FLOODPLAINS
FOR THE FUTURE
PUYALLUP, WHITE & CARBON RIVERS

Annual Report 2018

PCC FARMLAND TRUST

We define floodplain health as:

The condition of multiple elements that when considered together contribute to a functioning floodplain, including the natural physical processes and biological factors that support salmon populations; the long-term viability of agricultural lands; and the reduction of the risk of flooding.

Our Focus

Dear Reader,

From the summit of Mount Rainier to the shores of Commencement Bay, the Puyallup River Watershed covers a varied landscape home to a growing populace, a rich tradition of agriculture, and salmon runs. Floodplains for the Future is a partnership of stakeholders working together to unite these three elements and transform floodplain management in the watershed. Through our actions, we strive to protect and improve what people in our watershed value: communities resilient to flood events, a robust farming economy, and the habitat needed to recover salmon.

Since 2013, our partners have collaborated to support, fund, and implement multi-benefit floodplain projects and activities in the Puyallup Watershed. Together, we have removed over 70 structures at high-risk of flooding, conserved nearly 400 acres of farmland, restored critical salmon habitat and made numerous other advancements towards our goal of achieving integrated floodplain management. We have many more projects currently underway, but not yet completed.

This Annual Report celebrates the achievements of our partners over the past year, paints a picture of overall floodplain conditions in 2018, and provides valuable information our partners can use to improve and focus their future efforts. Since January 2018, our partners have invested over $9 million in floodplain restoration activities. We have also tracked floodplain conditions outside of our control like climate conditions and salmon abundance to provide valuable context for our work. The results contained in this Annual Report help our partners see progress towards their goals.

Managing the floodplains of the Puyallup Watershed to achieve multiple goals is a worthy challenge. This annual report shows that our collective efforts increasing the pace and magnitude of our work, while also revealing areas where adaptive management and new strategies may be needed. We hope this report inspires you, as it does us, to ask questions, make new connections, and take meaningful action.

Kathleen Berger

Floodplains for the Future Coordinator

Our Integrated Management Group

The Floodplains for the Future Integrated Management Group (IMG) is a group of stakeholder and government organizations with interest in the Puyallup River watershed. FFTF Partners include:

American Rivers
City of Orting
City of Puyallup
City of Sumner
Floodplains by Design
Forterra
King-Pierce Farm Bureau
Muckleshoot Indian Tribe
PCC Farmland Trust
Pierce Conservation District
Pierce County
Pierce County Agricultural Program
Port of Tacoma
Puget Sound Partnership
Puyallup Tribe of Indians
Strategic Conservation Partnership
South Puget Sound Salmon Enhancement Group
The Nature Conservancy
UW Climate Impacts Group
Washington State Department of Ecology
WRIA 10/12 Lead Entity
WSU Extension

Why Integrated Floodplain Management

Communities across Puget Sound are beginning to envision and implement a new way of managing floodplains. Historically, actions to reduce flood risk were separate from actions taken to restore habitat and many of these actions had no consideration for agricultural lands or uses.

Integrated floodplain management is a new form of planning and management where Floodplains for the Future (FFTF) partners have agreed on a set of shared visions, strategies, and actions to improve floodplain health. Instead of competing against one another for limited resources, FFTF partners work together to pursue diverse funding opportunities and develop a suite of integrated projects that move stakeholders in the watershed closer to achieving their goals.

One project, the Matlock Farm Conservation Easement, exemplifies the benefits that arise from such collaboration. After 60 years of stewardship by the Matlock Family, brothers Ivan and Dave decided to retire and sell their 153-acre farm. At the time, agricultural lands in Pierce County were being increasingly developed for residential or industrial purposes. In 2015, FFTF partners Forterra and Pierce County worked together to purchase a 116-acre conservation easement on the farm and the remaining 37 acres, encompassing 1,300 feet of Ball Creek, were purchased to protect and restore salmon habitat. In 2018, habitat restoration on Ball Creek was completed. Through their efforts, FFTF partners produced beneficial outcomes for agriculture and salmon recovery in the watershed.

The path towards integrated floodplain management can be difficult as oftentimes the goals behind reducing flood risk, supporting agriculture, and recovering salmon are at odds. However, working towards integrated solutions results in projects and funding opportunities that increase the pace and magnitude of FFTF actions to improve floodplain health.

Our goal is integrated floodplain management

Integrated floodplain management seeks common agreement on visions, strategies, and actions. Integrated management can lead to suites of actions that meet the needs of farm, fish, and flood risk. Integrated solutions make better use of limited funding and staffing and lead to wiser capital investments.

FARM **FISH** **FLOOD RISK**

Our Vision

Restored connections between rivers and land improve habitat for salmon, protect communities and critical infrastructure from flooding, and provide new opportunities for recreational and cultural uses while preserving agricultural lands in the Puyallup River Watershed.

Our Mission

To encourage shared leadership in a trusting and transparent environment in order to plan, fund, and implement multi-benefit floodplain projects in the Puyallup, White, and Carbon River floodplains.

Monitoring to Move Forward

In order to track progress towards their goals, FFTF partners have developed a robust monitoring plan referred to as the Shared Monitoring Program. One aspect of the program includes 18 high-level metrics that are used to track capital investments in the FFTF program, monitor the progress of actions by FFTF partners, and report on conditions in the watershed outside of the direct influence of FFTF partners. Together, these 18 metrics comprise the Index of Floodplain Health which groups the metrics around three themes: investments, land and outcomes. Land metrics help partners learn how communities interact with land in the floodplain, investment metrics track the financial contributions of FFTF partners and the tangible results from those contributions, and outcome metrics reflect trends in floodplain conditions. These metrics, in combination with a process to discuss and interpret results annually, comprise a monitoring and adaptive management program for the partners.

By monitoring their actions through these metrics, FFTF partners are able to understand the degree to which their individual and collective efforts and investments in the watershed align with their shared visions, strategies, and actions. Monitoring also allows partners to see how their efforts align with other outside factors. For example, monitoring provides information to evaluate whether FFTF efforts are reducing flood risk faster than new risk is being created. This iterative process of reflection allows partners to celebrate their successes, identify areas where they are falling short of their goals, and where collaboration can be improved, and ultimately, move closer to a better future for the Puyallup Watershed.

This 2018 Annual Report provides results for 14 of the 18 metrics in the Index of Floodplain Health. Some metrics are tracked by reach. A map of the reaches can found at the end of this report. Project specific monitoring of actions supported by FFTF will occur as each project is implemented.

INVESTMENTS

We are making capital investments in integrated floodplain management and making progress toward our goals

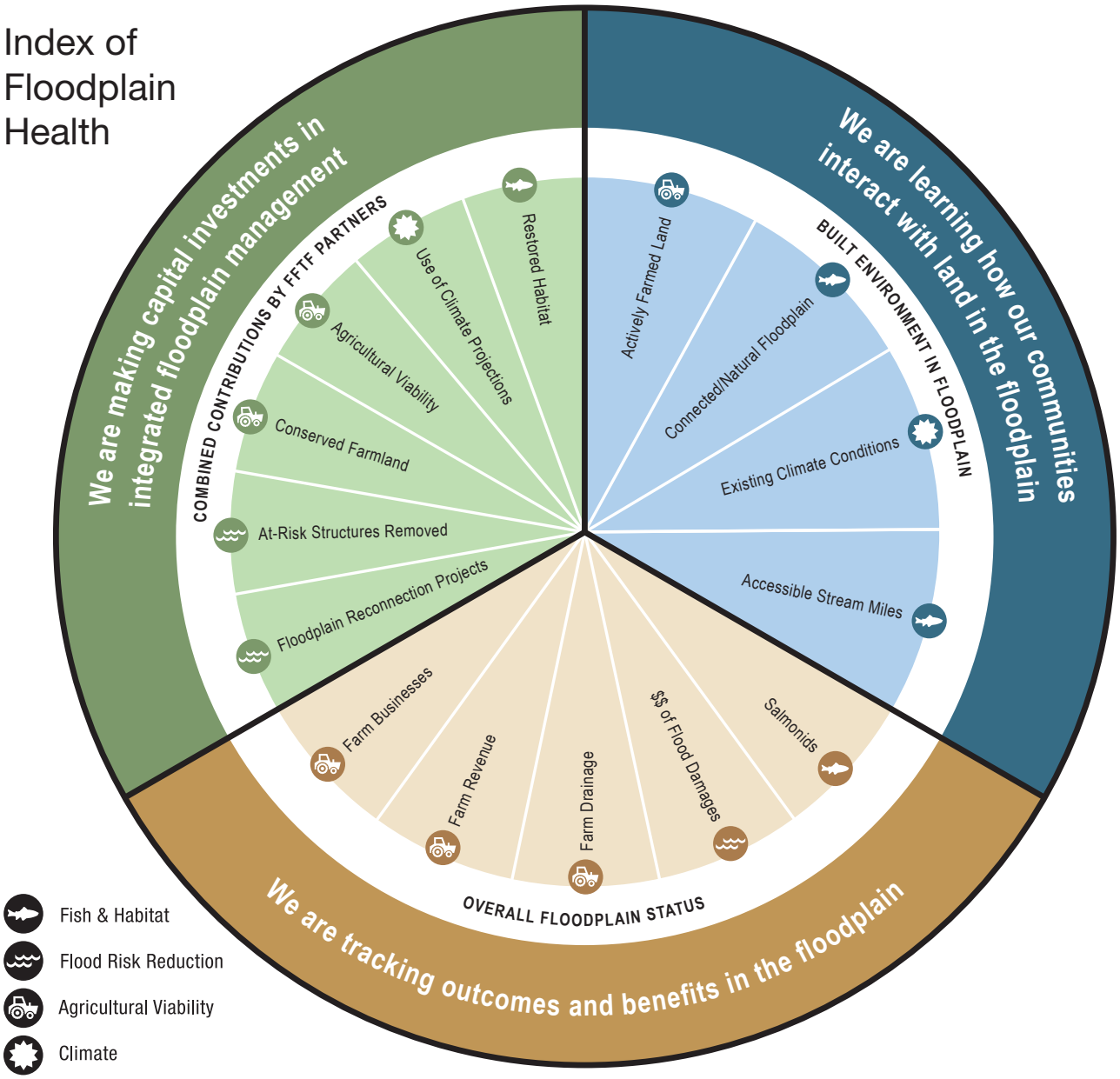
LAND

We are learning how our communities interact with land in the floodplain

OUTCOMES

We are tracking outcomes and benefits in the floodplain

Index of Floodplain Health



METRICS REPORTED IN THIS ANNUAL REPORT

INVESTMENTS

Combined Contributions

Floodplain Reconnection Projects

At-risk Structures

Conserved Farmland

Agricultural Viability

Use of Climate Projections

Restored Habitat

LAND

Built Environment in Floodplain

Actively Farmed Land

Connected/Natural Floodplain

Existing Climate Conditions

Accessible Stream Miles

OUTCOMES

Overall Floodplain Status

Farm Businesses

Farm Revenue

Farm Drainage

$$ of Flood Damages

Salmonids

Metrics Not Reported

Investments

We are making capital investments in integrated floodplain management and making progress toward our goals

INTEGRATED METRIC

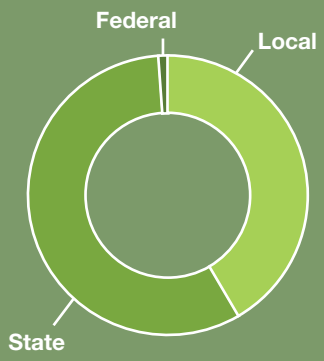
COMBINED CONTRIBUTIONS BY FFTF PARTNERS

DESCRIPTION

FFTF partners are working together to support the recovery of floodplain functions and protect the health and safety of communities around floodplains. Working independently and collaboratively, FFTF partners seek and acquire funding from multiple sources, including federal, state, and local grants, rate-based fees and taxes, and private foundations. Partners provide match funds in many cases and use existing grants to leverage additional funds where possible. Together, the combined investment of all FFTF efforts serves as an indicator of progress toward the shared goals of the FFTF program. In 2018, partners contributed over $9 million toward FFTF activities, bringing their total combined contributions to over $50 million since FFTF was formed in 2013.

$9,068,038 in 2018

$51,828,835 since 2013



Funding Source and 2018 Amount

Local	$3,769,717
State	$5,202,087
Federal	$96,234
Private	$0
TOTAL	**$9,068,038**

INDIVIDUAL METRICS

FLOODPLAIN RECONNECTION PROJECTS

DESCRIPTION

Floodplain reconnection projects are designed to reconnect floodplains to rivers and tributaries, providing room for rivers to migrate, lessening the impacts of severe flood events, and creating additional habitat. This metric tracks the total acreage of completed floodplain reconnection projects as well as the number of reconnection projects in progress and proposed by Pierce County.

52 acres of floodplain reconnected in 2018

13 projects in-progress and **5** proposed

South Fork Floodplain Restoration

Completed in 2018, the South Fork Floodplain Restoration project removed over 2,400 feet of levee to reduce flood risk along the Puyallup River. As a result of collaboration between FFTF partners, this project created over 2,000 feet of side channel habitat, constructed a 1,100-foot backwater channel, and installed engineered log jams and woody debris to enhance fish habitat and channel complexity.

This photo was taken within days of the project being completed

INDIVIDUAL METRICS

AT-RISK STRUCTURES REMOVED

DESCRIPTION

Removing at-risk structures from the floodplain is an effective way to prevent future flood damages and reduce costs associated with emergency response, clean-up, and recovery. This metric uses data from Pierce County to track progress made towards reducing flood risk.

13 at-risk structures removed in 2018

73 at-risk structures removed to-date

CONSERVED FARMLAND

DESCRIPTION

Agriculture has long been a major land use in the floodplains of the Puyallup Watershed. Compared to commercial, residential, or industrial development, agriculture is a compatible floodplain land use, and conserving a viable agricultural land base helps reduce the amount of development in the floodplain. This metric tracks the completion of farmland conservation projects carried out by FFTF partners, including Pierce County, PCC Farmland Trust, and Forterra.

2 projects in progress in 2018

393 acres of conserved farmland to-date

RESTORED HABITAT

DESCRIPTION

The restoration of wetlands, floodplains, and riparian areas provides important habitat benefits for fish and wildlife. This metric uses data from the Pierce County Salmon Recovery Lead Entity to track habitat restoration and reflect progress toward FFTF goals related to improving habitat. In 2018, this included over 20 acres of riparian plantings, wetland creation and enhancement, and stream channel creation or rehabilitation. Additionally, 1.4 acres of riparian planting occurred on agricultural lands. Floodplain reconnection is reported separately. FFTF partners have identified that a comprehensive system to track restored habitat is needed to capture all the restoration that is occurring in the watershed; it is likely that this metric is currently under-reporting the acres of restored habitat.

21 acres of restored habitat in the floodplain in 2018

118 acres of restored habitat in the floodplain to-date

Land

We are learning how our communities interact with land in the floodplain

INTEGRATED METRIC

BUILT ENVIRONMENT IN THE FLOODPLAIN

DESCRIPTION

WDFW's High Resolution Change Detection dataset is used to show changes in land-use between two time periods. This data revealed approximately 350 acres of new human-dominated land cover (i.e, developed or impervious) in the floodplain between 2013 and 2015. The majority of the new built environment is associated with commercial and residential development in the Lower Puyallup (127 acres) and Lower White (181 acres) reaches. Eight (8) acres of these 350 acres were previously connected to active river channel with natural land cover. The results for this metric were generated in 2018 and serve as the 2013 FFTF baseline.

350 acres of new built environment in the floodplain between 2013 and 2015

8 of the 350 acres were previously connected floodplain with natural land cover

"Built environment" is defined as human dominated land cover such as roads, buildings, and warehouses (as measured by impervious and semi-impervious surfaces)

INDIVIDUAL METRICS

ACTIVELY FARMED LAND

DESCRIPTION

This metric uses Washington State Department of Agriculture and Pierce County data to measure the amount of actively farmed land in the Puyallup watershed. The data allows FFTF partners to monitor progress made towards their goal of minimizing the conversion of agricultural lands to non-agricultural uses. The results for this metric were generated in 2018 and serve as the 2013 FFTF baseline.

4,083 acres of actively farmed land in the floodplain in 2013

FFTF Baseline


CARBON RIVER

INDIVIDUAL METRICS

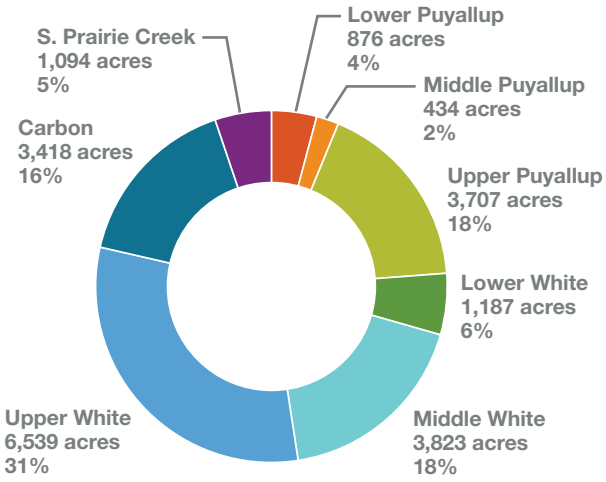
CONNECTED/NATURAL FLOODPLAIN

DESCRIPTION

This metric measures the amount of land in the watershed with natural land cover and unobstructed access to rivers and tributaries. This type of floodplain can provide beneficial habitat for fish and can mitigate the impacts of severe flooding events. Of the 21,078 acres of connected and natural floodplain in the watershed, over 30% occurs in the upper White River and only 2% is within the Middle Puyallup River reach. The results for this metric were generated in 2018 and serve as the 2013 FFTF baseline from which to track future change.

21,078 acres of connected floodplain with natural land cover in 2013

FFTF Baseline



EXISTING CLIMATE CONDITIONS

DESCRIPTION

Long-term climate trends and events influence nearly all metrics tracked by the FFTF monitoring program. This metric generates information about peak and low stream flows, air and water temperature, and precipitation to provide necessary context used to interpret the results of the other metrics in the FFTF monitoring plan. In 2018, both the peak and low streamflow events occurred in October. The low streamflow event occurred on October 24th. The peak stream flow was recorded on October 28th and was well below the 10% annual chance flood threshold (41,000 CFS). The average winter air temperature was two degrees below average, while precipitation was 4 inches below average. The highest 7-day average water temperature was two degrees below the 22°C threshold for lethal impacts to fish.

Peak streamflow of **26,200** cfs in water year 2018

Average winter air temperature of **46°F**

Low streamflow of **729** cfs in 2018

37 inches of total annual precipitation

Water temperature (White River) of **20°C** *(Highest 7-day average daily maximum)*

Outcomes

We are tracking outcomes and benefits in the floodplain

INDIVIDUAL METRICS

FARM BUSINESSES

DESCRIPTION

This metric reports data from the Census of Agriculture conducted by the U.S. Department of Agriculture. Census data is reported every five years and is measured across the county, not the watershed. Over the past 25 years, the number of farms in Pierce County has ranged from 989 to the 1,607 farms recorded in 2017. While the number of farms has gone up (1,607), the average farm size has gone down (28 acres) as of 2017.

1,607 farm businesses in Pierce County in 2017

129 new farms since 2012

FARM REVENUE

DESCRIPTION

This metric was also reported using results from the Census of Agriculture. Although overall revenue declined substantially across the county, the revenue from crops, which is the primary agricultural product in the Puyallup watershed, saw a $5.5 million increase from 2012.

$64,876,000 in total market value of agricultural products sold in 2017

$26,057,000 decrease since 2012

FARM DRAINAGE

DESCRIPTION

Adequate drainage is necessary for successful farm operations. This metric uses a survey to track responses from farmers about drainage conditions on farms throughout the watershed for a given year. The results of the 2018 survey will serve as a baseline against which subsequent surveys will be compared to evaluate perceptions of farm drainage over time.

For the 2018 growing season, surveyed farmers ranked drainage issues as **moderate**.

FFTF Baseline

PCC FARMLAND TRUST

BALL CREEK AND MATLOCK FARM

INDIVIDUAL METRICS

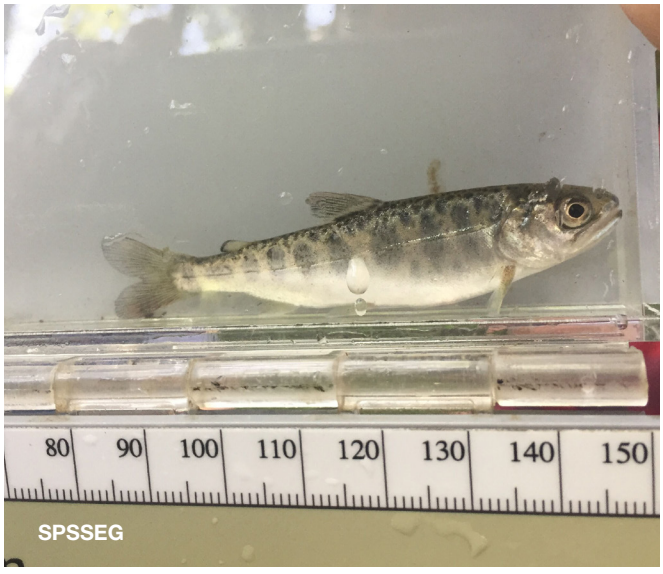
COST OF FLOODPLAIN DAMAGES

DESCRIPTION

This number only reflects damage to structures with a flood insurance policy, not all damages from flood events. It also doesn't reflect the full economic impact of flooding. FEMA tracks the amount of flood damage claims made each year, which provides the basis for this metric. No significant flooding events occurred in 2018.

$0 of flood damages in 2018

No major flooding events in 2018



SPSSEG

SALMONID ABUNDANCE

DESCRIPTION

Salmon are an invaluable resource in the Puyallup Watershed and FFTF partners have recognized the importance of the relationship between floodplain management and salmon abundance. According to the Salmon Habitat Protection and Restoration Strategy for Puyallup and Chambers Watersheds, historic estimates of Chinook spawner abundance numbered more than 64,000 fish. This metric uses data from the Puyallup Tribe and the Washington Department of Fish and Wildlife to monitor the populations of natural origin Chinook on the White and Puyallup Rivers.

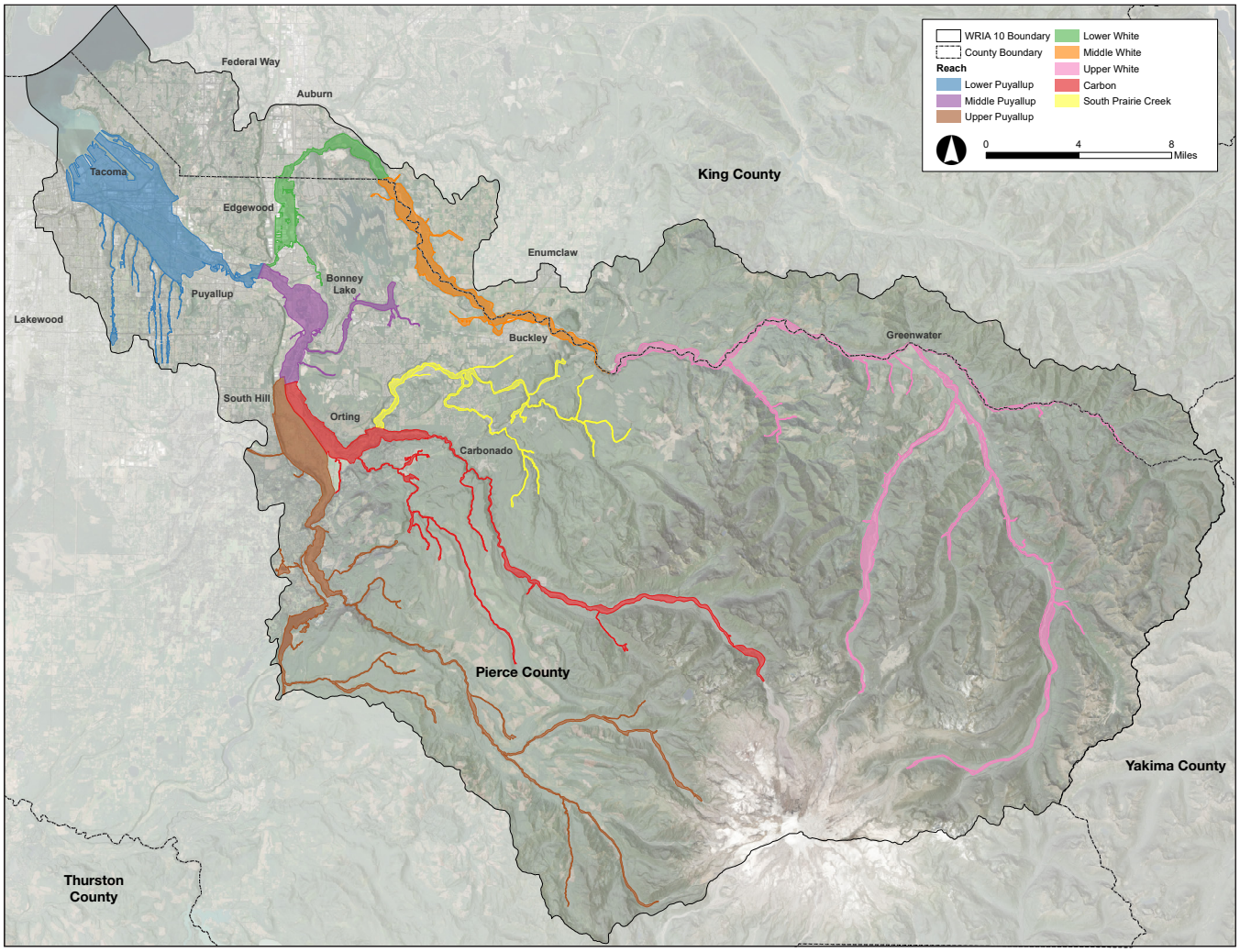
1,185 adult Puyallup River Fall Chinook of natural origin

10,803 total juvenile Chinook outmigration abundance estimate

320 adult White River Chinook of natural origin

Puyallup River **0.39%** freshwater survival

Puyallup Watershed: FFTF Reaches



LEARN MORE!

The monitoring component of the FFTF program is guided by the Shared Monitoring Plan. This document contains detailed information about the protocols used to track each metric including the data source and collection methods.

More information about the results included in this Annual Report including the Shared Monitoring Plan, graphics, tables, benchmarks, and data along with the results from previous years of monitoring (2013-2017) can be found on the Floodplains for the Future website: www.floodplainsforthefuture.org.

FLOODPLAINS FOR THE FUTURE
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