SFEG KNOTWEED REPORT 2024

Upper Skagit Knotweed Control Program
2024 Season Report
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Funders

Plant Protection Division Pest Program

America the Beautiful Challenge

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Introduction

The Upper Skagit Knotweed program was initiated in 2001 by The Nature Conservancy and the program has been controlling knotweed in the Upper Skagit Watershed ever since. In 2009 the Skagit Fisheries Enhancement Group (SFEG) inherited the program and has continued to secure funding this time. During the 2024 season, SFEG and our partners within the Skagit Cooperative Weed Management Area (CWMA), or Skagit Knotweed Working Group, completed extensive surveys and treatments of rivers and streams in the Upper Skagit River Watershed. We surveyed using a prioritized watershed, top-down, landscape scale approach along waterways and monitored a large percentage of previously recorded knotweed patches. Treatment efforts were guided by the prioritization strategy initially developed in 2001 and updated by the Skagit CWMA in 2019. The 2019 update reprioritized some sub-watersheds based on data from previous years. SFEG contracted with the Washington Conservation Corps (WCC) crew and local rafting companies to survey, monitor and treat knotweed patches in riparian areas and associated floodplains throughout the Upper Skagit Watershed. In addition, SFEG also received on-the-ground assistance in our efforts from several Skagit CWMA partners including U.S. Forest Service, Skagit County, Skagit Land Trust, Washington Department of Fish and Wildlife and the Sauk-Suiattle Indian Tribe.

In 2024, SFEG continued its goal of treating knotweed in the floodplains of the Skagit and Sauk Rivers upstream of their confluence in Rockport, while also working downstream of this confluence to Concrete. The downstream area, referred to as the Middle Skagit, [YR1]was added in 2019, under the guidance from the Skagit CWMA. The majority of survey/treatment work takes place in the floodplains. Occasionally surveys are completed in upland areas, since this can be the source of knotweed progeny in the floodplain, but most [YR2]of the upland areas were surveyed early in the Knotweeds Programs history and are now knotweed-free. SFEG makes occasional forays [YR3]into these previously checked areas to affirm the absence of knotweed, but most resources are directed at riparian areas where knotweed is more problematic and likely to spread. The Washington Conservation Corps (WCC), under supervision from the Stewardship Coordinator with SFEG, spent 50 days working for the Upper Skagit Knotweed Control Program in 2024, including one week where two crews were operating simultaneously.

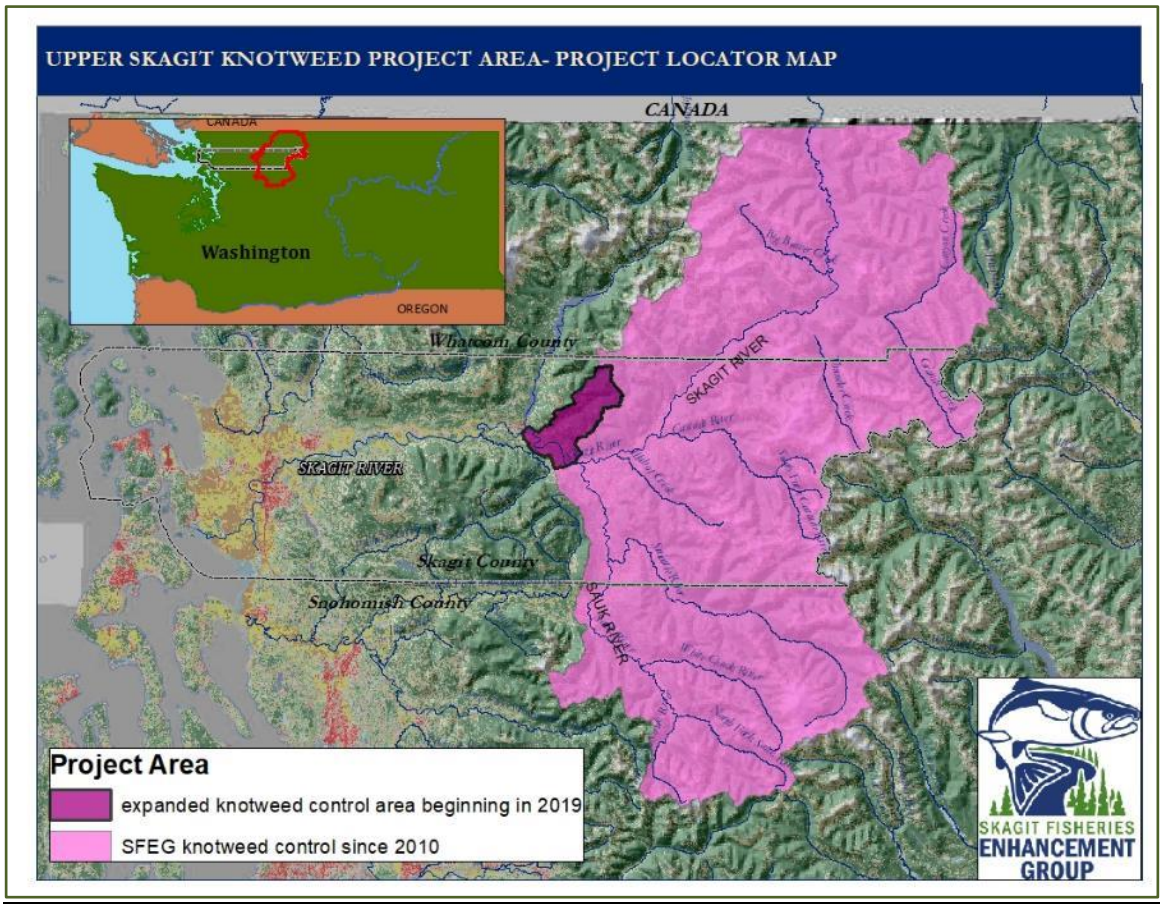

Figure 1. Upper Skagit Knotweed Program project area.

The Sauk-Suiattle Indian Tribe (SSIT) is an important CWMA partner that also conducts field treatments of knotweed under the umbrella of the Upper Skagit Knotweed Control Program. In 2024 they worked along the Sauk River from Backman County Park in Snohomish County downstream to the confluence with the Skagit, as well as in Darrington and the Sauk Prairie community. [YR4]The Sauk-Suiattle Tribe is based in Darrington and can utilize local relationships [YR5]with private landowners that SFEG would have to spend time cultivating. The Tribe also hired a contractor who conducted knotweed treatments along the mainstem of the Skagit River between Rockport and the Faber boat launch. See Figure 2 for visual representation of responsible knotweed areas. The Sauk-Suiattle Tribe has been helping to control knotweed in the project area [YR6]since 2011. SSIT reports its results separately, so this report does not include information for the areas they treated, unless otherwise specified.

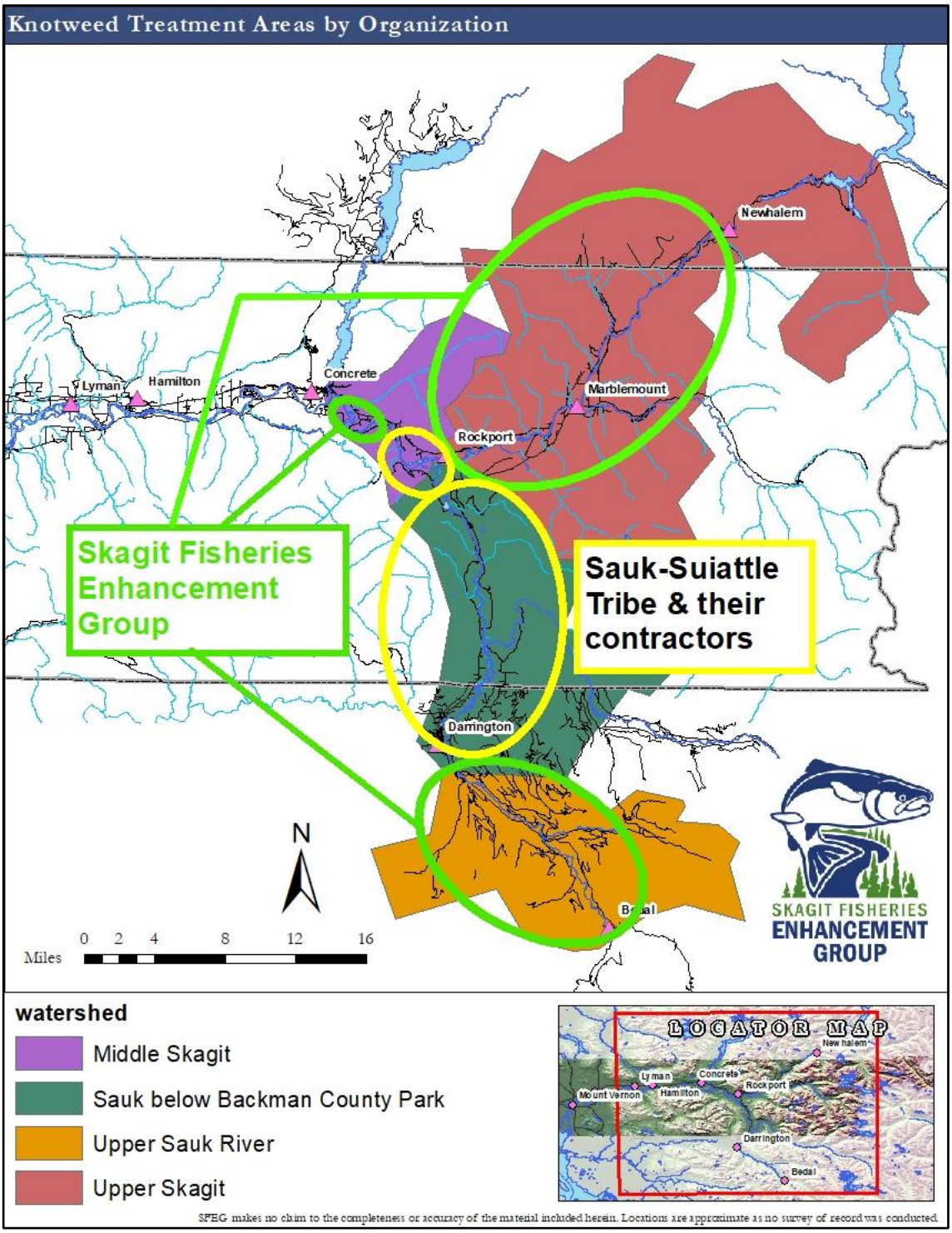

Figure 2 Map representing watersheds within the Skagit and which organization is responsible for treatment where within the watershed. Coordination is required to that the entire watershed gets surveyed and so that there is no duplication of effort.

2024 Summary: In 2024, the Skagit Fisheries Enhancement Group (SFEG) worked with AmeriCorps youth volunteers from the Washington Conservation Corps (WCC) to treat knotweed along 30.3 river miles of the Skagit River Watershed. While traversing approximately 6,074 acres (9.49 mi²) 265 knotweed patches [YR7]were encountered and treated. The total area of knotweed [YR8]treated was 933 square meters comprised of 17,921 stems. If aggregated into one spot this conglomerate patch would cover approximately 0.23 acres. The difference of knotweed prevalence between the Upper Skagit watershed, where knotweed has been controlled since 2001 and the Middle Skagit where we have been treating[YR9] knotweed since 2020 is remarkable. In the Upper Skagit

watershed there was an average of 1.6 knotweed stems per acre surveyed. In the Middle Skagit reach there was an average of 13.3 knotweed stems treated per acre surveyed[YR10].

The Watershed and Project Area

The Upper Skagit Knotweed Control Project focuses on the Upper Skagit River basin, which is approximately 2,960 square miles. Since a portion of the watershed is in Canada this makes the effective project area roughly 1,989 square miles, or about the size of Delaware. When the Knotweed Program began the focus was surveying and treating knotweed in the upland portions of the sub-watersheds. Once knotweed was controlled in the upland areas the focus shifted to the floodplain. Riparian areas is where knotweed truly thrives. High water events spread plant fragments throughout the floodplain where they grow roots and establish new colonies. SFEG still continues to treat upland knotweed patches as necessary, but the majority of resources are dedicated to eliminating knotweed from the floodplain. As the largest drainage in Puget Sound, the Skagit River contributes approximately one third of the total amount of freshwater input to Puget Sound. Much of the Skagit River has been designated as Wild and Scenic by the United States Forest Service because of the pristine nature and ecological significance of the area. Designations have also been extended to the Sauk, Suiattle and Cascade Rivers, plus Illabot Creek, all of which fall within the program boundary.

Various funding sources for various river reaches

Due to geographical restrictions from various funding sources SFEG has had to stitch together a patchwork mosaic of funding sources to be able to follow the tiered watershed, top-down approach in the Skagit watershed. For example, Washington Department of Agriculture funds knotweed treatment within a watershed downstream until the first landowner who does not provide access. The National Fish and Wildlife Foundations (NFWF) America the Beautiful Challenge provides funding for work specifically on US Forest Service property, both in the Upper Sauk watershed and in the Middle Skagit Reach. The initial SFEG proposal to NFWF was only for work in the Upper Sauk, but once the Sauk-Suiattle Tribe committed to filling in the gaps in the Middle and Lower Sauk and the Middle Skagit, SFEG expanded the NFWF proposal to include US Forest Service properties in this Middle Skagit (Fig. 3. [YR11]This is consistent with the top-down approach [YR12]directed by the Skagit Cooperative Weed Management Area (CWMA). The top-down approach utilized by SFEG and emphasized by WSDA means prioritizing knotweed treatment within a watershed by controlling plants in the upper portions of the watershed first and moving downstream. Figure 3 illustrates how SFEG cobbled together treatment areas from various funding sources and how the Sauk-Suiattle Tribe backfilled the gaps. Treatment areas are overlayed upon the prioritized sub-watershed map updated in 2019 by the Skagit CWMA. Without the cooperation, partnership and flexibility of the Sauk-Suiattle Tribe there is no way the entire Upper Skagit Watershed would get surveyed for knotweed.

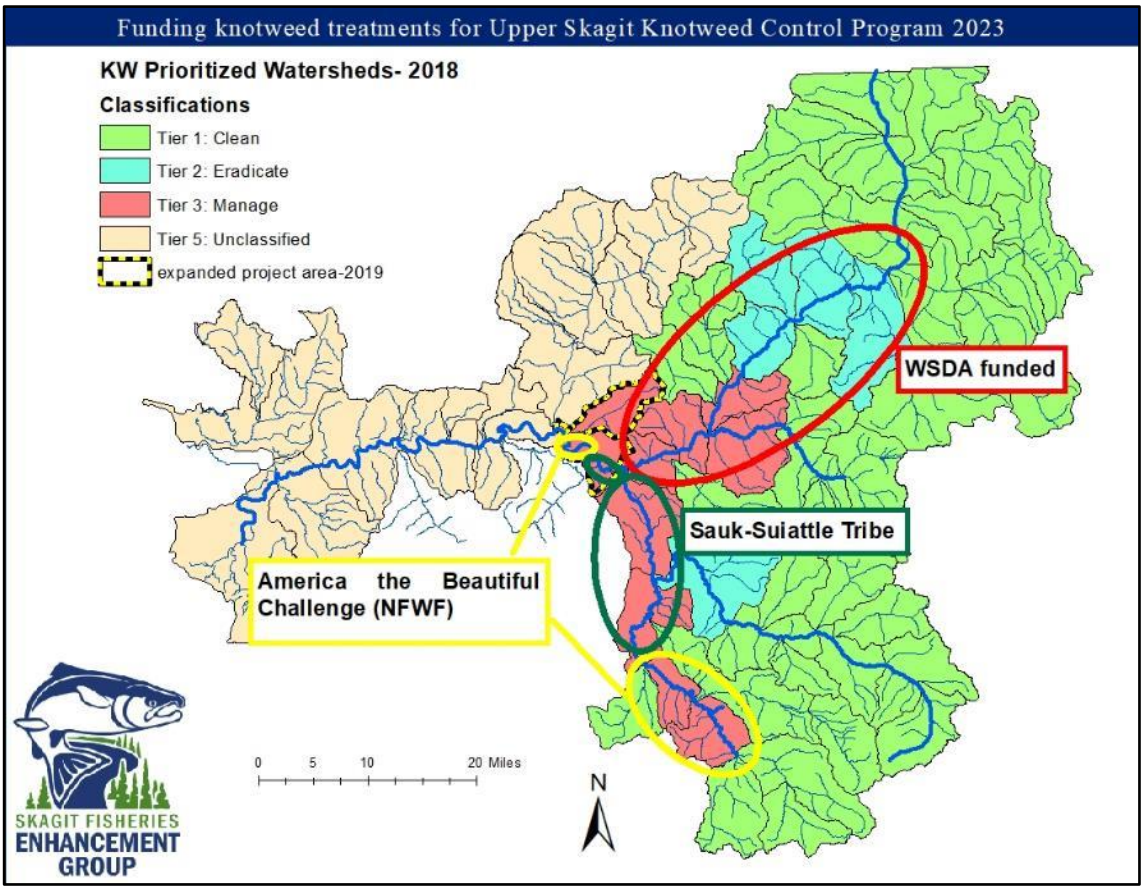

Figure 3 SFEG knotweed treatment reaches in the watershed based on funding source, overlaid over Skagit CWMA prioritized sub-watersheds [YR13].

2024 Monitoring Results

The typical monitoring regimen is one visit to a site to spray and a second follow-up visit, weeks or months later to assess herbicide effectiveness Due to the large extent of the Upper Skagit Knotweed Program project area this typical process is not practical. [YR14]There simply isn't enough time in the season to visit each site a second time. Skagit Fisheries has adapted to conduct surveys, treatments, and monitoring concurrently. The result of this is that monitoring results lag by a year. For example, during the 2024 knotweed year monitoring was conducted to determine effectiveness of patches treated in 2023. If a patch treated the previous year is found to still be alive it is treated again, and the monitoring data is updated.

The monitoring results for 2024 (conducted on patches treated in 2023) continued to be positive. For example, of the 331 knotweed patches treated in 2023 only 123 required follow-up herbicide application in 2024. This 62.8% kill rate is a decent number for knotweed. In the Upper Skagit, of the 18 patches treated in 2023, 7 required follow-up treatment in 2024. This mortality rate of 61% is acceptable and similar to the Middle Skagit Reach which had a mortality rate of 59.5%.

The 2024 treatment season results are summarized in Table 1, including some conclusions drawn from the data.

Table 1. Summary of 2024 knotweed treatments, traditional area (Upper Skagit) and expanded area (Middle Skagit) separated. Treatment metrics represent only SFEG effort and are not combined with partner efforts in project area[YR15].

2024 Season

2024 knotweed season	TOTAL	Upper Skagit	Middle Skagit
knotweed patches treated	265	87	178
new patches treated	66	36	30
old patches treated	199	51	148
river miles surveyed	30.3	26.3	4
area traversed (acres)	6,074	5,389	685
total stems treated	17,921	8,813	9,108
stems treated- new patches	12,202	7,450	4,752
stems treated- old patches	5,719	1,363	4,356
average stems- new pathces	184.8	206.9	158.4
average stems- old patches	28.7	26.7	29.4
knotweed stems per acre surveyed	2.6	1.6	13.3
1 stem patches found	40	12	28
total area treated (m^2)	933	243	690
area treated (m^2)- new patches	442	133	309
area treated (m^2)- old patches	491	110	381
average area (m^2)- new patches	6.7	3.70	10.3
average area (m^2)- old patches	2.5	2.1	2.6
patches dead/presumed dead	1,384	1,113	271
patches visited	1,583	1,164	419
percentage of patches visited	68.8%	65.1%	79.0%

Conclusions from 2024 Data:

SFEG has been treating knotweed in the Upper Skagit for years before beginning treatment in the Middle Skagit. It makes sense that there would be less knotweed encountered where treatment has been ongoing for years. There are several metrics that demonstrate this. The most straightforward is simply the number of knotweed patches treated. In 2024, SFEG treated 87 knotweed patches in the Upper Skagit watershed versus 178 knotweed patches in the Middle Skagit reach. The number of knotweed stems treated does not follow this trend, 8,813 knotweed stems treated in the Upper Skagit watershed against 9,108 stems in the Middle Skagit reach. The main reason for this is an outlier patch in the Upper Skagit that was 5,000 stems[YR16]. This patch was found in an area that was presumed to have been knotweed-free for years, but was found during a survey in 2024 to confirm the knotweed-free status, which obviously was incorrect. Given that the three largest patches in the Middle Skagit had a combined total of 3,600 stems this one large patch in the Upper Skagit was enough to skew the data. The difference in area between the Upper Skagit reach and Middle Skagit reach is also a factor that comes into play when one is comparing knotweed infestations. This can be mitigated by factoring in the area surveyed for knotweed. SFEG does this by calculating the number of knotweed stems treated per acre surveyed. In the Upper

Skagit watershed, the knotweed infestation comes out to 1.6 knotweed stems per acre (0.7 stems per acres if the aforementioned outlier knotweed patch is removed). The knotweed stems per acre for the Middle Skagit reach is 13.3. 2024 was the first year the number of new knotweed stems treated in the Upper Skagit Reach was more than the number of new knotweed stems treated in the Middle Skagit Reach. This is simply because we unexpectedly found one 5,000 stem knotweed patch in the Upper Skagit Reach. If this patch is taken out of the equation then the trend of more knotweed stems treated in the Middle Skagit Reach remains.

Table 2 Knotweed treatment tables comparing 2024 through 2021 [YR17]***.***

knotweed treatment metrics	2024	2023	2022	2021
number of stems treated	17,921	14,789	19,251	34,827
area of knotweed treated (m^2)	933	1,554	2,155	4,470

- There has been a general decline in the number of knotweed stems treated annually:
  - 2021- 34,827 stems
  - 2022- 19,251 stems
  - 2023- 14,789 stems
  - 2024- 17,921 stems
- The decline of knotweed is more consistent [YR18]and pronounced when one compares the area of knotweed treated annually:
  - 2021- 4,470 m^2
  - 2022- 2,155 m^2
  - 2023- 1,554 m^2
  - 2024- 933 m^2

Herbicide usage is another metric used to gauge the amount of knotweed treated. As the amount of knotweed in the system decreases one would expect to see a similar decline in the amount of herbicide applied each year. In 2008 the Upper Skagit Knotweed Control Program switched from treating knotweed with a 5% glyphosate mixture to a 1% imazapyr mixture. This was based on research from Tim Miller at the Washington State University extension office out of Mount Vernon. He found a 1% imazapyr solution had a higher kill rate on knotweed than a 5% glyphosate mixture. To be consistent, Table 3 and Figure 3 only show herbicide application in the Upper Skagit Reach, this does not include herbicide applied in the Middle Skagit reach. Since the Middle Skagit reach was added partway through the record keeping including it now would impact the Upper Skagit numbers and add inconsistency. The Middle Skagit numbers are recorded separately and not displayed here, since there are only four years' worth of data, which is not enough for a good analysis.

Table 3 Amount and type of herbicide applied, and area of knotweed treated.

Year	Gallons of herbicide mix applied	herbicide	Acres treated
2002	185	Glyphosate5%	1.9
2003	194	Glyphosate5%	1.9
2004	147	Glyphosate5%	1.5
2005	448	Glyphosate5%	4.5
2006	721	Glyphosate5%	7.2
2007	343	Glyphosate5%	3.4
2008	58	Imazapyr 1%	1.2
2009	180	Imazapyr 1%	3.6
2010	174	Imazapyr 1%	3.5
2011	65	Imazapyr 1%	1.3
2012	54	Imazapyr 1%	1.1
2013	34	Imazapyr 1%	0.6
2014	75	Imazapyr 1%	1.3
2015	42	Imazapyr 1%	0.8
2016	8.2	Imazapyr 1%	0.3
2017	17	Imazapyr 1%	0.4
2018	16.3	Imazapyr 1%	0.2
2019	26.3	Imazapyr 1%	0.2
2020	1.1	Imazapyr 1%	0.01
2021	7.1	Imazapyr 1%	0.04
2022	2.51	Imazapyr 1%	0.01
2023	1.52	Imazapyr 1% & Glyphosate 5%	0.01
2024	9.2	Imazapyr 1%	0.04

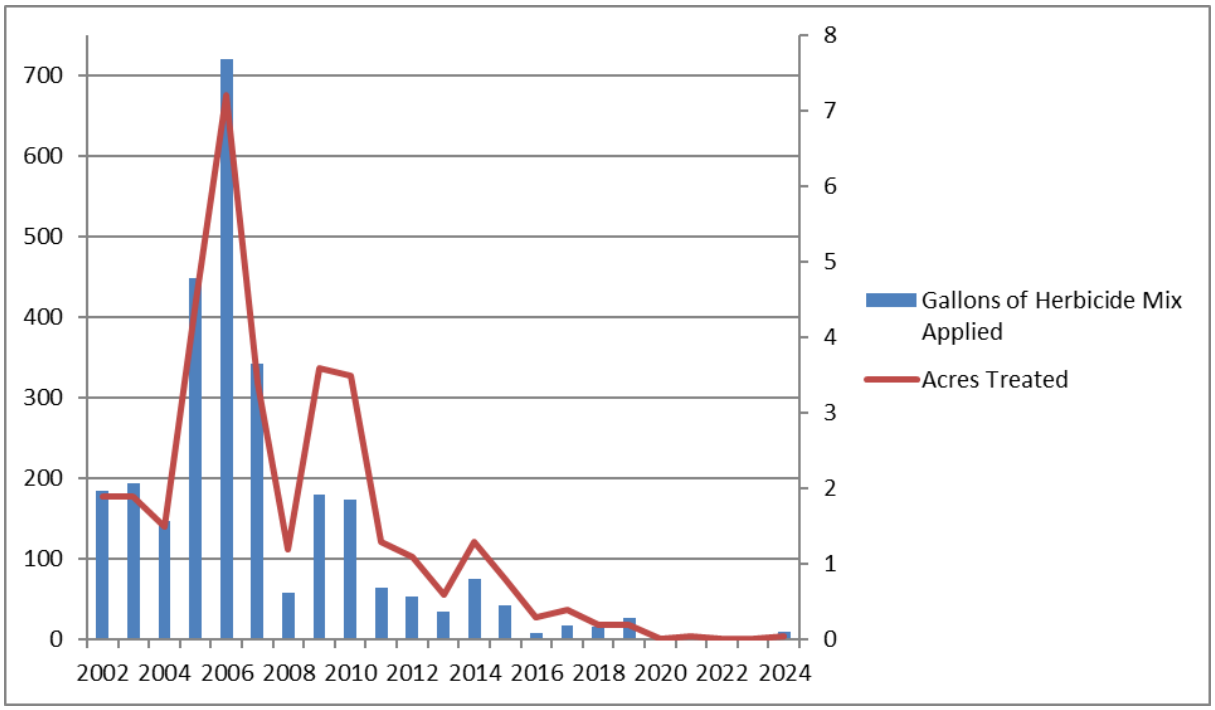

Figure 4. A graph showing the downward trend in herbicide applied and knotweed treated.

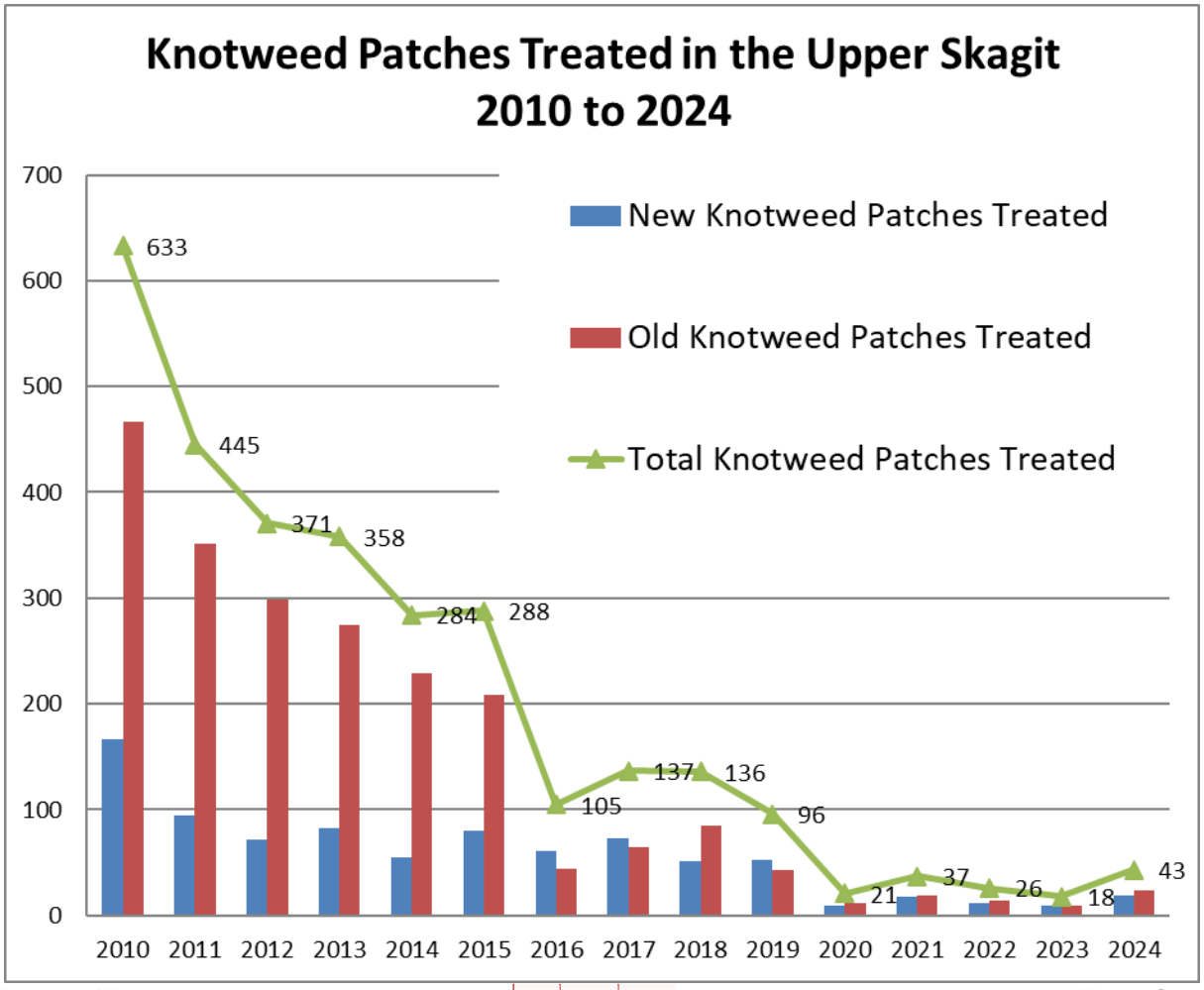

Figure 5. Knotweed patches treated, old versus new[YR19][YR20] in previously surveyed areas of the Upper Skagit Watershed.

For the first seven years that SFEG led this program, the total number of knotweed patches treated decreased, and the total number of knotweed stems treated also continued a downward trajectory, albeit with more year-to-year variability (Figures 6 and 7). Since 2016 this relationship seems to have reached a plateau, with the number of knotweed stems treated closely following the number of knotweed patches treated. In 2024 this trend broke because SFEG found two large previously unknown patches that skewed the data. The largest was a 5,000 stem[YR21] patch near Illabot Creek. It was presumed that this area was knotweed free, but SFEG surveyed through here in 2024 to confirm the theory and were proved wrong. There was also a 1,600 stem patch along the Upper Sauk upstream from the Whitechuck River. As treatment continues on these patches, this will be reflected in the data for the next couple of years.

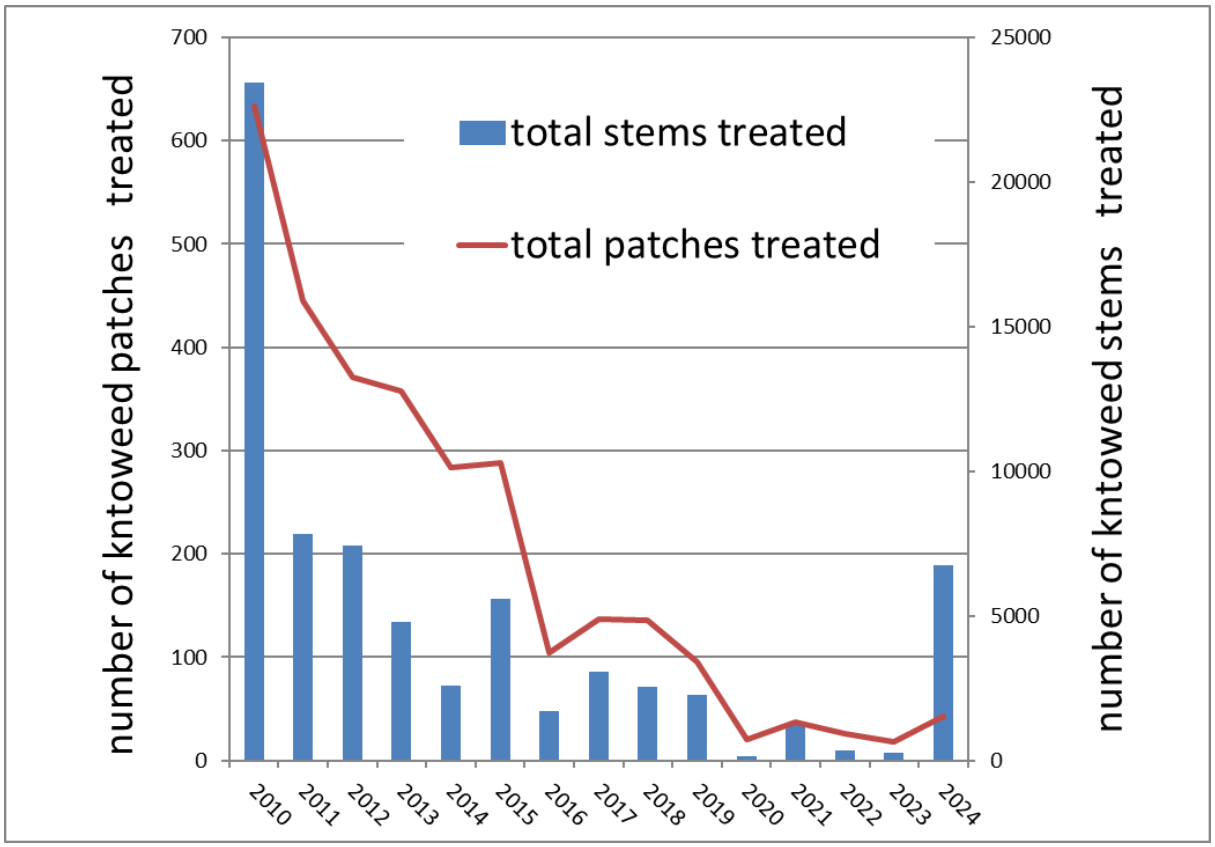

Figure 6. Knotweed stems treated in relation to total patches treated Upper Skagit Reach

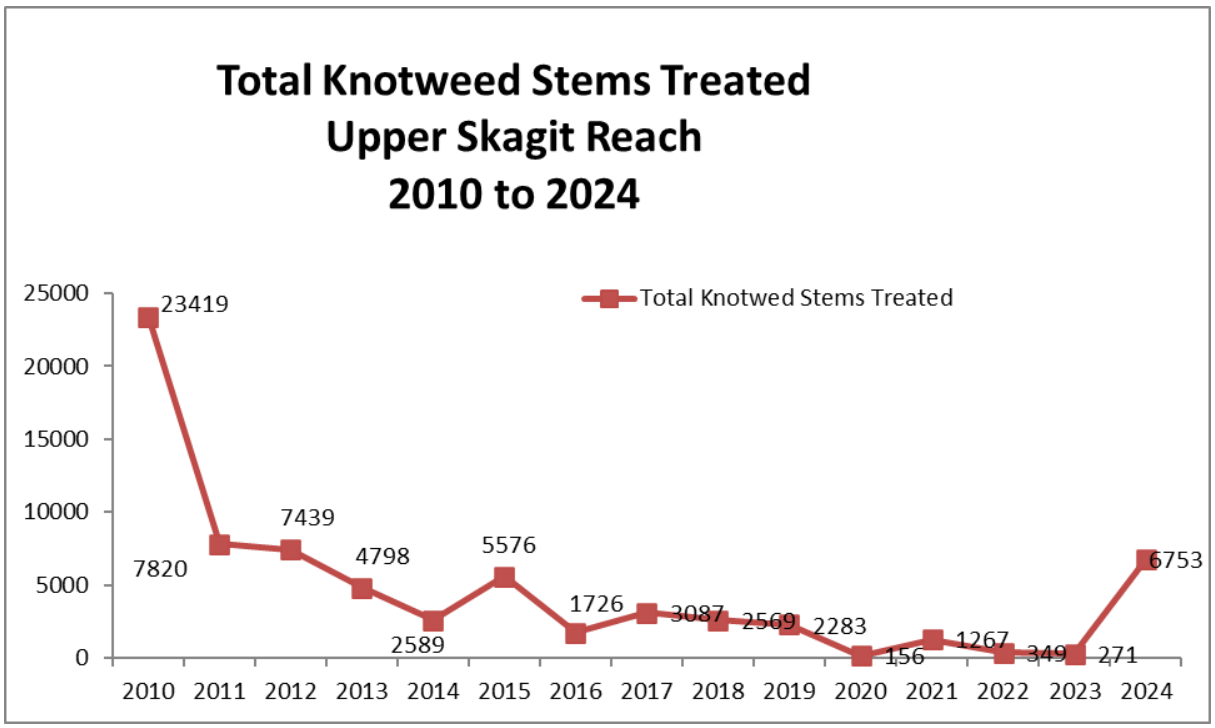

Figure 7. Knotweed stems treated Upper Skagit Reach

Survey and Treatment Techniques

Treatment techniques continue to follow Integrated Pest Management (IPM) methods and the Best Management Practices (BMPs) for knotweed treatment as discussed during the annual Skagit CWMA meetings. Currently, the

treatment regimen considered to be most effective for knotweed is a foliar application of 1% imazapyr (aquatic formulation preferred) mixed with 1% Agridex as the adjuvant. SFEG applies this mixture utilizing 50-ounce handheld pump sprayers, or 4-gallon backpack pump sprayers depending on which are most appropriate for site conditions. Herbicide application took place from June 10th 2024, through August 29th, 2024. This timeline was chosen because research indicates that herbicide is most effective against knotweed once it has established its spring foliage push and has begun to translocate sugars produced in the leaves down into the roots. Knotweed is much easier to spot in the early spring, since it is one of the first plants to emerge, but research has shown that when herbicide is applied early in the season it stunts growth but does not kill the rhizomes. This timeline was also chosen to align with the Washington Conservation Corps (WCC) crew availability.

Previously documented knotweed patches are located during field surveys by surveying transects in areas where knotweed is likely to spread; low lying areas in the floodplain prone to flooding, side channels, back-waters, etc. Knotweed patches treated the previous year are navigated to using a handheld GPS unit. SFEG prioritizes these previous years' treated points because they are the source of the monitoring data[YR22], as opposed to points that have been in the database for a decade and have not shown any knotweed activity since they were initially treated. Old points are still important because they signify past treated knotweed points, but SFEG does not use GPS to navigate to each one of these. If there is knotweed present it is observed while walking transects doing surveys. GPS location data is supplemented with aerial photos, topographic maps, and field notes. Status for previously identified patches is recorded in the field notebook and then updated in the master patch database. For new patches, a unique patch identifier is assigned, and the location is recorded using a Garmin e-trex legend GPS unit. Patch location, status and viability data are collected on a standard Upper Skagit Knotweed Project field form[YR23]. The patch is flagged with its patch identifier (Figure 8). Monitoring is conducted by taking photos of each patch treated, with the unique patch ID visible in the frame (Figure 9). Patches treated the previous year are found, and updated data and photos of patch condition are collected.

2024 was the third year that SFEG also recorded all data digitally while in the field. Data was collected on an iPad mini running iForm, which is a platform that allows the user to customize a database for field collection of data. It is compatible with various other software to enable easy transfer of data between other programs and partner organizations. Digital data was first collected in 2022. As with all new procedures, there were some growing pains and inconsistencies in data management. In planning for this, SFEG also recorded data in the traditional manner- a field notebook. There continue to be inconsistencies between data collected digitally versus in the notebook. Until these inconsistencies are ironed out SFEG will continue to collect data digitally and hand write it in a notebook.

Figure 8. Knotweed patch identifier written on knotweed specific flagging.

Figure 9 Knotweed patch monitoring photo. Whiteboard identifies unique patch identifier, status and number of stems. Following the below naming convention patch MP2268G is the 34th patch of the 2022 season located along the left bank of the Skagit River documented by SFEG.

For all new knotweed patches located the following was documented:

- Patch ID#: a unique identifier was assigned to each patch (each new patch was flagged with distinct stripped flagging and unique ID#)
    - ID# generation: first two letters are the river (Sauk = AP, Skagit = KP, MP = Middle Reach of Skagit) followed by the year first identified and sequential ID number (odd number right side river even number left side river). Lastly the organization making the documentation is the initial at the end of the sequence. In the above example patch MP2268G was first observed in the Middle Skagit (MP) reach in 2022 (22). It was the 34th patch observed on the left bank (68- since odd numbers are other side of river) of the season documented by SFEG (G)
- GPS coordinates
- Patch condition: Number of stems and patch area in meters
- Herbicide use data (Time/date/location/wind/temp/waterbody/applicators/amount applied/ NPDES qualified)

For previously located knotweed patches the following was documented:

- Status: alive, dead, not found, washed away
- Patch condition: Number of stems and area in meters
- Herbicide use data (Time/date/location/wind/temp/waterbody/applicators/amount applied/ NPDES qualified)

Acres treated

The differences between the Upper Skagit and Middle Skagit reaches are stark when one looks at the acres of knotweed treated. This metric measures the area of knotweed treated if all individual patches were to be combined into one aggregate patch. During data collection the smallest unit SFEG collects is one square meter, because this is much easier to wrap one's head around than 0.0002 acres. In 2024 the area treated in the Upper Skagit watershed was 243 square meters (0.06 acres). Area treated in the Middle Skagit reach was 690 square meters (0.17 acres). Total area of knotweed treated by the Upper Skagit Knotweed Control program in 2024 was 933 square meters (.23 acres).

River miles surveyed and area protected

In 2024, SFEG staff, assisted by WCC crews, thoroughly surveyed 6,074 acres within the floodplain of the Skagit River and Sauk Rivers. This area included habitats such as side channels, tributaries, back channels, islands, and riparian habitats. Included in this area was 30.3 miles of main stem river and tributaries. 14 miles along the Upper Sauk, 5.5 miles in the Middle Skagit reach and 10.8 miles [YR24]in the Upper Skagit watershed above Rockport.

Number of Private Landowners Assisted

Much of the land within the Upper Skagit Knotweed Control Program area is public[YR25]. All agencies with property within the project area are members of the Skagit CWMA and have given permission for SFEG to survey/treat knotweed on their lands. In addition to the public lands, SFEG has WSDA 10-year access agreements signed by many private landowners. The vast majority of these landowners do not have knotweed anymore, so SFEG does not spend the resources to do surveys on their propertiesevery year[YR26]. As such, the number of private landowners we work with is fewer than one would expect for a program of this magnitude. In 2024 SFEG worked with four private landowners. We also worked with nine entities who own land. In 2024 SFEG worked with 13 landowners.

Partners involved

The Skagit Cooperative Weed Management Area (CWMA) aka Knotweed Working Group includes 19 cooperators. The SFEG Stewardship Coordinator chaired this group until 2020 when leadership was transferred to Skagit County. Skagit Fisheries is still an active participant and plays a leadership role, but all official duties have been transferred.

Members

- WA Dept. of Fish and Wildlife
- WA Dept. of Natural Resources

- North Cascades National Park
- Seattle City Light
- Snohomish Co. Weed Board
- Skagit Co. Weed Board
- Whatcom Co. Weed Board
- The Nature Conservancy
- Skagit Fisheries Enhancement Group
- Skagit Land Trust
- Samish Tribe

Partners[YR27]

- WA Dept. of Agriculture
- U.S. Fish and Wildlife
- Washington Conservation Corps (WCC)
- WSU Extension
- National Fish and Wildlife Foundation
- Upper Skagit Tribe
- Sauk-Suiattle Tribe
- US Forest Service

Selected Photos from the Upper Skagit Knotweed Control Program

Figure 10 Areas like this that are depositional are prime locations for knotweed infestations because plant fragments settle out in the interstitial spaces between wood as the water recedes. It's also difficult to survey these areas because of the unstable footing.

Figure 11 Most knotweed surveys happen in remote locations which makes for some nice lunch views.

Figure 12 Bushwhacking while surveying for knotweed is exhausting. Lunch is a great time to take a quick nap, even when the conditions are less than ideal.

Figure 13 Knotweed generally follows watercourses, so we generally follow watercourses when looking for it. This means many days spent with wet feet, since wearing waders while doing a knotweed survey is impractical because of all the bushwhacking[YR28].

Figure 14 SFEG has begun to incorporate digital data management, but after a few years there are still inconsistencies between digital data and traditional notebook recorded data. Once these kinks get ironed out SFEG will move to solely digital data capture.

Figure 15 When the crew arrives at the survey site we communicate the plan for the day. Ofter an aerial photograph is the best way to give them the lay of the land. After that it's trusting in the process when walking transects through the disorienting, brushy floodplain.

Figure 16 Often when a large patch was sprayed the previous year the dead canes will still be visible a year later and some follow-up treatment will be required.

Figure 17 Rafting is often the most convenient way to get between survey sites. Much of the Upper Sauk Watershed has few roads, and even fewer with river access. SFEG contracts with local river guides since they provide the boats and expertise. Once the guides are onboard with the program they have become a surprising source of public outreach, teaching future clients about knotweed and invasive species.

Figure 18 Taking data on a knotweed patch before it is sprayed.

Figure 19 WCC crew member pointing out the rack line in a tree from a flood. These high-water events are how knotweed spreads throughout the floodplain.

Figure 20 SFEG is very grateful to all the participants in the Skagit Cooperative Weed Management Area (CWMA) who share resources. In this photo WDFW provided a boat and operator which allowed SFEG crews access to a knotweed treatment site on an island in the Skagit River.

Figure 21 Patch CPMG1800 had 20 stems when it was treated in 2022.

Figure 22 Patch CPNG1800 had 2 stems in 2023. Down from 20 the previous year.

Figure 23 After 2 years of treatment patch CPMG1800 was dead when visited in 2024.

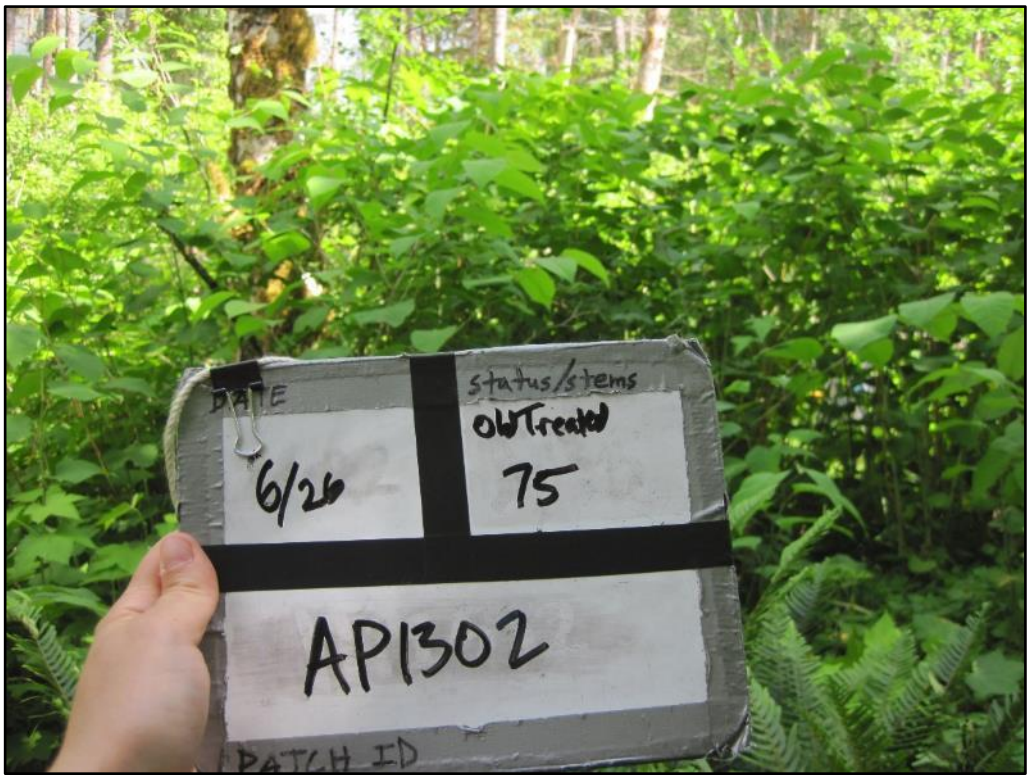

Figure 24 In 2023 Patch AP1302 had 75 stems.

Figure 25 When patch AP1302 was encountered in 2024 there were no live stems. Rarely does a 75 stem patch die after one herbicide application. It's likely small dormant stems will emerge in upcoming years.

Figure 26 Knotweed Patch AP1327 had 30 stems in 2023.

Figure 27 Knotweed patch AP1327 was dead when visited in 2024.

Figure 28 Knotweed patch AP2318 was first found in 2023. It contained 10 stems.

Figure 29 When patch AP2318 was encountered a year later it was dead. We know this is the same patch because the blue and white flagging above the white board in the picture labels it as AP2318.

Figure 30 Knotweed Patch AP2323 was first treated in July of 2023. It contained 18 stems.

Figure 31 When Patch AP2323 was visited in June of 2024 it was dead.

Figure 32 Large knotweed patches often take years to eliminate, especially patches along eroding banks where rhizomes are frequently exposed to air and sprout. In 2023 SFEG treated 300 stems belonging to Patch MP2206G.

Figure 33 In 2024 that number had been reduced to 75 stems, but the eroding bank continues to offer sub-optimal herbicide effectiveness.

Figure 34 Patch MP2290 had 18 stems in 2023. Despite what the whiteboard says, it was not a new patch in 2023. We know this because the label 'MP2209G' means it was first encountered in 2022. The patch labeling can serve as a check for data integrity.

Figure 35 Patch MP2290G was dead when encountered a year later, in 2024. This patch took two consecutive years of treatment to eradicate.

Figure 36 Large knotweed patches frequently take multiple years to eliminate. Patch MP2306G had 200 stems when it was first treated in 2023.

Figure 37 One year later Patch MP2306G had been reduced to 45 stems. It is possible treatment will be required again in 2025, but the stem count will continue to decrease.

Figure 38 Patch MP2392 was encountered at the base of a small willow in 2023. It contained 5 stems and was treated.

Figure 39 SFEG weas able to locate Patch MP2392G one year later because the flagging was still in the willow. No evidence of knotweed was found.

Figure 40 Sometimes knotweed treatments are not as effective as one would hope. Patch MP20654G had 16 stems when it was sprayed in 2023.

Figure 41 In 2024 Patch MP20654G had resprouted with 13 stems.