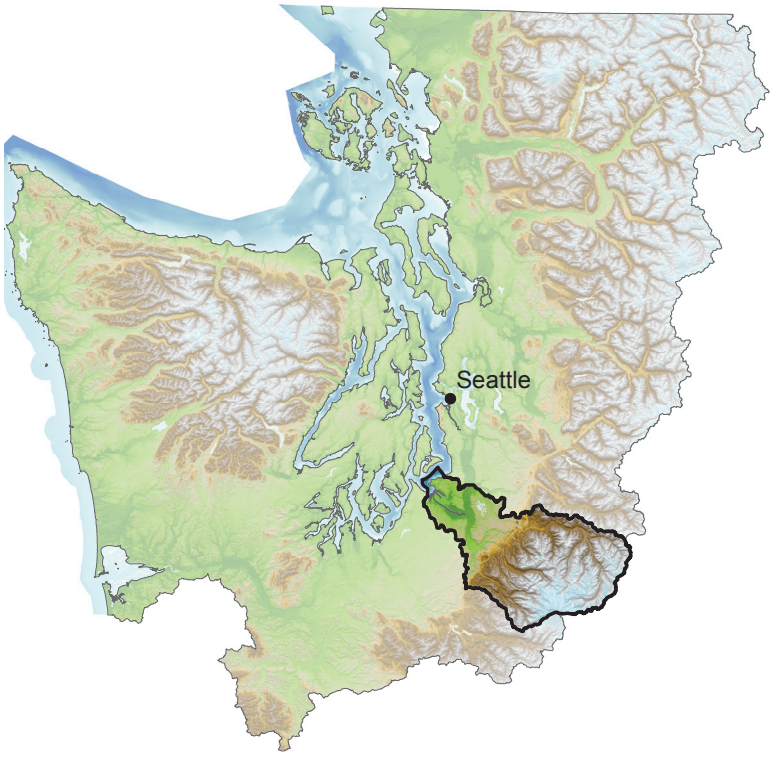
2016 State of Our Watersheds Report

Puyallup River Basin

It's the tribes that are putting the fish back in the waters. It's our people doing that to make sure our livelihood will carry on, that our children will have this opportunity to get into a boat and go fishing so they can eat what they need.

– Nancy Shippentower-Games
Puyallup Tribe of Indians



Puyallup Tribe of Indians

The Puyallup watershed was one of the earliest areas to be settled by Euro-Americans in the Puget Sound region. Consequently, it was also one of the first watersheds in Puget Sound to experience the full impacts of industrial, urban and agricultural development. This development and conversion of floodplain, uplands and forestlands has completely altered the hydrologic conditions within the watershed to the detriment of salmonid production. The Puyallup are fishing people. They lived on food provided by the fisheries since time immemorial. It was not until after the *U.S. v. Washington* court decision that they were able to exercise their rights to the fishery.

History of the Puyallup River Basin

The Puyallup River basin, WRIA 10, includes the White, Puyallup and Carbon rivers, which have their origins in the glaciers of the northwestern slopes of Mount Rainier. The Puyallup River flows to Commencement Bay at the Port of Tacoma, the third largest port in the western United States. The Puyallup Basin has been substantially altered from its historic condition and is currently contained within a revetment and levee system throughout its lower 26 miles.

The Puyallup River is the only river in the state where early flood protection measures included formation of a concrete channel. Intense timber harvest and forest road density within unstable drainages has led to high sediment input, frequent slope failures and channel instability. Economic activity within the watershed is largely industry, marine shipping, military base operations, lumber mills, urban development, commercial forestry, energy production and agriculture.

The identified leading factors for decline are loss of fish access to spawning and rearing habitat, lack of estuarine and nearshore habitat, impaired riparian functions and conditions, loss of floodplain processes and off-channel habitat, sediment transport, flow regime alteration and water quality.

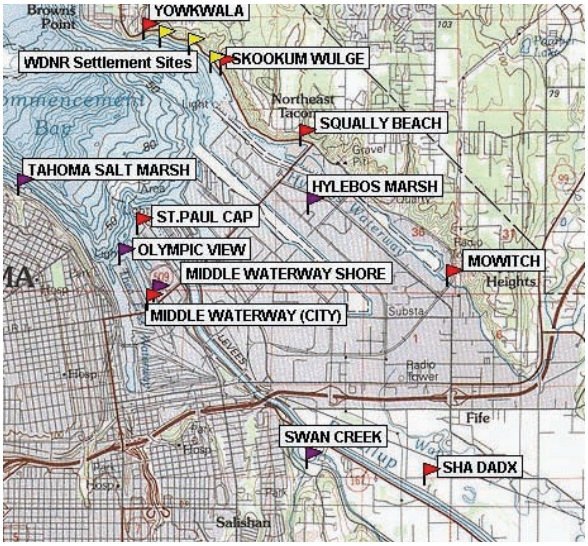
Habitat recovery planning has involved many forums including CERCLA/RCRA/NRDA issues in the industrial tideflats/POT area since 1980, various planning efforts under WAC 40-12 (nonpoint rule), as well as more recent processes; one conducted within the Shared Strategy Process and the other by the fishery co-managers. As part of the Puget Sound Shared Strategy process, Pierce County developed a habitat recovery plan using EDT modeling with the participation of the Puyallup Tribe and Washington Department of Fish and Wildlife. White River and Puyallup River Chinook Recovery Plans had already been developed by the co-managers in earlier watershed recovery planning processes. Efforts are ongoing between the co-managers and Pierce County to integrate these respective plans within an all-H context.

Three key strategic habitat protection and restoration priorities were identified in the Shared Strategy process for the Puyallup watershed:

- Restoration of estuary habitat and floodplain connectivity in the lower Puyallup, lower White and lower Carbon rivers;
- Increased protection and restoration of tributaries that have relatively high productivity, including South Prairie Creek, Boise Creek, Greenwater River, Huckleberry Creek and the Clearwater River; and
- Changes in flow management for Mud Mountain Dam PSE bypass, removal and amelioration of migration barriers associated with the Electron Dam.[1]

Carol Sue Braaten http://braatenfifecouncil.com/

Example of channelization of the Puyallup River.



Wildflower Productions/topo.com

Restoration Sites in Commencement Bay.

Recovery Efforts Show Signs of Improvement But Still Lagging in Key Indicators

At the 10-year mark of the Puget Sound Salmon Recovery Plan, a review of key environmental indicators for the Puyallup basin planning area shows improvements for water quality and removal of forest road barriers, but degradation for water quantity, marine shoreline habitat conditions and impervious surface areas. Each remains a priority issue. In general, there is a shortage of staff at all levels (e.g., federal, state, tribal, county) needed to address the issues and implement actions to restore and protect habitat and to monitor and enforce compliance of existing regulations. In addition, funding shortfalls for large-scale projects contribute to the slow pace of progress.

Review of the trend for these key environmental indicators since the 2012 State of Our Watersheds Report shows improvement for some indicators and a steady loss for others in habitat status:

Tribal Indicator	Status	Trend Since SOW 2012 Report
Water Quality	In 2013, the Puyallup basin saw a slight improvement in its water quality and aquatic habitat conditions. Grade went from C to C+.	Improving
Water Quality - Flows	Since 1926, the Puyallup River stream flows have shown a continuous decline especially during critical flow periods despite the establishment of instream flows in 1980. The decline is due to groundwater withdrawals and land-use changes.	Declining
Shoreline Modifications/Forage Fish Impacts	From 2005-2014, 270 HPAs were issued, resulting in an additional 1.2 miles of armored shoreline, while 0.25 miles were removed, resulting in a net increase of about 1 mile of armored shoreline.	Declining
Water Wells	From 2010-2014, the Puyallup River basin saw an increase of 2.6% in water wells, keeping at the same pace as 2010 (20 new wells per year). Since 1926, the Puyallup River stream flows has shown a continuous decline especially during critical flow periods, despite the establishment of instream flows in 1980.	Declining
Impervious Surface	The Puyallup River basin continued to see an increase in impervious surface (1.2%) from 2006 to 2011. Clarks Creek basin saw an increase in impervious surface in all of its watershed analysis units, while South Prairie basin still remains mostly undeveloped.	Declining
Forest Roads	About 81% of the RMAPs have be repaired or abandoned.	Improving
Restoration	Since 2012, two levee setback projects have been completed in the Puyallup River basin, setting back 1.6 miles of levee, while 6 levee setback projects are in development, which could setback another 1.5 miles of levee.	Improving
	South Fork Road Floodplain Restoration Project (2,000-foot side channel, 1,100-foot backwater channel, engineered logjams). Since 2012, two levee setback projects have been completed, setting back 1.6 miles of levee. A 6.7-acre project site located in the City of Tacoma along the lower, tidal section of Hylebos Creek was completed. Restoration inlcuded removing structure, material, non-native vegetation, excavating the site to re-establish the tridal marsh and mudflats, and planting a vegetative buffer.	

Looking Ahead

Greater strides must be taken in managing water resources and improving water quality in concert with habitat restoration in the Puyallup basin. New habitat projects must be wetted with adequate quantities of clean water. Resources need to be brought to bear on making sure this happens. Some age-old problems remain: restoration of instream flows, enforcement of TMDLs (or other mechanisms in its place to improve water quality), absence of TMDLs for water quality parameters that adversely affect fish, stormwater cleanup, absence of water resource management prescriptions in temperature TMDLs, and absence of continuous monitoring or monitoring for toxics/stormwater.

The projected population growth and associated economic development for the Puyallup watershed will continue to challenge salmon conservation and recovery efforts. Current trends indicate that land-use regulation reform is required, and continued funding of habitat restoration activities is necessary in order to achieve recovery goals. The continued decline in water quality and quantity remains the biggest impediment to recovery. Additional funding support is required to complete the development of an integrated, comprehensive strategy for recovery across all H's (habitat, harvest and hatcheries). The greatest challenge remains securing the funding necessary for the large, multi-year restoration projects required to conduct levee setbacks and estuarine habitat creation.

Tacoma Weekly

Puyallup Tribal members bring a canoe ashore during the Tribal Canoe Journey.

Future Tribal Actions and Restoration Efforts:

Puyallup Tribe's goals for the future include:

1. The Puyallup Tribe is set to begin out-migrant monitoring on the White River in 2016. An 8-foot screw trap will begin fishing in Sumner near river mile 3.0 in January. This action will address a long-standing data vacuum and will provide answers to questions concerning survival rates of smolts through Mud Mountain Dam, out-migration timing, spawner/recruit ratios, growth rates, etc.

2. The Puyallup Tribal Fisheries will begin operating a wild steelhead acclimation pond at 28 Mile Creek on the Greenwater River in 2016. Although the Tribe currently operates five similar facilities, this is the first to be dedicated to steelhead recovery. This new acclimation pond will allow the Tribe to move steelhead recovery program fish out of the Diru Creek Hatchery and get the fish acclimated to an area that provides a great deal of presently underutilized rearing and spawning habitat.

3. The Clarks Creek Channel and Bank Stabilization project will be constructed in the Maplewood Spring ravine. This project is designed to lessen the contribution and transport of sediment to downstream reaches using a variety of soft earth technologies.

4. The Tribe will continue to work with the Army Corps and other agencies to design a replacement fish trap facility that will improve adult survival and enhance data collection for stock assessment needs. The soonest we will see a new facility is 2020.

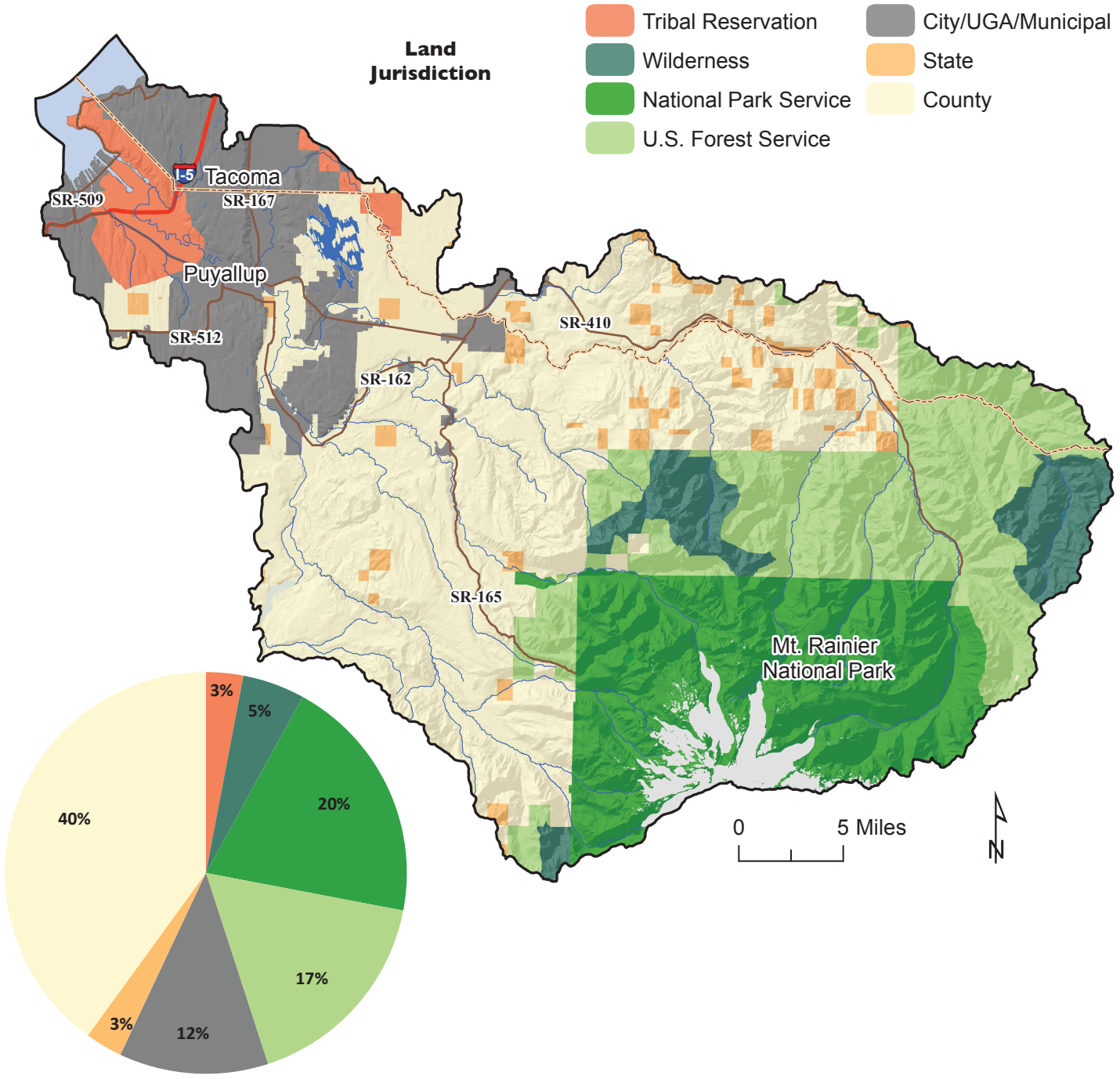
5. At Electron Dam, the Tribe will continue to work with the new project owner Electron Hydro to improve existing infrastructure that will lead to better survival rates and reduced diversion of fish into the power generation flume.

The Tribe will continue to work with its partners to improve both mainstem and riparian habitat conditions of South Prairie Creek. Both physical channel design changes and property acquisition are approaches currently being used.

Puyallup Tribe of Indians

Puyallup River Basin

The Puyallup River Basin (WRIA 10) includes the White, Puyallup and Carbon rivers, which have their origins in the glaciers of the northwestern slopes of Mount Rainier. The Puyallup River basin flows to Commencement Bay at the Port of Tacoma, the third largest port in the western United States. Historically, the drainage did not always include the White River until 1906, when the White was diverted from the Green River to the south into the Puyallup for flood control purposes, which effectively doubled the flow in the lower Puyallup River. The basin drainage area is about 1,065 square miles, and has over 4,300 miles of river and streams. The Puyallup basin has been substantially altered from its historic condition and is currently contained within a revetment and levee system throughout its lower 26 miles.[1] Salmonid species existing within the basin include Chinook, coho, chum, coastal cutthroat, pink, steelhead, bull trout and the occasional sockeye. Chinook, steelhead, and bull trout are listed as threatened under the Endangered Species Act, and coho are listed as a candidate.[2]



Data Sources: SSHIAP 2004,[3] WADNR,[4] WADNR 2014a,[5] WADNR 2014b,[6] WADNR 2014c,[7] WADOT 2013,[8] WAECY 1994,[9] WAECY 2011,[10] WAECY 2013a[11]

Habitat Restoration and Preservation Continues in WRIA 10

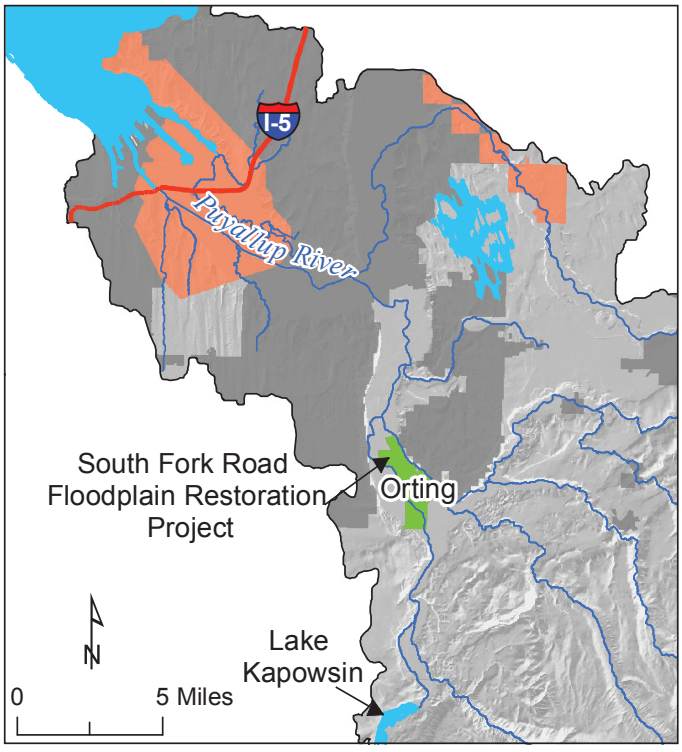
South Fork Road Floodplain Restoration Project

A very substantial restoration project is underway in WRIA 10 that will reconnect part of the Puyallup River to its historic floodplain, producing valuable, high quality salmon habitat. Pierce County is reconnecting part of the historic Puyallup River floodplain by building a side channel near South Fork Road and 145th Street East, north of the city of Orting and west of SR 162. Construction on the side channel's second segment (Phase 2A) was completed in summer 2014. The final phase of the project will complete the side channel's second segment and connect the segments together and to the Puyallup River (anticipated in 2015). The South Fork Road Floodplain Restoration project currently has a 2,000-foot side channel and a 1,100-foot backwater channel. In addition to constructing these channels, crews built engineered logjams in the channels, constructed a perimeter access road and planted native plants.[1] The final phase of this project is anticipated to be completed in 2015.

Engineered logjam.

Completed South Fork Phase 1 Channel.

Pierce County South Fork Floodplain Restoration Project (2)



Tribal Reservation
City/UGA

Created by the Electron mud flow off Mount Rainier 500 years ago, Lake Kapowsin is a unique example of the Earth's natural forces at work. The 512-acre lake is nearly undeveloped and covers an ancient cedar forest of old-growth trees.[2] The lake is important habitat for fish and other water-dependent species.

Lake Kapowsin WA DNR

Because of its rarity and value, the Washington Department of Natural Resources is proposing to make Lake Kapowsin Washington's first freshwater aquatic reserve.

Data Sources: SSHIAP 2004,[3] WADOT 2013,[4] WAECY 2011,[5] WAECY 2013a,[6] WADNR 2014b[7]

Levees and Revetments

Since 2012, two levee setback projects have been completed in the Puyallup River basin, setting back 1.6 miles of levee, while six levee setback projects are in some stage of development (feasibility, design, permitting) which could set back another 1.5 miles of levee.[1]

Of the 303 miles of known fish distribution in the Puyallup basin, 48 miles are contained within a levee and revetment system. Of these 48 miles, 36 are covered by U.S. Army Corps of Engineers Disaster Operations Public Law 84-99 Flood Control and Coastal Emergency Act (PL 84-90). Once a levee segment falls under PL84-99 jurisdiction, any repair work or maintenance that is deemed emergency is exempt from consultation, temporal closures associated with fish windows, mitigation, and compliance with WDFW's Integrated Streambank Protection Guidelines. Channelization and levees have reduced river processes that form pools, side channels and other habitat features used by salmonids. The construction of the revetments and levees and their maintenance has decreased the contribution of prey organisms to the river by precluding functioning riparian vegetation habitats. Additionally, they have precluded the recruitment of small and large wood from areas most likely to contribute this material.

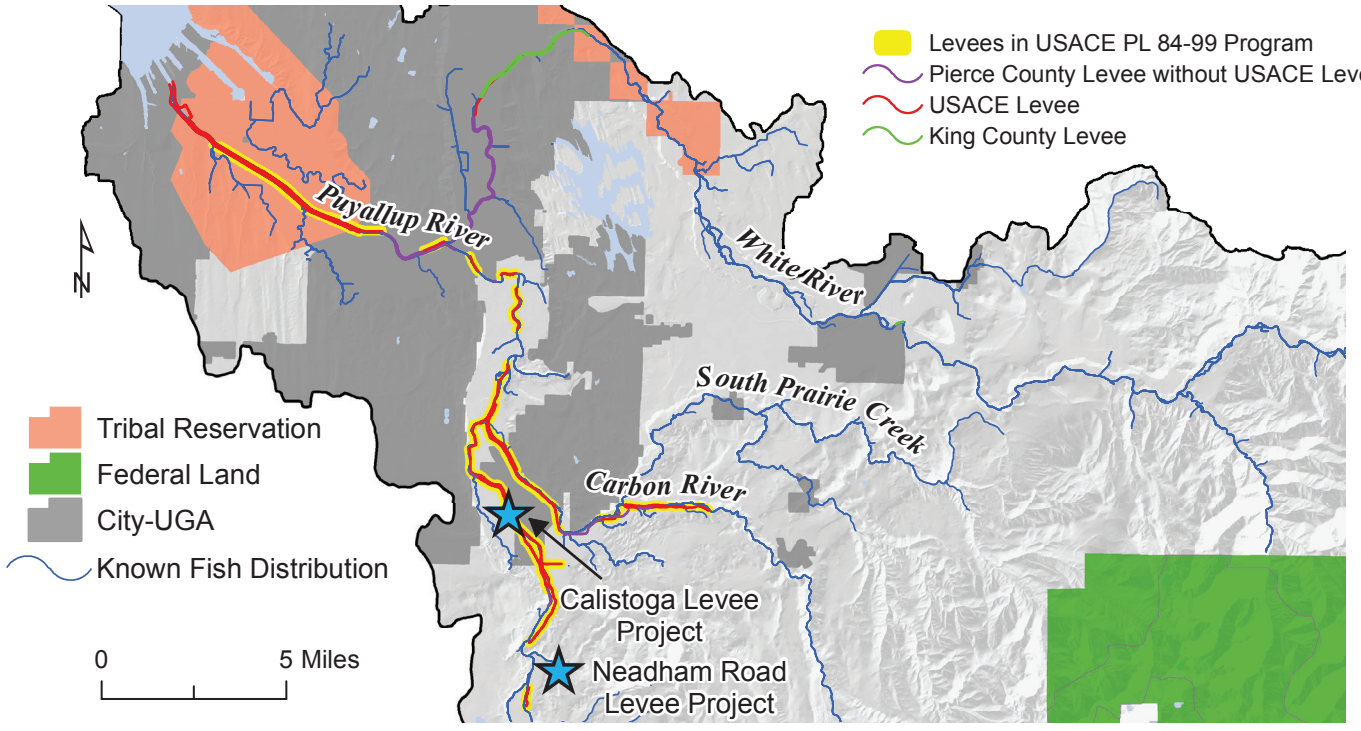
To improve the habitat conditions, the Puyallup Tribe and Pierce County have completed two levee setback projects and have six in development. Levee setbacks and estuarine habitat creation are the most beneficial types of actions needed for recovery of Chinook in WRIA 10 and will be a high priority.[2] The Calistoga and Neadham Road levee projects were two completed recently offering new habitat opportunities to local salmon populations.

Keith Eldrige, KOMO News

Calistoga Levee Project: This project will open up an approximately 1.5-mile-long corridor reconnecting the Puyallup River to a large portion of its historic floodplain while helping to reduce flooding and provide off-channel habitat for a range of fish species at various life stages.

Pierce County

Neadham Road Levee Project: This project on the Puyallup River included the installation of 650 lineal feet of setback levee and three engineered logjams offering new habitat opportunities to local salmon populations.



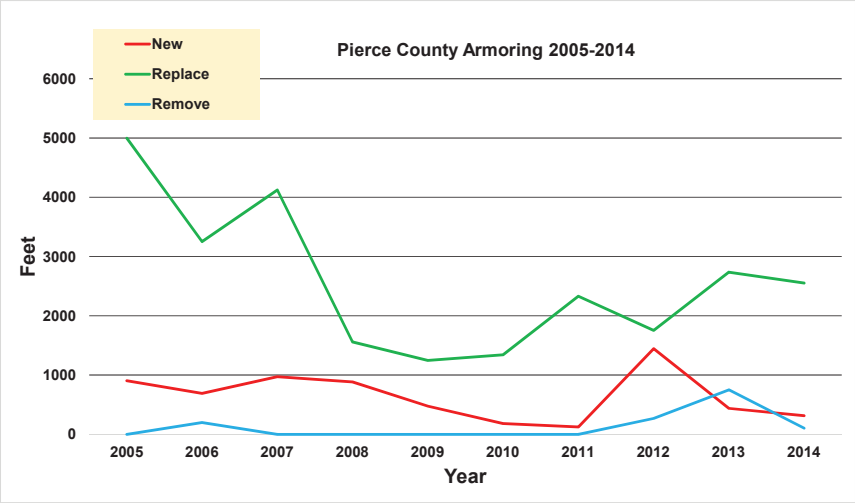
Data Sources: HWS 2015,[3] King Co. 2014,[4] Pierce Co. 2008,[5] SSHIAP 2004,[6] SWIFD 2014,[7] USACE 2008,[8] WADNR 2014b,[9] WADOT 2013,[10] WAECY 2011,[11] WAECY 2013a[12]

Nearshore and Estuary Habitat Lacking

From 2005-2014 in Pierce County, 270 Hydraulic Project Approvals (HPAs) were issued resulting in an additional 1.2-plus miles of armored shoreline, while 0.25 miles were removed, resulting in a net increase of about one mile.[1]

Of the 36 miles of marine shorelines in the Puyallup River basin, about 7% are undeveloped and free of bulkheads, riprap or other structures. Out of more than 5,900 acres of estuary habitats that historically existed at the head of Commencement Bay, only about 3% remain due to dredging, filling and activities associated with development.[2]

Nearshore and estuarine habitats provide food and refuge for juvenile salmon as they prepare for their journey to the ocean, but flood control projects, Port of Tacoma activities and urbanization have resulted in severely degraded conditions and have significantly reduced the amount of functioning habitat. Contaminated sediments, which have further limited the nearshore and estuarine habitat, have resulted in additional reductions in Chinook productivity.



Washington Department of Ecology Coastal Atlas

Example of Shoreline Modifications in WRIA 10.

NOAA Commencement Bay NRDA

Hylebos Creek Restoration Project: This 6.7-acre project site is located in the city of Tacoma along the lower, tidal section of Hylebos Creek. Restoration activities included restoring the estuarine salt marsh complex by creating intertidal channels and a vegetated buffer.[3] This property was later transferred to the Puyallup Tribe of Indians.

NOAA Commencement Bay NRDA

Hauff Property Nearshore Restoration Project: Despite the large amount of development along the marine shoreline in the Puyallup basin, a 6.7 acre project site located in the city of Tacoma along the lower, tidal section of Hylebos Creek was completed. Restoration activities include cleaning up the site by removing structures and materials, removing the non-native vegetation, excavating the site to re-establish the tidal marsh and mudflats, and planting a vegetative buffer.

Data Sources: Carman et al. 2015,[4] NAIP 2013[5]

Water Quality Shows Slight Improvement

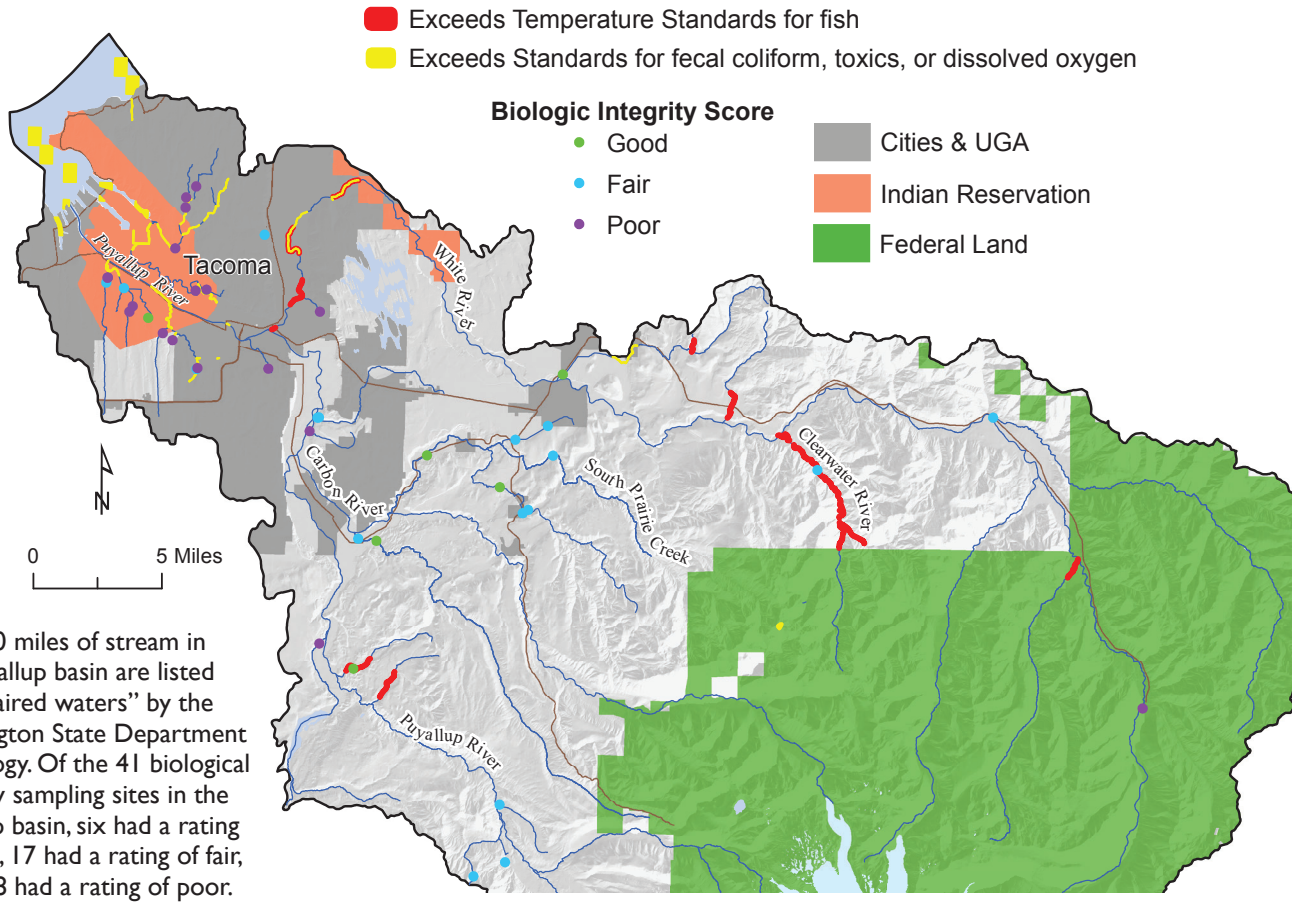
In 2013 the Puyallup basin saw a slight improvement in its water quality and aquatic habitat conditions. The average grade for Pierce County streams in 2013 was C+, up a little from the 2010 score of C, on a scale of A-F, with the water quality and aquatic habitat conditions still considered "fair."[1] The 41 biological integrity sampling sites in the Puyallup Basin show the "good" category changing from 0 to 6, the "fair" category changing from 19 to 17, and the "poor" category changing from 22 to 18.[2]

Since the mid-1990s, university scientists, water resource managers, and volunteers have used the multimetric Benthic Index of Biotic Integrity (B-IBI) to evaluate the biological condition of Pacific Northwest streams with benthic macroinvertebrates.[3] Benthic macroinvertebrates are particularly well suited for biomonitoring: they are diverse and abundant, sensitive to human disturbance, and are excellent indicators of stream condition because they are key components of the aquatic food web, often long-lived, and not migratory or artificially stocked.[4] The loss of biological integrity within salmon spawning grounds equates to a loss of salmon. If a stream's biological condition is degraded (as reflected by the condition of the benthic macroinvertebrate population), it is safe to conclude that the stream will not support healthy salmon or other fish populations. The decline of healthy salmon spawning and rearing habitat has been identified as one major cause of the decline of wild salmon populations. Of the 41 sampling sites in the Puyallup basin, none had a rating of excellent and only six had a rating of good.

Point and nonpoint source pollution due to industrial and commercial activities, residential development and agriculture adversely impacts water quality. Many of the streams in this basin suffer from combinations of high fecal coliform levels, low dissolved oxygen levels and other water quality impacts.

Puyallup Tribe

Puyallup staff collects macroinvertebrates in Clarks Creek.



Over 60 miles of stream in the Puyallup basin are listed as "impaired waters" by the Washington State Department of Ecology. Of the 41 biological integrity sampling sites in the Puyallup basin, six had a rating of good, 17 had a rating of fair, while 18 had a rating of poor.

Data Sources: HWS 2015,[5] Pierce Co. 2013,[6] SSHIAP 2004,[7] USGS 2014,[8] WADNR 2014b,[9] WADNR 2014c,[10] WADOT 2013,[11] WAECY 2011,[12] WAECY 2013a,[13] WAECY 2013b[14]

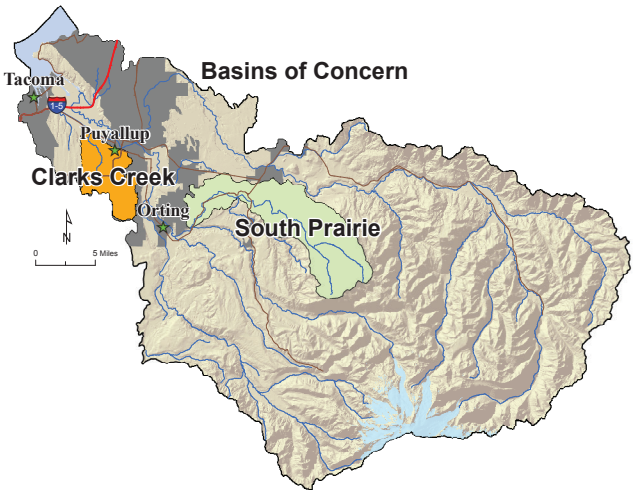
Impervious Surface and Population Continues to Increase

The Puyallup River basin continued to see an increase in impervious surface (1.2%) from 2006 through 2011. Clarks Creek basin saw an increase in impervious surface in all of its watershed analysis units, while South Prairie basin still remains mostly undeveloped.

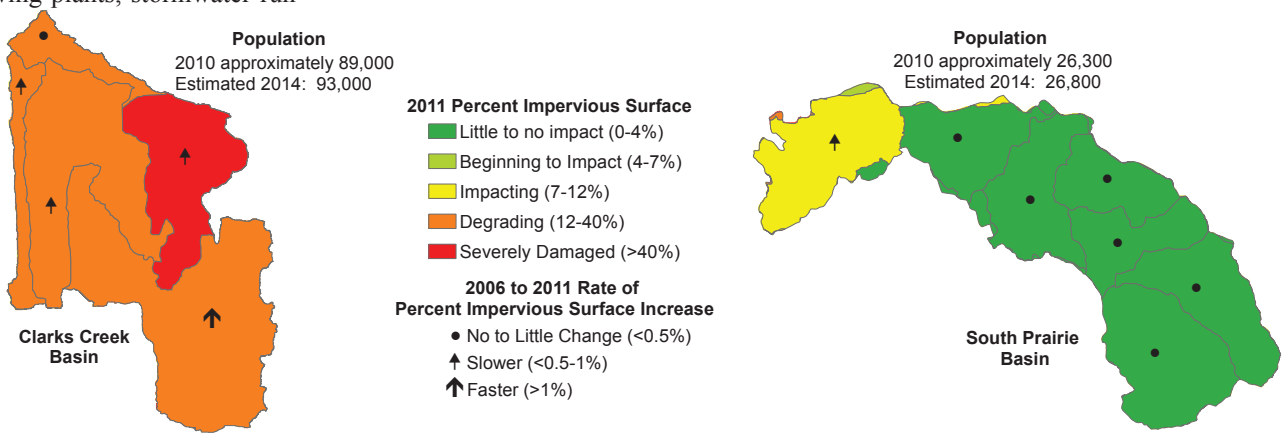
The Puyallup River basin has an estimated 2014 population of 424,001 (up 4,341 from 2010) in incorporated communities and unincorporated Pierce and King counties.[1] It includes the state's third largest city, Tacoma, with a population estimate of almost 200,900 for 2014. Increased population pressure and development, with the conversion of forested areas to impervious surfaces, is the major factor affecting water quality in the region.[2] Greater numbers of people in the region result in greater volumes of waste water, more septic systems and more sources of nutrients entering surface waters. As a result of development, once-forested land has been replaced with buildings, roads and lawns.

Clarks Creek supports the highest salmon spawning densities of any incorporated area in the watershed. Clarks Creek provides critical habitat for Chinook salmon. Within the creek can also be found coho, chum, cutthroat, and steelhead salmon. Over-growing plants, stormwater runoff pollution, fecal coliform and low levels of dissolved oxygen all plague Clarks Creek. The health of this creek and its sustainability are in jeopardy. Clarks Creek basin saw an increase in impervious surface in all of its watershed analysis units from 2006-2011 and remains degraded or severely damaged.

South Prairie Creek, a major tributary of the Carbon River, is considered one of the most productive reaches used by Chinook for spawning habitat that is available for natural salmonid production in the basin. South Prairie Creek is temperature impaired and has not seen water temperatures improve since a TMDL was completed in 2003. The South Prairie Creek mainstem is identified as a high priority for protection, meaning that further degradation would have a large negative effect on Chinook performance in that system. South Prairie basin still remains undeveloped with mostly little to no impact of impervious surface.



Incremental degradation is most rapid during the first stages of urbanization (0% < impervious surface < 10% in a watershed). Any watershed with less than 5% impervious surface will have high-quality habitat to consider for preservation.[3]



Example of impervious surface near the Puyallup River.

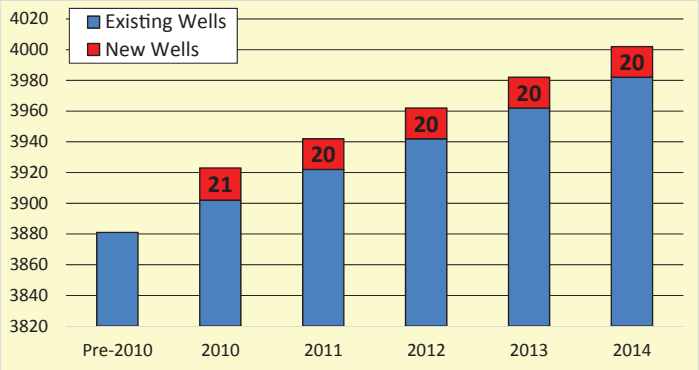
Impervious surfaces prevent rainfall from infiltrating into the soil and groundwater, and increase the volume and rate at which water runs off the surface into wetlands, streams, lakes and Puget Sound. The greater volume of runoff increases the frequency of flooding, erodes channel banks and streambeds, increases sediment movement, increases the amount of pollutants carried into water bodies and damages aquatic life. By reducing the amount of water that infiltrates, impervious surfaces can decrease aquifer recharge and reduce summer baseflow to streams. Reduced summer baseflow in streams can result in warmer temperatures that are harmful to fish and other aquatic life. Also, low streamflows and shallow water can form barriers to fish movement and migration. In addition to impacts from increased peak flows and volumes associated with new impervious surface areas, water quality can be affected if the new impervious surfaces are significant sources of pollutants. Runoff from pollutant-generating impervious surfaces can affect the quality of drinking water supplies, as well as negatively affect aquatic life in surface waters.

Data Sources: NAIP 2013,[4] NLCD 2006,[5] NLCD 2011,[6] WADNR 2006,[7] WADNR 2014c,[8] WAECY 2011,[9] WAOFM 2014[10]

Low Flows Continue to Decline

The Puyallup River basin saw an increase of 101 wells (2.6%) from 2010 to 2014, keeping at the same pace as 2010 (20 new wells per year). Since 1926, the Puyallup River streamflows have shown a continuous decline especially during critical flow periods, despite the establishment of instream flows in 1980.

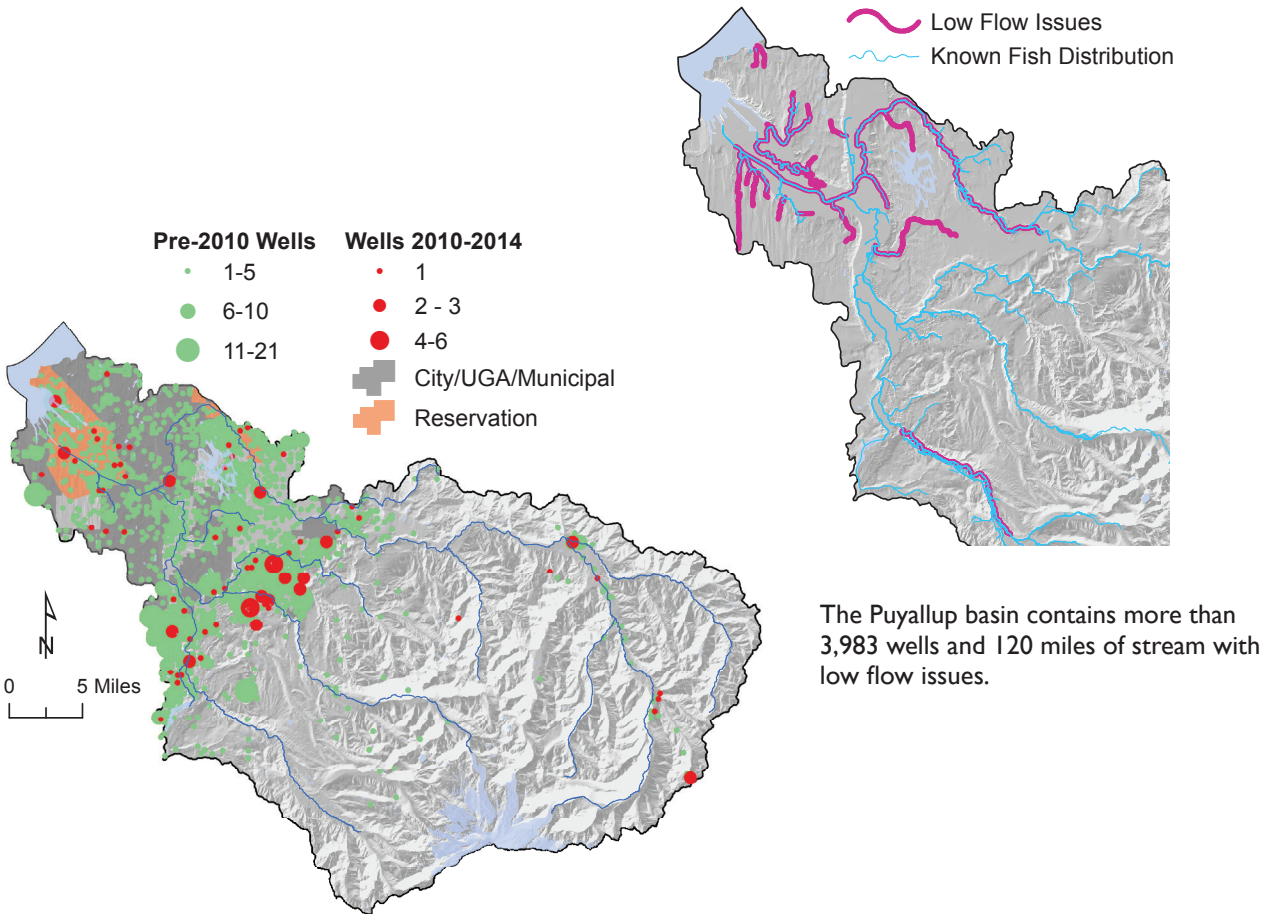
Instream flow rules, which allocate specific flow and timing regimes in rivers and river systems, are meant to legally account for the ecological requirements that may not have been considered previously. The Washington Department of Ecology and Department of Fish and Wildlife have developed instream flow rules to "protect and preserve instream resources" that include fish and fish habitats, water quality, wildlife, aesthetics and recreation.[1] A watershed assessment in 1995 conducted by Ecology indicated there has been a decrease in low flows over the last 20 years, despite above average precipitation and prohibitions on new surface water withdrawals. Low water flows were identified as a priority issue for salmon in WRIA 10.[2]



The number of wells from 2010-2014 continued to grow at the same pace as 2010.

Water well withdrawals can have a cumulative effect on streamflows, especially in late summer. Summer low flows have declined continuously since at least 1980 in spite of the closure for new surface water withdrawals, the establishment of minimum instream flow requirements and above average precipitations. The 1980 Ecology regulation prohibited all new surface water withdrawals from the White River, Hylebos and Wapato creeks, and many tributaries to the Puyallup River. Nevertheless, flows in the Puyallup River have continued a long decline.

The impacts of low flows can reduce the amount of habitat available for spawning and rearing, eliminate access to valuable habitats, dewater incubating eggs, affect the timing and success of both juvenile and adult migrations, reduce food sources by reducing invertebrate populations and increase stressors by degrading water quality (increasing temperatures and reducing dissolved oxygen).[3]



The Puyallup basin contains more than 3,983 wells and 120 miles of stream with low flow issues.

Data Sources: SSHIAP 2004,[4] SWIFD 2014,[5] USGS 2014,[6] WADNR 2014b,[7] WADOT 2013,[8] WAECY 2011,[9] WAECY 2013a,[10] WAECY 2015[11]

RMAPs Making Huge Progress

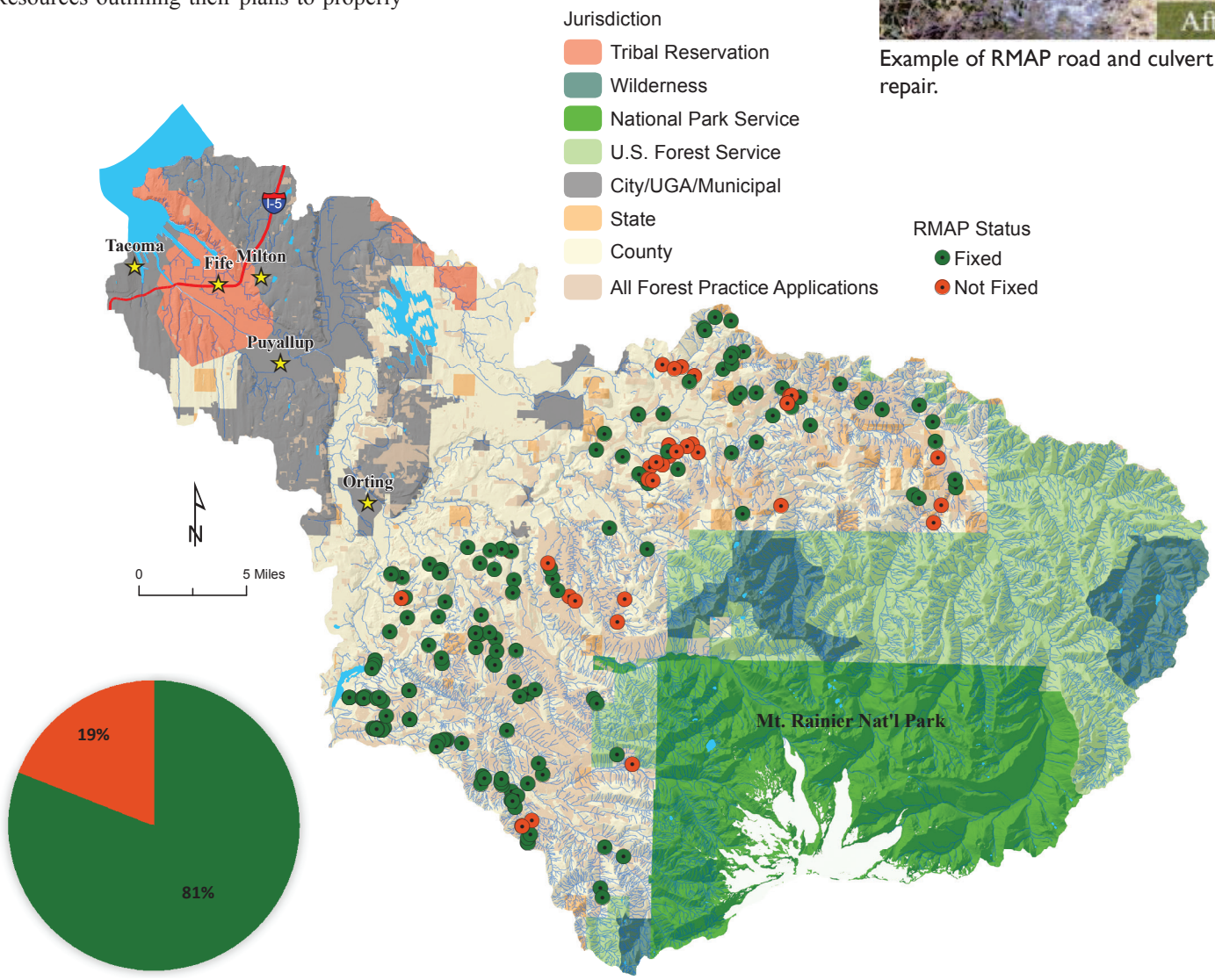
The Forests and Fish Law requires that all state and private forest roads be brought up to new forest roads standards by 2021 through RMAPs. Currently, in WRIA 10, about 81% of the RMAPs are repaired.[1]

Forest landowners are required to improve their forest roads to protect public resources, including water, and fish and wildlife habitat. Improved road maintenance and construction practices reduce or eliminate runoff and fine sediment being delivered into streams, which can degrade water quality and fish habitat. Statewide, as of June 2013, with both small and large landowners, 254 RMAPs and more than 10,000 RMAP checklists have been completed for large and small landowners respectively, covering more than 57,000 miles of forest road. The results are more than 3,800 miles of fish habitat has been opened by removing or replacing nearly 5,600 stream blockages.[2]

Forest landowners, both industrial and non-industrial, are required to submit their own RMAP to the Department of Natural Resources outlining their plans to properly abandon or stabilize existing forest roads no longer in use, and improve standards on how new roads are to be built. "Work must show progress over time, and be prioritized by the 'worst first' to give the most benefits to public resources early in the period."[3] Culverts and bridges are now being enlarged, new road techniques are being used, and old culverts and stream passages that pose a risk of failure are being re-engineered to withstand a 100-year flood. Other practices include building roads across streams at a perpendicular angle, not one that is parallel to the stream. This minimizes the area of road surface that can contribute sediment to streams. "New cross-drain techniques will divert runoff from ditches onto the forest floor, and sediment traps are used to stop sediment before it reaches a stream."[4]

ForestAndFish.com

Example of RMAP road and culvert repair.



Data Sources: SSHIAP 2004,[5] USGS 2014,[6] WADNR 2014a,[7] WADNR 2014b,[8] WADNR 2014c,[9] WADNR 2014d,[10] WADOT 2013,[11] WAECY 2011,[12] WAECY 2013a[13]

Citations

Chapter Summary

1 Shared Strategy for Puget Sound. 2007. Puget Sound Salmon Recovery Plan Volume 1. National Marine Fisheries Service.

Puyallup Tribe of Indians: Puyallup River Basin

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