

Voluntary Riparian Habitat Restoration in the Skagit Watershed, 2021

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. 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 a comparison to goals from the Skagit Watershed Council Habitat Protection and Restoration Strategy (1998) and the 2022 Strategic Approach and recommendations for improving our data system.

In 2021 Skagit Fisheries Enhancement Group, Skagit River System Cooperative, Skagit County Natural Resource Stewardship Program, and Skagit Land Trust planted 57 acres of new forest in the Skagit watershed (Table 1, Figure 1). Additionally, they enhanced existing deciduous forest with underplanting across 74 acres and replanted 51 acres of past restoration projects that had substantial die off. The average number of acres planted per year between 2009 and present is 52 acres, making 2021 an average year. A large effort was put towards replanting during 2021. Two large sites on the delta were underplanted, accounting for the high acreage of underplanting.

Activity	Total Acres	Stream Ft.
Planted	57.2	15,935
Underplanted	74.1	3,500
Replanted	50.8	2,930
TOTAL PLANTED	181.9	22,365
Maintained	491.9	Not measured

In addition to planting, practitioners reported 492 acres of landscape maintenance on new and existing plantings. Maintenance consisted primarily of invasive species control and mowing around young trees and shrubs to preclude competition with grasses. To ensure successful establishment of forest ecosystems, each site is ideally maintained for 5 years following planting, so the bulk of the work in riparian restoration is site maintenance, hence the large difference between the number of acres maintained and the number of acres planted (Table 1, Figure 2).

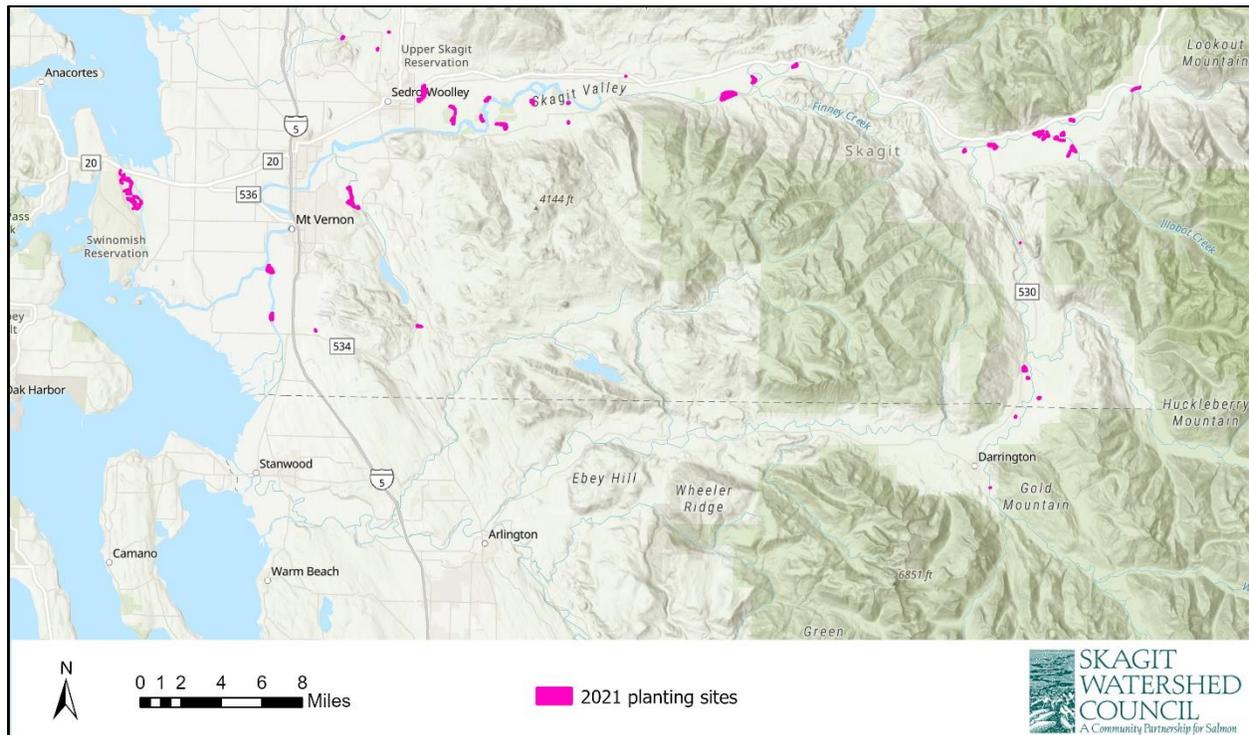


Figure 1 shows the location of planting and maintenance sites. The site outlines are bolded to make sites more visible at the map scale.

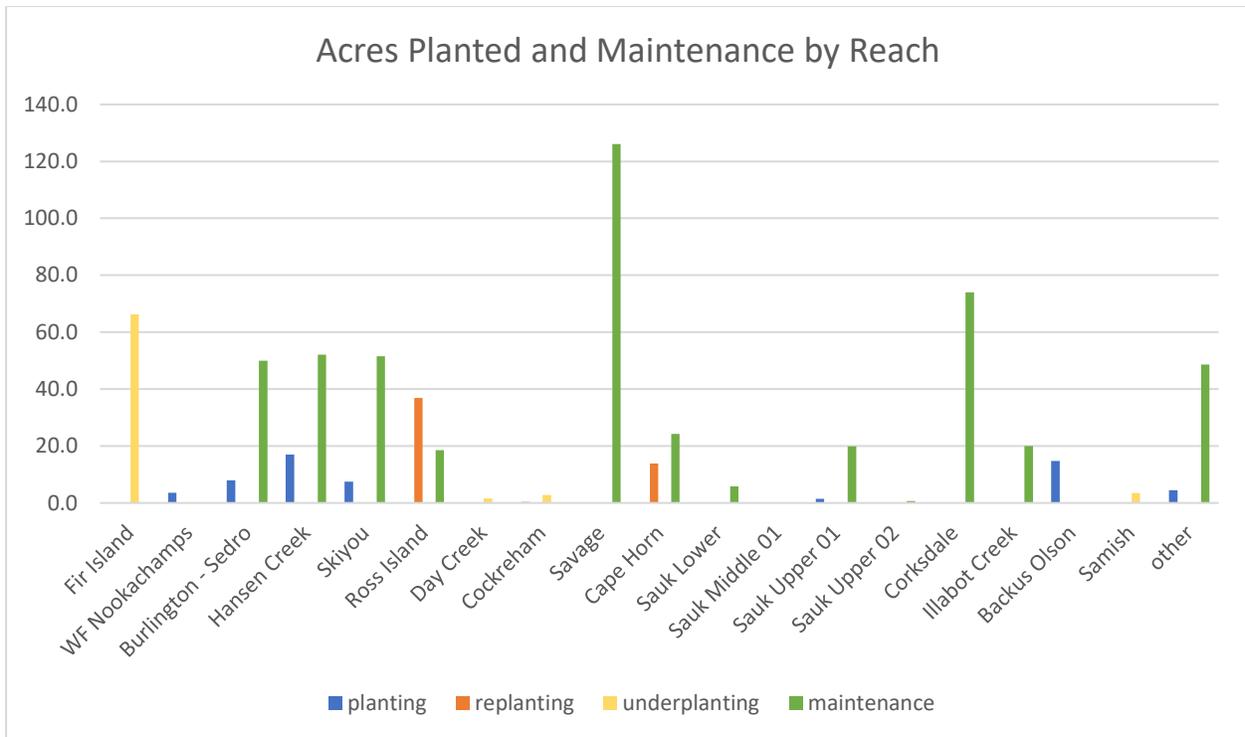


Figure 2. Planting and stewardship efforts by reach in acres. The 2021 maintenance effort is dominated by one event in Savage Reach where an entire large site was recorded as having been treated for invasive species.

A total of 42 sites were visited during the year, some more than once, for a total of 53 site visits (Table 2, Figure 2). Most of the site visits were for maintenance of previously planted areas. Most of the planting and underplanting (new work with new landowners) occurred on public lands or lands held in conservation ownership or with conservation easements (Figure 3). Only 1 of the maintenance sites in 2021 is privately owned.

Planting	11
Underplanting	5
Replanting	3
Maintenance	23

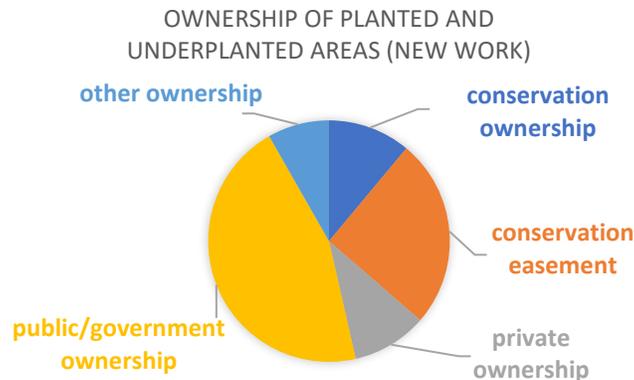


Figure 3. New projects by ownership (acres)

The Skagit Watershed Council’s Strategic Approach (2022) prioritizes habitats for Chinook salmon, defining priority tiers for areas of the watershed based on habitat type and fish use. In 2021 70% of planting, 93% of underplanting (dominated by the two delta sites), and 100% of replanting occurred in tier 1 areas (Figure 4, Table 3). Tier 1 areas are large river floodplains that support multiple Chinook populations/stocks. Restoration is driven by opportunity as well as strategies, so not all planting sites were tier 1. An additional 24% of planting occurred in tier 2 areas (major tributaries). Tier 2 areas are major Chinook tributary rearing habitats. Some lower priority areas were also planted.

Table 3. Effort by Tier in acres.

Tier	planting	underplanting	replanting
Tier 1 Estuary		66.3	
Tier 1 Floodplain - Mixed Stock Rearing	35.6	2.8	50.8
Tier 2 Single Stock - Major Tributary	17.1	1.5	
Tier 3 Sediment or Hydrology Impaired	1.5		
outside priority area	2.9	3.5	

PLANTING GAINS BY TIER

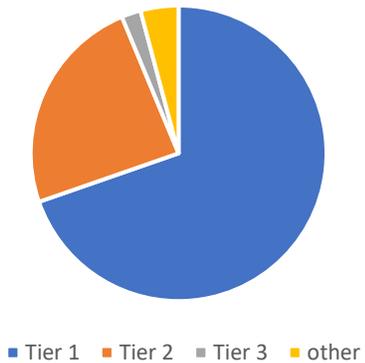


Figure 4. Planting by Tier (acres). “Other” acres are plantings in the Samish watershed or outside prioritized areas in the Strategic

Each planting site varied in the density of planting and the average width of the riparian area. Typically, about 500 plants per acre were planted (the mode for planted sites). The average number of plants per acre is 640, driven by high density planting at Presentin. Riparian area widths range from 35 feet to 900 feet, with an average of 258 feet. Riparian area widths varied across each site; the reported width is the average riparian area width for each site. The Elysian Meadows site at 900 feet average riparian area width almost spans Cape Horn in one section, accounting for the high average width overall. Approximately 68 percent of the sites planted have riparian area widths greater than 131 ft. (40 meters) and are considered functioning riparian areas according to the Skagit Watershed Council’s Habitat Restoration and Protection Strategy (SWC 1998) and supporting literature (Table 4). The other 32 percent of sites have riparian areas that are less than 66 feet (20m) and are considered impaired according to the Strategy.

Table 4 Riparian area width and ownership.

riparian area width	# of sites	# of privately owned sites
< or = 50 feet	6	5
> or = 150 feet	13	1

Impaired riparian areas do not provide enough function to meet sustainable fisheries goals (SWC 1998). There were no riparian areas installed with widths between 150 feet and 50 feet. Narrow riparian areas were installed almost exclusively on private property. Of the 6 private property planting sites, 5 of them have average riparian area widths of 50 feet or less.

Conclusions

We are meeting our goal of focusing riparian restoration in Tier 1 and Tier 2 floodplains, with nearly three quarters of all planting in Tier 1 floodplains. We are also meeting our goal for installing functional riparian area widths most of the time, though it is clear there is room to expand restoration and improve riparian area widths on private lands. This points to the necessity of the recent work SWC and the Conservation District have been doing to increase landowner incentives for implementing restoration projects on private, and especially working lands. Acres planted per year has been declining (Figure 5). Again, this

does not include CREP data. This has happened as maintenance efforts have increased (Figure 6). Note that data for maintenance prior to 2019 is not complete. Our overall effort since then includes about 4 times as many maintenance site visits as planting site visits, with each planting requiring 5 to 7 years of maintenance post-planting. The high level of maintenance taking place will hopefully improve survival of plantings, protecting our investment in establishing forest ecosystems. We need to continue to plan for this level of effort in the future.

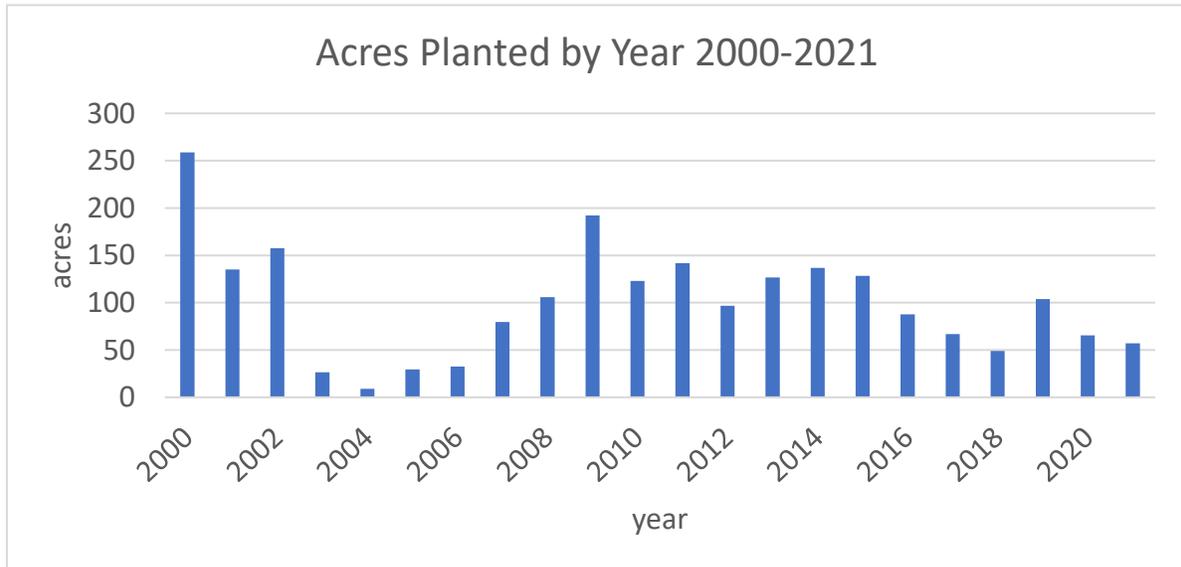


Figure 5. Planting acres per year. This does not include CREP plantings. Prior to 2018 there was not a systematic, basin-wide method of tracking polygons of riparian planting, so data quality is unknown for earlier years, but the existing data set represents the best approximation we have. The older the data (especially prior to 2008) the more likely it is to be inaccurate. We have a plan in place to check and improve the accuracy of old data. Also, because we do not have access to CREP data, there may be replantings of former CREP sites that are counted as initial plantings.

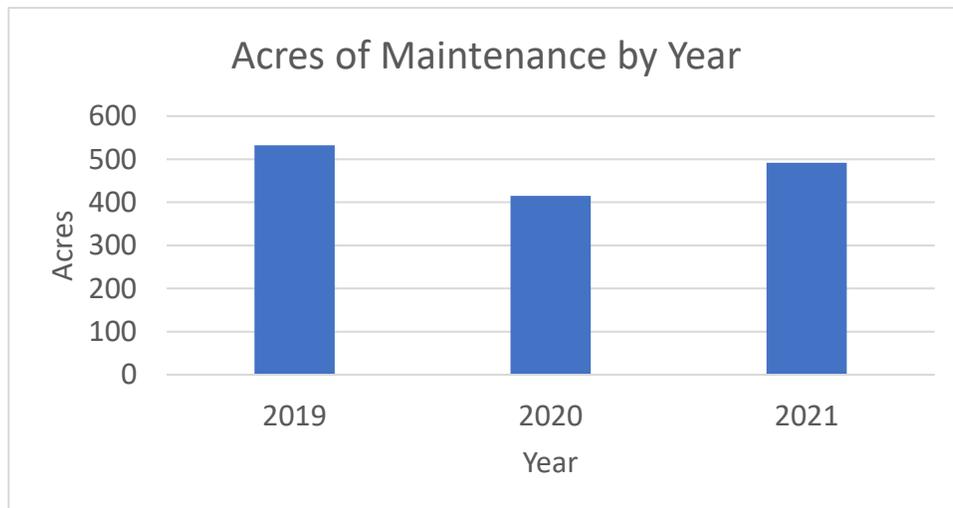


Figure 6. Maintenance acres by year, 2019 to 2021. Maintenance records were not systematically kept as polygons using a basin-wide method until 2019, so these data are incomplete. Maintenance includes mowing, invasive weed control, and other horticultural practices.

Recommendations for Improvements

- Ideally this effort would include a complete record of all riparian efforts from all practitioners in the watershed for accurate status and trends monitoring. A data reporting method that would allow for landowner privacy is being planned with the Conservation District. This would make it possible for CREP projects to be included.
- We are also working to achieve a multiuser interface using ArcGIS Online. Data entry has been an issue for practitioners who don't have an ArcGIS Online account. Database development and funding for all to have an account is under consideration. More training on how to enter data using ArcGIS Online is also necessary. One operational deficiency is the length of time it takes for practitioners to get their data into the database. Hopefully this can be improved with implementation of the online data service and better training.
- We are in the process of developing a QA workflow for the database that will hopefully catch mistakes and duplicate records before data are considered final and reported out. This will also include a backup protocol.
- We would also like to provide a public-facing webmap and summary of riparian work for the community. This is in the planning stages. This could be a webpage or storymap with an embedded webmap of the points and polygons of the riparian database for people to explore and some statistics about summarized data. Raw data tables would not be visible to the public. This could be updated annually when reporting happens.
- Monitoring plant survival is a key goal of keeping this database, which includes information relevant to plant survival. We have yet to set up a monitoring program for older plantings. This is a goal for 2023.
- Some GIS base layers need to be improved to facilitate analysis of riparian planting data in the future. We need tier polygons around tributaries where currently only lines exist. Ultimately the reach polygons which are based on the 2000 floodplain polygon need to be updated. The 2000 floodplain needs to be improved as the basis for both tiers and reaches.
- Also, the Samish watershed may need to be divided into reaches. A discussion needs to happen about how plantings in the Samish will be reported out/what is useful to report out since they are not assigned a tier or a reach currently.