Voluntary Riparian Habitat Restoration in the Skagit Watershed, 2022

This report summarizes voluntary riparian restoration and stewardship efforts by several practitioners in the Skagit Watershed who contribute to a database maintained by the Skagit Watershed Council (Figure 1). The purpose of the database is to keep track of habitat gains and riparian implementation attributes for status and trends monitoring and research into the effectiveness of planting methods. This is not a complete accounting of riparian restoration in the Skagit. For example, CREP plantings are not included. This report includes updated recommendations for improving our data system.

What We Accomplished

Skagit Fisheries Enhancement Group, Skagit River System Cooperative, and Skagit Land Trust, together, planted 113 acres of new forest in the Skagit watershed in 2022 (Table 1). Additionally, practitioners enhanced existing deciduous forest by underplanting conifers on 25.7 acres. Two

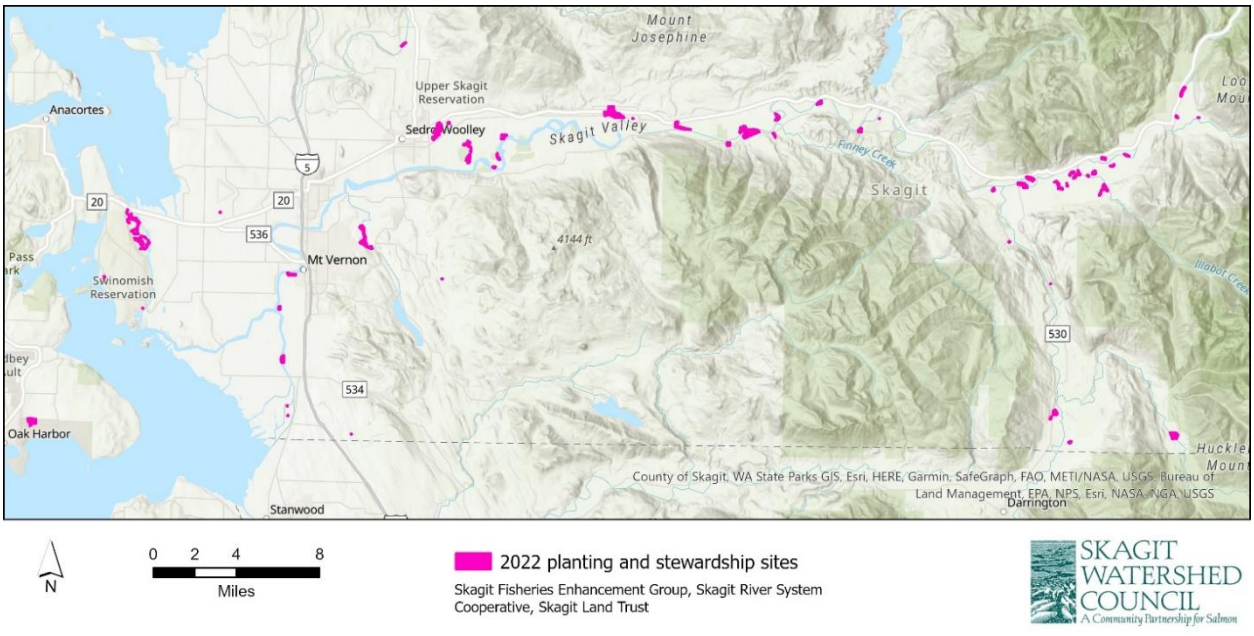

Figure 1. Location of planting and maintenance sites during 2022. The site outlines are bolded to make sites more visible at the map scale.

previously planted sites, totaling 8.3 acres, needed replanting due to die off. There were 97 riparian restoration events in total at 55 sites during 2022. Some sites were visited multiple times to complete planting across the entire site, conduct maintenance before and after planting, or complete multiple maintenance efforts.

Table 1. Riparian Work at 55 Skagit Sites in 2022

Activity	*# of Site Visits*	*# of Sites*	*Total Acres*	*Stream Miles*
Planting	30	25	113.0	4.4
Underplanting	4	4*	25.7	0.3
Replanting	2	2	8.3	0.1
Total of all planting work	36	31	147.0	4.8
Maintenance	60	36**	1,079.5	not measured

*1 of these sites is also a planting site.
**12 of these sites are also planting sites. 1 "other stewardship" event is not included in this tally of riparian work.

Practitioners also completed 1,079.5 acres of site maintenance on new and prior plantings. Maintenance consists primarily of invasive species control and mowing around young trees and shrubs to reduce competition with grasses. Sites may be visited more than once in a project year for different maintenance activities and more sites can be visited for maintenance than for the more time-consuming plantings, hence the large difference between the number of acres maintained and the number of acres planted (Table 1). To ensure successful establishment of forest ecosystems, each site is ideally maintained for 5-7 years following planting, so the bulk of the work in riparian restoration is site maintenance.

Where Restoration Happened

Priority Habitats

The Skagit Watershed Council's Strategic Approach (2022) prioritizes habitats for Chinook salmon recovery based on the Skagit Chinook Recovery Plan (WDFW and SRSC, 2005), defining priority Tiers for areas of the watershed based on habitat type and fish use. Tier 1 areas are large river floodplains and estuaries that support multiple Chinook populations/stocks for juvenile rearing. These areas are a habitat bottleneck for Chinook survival. Tier 2 areas are large river floodplains that support single stocks and major tributaries that support Chinook. Tier 3 areas and areas outside the mapped Skagit Basin priority areas are considered low or no priority for recovering Chinook, though those projects benefit other salmon species. Figure 2 shows the distribution of riparian restoration (new planting and underplanting) within each Tier from the Strategic Approach. In 2022, 77.4% of planted acres were in Tier 1 and Tier 2 areas. Restoration is driven by opportunity as

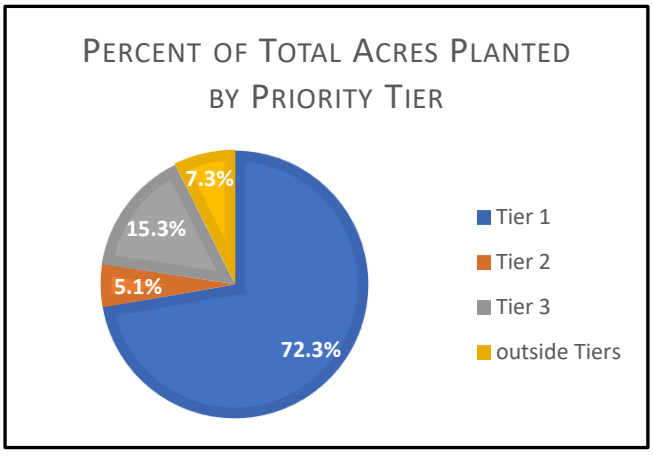

Figure 2. Planting and underplanting acres by Tier as a percent of total acres planted. Acres "outside Tiers" are plantings in the Samish watershed or outside prioritized areas in the Strategic Approach.

well as strategies, so not all planting sites were Tier 1. Almost 23% of plantings were in Tier 3 or outside areas.

Public and Private Lands

Riparian restoration took place primarily on publicly owned (government) lands or lands that have been purchased for salmon habitat conservation during 2022. The principal conservation landowners in the Skagit Basin are the Skagit Land Trust, Seattle City Light, Puget Sound Energy, and The Nature Conservancy (with only minor holdings). Conservation lands are acquired from willing landowners who sell their property to a conservation landowner who then holds those lands in perpetuity for natural resource benefits for all (fishers, people who eat fish, people who like scenic areas). Conservation lands are almost always maintained accessible to the public. In the Skagit, most conservation acquisitions go through a vetting process described in the Watershed Council's Protection Strategy. Figure 3 shows the percentage of total acres planted/underplanted by ownership. More than 80% of riparian restoration happened on public or conservation lands in 2022. Some private landowners sell or donate conservation easements on their properties, maintaining ownership, but encumbering the conservation area with a stipulation that it will be conserved in perpetuity for fish and/or wildlife habitat.

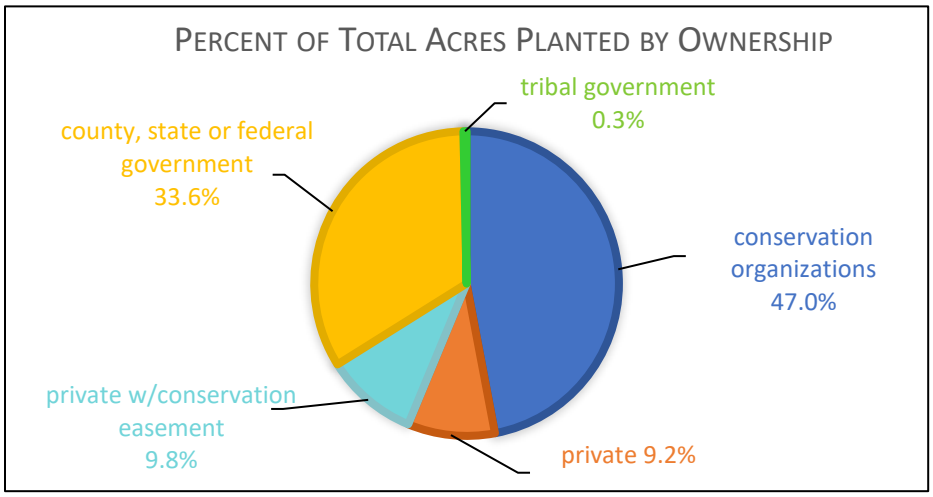

Figure 3. Percent of total acres planted including underplanting shown by land ownership of the restoration site. 80.9% of restoration acres were on government or conservation lands in 2022. An additional 19% was on private land, 9.8% on private land with conservation easements and 9.2% on land without easements.

Riparian Function

According to the Skagit Watershed Council's 1998 Habitat Restoration and Protection Strategy, riparian area with widths greater than 131 ft., or 40 meters, are classified as "functioning" riparian areas (SWC 1998). Buffers with widths between 131 and 66 feet are classified as having "moderately impaired" function as defined in the Skagit Watershed Council's Habitat Restoration and Protection Strategy (1998). Riparian zones categorized as having "impaired" functions are less than 66 feet in width.

New riparian areas planted in 2022 range in width from 35 feet to 868 feet across the 23 planting sites (Table 2). Only new plantings (not underplanting or replanting) are included in this analysis. The average width of new plantings is 301 feet (Table 2). Width is measured perpendicular to the stream, river, or slough shoreline. Riparian area widths vary throughout each site; the reported

width is the average riparian area width for each site calculated by measuring planted width at several, equally spaced transects across the site.

Approximately 61% of the sites planted (14 sites) have new riparian area widths greater than 131 ft. or 40m and are classified as "functioning" according to Skagit Watershed Council's 1998 strategy (Figure 4). An additional 22% or 5 of the sites have buffers classified as having "moderately impaired" function. Riparian zones categorized as having "impaired" functions, or less than 66 feet in width, were installed at 4 sites or 17% of the total 23 sites planted in 2022.

Buffer continuity is as important as buffer width when looking at riparian function. A continuous riparian buffer will more effectively shade the water and reduce water temperatures than a discontinuous buffer. Several streams in the lower Skagit basin are listed by the Washington State Department of Ecology as being impaired due to high temperatures. In the 2023 report we will analyze gains in buffer continuity over the past 5 years of riparian restoration.

Table 2. Average Buffer Widths by Ownership

Ownership	Average Buffer Width (ft.)	Range of Buffer Widths (ft.)
conservation lands	378	125-615
government lands	369	35-868
tribal lands	240	240
private lands	108	35-310
all sites	301	35-868

note: no easements were planted in 2022, but previous plantings were maintained

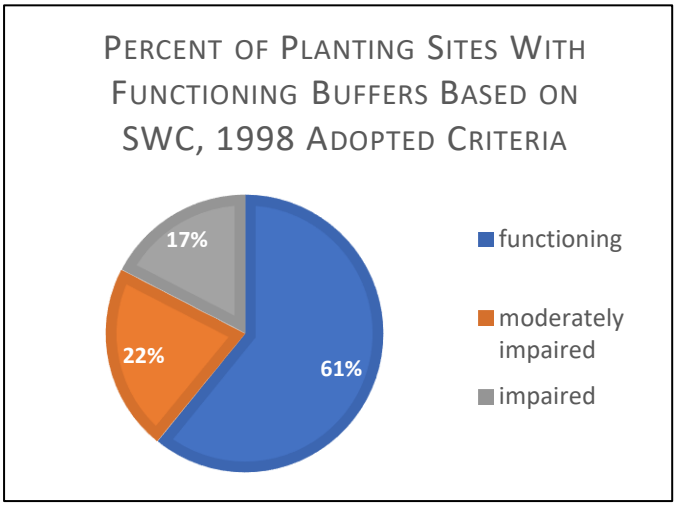

Figure 4. The percentage of all sites meeting buffer width criteria as defined in the Skagit Watershed Council's strategy (1998).

Conclusions

We are meeting our goal of focusing riparian restoration in Tier 1 and Tier 2 priority areas with just over three quarters of all planting in Tier 1 floodplains and the estuary and Tier 2 floodplains, tributaries, and pocket estuaries. We are also meeting our goal for installing functional riparian area widths 61% of the time. Another 22% installed in 2022 are classified as moderately impaired. Only 17% of the 2022 buffers installed are considered impaired for riparian function. Almost all restoration is happening on conservation and government lands, indicating a limitation of implementing riparian restoration. Ideally, we would be able to restore riparian habitat based on where shade and riparian function is most needed. This points to the necessity of improving incentives and education and outreach about incentives for landowners to implement restoration projects on private lands. There is more support for this at the state level via new funding and systems for service delivery. Local programs continue to improve as well.

References

Quinn, T., G.F. Wilhere, and K.L. Krueger, technical editors. 2020. Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications. Habitat Program, Washington Department of Fish and Wildlife, Olympia.

Skagit River System Cooperative and Washington Department of Fish and Wildlife. 2005. Skagit Chinook Recovery Plan. Skagit River System Cooperative, La Conner, WA.

Skagit Watershed Council. 1998. Habitat Protection and Restoration Strategy. Skagit Watershed Council, PO Box 2856, Mount Vernon, WA 98273. 56 pages.

Recommendations for Data System Improvements and Riparian Program Work Plan

Recommendations from 2022 Report	End of 2023 Status	2024 Goals
Include a complete record of all riparian efforts from all practitioners in the watershed, including CREP, that provide for various levels of confidentiality.	The Conservation District has joined the SWC Riparian Work Group. Data integration is being discussed.	Proceeding may require consultant services for database design and construction.
Finalize a multiuser interface using ArcGIS Online and train all users. Develop a workflow for Arc Pro users to access the same and enter related data. Finish training materials	Done	Finalize the draft user handbook.
Implement backup and data quality assurance protocols.	Done and ongoing	We may choose to automate these in the future.
Build a public-facing webmap and summary hub or dashboard of riparian work for the community with annual updates or possibly live updates.	RFQQ posted in March of 2023 received no responses due to the short timeframe.	We have plans to circulate a new RFQQ for a consultant to do this work.
Establish basin-wide monitoring protocols and collect survival data.	Not started.	Completion of this task depends on practitioner capacity. It is still an objective. We may seek specific funding for the work.
Improve SWC base GIS layers: tributary polygons, floodplain extent and derived tiers and reaches.	Not yet completed. These are organizational GIS needs, not part of the riparian program alone.	Progress will be as time allows. These layers are needed for other SWC programs and for the Salmon Recovery Portal.
Discuss inclusion of Samish watershed riparian polygons in reporting and analysis. Possibly divide into reaches.	Discussions took place at the TWG and LECC/Board levels and a decision to include Samish projects was implemented.	Determine if reaches are necessary and, if so, delineate. Classify non-Chinook projects as such. Incorporate Samish data into 2024 data report
Maintain a listserv for practitioners	Done and ongoing	Continue
Conduct an annual information-sharing conference in late January.	Done. Talks are posted on the SWC website.	Hold a conference in 2024. It is scheduled for January 23rd.
Convene a Riparian Work Group 4 times a year.	Done and ongoing	Continue
Historic data quality confirmation and data revision as needed.	Not done	Planned for 2024
Annual reporting	Done	Complete by January 5, 2025