altered hydrologic patterns (greater detail on geology and hydrology is provided in the following sections).

Native-American and Early Euro-American Settlers

The following information is compiled from several sources, primarily the Sauvie Island Community Association.

Members of the Multnomah tribe of the Chinook Indians were the original inhabitants of the island. Estimates of their population size on the island range from 2000-6000. They lived in cedar log houses 30 yards long and a dozen yards wide, in 15 villages. Salmon, wapato (a wild tuber with a distinct arrowhead leaf that grows in wetlands) and Oregon white oak acorns were major food sources, and the human population of the island increased during salmon and wapato harvesting seasons. The acorns were harvested and placed in deep pits lined with hemlock boughs in areas of underground springs. Water moving through the pits leached away the toxic tannins over winter, making the acorns edible by spring. Around 1830 disease swept through the local population of Chinook Indians and, by most accounts, nearly wiped out the community in a few years.

In 1792 Captain George Vancouver sent Lieutenant William Broughton to survey the Columbia River for the British Admiralty. He landed on the island's north end, near what is now known as Warrior Rock. The Lewis and Clark expedition landed on the island on November 4, 1805 and subsequently named it 'Wapato Island'. In the 1830s the



Wapato tubers from Sauvie Island lakes were a staple food of early inhabitants and are still prized today as a "first food."

Hudson Bay Company established dairies on the island to support its Fort Vancouver property just across the river. These were managed by Laurent Sauvé, for whom the island was renamed. Additional settlers of European descent arrived in the late-1840s via the Oregon Trail.

European-American settlers had staked out most of Sauvie Island by the mid-1850s and farmed the island's fertile soil. Beginning in the 1920s, dikes were built to protect houses and farms from annual flooding by Columbia River freshets, and to increase the amount of tillable land. The Gilbert River and other streams and sloughs on the island were straightened with dynamite. To further increase tillable lands, pumps were installed on the north end of the island to pull and transport water out of the island's wetlands and into the canals leading to the Multnomah Channel. Most of the island's native grasses and other prairie plants were plowed under and displaced by non-native pasture grasses and crops, as island farmers tilled the soil and worked to produce milk, meat, vegetables and fruits to feed the increasing population of urban residents from Portland and surrounding areas.

Grass carp and non-native Eastern US species such as bass and pan fish were introduced to the island's lakes and waterways. The effect, especially of the carp, was devastating to wetland plant communities and wildlife, since they churned up the bottoms of the lakes, rooted out wapato and other emergent species, and displaced native fish. Other invasive plant and animal species moved into the area, aided by human activities.

The island first received electricity in 1936 and telephone service in 1948. A small bridge connecting the island to the mainland was built in 1950, and on December 30, 1950, the Sauvie Island Ferry closed. The Oregon Game Commission (now Oregon Fish and Wildlife Commission), established the Sauvie Island Wildlife Area (SIWA) on the northern portion of the island in 1947 to protect and restore critical wetland habitats. The SIWA is discussed in greater detail elsewhere in this document.

The island has seen continual pressure on natural resources from the 1950s to present, while Islanders work to maintain its rural character. The growth of the greater Portland metro area brings a growing number of daily visitors to enjoy the island's farm products and participate in recreation activities. While this activity supports the farm economy on the island, it also challenges the serenity of the rural surroundings for both humans and wildlife.



FIGURE 2 1850s map showing natural features in Township 3, Range 1, on the north end of Sauvie Island.



FIGURE 3 1850s map showing natural features in Township 2, Range 1, on the south end of Sauvie Island and on the adjoining mainland.

FIGURE 4 1850s map showing landownership in Township 2, Range 1, on the south end of Sauvie Island and on the adjoining mainland.



In more recent decades, some of the island's larger landholdings have been divided into smaller plots, which, in many cases, have been purchased by former urban residents aspiring to enjoy a more rural existence. This has provided both challenges and opportunities from a conservation standpoint. New residents often lack the knowledge and focused attention to combat encroaching invasive species and to recognize and focus on native species. As many of these residents don't need to make a living from farming, an opportunity exists to encourage them to enhance habitat for birds and other wildlife species on their property.

Many of the newer, smaller farms on the island engage in organic low-impact farming practices, which typically make them more wildlife- and pollinator-friendly.

Early settlements in the Bottomlands followed similar patterns as that of Sauvie Island. Beginning as early as 1810 with fur traders, the number of settlers gradually increased as timber (in the upper watershed) and farming activities accelerated. The cities of Scappoose and St. Helens have experienced significant growth in population and development in recent decades. Gravel and other mining operations are an important industry in this lower portion of the Scappoose Watershed.

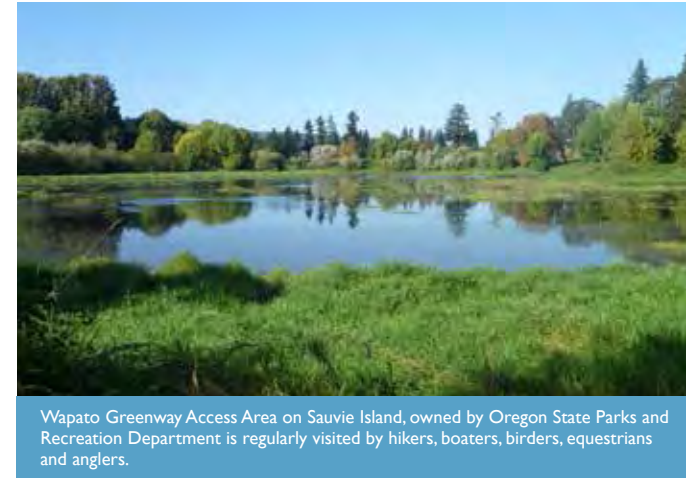
HISTORIC AND CURRENT CONDITIONS; SIGNIFICANT CHANGES

Ownership and Land Use Patterns

Figure 5 shows the land management patterns within the Plan Area. About one-third of the property is privately-owned, with the remainder owned by a mix of federal, state, county and local jurisdictions, such as Metro and Port Districts. Most of the state lands in the Plan Area are owned by Oregon Department of Fish and Wildlife (ODFW), with some smaller parcels owned by Oregon Parks and Recreation Department (OPRD). The Oregon Department of State Lands (DSL) owns the rivers, lakes, and other navigable waterways on the island up to the ordinary high



FIGURE 5 Map shows all publically-owned land in the Plan Area.



Wapato Greenway Access Area on Sauvie Island, owned by Oregon State Parks and Recreation Department is regularly visited by hikers, boaters, birders, equestrians and anglers.

water mark (as is the case around the state). ODFW/SIWA manages DSL lands and water adjacent to the wildlife area and to mean low-water mark (See Source page for more information on state-owned waterways).

PRIVATE LAND OWNERSHIP

Rural residential and agriculture are the primary uses of private property in the Plan Area, with some small sections of industrial use near the City of Scappoose. There are three irrigation districts in the Plan Area – the Scappoose Drainage Improvement Company (SDIC) and Columbia County Drainage District #1 in the Bottomlands, and the Sauvie Island Drainage Improvement Company (SIDIC) on the island. The SDIC manages irrigation on approximately 5,000 acres in the Bottomlands, and SIDIC manages irrigation on approximately 11,000 acres on Sauvie Island. Each district manages water levels to support agriculture through a series of canals and pumps. More details on these operations are discussed in the Hydrology section.

SAUVIE ISLAND WILDLIFE AREA

The largest publicly-owned parcel within the Plan Area is the Sauvie Island Wildlife Area (SIWA), encompassing 11,643 acres on the northern portion of Sauvie Island. It is managed by ODFW, and was established in 1947 with the primary purpose of “protecting and improving waterfowl habitat and providing a public hunting area.”

An updated Wildlife Area Management Plan was completed in 2010. It discusses current challenges facing the SIWA, including a “dramatic increase in public use, an ever-increasing wintering

population of geese, developing new wetlands, and restoring other habitat types” (ODFW, 2010). SIWA plan goals include “protect, enhance and manage” both wetland and upland habitats for a variety of species, as well as maintain waterfowl hunting programs and control other public use to minimize impacts on fish and wildlife. The plan can be downloaded from ODFW’s web site.

The SIWA contains significant acres of wet prairie and other valuable habitats including over 4,400 acres of seasonal and permanent wetlands (ODFW, 2010).

OTHER PUBLIC LANDS

ODFW owns and manages several other parcels on Sauvie Island and in the western lowlands of the project site (see Figure 5). Oregon Parks and Recreation Department manages Wapato Greenway Access Area (Wapato Greenway) on Sauvie Island and a few smaller parcels on the island, as well as the east side of Scappoose Bay. Wapato Greenway is approximately 150 acres, and is the only OPRD property in the area that allows public access for hiking, fishing, boating and wildlife viewing. Historical vegetation types here include marshland, open water, riparian hardwood forest, Oregon white oak-Douglas fir forest, upland prairie, riparian, scrub-shrub wet shrubland, and wet prairie. Today the area’s vegetation also includes emergent wetlands, weedy shrublands, reed canarygrass meadows, non-native grasslands and submerged and aquatic plant communities.

The Wapato Greenway 2013 Draft Park Plan identified five Primary Strategies that emphasize preserving natural undeveloped experiences, restoring and protecting the wetlands and native plant communities, and updating and enhancing visitor experiences.

Metro owns several properties within the Plan Area, including Howell Territorial Park on the island and Multnomah Channel Marsh on the mainland. Most of Metro’s properties have limited public access, with the exception of Howell Territorial Park, which abuts the Gilbert River and includes wetlands, restored prairies, a wooded pond and Oregon white oaks in open areas that are undergoing habitat restoration.

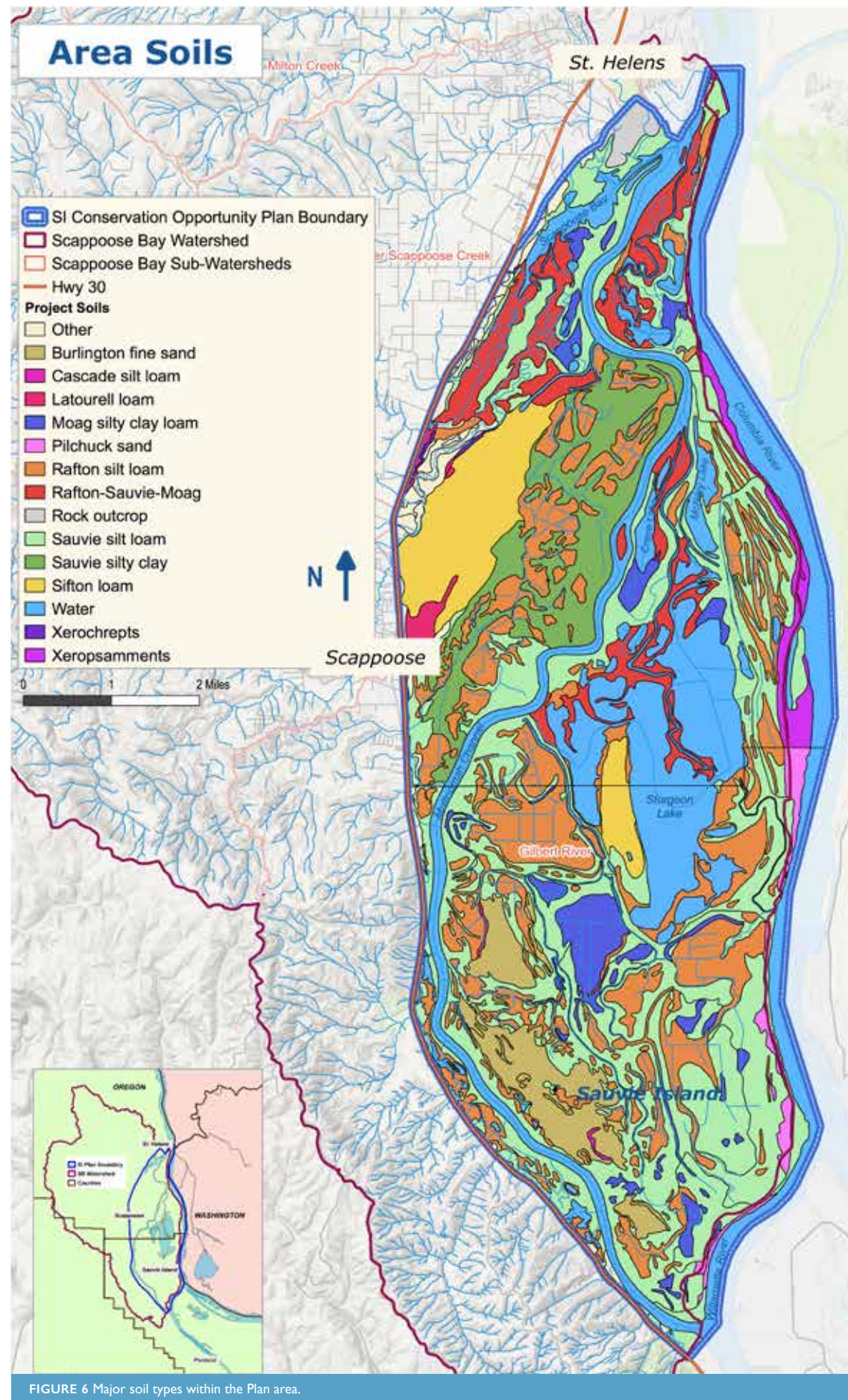


FIGURE 6 Major soil types within the Plan area.

Soils and Geology

Tranquil pastures and quiet farms belie the cataclysmic birth and often changing character of Sauvie Island and the surrounding area. Formed mostly from a series of flood events on the Columbia and Willamette rivers, parts of the island can trace its history back one million years to glacial deposits that also formed the Alameda Ridge in northeast Portland.

The more recent Missoula Floods (15,000-20,000 years ago) originated in glacial lakes which covered much of Idaho and Montana. These floods carried the soils and rocks of eastern Washington into the Portland Basin. Volcanic basalt formations around St. Helens caused water to back up across the entire Willamette Valley, depositing sand and gravel in the area we know today as Sauvie Island. At times, portions of Portland were under as much as 400 feet of water with approximately 100 to 200 feet of sediment left in the area of the island.

As the Columbia and Willamette rivers cut their way through these new deposits, and the Ice Age receded, something akin to the Sauvie Island we know today was formed. However, regular and often major flooding events on both the Columbia and Willamette Rivers moved their channels significantly as they swept away the old Missoula Flood deposits and left new sediment from further up in the basin.

Through time, secondary channels, lakes and sloughs formed on the island and were then covered up. Plants, animals and people of the area evolved and thrived with the roughly-annual flooding and resulting changes in soil composition.

SOIL TYPES WITHIN THE PLAN AREA

Over 85% of all soils on Sauvie Island can be grouped into three soil series – Rafton, Burlington, and Sauvie, while soils in Scappoose Bay Bottomlands are primarily made up of Rafton, Sauvie, and Sifton. Most of these soils are derived from alluvium, or river-deposited materials. Below are descriptions of some of the more dominant and unique soils and how they may affect land use and habitat types.

Rafton

The Rafton soils are one of the youngest soils in the area. Formed as lake beds, these soils were created from the periodic flooding of Sauvie Island and surrounding bottomlands.

Rafton soils are part of the soil order known as “Entisols.” Some refer to them as young soils since they are typically “only” a few hundred to a few thousand years old. Entisols are defined by their lack of any subsurface horizons. Typical soils have multiple horizons (layers) above whatever material the soils were formed upon, while Entisols only have a single horizon on top of parent material. In this case the soil sits on top of silts that have settled out of lake water or Columbia and Willamette River flood waters.

Rafton soils can be found in their natural state while walking around Sturgeon Lake and other natural lakes on Sauvie Island, and along the lower areas of the Bottomlands. These very poorly-drained soils typically make up the “wetland fringe” around more permanent Columbia River and Multnomah Channel floodplain lakes. They are flooded yearly and often for long periods of time between December and June. Due to this yearly flooding and high water table, Rafton soils mostly support wetland plants with very few woody trees and shrubs.

Despite their hydric nature, Rafton soils support a large variety of crops in the agricultural areas on the southern half of Sauvie Island. There, levees prevent the yearly floods and the SIDIC’s irrigation management efforts allow farmers to access fields with Rafton soils much earlier in the year than they could otherwise.

Rafton soils are present in many of the areas used by island duck clubs. Since Rafton soils tend to be on the lowest point of the landscape and easily form ponds, these farm fields attract waterfowl, allowing them to double as hunting sites.

Burlington

There were once sand dunes on Sauvie Island. Over the last few millennia they have evolved into a class of soils known as the Burlington series, named after the small township on Highway 30 just south of Cornelius Pass Road. Mostly located in the southwestern portion of Sauvie Island, these soils formed thousands or even tens of thousands of years ago. As noted earlier, ancient floods deposited material that was then formed into dunes as the wind whipped up and down the Columbia River. Today they are visible as the highest parts of Sauvie Island including the area around Wapato Greenway.

While Burlington is not the most abundant soil series on the island, it may be one of our most important agricultural

resources. Due to their sandy heritage, Burlington soils are very well drained so farmers are able to work on them much earlier in the year than most other soils, with little worry of compaction. With irrigation, these soils can produce almost any crop that the western Oregon climate will allow.

It is not just their sandy nature that makes them so productive. For most of their history, Burlington soils were host to abundant grasslands. The life and death of these grasses, with their deep roots and thick above-ground vegetation, pumped organic matter and nutrients into the depths of the soil creating what is known as a mollisol. Mollisols, also known as prairie soils, formed under grasslands all over the planet. The most well-known mollisols are found in the Great Plains and have created the “bread basket” that is the central United States. On Sauvie Island, Oregon white oak (*Quercus garryana*) trees are often found on Burlington soils. Historically, these oak woodlands and savannas provided diverse habitat for wildlife and the acorns were an important resource to the Native American tribes in the region.

Today, many different crops are grown on Burlington soils including nursery stock, tree fruits, berries, corn and other row crops. Areas not in agricultural production are dominated by Douglas fir, Oregon white oak forests, and white oak prairie.

Sauvie

The Sauvie series is considered a floodplain soil and can be found surrounding areas containing Rafton soils. These poorly drained soils formed as floodwaters receded, leaving sediment high in silt. Sauvie soils are aptly named as they make up nearly 50% of all soil types found on the Island and a large proportion of soils in the Bottomlands.

Historic habitats would have been almost exclusively wet prairie and meadow – dominated by forbs and grasses accustomed to the yearly floods. The Sauvie soils would also have been present where grasses and herbaceous wetland plants gave way to hydrophilic woody vegetation like willows, spirea, and Oregon ash.

When drained for agriculture, farmers use Sauvie soils to grow a variety of grasses, grains, vegetables, and orchards and

nursery crops. While likely never used as a site of permanent residence, evidence has shown that many Native-American encampments were set up on Sauvie soils during the drier months while people gathered wapato, acorns, and fish.

Sifton

Sifton soils make up a large portion of the central area of the Scappoose Bay Bottomlands. They are on low terraces, as well as in deep, well-drained areas. They have a black-loam surface layer and a dark brown, gravelly sand subsoil. The only place on the island where the Sifton series can be found is Oak Island, which sits in the middle of Sturgeon Lake. It is unique among Sauvie Island soils for its high gravel and cobble content – most Sauvie Island soils have virtually no rocks or pebbles. Historically, these soils proved poor for most agricultural activities due to the large cobbles, and Oak Island was mostly used for cattle prior to its purchase by the State of Oregon. The relatively high elevation and well-drained soils have provided the perfect habitat for its namesake, Oregon white oak, despite occasional flooding.

Hydrology and Water Quality

HYDROLOGY ON SAUVIE ISLAND

Historically the soil nutrients of Sauvie Island and the Multnomah Channel Bottomlands were seasonally “refreshed” by heavy upstream rain and snowmelt referred to as “freshets.”

Hydrologic patterns on and around the island have been altered at the landscape scale with significant flood control measures within the Columbia and Willamette River systems, and at the local scale on the island through dikes, levees, road grades and drainage ditches. The frequency, timing, and magnitude of spring freshets have been altered by dam construction and flow controls within the Columbia Basin.

Historically, large portions of Sauvie Island flooded throughout the year, with frequent inundation in the low-lying areas. Figure 7 shows the changes in the annual flow patterns in the Columbia River, illustrating the significant decrease in the spring floods from the late 1800s to present day, after construction of the mainstem dams. The current hydrosystem is managed so there are fewer spring

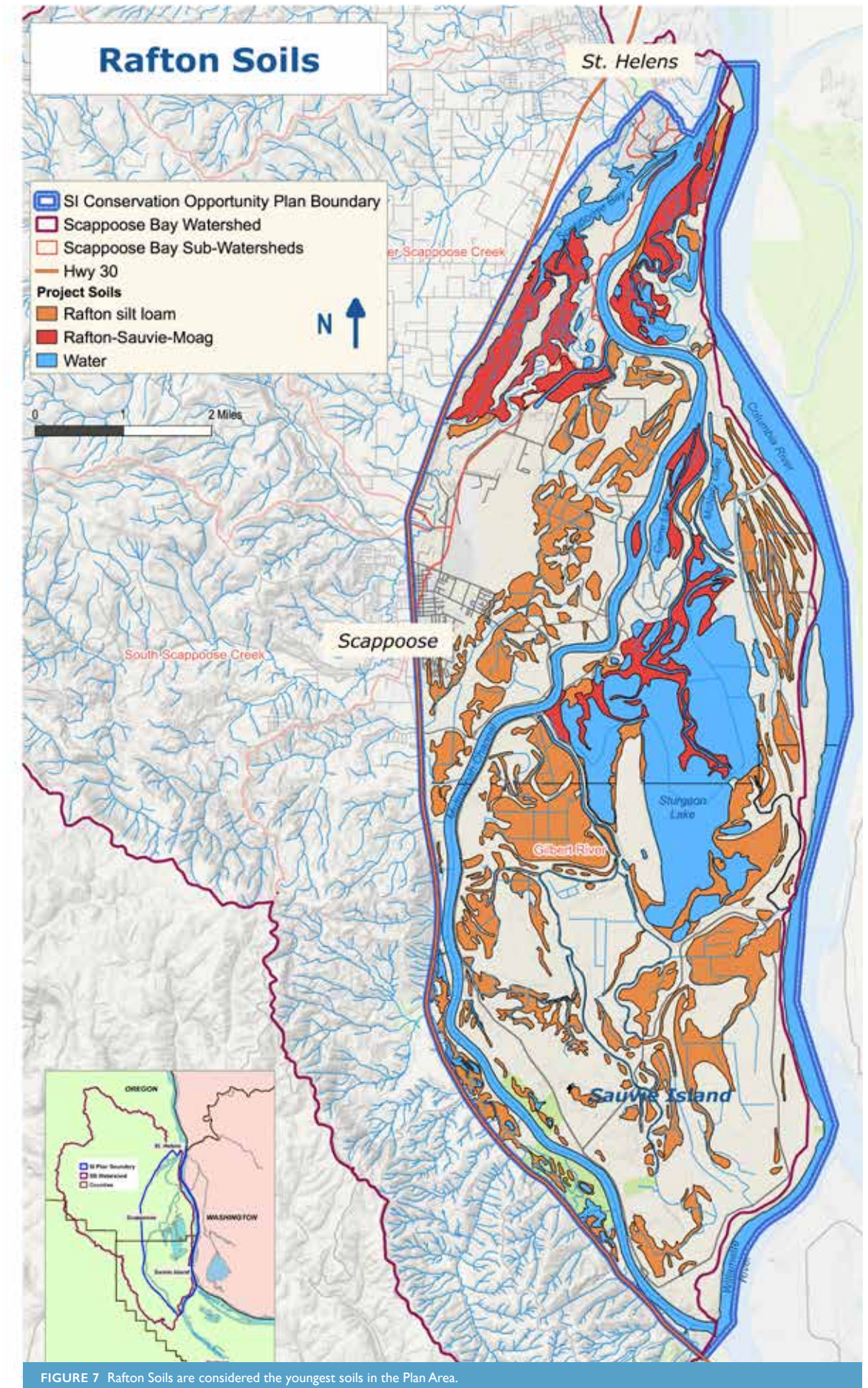


FIGURE 7 Rafton Soils are considered the youngest soils in the Plan Area.

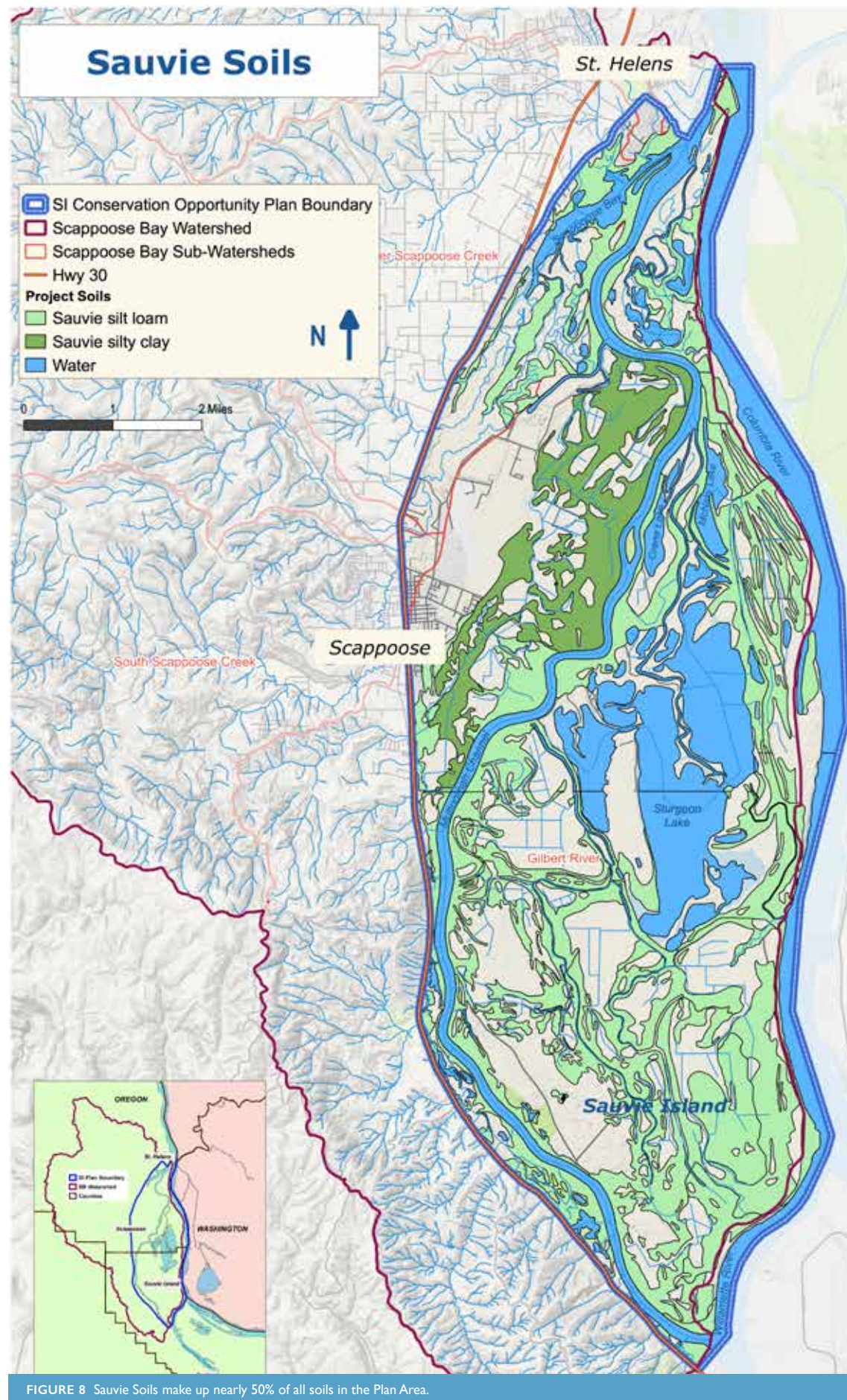


FIGURE 8 Sauvie Soils make up nearly 50% of all soils in the Plan Area.

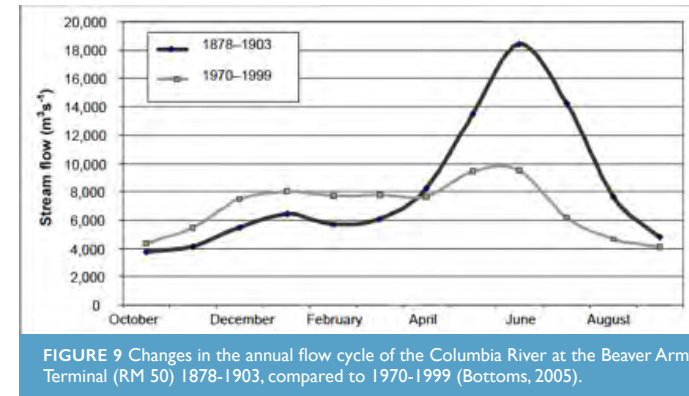


FIGURE 9 Changes in the annual flow cycle of the Columbia River at the Beaver Army Terminal (RM 50) 1878-1903, compared to 1970-1999 (Bottoms, 2005).

freshet “peaks” holding back water for higher river levels throughout the summer.

The map shown in Figure 8 represents the extent of seasonally-inundated areas on the island before larger watershed changes (dams, dikes, drainage), showing the extent of surface flow even during the low-water portion of the year. This is in contrast to the map in Figure 9 which shows the current extent of seasonally-inundated areas in the plan area.

Much of the area’s current hydrology is greatly controlled via drainage systems, including the southern half of Sauvie Island and much of the area known as the Scappoose Bay Bottomlands in the north-central portion of the Plan Area.

SAUVIE ISLAND DRAINAGE AND IRRIGATION DISTRICT (SIDIC)

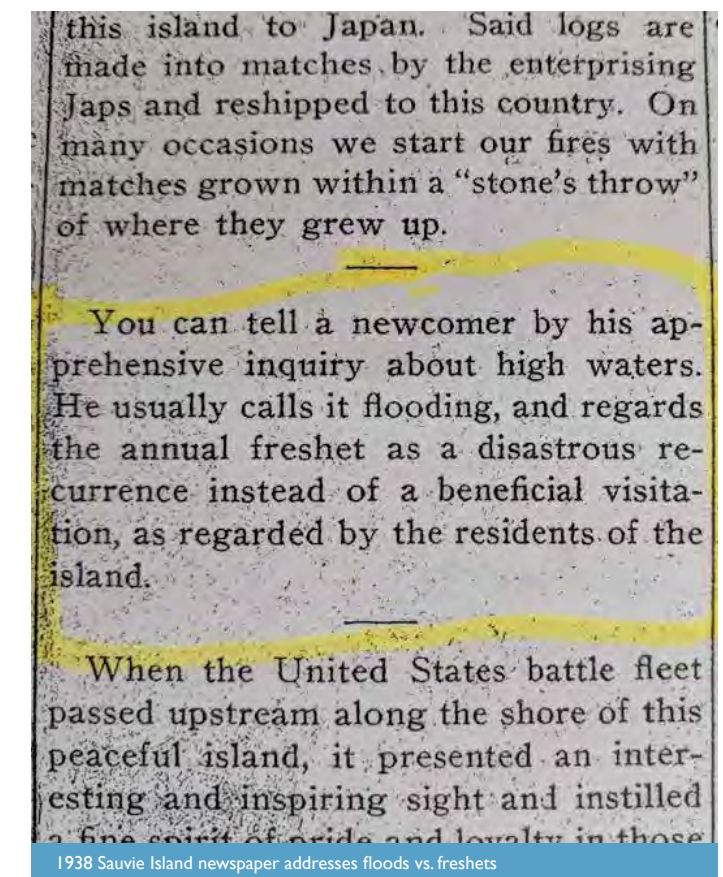
On Sauvie Island, the SIDIC manages water flow in close coordination with the Portland District of the US Army Corps of Engineers (USACE). Water level is controlled through a series of levees, straightened slough channels and an array of pumping stations, including a number of small “lift stations” to facilitate sub-area drainage, and an inlet station bringing water from Multnomah Channel for seasonal irrigation. Farmers have installed an extensive tile network on the south end, connected to the drainage channels, to control water tables for their crops and facilitate spring planting when farm fields would otherwise still be flooded. This network of drainage channels is tied to flow controls and pumps, which carry the water over the dike system and discharge it into Multnomah Channel on the north end during the wet season. All of the drainage channels flow generally north and connect to two primary channels, Gilbert and A-I Channel. The Gilbert River maintains some

of its historic sinuosity, with a highly-developed vegetation corridor along its banks (SIDIC and WMSWCD, 2013, SI Hydrologic Study).

HYDROLOGY ON THE WESTERN LOWLANDS

Although outside the Plan Area, the Tualatin Mountains strongly influence lowland hydrology since they are home to the headwaters of the Multnomah Channel. Numerous small streams drain multiple sub-basins, where slopes decrease from greater than 15% in the upper drainages, to less than 1% at their base on the Bottomlands. Multnomah Channel’s tributary streams have been re-routed and, in some cases, hydrologically disconnected by culverts resulting from the construction of Highway 30, the parallel railroad, agriculture and development. All have altered historic flow patterns.

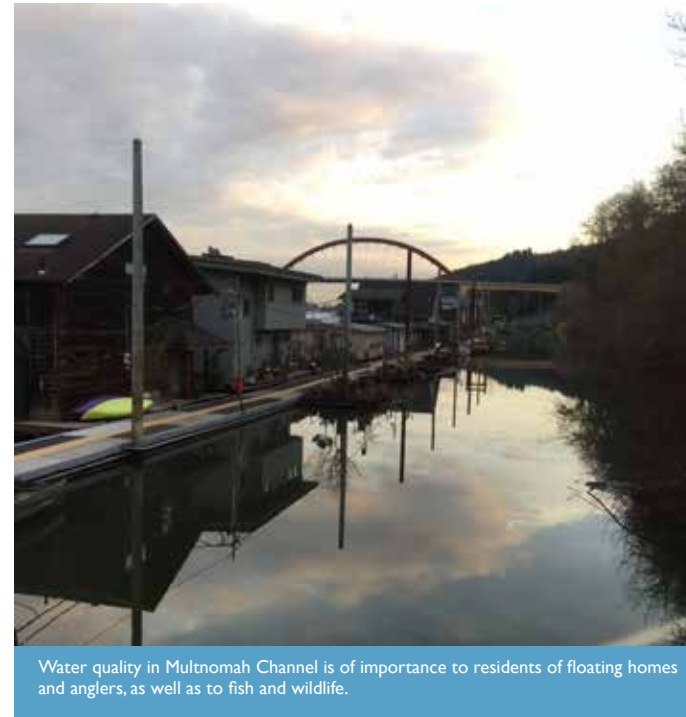
Several restoration projects are in various stages of development or implementation in the area between Highway 30 and Multnomah Channel, primarily to reconnect the channel to lowland wetlands and waterways as off-channel habitat for salmonids, and for turtles and other wildlife.



1938 Sauvie Island newspaper addresses floods vs. freshets

East of Highway 30 and north of Scappoose, much of the hydrology has also been controlled through construction of dikes and levees. An east-to-west oriented dike was constructed by the USACE in the 1930s at the south end of Columbia County between Highway 30 and Multnomah Channel. Originally Jackson Creek and Joy Creek both flowed into a floodplain lake north of this dike. Jackson Creek now flows south through the east side of the City of Scappoose and drains through a culvert under the USACE dike. It then turns east and flows into Multnomah Channel.

Other significant waterways along the western lowlands include McCarthy Creek, Crabapple Creek, Jones Creek, and several sloughs in the Scappoose Bay Bottomlands. The waterways around Scappoose Bay, including Scappoose Creek, remain relatively uncontrolled, but grazing and agriculture pressures have altered historical flow patterns.



WATER QUALITY ON SAUVIE ISLAND

Stream bank erosion along the canals and siltation and high turbidity in Sturgeon Lake are notable water quality concerns on Sauvie Island.

Stream bank stability is influenced to some extent by canal flow regime and maintenance. Lowering canal water levels via pumping and maintenance dredging may destabilize adjacent soils, which are generally made up of fine particles. The effect of operating dredging equipment and the placement of dredged soil materials (spoils) can destroy established trees and other vegetation, increasing the potential of future bank erosion. Spoils are often placed alongside the canal (usually without seeding), which causes additional bank sloughing. WMSWCD is working with SIDIC to establish practices that benefit canal function by improving vegetation management, optimizing pumping regimes and evaluating dredging operations. Non-vegetated farm fields can also be a source of “sheet erosion” after prolonged heavy rains.

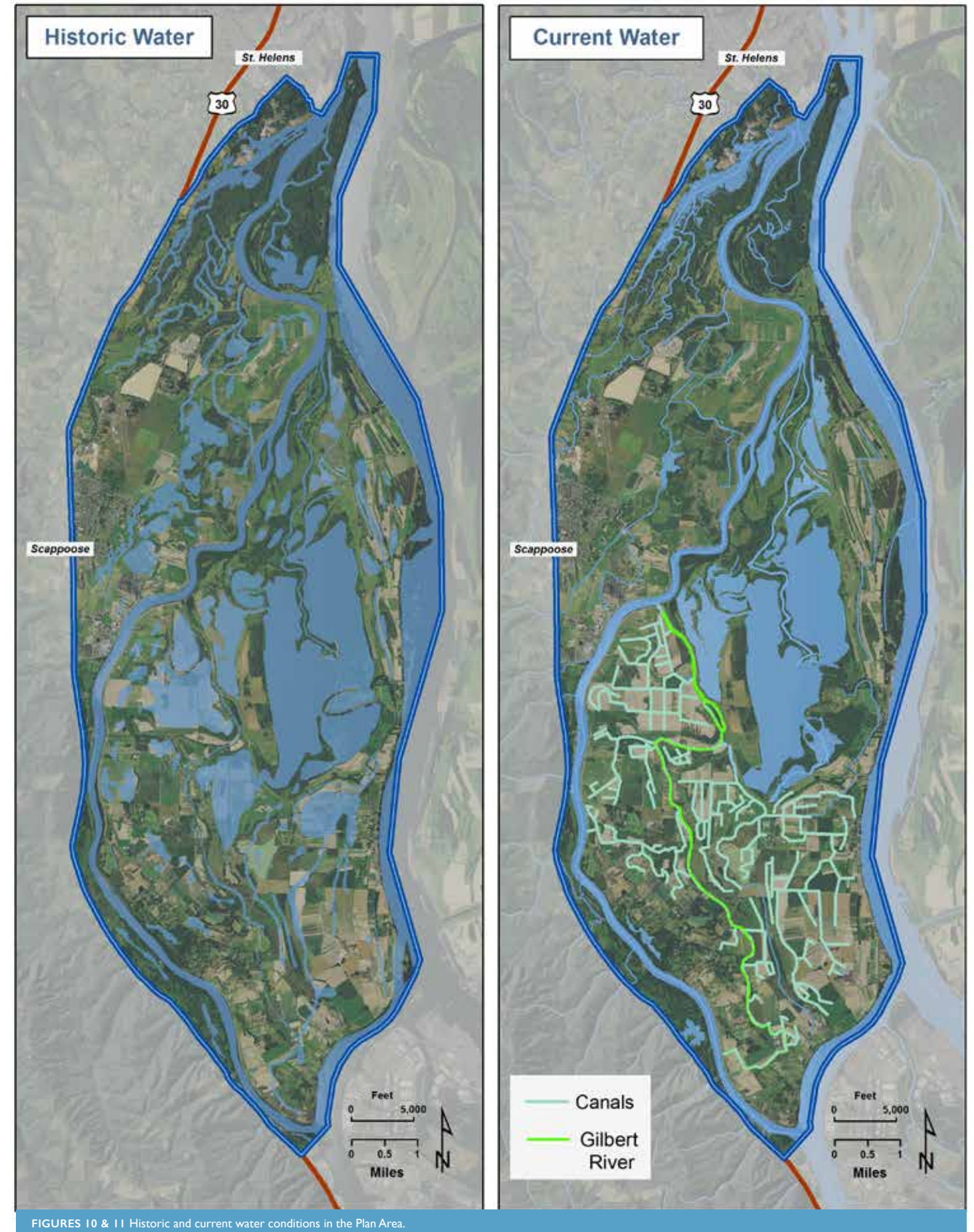
Sturgeon Lake’s upriver flow was cut off from the Columbia River when island levees were constructed in 1941, limiting the flushing action historically present in the lake. Suspended sediments are deposited onto the shallow lake bottom through the Gilbert River. These sediments are re-suspended by the movement of wind and carp, increasing already high concentrations in the water column. Additional concerns in

the lake are algae blooms, high levels of bacteria (Johnson 1985) and elevated temperatures.

WATER QUALITY IN SCAPPOOSE BAY, THE BOTTOMLANDS AND ALONG MULTNOMAH CHANNEL

Water quality data in Scappoose Bay was collected by the Scappoose Bay Watershed Council during June-September in both 2015 and 2016. The data includes temperature, pH, conductivity, dissolved oxygen, turbidity and bacteria. Continuous temperature loggers provided 30-minute-interval data from early June to late September in both years. Additional water quality data was collected in the mainstems and major tributaries of the Scappoose Bay Watershed from 2008-2010; two of the lowest of these sites (Scappoose Creek and Milton Creek) are within or at the edge of the Plan Area.

Elevated temperatures are a consistent problem throughout the bay and lowlands. Warm temperatures limit the growth and development of salmon populations. DEQ regulatory standards for general salmon rearing habitat state that temperatures exceeding 18°C, measured as an average maximum daily temperature over a 7-day period, are considered poor salmon habitat. In 2015 and 2016, temperatures at the mouth of Scappoose Creek were generally above 18°C during the summer months. Temperatures at the mouth of Milton Creek were



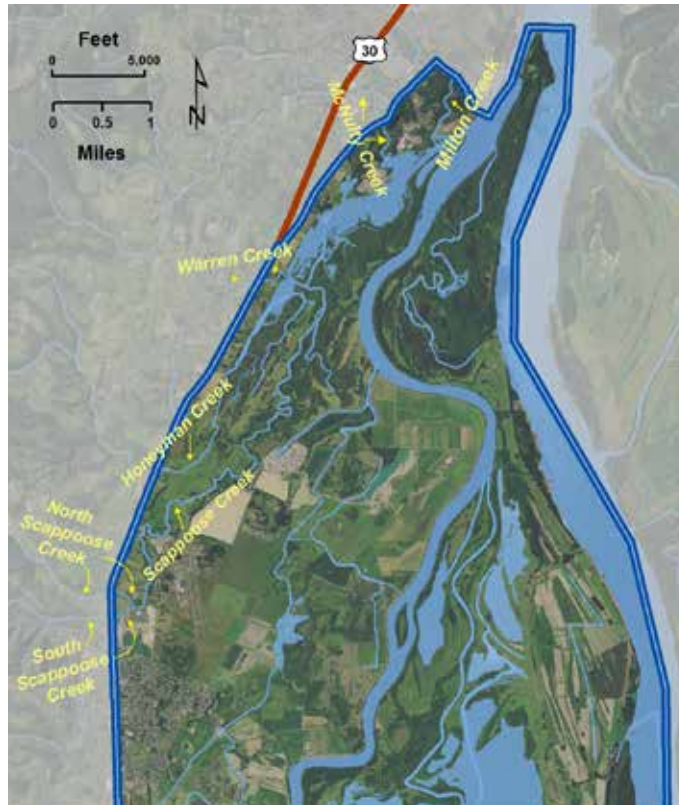


FIGURE 12 Current water in the north half of the Plan Area.

somewhat lower but also had a significant number of days with maximum temperatures above 18°C. Data at four other sites throughout the bay, but particularly the upper end, show elevated temperatures of significant concern. Temperatures were somewhat lower in 2016 than in 2015.

Turbidity and bacteria levels are also an issue in Scappoose Bay, and are spatially greater at the upper end of the bay than the lower end where Multnomah Channel and the Columbia River have a larger influence. These are likely due to upstream inputs, cattle grazing up to and in the tidal areas, and poor vegetation cover around the bay itself.

Water quality in Multnomah Channel has not been well documented. The channel is a distributary (outflowing branch) of the Willamette River and directly downstream from the Portland Harbor Superfund Site, a 10-mile stretch of the Lower Willamette River heavily polluted by industrial use. In January 2017, the EPA announced a Record of Decision presenting a final cleanup plan for this stretch of the river. The selected remedy for treating contaminated soils at the river bottom uses a combination of technologies, including capping, dredging or excavation, in-situ and ex-situ treatment, as well as natural recovery (EPA, 2017).

To begin the progress of collecting water quality data for Multnomah Channel, WMSWCD and SBWC are working with several residents of floating homes along the channel to measure the surface and bottom water temperatures, take clarity readings on a weekly basis and collect monthly samples, which are analyzed for turbidity and bacteria. Six sites along the channel, from just downstream of the Sauvie Island Bridge to Scappoose Bay, are included in the study.

WMSWCD has monitored temperature and bacteria levels in Miller, McCarthy, and Crabapple Creeks in the Tualatin Mountains since 2009. Data show that Miller Creek has the least degraded water quality of those tested along the Tualatin Mountains, while elevated temperatures are a concern in the lower reaches of McCarthy Creek and at the single monitoring site at the base of Crabapple Creek.

Plant Communities (Land Cover)

Extensive information exists from herbarium records regarding what plants were found in the Plan Area from the late 1800s to present day (These records are included in the **Appendix**). However, how and in what percentages those plants were distributed among various habitats is not well documented.

Historical vegetation in the Willamette Valley is documented by Christy, et al (2011) from several sources, including General Land Office (GLO) surveys from 1851-1955. The Plan Area land is included in the Christy study, but not in a well-defined way. Major classes of vegetation identified on Sauvie Island include prairie, riparian forest, marsh/shrub swamp and upland forest.

Major plant communities and land cover classes identified for the Plan Area are shown on Figure 13. Oregon white oak concentrations and plant communities are distinguished as a separate class due to the significant loss, current importance and regional interest in protecting and preserving these habitats. Additional land cover classes are derived from multiple sources, including the Institute for Natural Resources, Christy (2017), and the working knowledge of local residents.

PLANT COMMUNITY DESCRIPTIONS

Oak

The Oak class designates areas where Oregon white oaks are a key component of the landscape. This class includes oak woodlands, oak prairies and oak savannahs. The understory and open areas typically consist of herbs and forbs, or an understory of shrubs – mostly snowberry and more recently, non-native blackberry. While white oaks are often associated with higher elevations, they can tolerate occasional flooding and are also found in the lower areas that were seasonally flooded in pre-settlement conditions.

Historically, these areas supported a diverse understory of native forbs. Additional information on oaks can be found on page 35 and on the Resource page.



The many large oaks in the area, some over 300 years old, still remain because generations of landowners appreciated and protected them.

Wet Prairie

Wet Prairie is a designated wetland class that occurs at lower elevations where clay soils create a seasonally perched water table. Clay soils are predominant in this land cover class on the island. This produces minimally flooded plains



Two thirds of Sauvie Island was once wet prairie, but nearly all of these areas were converted to pasture or croplands after the dikes and dams were built. A few remnants of this habitat remain in Columbia county.

that are inundated in early spring and usually dry out by late-spring or early-summer. Before intensive water control efforts, wet prairies covered large portions of Sauvie Island, but almost none exist at present. These areas were flooded for one or two months every year during the annual “spring freshets” that were fueled by a seasonal surge of water from snowmelt throughout the Columbia Basin. Wet prairies are dominated by herbaceous wild flowers and grasses such as tufted hair grass and Columbia sedge. Invasion by non-native reed canary grass (*Phalaris arundinacea*) is an extensive problem in these habitats. These areas are important for migrating and over-wintering waterfowl.

Emergent Wetland

Emergent Wetlands are continually or frequently inundated by water. They are dominated by herbaceous plants, typically rooted underwater with vegetation that emerges above the water. These are typically around the edges of the island’s numerous large and small lakes where the water draws down by mid- to late-summer. Emergent wetland can also be found along the shallow margins of ponds. Perennial plants such as rushes, sedges, beggars tick and sneezeweed are typically found in these areas.

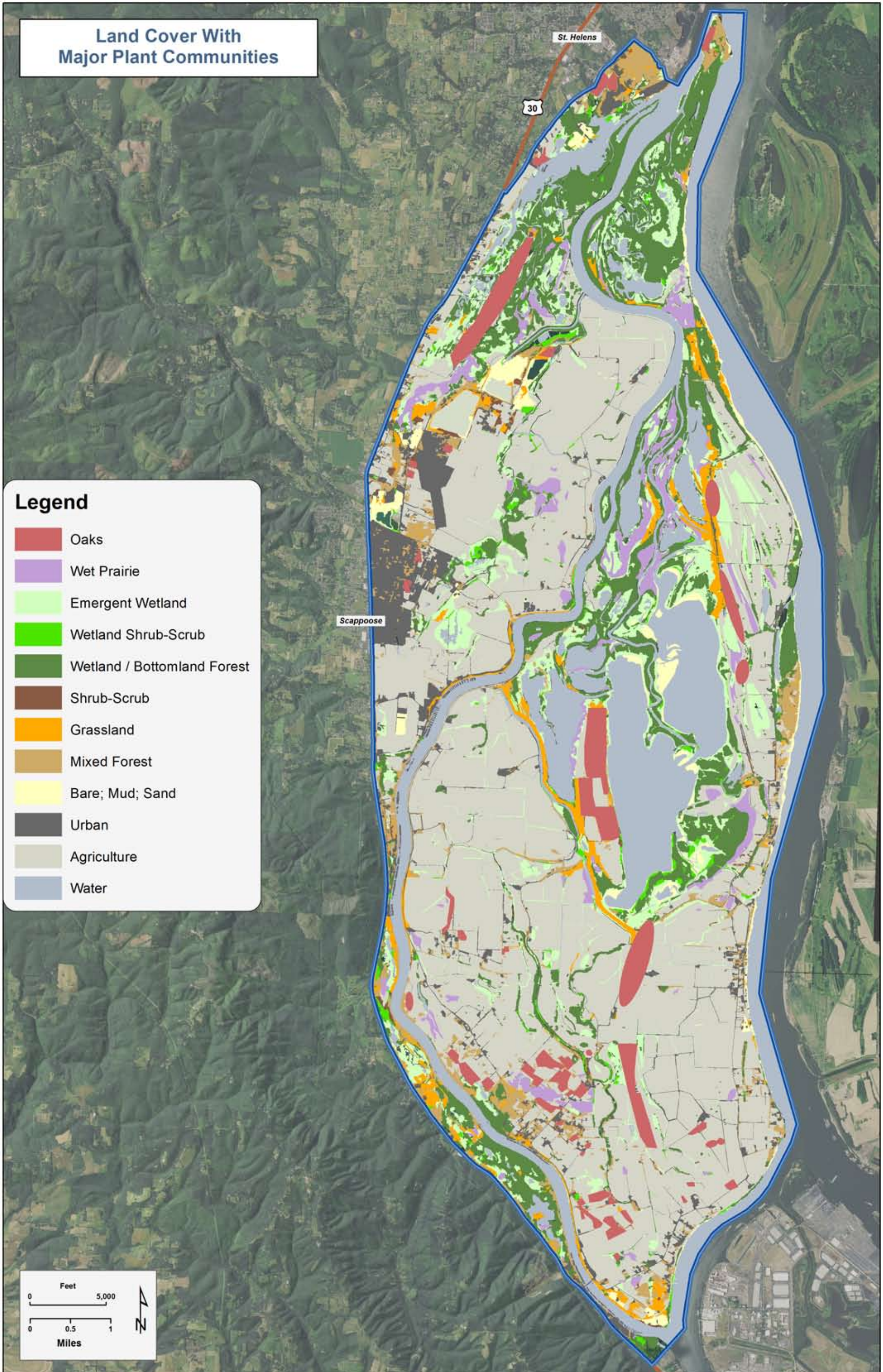
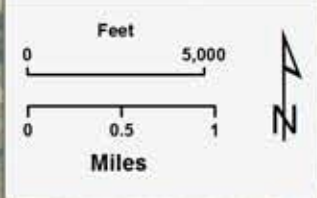
Wetland Shrub-Scrub

These are low-lying, poorly drained areas and lake shores, dominated by woody vegetation less than 20 feet tall. These areas may flood occasionally, but standing water is generally infrequent. Vegetation consists of true shrub species such as Douglas spirea, red elderberry, red-osier dogwood, snowberry and various willow species.

Land Cover With Major Plant Communities

Legend

- Oaks
- Wet Prairie
- Emergent Wetland
- Wetland Shrub-Scrub
- Wetland / Bottomland Forest
- Shrub-Scrub
- Grassland
- Mixed Forest
- Bare; Mud; Sand
- Urban
- Agriculture
- Water



Wetland/Bottomland Forest

These forests are in low-lying areas exposed to frequent flooding and with a high water table, dominated by mature trees 20 feet or taller. There is generally an overstory of trees with an understory of shrubs and herbs. These areas are sometimes referred to as lowland forests. The dominant tree species are deciduous, including Oregon ash, black cottonwood, Pacific willow and Sitka willow. Understory trees and shrubs can include Suksdorf hawthorn, Douglas spiraea, red-osier dogwood and snowberry.

Shrub-Scrub

Shrub-Scrub communities are dominated by shrubs, grasses and herbaceous plants found at elevations not prone to flooding. It may be a mature vegetation type that remains stable over time or a transitional community that occurs temporarily as the result of a disturbance, such as fire. This plant community is not considered historically native to Sauvie Island. However, in present day hydrological conditions, some areas that were historically Wet Prairie now function as Shrub-Scrub. Managing these areas to encourage appropriate native flora can provide food, shelter and resting areas for many birds and animals, and make these a valuable part of the current ecosystem. Appropriate species for planting could include Nootka rose, red-osier dogwood, Douglas spirea, Pacific ninebark and Oregon grape.

Mixed Forest

Mixed Forest denotes wooded areas found in the higher elevations of Sauvie Island that have a mix of both deciduous and coniferous tree species. Large tree species include Douglas fir, western red cedar, grand fir, Oregon white oak, Pacific yew and big leaf maple. Understory trees include cascara, Indian plum and Pacific dogwood. A rich mix of forbs blankets the understory in a healthy mixed forest. A small portion of these areas are primarily coniferous forests extending from adjoining Forest Park.

Grassland

These are large expanses of land dominated by native grasses, mixed with some low-lying herbs and forbs, with

only occasional shrubs or trees. As these lands were managed for pasture in the last decades, they are currently dominated by a mix of non-native pasture grasses and invasive weeds. Conservation management practices in these areas encourage native species. Although these mostly non-native areas offer some habitat benefits, they support a wider range of species after native grasses and forbs are reintroduced. Areas of native tufted hair grass can still be found on the north part of the island.

Appendix 5 has much more detailed information about plant communities, including plant and wildlife species found in each community and non-native plants that invade them.

Oak Habitat in the Plan Area; Historical and Present Day

Oregon white oak habitats have experienced a dramatic decline since settlement began in the 1800s. The moist, fertile soils of the flat land where oaks grow has led to significant clearing of oaks over the years. Fast-growing conifers have also increased due to a reduction in regular burning by Native-Americans (Thompson, 2007). Figures 15 and 16 show the original extent of oaks, based on historical maps and references, and the current extent of oaks, as mapped through regional efforts.

Wildlife

Sauvie Island has been designated as an Important Bird Area (IBA) by the National Audubon Society, as well as a Priority Turtle Conservation area by the Oregon Native Turtle Working Group. It is home to the 11,643 acre Sauvie Island Wildlife Area (SIWA), which occupies most of the northern part of the island. The island's wetlands and oak-lands all provide important wildlife habitat. Many of the wetlands in the document area are important to threatened and endangered salmonids. Columbia white-tailed deer, also a species of concern, use the area.

The Scappoose Bay Bottomlands Conservation and Restoration Plan (2004, TWC) details important wildlife and fish species in the northern part of the Plan Area. The report includes lists of fish, amphibians, reptiles, birds, and mammals that are tracked, known to exist, or expected to be present on Sauvie Island and in the Scappoose Bay Bottomland

habitats. The lists include 10 amphibians, 15 reptiles, and over 200 bird species.

The SIWA, including the 3,000-acre Sturgeon Lake, is an important stop-over for migrating waterfowl and is habitat for wintering waterfowl, swans, herons, sandhill cranes, bald eagles and several warbler species and other songbirds. Waterfowl numbers reach 200,000 and shorebird numbers reach 30,000. Other lakes, wetlands and tidal properties within the document area also provide a large number of acres of habitat for listed fish species, and waterfowl and other birds (See **Appendix 1** for a complete list of mammals, birds, reptiles and amphibians in the Plan Area).

There are multiple wildlife viewing opportunities in the document area – Wapato Greenway, Oak Island and SIWA on Sauvie Island; in the channels of Scappoose Bay, and at Chapman's Landing or along the Crown Zellerbach Trail east of Scappoose.

Numerous species of concern use habitats in the document area. A detailed list of these as well as action steps to

increase or stabilize their populations is found in **Appendix 3**.

Conservation Projects

Many entities are involved in conservation projects through the Sauvie Island and western lowlands area, including major public land managers, WMSWCD and private landowners. It is helpful for individuals working on these projects to be aware of other projects occurring in the area, and to share information, expertise, strategies, and resources that can support multiple concerns.

A comprehensive list of conservation projects that have been completed or are in progress, is shown in **Appendix 6** and mapped in Figure 14. The list includes project lead, major and minor goals, and project location. Major project types include fish passage correction, wetlands and riparian restoration, wildlife monitoring, invasive species control and oak woodland enhancements.



High value farmlands are protected from development by state and county land use laws.

Restoration Projects

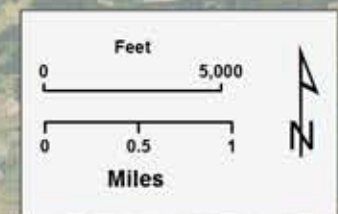
Legend

Restoration Sites

- Fish Passage/ Habitat
- Wetland
- Riparian
- Shrub-Scrub Upland
- Oak Woodlands/ Savannah
- Mixed Forest
- Grassland
- Shorebird Habitat

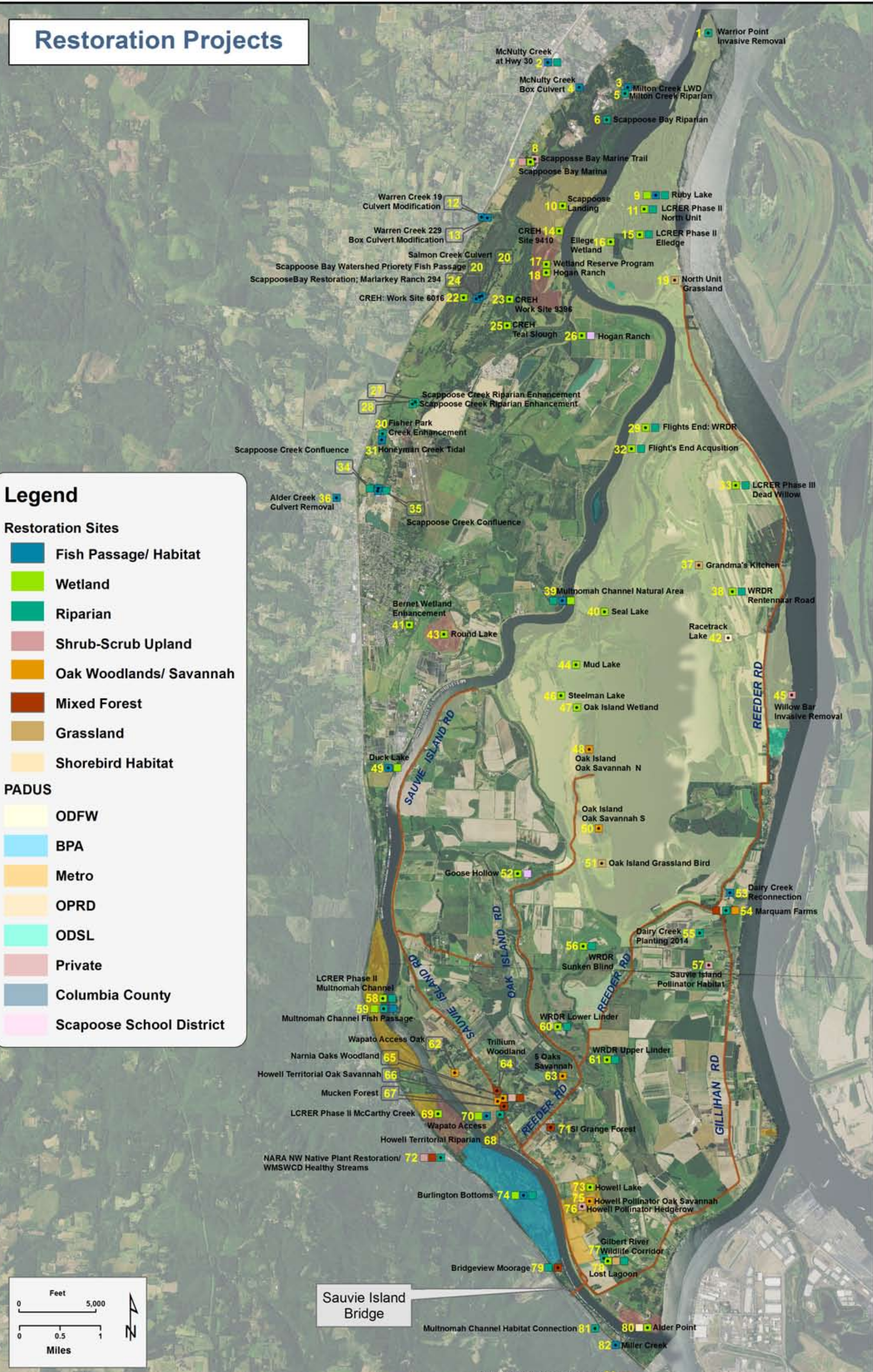
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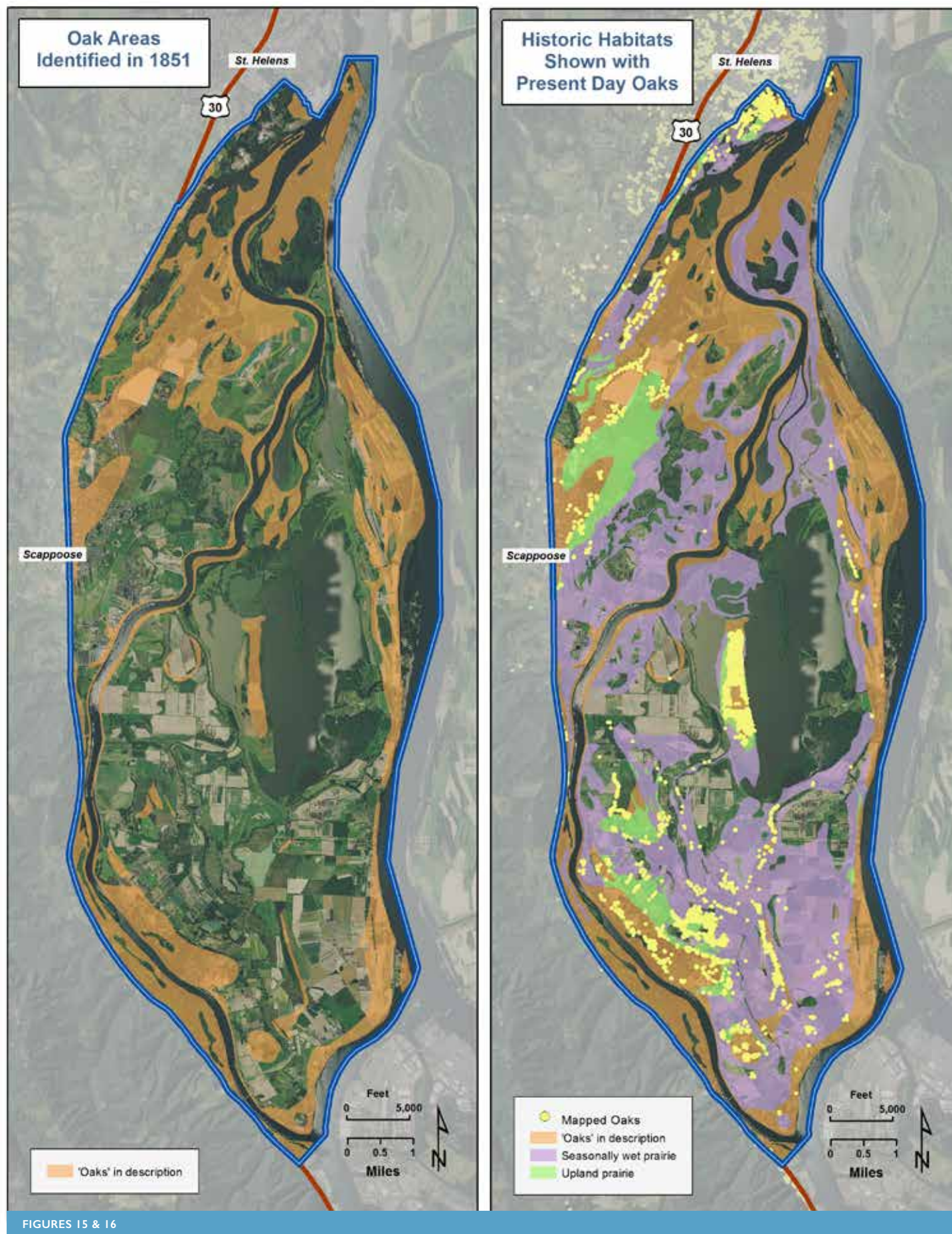
- ODFW
- BPA
- Metro
- OPRD
- ODSL
- Private
- Columbia County
- Scappoose School District



Sauvie Island Bridge

Portland Garlic Mustard Control 83





FIGURES 15 & 16

Here is a summary of the number of projects by type:

Project Type	Number of Projects
Fish Passage/Habitat	19
Grassland	4
Mixed Forest	4
Oak Woodlands/Savannah	7
Riparian	13
Shorebird Habitat	1
Shrub-Scrub Upland	4
Wetland	31
Total	83

It is the goal of this document to maintain and update the project list as much as possible and to increase communication among those working on the varied conservation projects. Figure 14 is a map of many of the known restoration projects.

Sauvie Island Rural Area Plan and Zoning

Sauvie Island Rural Area Plan

The Sauvie Island/Multnomah Channel Rural Area Plan (SIMC Plan) includes those portions of Sauvie Island and along Multnomah Channel east of Highway 30 that are within Multnomah County (2015, Multnomah County). Agriculture is the dominant land use, but the ODFW Wildlife Management Area is included, as are multiple water uses from secluded wetlands to marinas along the channel. The rural area includes approximately 15,400 acres of land and several thousand acres of water.

The SIMC Plan was updated from 2013-2015 by Multnomah County planning staff, with support and input from multiple landowners, land managers, and county administrators. The updated plan informs policies, zoning codes, and transportation improvements for the area over the next 20 years. The updated plan consists of six chapters: Agriculture and Agro-Tourism, Multnomah Channel-Marinas and Floating Homes, Natural and Cultural Resources, Public and Semi-Public Facilities, Transportation, and Policy Tasks. There are six supporting background appendices.

Chapter 3 of the SIMC Plan describes natural resource and cultural resource concerns and sites. The Natural & Cultural Resources Policy Framework details policies to address identified concerns (See sidebar listing of natural resource policies in the SIMC Plan).

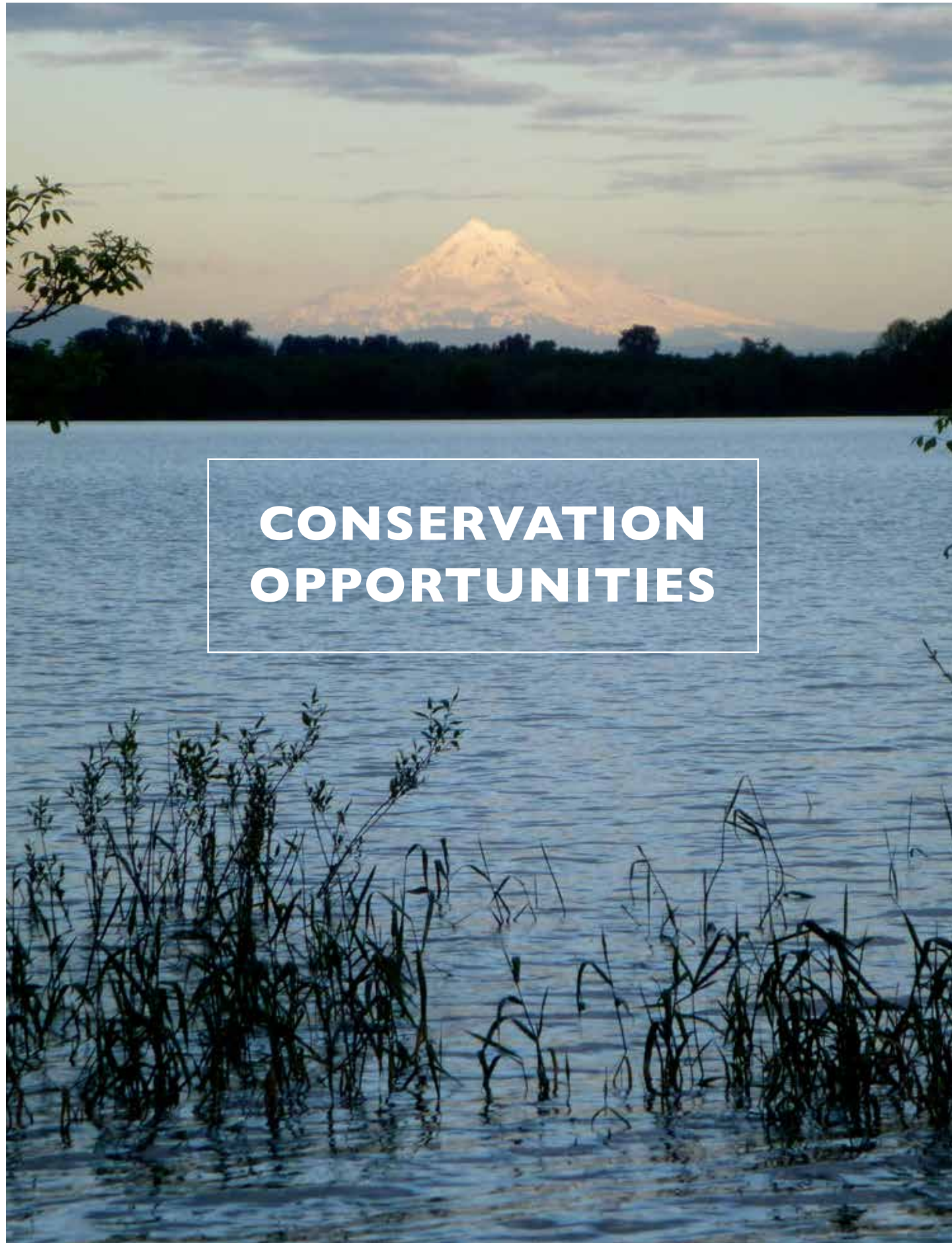
The complete plan can be accessed on Multnomah County's website.

More recently, policies from the SIMC Plan were incorporated into the Multnomah County Comprehensive Plan, which covers all unincorporated areas of the county. Almost all of the private land on the island is zoned either Exclusive Farm Use (EFU), with a minimum lot size of 80 acres, or Mixed Use Agriculture (MUA), with a minimum lot size of 20 acres. EFU lands are devoted exclusively to farming and contribute in a substantial way to the commercial agricultural enterprises of the area (nursery crops, food crops and livestock). MUA designates rural residential lands capable of supporting agriculture at a much smaller (hobby farm) scale. To encourage small scale farming on MUA lands, Multnomah County and Columbia County offer a farm tax deferral for the acreage that is in farm use.

Wildlife Habitat Conservation and Habitat Management Deferrals

Wildlife Habitat Conservation and Management deferrals, with the same tax benefits as farm deferrals, are offered on EFU land. To qualify, a plan detailing what will be done and how wildlife will benefit must be approved by ODFW and filed with the county (See Resource page for a link to further information on ODFW and Multnomah County deferral programs).

There are ample opportunities for habitat conservation and enhancement, even on land that is in farm deferral. WMSWCD has worked with landowners on the island to plant pollinator-friendly hedgerows, control weeds in remnant woodlands and wetlands, plant native plants along canals as part of the Healthy Streams Program, and develop conservation plans that detail ways to provide habitat for birds and other wildlife. Other opportunities for assistance are available and described in multiple places in the **Conservation Opportunities** section below.



CONSERVATION OPPORTUNITIES

Sauvie Island and the Multnomah Channel Bottomlands are home to a diverse set of habitat types supporting multiple plant, wildlife and fish species. All of these habitats provide opportunities to restore and enhance native environments on both public and private lands.

The following sections describe key concerns, their importance, past and current accomplishments, and actions steps for future improvements.

NATIVE VEGETATION

Background

Species of native plants on Sauvie Island and the Multnomah Channel are relatively well-documented, starting with the early days of settlement. The author of the first Flora of the Pacific Northwest, Thomas Howell, was a Sauvie Island resident, and with his brother Joseph, thoroughly botanized this area in the late 1800s.

The undeveloped wetlands, swales and wet prairies of the area were, and in some cases, continue to be, places where rare species can be found. Ecologically and culturally significant species such as Oregon white oak continue to have a meaningful presence on Sauvie Island and throughout the Plan Area, despite challenges. Some landowners and managers are actively planting and protecting these increasingly rare trees and their associated ecosystems. Historically, both Oregon white oak acorns, camas and wapato (which grows in the area's wetlands) were harvested locally by Native-Americans as an important food source. There is renewed interest on the part of native communities to continue some of these practices.

Before the construction of dikes and drainage tiling to allow for farming and habitation on the island, much of Sauvie Island was seasonally-flooded wet meadow or emergent wetland, with associated native vegetation.

Protection, restoration and enhancement of native plant communities is extremely important because of their value to wildlife and to our shared cultural heritage, and is a priority of all conservation agencies that own property



We know what plants are native to the Sauvie Island, in large part, due to the efforts of Island residents Thomas and Joseph Howell, who thoroughly documented the island's flora in the late 1800s. Thomas Howell authored the "Flora of the Pacific Northwest" which was the first accounting of all northwest plant species.

or work with landowners on the island. To date, many restoration efforts have focused on planting shrubs and trees and managing invasive weeds, allowing for the survival of new native woody plants and the passive restoration of herbaceous vegetation. Manipulation of ground surface elevations and disturbance regimes such as flooding have also been used in a few cases to shift conditions so they are more favorable to native species.

Once competing invasive species are significantly controlled at a given site (often a multi-year effort), attention can turn to active restoration of native herbaceous plants. Ideally, efforts to restore native herbaceous plants are an integral component of most restoration projects and include attention to grassland, understory, and wetland plants such as wildflowers, grasses, sedges and rushes.

GOAL:

Restore and enhance native plant and wildlife communities.

Current Status and Recent Work

Sauvie Island Habitat Partnership's education and plant identification projects collaborate with the Oregon Flora project and the Native Plant Society of Oregon to consolidate native plant records and conduct additional plant surveys. Educational efforts also occur through the SBWC's Native Plant Nursery in Scappoose, which conducts outreach and sells low-cost native plants.

WMSWCD provides funding for restoration efforts focused on riparian areas through its Healthy Streams Program, as well as numerous plantings of trees, shrubs and native grasses along hedgerows, in upland forests and wetlands, and along Dairy and McCarthy Creeks.

Additional active projects include:

- Metro has restored native plants to many of its properties on Sauvie Island and the Multnomah Channel Bottomlands.
- OPRD has conducted plant surveys at Wapato Greenway, and removes invasive plants to allow native species to thrive (with assistance from SIHAB volunteers).
- SIHAB plants native species at Wapato Greenway, on the SIWA and at Sauvie Island School.
- Educational efforts by WMSWCD include Oak Quest mapping, school field trips to Sauvie Island Center, and planting a native habitat garden at Sauvie Island School.



Students from Sauvie Island School planted native wildflowers on Oak Island.

Priority Actions

Education, combined with on-the-ground action, is necessary to increase the pace of native species restoration. Specifically:

- Increase education and outreach efforts to landowners and visitors to encourage appreciation of existing native plants and understanding of their benefits.
- Widely distribute the comprehensive plant list produced as part of this plan.
- Develop information on the percentages of various types of plants that should be present in diverse habitats.
- Seek additional funding sources for native plant projects on both public and private lands, and recruit additional landowners willing to participate in projects to increase and enhance native species on their property.
- Encourage landowners to use existing resources to integrate native plants into landscapes whenever possible.

INVASIVE SPECIES

Background

As settlers moved to the area, starting in the late 1800s, they brought with them many non-native plants. Some, brought unintentionally, were the same agricultural weeds battled east of the Rockies. Some arrived on ships' ballast. Others, like Armenian (previously known as Himalayan) blackberry and English and Irish ivy, were brought intentionally. In addition, humans introduced bullfrogs, nutria, starlings, carp, red-eared slider turtles and other animal species that can out-compete native wildlife species for habitat and food. New invasive species continue to appear. Some new plant invaders, like Italian arum and lesser celandine, come in through the nursery industry's quest for attractive new garden plants. Others move in from other geographic areas, such as insects that hitchhike on firewood or snails on recreational boats.

Invasive weeds create headaches for home gardeners and lost productivity for farmers, displace native plants and degrade natural habitats. They spread aggressively and often

create monocultures that greatly diminish the ecosystem's ability to support diverse plant and wildlife species and to support and maintain healthy soils. They pose economic costs to landowners and managers and agencies. Early detection and control of aggressive weeds is critical.

Waterways are especially susceptible to plant invasion because many weed species spread via floating plant material, such as seeds and root fragments. Invasive false indigo bush, for example, has spread along the shoreline of Sturgeon Lake and Dairy Creek. Purple loosestrife has invaded a section of the Willamette River shoreline on southern Sauvie Island, as well as other locations. Invasive animals such as the New Zealand mud snail, Zebra and Quagga mussels and the red swamp crayfish, native to the Gulf Coast, also spread via water.

See **Appendix 4** for a detailed list of invasive species known to occur on Sauvie Island. These species are likely representative of species that also occur throughout the Scappoose Bay Bottomlands.

GOAL:

Significantly reduce the number of sites with predominant invasive vegetation and decrease invasive species (vegetation and wildlife) over the entire Plan Area through targeted treatment and landowner encouragement and education. Focus on areas with the greatest ecological significance while also capturing enthusiasm and honoring the priorities of interested landowners. Where possible, replace non-native species with native ones.

Current Status and Recent Work

Significant progress has been made to reduce invasive vegetation in the Plan Area over the past decade. Major efforts by WMSWCD, SIHAB, SBWC, ODFW, OPRD, CREST and Metro have established programs and projects that work to:

- Eradicate EDRR species (Early Detection-Rapid-Response program of the ODA Noxious Weed Control Program) and other priority weeds.
- Reduce ivy infestations, particularly along forested areas.
- Use biocontrol methods to control invasive populations along waterways; an example is the control of purple loosestrife in Scappoose Bay.



The Tuesday Morning Weed Warriors have been at it for four years, battling ivy and other invasive plants on Sauvie Island and along Highway 30. Here, they gloat over a pile of newly-pulled ivy at Wapato Greenway Access Area.

- Test effectiveness of controlling water elevations to lessen reed canary grass.
- Educate and inform landowners and land managers of specific techniques to reduce invasive species.
- Implement wetland restoration projects that reduce ground surface elevation.
- Control efforts for Japanese knotweed, blackberry, thistle and other invasive weeds in the Sauvie Island Wildlife Management Area.

WMSWCD's Healthy Streams program specifically supports efforts along Sauvie Island canals, a remnant slough and a large pond for intensive control of invasive weeds and native vegetation restoration along waterbodies.

Priority Actions

- Control of invasive species will continue to be an ongoing effort on many fronts. A combination of identification, increased knowledge of specific invasive species and control methods, and targeted treatment are all important elements to address invasive species. Specific suggested actions include:
- Control infestations of all EDRR target species in the Plan Area by educating landowners and land managers on how to identify them (through the web, EDRR targeted events, mailings, etc.).
- Expand identification and reporting efforts to locate key invasive species infestations, particularly in priority

TARGETED INVASIVE SPECIES

Some of the aggressive weeds found on Sauvie Island and the Scappoose Bay Bottomlands are considered “Early Detection, Rapid Response” (EDRR) species targeted for immediate eradication by WMSWCD. All EDRR weeds are priorities for control because they pose ecological and/or economic risk to our region and are still limited enough in extent that they are more cost-effective to control. These include **common reed**, **water primrose**, **pokeweed** and **milk thistle**. For a full list of EDRR species, see the Resource page.

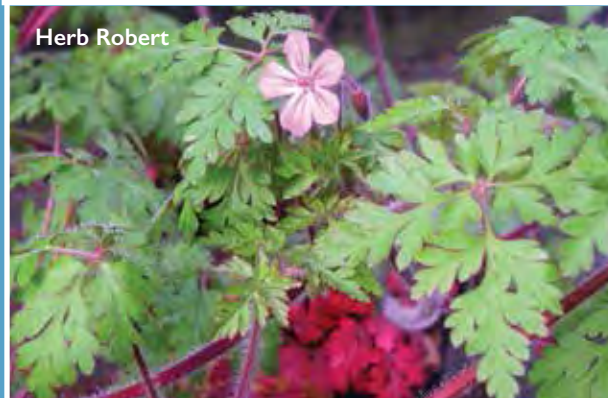
Other more common invasive weeds are managed by landowners as part of a larger restoration or farm conservation planning project with assistance from partner agencies such as WMSWCD.



Japanese Knotweed



Purple Loosestrife



Herb Robert

- Common weeds like **English/Irish ivy** and **Old Man’s Beard** can climb important native tree species, robbing them of water and sunlight and causing them to fall and die. **Armenian blackberry**, **Japanese knotweed**, **reed canary grass**, **purple loosestrife**, **false indigo bush**, and **yellow flag iris** are other invasive weeds found along shorelines, creek banks and ditches. These weeds are typically found as monotypic patches and are less able to nourish and hold soils in place as compared to a matrix of diverse native plants and roots. The result is a greater risk of erosion, particularly along canals, where vertical banks are prone to sloughing.
- Certain aquatic weeds, such as **South American waterweed** and **Eurasian watermilfoil** can choke waterways, which has been documented in a slough on the island and in small amounts throughout Multnomah Channel.
- Other invasive weeds include **herb Robert**, **shiny geranium**, **garlic mustard**, and **spurge laurel** which are invaders of woodlands, including those containing critically important Oregon white oak. Invasive trees, such as **English holly**, **hawthorn laurel** and **Tree of Heaven** spread quickly and compete with native species for space and resources.

See Appendix 4 for a matrix of invasive species found in our area.



The largest old-growth ivy vine on the island, found in this stand, was almost 7 inches in diameter.

habitats such as oak woodlands, riparian and wetland areas, and especially where infestations threaten the health of priority trees or sensitive species.

- Provide cost-share and technical assistance programs for private landowners, targeting invasive species removal, followed by native or appropriate non-native planting and management.

Work with land management agencies to develop and implement increased invasive species control plans. Focus efforts on imperiled ecosystems and the restoration of ecosystem services, such as plants for pollinators.

OAK SAVANNAH AND WOODLAND

Background

Sauvie Island and the Multnomah Channel Bottomlands are some of the remaining bastions of mature native oak trees in the north Willamette Valley. The Oregon white oak trees, many of which are more than 300 years old, were highly valued by Native-American tribes who lived in the area,

and are still standing, in many cases, because they have been respected by generations of farmers and landowners. Native-Americans harvested the acorns, and the camas bulbs, seeds and berries found in adjacent open areas.

In the Plan Area, as well as in all parts of our region, these old oaks are being removed at an alarming rate for agricultural expansion, development and firewood. Our native oaks are one of the most important trees for birds and other wildlife, and several oak-dependent species, including slender-billed nuthatches and acorn woodpeckers are now on the state’s sensitive species list. They remain culturally significant, as well.

GOAL:

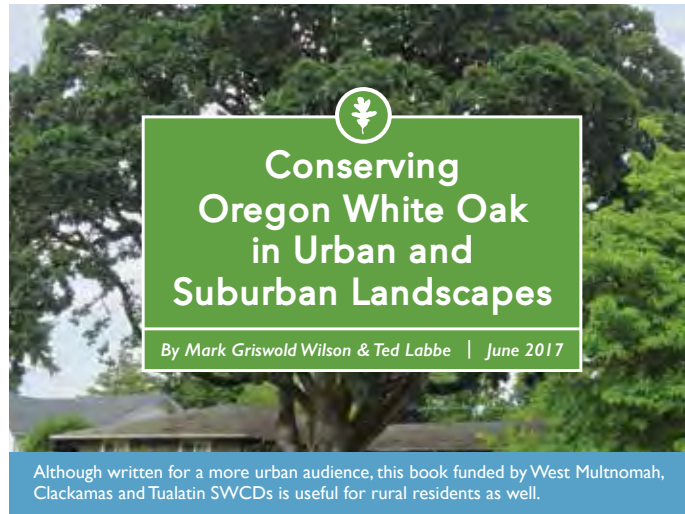
Maintain and increase the number of oak trees and the acreage of native oak stands and associated plants through preservation of existing stands, additional planting and increased landowner education.

Current Status and Recent Work

Individual oaks on the island and the Bottomlands were mapped as part of the regional Oak Quest project spearheaded by the Intertwine Alliance. Multiple agencies have collaborated on an Oak and Prairie working group, and have recently completed a Strategic Plan. The plan outlines action steps that can be taken in our Plan Area as well as elsewhere in the region.

SIHAB, WMSWCD and Metro are involved in several projects around oak and oak habitat:

- Ivy and blackberry removal from hundreds of oak trees and oak stand understories.
- Providing oak seedlings to landowners.
- Outreach to landowners, including a community presentation, articles, and information on farming and landscaping around native oaks.
- Planting new oaks on multiple projects in the vicinity of canals and remnant channels on the island, and planting new oaks in the upland areas, including on the mainland near Multnomah Channel.
- Development and printing of booklet, *Conserving Oregon White Oak in Urban and Suburban Landscapes* (See Resource page for a link to download).



Although written for a more urban audience, this book funded by West Multnomah, Clackamas and Tualatin SWCDs is useful for rural residents as well.

- OPRD and ODFW are working to remove blackberry from around young oak trees and oak understories at several island locations. ODFW has especially targeted Oak Island for restoration efforts.
- WMSWCD also provides technical and financial assistance to maintain and enhance oak habitat, such as controlling invasive weeds, thinning competing trees, adding new oaks, and seeding native grasses. The District secured Conservation Implementation Strategy funds (from NRCS) for oak restoration projects in 2018-2020.
- WMSWCD and SIHP produced 2 oak related factsheets, Farming around Native Oaks and Native Oaks in your Landscape (see Resources page).

Priority Actions

- Continue progress made working with landowners that have native oak stands, and expand outreach efforts to additional landowners to encourage preservation, protection and enhancement of oak habitat.
- Seek additional funding sources and develop additional preservation and oak-focused restoration projects.
- Work with regional partners to expand education efforts, and increase management knowledge of best available methods for both preservation and enhancement of oak habitat.
- Encourage removal of competing trees, such as Douglas fir, via “oak release,” or thinning, and remove invasive



Oaks can live for several hundred years, but not forever. As older oaks die off, new ones can be planted, or just encouraged when they sprout.

weeds in the understory to protect the long-term survival and productivity of threatened oak trees. Enhance the habitat value of existing and new or expanded tree stands, or the area around individual trees, by adding associated native plants, such as shrubs, small trees, native grasses and wildflowers.

- Distribute and encourage the use of the Conserving Oregon White Oak guide, WMSWCD/SIHP native oak habitat fact sheets, and other oak-related resources..

RIPARIAN BUFFERS AND CANALS

Background

In addition to providing drainage and irrigation, the canals on Sauvie Island and in the Scappoose Bay Bottomlands serve as habitat and wildlife corridors for multiple species. Perhaps of most concern are turtles, since both of our native species of turtles are designated as sensitive/critical. Turtles have fairly simple needs that are easy to provide:

- Logs or human-created rafts on which to bask in the sun. Heat is essential for turtle health and egg development.
- Sunny, sparsely vegetated upland areas adjacent to or near their aquatic habitat in which to lay their eggs.
- Still or slow-moving water (which canals, sloughs, and farm ponds provide).

The canals also provide a corridor for movement of otters, beavers and other species, and are used by several species of ducks, great blue herons and egrets.

Native trees, shrubs, and other plants along the edges of the canals and streams provide shelter, food, nesting places, and a movement corridor for many other species of wildlife and birds. They also serve a critical role in minimizing bank erosion.

GOAL:

Improve habitat and movement corridors for birds, amphibians, turtles and other wildlife species and reduce soil erosion along the Gilbert River and other sloughs and drainage canals within the entire Plan Area.

Current Status and Recent Work

There have been some significant efforts along the canals on Sauvie Island to improve turtle and riparian habitat:

- WMSWCD has made the Gilbert River a priority for its Healthy Streams Program and has added riparian plantings at 8 projects along the river, at remnant Dairy Creek and around a large pond.
- WMSWCD has been removing invasive plant species along Dairy Creek as part of Sturgeon Lake Restoration and is restoring native plants.
- In 2014, 15 turtle basking rafts were placed around the island and an additional 12 rafts were placed the following year. Funding for repair and replacement of several of these rafts was provided by WMSWCD in summer 2015. WMSWCD also funded construction and installation of



Native vegetation has been planted along several sections of Sauvie Island's Gilbert River, under the Healthy Streams Program of West Multnomah Soil & Water Conservation District.

16 improved rafts in 2018. In 2014, 15 turtle basking rafts were placed around the island and an additional 12 rafts were placed the following year. Funding for repair and replacement of several of these rafts was provided by WMSWCD in summer 2015.

- Sauvie Island has been designated as an Important Turtle Area by the Oregon Native Turtle Working Group.
- WMSWCD and SBWC are updating the Operations and Maintenance Plan for the SIDIC, which will identify canal management options that can potentially improve riparian conditions along the canals.

Priority Actions

- Continue riparian plantings for habitat, erosion control and water quality benefits, while leaving ample sunny areas for basking and nesting turtles.
- Build additional basking rafts for turtles that can be placed at intervals in the canals, but can be temporarily removed for dredging or other required canal work.

Create nesting habitat for turtles using methods prescribed by the Oregon Native Turtle Working Group in *Guidance of Conserving Oregon's Native Turtles Including Best Management Practices* (See Resource page for link to download).

- Modify steep banks of canals in areas where there is good upland habitat for wildlife.
- Inspect and maintain habitat and wildlife structures every 2-3 years and repair and replace as needed.
- Explore “beaver deceivers” and other strategies to allow beavers to remain in a few places where they are causing blockages.
- Improve riparian conditions throughout the area via control of invasive weeds, planting of diverse native species, and restoration of hydrologic connection of sloughs and floodplains.



Plantings are intended to decrease erosion, lower the water temperature by creating shade and serve as a wildlife corridor that allows safe passage and provides food and shelter to many species.

HEDGEROWS

Background

Hedgerows provide valuable habitat for a variety of bird and wildlife species. They can be attractive, provide privacy and be a wind barrier to shelter an area for the establishment of bees, which are important for crop pollination.

Sauvie Island already has some excellent mature native shrub/small tree thickets along island roads. Red-osier dogwood, Nootka rose, common snowberry, cascara, Suksdorff's hawthorn and Douglas spirea are the dominant native shrub species in these areas.

A major issue limiting hedgerow benefits is the continual encroachment of non-native blackberry that crowds out native thicket plants.

GOAL:

Increase the amount of high quality habitat for songbirds, pollinating insects and other wildlife by planting and enhancing existing hedgerows.

Current Status and Recent Work

Projects dedicated to hedgerow enhancements within the Plan Area include:

- A 2012-13 SIHAB/WMSWCD project with 13 landowners to plant hedgerows on their Sauvie Island properties.
- WMSWCD is creating extensive native hedgerows in the uplands at a large wetland / riparian restoration project along lower McCarthy Creek on the mainland.
- Metro planted hedgerows on its Howell Territorial Park property a decade ago. These mature hedgerows have been used for educational purposes by Sauvie Island Organics and the Xerces Society.
- In 2015, Multnomah County recognized the importance of native hedgerows by noting them in their SIMC Plan. County road maintenance crews have pledged, among other things, to not mow these areas during baby bird season except when there is a safety hazard.

Priority Actions

- Identify additional areas on both Sauvie Island and the mainland side of Multnomah Channel where hedgerows and native shrub thickets can be planted, or where existing hedgerows in poor condition can be enhanced.
- Additional surveys, research and education are needed to increase knowledge about native pollinator species and the native plants that sustain them.
- Education efforts with landowners and land managers to identify pollinators and native plants that support them.



A grant from West Multnomah Soil & Water Conservation District to the Sauvie Island Habitat Partnership created hedgerows of native shrubs. They provide food and shelter for birds and other wildlife and harbor native bees and other species that are beneficial in pollinating farm crops and gardens.

- Secure additional project support, including funding, for establishing these habitats, delivering technical assistance to public and private landowners and land managers, and increasing and expanding monitoring efforts to include the Multnomah Channel Bottomlands.

GRASSLANDS

Background

Prior to settlement, approximately two-thirds of Sauvie Island was wet prairie/grassland habitat. Once diked and drained, these areas were converted to crop and pastureland to the extent that there are no intact remnants of these habitats. There are, however, some larger expanses of grassland on the Sauvie Island Wildlife Management Area that have a few remaining native plants among the non-natives.

Breeding grassland birds require large expanses (200 acres or more) of open habitat. Meadowlarks, our state bird, were once very common in the Portland area and nested on Sauvie Island. They are now seldom seen and no longer breed on the island, hence the state designation as sensitive-critical (see link to ODFW Sensitive Species designations in **Appendix 3**). Very little is left in the Willamette Valley of the large expanses of grassy habitat meadowlarks require. Small flocks are occasionally seen on Sauvie Island in the non-breeding season, but no nesting has been observed. Other grassland birds, including short-eared owls and nighthawks, were formerly common on the island as well and are almost never seen presently.



Oregon's state bird, the Western meadowlark, was once common and nested on Sauvie Island. ODFW is managing several areas on the wildlife area to help bring them back.



Native grasslands once covered much of Sauvie Island and the Bottomlands, but as settlers moved in, almost all of these areas were converted to cropland or pasture. Since grasslands evolved with grazing herbivores, cattle can be useful in restoring healthy grassland habitats.

The streaked horned lark, another grassland dependent bird, has been federally listed as a threatened species. A tiny population remains in the industrial area across the Willamette River from the island, and wildlife managers as well as developers would like to see these birds move across the river to better habitat on the island.

Other species that will benefit from grassland restoration are northern harriers, killdeer and savannah sparrows.

GOAL:

Increase the population of grassland-dependent species within the Plan Area by increasing the amount of quality habitat, primarily in larger parcels.

Current Status and Recent Work

ODFW has designated four areas on Sauvie Island as habitat to be developed for grassland birds – two on Oak Island, one at Grandma's Kitchen at the end of Rentenaar Road, and one at the end of Reeder Road, just south of the trailhead to Warrior Point. Volunteers from the Portland Audubon Society have been conducting grassland bird counts in these areas since 2014 to get baseline information on grassland bird use. However, much habitat work is required to increase the attractiveness of these areas to birds.

Native bees and some bird species can benefit from even small patches of native prairie wildflowers, and efforts are underway to increase these (see Pollinator section).

Priority Actions

- Increase research, education and monitoring efforts that focus on grasslands, through groups such as the Streaked Horned Lark Working Group, The Intertwine Alliance Oak and Prairie Working Group and the Cascade Prairie Oak Partnership.
- Identify grassland areas and manage for native species by:
 - *Clearing or thinning some trees and shrubs on grassland areas to create more contiguous open habitat.*
 - *Removing invasive grasses and forbs and planting native prairie grasses and wildflowers.*
 - *Limiting human and canine disruptions during grassland bird breeding season.*
 - *Using controlled grazing and/or mowing to manage grass height, especially prior to the time when grassland birds are scouting for nest sites.*
- Keep abreast of a growing body of information being generated by multiple agencies and NGOs on methods for prairie restoration.
- Continue to refine the “prescription” for how these areas can best be restored specifically in our area by generating species lists and other information.
- Continue to support small patches of prairie on private landowner sites.

POLLINATOR HABITAT

Background

Pollinators are essential to agriculture as well as to the maintenance of diverse wildlife habitats. In pre-settlement times, the wildflower-covered prairies of Sauvie Island and the Bottomlands were perfect habitat to support many species of mason bees, carpenter bees and dozens of other

bee species. This habitat also hosted butterflies, hummingbirds, bats and other pollinators. Many of those are still present, and are essential for the pollinating food crops of the plan area, but numbers of many species are in steep decline.

Planting pollinator habitat is useful on a small scale as well as large, so even residential property owners can help with this opportunity.

GOAL:

Increase the numbers of various species of native bees and other pollinators by planting native wildflowers, and encouraging farmers to use pesticides in a pollinator-safe manner.

Current Status and Recent Work

Pollinator plantings are a high priority when WMSWCD assists landowners with conservation on their property. The district began planting pollinator hedgerows on the island in 2012 when it funded a grant for SIHAB to plant native hedgerows on the properties of 12 private landowners. The district also funded a pollinator planting at the Sauvie Island Grange Hall. WMSWCD’s updated Pollinator Bloom Chart, available at www.wmswcd.org, is a great guide for selecting native plants for pollinators.

The Xerces Society has trained staff at Sauvie Island Organics to incorporate pollinator plantings into commercial vegetable production. In summer, 2016, the Xerces Society and WMSWCD trained volunteers to monitor bee species on Sauvie Island and other areas of the district.

Priority Actions

- Plant more native plants for pollinators.
- Additional surveys, research and education is needed to increase knowledge about native pollinator species and the native plants that sustain them.
- Education efforts with landowners and land managers should focus on identifying pollinators and native plants that support them.
- Secure additional project support, including funding, for establishing these habitats, delivering technical assistance to public and private landowners and land managers, and increasing and expanding monitoring efforts to include the Multnomah Channel Bottomlands.

PLANTING FOR POLLINATORS

To provide nectar for butterflies, bees and other pollinators throughout the season, consider planting the following natives, listed below with their bloom times.

Early Spring

- Tall Oregon grape
- Osoberry (Indian plum)
- Red-flowering currant
- Native willows (Sitka, Scouler, Pacific)

Late Spring

- Large-leaf lupine
- Common camas
- Fringe cup
- Woodland strawberry

Early Summer

- Cascara
- Mock orange
- Pacific ninebark
- Western columbine

Late Summer

- Oceanspray
- Lance selfheal
- Yarrow
- Oregon bee’s friend

Early Fall

- Douglas aster
- Giant goldenrod
- Snowberry

Important host plants for our local butterflies:

- Native willows for Western tiger swallowtails
- Stinging nettles (yes, they are native!) for red admirals
- Red-osier dogwoods for Spring azures

Native nectar plants for hummingbird in our area:

- Red-flowering currant
- Black twinberry
- Orange honeysuckle
- Western red columbine



Western tiger swallowtail on oceanspray

For more detailed information, see wmswcd.org/library/pollinator-plants-and-bloom-periods-for-portland-metro-area

WETLAND AND AQUATIC HABITAT

Background

Aquatic habitat in the Plan Area includes Multnomah Channel, streams in the Tualatin Mountains draining into the Channel, ponds and wetlands on Sauvie Island and Multnomah Channel lowlands, and Sauvie Island lakes, including Sturgeon, Steelman, McNary, and Crane. This habitat is critical for out-migrating juvenile salmonids, waterfowl, and other species including frogs, other amphibians and turtles.

As noted in the hydrology section above, the presence of dams and flood control on the Columbia River has attenuated the impact of spring freshets and flooding, resulting in a smaller mass of wetlands in the Plan Area. The lack of flushing flows has increased sedimentation in aquatic habitats such as Sturgeon Lake, and the reduced water levels have helped increased water temperature and facilitated the spread of invasive weeds like reed canary grass. In addition,



West Multnomah Soil & Water Conservation District and the Xerces Society have trained volunteers to monitor native bees on district plantings.

many of the historic side channels are now disconnected, limiting off-channel, slower-flowing water once available as refugia for juvenile fish needing space to feed and grow.

In addition, Sauvie Island lakes are critical for overwintering waterfowl, including many species of ducks and geese, plus tundra and trumpeter swans and sandhill cranes. In summer, osprey and a growing population of white pelicans feed in the larger lakes.

GOAL:

Measurable habitat improvement is the long-term goal, including an increase in the amount of off-channel habitat and a reduction of water temperatures and sediment levels. Shorter-term goals include expanding water quality monitoring efforts to determine current conditions, and projects to expand off-channel areas and enhance wetland habitats.

Current Status and Recent Work

WMSWCD currently monitors temperature (and occasionally aquatic insects as indicators of sediment levels) to help understand aquatic habitat conditions in streams and other flowing waters. This information helps guide where the organization conducts riparian habitat enhancement. For example, WMSWCD monitors streams in the Tualatin Mountains and supports volunteer monitoring in Multnomah Channel. Monitoring in three West Hills streams – Miller, McCarthy and Crabapple – began in 2009; efforts include continuous temperature sensors (spring through fall), and benthic sampling on a 5-year rotation.

Efforts to restore Sturgeon Lake have occurred for over a decade, with recent funding obtained from multiple public and private entities. Construction began in 2018.

A Sauvie Island Pond project began in 2012, working with nine landowners to review and identify wildlife improvement efforts on individual ponds. A link to more information is available on our Resource page.

Pond Projects to improve off-channel areas are in various stages of development or implementation. The J.R. Palensky Wildlife Mitigation Area (sometimes known as Burlington Bottoms) is a 417-acre site on the west side of Multnomah Channel that was purchased by BPA in 1991, and is managed by ODFW. It contains high-quality fish and wildlife species and is preserved primarily for protection of habitat for

multiple species. A reconnection plan was developed for Virginia Lake in Wapato Greenway on the east side of Multnomah Channel, but has not been implemented.

WMSWCD, with support from SIDIC and SIHP, has provided funding multiple times to build, install and maintain as many as 16 small floating structures in Sauvie Island canals for turtle basking habitat.

Additional work has been done on the north end of the island at the SIWA North Unit Management Area, sites near Crane Lake, and the main stem Columbia River at Willow Bar, as well as along Scappoose Creek where it enters Scappoose Bay in the Bottomlands.

WMSWCD manages a wetland reserve enhancement project at the mouth of McCarthy Creek at the base of the Tualatin Mountains. The project has restored fish passage to 4.5 miles upstream through removal of a failing culvert. The Conservation District is controlling invasive weeds and planting native trees and shrubs on 5 riparian acres, along with other enhancement elements.

Priority Actions

- Reduce sediment transport into the streams of the Tualatin Mountains through landowner education and riparian planting efforts along the creeks.
- Engage landowners through workshops on wildlife benefits of pond and wetland habitats.
- Seek additional landowner interest and identify funding for wetland enhancements on remaining parcels along the channel, and in parcels throughout the Scappoose Bay Bottomlands.



Wapato was a major food for the early dwellers of Sauvie Island, and in fact, Lewis and Clark named the island for this plant. Above, Volunteers collect wapato seeds at the edge of Ruby Lake.

- Encourage and assist landowners to control invasive weeds around their ponds and plant native sedges, rushes, willows and other herbaceous and woody wetland vegetation. Also encourage them to leave or place woody debris as places for wildlife to perch, bask or burrow under and as places to search for insects.
- Continue supporting efforts to place turtle basking rafts in Sauvie canals and elsewhere.
- Remove invasive plants and plant native species on the edges of and in waterbodies to improve habitat.

WATER QUALITY

Background

Water quality on Sauvie Island and the western portion of the Plan Area has not been well studied or documented, although surface water sampling has been done in Scappoose Bay, Multnomah Channel, and a few locations at the base of the Tualatin Mountains. Known issues are temperature, sediment, and bacteria levels (in parts of Scappoose Bay). Temperature data is available for non-summer months at a couple of locations along the canals on Sauvie Island.

Groundwater sampling information is limited. A review of the available DEQ data indicates a few locations where groundwater data has been collected, but there are no sampling requirements or regular collection programs. A large portion of the Plan Area is within the 100-year floodplain with significant groundwater resources identified in multiple areas (SIMC Plan).

Both surface and groundwater in the Plan Area is used to irrigate crops, which are grown in multiple soil types (see Section 3). Of the four major soil types found in the area, two are generally well-draining (Burlington and Sifton), while two are very poorly, or poorly-draining (Rafton and Sauvie). Agriculture activities occur over all of these soils, so the potential for groundwater infiltration from surface inputs varies depending on application methods, soil type, irrigation and other factors.

Most types of irrigation on Sauvie Island involve hand lines containing impact sprinkler heads. Other types are drip systems or those using sprinkler “guns” to irrigate large fields. Although

the soils on Sauvie Island are susceptible to erosion, they do not qualify for highly erodible land designation because there is no slope. Thus, infiltration can occur, but field erosion is limited.

Erosion can be a concern on canal slopes or steep stream banks, where a lack of vegetation creates potential for sloughing and erosion. The pumping system managed by SIDIC can affect the stability of saturated soils along canal banks. Maintenance dredging can also cause bank damage and sedimentation, as well as vegetation removal activities.

A growing concern is E. coli levels in irrigation water, particularly for smaller farms and u-pick stands.

The above factors contribute to water quality concerns, but much is unknown due to a lack of monitoring.

GOAL:

Develop an understanding of water quality conditions within the Plan Area, and identify management practices that address water quality concerns.

Current Status and Recent Work

Basic water quality monitoring is underway at six locations along Multnomah Channel. This includes weekly temperature and clarity samples, and monthly monitoring of turbidity and E. coli bacteria. Additional monitoring at one or two canal locations on Sauvie Island will be conducted in 2018.

As noted in the previous section, WMSWCD is monitoring water quality in three streams of the west Tualatin Mountains. Monitoring in Miller, McCarthy and Crabapple Creeks began



Floating home residents along the Multnomah Channel have been monitoring water quality along from their dock, under a program set up by the Scappoose Bay Watershed Council, funded by the West Multnomah Soil & Water Conservation District.

in 2009 and has increased understanding of soil erosion impacts along the steeper tributaries to Multnomah Channel. Sampling of temperature, clarity, bacteria and turbidity in Multnomah Channel began in fall 2016.

WMSWCD worked with the SBWC to research and publish and distribute a comprehensive guide for owners of floating homes and marina managers surrounding Sauvie Island and along Multnomah Channel. The guide, called *Living on the Water*, covers a wide variety of topics affecting water quality, including moorage facility management, floating home operations and upkeep, vegetation and animals, and recreational water use.

The SIDIC currently operates without a management practices plan that could address erosion prevention and control measures along the drainage canals. A funded project to complete an Operations and Maintenance Plan is underway, with expected completion by summer 2018.

Priority Actions

- Continue and/or expand current water quality monitoring on the island, in the Tualatin Mountains, and the Scappoose Bay Bottomlands. Do additional testing for nitrate levels and other potentially harmful pollutants.
- Use monitoring data and additional research to identify sources impacting sediment runoff, elevated temperatures and other concerns; develop and implement action projects to address these.
- Implement appropriate actions to improve water quality on a long-term basis.
- Complete SIDIC Operations and Maintenance Plan for canal operations, including methods to increase vegetation along steeper canal banks.
- Identify reaches along canals with highest potential of erosion and implement a pilot project to demonstrate alternative canal maintenance and native vegetation planting; expand as funds and interest allow.
- Increase funding for technical resources and education, and encourage implementation of improved management practices.



Healthy soils tend to have lots of organic matter and diverse ecosystems of soil biota.

- Continue outreach to moorage owners and residents on best management practices for living on the water”
- Continue work with farmers to increase use of cover crops and refine fertilizer application and timing to avoid run-off of excess nutrients.

SOIL HEALTH & BIODIVERSITY

Background

Soil is a living organism that needs food and energy; healthy soil tends to have lots of organic matter and diverse ecosystems of soil biota. Loss of organic matter is just as much of a threat to the long-term productivity of the soil as wind and erosion. Healthy soil has many benefits to farm operations and to their bottom line. Healthy soil is more



Cover crops are a way to implement one of the principals of soil health: Keep it covered.

GIVE COVER CROPS A TRY

For those eager to start cover cropping on their own, most online retailers and local farm and garden stores carry cover crop seeds. Seed mixes are best chosen based on soil type and individual objectives, such as increasing organic matter, weed suppression, nitrogen accumulation or scavenging, soil protection, etc. In general, cereals and grasses build organic matter or scavenge nutrients while legumes (vetches, clovers, etc.) accumulate nitrogen. Using a combination of these increases the chance of successful cover crop establishment and vigorous stands that outcompete weeds; a typical commercial mix has a 3:1 ratio of non-legumes to legumes. Mixes should be varied and adjusted year-to-year based on personal observations and results.

In western Oregon, cover crops are commonly planted in the fall, from September 15 to October 15. A fall cover crop provides winter cover for the soil and protection

from compaction and is ready to grow vigorously come spring. Mow or crimp the cover crop 4-6 weeks before planting a cash / food crop. Incorporation into the soil can reduce the lag time between cutting cover crops and planting cash crops, but especially tall cover crops can bind tillage equipment. All field work should wait for dry spells of at least three days and never when the field is saturated -- to reduce damage to soil from equipment.

If you want to supplement your nutrient management with cover crops, try the OSU Cover Crop Calculator. It calculates the nutrients made available by specific cover crops. Combined with regular soil tests and plant tissue analysis of the cover crops, it provides farmers with specific nutrient rates (in pounds per acre) and is used to set up a fertilizer plan for a given crop and year.

For more information on soil health and to learn more about cover crops, see our Resource page.

resilient to drought and has fewer crop diseases and pests. Soil with good structure absorbs and holds water better, and soil rich in organic matter need fewer nutrient inputs. The healthier and more diverse a soil, the better able it is to produce food and fiber.

The four basic principles of soil health are:

1. *Keep it covered*
2. *Limit disturbance*
3. *Keep a living root in the soil AND*
4. *Diversify to benefit microorganisms*

In practice, this means farmers should reduce tillage, either through no-till systems or crop residue management. It means planting cover crops to feed the soil and the ecosystems within it. Sowing diverse cover crops can improve drainage, increase organic matter, increase nitrogen levels, improve soil structure, suppress weeds and increase overall yield of cash crops. Overwintering cover crops

provide all these benefits at a time when most fields would otherwise be fallow. And, broadleaf cover crops such as clover and vetch are food sources for pollinators and other beneficial insects.

GOAL:

Increase the health of soils — in farm fields and beyond — by limiting disturbance, cover cropping/keeping soils covered, and otherwise creating conditions that maintain soil structure and diversify beneficial microorganisms. Increase the awareness of the importance and principles of soil health.

Current Status and Recent Work

WMSWCD engaged and funded OSU Extension work with Sauvie Island farmers to introduce cover crops to improve soil health and reduce fertilizer inputs and costs.

WMSWCD's Soil Health program encourages farmers to adopt cover cropping as a farm practice by paying for cover crop seed for up to three years, while the landowner provides the labor and equipment to plant it. Seed mixes

are fully tailored to the situation of the particular farmer. As of 2018, 15 farms on Sauvie Island have participated in the program, covering more than 133 acres.

Priority Actions

- WMSWCD will continue cost-share cover cropping programs for farmers.
- WMSWCD will continue efforts to encourage farmers and other landowners to follow the principles of soil health.



COMMUNITY SCIENCE

Background

Trained volunteers have been invaluable in assessing and monitoring species populations on Sauvie Island and the Multnomah Channel Bottomlands, as well as water quality in Multnomah Channel. The wealth of resulting data is very useful to ecologists, biologists and others working on projects in the area. It has been a meaningful and satisfying way for community members to learn about and engage in conservation.

GOAL:

Continue to add to the body of information on species presence and abundance and natural resource conditions in the Plan Area with the assistance of trained volunteers using specified protocols.

Current Status and Recent Work

Elite birder volunteers organized by the Audubon Society of Portland have monitored bird populations at several locations on Sauvie Island for more than a decade, using transects and point counts.

Sauvie Island Habitat Partnership has monitored amphibian egg masses in several ponds and wetlands on both Sauvie Island and the Multnomah Channel Bottomlands. Metro has also used volunteers for this pursuit.

Purple martins on the island have been monitored for more than three decades using the protocols of the Purple Martin Conservation Association.

Osprey nests have been mapped using handheld GPS units and tracked on the island to determine nesting success and the interval between nests.

Turtle surveys were conducted on Sauvie Island in 2013.

Aquatic plant surveys were conducted on numerous water bodies on Sauvie Island by volunteer botanists from the Native Plant Society of Oregon.

Annual Christmas Bird Counts on Sauvie Island (the area of which includes the Multnomah County Bottomlands) have been conducted for more than half a century.

eBird records posted by various birders have provided invaluable information on species presence and abundance.

Oregon white oak trees were mapped in the Plan Area, using mobile technology, both for WMSWCD and for the regional OakQuest project of the Intertwine Alliance Oak-Prairie Workgroup.

Water quality monitoring has been conducted by moorage residents along Multnomah Channel with support from SBWC and WMSWCD.

WMSWCD has trained and engaged volunteers to identify and monitor pollinating insects using woody and herbaceous plants in WMSWCD-supported restoration projects.

Priority Actions

- Continue and expand current efforts to collect data on birds and other species, measure water quality and map native trees and plant species in the Plan Area.
- Look into the feasibility of conducting bat surveys.
- Consider conducting a bioblitz (an intense period of biological surveying) in the area.
- Using the list in this document, collect species and submit herbarium vouchers on plants that have not been documented in many years.

LAND USE PLANNING

Background

Land use issues on Sauvie Island and the Multnomah Channel bottomlands have focused on maintaining the rural character of the island and minimizing impacts from the area's role as a regional recreational and tourist destination.

To this end, the SIMC Rural Area Plan was originally adopted in 1997. The 2015 plan update includes a vision statement, background information, inventory and zoning maps, and land use and transportation policies, plus seven background reports. The reports cover significant agriculture and agritourism, natural and cultural resources, marinas and floating homes, public and semi-public facilities, and transportation concerns. The updated plan was produced through a process that included multiple outreach committees, planning briefings, open houses and other activities.

The plan contains policies to govern future land uses within the Plan Area. Each of the six chapters identifies and addresses land use impacts. See the **Resource Page** for a link to the SIMC Rural Area Plan.

The policies in the SIMC Rural Area Plan addressing natural resources are shown on pages 48 and 49.

In 2016 the county updated the Multnomah County Comprehensive Plan (MCCP) for all of the county's unincorporated areas, including Sauvie Island and



Sauvie Island's designation as a "rural reserve" by Multnomah County protects farmlands and natural resources by prohibiting development at intensities greater than what is currently permitted by zoning.

Multnomah Channel. MCCP policies impacting natural resources are essentially identical to those developed for the SIMC Rural Area Plan. MCCP contains strategies to carry out the plan policies.

GOAL:

Provide full implementation of the natural resource policies in the SIMC Rural Area Plan and Multnomah County Comprehensive plans.

Current Status and Recent Work

Multnomah County planning staff are amending county codes to reflect policies in the 2015 SIMC Rural Area Plan.

The SIMC Rural Area Plan was adopted by Multnomah County in 2015, strengthening policies that protect natural resources. It contains specific strategies to implement natural resource policies for Sauvie Island and Multnomah Channel.

The Scappoose Bay Watershed Council has worked with the City of Scappoose on restoration planning for Scappoose Creek, above the Bottomlands, and is establishing working relationships to address additional projects.

Several restoration projects are in the early stages of work on the larger tidal properties in the northern portion of the Bottomlands. The City of Scappoose is working on updates to its comprehensive plan and addressing issues pertaining to parks, transportation, and industrial airparks.

Sauvie Island and Multnomah Channel Rural Area Plan – Natural resource policies relevant to this plan.

Policy 3.1 – Collaborate and partner with private, public and non-profit organizations and tribes to adopt and maintain an inventory of natural systems in the planning area, document restoration projects, and develop strategies to address natural resource issues including but not limited to hydrology, climate change, changes in regional geography, wildlife and habitat conservation, restoration and enhancement, and educational programs.

Policy 3.2 – Encourage voluntary conservation efforts such as conservation easements and community-based restoration projects that complement Multnomah County’s Goal 5 (Natural and Cultural Resources) and Goal 15 (Willamette River Greenway) regulatory programs and if possible, extend the Wildlife Habitat tax deferral to MUA lands.

Policy 3.3 – Coordinate with federal and state agencies, including National Oceanic and Atmospheric Administration Fisheries Division (NOAA Fisheries) to develop design standards that protect salmon habitat and fish passage within and along the Multnomah Channel and its tributaries and ensure compliance with the Endangered Species Act (ESA).

Policy 3.4 – Update the inventory of surface water resources and associated riparian areas in compliance with Goal 5 requirements. Apply the Significant Environmental Concern overlay to significant wetlands (SEC-w) and streams (SEC-s) in the planning area.

Policy 3.5 – Where possible, streamline and simplify the Multnomah County Code to provide and encourage fish and wildlife habitat restoration and enhancement projects on public and private lands conducted by natural resource public agencies such as Metro, Multnomah Soil and Water Conservation Districts and Oregon Department of Fish and Wildlife.

Policy 3.6 – Multnomah County should work collaboratively with the Sauvie Island Drainage Improvement Company, state and federal agencies, and non-profit organizations to maintain the drainage and flood-control functions provided by the Company while restoring natural systems where appropriate.

Policy 3.7 – Adopt a “dark sky” ordinance for the planning area and work with the City of Portland, Port of Portland and other adjacent jurisdictions and agencies towards reducing light pollution from sources beyond the plan area.

Policy 3.8 – Encourage educational programs regarding the maintenance and restoration of wildlife habitat in the planning area, including programs addressing:

- a) Maintenance and restoration of wildlife corridors.
- b) Restoration and enhancement of wetlands, riparian areas and grasslands.
- c) Planting of native vegetation hedgerows.
- d) Conserving Oregon white oak habitat and bottomland cottonwood/ash forests.
- e) Use of wildlife-friendly fencing.

Policy 3.12 – Recognize and celebrate the heritage value of the natural resources of Sauvie Island to Native American tribes, including historic wetlands, riparian areas, water bodies and oak uplands. Encourage and support the protection and restoration of these resources.

Policy 3.13 – Continue to explore and encourage opportunities to conduct selected dredging to increase depth, flows, flushing, and circulation action in Sturgeon Lake in coordination with partner agencies and organizations. Support the dredging and reconstruction of the Dairy Creek Channel between the Columbia River and Sturgeon Lake to allow it

to remain open for 8-10 months of each year, and contribute to the cost of replacing two failed culverts where Reeder Road crosses Dairy Creek.

Policy 3.14 – Direct the Multnomah County Vector Control staff to coordinate with Oregon Department of Fish and Wildlife, using that agency’s map of sensitive areas and their Vector Control Guidance for Sensitive Areas to identify important habitat for sensitive species like red-legged frogs and native turtles where an altered protocol should be used. The county’s vector control staff is encouraged to act as a resource in efforts to educate and collaborate with landowners about natural means of mosquito control.

Policy 3.15 – Recommend that any fill generated as a result of dredging activities be located on Sauvie Island only under the following conditions:

- a) To assist in flood control.
- b) Not on designated wetlands.
- c) Not on high value farmland unless placement of such fill improves a farm’s soils or productivity.
- d) In areas where it will not negatively impact wildlife habitat.

Policy 3.16 – Review internal protocols related to road and right-of-way maintenance, including roadside hedgerow trimming and weed eradication. Work with the West Multnomah Soil & Water Conservation District, ODFW and the Sauvie Island Habitat Partnership to protect wildlife and manage invasive plant species to ensure that habitat and water resource restoration projects are coordinated with county road maintenance and drainage control programs.

Ensure that non-profit organizations and property owners are aware of county programs that may limit wildlife habitat restoration projects, and that road county staff are aware of existing and completed habitat restoration projects when they conduct their operations.

To implement this policy, the County Road Maintenance program will review the following recommendations:

- a) Except in emergency situations, County road mowing should be done between August 15 and March 15 to minimize impact to nesting birds, and workers should avoid mowing at identified turtle, frog and salamander crossings during nesting season (May and September).
- b) Culverts under county roads should be surveyed, then repaired and replaced as needed to limit barriers to fish and wildlife passage.
- c) County staff should work with ODFW and the Sauvie Island Habitat Partnership to identify and mitigate in areas where concentrations of small wildlife cross county roads.
- d) Mowing equipment should be regularly cleaned so that seeds of invasive plants are not spread into areas where they have not yet been introduced.
- e) County staff should confer with the West Multnomah Soil & Water Conservation District on best management practices before removing invasive weeds along road right-of-way.
- f) County staff should be trained to recognize invasive and desirable native plant species; Multnomah County should prioritize plant species for control.
- g) County staff should inform property owners of the existing Owner Vegetation Maintenance Agreement, which allows abutting property owners to maintain right-of-way vegetation.

Policy 3.17 – Update the Willamette River Greenway standards in the Multnomah County Code for clarity consistent with implementing rules and statutes.

Priority Actions

- Establish a process of communication and interaction among state and local government agencies, special districts and community members, and incorporate restoration actions and concerns into development planning.
- Identify land-use changes that have, or will likely have, an impact on watershed natural resources, and incorporate city and county planning and zoning changes into ongoing restoration prioritization.
- Identify potential land management areas of concern with respect to natural resources that are not being addressed in the existing planning documents.
- Continue work with local governments through channels established with the SIMC Plan, and ongoing projects with the City of Scappoose and Columbia County. Provide input and information about additional land management policies to protect and enhance resources.
- Educate landowners on the updated natural resources policies, and assist them in complying with those that impact their properties.
- WMSWCD and other SWCDs are working with ODFW

to develop resources for establishing and monitoring habitat deferral plans on EFU and MUA-zoned lands.

- Encourage Multnomah County to designate significant oak stands as significant natural resources under Goal 5.

STURGEON LAKE RESTORATION

Background

Sturgeon Lake, managed as a wildlife refuge by ODFW, is one of the premier natural and biologically significant aquatic and wildlife habitats in the state. It was identified in the Oregon Conservation Strategy as a “conservation opportunity area” for its importance to salmon and other fish and wildlife species.

Levees built on Sauvie Island in 1941, and construction of Bonneville and Grand Coulee Dams, significantly altered natural flows from the Columbia River through Sturgeon Lake and the Gilbert River into Multnomah Channel. This resulted in increased lake sedimentation, and significantly reduced aquatic habitat function.



Sturgeon Lake



Volunteers from the Native Plant Society of Oregon worked with Sauvie Island Habitat Partnership to survey aquatic plant species in Sauvie Island ponds and waterways.

Sturgeon Lake is an important link in the Pacific Flyway for waterfowl and a wide variety of bird species, offering winter habitat to 200,000 geese alone. In addition, juvenile salmon will leave the main river and seek refuge from high flows within the lake and sloughs. They use this time to increase in size and heartiness which in turn increases their likelihood of survival when they reach the ocean. Restoring flushing flows to Sturgeon Lake for salmon habitat restoration is specifically named as a state strategy.

GOAL:

Restore the functionality of Sturgeon Lake by reconnecting it to the Columbia River through Dairy Creek.

Current Status and Recent Work

WMSWCD, in partnership with BPA, Columbia River Estuary Study Taskforce (CREST), and multiple other supporters, began construction on restoring flow to Sturgeon Lake in the summer of 2018 by reestablishing the connection between the lake and the Columbia River through the Dairy

Creek channel. Construction for the project is estimated at \$3 million. The project is replacing two failing culverts with a bridge over Dairy Creek at Reeder Road, removing the sediment plug at the creek’s confluence with the Columbia River and reconstruct Dairy Creek to allow fish passage in and out of Sturgeon Lake through the summer.

Priority Actions

- Remove the sediment plug at the mouth of Dairy Creek and reconstruct the channel.
- Remove invasive species along the lake shores and Dairy Creek and re-seed/re-plant with native species.
- Replace the failed culvert over Dairy Creek with a bridge that allows better hydrologic flushing from Columbia River spring flows.
- Continue to monitor the water quality, invasive species introductions, wetland fringe habitat, and the hydrology of the lake with the Columbia River.

APPENDICES

APPENDIX 1: WILDLIFE	53
APPENDIX 2: PLANT SPECIES	59
APPENDIX 3: SPECIES OF CONCERN	76
APPENDIX 4: INVASIVE SPECIES	90
APPENDIX 5: PLANT COMMUNITIES	97
APPENDIX 6: CONSERVATION PROJECTS	103

APPENDIX I

SAUVIE ISLAND/MULTNOMAH CHANNEL BOTTOMLANDS WILDLIFE

BIRDS

S March –May
 S June –August
 F September – November
 W December – February
 C Common

U Uncommon
 O Occasional
 R Rare
 * Breeds locally
 # Species of concern

+ Non-native
 Updated 6/8/18

WATERFOWL	S	S	F	W
Snow Goose	U		C	C
Ross's Goose				R
Greater White-fronted Goose	U	R	U	U
Brant				R
Cackling Goose	C		C	C
Canada Goose * (#-Dusky)	C	U	C	C
Trumpeter Swan	R		U	U
Tundra Swan	U		C	C
Wood Duck*	C	C	U	U
Blue-wing Teal	U	O	R	R
Cinnamon Teal	C	U	U	U
Northern Shoveler	C	O	C	C
Gadwall*	C	O	U	C
Eurasian Wigeon	U		U	U
American Wigeon	C	U	C	C
Mallard*	C	C	C	C
Northern Pintail*	C	U	C	C
Green-winged Teal	C	U	C	C
Canvasback	U		U	C
Redhead	O	R	R	O
Ring-necked Duck	C	O	U	C
Greater Scaup	U		U	U
Lesser Scaup	C		C	C
Surf Scoter			O	R
White-winged Scoter			R	
Bufflehead	C	R	C	C
Common Goldeneye	O		O	O
Barrow's Goldeneye	O		O	U
Hooded Merganser*	U	U	O	C

Common Merganser	U		U	C
Red-breasted Merganser	R			R
Ruddy Duck	C	R	C	C
UPLAND GAME BIRDS	S	S	F	W
California Quail+	U	U	U	U
Ruffed Grouse	R	R	R	R
LOONS AND GREBES	S	S	F	W
Red-throated Loon	U			U
Pacific Loon			R	R
Common Loon	O		O	O
Pied-billed Grebe*	C	C	C	C
Horned Grebe	O		O	O
Eared Grebe			R	R
Red-necked Grebe			O	O
Western Grebe	U	O	U	U
Clark's Grebe		O	O	O
CORMORANTS	S	S	F	W
Double-crested Cormorant	C	U	C	C
PELICANS	S	S	F	W
American White Pelican	U	C	C	U
HERONS/EGRETS/ ALLIES	S	S	F	W
American Bittern	O	O	O	O
Great Blue Heron*	C	C	C	C
Great Egret	C	C	C	C
Snowy Egret			R	R
Green Heron*	U	U	U	O
VULTURES/EAGLES/HAWKS	S	S	F	W
Turkey Vulture*	C	C	U	U
Osprey*	C	C	C	U
White-tailed Kite	R		R	R

Golden Eagle	R			R
Northern Harrier*	C	U	C	C
Sharp-shinned Hawk	U	U	U	U
Cooper's Hawk*	U	U	U	U
Bald Eagle*	C	U	C	C
Northern Goshawk			R	R
Red-shouldered Hawk	O	O	U	U
Swainson's Hawk	R		R	
Red-tailed Hawk*	C	C	C	C
Rough-legged Hawk	O		O	O
RAILS AND GALLINULES	S	S	F	W
Virginia Rail*	U	U	U	U
Sora*	U	U	U	O
American Coot*	C	C	C	C
CRANES	S	S	F	W
Sandhill Crane	C	O	C	C
SHOREBIRDS	S	S	F	W
American Avocet		R	O	
Black-bellied Plover	U	U	U	
American Golden Plover			R	
Semipalmated Plover	R	O	O	
Killdeer*	C	C	C	C
Marbled Godwit			R	
Stilt Sandpiper		R	R	
Sanderling		O	O	
Dunlin	U	O	U	U
Baird's Sandpiper		O	O	
Least Sandpiper	U	C	C	O
Pectoral Sandpiper	R	O	O	
Semipalmated Sandpiper		O	O	
Western Sandpiper	C	C	C	
Short-billed Dowitcher	U	U	U	
Long-billed Dowitcher	O	C	C	O
Wilson's Snipe*	U	O	U	U
Wilson's Phalarope	R	R	R	
Red-necked Phalarope	O	O	O	
Whimbrel	R			
Spotted Sandpiper*	U	U	U	U
Solitary Sandpiper*	R	R	R	
Greater Yellowlegs	U	C	C	O
Lesser Yellowlegs	O	C	C	

GULLS AND TERNS	S	S	F	W
Sabine's Gull		O	O	
Bonaparte's Gull	U	O	U	R
Franklin's Gull		O	O	
Mew Gull	C	O	C	C
Ring-billed Gull	C	U	U	C
Western Gull	U		U	U
California Gull	U	C	C	C
Herring Gull	U		U	C
Iceland Gull	U		U	U
Glaucous-winged Gull	U	O	C	C
Glaucous Gull				R
Caspian Tern#	O	O	U	
Common Tern		O	O	
Forster's Tern		R	R	
PIGEONS AND DOVES	S	S	F	W
Rock Pigeon+	C	C	C	C
Band-tailed Pigeon	U	U	U	R
Eurasian-collared Dove*+	C	C	C	C
Mourning Dove*	C	C	C	C
OWLS	S	S	F	W
Barn Owl*	U	U	U	U
Western Screech-Owl*	U	U	U	U
Great Horned Owl*	U	U	U	U
Northern Pygmy-Owl			R	R
Barred Owl	O	O	O	O
Short-eared Owl#	R		R	R
Long-eared Owl	R	R	R	R
Northern Saw-whet Owl	O	O	O	O
NIGHTJARS	S	S	F	W
Common Nighthawk#		R	R	
SWIFTS	S	S	F	W
Vaux's Swift*	U	C	U	
HUMMINGBIRDS	S	S	F	W
Anna's Hummingbird*	C	C	C	C
Rufous Hummingbird*	C	C	O	
KINGFISHERS	S	S	F	W
Belted Kingfisher*	C	C	C	C
WOODPECKERS	S	S	F	W
Northern Flicker*	C	C	C	C
Pileated Woodpecker*	U	U	U	U
Lewis's Woodpecker	R	R	R	

Red-breasted Sapsucker*	U	U	U	U
Downy Woodpecker*	C	C	C	C
Hairy Woodpecker*	U	U	U	U
FALCONS	S	S	F	W
American Kestrel*	C	C	C	C
Merlin	O		O	O
Peregrine Falcon	U	U	U	U
TYRANT FLYCATCHERS	S	S	F	W
Olive-sided Flycatcher#	O		O	O
Western Wood-Pewee*	C	C	C	
Willow Flycatcher*#	U	C	U	
Hammond's Flycatcher	O	O	O	
Dusky Flycatcher	R			
Pacific-slope Flycatcher*	U	U	R	
Black Phoebe	R	O	O	R
Say's Phoebe	O		R	O
Western Kingbird	R	R		
SHRIKES	S	S	F	W
Northern Shrike	O		O	O
VIREOS	S	S	F	W
Hutton's Vireo	U	U	U	U
Cassin's Vireo	O	U		
Warbling Vireo*	C	C	U	
Red-eyed Vireo		U		
JAYS, CROWS AND RAVENS	S	S	F	W
Steller's Jay	U	U	U	C
California Scrub Jay*	C	C	C	C
American Crow*	C	C	C	C
Common Raven	U	U	U	U
LARKS	S	S	F	W
Horned Lark	R		U	C
MARTINS AND SWALLOWS	S	S	F	W
No. Rough-winged Swallow	U	U	O	
Purple Martin*#	C	C	O	
Tree Swallow*	C	C	U	U
Violet-green Swallow*	C	C	U	
Barn Swallow*	C	C	C	O
Bank Swallow*		O	O	
Cliff Swallow*	U	U	U	

CHICKADEES AND BUSHTITS	S	S	F	W
Black-capped Chickadee*	C	C	C	C
Chestnut-backed Chickadee*	U	U	U	U
Bushtit*	C	C	C	C
NUTHATCHES	S	S	F	W
Red-breasted Nuthatch*	O	O	C	O
White-breasted Nuthatch*#	C	C	C	C
TREE CREEPERS	S	S	F	W
Brown Creeper*	C	C	C	C
WRENS	S	S	F	W
House Wren*	C	C	U	
Pacific Wren	U	U	U	U
Marsh Wren*	C	U	U	U
Bewick's Wren*	C	C	C	C
KINGLETS	S	S	F	W
Golden-crowned Kinglet	U	O	U	C
Ruby-crowned Kinglet	U		C	C
THRUSHES	S	S	F	W
Western Bluebird#	R		R	
Swainson's Thrush*	U	C	U	
Hermit Thrush	U		U	O
American Robin*	C	C	C	C
Varied Thrush	U		U	U
STARLINGS	S	S	F	W
European Starling* +	C	C	C	C
PIPITS	S	S	F	W
American Pipit	O		C	C
WAXWINGS	S	S	F	W
Cedar Waxwing*	C	C	U	U
WOOD WARBLERS	S	S	F	W
Orange-crowned Warbler*	C	U	U	O
Nashville Warbler	O			
MacGillivray's Warbler	O	O	R	
Common Yellowthroat*	C	C	C	R
Yellow Warbler*	C	C	U	
Yellow-rumped Warbler*	C	U	C	U
Black-throated Gray Warbler*	U	O	U	
Townsend's Warbler	U		U	U
Hermit Warbler	R			
Wilson's Warbler	C	C	O	

NEW WORLD SPARROWS S S F W

Chipping Sparrow	O	O	O	
Clay-colored Sparrow	R		R	R
Fox Sparrow	C		C	C
Dark-eyed Junco	U	U	C	C
White-crowned Sparrow	C	U	C	C
Golden-crowned Sparrow	C		C	C
Harris's Sparrow	R		R	
White-throated Sparrow	U		U	U
Savannah Sparrow*	C	C	U	U
Song Sparrow*	C	C	C	C
Lincoln's sparrow	U		U	U
Swamp Sparrow	O		O	O
Spotted Towhee*	C	C	C	C

YELLOW-BREASTED CHAT S S F W

Yellow-breasted Chat#	O	O		
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CARDINALS/GROSBEAKS S S F W

Western Tanager	U	U	O	
Black-headed Grosbeak*	C	C	O	
Lazuli Bunting	O	U	O	

DEFINITIONS

Common: Resident or seasonally abundant species that will be seen during most visits
Uncommon: Species regularly present in either low density or particular habitats, not likely to be seen during every visit
Occasional: Species likely present in most years but might not be detected annually
Rare: Species found less than annually, fewer than 20 all-time records
Species of Concern: Species identified by the State of Oregon as "endangered," "threatened," "sensitive" or "sensitive critical" for the Willamette Valley, including Sauvie Island

ACCIDENTAL OR VERY RARE SPECIES

Accidental species are outside their normal range and exceedingly rare, with fewer than five all-time records.

Emperor Goose	Black Tern	Bobolink
Baikal Teal	Arctic Tern	Tropical Kingbird
Long-tailed Duck	Parasitic Jaeger	Loggerhead Shrike
Cattle Egret	Common Ground-Dove	Blue Jay
Black-crowned Night Heron	Yellow-billed Cuckoo	Gray Jay
White-faced Ibis	Snowy Owl	Black-billed Magpie
Ferruginous Hawk	Burrowing Owl	Mountain Chickadee
Red Knot	Northern Hawk-Owl	Townsend's Solitaire
Ruff	Acorn Woodpecker	Veery
Sharp-tailed Sandpiper	Red-naped Sapsucker	Northern Mockingbird
Buff-breasted Sandpiper	Prairie Falcon	Lapland Longspur
Red Phalarope	Gyr Falcon	Snow Bunting
Long-billed Curlew	Least Flycatcher	Northern Parula
Black-legged Kittiwake	Ash-throated Flycatcher	Blackpoll Warbler
Slaty-backed Gull	Eastern Kingbird	Palm Warbler
American Tree Sparrow	Vesper Sparrow	Tri-colored Blackbird
Brewer's Sparrow	Lark Sparrow	

BLACKBIRDS S S F W

Yellow-headed Blackbird*	O	O	O	
Western Meadowlark*##	U	O	U	C
Bullock's Oriole*	U	C	U	
Red-winged Blackbird*	C	C	C	C
Brown-headed Cowbird*	C	C	U	U
Rusty Blackbird			R	R
Brewer's Blackbird*	C	C	C	C

FINCHES S S F W

Evening Grosbeak	O	O	O	
House Finch*	C	C	C	C
Purple Finch*	U	U	U	U
Red Crossbill	O			O
Pine Siskin	O	O	U	O
Lesser Goldfinch	C	U	C	C
American Goldfinch*	C	C	U	U

OLD WORLD SPARROWS S S F W

House Sparrow*+	U	U	U	U
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ACKNOWLEDGEMENTS

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MAMMALS

Species in Italics are introduced non-native. Species in bold face are designated as federally or state sensitive, threatened or endangered (see **Appendix 3** for details on these.)

<i>Virginia Opossum</i>	Townsend's Chipmunk	Bobcat
Vagrant Shrew	California Ground Squirrel	Cougar
Pacific Shrew	<i>Eastern Fox Squirrel</i>	Coyote
Pacific Water Shrew	<i>Eastern Gray Squirrel</i>	Red Fox
Trowbridge's Shrew	Western Gray Squirrel	Gray Fox
Shrew Mole	Pacific Jumping Mouse	Raccoon
Townsend's Mole	Camas Pocket Gopher	Long-tailed Weasel
Little Brown Myotis	Douglas' Squirrel	Mink
Yuma Myotis	Muskrat	Short-tailed Weasel
Long-eared Myotis	American Beaver	Western Spotted Skunk
Fringed Myotis	Deer Mouse	Striped Skunk
Long Legged Myotis	Dusky-footed Woodrat	River Otter
California Myotis	Bushy-tailed Woodrat	Elk
Silver Haired Bat	Gray-tailed Vole	Black-tailed Deer
Big Brown Bat	Townsend's Vole	Columbia White-tailed Deer
Hoary Bat	Creeping Vole	California Sea Lion
Townsend's Big-eared Bat	Porcupine	Steller Sea Lion
Pallid Bat	<i>Nutria</i>	
Brush Rabbit		
Black-tailed Jack Rabbit		
Douglas' Squirrel		

REPTILES AND AMPHIBIANS

Species in *Italics* are non-native. Species in **bold face** designated federally or state sensitive, threatened or endangered (see **Appendix 3** for details.)

Northwestern Salamander	<i>Ambystoma macrodactylum</i>	Northwestern Pond Turtle	<i>Clemmys marmorata</i>
Long-toed Salamander	<i>Ambystoma macrodactylum</i>	Northern Alligator Lizard	<i>Elgaria coerulea</i>
Ensatina	<i>Ensatina eschscholtzi</i>	Southern Alligator Lizard	<i>Elgaria multicarinata</i>
Dunn's Salamander	<i>Plethodon dunni</i>	Western Fence Lizard	<i>Sceloporus occidentalis</i>
Western Red-backed Salamander	<i>Plethodon vehiculum</i>	Western Skink	<i>Eumeces skiltonianus</i>
Roughskinned Newt	<i>Taricha granulosa</i>	Rubber Boa	<i>Charina bottae</i>
Western Toad	<i>Bufo boreas</i>	Racer	<i>Coluber constrictor</i>
Pacific Treefrog	<i>Hyla regilla</i>	Sharp-tailed Snake	<i>Contia tenuis</i>
Red-legged Frog	<i>Rana aurora</i>	Ring-necked Snake	<i>Diadophis punctatus</i>
Foothill Yellow-legged Frog	<i>Rana boylei</i>	Gopher Snake	<i>Pituophis melanoleucus</i>
<i>Bullfrog</i>	<i>Rana catesbeiana</i>	W.Terrestrial Garter Snake	<i>Thamnophis elegans</i>
Spotted Frog	<i>Rana pretiosa</i>	Northwestern Garter Snake	<i>Thamnophis ordinoides</i>
Western Painted Turtle	<i>Chrysemys picta</i>	Common Garter Snake	<i>Thamnophis sirtalis</i>

FISH

Pacific Lamprey	<i>Lampetra tridentata</i>	Dace	<i>Rhinichthys</i> spp.
Coho Salmon	<i>Oncorhynchus kisutch</i>	Bridgelip Sucker	<i>Catostomus columbianus</i>
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Longnose Sucker	<i>Catostomus catostomus</i>
Sockeye Salmon	<i>Onchorhynchus nerka</i>	Largescale Sucker	<i>Catostomus macrosheilus</i>
Chum Salmon	<i>Onchorhynchus keta</i>	Oriental Weatherfish	<i>Misgurnus anguillicandatus</i>
Steelhead	<i>Onchorhynchus gairdneri</i>	American Shad	<i>Alosa sapidissima</i>
Cutthroat trout	<i>Onchorhynchus clarkii</i>	Mosquitofish	<i>Gambusia affinis</i>
<i>Black Crappie</i>	<i>Pomoxis nigro-annularis</i>	Redside Shiner	<i>Richardsonius balteatus</i>
<i>White Crappie</i>	<i>Pomoxis annularis</i>	Sculpin	<i>Cottus</i> spp.
<i>Bluegill</i>	<i>Lepomis macrochirus</i>	Northern Pikeminnow	<i>Ptychocheilus oregonensis</i>
<i>Largemouth Bass</i>	<i>Micropterus salmoides</i>	Common Carp	<i>Cyprinus carpio</i>
<i>Warmmouth Bass</i>	<i>Lepomis gulosus</i>	Yellow Bullhead	<i>Ictalurus natalis</i>
<i>Pumpkinseed</i>	<i>Lepomis gibbosus</i>	Brown Bullhead	<i>Ictalurus nebulosus</i>

APPENDIX 2

SAUVIE ISLAND/MULTNOMAH CHANNEL BOTTOMLANDS PLANTS

This list is based on botanical records dating back to 1874, and was compiled from the Oregon Flora Project's (OFF) database with additions from more recent plant lists by various botanists. It was edited by wetlands ecologist John A. Christy and Jane Hartline of the Sauvie Island Habitat Partnership. Species names have been updated to conform with the 2017 OFF checklist (Version 1-7). Plants noted in bold face are locally rare or even extinct, but are included because of the possibility of re-introduction as habitats are restored. Plants in italics are exotic to this area. The much more detailed spreadsheet on which this version was based is available by contacting Jane Hartline, sauvi habits (at) gmail.com.

	FAMILY	SPECIES	COMMON NAME
N	Sapindaceae	<i>Acer circinatum</i>	Vine Maple
N	Sapindaceae	<i>Acer macrophyllum</i>	Bigleaf maple
E	<i>Sapindaceae</i>	<i>Acer platanoides</i>	Norway maple
N	Asteraceae	<i>Achillea millefolium</i>	Yarrow
NR	Berberidaceae	<i>Achlys californica</i>	Deer's foot
N	Berberidaceae	<i>Achlys triphylla</i>	Vanillaleaf
N	Fabaceae	<i>Acmispon americanus</i> var. <i>americanus</i>	Pursh's lotus
N	Fabaceae	<i>Acmispon parviflorus</i>	Field lotus, small-flowered lotus
N	Ranunculaceae	<i>Actaea rubra</i>	Western red baneberry
N	Asteraceae	<i>Adenocaulon bicolor</i>	Pathfinder
N	Pteridaceae	<i>Adiantum aleuticum</i>	Maidenhair fern
NR	Asteraceae	<i>Agoseris apargioides</i> var. <i>maritima</i>	Seaside agoseris
N	Poaceae	<i>Agrostis exarata</i>	Spike bentgrass
NR	Poaceae	<i>Agrostis pallens</i>	Thin bentgrass, Seashore bentgrass
E	<i>Poaceae</i>	<i>Agrostis stolonifera</i>	Creeping bent grass
E	<i>Poaceae</i>	<i>Aira caryophyllea</i> var. <i>caryophyllea</i>	Silver hairgrass
NR	Alismataceae	<i>Alisma gramineum</i>	Emergent water plantain
E	<i>Alismataceae</i>	<i>Alisma lanceolatum</i>	Lanceleaf water plantain
N	Alismataceae	<i>Alisma triviale</i>	Northern water plantain
E	<i>Betulaceae</i>	<i>Alnus glutinosa</i>	European alder
N	Betulaceae	<i>Alnus rubra</i>	Red alder, Oregon alder
N	Poaceae	<i>Alopecurus aequalis</i> var. <i>aequalis</i>	Short-awn foxtail
N	Poaceae	<i>Alopecurus geniculatus</i>	Water foxtail
E	<i>Poaceae</i>	<i>Alopecurus pratensis</i>	Meadow foxtail
N	Amaranthaceae	<i>Amaranthus powellii</i>	Powell's amaranth
E	<i>Asteraceae</i>	<i>Ambrosia artemisiifolia</i>	Common ragweed, annual ragweed
N	Rosaceae	<i>Amelanchier alnifolia</i> var. <i>semiintegrifolia</i>	Serviceberry
NR	Boraginaceae	<i>Amsinckia lycopoides</i>	Tarweed fiddleneck, bugloss fiddleneck

NR	Boraginaceae	Amsinckia menziesii	Small-flowered fiddleneck, Menzies' fiddleneck
NR	Boraginaceae	Amsinckia menziesii var. menziesii	Small-flowered fiddleneck, Menzies' fiddleneck
NR	Boraginaceae	Amsinckia tessellata	Tesselate fiddleneck, devil's lettuce
E	Primulaceae	<i>Anagalis minima (Centunculus minimus)</i>	<i>Chaffweed</i>
N	Asteraceae	<i>Anaphalis margaritacea</i>	<i>Pearly everlasting</i>
N	Ranunculaceae	<i>Anemone deltoidea</i>	<i>Western white anemone, threeleaf anemone</i>
NR	Apiaceae	Angelica arguta	Shining angelica
NR	Apiaceae	Angelica genuflexa	Kneeling angelica
N	Asteraceae	<i>Anisocarpus madioides</i>	<i>Woodland tarweed</i>
E	Asteraceae	<i>Anthemis cotula</i>	<i>Mayweed chamomile, dogfennel</i>
E	Poaceae	<i>Anthoxanthum odoratum</i>	<i>Sweet vernalgrass</i>
E	Plantaginaceae	<i>Antirrhinum orontium</i>	<i>Weasel's snout, lesser snapdragon</i>
E	Rosaceae	<i>Aphanes australis</i>	<i>Slender parsley-piert</i>
N	Rosaceae	<i>Aphanes occidentalis</i>	<i>Western lady's mantle</i>
NR	Apocynaceae	Apocynum cannabinum	Indian hemp, hemp dogbane
N	Ranunculaceae	<i>Aquilegia formosa</i>	<i>Western red columbine</i>
NR	Brassicaceae	Arabis eschscholtziana or A. pycnocarpa	Hairy rockcress
N	Ericaceae	<i>Arbutus menziesii</i>	<i>Pacific madrone</i>
E	Asteraceae	<i>Arctium minus</i>	<i>Common burdock</i>
E	Poaceae	<i>Arrhenatherum elatius ssp. bulbosum</i>	<i>Tall oatgrass</i>
E	Asteraceae	<i>Artemisia biennis</i>	<i>Biennial wormwood</i>
N	Asteraceae	<i>Artemisia douglasiana</i>	<i>Douglas sagewort, dragon sagewort</i>
N	Rosaceae	<i>Aruncus dioicus var. acuminatus</i>	<i>Sylvan goatsbeard</i>
N	Aristolochiaceae	<i>Asarum caudatum</i>	<i>Western wild ginger</i>
N	Athyriaceae	<i>Athyrium filix-femina</i>	<i>Lady fern</i>
N	Athyriaceae	<i>Athyrium filix-femina var. cyclosorum</i>	<i>Lady fern</i>
E	Poaceae	<i>Avena barbata</i>	<i>Slender wild oats</i>
E	Poaceae	<i>Avena fatua</i>	<i>Wild oats</i>
E	Poaceae	<i>Avena sativa</i>	<i>Cultivated oats</i>
N	Salviniaceae	<i>Azolla filiculoides</i>	<i>Duckweed fern, Pacific mosquito fern</i>
N	Salviniaceae	<i>Azolla microphylla</i>	<i>Mexican water fern, western mosquito fern</i>
N	Brassicaceae	<i>Barbarea orthoceras</i>	<i>American watercress</i>
E	Brassicaceae	<i>Barbarea vulgaris</i>	<i>Bitter wintercress, yellow rocket</i>
E	Orobanchaceae	<i>Bellardia viscosa</i>	<i>Yellow parentucellia</i>
E	Asteraceae	<i>Bellis perennis</i>	<i>English daisy</i>
N	Berberidaceae	<i>Berberis aquifolium</i>	<i>Tall Oregon grape</i>
N	Berberidaceae	<i>Berberis nervosa</i>	<i>Cascade Oregon grape, long-leaved Oregon grape</i>

NR	Elatinaceae	Bergia texana	Texas waterfire, Texas bergia
NR	Apiaceae	Berula erecta	Cutleaf water parsnip
N	Asteraceae	<i>Bidens cernua</i>	<i>Nodding beggarstick</i>
N	Asteraceae	<i>Bidens frondosa</i>	<i>Leafy beggarstick</i>
N	Asteraceae	<i>Bidens tripartita</i>	<i>Three-lobed beggarstick</i>
E	Asteraceae	<i>Bidens vulgata</i>	<i>Tall beggarstick</i>
N	Blechnaceae	<i>Blechnum spicant</i>	<i>Deer fern</i>
N	Amaranthaceae	<i>Blitum nuttallianum (syn. Monlepis nuttaliana)</i>	<i>Nuttall's povertyweed</i>
NR	Cyperaceae	Bolboschoenus fluviatilis	River bulrush
E	Boraginaceae	<i>Borago officinalis</i>	<i>Borage</i>
N	Cabombaceae	<i>Brasenia schreberi</i>	<i>Water-shield, water target</i>
E	Brassicaceae	<i>Brassica rapa</i>	<i>Field mustard, turnip</i>
NR	Asparagaceae	Brodiaea coronaria	California cluster-lily
N	Poaceae	<i>Bromus carinatus</i>	<i>California brome</i>
E	Poaceae	<i>Bromus hordeaceus</i>	<i>Soft chess</i>
N	Poaceae	<i>Bromus sitchensis</i>	<i>Sitka brome</i>
NR	Poaceae	Calamagrostis canadensis var. canadensis	Bluejoint reedgrass
NR	Poaceae	Calamagrostis canadensis var. langsdorffii	Bluejoint reedgrass
NR	Montiaceae	Calandrinia ciliata	Red maids, rock purslane
N	Plantaginaceae	<i>Callitriche fassettii</i>	<i>Autumnal water-starwort</i>
N	Plantaginaceae	<i>Callitriche heterophylla var. heterophylla</i>	<i>Different leaved water-starwort</i>
E	Plantaginaceae	<i>Callitriche stagnalis</i>	<i>Pond water-starwort</i>
N	Plantaginaceae	<i>Callitriche verna</i>	<i>Spring water-starwort, vernal water-starwort</i>
NR	Orchidaceae	Calypso bulbosa var. occidentalis	Calypso orchid, fairy slipper
N	Convolvulaceae	<i>Calystegia sepium ssp. angulata</i>	<i>Large bindweed, false hedge bindweed</i>
N	Asparagaceae	<i>Camassia quamash</i>	<i>Small camas</i>
N	Asparagaceae	<i>Camassia quamash ssp. maxima</i>	<i>Common camas</i>
E	Brassicaceae	<i>Capsella bursa-pastoris</i>	<i>Shepherd's purse</i>
N	Brassicaceae	<i>Cardamine angulata</i>	<i>Angled bittercress, seaside bittercress</i>
E	Brassicaceae	<i>Cardamine hirsuta</i>	<i>Hairy bittercress, European bittercress</i>
N	Brassicaceae	<i>Cardamine nuttallii var. nuttallii</i>	<i>Spring beauty, Nuttall's toothwort</i>
N	Brassicaceae	<i>Cardamine occidentalis</i>	<i>Western bittercress</i>
N	Brassicaceae	<i>Cardamine oligosperma</i>	<i>Little Western bittercress</i>
N	Brassicaceae	<i>Cardamine parviflora</i>	<i>Sand bittercress, small-flowered bittercress</i>
NR	Brassicaceae	Cardamine pensylvanica	Pensylvanica bittercress
N	Cyperaceae	<i>Carex angustata</i>	<i>Narrow-leaved sedge</i>
N	Cyperaceae	<i>Carex aperta</i>	<i>Columbia sedge</i>
E	Cyperaceae	<i>Carex arenaria</i>	<i>Sand sedge</i>

N	Cyperaceae	Carex feta	Green-sheath sedge
N	Cyperaceae	Carex hendersonii	Timber sedge
NR	Cyperaceae	Carex interrupta	Greenfruit sedge
N	Cyperaceae	Carex kelloggii var. kelloggii	Kellogg's sedge, lakeshore sedge
NR	Cyperaceae	Carex laeviculmis	Smoothstem sedge
N	Cyperaceae	Carex leptopoda	Slender-foot sedge
N	Cyperaceae	Carex obnupta	Slough sedge
N	Cyperaceae	Carex pachystachya	Many-rib sedge
NR	Cyperaceae	Carex pellita	Woolly sedge
NR	Cyperaceae	Carex retrorsa	Retrorse sedge
NR	Cyperaceae	Carex rossii	Ross' sedge
NR	Cyperaceae	Carex scoparia	Pointed broom sedge
E	Cyperaceae	Carex tribuloides var. tribuloides	Tribulation sedge, blunt broom sedge
N	Cyperaceae	Carex unilateralis	One-sided sedge, lateral sedge
NR	Cyperaceae	Carex utriculata	Southern beaked sedge, inflated sedge
E	Asteraceae	Centaurea melitensis	Tocalote, Maltese starthistle
N	Caryophyllaceae	Cerastium arvense ssp. strictum	Field chickweed, field mouse-ear chickweed
E	Caryophyllaceae	Cerastium fontanum ssp. vulgare	Common mouse-ear chickweed
E	Caryophyllaceae	Cerastium glomeratum	Sticky mouse-ear chickweed
N	Ceratophyllaceae	Ceratophyllum demersum	Coontail
N	Cupressaceae	Chamaecyparis lawsoniana	Port Orford cedar
NR	Euphorbiaceae	Chamaesyce serpyllifolia	Thyme-leaved spurge, thymeleaf sandmat
N	Onagraceae	Chamerion angustifolium var. canescens	Fireweed
E	Amaranthaceae	Chenopodium album	Lamb's quarter
NR	Saxifragaceae	Chrysosplenium glechomifolium	Western golden carpet, golden saxifrage
E	Asteraceae	Cichorium intybus	Common chicory
N	Apiaceae	Cicuta douglasii	Douglas (Western) water hemlock
NR	Ranunculaceae	Cimicifuga elata	Tall bugbane
N	Onagraceae	Circaea alpina ssp. pacifica	Enchanter's nightshade
E	Asteraceae	Cirsium arvense	Canada thistle
E	Asteraceae	Cirsium vulgare	Bull thistle
NR	Onagraceae	Clarkia amoena ssp. lindleyi	Lindley's clarkia
NR	Onagraceae	Clarkia pulchella	Ragged robin
NR	Onagraceae	Clarkia purpurea ssp. quadrivulnera	Small-flowered godetia
N	Montiaceae	Claytonia parviflora ssp. parviflora	Linear-leaved springbeauty
N	Montiaceae	Claytonia perfoliata ssp. perfoliata	Miner's lettuce
N	Montiaceae	Claytonia rubra ssp. depressa	Redstem springbeauty
N	Montiaceae	Claytonia sibirica	Candyflower

NR	Ranunculaceae	Clematis ligusticifolia	Western clematis, Wester virgin's bower
NR	Poaceae	Coleanthus subtilis	Mudgrass
N	Plantaginaceae	Collinsia parviflora	Small-flowered blue-eyed Mary
NR	Polemoniaceae	Collomia grandiflora	Large-flowered collomia
N	Polemoniaceae	Collomia linearis	Narrow-leaved collomia
NR	Rosaceae	Comarum palustre	Marsh cinquefoil, purple cinquefoil
E	Apiaceae	Conium maculatum	Poison hemlock
E	Convolvulaceae	Convolvulus arvensis	Field bindweed, field morning-glory
N	Asteraceae	Conyza canadensis	Horseweed
N	Orchidaceae	Corallorhiza striata	Striped coralroot
N	Orchidaceae	Corallorhiza striata var. striata	Striped coralroot
E	Asteraceae	Coreopsis rosea	Ink tickseed
N	Asteraceae	Coreopsis tinctoria	Columbia coreopsis
N	Asteraceae	Coreopsis tinctoria var. atkinsoniana	Columbia coreopsis
NR	Amaranthaceae	Corispermum americanum	American bugseed
N	Amaranthaceae	Corispermum pacificum	Pacific bugseed
N	Cornaceae	Cornus nuttallii	Pacific dogwood
N	Cornaceae	Cornus sericea	Red-osier dogwood, red-twig dogwood
NR	Papaveraceae	Corydalis scouleri	Scouler's corydalis, Western corydalis
E	Betulaceae	Corylus avellana	Filbert, hazelnut
N	Betulaceae	Corylus cornuta ssp. Californica	Beaked hazelnut, California hazelnut
N	Crassulaceae	Crassula aquatica	Water pygmyweed
N	Rosaceae	Crataegus douglasii	Douglas hawthorn, black hawthorn
N	Rosaceae	Crataegus gaylussacia	Suksdorf's hawthorn
N, E	Rosaceae	Crataegus gaylussacia × Crataegus monogyna	English-Suksdorf's hawthorn hybrid
E	Rosaceae	Crataegus monogyna	English hawthorn
E	Asteraceae	Crepis capillaris	Smooth hawksbeard
E	Poaceae	Crypsis alopecuroides	Foxtail pricklegrass
N	Convolvulaceae	Cuscuta pentagona var. pentagona	Field dodder
E	Poaceae	Cynodon dactylon	Bermuda grass
E	Poaceae	Cynosurus echinatus	Bristly dogtail
N	Cyperaceae	Cyperus erythrorhizos	Red-rooted flat sedge
E	Cyperaceae	Cyperus esculentus var. leptostachyus	Yellow nutsedge
N	Cyperaceae	Cyperus squarrosus	Awned flatsedge
NR	Cystopteridaceae	Cystopteris fragilis	Fragile fern, bitter fern
E	Fabaceae	Cytisus scoparius	Scots broom
E	Poaceae	Dactylis glomerata	Orchard grass
E	Solanaceae	Datura stramonium	Jimson weed

E	Apiaceae	<i>Daucus carota</i>	Queen Anne's lace, wild carrot
NR	Apiaceae	<i>Daucus pusillus</i>	American carrot, rattlesnake weed
N	Poaceae	<i>Deschampsia cespitosa</i>	Tufted hairgrass
N	Poaceae	<i>Deschampsia elongata</i>	Slender hairgrass
NR	Brassicaceae	<i>Descurainia incisa</i>	Cutleaf tansymustard
E	Caryophyllaceae	<i>Dianthus armeria</i> ssp. <i>armeria</i>	Deptford pink, grass pink
N	Poaceae	<i>Dichanthelium oligosanthes</i> ssp. <i>scribnerianum</i>	Few-flowered panic grass
N	Asparagaceae	<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	Ookow
N	Asparagaceae	<i>Dichelostemma congestum</i>	Ookow
E	Caryophyllaceae	<i>Dichodon viscidum</i>	Anomalous mouse-ear chickweed
E	Plantaginaceae	<i>Digitalis purpurea</i>	Foxglove
E	Poaceae	<i>Digitaria sanguinalis</i>	Hairy crabgrass
E	Dipsacaceae	<i>Dipsacus fullonum</i>	Wild teasel, Fuller's teasel
N	Asparagaceae	<i>Dipterostemon capitatus</i> ssp. <i>capitatus</i>	Bluedicks
E	Brassicaceae	<i>Draba verna</i>	Spring whitlow grass
E	Araceae	<i>Dracunculus vulgaris</i>	Voodoo lily, draon arum
N	Dryopteridaceae	<i>Dryopteris arguta</i>	Coastal wood fern
N	Dryopteridaceae	<i>Dryopteris expansa</i>	Spreading wood fern, Northern wood fern
NR	Cyperaceae	<i>Dulichium arundinaceum</i>	Three-way sedge
E	Amaranthaceae	<i>Dysphania ambrosioides</i>	Mexican tea
E	Amaranthaceae	<i>Dysphania botrys</i>	Jerusalem oak, feather geranium
E	Poaceae	<i>Echinochloa crus-galli</i>	Barnyard grass
NR	Poaceae	<i>Echinochloa muricata</i> var. <i>microstachya</i>	American barnyard grass
E	Elaeagnaceae	<i>Elaeagnus umbellata</i>	Autumn olive
N	Elatinaceae	<i>Elatine chilensis</i>	Chilean waterwort
N	Cyperaceae	<i>Eleocharis acicularis</i>	Needle spikerush
N	Cyperaceae	<i>Eleocharis obtusa</i>	Blunt spikerush
N	Cyperaceae	<i>Eleocharis palustris</i>	Common spikerush, marsh spikerush
N	Hydrocharitaceae	<i>Elodea canadensis</i>	Canadian waterweed
NR	Hydrocharitaceae	<i>Elodea nuttallii</i>	Nuttall's waterweed, Western waterweed
N	Poaceae	<i>Elymus glaucus</i> ssp. <i>glaucus</i>	Blue wildrye
E	Poaceae	<i>Elymus repens</i>	Quackgrass
N	Onagraceae	<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	Purple-leaved willowherb
E	Orchidaceae	<i>Epipactus helleborine</i>	Broad-leaved helleborine
N	Bryaceae	<i>Epipterygium tozeri</i>	Tozer's epiterygium moss
N	Equisetaceae	<i>Equisetum x ferrissii</i>	Ferriss' horsetail
N	Equisetaceae	<i>Equisetum arvense</i>	Common horsetail
N	Equisetaceae	<i>Equisetum fluviatile</i>	River horsetail

N	Equisetaceae	<i>Equisetum hyemale</i> var. <i>affine</i>	Scouring rush
N	Poaceae	<i>Eragrostis hypnoides</i>	Teal lovegrass
NR	Asteraceae	<i>Erigeron divergens</i>	Spreading dogbane, diffuse daisy
NR	Asteraceae	<i>Erigeron philadelphicus</i>	Philadelphia fleabane, Philadelphia daisy
NR	Asteraceae	<i>Erigeron speciosus</i>	Showy fleabane, showy daisy
E	Asteraceae	<i>Erigeron strigosus</i> var. <i>strigosus</i>	Daisy fleabane
E	Geraniaceae	<i>Erodium cicutarium</i>	African filaree, red-stemmed filaree
E	Brassicaceae	<i>Erysimum cheiranthoides</i>	Wormseed mustard, treacle mustard
N	Phrymaceae	<i>Erythranthe alsinoides</i>	Chickweed monkeyflower
NR	Phrymaceae	<i>Erythranthe brevipflora</i>	Short-flowered monkeyflower
NR	Phrymaceae	<i>Erythranthe floribunda</i>	Purple-stemmed monkeyflower
N	Phrymaceae	<i>Erythranthe guttata</i>	Common monkeyflower, seep monkeyflower
N	Phrymaceae	<i>Erythranthe microphylla</i>	Small-leaf monkeyflower
NR	Phrymaceae	<i>Erythranthe washingtoniensis</i>	Washington monkeyflower
N	Liliaceae	<i>Erythronium oregonum</i>	Oregon fawn lily
N	Papaveraceae	<i>Eschscholzia californica</i>	California poppy
N	Asteraceae	<i>Euthamia occidentalis</i>	Western goldentop
E	Polygonaceae	<i>Fallopia x bohemica</i>	Bohemian knotweed
E	Polygonaceae	<i>Fallopia convolvulus</i>	Ivy bindweed, climbing knotweed
N	Poaceae	<i>Festuca occidentalis</i>	Western fescue
N	Poaceae	<i>Festuca subulata</i>	Bearded fescue
N	Limnathaceae	<i>Floerkea proserpinacoides</i>	False mermaid
N	Rosaceae	<i>Fragaria vesca</i> ssp. <i>bracteata</i>	Woodland strawberry
N	Rosaceae	<i>Fragaria vesca</i> ssp. <i>californica</i>	California strawberry
N	Rosaceae	<i>Fragaria virginiana</i>	Broad-petal strawberry, wild strawberry
N	Oleaceae	<i>Fraxinus latifolia</i>	Oregon ash
NR	Liliaceae	<i>Fritillaria affinis</i>	Checker-lily, chocolate lily, mission bells
N	Rubiaceae	<i>Galium aparine</i>	Cleavers, bedstraw
N	Rubiaceae	<i>Galium trifidum</i>	Small bedstraw
N	Asteraceae	<i>Gamochaeta ustulata</i>	Purple cudweed
N	Onagraceae	<i>Gayophytum diffusum</i> ssp. <i>diffusum</i>	Spreadng groundsmoke
N	Onagraceae	<i>Gayophytum diffusum</i> ssp. <i>parviflorum</i>	Nuttalls' groundsmoke
N	Geraniaceae	<i>Geranium bicknellii</i>	Bicknell's geranium
N	Geraniaceae	<i>Geranium carolinianum</i>	Carolina geranium
E	Geraniaceae	<i>Geranium dissectum</i>	Cutleaf geranium
E	Geraniaceae	<i>Geranium lucidum</i>	Shiny geranium
E	Geraniaceae	<i>Geranium molle</i>	Dovefoot geranium
E	Geraniaceae	<i>Geranium pusillum</i>	Small-flowered cranesbill
E	Geraniaceae	<i>Geranium robertianum</i>	Stinky Bob, herb Robert

N	Rosaceae	<i>Geum macrophyllum</i> var. <i>macrophyllum</i>	Largeleaf avens
E	Lamiaceae	<i>Glechoma hederacea</i>	Ground ivy, creeping charlie
N, E	Poaceae	<i>Glyceria ×occidentalis</i>	Western manna grass
N	Poaceae	<i>Glyceria borealis</i>	Boreal mannagrass
N	Poaceae	<i>Glyceria leptostachya</i>	Narrow mannagrass
N	Asteraceae	<i>Gnaphalium palustre</i>	Lowland cudweed
N	Orchidaceae	<i>Goodyera oblongifolia</i>	Western rattlesnake plantain
N	Plantaginaceae	<i>Gratiola neglecta</i>	Common American hedge hyssop
E	Araliaceae	<i>Hedera helix</i>	English ivy
E	Araliaceae	<i>Hedera hibernica</i>	Atlantic ivy
N	Asteraceae	<i>Helenium autumnale</i>	Common sneezeweed
N	Asteraceae	<i>Helenium autumnale</i> var. <i>grandiflorum</i>	Common sneezeweed, large-flowered sneezeweed
N	Apiaceae	<i>Heraclium maximum</i>	Cow parsnip
NR	Pontederiaceae	<i>Heteranthera dubia</i>	Water stargrass
N	Saxifragaceae	<i>Heuchera micrantha</i> var. <i>micrantha</i>	Small-flowered alumroot, Pacific alumroot
NR	Asteraceae	<i>Hieracium albiflorum</i>	White-flowered hawkweed
NR	Asteraceae	<i>Hieracium scouleri</i>	Scoulers' hawkweed
NR	Asteraceae	<i>Hieracium umbellatum</i>	Narrowleaf hawkweed
NR	Poaceae	<i>Hierochloë occidentalis</i>	California sweetgrass
N	Plantaginaceae	<i>Hippuris vulgaris</i>	Mare's tail
E	Poaceae	<i>Holcus lanatus</i>	Velvetgrass
N	Rosaceae	<i>Holodiscus discolor</i> var. <i>discolor</i>	Oceanspray
N	Poaceae	<i>Hordeum brachyantherum</i>	Meadow barley
NR	Campanulaceae	<i>Howellia aquatilis</i>	Water howellia
N	Araliaceae	<i>Hydrocotyle ranunculoides</i>	Floating marsh pennywort
N	Hydrophyllaceae	<i>Hydrophyllum tenuipes</i>	Pacific waterleaf
E	Hypericaceae	<i>Hypericum perforatum</i>	Common St. John's wort
E	Asteraceae	<i>Hypochaeris radicata</i>	Rough cat's ear, hairy cat's ear
E	Aquifoliaceae	<i>Ilex aquifolium</i>	English holly
E	Asteraceae	<i>Inula helenium</i>	<i>Inula, elecampane</i>
E	Iridaceae	<i>Iris pseudacorus</i>	Yellow flag iris
N	Iridaceae	<i>Iris tenax</i> var. <i>tenax</i>	Oregon iris
NR	Juncaceae	<i>Juncus acuminatus</i>	Tapered rush, sharp-footed rush
N	Juncaceae	<i>Juncus bufonius</i> var. <i>bufonius</i>	Toad rush
E	Juncaceae	<i>Juncus effusus</i> ssp. <i>effusus</i>	Common rush, soft rush
N	Juncaceae	<i>Juncus effusus</i> ssp. <i>pacificus</i>	Pacific rush
NR	Juncaceae	<i>Juncus nevadensis</i> var. <i>nevadensis</i>	Sierra rush

N	Juncaceae	<i>Juncus occidentalis</i>	Prairie rush, Western rush
N	Juncaceae	<i>Juncus oxymyris</i>	Pointed rush
N	Juncaceae	<i>Juncus patens</i>	Spreading rush
N	Juncaceae	<i>Juncus tenuis</i>	Path rush, slender rush, poverty rush
NR	Juncaceae	<i>Juncus torreyi</i>	Torrey's rush
NR	Poaceae	<i>Koeleria macrantha</i>	Junegrass
E	Lamiaceae	<i>Lamium purpureum</i> var. <i>purpureum</i>	Red deadnettle
E	Asteraceae	<i>Lapsana communis</i>	Nipplewort
E	Asteraceae	<i>Lapsanastrum apogonoides</i>	Japanese lapsana
E	Fabaceae	<i>Lathyrus latifolius</i>	Perennial peavine, everlasting pea
N	Fabaceae	<i>Lathyrus nevadensis</i> var. <i>nevadensis</i>	Sierra peavine
N	Fabaceae	<i>Lathyrus polyphyllus</i>	Leafy peavine
N	Poaceae	<i>Leersia oryzoides</i>	Rice cutgrass
N	Araceae	<i>Lemna minor</i>	Common duckweed
N	Araceae	<i>Lemna trisulca</i>	Star duckweed
E	Lamiaceae	<i>Leonurus cardiaca</i>	Motherwort
NR	Brassicaceae	<i>Lepidium densiflorum</i> var. <i>pubicarpum</i>	Babyseed pepperweed, prairie pepperweed
NR	Brassicaceae	<i>Lepidium virginicum</i> ssp. <i>menziesii</i>	Hairy pepperweed
E	Asteraceae	<i>Leucanthemum vulgare</i>	Oxeye daisy
NR	Poaceae	<i>Leymus triticoides</i>	Beardless wildrye
NR	Apiaceae	<i>Ligusticum apiifolium</i>	Celery-leaved licorice root
NR	Apiaceae	<i>Lilaeopsis occidentalis</i>	Western lilaeopsis, Western grasswort
N	Liliaceae	<i>Lilium columbianum</i>	Columbia lily
N	Scrophulariaceae	<i>Limosella aquatica</i>	Mudwort, northern mudwort
E	Plantaginaceae	<i>Linaria vulgaris</i>	Butter and eggs
N	Linderniaceae	<i>Lindernia dubia</i>	Yellowseed false pimpernel
N	Linnaeaceae	<i>Linnaea borealis</i> var. <i>longiflora</i>	Western twinflower
NR	Saxifragaceae	<i>Lithophragma parviflorum</i>	Small-flowered fringe cup
E	Poaceae	<i>Lolium multiflorum</i>	Annual ryegrass
E	Poaceae	<i>Lolium perenne</i>	Perennial ryegrass
E	Poaceae	<i>Lolium temulentum</i> ssp. <i>temulentum</i>	Darnel
N	Caprifoliaceae	<i>Lonicera ciliosa</i>	Orange honeysuckle
N	Caprifoliaceae	<i>Lonicera involucrata</i>	Black twinberry
N	Caprifoliaceae	<i>Lonicera involucrata</i> var. <i>involucrata</i>	Black twinberry
N	Caprifoliaceae	<i>Lonicera involucrata</i> var. <i>ledebourii</i>	Coastal twinberry
E	Caprifoliaceae	<i>Lonicera maackii</i>	Amur honeysuckle
E	Fabaceae	<i>Lotus corniculatus</i>	Birdsfoot trefoil
E	Fabaceae	<i>Lotus uliginosus</i>	Greater birdsfoot trefoil

N	Onagraceae	Ludwigia palustris	Eastern false loosestrife
E	Brassicaceae	Lunaria annua	Money plant, honesty
NR	Fabaceae	Lupinus albicaulis var. albicaulis	Pine lupine, sickle keeled lupine
NR	Fabaceae	Lupinus bicolor	Two color lupine, miniature lupine
NR	Fabaceae	Lupinus polycarpus	Field Lupine, small-flowered lupine
N	Fabaceae	Lupinus polyphyllus var. polyphyllus	Bigleaf lupine
NR	Juncaceae	Luzula comosa var. laxa	Pacific woodrush
N	Juncaceae	Luzula hitchcockii	Hitchcock's woodrush, smooth woodrush
N	Juncaceae	Luzula parviflora	Small-flowered woodrush
N	Lamiaceae	Lycopus americanus	Cutleaf water horehound
NR	Lamiaceae	Lycopus uniflorus	Northern bugleweed
NR	Primulaceae	Lysimachia ciliata	Fringed loosestrife
N	Primulaceae	Lysimachia latifolia (Trientalis latifolia)	Western starflower
E	Primulaceae	Lysimachia nummularia	Creeping Jenny
E	Lythraceae	Lythrum salicaria	Purple loosestrife
NR	Asteraceae	Madia exigua	Little tarweed, threadstem madia
N	Asteraceae	Madia glomerata	Cluster tarweed, mountain tarweed
N	Asteraceae	Madia sativa	Coast tarweed
N	Asparagaceae	Maianthemum racemosum ssp. amplexicaule	False Solomon's seal
N	Asparagaceae	Maianthemum stellatum	Starry false Solomon's seal
E	Rosaceae	Malus × domestica	Domestic apple
N	Rosaceae	Malus fusca	Western crabapple
E	Malvaceae	Malva parviflora	Wrinkled cheeseweed, little mallow
N	Marsileaceae	Marsilea vestita	Western waterclover
N	Asteraceae	Matricaria discoidea	Pineapple weed
E	Phrymaceae	Mazus pumilus	Japanese mazus
E	Fabaceae	Medicago lupulina	Black medic, hop clover
N	Lamiaceae	Mentha canadensis	Field mint
E	Lamiaceae	Mentha pulegium	Pennyroyal
NR	Menyanthaceae	Menyanthes trifoliata	Buckbean, bogbean
N	Saxifragaceae	Micranthes fragosa	Brittle-leaved saxifrage, fleshy-leaved saxifrage
NR	Saxifragaceae	Mitella caulescens	Creeping mitrewort, star-shaped mitrewort
NR	Caryophyllaceae	Moehringia lateriflora	Blunt-leaved sandwort
N	Caryophyllaceae	Moehringia macrophylla	Big-leaved sandwort
E	Molluginaceae	Mollugo verticillata	Carpetweed, Indian chickweed
NR	Montiaceae	Montia diffusa	Branching montia
N	Montiaceae	Montia fontana	Spring water chickweed

NR	Montiaceae	Montia howellii	Howell's montia
N	Montiaceae	Montia linearis	Narrowleaf montia, lineleaf Indian lettuce
N	Asteraceae	Mulgedium oblongifolium	Blue lettuce
E	Asteraceae	Mycelis muralis	Wall lettuce
N	Boraginaceae	Myosotis laxa	Small-flowered forget-me-not
NR	Boraginaceae	Myosotis verna	Spring forget-me-not
NR	Ranunculaceae	Myosurus minimus	Least mousetail, tiny mousetail
NR	Haloragaceae	Myriophyllum hippuroides	Western water milfoil
E	Haloragaceae	Myriophyllum spicatum	Eurasian water milfoil
NR	Hydrocharitaceae	Najas flexilis	Wavy water nymph, slender water nymph
NR	Hydrocharitaceae	Najas guadalupensis var. guadalupensis	Common water nymph
NR	Polemoniaceae	Navarretia intertexta	Near navarretia
N	Polemoniaceae	Navarretia squarrosa	Skunkweed
N	Hydrophyllaceae	Nemophila parviflora var. parviflora	Small-flowered nemophila
N	Hydrophyllaceae	Nemophila pedunculata	Meadow nemophila, spreading nemophila
E	Lamiaceae	Nepeta cataria	Catnip
E	Solanaceae	Nicotiana acuminata var. multiflora	Flowered tobacco
N	Nymphaeaceae	Nuphar polysepala	Yellow pond lily
N	Rosaceae	Oemleria cerasiformis	Indian plum, osoberry
N	Apiaceae	Oenanthe sarmentosa	Pacific water parsley
N	Onagraceae	Oenothera biennis	Common evening primrose
N	Onagraceae	Oenothera villosa ssp. strigosa	Villous evening primrose
NR	Araliaceae	Oplopanax horridus	Devil's club
E	Orobanchaceae	Orobanche minor	Clover broomrape
NR	Orobanchaceae	Orobanche uniflora	Broomrape
N	Apiaceae	Osmorhiza berteroi	Mountain sweet cicely
E	Oxalidaceae	Oxalis corniculata	Creeping yellow wood sorrel
N	Poaceae	Panicum capillare ssp. capillare	Witchgrass
E	Poaceae	Panicum dichotomiflorum ssp. dichotomiflorum	Fall panicum
E	Poaceae	Panicum miliaceum	Proso millet, common millet
E	Poaceae	Paspalum dilatatum	Dallisgrass
N	Poaceae	Paspalum distichum	Knotgrass
NR	Plantaginaceae	Penstemon ovatus	Broad-leaved penstemon
NR	Apiaceae	Perideridia gairdneri (syn. P. montana)	Gairdner's yampah, Western false caraway
NR	Apiaceae	Perideridia oregana	Oregon yampah
N	Polygonaceae	Persicaria amphibia	Water smartweed
E	Polygonaceae	Persicaria hydropiper	Smartweed, marshpepper smartweed
N	Polygonaceae	Persicaria hydropiperoides	Waterpepper

N	Polygonaceae	Persicaria lapathifolia	Curltop lady's thumb, willowweed
E	Polygonaceae	Persicaria maculosa	Spotted lady's thumb, heartweed
E	Polygonaceae	Persicaria pensylvanica	Pinkweed
N	Polygonaceae	Persicaria punctata	Dotted smartweed, water smartweed
N	Asteraceae	Petasites frigidus var. palmatus	Western coltsfoot
N	Hydrophyllaceae	Phacelia nemoralis ssp. oregonensis	Oregon phacelia
E	Poaceae	Phalaris aquatica	Bulbous canarygrass
E	Poaceae	Phalaris arundinacea	Reed canarygrass
E	Poaceae	Phleum pratense	Timothy
E	Poaceae	Phragmites australis ssp. australis	Old world common reed
NR	Lamiaceae	Physostegia parviflora	Purple dragonhead
N	Boraginaceae	Plagiobothrys bracteatus	Bracted plagiobothrys
N	Boraginaceae	Plagiobothrys hispidulus	Eastside popcornflower
N	Boraginaceae	Plagiobothrys scouleri	Scouler's popcornflower
E	Plantaginaceae	Plantago arenaria	Sand plantain
E	Plantaginaceae	Plantago lanceolata	English plantain
E	Plantaginaceae	Plantago major	Common plantain
E	Plantaginaceae	Plantago pusilla	Dwarf plantain
NR	Orchidaceae	Platanthera unalascensis	Alaska rein orchid, short-spurred piperia
NR	Valerianaceae	Plectritis brachystemon	Shortspur white plectritis
N	Valerianaceae	Plectritis congesta	Rosy plectritis
N	Valerianaceae	Plectritis macrocera	Longspur white plectritis
E	Poaceae	Poa annua	Annual bluegrass
N	Poaceae	Poa laxiflora	Looseflower bluegrass
E	Poaceae	Poa palustris	Foul bluegrass
E	Poaceae	Poa pratensis	Kentucky bluegrass
N	Polemoniaceae	Polemonium micranthum	Annual polemonium
E	Polygonaceae	Polygonum aviculare	Prostrate knotweed, doorweed
NR	Polygonaceae	Polygonum douglasii	Douglas knotweed
N	Polypodiaceae	Polypodium glycyrrhiza	Licorice fern
E	Poaceae	Polypogon monspeliensis	Rabbitsfoot grass, annual beardgrass
N	Dryopteridaceae	Polystichum munitum	Common sword fern, Western sword fern
N	Salicaceae	Populus trichocarpa	Black cottonwood
E	Portulacaceae	Portulaca oleracea	Common purslane
E	Potamogetonaceae	Potamogeton crispus	Curled pondweed
NR	Potamogetonaceae	Potamogeton epihydrus	Ribbon-leaf pondweed
N	Potamogetonaceae	Potamogeton foliosus	Leafy pondweed
NR	Potamogetonaceae	Potamogeton illinoensis	Illinois pondweed

N	Potamogetonaceae	Potamogeton natans	Floating-leaf pondweed
NR	Potamogetonaceae	Potamogeton pusillus	Small pondweed
NR	Rosaceae	Potentilla anserina ssp. anserina	Common silverweed
NR	Rosaceae	Potentilla anserina ssp. pacifica	Pacific silverweed
NR	Rosaceae	Potentilla biennis	Biennial cinquefoil
N	Rosaceae	Potentilla gracilis var. gracilis	Graceful cinquefoil
NR	Rosaceae	Potentilla rivalis	Brook cinquefoil, streambank cinquefoil
N	Liliaceae	Prosartes hookeri	Hooker's fairybells
N	Lamiaceae	Prunella vulgaris var. lanceolata	Native heal all
E	Rosaceae	Prunus avium	Bird cherry, sweet cherry
E	Rosaceae	Prunus domestica	European plum, garden plum
E	Rosaceae	Prunus mahaleb	Mahaleb cherry
NR	Rosaceae	Prunus virginiana var. demissa	Western chokecherry
NR	Asteraceae	Pseudognaphalium stramineum	Cotton batting cudweed
N	Pinaceae	Pseudotsuga menziesii var. menziesii	Douglas fir
NR	Asteraceae	Psilocarphus elatior	Tall wollyheads
NR	Asteraceae	Psilocarphus oregonus	Oregon woolyheads
N	Dennstaedtiaceae	Pteridium aquilinum var. pubescens	Bracken fern
N	Fagaceae	Quercus garryana	Oregon white oak
N	Fagaceae	Quercus garryana var. garryana	Oregon white oak
NR	Ranunculaceae	Ranunculus aquatilis	Leafy water buttercup
NR	Ranunculaceae	Ranunculus californicus	California buttercup
NR	Ranunculaceae	Ranunculus flabellaris	Yellow water buttercup
N	Ranunculaceae	Ranunculus flammula	Creeping buttercup, lesser spearwort
NR	Ranunculaceae	Ranunculus macounii	Macoun's buttercup
N	Ranunculaceae	Ranunculus occidentalis	Western buttercup
N	Ranunculaceae	Ranunculus orthorhynchus var. orthorhynchus	Straightbeak buttercup, bird's foot buttercup
E	Ranunculaceae	Ranunculus repens	Double-flowered creeping buttercup
E	Ranunculaceae	Ranunculus sardous	Hairy buttercup
N	Ranunculaceae	Ranunculus sceleratus var. sceleratus	Blister buttercup
N	Ranunculaceae	Ranunculus uncinatus	Little buttercup
E	Brassicaceae	Raphanus raphanistrum	Jointed charlock
E	Brassicaceae	Raphanus sativus	Wild radish
N	Rhamnaceae	Rhamnus purshiana	Cascara
N	Grossulariaceae	Ribes divaricatum var. divaricatum	Wild gooseberry, straggly gooseberry
N	Grossulariaceae	Ribes sanguineum var. sanguineum	Red-flowering currant
NR	Brassicaceae	Rorippa columbiae	Columbia cress, Columbia yellowcress
NR	Brassicaceae	Rorippa curvipes var. truncata	Bluntleaf yellowcress

N	Brassicaceae	Rorippa palustris	Hairy marsh yellowcress
N	Brassicaceae	Rorippa sinuata	Spreading yellowcress, Western yellowcress
N	Rosaceae	Rosa gymnocarpa	Bald-hip rose
N	Rosaceae	Rosa gymnocarpa var. gymnocarpa	Bald-hip rose
E	Rosaceae	Rosa multiflora	Multiflora rose
N	Rosaceae	Rosa nutkana	Nootka rose
N	Rosaceae	Rosa pisocarpa ssp. pisocarpa	Clustered rose, swamp rose
NR	Lythraceae	Rotala ramosior	Toothcup
E	Rosaceae	Rubus bifrons	Armenian blackberry, Himalayan blackberry
E	Rosaceae	Rubus lanciniatis	Evergreen blackberry, cut-leaved blackberry
NR	Rosaceae	Rubus leucodermis	Western blackcap, western black raspberry
N	Rosaceae	Rubus nivalis	Snow dewberry, dwarf snow bramble
N	Rosaceae	Rubus parviflorus	Thimbleberry
N	Rosaceae	Rubus spectabilis	Salmon berry
N	Rosaceae	Rubus ursinus	Pacific blackberry, Pacific dewberry
E	Polygonaceae	Rumex acetosella	Sheep sorrel
E	Polygonaceae	Rumex crispus	Curly dock
E	Polygonaceae	Rumex obtusifolius	Bitter dock
N	Polygonaceae	Rumex occidentalis	Rocky mountain western dock
NR	Polygonaceae	Rumex salicifolius	Willow dock
N	Polygonaceae	Rumex salicifolius var. salicifolius	Willow dock
N	Polygonaceae	Rumex venosus	Veiny dock, winged dock
N	Caryophyllaceae	Sabulina macra	Slender sandwort, slender stitchwort
N	Caryophyllaceae	Sagina decumbens ssp. occidentalis	Western pearlwort
NR	Alismataceae	Sagittaria cuneata	Wapato, arrowleaf arrowhead
N	Alismataceae	Sagittaria latifolia	Wapato, broadleaf arrowhead
N	Salicaceae	Salix exigua var. columbiana	Columbia River willow
N	Salicaceae	Salix exigua var. exigua	Coyote willow, narrowleaf willow
N	Salicaceae	Salix exigua var. sessilifolia	Northwest sandbar willow, soft-leaved willow
N	Salicaceae	Salix lasiandra var. lasiandra	Pacific willow
N	Salicaceae	Salix scouleriana	Scouler's willow
N	Salicaceae	Salix sitchensis var. sitchensis	Sitka willow
N	Adoxaceae	Sambucus mexicana ssp. caerulea	Blue elderberry
N	Adoxaceae	Sambucus racemosa	Red elderberry
N	Adoxaceae	Sambucus racemosa var. arborescens	Pacific red elderberry
N	Apiaceae	Sanicula crassicaulis	Pacific snakeroot, Western snakeroot
N	Lamiaceae	Satureja douglasii	Yerba buena
NR	Cyperaceae	Schoenoplectus acutus var. occidentalis	Tule, hardstem bulrush

N	Cyperaceae	Schoenoplectus tabernaemontani	Tule, softstem bulrush
E	Cyperaceae	Scirpus cyperinus	Woolgrass
N	Cyperaceae	Scirpus microcarpus	Small-fruited bulrush
NR	Lamiaceae	Scutellaria lateriflora	Mad dog skullcap
E	Poaceae	Secale cereale	Rye
NR	Crassulaceae	Sedum spathulifolium	Broadleaf stonecrop
NR	Crassulaceae	Sedum stenopetalum ssp. stenopetalum	Wormleaf stonecrop
NR	Selaginellaceae	Selaginella oregana	Oregon spikemoss, Oregon selaginella
NR	Asteraceae	Senecio integerrimus var. ochroleucus	Western white groundsel
E	Asteraceae	Senecio jacobaea	Tansy ragwort
E	Asteraceae	Senecio sylvaticus	Woodland groundsel, wood groundsel
E	Asteraceae	Senecio vulgaris	Common groundsel
E	Poaceae	Setaria pumila ssp. pumila	Yellow foxtail, yellow bristlegrass
E	Caryophyllaceae	Silene coronaria	Rose campion
N	Caryophyllaceae	Silene scouleri ssp. scouleri	Scouler's catchfly
E	Asteraceae	Silybum marianum	Milk thistle
E	Brassicaceae	Sisymbrium officinale	Hedge mustard
N	Iridaceae	Sisyrinchium idahoense var. idahoense	Idaho blue-eyed grass
NR	Apiaceae	Sium suave	Hemlock water parsnip
E	Solanaceae	Solanum americanum	Small-flowered nightshade
E	Solanaceae	Solanum dulcamara	Climbing nightshade, bittersweet
E	Solanaceae	Solanum rostratum	Buffalo bur
NR	Asteraceae	Solidago gigantea	Giant goldenrod
N	Asteraceae	Solidago lepida var. lepida	Canada goldenrod
E	Asteraceae	Sonchus asper	Prickly sow thistle
NR	Rosaceae	Sorbus sitchensis	Sitka mountain ash
N	Typhaceae	Sparganium angustifolium	Floating bur-reed
N	Typhaceae	Sparganium emersum	Simple-stem bur-reed
E	Caryophyllaceae	Spergula arvensis	Cornspurrey, stickwort
E	Caryophyllaceae	Spergularia rubra	Red sand-spurrey
N	Rosaceae	Spiraea douglasii var. douglasii	Douglas spirea
N	Araceae	Spirodela polyrrhiza	Greater duckweed
N	Lamiaceae	Stachys cooleyae	Great betony, Cooley's hedgenettle
N	Lamiaceae	Stachys mexicana	Mexican betony, great betony
N	Lamiaceae	Stachys rigida	Rigid betony, rigid hedgenettle
N	Caryophyllaceae	Stellaria borealis	Boreal starwort
NR	Caryophyllaceae	Stellaria borealis ssp. sitchana	Sitka starwort, few-flowered starwort

N	Caryophyllaceae	Stellaria calycantha	Northern starwort
NR	Caryophyllaceae	Stellaria longipes	Goldie's starwort
<i>E</i>	<i>Caryophyllaceae</i>	<i>Stellaria media</i>	<i>Common chickweed</i>
NR	Caryophyllaceae	Stellaria nitens	Shining starwort
NR	Potamogetonaceae	Stuckenia pectinata	Sago pondweed, fennel-leaved pondweed
NR	Saxifragaceae	Sullivantia oregana	Sullivantia
<i>N</i>	<i>Caprifoliaceae</i>	<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	<i>Common snowberry</i>
<i>N</i>	<i>Asteraceae</i>	<i>Symphotrichum subspicatum</i>	<i>Douglas' aster</i>
<i>E</i>	<i>Asteraceae</i>	<i>Tanacetum vulgare</i>	<i>Common tansy</i>
<i>E</i>	<i>Asteraceae</i>	<i>Taraxacum officinale</i>	<i>Common dandelion</i>
<i>N</i>	<i>Taxaceae</i>	<i>Taxus brevifolia</i>	<i>Pacific yew</i>
<i>N</i>	<i>Saxifragaceae</i>	<i>Tellima grandiflora</i>	<i>Fringe cup, large fringe cup</i>
NR	Ranunculaceae	Thalictrum polycarpum	Tall Western meadowrue
<i>N</i>	<i>Cupressaceae</i>	<i>Thuja plicata</i>	<i>Western red cedar</i>
<i>N</i>	<i>Saxifragaceae</i>	<i>Tiarella trifoliata</i> var. <i>trifoliata</i>	<i>Trefoil foamflower</i>
<i>N</i>	<i>Saxifragaceae</i>	<i>Tolmiea menziesii</i>	<i>Piggyback plant</i>
NR	Poaceae	Torreyochloa pallida var. pauciflora	Weak mannagrass, pale false mannagrass
<i>N</i>	<i>Anacardiaceae</i>	<i>Toxicodendron diversilobum</i>	<i>Poison oak</i>
<i>E</i>	<i>Asteraceae</i>	<i>Tragopogon dubius</i>	<i>Yellow salsify</i>
<i>E</i>	<i>Fabaceae</i>	<i>Trifolium arvense</i>	<i>Hare's foot, rabbitfoot clover</i>
<i>E</i>	<i>Fabaceae</i>	<i>Trifolium campestre</i>	<i>Hop clover</i>
<i>E</i>	<i>Fabaceae</i>	<i>Trifolium dubium</i>	<i>Least hop clover</i>
<i>N</i>	<i>Fabaceae</i>	<i>Trifolium microcephalum</i>	<i>Small-headed clover, woolly clover</i>
NR	Fabaceae	Trifolium oliganthum	Few-flowered clover
<i>E</i>	<i>Fabaceae</i>	<i>Trifolium pratense</i>	<i>Red clover</i>
<i>E</i>	<i>Fabaceae</i>	<i>Trifolium repens</i>	<i>White clover, Dutch clover</i>
<i>N</i>	<i>Melanthiaceae</i>	<i>Trillium ovatum</i> ssp. <i>ovatum</i>	<i>Western trillium</i>
NR	Campanulaceae	Triodanis perfoliata	Clasping Venus' looking glass
NR	Orobanchaceae	Triphysaria pusilla	Dwarf triphysaria, dwarf owl clover
<i>E</i>	<i>Poaceae</i>	<i>Triplasis purpurea</i>	<i>Purple sandgrass</i>
N	Poaceae	Trisetum canescens	Tall trisetum
<i>N</i>	<i>Asparagaceae</i>	<i>Triteleia hyacinthina</i>	<i>Hyacinth triteleia, white triteleia</i>
<i>N</i>	<i>Brassicaceae</i>	<i>Turritis glabra</i>	<i>Tower mustardweed</i>
<i>N</i>	<i>Typhaceae</i>	<i>Typha angustifolia</i>	<i>Narrow-leaved cattail, lesser cattail</i>
<i>N</i>	<i>Typhaceae</i>	<i>Typha latifolia</i>	<i>Broad-leaved cattail, common cattail</i>
<i>N</i>	<i>Urticaceae</i>	<i>Urtica dioica</i> ssp. <i>gracilis</i>	<i>Northwest nettle, American stinging nettle</i>
NR	Lentibulariaceae	Utricularia vulgaris ssp. macrorhiza	Common bladderwort

<i>E</i>	<i>Caryophyllaceae</i>	<i>Vaccaria hispanica</i>	<i>Cow soapwort, cowcockle</i>
<i>N</i>	<i>Ericaceae</i>	<i>Vaccinium parvifolium</i>	<i>Red huckleberry</i>
<i>E</i>	<i>Valerianaceae</i>	<i>Valerianella locusta</i>	<i>European corn salad</i>
<i>N</i>	<i>Hydrocharitaceae</i>	<i>Vallisneria americana</i>	<i>Tape-grass, American water celery</i>
<i>N</i>	<i>Berberidaceae</i>	<i>Vancouveria hexandra</i>	<i>White inside out flower</i>
<i>E</i>	<i>Scrophulariaceae</i>	<i>Verbascum blattaria</i>	<i>Moth mullein</i>
<i>E</i>	<i>Scrophulariaceae</i>	<i>Verbascum thapsus</i>	<i>Flannel mullein, cowboy toilet paper</i>
NR	Verbenaceae	Verbena bracteata	Bracted verbena
<i>N</i>	<i>Verbenaceae</i>	<i>Verbena hastata</i>	<i>Blue verbena</i>
<i>N</i>	<i>Plantaginaceae</i>	<i>Veronica americana</i>	<i>Amerian brooklime</i>
<i>E</i>	<i>Plantaginaceae</i>	<i>Veronica arvensis</i>	<i>Corn speedwell</i>
<i>N</i>	<i>Plantaginaceae</i>	<i>Veronica peregrina</i> var. <i>peregrina</i>	<i>Purslane speedwell</i>
<i>N</i>	<i>Plantaginaceae</i>	<i>Veronica peregrina</i> var. <i>xalapensis</i>	<i>Hairy purslane speedwell</i>
<i>E</i>	<i>Plantaginaceae</i>	<i>Veronica persica</i>	<i>Persian speedwell</i>
<i>N</i>	<i>Plantaginaceae</i>	<i>Veronica scutellata</i>	<i>Marsh speedwell, skullcap speedwell</i>
<i>N, E</i>	<i>Plantaginaceae</i>	<i>Veronica serpyllifolia</i>	<i>Thyme-leaved speedwell</i>
<i>N</i>	<i>Adoxaceae</i>	<i>Viburnum ellipticum</i>	<i>Oregon viburnum</i>
<i>N</i>	<i>Fabaceae</i>	<i>Vicia americana</i> var. <i>americana</i>	<i>American vetch</i>
<i>E</i>	<i>Fabaceae</i>	<i>Vicia cracca</i>	<i>Bird vetch, cat peas</i>
<i>E</i>	<i>Fabaceae</i>	<i>Vicia hirsuta</i>	<i>Hairy vetch</i>
NR	Fabaceae	Vicia nigricans var. gigantea	Giant vetch
<i>E</i>	<i>Fabaceae</i>	<i>Vicia villosa</i>	<i>Winter Vetch</i>
NR	Violaceae	Viola adunca	Early blue violet, hookedspur violet
<i>N</i>	<i>Violaceae</i>	<i>Viola glabella</i>	<i>Stream violet</i>
<i>N</i>	<i>Violaceae</i>	<i>Viola praemorsa</i> ssp. <i>praemorsa</i>	<i>Upland yellow violet, canary violet</i>
NR	Violaceae	Viola sempervirens	Redwoods violet, evergreen violet
<i>E</i>	<i>Poaceae</i>	<i>Vulpia myuros</i>	<i>Rattail fescue</i>
NR	Poaceae	Vulpia octoflora	Sixweeks fescue, six-weeks grass
NR	Hydrangeaceae	Whipplea modesta	whipplevine, yerba de selva
<i>E</i>	<i>Araceae</i>	<i>Wolffia brasiliensis</i>	<i>Brazilian water meal</i>
NR	Araceae	Wolffia columbiana	Columbia water meal
<i>N</i>	<i>Asteraceae</i>	<i>Xanthium strumarium</i> var. <i>canadense</i>	<i>Rough cocklebur</i>

APPENDIX 3

SAUVIE ISLAND/MULTNOMAH CHANNEL SPECIES OF CONCERN

The area covered in this document provides habitat for more than 40 fish and wildlife species, including 7 mammals, 24 birds, 2 reptiles, 3 amphibians and 5 fish species, that are considered to be of concern by one or more agencies.

MAMMALS

California Myotis

Habitat:

Generally forages around trees or over open water. Roosts in cliff faces, caves, crevices in trees or structures such as bridges. Hibernates in winter.

Status:

- Oregon sensitive species list
- Oregon Conservation Strategy species
- ORBIC rank 4

Current and Historical Presence:

Documented on the island and/or Multnomah Channel riparian habitat in a 2005 bat survey.

Actions to stabilize/increase populations:

- Educate landowners on the importance of bats and the facts and myths about bats and diseases.
- Encourage landowners and land managers to tolerate bats roosting in buildings or under eaves.
- Leave and create large snags.
- Minimize use of pesticides and use bat-sensitive vector controls.
- Complete bridge replacements and maintenance when bats are absent.
- Save and report dead bats to ODFW so they can check them for white-nose syndrome.

Fringed Myotis

Habitat:

Require forest habitat. Use large snags and rocks for day and

night roosts and maternity roosts. Use caves and mines for hibernacula. Occasionally use bridges for night roosts.

Status:

- Oregon sensitive species list
- Oregon Conservation Strategy species
- ORBIC rank 2

Current and Historical Presence:

Have not been documented on the island or nearby bottomlands, but could or should be here based on range and modeled habitat.

Actions to stabilize/increase populations:

- Educate residents on importance of bats and the facts and myths about bats and diseases.
- Leave brushy understory in stands of trees.
- Minimize use of pesticides and use bat-sensitive vector controls.
- Save and report dead bats to ODFW so they can check them for white-nose syndrome.

Hoary Bat

Habitat:

This migratory, forest-dwelling species roosts in the foliage of trees during the day and forages along riparian corridors and brushy areas in forests at night.

Status:

- Oregon sensitive species list
- Oregon Conservation Strategy species
- Federal Species of Concern
- ORBIC rank 4

Current and Historical Presence:

Documented on the island and Multnomah Channel riparian habitat in a 2005 bat survey.

Actions to stabilize/increase populations:

- Educate landowners on the importance of bats and the facts and myths about bats and diseases.

- Plant riparian corridors.
- Retain large trees for roosting.
- Leave brushy understory in stands of trees.
- Minimize use of pesticides and use bat-sensitive vector controls.
- Save and report dead bats to ODFW so they can check them for white-nose syndrome.

Silver-haired Bat

Habitat:

Older coniferous forests. Forages over ponds and streams at night and roosts by day under loose bark or in cavities.

Status:

- Oregon sensitive species list
- Oregon Conservation Strategy species
- Federal Species of Concern
- ORBIC rank 4

Current and Historical Presence:

Documented on the island and/or Multnomah Channel riparian habitat in a 2005 bat survey.

Actions to stabilize/increase populations:

- Educate landowners on the importance of bats and the facts and myths about bats and diseases.
- Leave and create large snags
- Minimize use of pesticides and use bat-sensitive vector controls.
- Save and report dead bats to ODFW so they can check them for white-nose syndrome.

Western Gray Squirrel

Habitat:

Oak woodlands, oak savannahs and mixed oak-pine-fir woodlands. Prefers older oak trees with large limbs and continuous canopy cover that facilitates movement.

Status:

- Oregon sensitive species list
- Oregon Conservation Strategy species
- State listed as threatened in Washington State.
- ORBIC rank 4

Current and Historical Presence:

There are a few left on the island but most have been displaced by eastern squirrel species and their numbers declined as stands of oak have been eliminated for agriculture.

Actions to stabilize/increase populations:

- Retain existing Oregon white oaks, especially larger stands.
- Encourage the planting of more oaks.
- Retain and plant native hazelnuts.
- Educate landowners and land managers about the importance of old trees and snags, especially those with woodpecker holes, which gray squirrels use as granaries.
- Encourage connectivity between patches of forests.
- Control non-native squirrels.
- Consider a relocation project, but first modify regulations to prohibit hunting of this species on the island.

Columbia White-tailed Deer

Habitat:

Bottomland forests and riparian scrub-shrub habitat with cottonwood and willows.

Status:

- Oregon sensitive species list
- Federally listed as endangered, but USFWS has proposed the species be down-listed to threatened
- Oregon Conservation Strategy species
- State-listed as endangered in Washington State
- ORBIC rank I



Current and Historical Presence:

Probably common in pre-settlement times. Some individual deer trans-located to Ridgefield National Wildlife Refuge, swam the Columbia River and now live on the island. The increase dominance of Reed canarygrass has caused problems for this species.

Actions to stabilize/increase populations:

- Plant more riparian scrub-shrub habitat.
- Remove Reed canarygrass and replace with shorter, preferably native grasses.

Stellar Sea Lion

Habitat:

Open water connected to the ocean

Status:

- Federally listed as threatened
- Oregon Conservation Strategy species

Current and Historical Presence:

Have been moving into the Columbia River adjacent to Sauvie Island and Multnomah Channel to feed on salmon.

Actions to stabilize/increase populations:

- There are no recommendations related to our area. The Marine Mammal Protection Act was amended in 1994 to allow removal of individual California sea lions, but this provision does not apply to Steller sea lions.

BIRDS

This list includes does not include species that may have occasionally been spotted on the island but are out of range for the area.

Acorn Woodpecker

Habitat:

Oak woodlands with high canopies and relatively open understories. Dependent on dead limbs or snags for storing acorns.

Status:

- Oregon sensitive list
- Federal Species of Concern
- Oregon Conservation Strategy species
- ORBIC rank 4

Current and Historical Presence:

There has been one sighting on the island in the past decade, but they may have never been common here.

Actions to stabilize/increase populations:

- Retain existing native Oregon white oaks and encourage the planting of more. Consider easements on remaining oak stands.
- Retain standing dead oaks, which are critical since these woodpeckers use them for their granaries.
- Educate landowners about the importance of old trees and snags, especially those with woodpecker holes.
- Create more oak savannahs by removing blackberry understory in oak stands.

American White Pelican

Habitat:

Cooperatively feed in shallow water. Typically nest on islands in lakes, rivers, freshwater marshes.

Status:

- Oregon Conservation Strategy species
- State listed as threatened in Washington State
- ORBIC rank 2

Current and Historical Presence:

Five hundred or so pelicans feed on Sauvie Island's larger lakes in spring and fall, but go elsewhere to breed.

Actions to stabilize/increase populations:

- The most important action will be the restoration of Sturgeon Lake, which is currently underway.

Bald Eagle

Habitat:

Lakes, wetlands and rivers, where they prey on geese and ducks and wetlands. Large trees where they roost and nest.

Status:

- Was de-listed as a federally listed species in 2007
- National Audubon Priority Bird
- USFWS Bird of Conservation Concern
- ORBIC rank 4
- Has special protection under the Bald and Golden Eagle Protection Act.

Current and Historical Presence:

Winter populations have dramatically increased on the island. In 2016, 205 bald eagles were counted. Several pairs

have been staying through the summer months to nest on the island and along the Multnomah Channel.

Actions to stabilize/increase populations:

- Retain large old trees for nesting.
- Be proactive in retrofitting power lines and poles to prevent electrocutions.

Band-tailed Pigeon

Habitat:

Nest in coniferous forests, but visit more open areas to forage for berries, grains and flowers.

Status:

- Federal species of concern
- State of the Birds Watch List
- WDFW Priority species in Washington State
- ORBIC rank 4

Current and Historical Presence:

Nest in forested hills above the island/channel, but visit more open areas on the island and channel bottomlands to forage for berries, grains and flowers. Flocks occasionally visit island backyard bird feeders.

Actions to stabilize/increase populations:

- Encourage landowners and land managers to plant island-appropriate native trees and shrubs that provide favored foods for this species: oaks, elderberries, cascaras, chokecherries and bitter cherries

Chipping Sparrow

Habitat:

Open stands of trees interspersed with grasslands.

Status:

- Oregon sensitive list
- Oregon Conservation Strategy species
- ORBIC rank 4

Current and Historical Presence:

Occasionally seen on the island. May have never been numerous here.

Actions to stabilize/increase populations:

- Remove invasives and maintain native low-growing herbaceous understory in oak woodlands.
- Trap, neuter and rehome feral cats.

Common Nighthawk

Habitat:

Grasslands and pastures, especially near lakes and rivers. Nest on the ground in open areas with sparse ground cover, including gravelly islands in rivers. Habitat has to support aerial insects.

Status:

- Oregon sensitive-critical list
- ORBIC rank 4
- Oregon Conservation Strategy species



Current and Historical Presence:

Used to be fairly common on the island, but are now rarely seen.

Actions to stabilize/increase populations:

- Minimize pesticide use.
- Create/restore more grasslands with sparse vegetation and open bare patches.
- Restore riparian and wetland habitats to increase insect prey base.

Dusky Canada Goose

Habitat:

Graze in grasslands, pastures and agricultural fields

Status:

- Oregon sensitive list

- Oregon Conservation Strategy species
- ORBIC rank 2

Current and Historical Presence:

Are present in small numbers on Sauvie Island during the winter months.

Actions to stabilize/increase populations:

- Educate hunters to know the difference between this and other goose subspecies.

Evening Grosbeak

Habitat:

More likely to be in lowlands in non-breeding season, especially in spring. Attracted to bigleaf maples. Breed in coniferous forests at higher elevations.

Status:

- State of the Birds Watch List
- Partners in Flight Watch List



Current and Historical Presence: Foraging flocks occasionally visit Sauvie and its residential bird feeders.

Actions to stabilize/increase populations:

- Plant bigleaf maples and Willamette Valley Ponderosa pines

Peregrine Falcon

Habitat:

Peregrines in the Portland area have learned to substitute structures under bridges for the cliffs they once needed for nesting. Pigeons provide ample food.

Status:

- USFWS Bird of Conservation Concern
- De-listed from federal threatened list
- ORBIC rank 4



Current and Historical Presence:

Populations of this species have increased throughout their range since the banning of DDT, and they forage on the island and channel bottomlands year-round. They prey on birds, especially pigeons, starlings and gulls, which are plentiful in our area. A pair has been spotted repeatedly near the Sauvie Island Bridge, but don't seem to prefer the location for nesting. A nesting platform could be installed.

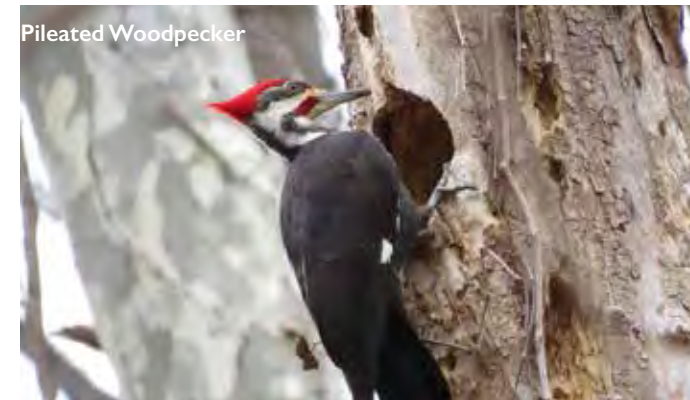
Actions to stabilize/increase populations:

- Consider retrofitting the Sauvie Island Bridge to create a nesting opportunity for a pair of falcons.

Pileated Woodpecker

Habitat:

Late succession mixed coniferous forests. Use large diameter trees and snags for foraging, nesting and roosting.



Status:

- Candidate for state listing in Washington State
- ORBIC rank 4

Current and Historical Presence:

A few individuals live and forage on the island year-round.

Actions to stabilize/increase populations:

- Leave large trees and snags.

Sandhill Crane

Habitat:

Natural habitat is large wetland-wet/dry meadow complexes with a mosaic of aquatic and herbaceous conditions. They are opportunistic omnivores that feed on a wide variety of foods, including grains, frogs, snails, voles and yellow nut sedge. On Sauvie Island, often forage in winter-fallow agricultural fields where crops such as corn and pumpkin were grown in summer.

Status:

- National Audubon Priority Bird
- State-listed as endangered in Washington State
- ORBIC rank 3 (for Canadian subspecies that winters on Sauvie)

Current and Historical Presence:

Thousands of cranes winter on Sauvie Island, foraging in large flocks. Genetic tests conducted by the International Crane Association showed that they are neither greater nor lesser Sandhill cranes, but rather a separate Canadian subspecies.

Actions to stabilize/increase populations:

- Create more and larger wetlands.
- Control ground-foraging predators.

- Encourage the use of cover crops to improve soil health and increase the presence of soil fauna.
- Promote no-till practices to improve soil health and to leave agricultural stubble in the fields for cranes to feed on.
- Consider crane commuting distances when prioritizing conservation actions.
- Encourage farmers to tolerate foraging cranes and discourage the use of hazing.
- When possible, minimize disturbance where cranes are foraging.
- Encourage the use of cover crops to improve soil health and increase the presence of soil fauna.
- Consider the crane's need for long sight lines for safety when considering hedge row and riparian planting.

Short-eared Owl

Habitat:

Requires large expanses of marshes and wet prairies.

Status:

- Oregon sensitive list
- Oregon Conservation Strategy species
- ORBIC rank



Current and Historical Presence:

Seldom seen in the area, but were formerly here. A colony of almost 30 of these owls used to winter near the Sauvie Island Bridge.

Actions to stabilize/increase populations:

- Create more and larger wetlands.
- Control ground-foraging predators.

Streaked Horned Lark

Habitat:

Large (200+ acre) grasslands with few or no trees and shrubs and with low-growing sparse grasses and bare patches.

Status:

- Federally listed as threatened
- Oregon sensitive-critical list
- Oregon Conservation Strategy species
- ORBIC rank I

Current and Historical Presence:

There are historic breeding records for the island but they have recently been seen on Sauvie Island only in winter. There are small breeding populations in the Rivergate Industrial Area, across the Willamette River from the island, and on some gravel bar islands north Sauvie Island. Because this species is federally listed, ODFW has set aside three areas on the island to manage for grassland birds, including larks, so Sauvie Island could become an important area for this species. Audubon Society of Portland, in conjunction with ODFW, is conducting grassland bird surveys, and decoys and sound systems have been installed to attract larks. To date, efforts to attract larks have not been successful.

Actions to stabilize/increase populations:

- Create/restore more grasslands with sparse vegetation and open bare patches.
- Keep dogs out of potential grassland bird nesting areas.
- Trap and re-home feral cats.

Trumpeter Swan

Habitat:

Wetlands with submerged aquatic plants.

Status:

- WDFW Priority Species
- ORBIC rank 2



Current and Historical Presence:

Are around in small numbers on Sauvie Island during the winter months.

Actions to stabilize/increase populations:

- Minimize further loss of wetlands.
- Restore wetlands.

Vaux's Swift

Habitat:

Nest in hollow trees, but in our area, mostly nest in chimneys.

Status:

- Candidate for listing in Washington State

Current and Historical Presence:

Fairly common in the area in summer. Several residents have nesting swifts in their chimneys.

Actions to stabilize/increase populations:

- Encourage landowners to tolerate swifts nesting in chimneys.
- Minimize use of pesticides that impact flying insects.

Vesper Sparrow

Habitat:

Grasslands and lightly grazed pastures with scattered shrubs and some bare patches.

Status:

- Oregon sensitive-critical list
- Oregon Conservation Strategy species

- Federal species of concern
- ORBIC rank 2

Current and Historical Presence:

Mostly seen east of the Cascade Mountains, but populations exist in the Willamette Valley. There are historic records for the island, but they have not been seen here in recent decades.

Actions to stabilize/increase populations:

- Replace reed canarygrass with shorter grasses, preferably native species.

Western Bluebird

Habitat:

Grasslands, pastures near open woodlands where snags with cavities or bird boxes offer nesting opportunities.

Status:

- Oregon sensitive list
- Oregon Conservation Strategy species
- ORBIC rank 4

Current and Historical Presence:

Populations have declined greatly in the Willamette Valley, where they were formerly common. They have always been more likely to nest in the hills above the island, but they definitely nested and foraged on the island before the 1940s. Non-native starlings and house sparrows as well as native tree and violet green swallows often out-compete bluebirds for suitable nest cavities and boxes.

Actions to stabilize/increase populations:

- Protect existing snags and create snags. Inform property owners that while eliminating hazard trees, they can leave a good portion of the tree for bluebird and other wildlife habitat.
- Make sure to erect enough nest boxes for swallows. Put up birdhouses and evict starlings and house sparrows that attempt to nest in them. Put up multiple nest boxes for swallows so that there will be enough to go around.
- Minimize use of pesticides.
- Create more oak savannahs by removing blackberry understory.

Western Grebe

Habitat:

Open water, wetlands and marshes

Status:

- Candidate for state listing in Washington State
- ORBIC rank 4

Current and Historical Presence:

Sometimes seen in the Multnomah Channel and on larger Sauvie lakes

Actions to stabilize/increase populations:

- Encourage emergent vegetation at edges of lakes.

Western Meadowlark

Habitat:

Expanses (200+ acres) of grasslands or lightly-grazed pastures with medium-height grasses and few trees and shrubs. Meadowlarks nest on the ground, but hedgerows make habitat undesirable since they can harbor predators.

Status:

- Oregon sensitive-critical list
- Oregon Conservation Strategy species
- ORBIC rank 4

Current and Historical Presence:

Formerly common on the island during nesting season as well as at other times of the year, but now seen in small flocks only in non-breeding season. Hay and grass seed fields can be "biological traps" for ground-nesting birds. The increase in coyote populations on the island may also be a factor. ODFW has set aside three areas on the Sauvie Island Wildlife Management Area for grassland birds, including meadowlarks. Audubon Society of Portland is conducting summer grassland bird surveys in these areas, but in the last three summers, no nesting meadowlarks have been noted.

Actions to stabilize/increase populations:

- Create and manage large (200+ acre) areas of uncultivated grasslands.
- Manage cattle grazing so that grass heights are conducive to meadowlark nesting.
- Keep dogs out of areas where meadowlarks and other ground-nesting birds are present.
- Wait until late summer to mow/hay pastures if nesting meadowlarks are present.
- Plant native wildflowers in grasslands to increase insect population.

- Minimize use of pesticides.
- Trap and re-home feral cats.

Western Purple Martin

Habitat:

Open grasslands/pastures near rivers, lakes and wetlands

Status:

- Oregon sensitive-critical list
- Candidate for state listing in Washington State
- ORBIC rank 2

Current and Historical Presence:

Martins once nested in more areas of Oregon, but Sauvie Island and the Multnomah Channel are among only a few areas west of the Rockies where martin populations are currently stable. They are more common here than previously because of work by the Northwest Purple Martin Conservation Group which for decades has been erecting and monitoring nesting gourds. Many island /channel residents are enthusiastic “martin landlords.”

Actions to stabilize/increase populations:

- Retain existing snags and create snags.
- Erect and monitor enough nest gourds to keep up with the expanding populations of martins.
- To minimize competition from starlings and other cavity nesting species, take gourds down during winter and wait to put them up until the martins return from migration.
- Minimize use of pesticides.
- Keep ponds and wetlands healthy to encourage dragonflies—the martin’s favorite food.
- Identify gathered pilings in Multnomah Channel currently used by nesting martins and work to retain them during piling removal projects.

White-breasted (Slender-billed) Nuthatch

Habitat:

Large diameter native oaks and semi-open oak savannahs and woodlands. Forage for weevils and other insects on large tree limbs and trunks. Visit backyard birdfeeders. White-breasted nuthatch are considered an oak-dependent species.

Status:

- Oregon sensitive list



- Oregon Conservation Strategy species
- ORBIC rank 3
- Candidate for state listing in Washington State

Current and Historical Presence:

Populations have declined on the island as old native oaks and oak stands have been taken down for agriculture and firewood.

Actions to stabilize/increase populations:

- Encourage farmers and landowners to conserve native oak trees.
- Disseminate information on how to care for oaks on farmland and in backyards (A fact sheet was recently published by the Sauvie Island Habitat Partnership and the West Multnomah Soil & Water Conservation District.)
- Encourage/plant young native oak trees to replace old oaks that die of old age or are logged out.
- Restore oak understory.
- Minimize use of pesticides.
- Consider conservation easements on island oak stands.

Willow Flycatcher

Habitat:

Riparian shrub thickets. Partial to native willows, but will nest in thickets of non-native blackberries. Sometimes use oak woodlands. Nest a few feet above the ground.

Status:

- Oregon sensitive-critical list
- Federal species of concern
- ORBIC rank 4

Current and Historical Presence:

Formerly more common on the island/channel, but still nest in smaller numbers in island willow and blackberry thickets.

Actions to stabilize/increase populations:

- Encourage landowners and land managers to plant willows and other native shrubs that provide cover and nesting habitat.
- Plant native species to encourage native insects.
- Minimize pesticide use.
- Wait until after nesting season to cut back or spray blackberries and other thicket-forming shrubs.
- Control reed canarygrass so willow seeds will germinate.
- Trap and re-home feral cats.

Yellow-billed Cuckoo

Habitat:

Large areas of bottomland willow/ash/cottonwood forests and willows along rivers.

Status:

- Proposed candidate for federal listing as a threatened species
- ORBIC rank 2

Current and Historical Presence:

J. K. Townsend mentioned in the 1830s that this species was “abundant in summer” in areas along the Columbia River on Sauvie Island and near Fort Vancouver, but by the 1890’s ornithologists were describing these birds as rare in the Willamette Valley. The north end of the Sauvie Island Wildlife Management Area has one of the largest remaining expanses of bottomland forest in our region, but cuckoos have not been documented here in decades. Their decline may be partly because of the decline of Lepidoptera species, since caterpillars are their preferred food. A cuckoo spotted at the Sandy River Delta in the mid 1990s held out hope that this species is not completely extirpated from our area.

Actions to stabilize/increase populations:

- Educate landowners about the wildlife values of cottonwood/ash/willow forests and consider easements on remaining large stands.
- Encourage landowners to leave tent caterpillars as food for birds.
- Minimize use of pesticides.
- Minimize cattle grazing in the understory of bottomland forests.

Yellow-breasted Chat

Habitat:

Large, dense riparian shrub thickets.

Status:

- Oregon sensitive-critical list
- Federal species of concern
- Oregon Conservation Strategy species
- ORBIC rank 4

Current and Historical Presence:

Uncommon, but are occasionally seen on Sauvie Island.

Actions to stabilize/increase populations:

- Plant dense areas of native shrubs, especially spireas, red-osier dogwoods and willows.
- Minimize pesticide use.

REPTILES/AMPHIBIANS

Western Painted Turtle

Habitat:

Slow moving water: ponds, lakes, wetlands, canals and rivers with logs for basking. Need sparsely vegetated uplands for nesting. Drainage canals are an important “wildlife corridor” for this species on our island.



Federal/State Status:

- Oregon sensitive-critical list
- Oregon Conservation Strategy species

Current and Historical Presence:

Populations exist in the island/Multnomah Channel drainage

canals and a few farm ponds and lakes but few juveniles are seen. Turtle surveys were conducted on the island in 2007, 2008 and 2013.

Actions to stabilize/increase populations:

- Encourage landowners and land managers to add basking logs or structures in canals and ponds (15 basking structure have been placed in the last few years.)
- Remove reed canary grass at edges of ponds and wetlands and replace with sedges and other emergent vegetation.
- Create/enhance nesting areas by removing reed canarygrass and adding sand and gravel to the substrate on sunny sites near known turtle areas.
- Outreach to and educate Sauvie landowners and recreational visitors. Remind them it is illegal and inadvisable to move turtles.
- Use ODFW's Best Management Practices for turtle-friendly management of drainage canals and dikes (including timing of dredging and vegetation management.)
- Trap and remove invasive turtles (to date, none have been seen in turtle surveys, but vigilance is called for).
- Encourage reporting of turtle sightings on www.oregonturtles.com.
- Install wildlife crossing signs on roads where turtles and other wildlife are most often hit by vehicles.

Western Pond Turtle

Habitat:

Slow moving water: ponds, lakes, wetlands, canals and rivers with logs for basking. Need sparsely vegetated uplands for nesting. Drainage canals are an important "wildlife corridor" for this species on our island.



Western Pond Turtle

Status:

- Proposed as a candidate for federal listing as threatened
- Oregon sensitive-critical list

- Oregon Conservation Strategy species
- State-listed as endangered in Washington State

Current and Historical Presence:

In past decades, were spotted occasionally on Sauvie Island, but the one last seen was hit by a car in 2008. None were seen during turtle surveys conducted on the island in 2007, 2018 and 2013.

Actions to stabilize/increase populations:

- Encourage landowners and land managers to add basking logs or structures in canals and ponds. (15 basking structures have been placed in the last few years.)
- Remove reed canary grass at edges of ponds and wetlands and replace with sedges and other emergent and aquatic vegetation.
- Create/enhance nesting areas by removing reed canarygrass and adding sand and gravel to the substrate to sunny sites near known turtle areas.
- Outreach to and educate Sauvie landowners and recreational visitors. Remind people it is illegal and inadvisable to move turtles.
- Use ODFW's Best Management Practices for turtle-friendly management of drainage canals and dikes (including timing of dredging and vegetation management)
- Trap and remove invasive turtles (to date, none have been seen in turtle surveys, but vigilance is called for.)
- Encourage reporting of turtle sightings on www.oregonturtles.com.
- Install wildlife crossing signs at places where turtles and other wildlife are most often hit by vehicles.

Clouded Salamander

Habitat:

Large, decaying logs in forests.

Status:

- Oregon sensitive species
- Oregon Conservation Strategy Species

Current and Historical Presence:

Have not been documented on the island or nearby bottomlands, but could or should be here based on range and modeled habitat.

Actions to stabilize/increase populations:

- Leave large fallen logs undisturbed
- Provide adequate riparian buffers

Northern Red-Legged Frog

Habitat:

Forests in proximity to wetlands or ponds are ideal, but they will travel long distances from the forests where they live most of the year to the ponds and wetlands where they breed. Ponds and wetlands that mostly dry up in summer at ideal for their egg-laying and tadpole development since it is not a successful habitat for bullfrog/tadpole development. Northern red-legged frogs will even use large backyard ponds if they have at least 24" of water during the early summer, when tadpoles are developing. Ponds need to have some emergent vegetation for egg attachment, but even reed canarygrass will do.

Status:

- Oregon sensitive list
- Federal species of concern
- Oregon Conservation Strategy species



Northern Red-Legged Frog

Current and Historical Presence:

Populations in the area are likely fairly stable. Egg mass surveys were conducted in 2014 as part of the Sauvie Pond Project. Surveys have also been conducted in several areas in the Multnomah Channel bottomlands. A large population that lives most of the year in Forest Park migrates annually to the Harborton Wetlands, just south of Sauvie, to lay eggs and breed.

Actions to stabilize/increase populations:

- Manage hydrology with this species in mind
- Preserve forest areas with native understory near wetlands when this species is present.
- Be mindful that fish projects may need alterations to

retain amphibian breeding habitat.

- Trap and remove bullfrogs, invasive carp and other warm-water non-native fish.
- Discourage the addition of bass and other warm-water predator fish to ponds.
- Minimize use of pesticides.
- Use environmentally sensitive mosquito control methods on ponds and wetlands.
- Keep dogs out of water bodies where egg masses are present.
- Work to minimize road mortality between habitat patches (i.e. Sauvie Island Road near Wapato Greenway). Seek out areas where they may be migrating across Highway 30 during breeding season and take steps to assist these populations.

Western Toad

Habitat:

Use wetlands, ponds and lakes for breeding.

Status:

- ODFW sensitive list
- Oregon Conservation Strategy Species
- Candidate for listing in Washington State

Current and Historical Presence:

Have not been documented on the island, but could or should be here based on range and modeled habitat.

Actions to stabilize/increase populations:

- Install culverts or drift fences at problem road crossings near breeding sites.
- Inform recreationists about importance of minimizing shoreline activity.
- Manage vegetation at known breeding sites.

FISH

Lower Columbia River Chinook Salmon

Habitat:

Columbia River and off-channel habitat; Pacific Ocean. For spawning, require cool streams with clean gravel. Require cool, deep resting holes in summer.



Status:

- Federally listed as threatened
- Oregon sensitive list
- Oregon Conservation Strategy species

Current and historical presence:

Chinook salmon were historically present and are currently present in the areas throughout the Multnomah Channel and in and around Sauvie Island wherever access is not limited by dikes, levees and other fish passage barriers.

Actions to stabilize/increase populations:

- Create off-channel habitat
- Re-establish flood plain connections
- Reduce and improve dredging activities and food web function

Lower Columbia River Chum Salmon

Habitat:

Columbia River and off-channel habitat; Pacific Ocean. Spawn in stream gravel bars with pulling flow and side channels near tidewaters.

Status:

- Currently considered functionally extirpated
- Federally listed as threatened
- Oregon sensitive-critical list
- Oregon Conservation Strategy species

Current and historical presence:

Historically, chum adults and juveniles used main stem habitats in and around Sauvie Island. Adult chum spawned in main stem areas containing gravel and juveniles used any available habitat.

Currently chum are functionally extirpated from the these

areas due to human impacts and a lack of habitat throughout these heavily impacted areas and in other sub-basins throughout the Columbia basin.

Actions to stabilize/increase populations:

- Create off-channel habitat
- Re-establish flood plain habitat for juvenile rearing
- Control invasive species
- Improve land use activities and water quality for juvenile fish

Lower Columbia River Coho Salmon

Habitat:

Columbia River and off-channel habitat; Pacific Ocean

Status:

- Federally listed as threatened
- State listed as endangered
- Oregon Conservation Strategy species

Current and historical presence:

Coho salmon were historically and are currently present in the areas throughout the Multnomah Channel and in and around Sauvie Island wherever access is not limited by dikes and fish passage barriers.

Actions to stabilize/increase populations:

- Create off-channel habitat
- Re-establish flood plain connections
- Manage sustainable harvest
- Manage water quality impacts from land use activities.

Lower Columbia River Steelhead

Habitat:

Columbia River and off-channel habitat; Pacific Ocean

Status:

- Federally listed as threatened
- Oregon Conservation Strategy species

Current and historical presence:

Steelhead were historically and are currently present in the areas throughout the Multnomah Channel and in and around Sauvie Island wherever access is not limited by dikes and fish passage barriers.

Actions to stabilize/increase populations:

- Create off-channel habitat
- Re-establish flood plain connections

Oregon Chub

Habitat:

Shallow, still-water habitats such as river side channels, beaver ponds, sloughs and flooded marshes.

Status:

- Federally de-listed in 2015. Was the first fish to be taken off the Endangered Species List
- Oregon Conservation Strategy species

Current and historical presence:

No Oregon chub have been found in the Plan Area in recent years, but it is highly probably that they were present in the past. The preponderance of slough backwater habitat and isolated ponds and lakes would have and still would offer ideal habitat for this species.

Actions to stabilize/increase populations:

- Create off-channel habitat
- Re-establish flood plain connections
- Implement invasive species removal programs

SOURCES

Information in this section is from the following sources:

Oregon Conservation Strategy

Staff of Oregon Department of Fish and Wildlife

Birds of Oregon, a general reference, edited by Marshal Hunter and Contreas. OSU Press

The websites of the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, US Fish and Wildlife Services and National Audubon.

Accounts by island birders and residents

APPENDIX 4

SAUVIE ISLAND/MULTNOMAH BOTTOMLANDS INVASIVE PLANTS

One of the biggest threat to natural habitats in our area and throughout the world is the encroachment of invasive plants since they crowd out native plants that are important sources of food, habitat and shelter for native wildlife species. The following is a prioritized list of species that grow in this area. An excellent source of more information on control of invasive species is www.4countyCVMA.org.

EDRR SPECIES

EDRR stands for Early Detection, Rapid Response. These are more recently introduced species that spread quickly and alter natural habitats. They are top priority for immediate eradication. In most cases, only a few patches have been found in our area and treatment is underway. Presence of these species should always be reported at www.oregoninvasiveshotline.org or by calling 1-866-invader.

Latin name	Common name	Distribution on the Island/Channel	Status	Control options
<i>Alliaria petiolata</i>	Garlic mustard	Only one small known patch in the area, along the trail on the east side of Wapato Access, likely carried in by hikers.	Controlled repeatedly over seven years by WMSWCD/Sauvie Island Habitat Partnership (SIHAB) weed pulls. Patch has diminished but seed stock remains and new plants sprout yearly.	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . Persistent hand pulling is effective, but needs to be done over the course of several years, since seeds are viable for up to 10 years, or more. Foliar treatment (2% triclopyr amine, or 2% glyphosate) works as well with the same caveat.
<i>Daphne laureola</i>	Spurge laurel	A few isolated specimens were found and removed near Charlton Road in forested areas. Surveys did not find extensive populations, but many woodland areas are at risk. Especially problematic in oak habitat, where carpets of seedlings hinder germination and development of sensitive native species.	Early detection surveys found and removed isolated populations; appears to not have spread greatly, but may be present elsewhere on the Island.	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . Contact WMSWCD for verification and assistance. All parts of the plant are toxic and can cause contact dermatitis and respiratory issues. Small to medium specimens can be uprooted by hand or with a shovel or weed wrench. Large specimens may require a cut-stump application (cut at base, and apply a thin layer of 50% triclopyr amine to fresh wound). Monitor for seedlings, or regrowth.
<i>Ludwigia hexapetala</i> ; <i>L. peploides</i>	Water primroses	A single population was found in the Multnomah Channel just south of the Sauvie Island bridge. Extensive populations exist in the Columbia Slough and mid-Willamette systems. NOTE: <i>Ludwigia palustris</i> , which is common in lakes and ponds in our area is native and should NOT be controlled.	The only known population was controlled effectively and has not returned, though it is monitored annually. Invasive <i>Ludwigia</i> species are found nearby in the Columbia Slough and in the Willamette River.	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . This species can be confused with a native look-a-like and requires an aquatic herbicide application.
<i>Lythrum salicaria</i>	Purple loosestrife	Edges of Sturgeon Lake and other water bodies, along Willamette/Columbia River beaches, and in and along the Multnomah Channel.	Biological control beetles have been used on the island, but have been limited in their effectiveness in many areas because of fluctuating water levels. Some locations have been treated with chemicals.	Best time to control is in summer, when flowers make it more visible, but before it goes to seed. Hand-pulling is recommended for small patches, but plants should be disposed of in plastic bags so that they don't re-root. Report sightings to WMSWCD and www.oregoninvasiveshotline.org .
<i>Phragmites australis</i> ssp. <i>australis</i>	Common reed	Scattered along both sides of Multnomah Channel and around the southern tip of Sauvie Island. The native species looks very similar and is difficult to distinguish.	Monitored and treated by WMSWCD and the Oregon Department of Agriculture, with assistance from PSU Center for Lakes and Reservoirs.	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . This species can easily be confused with a native look-a-like and requires an aquatic herbicide application.
<i>Phytolacca americana</i>	American pokeweed	Occasional occurrences on southeastern side of Sauvie Island. This area is at great risk in the long-term since there are extensive, unmanaged populations in North Portland. Birds are likely vectors.	All known populations are currently being managed on Sauvie Island. Status will need to be re-evaluated regularly, in the event that this species becomes established on the Island.	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . Remove as soon as identification is confirmed as mature specimens are difficult to control. If fruits are present, clip and dispose of these in the trash. Small plants can be hand-dug. Large specimens can be treated foliarly before seed maturation with 2% triclopyr amine.
<i>Polygonum</i> spp. (<i>p. cuspidatum</i> , <i>p. polystachyum</i> , <i>p. sachalinense</i> and hybrids)	Japanese, Himalayan, giant and hybrid knotweeds	A few small scattered patches across Sauvie Island.	ODFW has aggressively treated on their land; WMSWCD and landowners routinely treat in a few other locations. Landowners are strongly urged to control this species before it spreads to other properties.	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . Do not cut or mow plants as cut material re-roots and causes new infestations. Foliar aquatically-approved glyphosate spray needs to be done late in the season when it will be carried down into the rhizomes.

HIGH PRIORITY SPECIES

Habitat altering species that land owners/managers are strongly urged to control to prevent further spread into natural areas

Latin name	Common name	Distribution on the Island/Channel	Status	Control options
<i>Ailanthus altissima</i>	Tree of Heaven	Lower east side of Sauvie.	Landowners are strongly urged to control this species before it spreads to other properties. Note; this is an abundant plant along shores of mid-Columbia River system, so there will be lots of propagule pressure along Columbia River side of Sauvie Island.	Hand pull or dig seedlings prior to fruit formation in the late summer/fall. A weed wrench may be helpful. For larger specimens, saw or lop off a few inches above the base (or girdle) and apply 50% triclopyr amine. Monitor for re-sprouts; follow-up treatments will likely be necessary.
<i>Amorpha fruticosa</i>	False indigo bush	Locally abundant along Columbia River beaches, Dairy Creek and the SE corner of Sturgeon Lake. Also scattered in the Multnomah Channel in low densities.	SIHAB work parties have treated at Warrior Rock and Willow Bar. Landowners are strongly urged to control this species before it spreads to other properties.	Hand pull or dig seedlings prior to fruit formation in the late summer/fall. A weed wrench may be helpful. For larger specimens, saw or lop off a few inches above the base and spray stump with 50% glyphosate. Monitor for re-sprouts; follow-up treatments will likely be necessary.
<i>Arum italicum</i>	Italian arum	Escaped from cultivation. Seen in residential areas and starting to creep into more natural areas.	Landowners are strongly urged to control this species before it spreads to other properties.	Hand digging is difficult, since even a small piece of a broken off bulb will generate into a new plant. Underground stems are thin and break easily when dug. A glyphosate spray will be somewhat effective, but needs to be repeated over several seasons.
<i>Carex diffusa</i>	Drooping sedge	A few plants have been seen on the island.	Landowners are strongly urged to control this species before it spreads to other properties.	Hand digging is effective and relatively easy on small plants. Large mature plants may need to be "sawed" in quarters and then dug out.
<i>Centaurea diffusa</i>	Diffuse knapweed	Infestations noted at Marshall beach and Willow Bar, likely elsewhere on Columbia River side of Sauvie Island.	Pulled once by WMSWCD, but more extensive surveying is needed to continue effort given likelihood of presence. Extensive population in mid-upper Columbia River system.	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . If soils permit, plants can be pulled after they bolt but before they flower, typically May to June.
<i>Conium maculatum</i>	Poison hemlock	Along Sauvie roads; Oak Island.	Poisonous to humans and livestock and remains toxic when baled into hay, so landowners are strongly urged to control it.	Tends to colonize disturbed areas so improving pastures can be a defense. Plants can be hand pulled or treated with glyphosate.
<i>Crataegus monogyna</i>	English hawthorn	Common in woodlands throughout and particularly pervasive at Wapato Greenway. Birds spread the berries around the island.	OSP has felled and treated many trees at Wapato Greenway. Landowners are strongly urged to control this species before birds spread the berries to other properties.	Hand pull or dig seedlings prior to fruit formation in the late summer/fall. A weed wrench may be helpful. For larger specimens, saw or lop off a few inches above the base and spray stump with 50% glyphosate. Monitor for re-sprouts; follow-up treatments will likely be necessary.
<i>Cytisus scoparius</i>	Scotch broom	Willow Bar; scattered elsewhere.	Has been treated by SIHAB and others in a few locations. Landowners are strongly urged to control this species before it spreads to other properties.	Small plants can be dug out. Cut out the root crown of larger plants. A weed wrench makes easier work on this and can be checked out from WMSWCD. Alternatively, mow in spring before seeds ripen and follow up with an herbicide application in the fall. Avoid mowing when seed pods are ripe.
<i>Elaeagnus umbellata</i>	Autumn olive	Along the edge of the forest at Willow bar and other scattered locations on Sauvie Island.	No control activities are known at this time.	Hand pull or dig seedlings prior to fruit formation in the late summer/fall. A weed wrench may be helpful. For larger specimens, saw or lop off a few inches above the base and spray stump with 50% glyphosate. Monitor for re-sprouts; follow-up treatments will likely be necessary.
<i>Hedera helix/Hedera hibernica</i>	English/Irish ivy	Scattered in forests and residential areas.	All large infestations on Sauvie have been treated by WMSWCD and Sauvie Island Habitat Partnership. Several smaller areas still need treatment, but have been noted in a matrix being used by SIHAB and WMSWCD. Treated areas be monitored by SIHAB and re-controlled every 3 to 5 years.	Ivy vines in trees, especially those vines that are fruiting, should be the highest priority. Large vines can be sawed or lopped off a few inches above the base, then paint or spray stump with 50% glyphosate to prevent re-sprouting. Landowners can contact the SIHAB for help with treatment of large, fruiting vines. Ivy on the ground can be pulled by hand or treated with a glyphosate spray.

<i>Ranunculus ficaria</i>	Lesser celandine	Occasional in residential areas on south end of Sauvie Island.	WMSWCD and landowners have treated all known locations on the Island (as of 3/2017).	Report sightings to WMSWCD and www.oregoninvasiveshotline.org . Do not pull or compost. Small clumps can be carefully removed with a shovel but be sure to remove entire underground bulb mass. Dispose of in trash or sift soil to remove bulbs. Above ground bulblets born on stems can be easily tracked to new areas. Glyphosate or triclopyr amine spray is most effective when the plants are in bloom and no rain is forecasted for at least 24 hours.
<i>Rubus armeniacus</i>	Armenian blackberry	Widespread along pasture edges, roadsides and woodland edges throughout the area.	Treated by landowners and ODFW and in areas being restored by WMSWCD, but still rampant throughout the area.	For smaller patches, cut back to within a few inches of the ground and then pop out the root crown with a shovel. For larger infestations, a tractor with a blade can be used to get rid of most of the growth, then treat re-sprouts when they are ~18-24" tall with a foliar spray, preferably in late fall when spray will be carried down into the roots.
<i>Populus alba</i>	Silver poplar	An aggressively-spreading patch of this on the east side of Wapato Greenway needs treatment.	No control activities are known at this time.	Saw or lop off a few inches above the base and paint or spray stump with 50% glyphosate to prevent re-sprouting.
<i>Silybum marianum</i>	Blessed milk thistle	Escapee from cultivation that has been found in various locations on the island, but has posed a serious threat elsewhere in Oregon and across the Columbia River near Vancouver Lake.	Because there are just a few patches on Sauvie Island, it is a priority for treatment by WMSWCD. Scattered locally abundant patches on ODFW refuge land, and eastern and southern sides of the Island. All known populations are controlled.	Specimens can be mowed repeatedly before seed set to limit seed production. If seed heads are present, clip, bag and dispose of them in the trash. Plants can also be treated with 2% triclopyr amine before flowering. Report sightings to WMSWCD and www.oregoninvasiveshotline.org

MEDIUM PRIORITY

Pervasive species that have been in the area for decades. Should be controlled, but are lower priority than species aforementioned.

Latin name	Common name	Distribution on the Island/Channel	Status	Control options
<i>Aegopodium podagraria</i>	Goutweed / Bishop's Weed	Has spread very aggressively in just a couple of locations on the island.	Landowners are strongly urged to control this species before it spreads to other properties.	Persistent pulling and digging can be effective. Be sure to get all the roots. Foliar 2% glyphosate or triclopyr amine spray can be used on larger infestations. Spray the infestation once in the spring, and once again in late summer. Do not plant.
<i>Buddleia davidii</i>	Butterfly bush	Rampant on east side of Highway 30 just south of the Island, but not as common on the Island.	Landowners are strongly urged to control this species before it spreads to other properties.	Saw or lop off a few inches above the base and paint or spray stump with 50% glyphosate to prevent re-sprouting.
<i>Cirsium arvense</i>	Canada thistle	Common in pastures and grasslands throughout the area.	Treated regularly by ODFW and many landowners. Provides pollinator resources. Can be confused with native thistles.	Hand pulling is not very effective, since root remnants can develop into new plants. BE AWARE, many native thistles are often confused with invasive thistles. If must control, use 2% triclopyr amine after bolting, but before flowering.
<i>Geranium lucidum</i>	Shiny geranium	Rampant along trails at Wapato Greenway, and at some private properties.	OSP has treated, but infestation remains. Landowners are strongly urged to control this species before it spreads to other properties.	Hand pulling is not very effective, since root remnants can develop into new plants. Recommend spraying with glyphosate after germination but before flowering (March – April). May choose to use 2% triclopyr amine to select against beneficially competing grasses.
<i>Geranium robertianum</i>	Herb Robert	Rampant along trails at Wapato Greenway, and elsewhere on the Island.	OSP has treated, but much remains. Landowners are strongly urged to control this species before it spreads to other properties.	Hand pulling is not very effective, since root remnants can develop into new plants. Recommend spraying with 2% triclopyr amine in early spring before flowering.
<i>Geum urbanum</i>	Wood avens	Scattered populations in natural and cultivated areas.	Landowners are strongly urged to control this species before it spreads to other properties. Easily confused with the invasive <i>Geum microphyllum</i> . <i>Geum urbanum</i> has darker leaves and blooms later.	Easy to hand pull in landscape settings or spray with Roundup.

<i>Ilex aquifolium</i>	Holly	Scattered in forests throughout the area.	SIHAB has treated in ODFW North Unit, Grange Forest, Wapato Greenway and other locations as discovered when treating other invasive species. No systematic treatment otherwise. Landowners are strongly urged to control this species before it spreads to other properties.	Small plants can be hand pulled or dug. Saw or lop off larger plants a few inches above the base and paint or spray stump with 50% glyphosate to prevent re-sprouting.
<i>Lonicera maackii</i>	Amur honeysuckle	Several plants were found where Oak Island Road enters the Sauvie Island Wildlife area.	Plants at Oak Island Wildlife Area entrance were controlled in summer 2016 by ODFW staff. No further plants have been noted, landowners and agencies should be on the lookout.	Saw or lop off a few inches above the base and paint or spray stump with 50% glyphosate to prevent re-sprouting.
<i>Lysimachia nummularia</i>	Creeping Jenny	Invading edges of wetlands on several areas of Sauvie Island.	Some areas have been treated where restoration has occurred. Landowners are strongly urged to control this species before it spreads to other properties.	Persistent hand pulling can keep it at bay, but is largely ineffective, since root fragments re-sprout. Foliar spray of glyphosate is recommended. Do not plant.
<i>Phalaris arundinacea</i>	Reed canarygrass	Very widespread in pastures, grasslands and wetland edges.	Treated in areas where restoration has occurred, but otherwise mostly unchecked. Formerly planted as forage and for hay in wet pastures.	This is one of the most destructive, habitat-altering species on our island, but control is daunting since it is so ubiquitous. Hand pulling is ineffective. Mow established stands and treat with a site-appropriate herbicide when the regrowth is at the height recommended on the label. Grass-selective herbicides will require a shorter height than broad-spectrum herbicides. Aquatically-approved herbicide is required if site is near waterways or other types of waterbodies.
<i>Prunus lusitanica</i>	Portuguese laurel	Occasional in forest understory throughout the area.	SIHAB has treated as plants are discovered, but untreated elsewhere. Landowners are strongly urged to control this species before it spreads to other properties.	Seedlings can be hand pulled. With larger plants, saw or lop off a few inches above the base and paint or spray stump with 50% glyphosate to prevent re-sprouting. Do not plant.
<i>Rosa multiflora</i> <i>Senecio jacobaea</i>	Multiflora rose Tansy ragwort	Occasional along roadways and fence Scattered in pastures and grasslands around the area.	Formerly planted as a wildlife plant, but Biological control cinnabar moths, and to a greater extent, flea beetles, have been fairly effective in controlling this species on the island, but scattered plants remain. This species is of higher priority to livestock owners since it is toxic to horses and some other livestock.	Seedlings can be hand pulled. With larger plants, saw or lop off a few inches above the base and paint or spray stump with 50% glyphosate to prevent re-sprouting. There have to be a few plants scattered around to retain populations of cinnabar moths and flea beetles, so it is recommended not to treat unless you have horses or other site objectives that require control.
<i>Solanum dulcamara</i>	Bittersweet nightshade	A common vine in our forested wetlands.	Poisonous. Landowners are strongly urged to control this species before it spreads to other properties.	Hand pulling is effective. Foliar spraying is difficult since this vine is often intertwined with native species.

LOW PRIORITY

Many weeds in this category are present in our area. These are just a few examples. In most cases, they are annoying non-natives that invade residential and agricultural lands, but are not aggressive in natural areas.

Latin name	Common name	Distribution on the Island/Channel	Status	Control options
<i>Acer platanoides</i>	Norway maple	An escapee from cultivation that seeds profusely.	Seeds from one tree can make hundreds of seedlings that grow quickly, so it's best to keep up with it.	Seedlings can be hand pulled. With larger plants, saw or lop off a few inches above the base and paint or spray stump with 50% glyphosate to prevent re-sprouting.
<i>Anthemis cotula</i>	Mayweed chamomile	Common on gravel roads and other disturbed areas.	Not a priority for treatment.	
<i>Arctium minus</i>	Common burdock	Occasional residential and agricultural weed.	Not a priority for treatment.	
<i>Brassica raba</i>	Birdsrape mustard	Occasional in disturbed areas.	Not a priority for treatment.	Eradication through mastication recommended. Makes an excellent cooked green.
<i>Brassica nigra</i>	Black mustard	Occasional in wetter areas.	Not a priority for treatment.	

<i>Cardamine hirsuta</i>	Hairy bittercress	Pervasive in residential and agricultural areas.	Not a priority for treatment.	Eradication through mastication recommended: Good in salad.
<i>Leucanthemum vulgare</i>	Oxeye daisy	Occasional in pastures and grasslands.	Not a priority for treatment.	
<i>Cirsium vulgare</i>	Bull thistle	Common in pastures and grasslands throughout the area.	Treated regularly by ODFW and many landowners, but is often solitary and not a priority for treatment. Easily confused with several native thistles.	Unlike Canada thistle, can be controlled by mowing. However, several native thistles are easily confused with bull thistle. If action must be taken, confirm identification prior to control.
<i>Convolvulus arvensis</i>	Field bindweed	Common garden/agricultural weed.	Not a priority for treatment.	Can overtake newly established plantings. Thin roots break easily. Untwine from desired vegetation and carefully apply 4% glyphosate or 2% triclopyr amine. Will require repeat treatments through growing season for adequate control.
<i>Daucus carota</i>	Queen Anne's lace	Common in pastures.	Not a priority for treatment. Provides overwintering pollinator habitat.	
<i>Dipsacus fullonum</i>	Teasel	Widespread in -pastures and grasslands.	Not a priority for treatment; flowers have nectar for bumblebees.	
<i>Digitaria sanguinalis</i>	Crabgrass	Common residential and agricultural weed.	Not a priority for treatment.	
<i>Echinochloa crus-galli</i>	Barnyard grass	Common residential and agricultural weed.	Not a priority for treatment.	
<i>Eleagnus angustifolia</i>	Russian olive	Occasional along roads; above beach at Willow Bar. Extensive populations in mid-Columbia River system.	Previously planted in the area as a wildlife plant, but now escaping into natural areas; not a priority for treatment by agencies.	
<i>Hypericum perforatum</i>	Common St. John's wort	Occasional in pastures and grasslands.	Not a priority for treatment.	
<i>Impatiens capensis</i>	Jewelweed	Fairly common along houseboat docks.	Not a priority for treatment.	Hand pull before seed formation. Easy to uproot by hand.
<i>Lamium purpureum</i>	Purple deadnettle	Common garden/agricultural weed.	Not a priority for treatment.	
<i>Linaria dalmatica</i>	Dalmatian toadflax	Fairly common in pastures and grasslands throughout the area.	Not a priority for treatment except to improve pastures.	In pastures, avoid overgrazing and take steps to improve pasture health.
<i>Linaria vulgaris</i>	Yellow toadflax	Occasional in pasture and grasslands.	Not a priority for treatment except to improve pastures.	In pastures, avoid overgrazing and take steps to improve pasture health.
<i>Malva neglecta</i>	Common mallow	Occasional weed in disturbed areas.	Not a priority for treatment.	
<i>Matricaria matricariodes</i>	Pineapple weed	Common in median of gravel roads and other disturbed areas.	Not a priority for treatment.	
<i>Oxalis corniculata</i>	Common wood sorrel	Common garden weed.	Not a priority for treatment.	
<i>Portulaca oleracea</i>	Common purslane	Common garden weed.	Not a priority for treatment.	Eradication through mastication recommended: Good in salad.
<i>Ranunculus repens</i>	Creeping buttercup	Common garden weed.	Is being seen spreading into some natural areas, but is not a priority for treatment.	Difficult to control by hand pulling, since roots and stolons (i.e. horizontal stems) left behind in the soil can re-sprout. Manual work is most effective fall through spring when ground is moist enough to permit thorough root removal. A small trowel can help. Persistence over several years and/or a glyphosate spray is recommended.
<i>Rumex crispus</i>	Curly dock	Common in neglected pastures and disturbed areas.	Not a priority for treatment.	
<i>Oxalis corniculata</i>	Common wood sorrel	Common garden weed.	Not a priority for treatment.	
<i>Plantago lanceolata</i>	Narrow-leaved plantain	Common in pastures and grasslands.	Not a priority for treatment. Has value as a host plant for certain butterfly species.	In pastures, avoid overgrazing and take steps to improve pasture health.

<i>Plantago major</i>	Broadleaf plantain	Common in pastures and grasslands.	Not a priority for treatment.	In pastures, avoid overgrazing and take steps to improve pasture health.
<i>Senecio vulgaris</i>	Common groundsel	Common in disturbed areas.	Not a priority for treatment.	
<i>Soncus arvensis</i>	Perennial sowthistle	Common in neglected pastures and disturbed areas.	Not a priority for treatment.	
<i>Sonchus asper</i>	Spiny sowthistle	Common in neglected pastures and disturbed areas.	Not a priority for treatment.	
<i>Stellaria media</i>	Common chickweed	Occasional in disturbed areas.	Not a priority for treatment.	
<i>Tanacetum vulgare</i>	Common tansy	Occasional in disturbed areas.	Not a priority for treatment.	
<i>Taraxacum officinale</i>	Dandelion	Common in lawns and disturbed areas.	Not a priority for treatment.	
<i>Verbascum thapsus</i>	Common mullein	Common in disturbed areas.	Not a priority for treatment.	
<i>Vicia villosa</i>	Hairy vetch	Common in pastures and grasslands.	Not a priority for treatment; has value as a nectar source for bumblebees.	

WATCH LIST

Have not been seen on the island, but we should be vigilant, since they have been spotted in other nearby areas. Immediately report presence of these species at www.oregoninvasivshotline.org or by calling 1-866-invader.

Latin name	Common name	Distribution on the Island/Channel	Status	Control options
<i>Brachypodium sylvaticum</i>	False-brome	n/a	Many sightings in the Portland area, including one on Germantown road.	Contact WMSWCD for verification and assistance.
<i>Butomus umbellatus</i>	Flowering rush	n/a	Is well-established in the upper Columbia River, and is moving into the mid-Columbia River system.	Contact WMSWCD for verification and assistance.
<i>Galega officinalis</i>	Goatsrue	n/a	Not found on Sauvie Island, but there is a large infestation upriver near the Columbia Slough.	Contact WMSWCD for verification and assistance.
<i>Heracleum mantegazzianum</i>	Giant hogweed	n/a	Has been mapped in St. Johns and elsewhere in Portland. Contact with this plant can cause a severe skin reaction, similar to 2 nd degree burns.	Contact WMSWCD for verification and assistance. NOTE: Hand pulling or digging can result in a severe skin reaction.
<i>Hieracium auranticum</i>	Orange hawkweed	n/a	Several sightings in the Portland area, including one in Forest Park and one in St. Johns.	Contact WMSWCD for verification and assistance.
<i>Impatiens glandulifera</i> , <i>Impatiens balfourii</i>	Policeman's helmet, Balfour's balsam	n/a	Several sightings of both species in the Portland area. <i>I. glandulifera</i> has been near Balch Creek and <i>I. balfourii</i> has been spotted on NW Skyline Drive.	Contact WMSWCD for verification and assistance.
<i>Schoenoplectus mucronatus</i>	Ricefield bulrush	n/a	Present at Ridgefield National Wildlife Refuge just across the Columbia River from Sauvie Island.	Contact WMSWCD for verification and assistance.

WAIT!! Is it really a weed?

There are several native plants that can act 'weedy' and be annoying, but that are important to wildlife. Consider allowing them to remain when they are not invading cultivated areas.

Latin Name	Common Name	Ecological Benefits
<i>Conyza canadensis</i>	Horseweed	Attractive to native insects.
<i>Epilobium ciliatum</i>	Willowherb	Produces nectar for hummingbirds.
<i>Equisetum arvense</i>	Field horsetail	Provides food, cover and perches for native invertebrates.
<i>Equisetum telmateia</i>	Giant horsetail	Provides cover for invertebrates but has no direct food value for other wildlife.
<i>Galium apocrine</i>	Bedstraw/Cleavers	Eaten by geese and other waterfowl.
<i>Geum macrophyllum</i>	Large-leaved avens	Used by pollinators. Easily confused with the non-native invasive, <i>Geum urbanum</i> , which has darker leaves and blooms later.
<i>Juncus effusus</i>	Common rush	At edges of ponds, provides cover for young turtles and amphibians and is used by amphibians for egg attachment. The native can be confused with a larger non-native subspecies.
<i>Lemna minor</i>	Common duckweed	Important food plant for waterfowl and other aquatic species. Can help control algae by shading it out.
<i>Mentha canadensis</i>	Field mint	Important pollinator plant.
<i>Nuphar lutea</i>	Spatterdock	Provides food and cover for wildlife.
<i>Pteridium aquilinum</i>	Western brackenfern	Can be poisonous to livestock.
<i>Phacelia nemoralis</i>	Tall phacelia	A nectar source for bumblebees.
<i>Rosa nutkana</i>	Nootka rose	Important pollinator plant. Hips provide winter food for birds
<i>Solidago canadensis</i>	Canada goldenrod	Excellent nectar plant for bees and other pollinators.
<i>Salix sp.</i>	Willows (various species)	Native willows are among the most important pollinator nectar and host plants. Weeping willows are non-native.
<i>Typha latifolia</i>	Common cattail	Provide cover and nesting areas for numerous species and filter run-off into ponds and wetlands.
<i>Urtica dioica</i>	Stinging nettle	Important host plant for red admiral butterflies.

APPENDIX 5

SAUVIE ISLAND/MULTNOMAH CHANNEL PLANT COMMUNITIES

Bottomland Forests

Native black cottonwoods are one of the most important wildlife trees on the island and along the channel. The island's cottonwoods are where bald eagles and great blue herons most often choose to build their nests, and many songbirds use them as well.

Cottonwoods are valuable to wildlife, dead or alive. As they age, they shed branches that provide habitat for salamanders and invertebrates. Cottonwood snags are used by woodpeckers and cavity nesting birds such as purple martins, screech owls and kestrels.

Since the 1850s, bottomland forests have declined by more than 80% in the Willamette Valley, so Sauvie Island's stands of cottonwood are precious indeed. The ash trees that grow on slightly lower, wetter ground are also important wildlife trees. These areas are magnets for a variety of birds.



To keep bottomland forests healthy for wildlife:

- Remove blackberries and other invasive species and replace them with native plants.
- Leave aging trees, snags and downed wood.
- Be vigilant for emerald ash borers, which have destroyed acres of ash forest in the Eastern US. Take the Forest Pest Detector training (online).

Some species that use these habitats:

Red-legged frog	Bald eagle	Warbling vireo
Northwestern salamander	Great blue heron	Western wood pewee
Long-toed salamander	Purple martin	Wilson's warbler
Bullock's oriole	Swainson's thrush	Yellow warbler

Some native plant species of these habitats:

<p>Large Trees: Cottonwood Oregon ash Pacific willow</p> <p>Understory trees: Suksdorf's hawthorn Indian plum</p> <p>Shrubs: Red-osier dogwood red elderberry</p>	<p>Shrubs, Cont. Douglas spiraea Wild gooseberries Nootka rose Snowberries Trailing blackberries (native)</p> <p>Herbaceous plants: Lady fern Sword fern Fringe cup Piggy-back plant</p>	<p>Herbaceous plants (continued): Large-leaved avens Greater hedgenettle Giant goldenrod Small-footed sedge Slough sedge Cow parsnip Willow herb Stinging nettle</p>
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Invasives to watch for: Reed canarygrass, blackberry, climbing nightshade, Japanese knotweed, buttercup, English hawthorn, multiflora rose, feral cherry, Norway maple

Reference habitat: Wapato Greenway trail (along river) and Sauvie Island Wildlife Management Area North Unit

Oaks/Oak Savanna

Description:

The big oaks on Sauvie have been here for decades. Many are more than 300 years old. Some grow in open grasslands with camas, lupines and other wildflowers and some grow in mixed forests with big-leaf maple or ash trees (See mixed forest description). Others stand alone in the middle of farm fields, a legacy left by generations of farmers who showed them respect. Oak savannas were a dominant plant community in much of the Willamette Valley, but there are precious little left, and oak savannas are high priority for restoration efforts throughout the valley.



Some species that use these habitats:

Slender-billed (white-breasted) nuthatch
Acorn woodpecker
House wren
Bullock's oriole
Black-headed grosbeak
Western gray squirrel
Several species of bats
Countless invertebrates that are the bottom of the food chain for other species

To keep oaks and oak habitats healthy for wildlife:

- Remove blackberry and other non-native understory plants, and competing trees.
- Leave a tillage buffer extending out to the tree's drip line.
- Don't irrigate; oaks need our dry summers.
- Plant a suite of native oak understory plants.
- Leave old oak snags for cavity nesting birds.
- Consult with West Multnomah Soil & Water Conservation District (WMSWCD) for technical advice and possible financial assistance to renovating oak stands.
- Consider a conservation easement to protect your oaks/oak stands in perpetuity.

Plants:

Large Trees:

Oregon White Oak

Understory trees: sparse

Shrubs: Oregon grape, snowberry

Herbaceous plants:

Tufted hair grass
Slender hair grass
Common camas
Big-leaf lupine
Western red columbine
Tall phacelia

Invasives to watch for: Blackberry, ivy, poison hemlock

Reference habitat: Oak Island nature trail

Mixed Coniferous/Deciduous Forest

Description:

Douglas firs are found naturally on the highest areas of Sauvie Island, near Wapato Greenway and the Grange forest. Cedars, grand firs and yews are more abundant elsewhere on the island as they tolerate wetter soils. These areas are the preferred habitat of the Western gray squirrel, which is now seldom seen on the island or elsewhere in Oregon.



Some species that use these habitats:

Slender-billed (white-breasted) nuthatch
Stellar's jay
Pileated woodpecker
Downy woodpecker
Western gray squirrel
Screech owl
Several bat species
Ensatinas (terrestrial salamanders)
Countless invertebrates that provide food for other species

To keep coniferous/deciduous forest healthy for wildlife:

- Remove ivy, blackberry and other non-native understory plants and replace them with native plants.
- Leave old tree snags for cavity nesting birds.
- Leave downed wood for salamanders and the invertebrates that support higher levels of the food chain.

Plants:

Large Trees:

Western red cedar
Grand fir
Pacific yew
Douglas fir
Oregon white oak
Big-leaf maple

Understory trees:

Cascara
Indian plum
Pacific dogwood
Pacific yew
Beaked hazelnut

Shrubs:

Red-flowering currant
Tall Oregon grape
Short Oregon grape
Snowberry

Herbaceous plants:

Sword fern
Spring beauty
Wild ginger
Fringe cups
Inside-out flower
Calypso orchid
Rattlesnake plantain

Invasives to watch for: Ivy, herb Robert, shiny geranium, Norway maple, feral cherries

Reference habitat: Grange forest, southeast corner of Wapato Greenway

Wet Prairie/Grasslands

In pre-settlement times (before dikes and dams), most of Sauvie Island's lower half was wet prairie. Unfortunately, 98% of this habitat has been lost because of displacement by non-native plants and conversion to agriculture, housing and development. As a result, several bird species, including our formerly common state bird, the western meadowlark, no longer nests on the island.



Grassland birds need large expanses of open grasslands, but even small patches of native prairie species can contribute to the come-back of pollinators and butterflies.

To create prairies healthy for wildlife

- Consider replacing some European pasture or lawn grasses with a mix of native grasses and wildflowers
- Make sure native wildflower mixes contain flowers that are native to our area.
- If you have an acre or more on which you are willing to encourage native prairie, ask Sauvie Island Habitat Partnership or WMSWCD for technical assistance.
- Read the labels on herbicides and pesticides to make sure they are used in a bee-safe manner.

Some species that use these habitats:

Deer	Meadowlark
Coyote	Streaked horned lark (A federally listed species)
Western swallowtail, red admiral, painted lady and other butterflies	Savannah sparrow
Various bumblebees and other native bee species	Common yellowthroat
American kestrel	Northern harrier
Short-eared owl	Red-tailed hawk
	Garter snake

Plants:

Large trees: Sparse or a few scattered Oregon white oaks

Understory trees: none

Shrubs: none

Herbaceous plants:

Giant goldenrod
Tufted hair grass
Columbia sedge
Common camas
Western buttercup
Large-leaf lupine
Yarrow
Douglas aster
Dagger-leaved rush

Invasives to watch for:

Blackberry, teasel, Canada thistle, bull thistle, sow thistle, oxeye daisy, toadflax, tansy ragwort

Reference habitat: There are no intact prairies left on Sauvie Island or in the Multnomah Channel Bottomlands. There is a remnant behind the OSU extension office in St. Helens, near the corner of Pittsburgh Road and Hwy. 30.

Wetlands/Seasonal Wetlands/Ponds

Sauvie Island and the surrounding bottomlands are a major stopover on the Pacific Flyway for migratory waterfowl. Of 414 wildlife species in Oregon, 359 use wetlands and riparian areas. With a decline in wetlands throughout the Willamette Valley, our soggy bottomland areas and associated lakes, ponds and sloughs are absolutely vital. Unfortunately, reed canarygrass and other invasive species have mostly overtaken the native plants that make these areas most useful to wildlife.



To keep wetlands and ponds healthy for wildlife

- Remove reed canarygrass and other invasive plants and replace with native riparian plants.
- If not already there, consider introducing native emergent and floating plants that provide food and shelter for aquatic animals and help shade out algae.
- If turtles are present, refer to www.oregonturtles.com to learn how to create basking habitat and enhance nesting habitat for turtles.
- Ask WMSWCD for technical assistance and possibly financial assistance on improving pond and wetland habitats.
- Put up bird boxes for wood ducks and hooded mergansers.

Some species that use these habitats:

Beaver	Various waterfowl species
Otter	Yellow warbler
Western painted turtle	Willow flycatcher
Red-legged frog (If there is a forest nearby)	Red-winged blackbird
Northwestern salamander	Black-headed grosbeak
Long-toed salamander	Meadowhawks and other dragonfly species
Pacific chorus frog	

Plants:

Large trees: Oregon ash, Pacific willow

Understory trees: Sitka willow, Scouler willow, Suksdorf hawthorn

Shrubs: Douglas spiraea, red-osier dogwood, snowberries, Columbia river willow

Herbaceous plants

Wapato
Water plantain
Bur-reed
Spatterdock

Herbaceous plants, cont:

Potamageton sp.
Columbia sedge
Slough sedge
Common rush
Coontail
Common spike rush
Water buttercup
Common duckweed
Smartweed
Marsh pennywort
Cattail
Sneezeweed
Howellia (Rare and federally listed)

Invasives to watch for: Reed canarygrass, purple loosestrife, yellow flag iris, pennyroyal, Eurasian water milfoil, indigo bush, nutria

Reference habitat: Seal Lake, Ruby Lake, Lost Lagoon pond

Forested wetlands

These forested wetland depressions can have five feet of water in winter, but dry out in summer. Most trees can't live with wet feet, but our native ashes and willows thrive in these conditions.

Red-legged frogs and salamanders thrive in the damp understory and songbirds abound in the tree canopy.



How to keep a forested wetland healthy for wildlife

- Retain snags and downed limbs
- Remove reed canarygrass and other invasives
- Use environmentally-sensitive mosquito control by enhancing habitat for mosquito predators.

Some species that use these habitats:

Beaver	Wood duck
Red-legged frog	Hooded merganser
Northwestern salamander	Mallard
Long-toed salamander	Swainson's thrush
Red-breasted sapsucker	Ruby-crowned kinglet
Song sparrow	

Plants:

Large trees: Oregon ash, Pacific willow

Understory trees: Sitka willow, Suksdorf's hawthorn

Shrubs: Douglas spirea, red-osier dogwood, snowberries, Columbia river willow, red elderberry

Herbaceous plants:

Leafy beggarstick
Lady fern
Small-footed sedge
Veronica americana

Invasives to watch for: Reed canarygrass, climbing nightshade, creeping Jenny

Reference habitat: Lost Lagoon swale

APPENDIX 6

SAUVIE ISLAND/MULTNOMAH CHANNEL BOTTOMLANDS CONSERVATION PROJECTS

Many projects have taken place over several decades to improve wildlife habitat and water quality on Sauvie Island - from multi-million dollar salmon habitat restoration projects and other wetland restoration actions, to modest native plantings by rural landowners. The information below is not a complete list, but is a representation of various project types and recognition for the people and agencies that have engaged in these efforts. The order of projects is roughly from north to south. See the end of this section for spelled out names of agencies that are represented as acronyms in this appendix.

NAME/LOCATION	OWNERSHIP / MANAGEMENT	PROJECT MANAGEMENT	PARTNERS	DATE(S)	STATUS C=complete IP=In Progress O=ongoing	DESCRIPTION	ISLAND / MAINLAND
Nob Hill Nature Park	City of St. Helens	Friends of Nob Hill Nature Park	SBWC	2011-	O	Hold two work parties per year in which volunteers remove invasive species and plant natives on an oak savanna and wetland. Built a trail (including stairs), and erected educational signs. The rich native plant community was documented by volunteer botanists. Volunteer efforts inspired the City of St. Helens to designate this as a natural area to be enjoyed by all.	M
Warrior Point Ivy removal	ODFW	SIHAB	ODFW, PLO	2012-14	C	SIHAB volunteers, with some assistance from an ODFW staff member, removed giant, old-growth tree ivy vines from 60+ trees on the far north end of the island. Indigo bush was removed at another SIHAB work party.	SI
Milton Creek Riparian Restoration	9 PLO's	SBWC	CCSWCD, 9 PLOs	2004	C	Stabilized banks, removed invasives and planted natives.	M
Milton Creek Large Woody Debris placement	City of St. Helens	SBWC	USFWS, City of St. Helens	2007	C	Placed large woody debris in mainstem, planted native riparian vegetation; improved conditions for salmon as well as other wildlife.	M
Scapoose Bay Marine Trail	Port of St. Helens	SBWC		1995/2013	C	Channel restoration, creation of/designation as a nature park, trail development. Creation in mid-nineties was followed by a grant to improve it in 2013.	M
Ellege Wetland	PLO	DU	LCEP	2003	C	Water Control structure placed; 50 acres of wetland restored	SI
North End Fish and Wetland restoration	ODFW	CREST	ODFW, PC Trask, BPA	2011-15	C	Enhanced 200+ acres of estuarine wetland through alteration or removal of water control structures and other fill material. Reconnected Ruby Lake and five other lakes in the SIWA North Unit to Cunningham Slough to improve fish passage. Also removed invasives and planted natives.	SI
Grassland bird restoration	ODFW	ODFW	ASoP, SIHAB, ABC, Oregon Wildlife	2013-	O	Efforts on Oak Island, Grandma's Kitchen and an ODFW-owned field near the end of Reeder Road to restore habitat for streaked horned larks, meadowlarks and other grassland birds by vegetation management per recommendations from the American Bird Conservancy. Posted signs to limit recreational activities during the nesting season. With funding from Oregon Wildlife, installed streaked horned lark audio and decoys aimed at luring this species to one of the areas. Volunteers from Audubon Society of Portland have conducted multiple years of weekly bird counts during the breeding season to monitor use of these areas by target species.	SI
Hogan Ranch Wetland restoration	PLO	SBWC/NRCS		2004	C	Wetlands restoration, invasive species control and native plantings on 20 acres. Also worked with NRCS on fencing 170 acres of wetland easement.	M
Honeyman Creek Tidal restoration	PLO	SBWC	PLO, LCEP	2012	C	Replaced 3 failing culverts to improve salmon passage.	M
Stan's Lake	ODFW	DU	ODFW, USFWS, NRCS, ODHA	1999	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing.	SI

Deadwillow/Rays Lake	ODFW	ODFW	ODFW, USFWS, NRCS, ODHA	2007	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing.	SI
Mudhen Lake	ODFW	DU	ODFW, USFWS, NRCS, ODHA	2005	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing.	SI
North/South Scapoose Creek Confluence	Multiple PLOs	SBWC	SBWC	2011	C	Fluvial rechannelization, off-channel habitat restoration, and large woody debris placement.	M
Flights End Purchase and restoration	ODFW	ODFW	CREST, BPA, PC Trask	2014-	O	Purchased land with BPA mitigation funds. Enhancing 44 acres of floodplain habitat by removal of culverts, installation of channel spanning bridge, and marshplain lowering for the benefit of fish passage, waterfowl and native emergent vegetation.	SI
Crane Lake restoration	ODFW	DU	ODFW, USFWS, NRCS, ODHA	1999	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing.	SI
Boys Lake	ODFW	ODFW	ODHA	2012	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass.	SI
Rentaur Rd. Complex restoration	ODFW	DU	ODFW, USFWS, NRCS, ODHA	2010	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing.	SI
Stutzer/Lost Prairie/Spud Lake Wetland enhancement	ODFW	DU	ODFW, USFWS, NRCS, ODHA	2008	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing.	SI
Racetrack Lake Shorebird Habitat Project	ODFW	ODFW	USFWS, ASoP, Nat'l Audubon	2008-	O	An area of the shoreline is disked annually to create shorebird habitat and is monitored for shorebirds.	SI
Mud Lake restoration	ODFW	DU	ODFW, USFWS, NRCS, ODHA	2014	C	Added water control structure to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing.	SI
Willow Bar invasive species removal	ODFW	SIHAB	ODFW, Trackers Portland Summer Camp	2012-2018	C	SIHAB volunteers removed Indigo Bush along 3 miles of Columbia River shoreline plus an infestation of large ivy vines. SIHAB volunteers and volunteers from a childrens' summer camp have continued to work the ivy infestation, which is now limited to a much smaller area.	SI
Oak Island restoration	ODFW	ODFW	DU, USFWS, NRCS, ODHA, SIA, PSU, OSU, ASoP	2012	IP	Restoration of wetlands, grasslands and oak savanna. Removed understory of invasives in oak woodland, removed hedgerows to maximize habitat for meadowlarks and other grassland birds, added water control structure to wetlands to mimic historic hydrologic regimes, disked wetlands to set back reed canary grass and erected cattle exclusion fencing. Volunteer birders from ASoP conducted bird counts for multiple years.	SI
Sturgeon Lake Restoration Project/Dairy Creek reconnection	ODFW, WMSWCD, private landowners	WMSWCD, CREST	USACE, ODFW, BPA, Metro, Oregon Wildlife Foundation, Multnomah County	2010-	IP	Restore tidal channel and fish access to 4,100 acres of lake and wetland habitat. Replace culverts with channel spanning bridge. Lower marshplain to provide native emergent vegetation. Replant over 1 mile of riparian habitat with native vegetation.	SI
Wetland/Multnomah Channel	PLO	Turnstone Environmental	PLO	2007	C	Created a new wetland with large woody debris. Mitigation for ESCO.	SI
Wetland Enhancement	PLO	DU	NRCS, USFWS	2008-9	C	Three projects on private property enhanced wetlands for ducks and other species.	SI
Multnomah Channel Wetlands	Metro	Metro	DU	2001 -	IP	Restoration of Metro's 300-acre natural area, which is connected to another 600 acres of restored floodplain. Water control devices were added, a stream was re-aligned, invasives were removed and native species were planted. Amphibian egg mass surveys and other monitoring has occurred.	M
Five Oaks Savanna restoration	PLO	PLO	WMSWCD, SIHAB	2006-	O	Restoration of multiple habitat types, including native oak savanna.	SI
Narnia Oaks Woodland restoration	PLO	PLO	WMSWCD	2008-	O	Invasive removal, native plantings, including Oregon white oak.	SI

Mucken Forest restoration	PLO	PLO	WMSWCD	2010-2012	C	Invasive removal and native plantings.	SI
Wapato Greenway Master Plan	OPRD	OPRD	SIHAB, WMSWCD	2012-13	IP	OPRD held meetings with representatives from various agencies and sought input from Island neighbors to develop a comprehensive plan for this area. Vegetation surveys and amphibian egg mass surveys were conducted as part of the planning process.	SI
Wapato Greenway Oak restoration	OPRD	OPRD	SIHAB	2012-	O	Oak seedlings were planted along the Greenway's northern edge and have been tended by park staff and by the SIHAB volunteers.	SI
Wapato Greenway invasives removal	OPRD	SIHAB	OPRD, WMSWCD, SOLVE	2013-	O	Multiple work parties and ongoing monitoring and attention by SIHAB's volunteer Weed Warriors have tackled ivy, garlic mustard, blackberry, holly and English hawthorn. WMSWCD organized two community weed pulls on SOLVE clean-up dates.	SI
BelleVue Point	Metro	Metro		2014	C	Removed invasives, planted native species.	SI
Howell Lake restoration	Metro	Metro		2015	C	Restoring large lake/wetland. Replaced water control structure. Continue to remove invasives and plant natives.	SI
Howell Territorial Park Oak Savanna restoration	Metro	Metro		2015-	O	Removed invasives and planted native prairie wildflowers in open areas and in the understory of ancient oaks.	SI
Howell Pollinator Hedgerow	Metro	Metro	Sauvie Island Organics	2003	C	Planted a hedgerow of native shrubs that provide pollinator food and habitat and a buffer between Howell Territorial Park and Sauvie Island Organics.	SI
JR Palensky Wetland	ODFW	ODFW	BPA	2004 -	O	Restoration of a large complex of wetlands. Added water control structures to mimic historic hydrologic regimes. Ongoing efforts remove invasives and plant native species.	M
Grange Forest restoration/ Charlton Road ivy removal	SI Grange, SI School, 3 PLOs	SIHAB	WMSWCD, SI School, PLOs, SOLVE, SI Grange	2010 -	C	With the help of 64 volunteers who put in almost 500 hours, huge investigations of ivy were removed from the forest next to the grange hall, Sauvie Island School and on three private properties on Reeder Road. WMSWCD provided funding and followed up with paid work crews. SOLVE's Project Oregon was helpful with volunteer recruitment and sign-ups and gave SIHAB a small grant for gloves and tools. A crew of volunteers who normally work on trails in Forest Park built a trail through the Grange Forest. Some native plants were planted, but mostly, the native understory came back on its own. SIHAB Weed Warriors continue to monitor for and remove invasive species.	SI
Sauvie Island School Habitat Garden	Sauvie Island School	Sauvie Island School	WMSWCD, SIHAB,	2008-	O	Students have planted and tend native plants to create a habitat garden for wildlife in front of the school. Teachers use this to educate students about native plants and habitats.	SI
Gilbert River, remnant Dairy Creek and McCarthy Creek Wildlife Corridors	8 PLO's	WMSWCD	SIHAB, SIDIC	2013-	O	Through WMSWCD's Healthy Streams Program, 50 ft. wide native riparian corridors were planted with native seeds and plants along the waterways on 8 private properties. Projects included invasive weed removal and maintenance. The largest of the projects is nearly 5 acres and a mile long. Well over 10,000 plants were installed in 2017-28. WMSWCD is seeking more willing landowners with sites for additional plantings.	SI
Lost Lagoon restoration	PLO	SIHAB	WMSWCD, OWEB	2010 -	O	Restoration of pond, forested wetland and uplands. Invasive removal. Thousands of native plants have been installed, making this property a virtual arboretum of native trees, shrubs, wildflowers and other understory plants. Interpretive signage has been created and multiple tours and "open houses" have been enjoyed by Master Gardeners, the Hardy Plant Society of Oregon, the Native Plant Society of Oregon, students from the Sauvie Island School, Audubon Society of Portland, The Wetlands Conservancy, The Nature Conservancy and other organizations.	SI

Alder Point Salmon Project	Wildlands	Wildlands	City of Portland	2012-	IP	Creation of salmon refugia on 51 acres. Mitigation credits were purchased by the City of Portland for Portland Harbor Natural Resource Restoration.	SI
North Unit: Ruby Lake	ODFW	CREST	BPA, PC Trask	2013	C	Enhanced 122 acres of floodplain habitat through the removal of a water control structure and marshplain lowering for the benefit of fish passage and native emergent vegetation.	SI
North Unit: Millionaire, Deep and Widgeon Lakes	ODFW	CREST	BPA, PC Trask	2014	C	Enhanced 139 acres of floodplain habitat through the removal of 2 water control structures and marshplain lowering for the benefit of fish passage and native emergent vegetation.	SI
North Unit: 3-Finger Jack & South Slough	ODFW	CREST	BPA, PC Trask	2015	C	Enhance 68 acres of floodplain habitat through the removal of culverts, installation of channel spanning bridge, and marshplain lowering for the benefit of fish passage and emergent vegetation.	SI
Crane/Domeyer		CREST	BPA, PC Trask	2016	C	Enhance 43 acres of floodplain habitat through the removal of culverts and marshplain lowering for the benefit of fish passage and native emergent vegetation.	SI
Willow Bar		CREST	BPA, PC Trask	2016	C	Enhance 17 acres of floodplain habitat by marshplain lowering for the benefit of fish passage and native emergent vegetation.	SI
McCarthy Creek Wetland Reserve Easement	PLO	WMSWCD	NRCS, CREST	2014-	O	Creation of conservation easement on 120 ac. of habitat. Removal of culvert, restoration of channel banks; invasive weed removal and phase 1 of restoration of 8 acres of riparian & upland oak, etc. areas; additional wetland restoration in planning stages.	M
MULTIPLE LOCATIONS							
Pollinator monitoring project	Multiple PLOs	WMSWCD	Xerces Society	2015-	O	Trained volunteers conduct monthly native bee surveys on transects along various WMSWCD plantings.	SI
Sauvie Osprey Project	Multiple	SIHAB	SIHAB, PGE, ODFW, ASoP	2012 -	O	GPS'ed and mapped locations of osprey nests on the island. Monitored for nesting success. PGE erected 6 new nest platforms. Volunteers continue to monitor and notify PGE when ospreys start building on power poles so that structures can be added for safer nesting.	SI
Sauvie Native Turtle Project	Multiple PLOs	SIHAB	WMSWCD, Oregon Native Turtle Working Group	2012-	O	Surveyed turtles on the southern half of the island; built and placed 18 basking platforms. Several additional platforms were built and installed by an Eagle Scout candidate and his troop members. Platforms have been repaired and some replaced on two other occasions with funds from WMSWCD. SIHAB worked with the Oregon Native Turtle Group to have the island designated as a Priority Turtle Conservation Area.	SI
Sauvie Hedgerow Project	Multiple PLOs	SIHAB/ WMSWCD	SIHAB, WMSWCD	2012-13	C	SIHAB secured a grant and assistance from WMSWCD to plant all-native pollinator shrub hedgerows on 13 private properties. Landowners used their time to keep the areas watered and weeded as match for the grant funds.	SI
Sauvie Pond Project	Multiple PLOs	SIHAB/ WMSWCD	SIHAB, WMSWCD, ODFW, Xerces Society, OSU Extension, NRCS, 12 PLOs	2012 -	O	Biotic surveys, two days of visits by experts from various agencies on various aspects of pond health, amphibian egg mass surveys were followed by recommendations for each of 12 ponds on private land. A workshop for pond owners is planned for 2019.	SI
Purple Martin Project	Multiple	NW Purple Martin Group		1985 -	O	One of the longest running volunteer run programs on the island has involved erecting, maintaining and monitoring nest boxes and gourds for purple martins. Data on nesting success is collected and data sheets are sent annually to the Purple Martin Conservation Association to be included in their nationwide research program.	SI
Tuesday Weed Warriors	Multiple	SIHAB	WMSWCD	2011 -	O	A hardy volunteer crew has been working nearly every Tuesday morning for years, removing ivy, blackberry and other invasive species from public and private property on Sauvie Island and along Highway 30 from the Sauvie Island Bridge to the St. John's Bridge.	SI/M

Amphibian Egg Mass monitoring	SIHAB	SIHAB		2011-2015	C	Trained volunteers conducted egg mass surveys on private ponds on Sauvie Island as well as on two wetlands in the Multnomah Channel Bottomlands.	SI/M
Sauvie Plant List	Multiple	SIHAB	OR Flora Project, NPSO	2012-2018	C	Compiled all botanical records for Sauvie Island and the Multnomah Channel Bottomlands. Conducted aquatic plant surveys, since evidence of these plants was under-represented in herbarium records.	SI/M
Heron Rookery monitoring	Multiple	ASoP		2012-14	C	Volunteers monitored numbers of nests and nestlings at four rookeries in the area.	SI/M
WMSWCD Soil Health Program	PLO	WMSWCD	OSU Small Farms Program	2014-	O	WMSWCD has provided financial incentives to 13 landowners to install cover crops on farm fields to improve soil health, reduce need for fertilizer and improve water quality	
Kestrel monitoring	Multiple	ASoP	American Kestrel Partnership, East Cascade Bird	2008-	O	From 2008-10, volunteer birders monitored monthly during summer for presence of kestrels along Sauvie Island's roads. Ten kestrel nest boxes were constructed and erected and are being monitored. Sauvie kestrels are now included in a winter raptor survey. Data is shared with ODFW, USGS's Bird Banding Laboratory and landowners with kestrel boxes on their property.	SI

Key to Acronyms above	ABC	American Bird Conservancy
	ASoP	Audubon Society of Portland
	BPA	Bonneville Power Administration
	CCSWCD	Columbia County Soil and Water Conservation District
	CREST	Columbia River Estuary Study Taskforce
	DU	Ducks Unlimited
	LCEP	Lower Columbia Estuary Partnership
	NAWCA	National American Wetlands Conservation Act
	NPSO	Native Plant Society of Oregon
	NRCS	Natural Resource Conservation Service
	ODFW	Oregon Department of Fish and Wildlife
	ODHA	Oregon Duck Hunting Association
	PGE	Portland General Electric
	PLO	Private landowner
	PSU	Portland State University
	SBWC	Scappoose Bay Watershed Council
	SI Grange	Sauvie Island Grange #840
	SI School	Sauvie Island School
	SIHAB	Sauvie Island Habitat Partnership
	SIDIC	Sauvie Island Drainage Improvement Company
	USACE	US Army Corp of Engineers
	USFWS	US Fish and Wildlife Service
	WMSWCD	West Multnomah Soil & Water Conservation District
	Xerces	Xerces Society

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RESOURCES

Conserving Oregon White Oak in Urban and Suburban Landscapes: <https://wmswcd.org/programs/oak-habitat/>

Early Detection, Rapid Response species list: <https://wmswcd.org/programs/early-detection-rapid-response-edrr-weeds>

Farming around native oaks: <https://wmswcd.org/wp-content/uploads/2016/05/Farming-around-oaks-FINAL.pdf>

Multnomah County Comprehensive Plan (MCCP): <https://multco.us/landuse/comprehensive-plan>

Multnomah County tax deferral programs: <https://multco.us/assessment-taxation/deferral-programs-agricultural-land-and-natural-spaces>

Native Oregon oaks in your landscape: <https://wmswcd.org/wp-content/uploads/2018/06/Native-oaks-in-your-landscape-flyer.pdf>

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Oregon Department of Fish and Wildlife: www.dfw.state.or.us

Oregon Flora Project: www.oregonflora.org

OSU Cover Crop Calculator: <http://smallfarms.oregonstate.edu/calculator>

Pollinator Plants & Bloom Periods for West Multnomah & Portland Metro Area: https://wmswcd.org/wp-content/uploads/2018/05/WMSWCD_PollBloomChart_interactive_4.2018.pdf

Sauvie Island Community Association: www.sauvieisland.org

Sauvie Island Pond Project: <https://wmswcd.org/projects/sauvie-island-pond-project/>

Sauvie Island Rural Area Plan (SIMC Plan): <https://multco.us/file/67286/download>

Sauvie Island Wildlife Area Management Plan: https://www.dfw.state.or.us/wildlife/management_plans/wildlife_areas/docs/SIWA%20Management%20Plan%20April%202012.pdf

Soil health and cover crops: <https://wmswcd.org/types/soil> and <https://wmswcd.org/wp-content/uploads/2018/05/Cover-Crops-and-WQSARE-1.5.pdf>

State-owned waterways: <http://www.oregon.gov/dsl/WWW/Pages/Waterways.aspx>

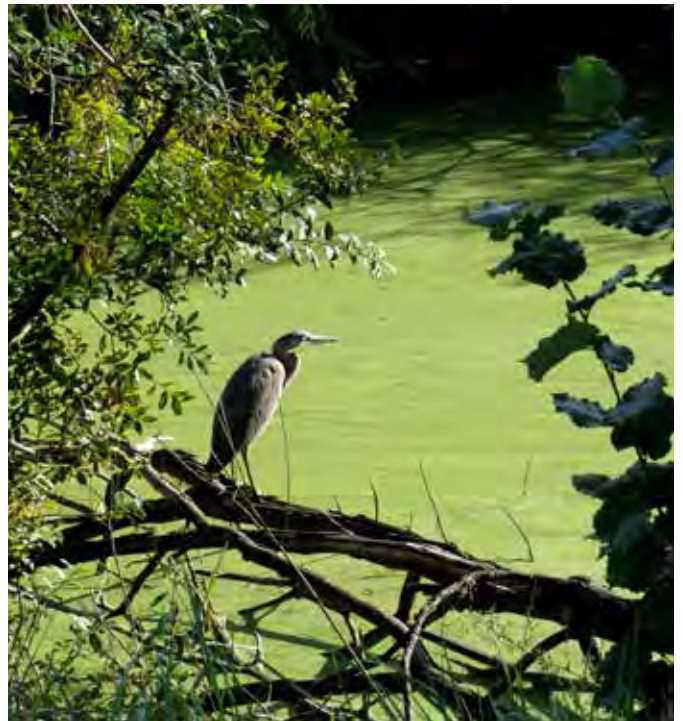
Sturgeon Lake Restoration Project: <https://wmswcd.org/projects/sturgeon-lake-dairy-creek-restoration-project/>

Wildlife Habitat Conservation and Management deferral information: <http://www.dfw.state.or.us/lands/whcmp/index.asp>

ACRONYMS USED IN THIS DOCUMENT

BPA	Bonneville Power Administration
CRE	Columbia River Estuary
CREST	Columbia River Estuary Study Taskforce
DEQ	Department of Environmental Quality
EDRR	Early Detection, Rapid Response
EFU	Exclusive Farm Use

EPA	Environmental Protection Agency
MCCP	Multnomah County Comprehensive Plan
MUA	Mixed Use Agriculture
NRCS	National Resources Conservation Service
ODA	Oregon Department of Agriculture
DSL	Oregon Division of State Lands
ODFW	Oregon Department of Fish and Wildlife
OPRD	Oregon Parks and Recreation Department
OLCD	Oregon Department of Land Conservation and Development
SDIC	Scappoose Drainage Improvement Company
SBWC	Scappoose Bay Watershed Council
SIDIC	Sauvie Island Drainage Improvement Company
SEC	Significant Environmental Concern
SIMC Plan	Sauvie Island Multnomah County Rural Area Plan
SIHAB	Sauvie Island Habitat Partnership
SIWA	Sauvie Island Wildlife Area
TWC	The Wetlands Conservancy
USACE	United States Army Corps of Engineers
WMSWCD	West Multnomah Soil & Water Conservation District



This Sauvie Island & Multnomah Channel Bottomlands Conservation Opportunities resource booklet is a collaborative effort of many organizations to inspire and inform the future conservation of natural resources, habitats and wildlife in this unique area of the northwest.

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