

SKAGIT COOPERATIVE WEED MANAGEMENT AREA
Upper Skagit Knotweed Control Program
2015 Season Ending Report
10/06/2015



Sauk River during 2015 knotweed surveys.

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Introduction

In the 2015 season, the Skagit Fisheries Enhancement Group (SFEG) and our partners with the Skagit Cooperative Weed Management Area (CWMA) or Skagit Knotweed Working Group, completed extensive surveys of rivers and streams in the Upper Skagit watershed, treating knotweed in a top-down, prioritized approach along these waterways, and monitoring a large percentage of previously recorded knotweed patches in the Upper Skagit watershed. We continued using the prioritization strategy developed in 2009 to guide where work is completed. SFEG contracted with the Washington Conservation Corps (WCC) crew and rafting companies to survey, monitor and treat knotweed patches. In addition SFEG also received on-the-ground assistance in our efforts from several Skagit CWMA partners including: U.S. Forest Service, Seattle City Light, National Park Service and the Sauk-Suiattle Indian Tribe. The Sauk-Suiattle Indian Tribe received a grant from the EPA in 2011 to perform survey and treatment work on the Lower Sauk River and in the town of Darrington through 2015. This work was done in coordination with SFEG's Upper Skagit Knotweed Control Program.

The knotweed program met its goal of surveying and treating both the upper mainstem floodplains of the Sauk and Skagit Rivers. SFEG and WCC surveyed for knotweed in June and then implemented treatment from July until the first week of September. The results of the 2015 survey and treatment season show an overall reduction in the number of live knotweed patches (new and old) found since 2010 and in both the Sauk and Skagit floodplain the survey area was expanded.

Program Overview: *In 2015, SFEG and WCC extensively surveyed within the 100-year floodplain along 53.8 mainstem river miles of the Skagit and Sauk Rivers and 23.4 miles of tributaries (77.2 miles of river and streams), 25 road miles in priority areas and treated an estimated 0.8 solid acres of upland and riparian knotweed in the Upper Skagit watershed.*

The Watershed and Project Area

The Upper Skagit Knotweed Project focuses on the Upper Skagit River basin, approximately 2,960 square miles in size. The project area includes the Skagit and Sauk River floodplains and priority uplands from the upper portions of these watersheds to the confluence of the Skagit and Sauk rivers at the town of Rockport. The project area also contains the floodplains of the Cascade and Suiattle Rivers, as well as smaller tributaries of these reaches (Figure 1).

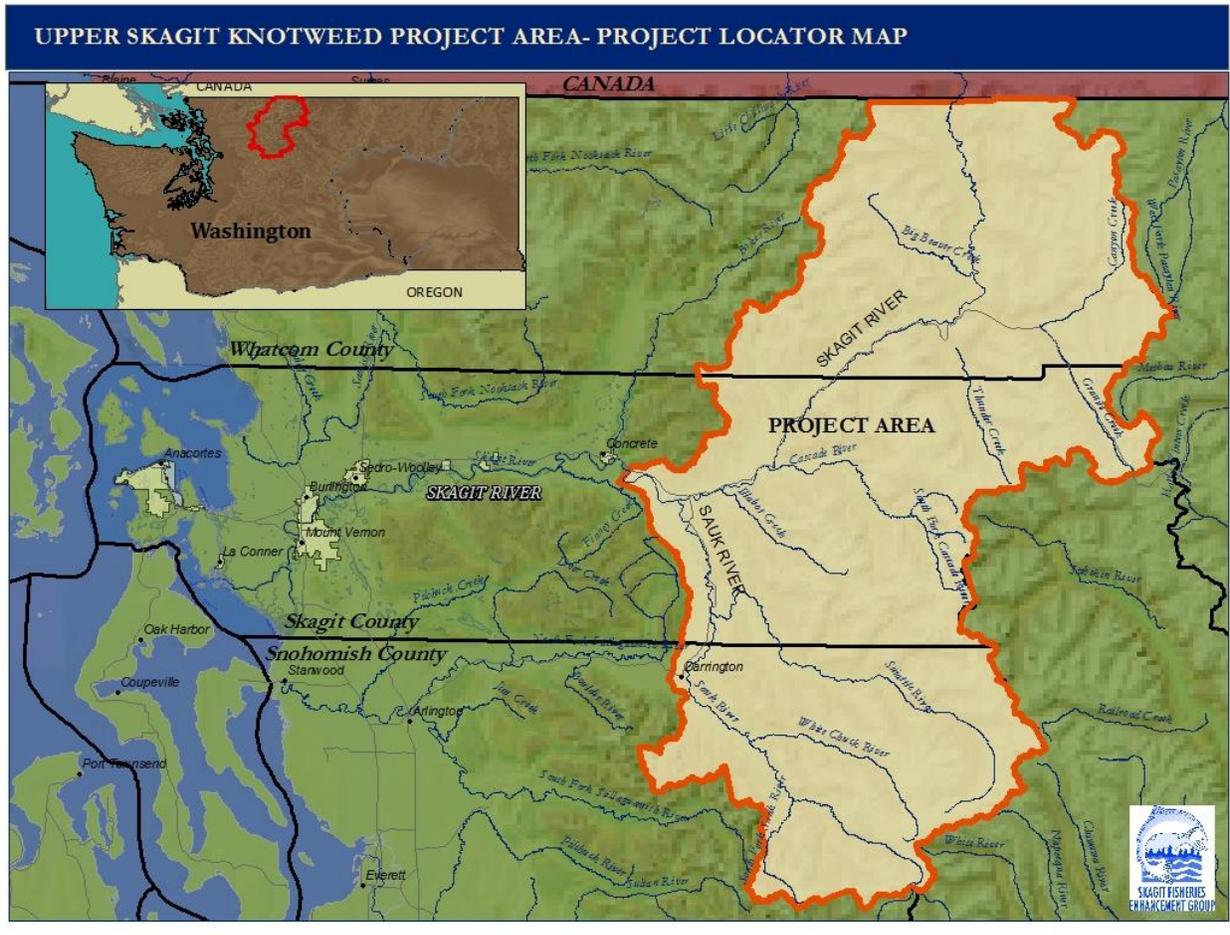
As the largest and most ecologically important drainage in Puget Sound, the Skagit River contributes approximately one third of the total amount of fresh water to Puget Sound and 44% of the total anadromous fish production. The Skagit watershed supports all five species of Pacific salmon plus steelhead, cutthroat, rainbow and bull trout, and contains the largest and healthiest wild Chinook and pink salmon runs in the Puget Sound. Recovery of ESA listed Puget Sound Chinook salmon is especially dependent on the Skagit watershed, as one half of the remaining Puget Sound Chinook spawn in the Skagit River and its tributaries, primarily in the upper Skagit watershed. Because of the ecological significance of this area, SFEG and other groups are dedicated to preserving the biological diversity, and in this case, specifically the biodiversity of the riparian zone. The floodplains in the Upper Skagit watershed (including the Sauk, Suiattle and Cascade Rivers) are a high priority area for protection and restoration actions in order to recover critical habitat for ESA threatened Chinook salmon in Puget Sound. The project area also contains the largest wintering bald eagle concentration in the state, and one of the four largest in the lower 48 states.

The floodplains in the Upper Skagit watershed (including the Sauk, Suiattle and Cascade Rivers) are a high priority area for protection and restoration actions in order to recover critical habitat for threatened Chinook salmon, steelhead trout and bull trout in Puget Sound. According to the ESA Recovery Plan for Skagit Chinook (the Skagit Chinook Recovery Plan, 2005), floodplains provide important freshwater habitat for all Chinook salmon fry, but more expressly for those life history strategies that depend on freshwater

habitat for extended rearing such as parr migrants and yearlings. Adult Chinook spawn in the mainstem of the Skagit, Sauk, Suiattle and Cascade Rivers. The Upper Skagit River contains the highest density of Chinook spawning areas in the entire Skagit watershed. The majority of the Chinook, pink and chum salmon that spawn in the Skagit River system spawn in the Upper Skagit area (from the Sauk River confluence to the dams operated by Seattle City Light). The off-channel sloughs and wetlands in this reach provide critical rearing habitat for Chinook and coho. While a Recovery Plan has not been approved for bull trout, the upper Skagit watershed has been identified by US Fish and Wildlife Service as one of the most critical areas for bull trout habitat in the Puget Sound region.

The Skagit Watershed Council (the Lead Entity for Salmon Recovery in the Skagit watershed) defines the floodplains of the Upper Skagit watershed (including the Sauk, Suiattle and Cascade Rivers) as a high priority area for protection and restoration actions in order to recover critical habitat for threatened Chinook salmon in Puget Sound. Specifically the Council's *2015 Strategic Approach* indicates that most of the project area falls in the Level 1 area for floodplain protection and restoration, with the remainder falling in the Level 2 area. The project area contains critical spawning and rearing areas for five stocks of threatened Chinook salmon including: Upper Skagit, Cascade, Suiattle, Lower Sauk and Upper Sauk Chinook stocks. Threatened species of steelhead and bull trout spawn and rear in the project area as well. Due to the importance of the project area, there is a coordinated effort to protect floodplain habitat in the Upper Skagit watershed through the members of the Skagit Watershed Council. As part of its role in protecting floodplain properties, The Nature Conservancy completed a Site Conservation Plan that identified the primary threats to biodiversity in the Upper Skagit ecosystem. Invasive species were identified as a threat, and in particular, knotweeds (Japanese, Giant, and Bohemian) were singled out above other invasive species as posing a significant threat to the Upper Skagit watershed floodplain system.

Figure 1. Project Area

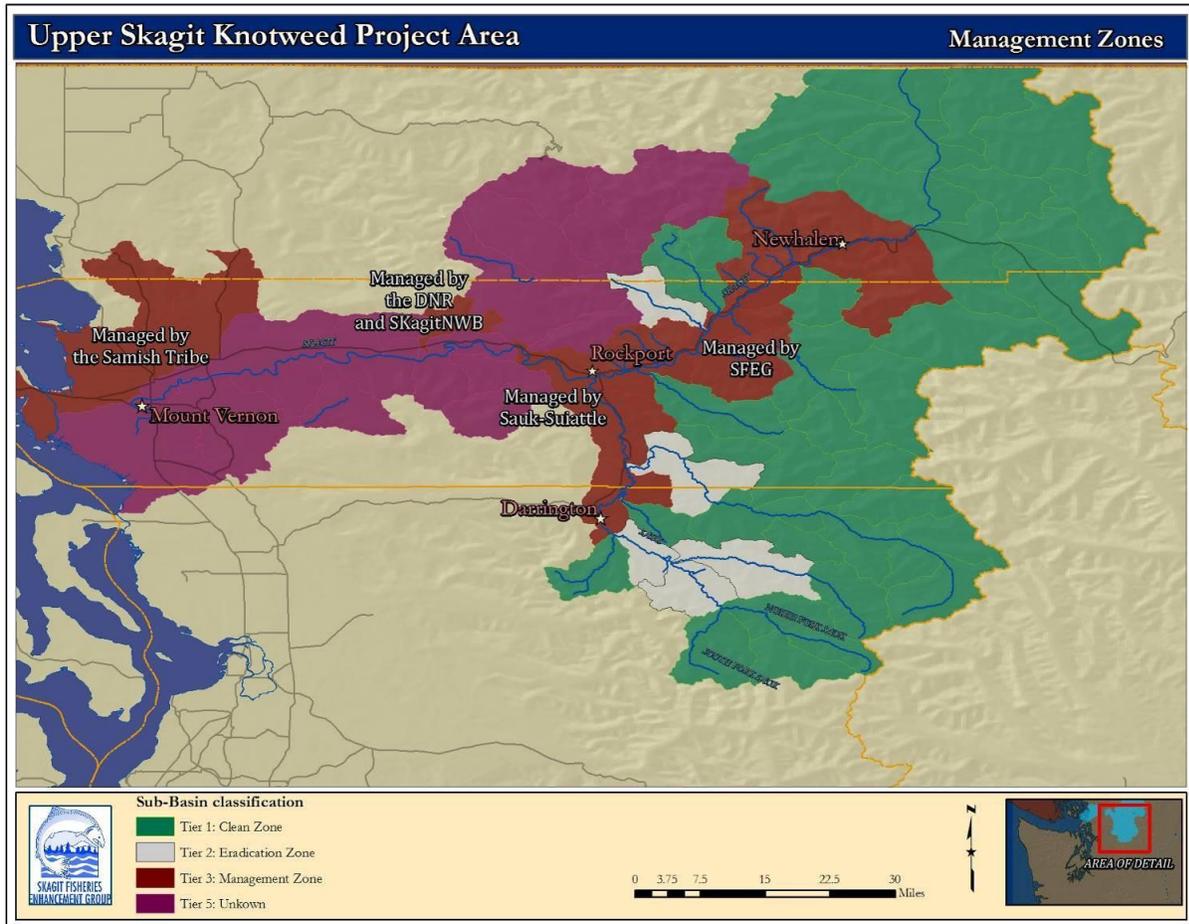


Watersheds where knotweed control work was performed

Knotweed control (treatment) work was performed in the Upper Skagit watershed, above the confluence of the Skagit and Sauk Rivers, including the Skagit River below the town of Diablo, the Sauk River below the community of Bedal and other tributaries to these rivers. Focusing on the upper portion of the watershed not only accomplishes the top down approach to control but also works to protect the most valuable salmon spawning habitat as detailed in the project area description.

In 2009, The Nature Conservancy (TNC) and the Skagit Cooperative Weed Management Area partners developed a watershed-scale prioritization strategy to help decide where to focus work in the project area. The result of that planning effort is shown below in Figure 2. SFEG continued to follow this strategy during the 2015 field season. The idea behind the strategy is to break down the larger watershed into smaller subwatersheds and show (1) knotweed-free areas (Tier 1/green), (2) areas to treat all knotweed and test the theory of eradication (Tier 2/gray), (3) management areas where treatment will only occur along tributaries and floodplains in a top-down approach (Tier 3/red), and (4) areas of the watershed where surveys and work are not yet being completed (Tier 5/purple) (Figure 2). This project focuses only on areas defined as Tier 1, 2 or 3. Other organizations have begun knotweed control work in the Tier 5 subwatersheds including the Dike District, the Department of Natural Resources and the Skagit County Noxious Weed Control Board, and will be reporting on their work at our Skagit CWMA Working Group meeting in December.

Figure 2. Prioritization strategy for knotweed control in the Upper Skagit Project Area.



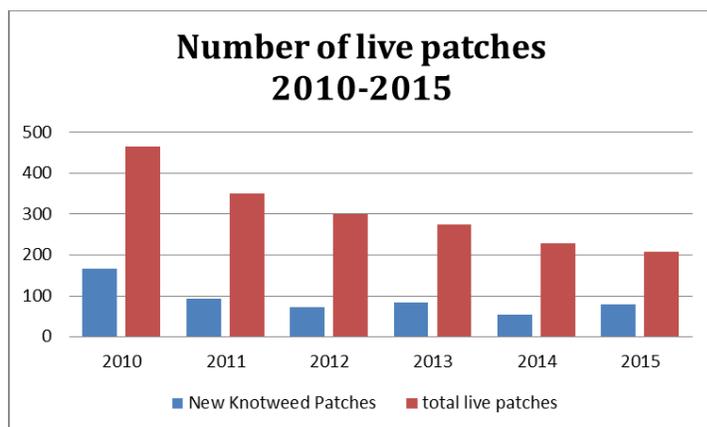
2015 Monitoring Results

The monitoring results for 2015 were positive with an overall reduction in the total amount of new patches and old live patches found and treated in the Upper Skagit Knotweed Project Area. As a result of the program, within the project area floating both the Sauk and the Skagit mainstem rivers, knotweed patches are rarely visible. Patches that are found are typically in isolated areas of the floodplain understory, and side channels and less than 10 stems in size. The 2015 season outcomes are described below, again these continue to show a reduced presence of knotweed in the watershed as a result of SFEG's program efforts since 2010 (Table 1) and TNC's efforts from 2001 to 2009.

An important component of this program is the collaboration with the Sauk-Suiattle Indian Tribe. Since 2011, the tribe has managed knotweed patches in the lower Sauk River floodplain (below the Highway 530 bridge) the Town of Darrington and the Sauk Prairie area in collaboration with the Skagit CWMA and SFEG. Because of the combined efforts of SFEG and the Tribe the entire Sauk River is being controlled for knotweed. As of 2015 the Sauk-Suiattle Indian Tribe had 848 knotweed patches in their project area. With the combined efforts of SFEG and the Sauk-Suiattle Tribe a total of 2,591 patches have been found throughout the Upper Skagit Knotweed Project area since 2001 and 2,247 patches were surveyed by SFEG and the Tribe in 2015, this constitute 86% of all patches in the entire project area.

In 2015, SFEG and WCC crews surveyed 1,519 old knotweed patches within SFEG's work area, which constitutes the almost the whole upper Skagit project area, with the exception of the Tribe's work area in the lower Sauk (Figure 3). Within SFEG's work area, there are 1,743 total patches (this includes 80 new patches found in 2015). During the 2015 season 92% of the old patches within SFEG's work area (1,663 total old patches) were monitored (144 patches where not monitored due to access issues or lack of land owner permission). Of these 1,519 patches visited in 2015, data shows that 91% of old patches previously treated were found dead (table 1.). If new patches found this year and old patches found alive this year are included the percent of patches dead (or eliminated) is 81%. Another way to look at the data is that only 19% of patches surveyed were live in 2015. This percent elimination of knotweed patches in the watershed shows an excellent overall level of control of infestations in the project area.

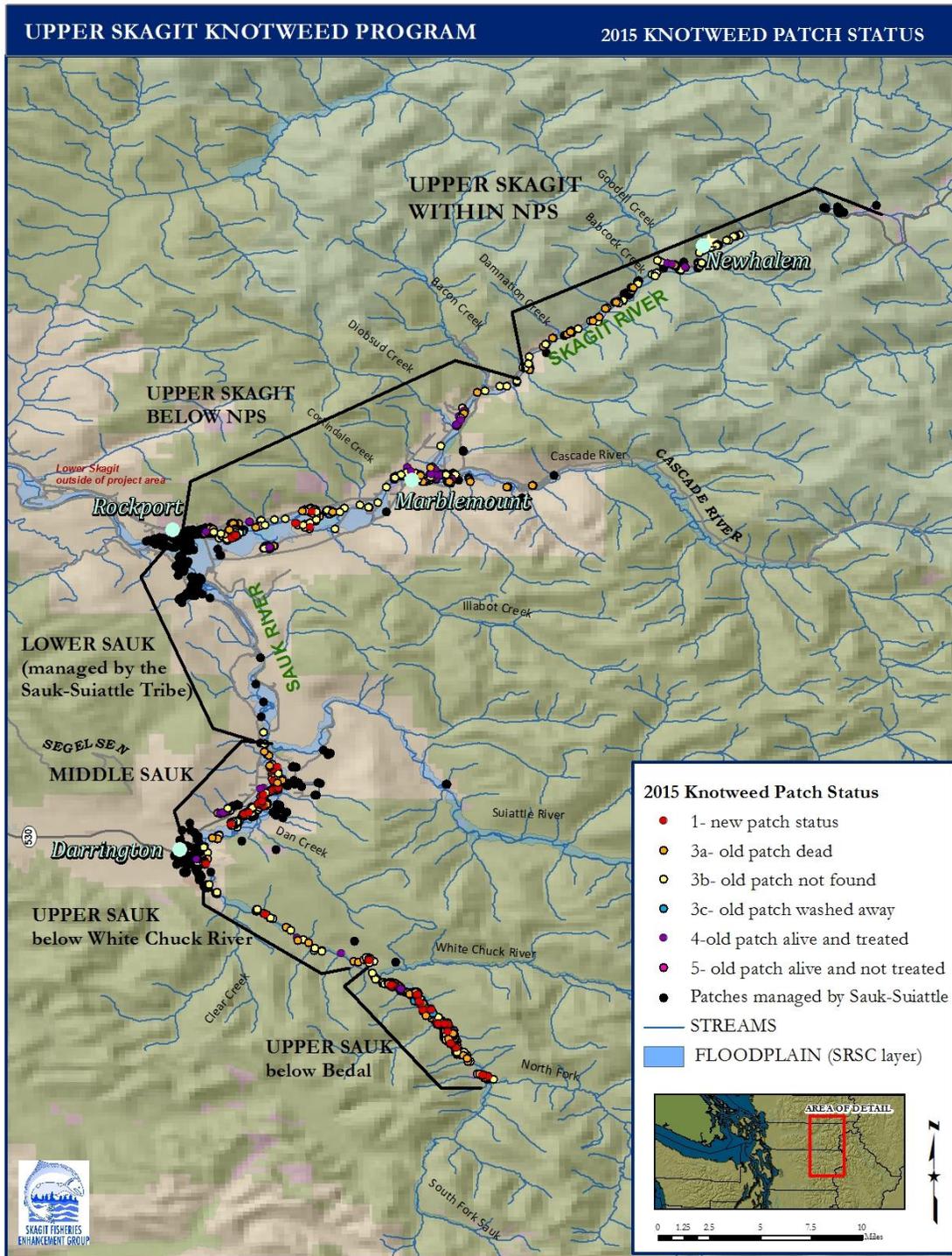
Table 1. Number of live knotweed patches in SFEG survey area.



Additionally, within the 1,519 patches surveyed, 207 live knotweed patches were found in 2015. The number of live patches (new 39% and old 61%) found is similar but slightly lower than live patches found and treated in 2014, which was 229. However, the difference between 2015 and 2014 is that in 2015 fewer old patches (previously treated) were found alive and more new patches were found (80 new patches in 2015, 54 in 2014). More new patches can partly be accounted for by expanded search areas within the floodplains and low flow/drought conditions allowing for better access. New patch numbers in the upper portions of the watershed (the upper Sauk US Forest Service land and upper Skagit National Park Service and Seattle City Light

lands) remained consistent with numbers found in 2014. However, significantly more new patches were found in the middle Sauk and on the Skagit below Copper Creek. New patches account for 39% of live patches found in 2015. These numbers reinforce the need for rigorous surveys each season to catch new patches that have spread within the floodplain. They also show that knotweed continues to spread in the watershed but our efforts continue to reduce the occurrence of infestation and the source patches.

Figure 3. This figure shows the GIS/GPS data used to record and track knotweed patch data, and visually depicts where patches are eliminated, not visited, etc. Patches not visited (in pink) that are located higher in the watershed, e.g., above Marblemount or near Darrington are upland patches out of the floodplain that were not given high priority in the prioritization strategy. Shown in black are patches that were monitored by the Sauk-Suiattle Indian Tribe in 2015. Note the floodplain GIS layer used for this map and others in this report was developed by the Skagit River System Cooperative (SRSC) for the Skagit Chinook Recovery Plan (2005).



Treatment techniques used

SFEG continued to follow the prioritization strategy for knotweed treatment developed in 2009 for the Upper Skagit Knotweed Control Project. This strategy follows the tiered prioritization strategy outlined in Figure 2, and also incorporates factors including location in the watershed (e.g., riparian vs. upland; upriver vs. downriver) and ownership. We first targeted the upper Sauk River for treatment and surveys, as this area is the test Tier 2 eradication zone. The Upper Sauk has a greater and more dynamic river channel and is also more difficult to traverse via raft later in the summer due to low flows. We secondly targeted the middle Sauk River, Tier 3 Management Area, from the town of Darrington to Government Bridge for treatment in July, because of its large gravel dynamic gravel bars it is a difficult section to survey as flows decrease. Once the majority of the Sauk River surveys and treatment was completed in July we focused on the Skagit River. Though the highest priority section (between Diablo and Copper Creek) was completed later in the season to best fit the schedule of project partners. This work was done in coordination with the support of our National Park Service (NPS) and Seattle City Light (SCL) partners. SFEG completed all planned treatment work along the Skagit and Sauk Rivers in the project area. The lower Sauk River and the town Darrington were surveyed and treated by the Sauk-Suiattle Indian Tribe in coordination with SFEG and the CWMA. The Tribe's work on the lower Sauk and upland areas of the town of Darrington and Sauk Prairie allowed for SFEG to focus more on the high priority areas of the upper watershed.

Treatment techniques continued to follow integrated pest management methods including: 1) manual bending of stems taller than 1-meter during surveys in spring and early summer, followed by 2) foliar spraying a mix of 1% Imazapyr and 1% Agridex with 50 oz hand sprayers or 4-gallon backpack sprayers. Surveys took place from May through the end of September. Herbicide treatments began in late July and continued until the first freeze in mid October. We followed the protocol of waiting to begin spraying until July that has been recommended by research scientists and other professionals in the field, although it does reduce our window for completing the work, and leads to not always being able to treat all patches each field season.

Previously identified patches were located using GPS location data, in combination with aerial photos, topographic maps and field notes. Status data for previously identified patches is recorded in the field notebook and then updated in the master patch spreadsheet. For new patches, a unique patch identifier was assigned and the location was recorded using Garmin etrex legend GPS units. Patch location, status and viability data are collected on a standard Upper Skagit Knotweed Project field form. A written description of the specific patch location and surroundings was also recorded and the patch is flagged with its patch identifier.

For all new patches found the following was documented:

Patch ID#: a unique identifier is assigned to each patch (note each new patch is flagged with distinct striped flagging and unique ID#)

ID #: *first two letter river (Sauk = AP, Skagit = KP) Year (13) and unique ID odd number right side river even number left side river. Example patch AP1301, Sauk River patch found in 2013 on the right side of the river.*

Location description:

Distance from water: <10ft, 10-50ft, >50ft

Patch condition: Number of stems and patch area in meters

Herbicide use data (Time/date/location/wind/temp/waterbody/applicators/amount applied)

For previously identified patches the following was documented:

Status: alive, dead, not found, washed away

Location Description:

Patch condition: Number of stems

Herbicide use data: (Time/date/location/wind/temp/waterbody/applicators/amount applied)

Acres treated

An estimated 0.8 solid acres of knotweed were treated in the project area in 2015. This is half an acre lower than in 2014 (see Table 2). This area was calculated based on SFEG using approximately 5,479 ounces (42 gallons) of herbicide mix equaling 54.79 ounces or 0.46 gallons of Imazapyr herbicide. It is difficult to estimate the number of acres treated (solid or affected area) because most knotweed patches in the project area are very small and are sparsely spread out over large floodplain areas. Given that, we believe that the percent elimination measure may be a better indication of the success of the project (see “other notable outcomes” section).

Herbicide usage in 2015 is the second lowest in program history. Numbers continue to decline due to the reduction in live patches within the floodplain. Though, in 2014 the amount of herbicide doubled from 0.6 acres in 2013, to 1.3 acres. This increase was due to one large patch near Rockport with over 1000 stems that was treated during 2014. SFEG had been trying to acquire permission for several years to treat this patch and finally received it for the 2014 season. In addition treatment area has decreased since 2011 when the Sauk-Suiattle Indian Tribe took over the treatment of the Lower Sauk, which is a portion of the project area with a high occurrence of knotweed and that needs concentrated treatment efforts. This has contributed to lower herbicide usage numbers from 2011 -2014 . Table 2 illustrates herbicide usage since 2002.

Annual herbicide use data from 2008 - 2015 are based on using a 1% Imazapyr herbicide mix solution and a spray rate of 50 gallon/acre. This differs from years prior to 2008 since Glyphosate was used at a 5% rate with an estimated 100 gallon/acre spray. Because the U.S. Forest Service granted permission to treat knotweed on their lands with Imazapyr in early 2008, the program was able to convert entirely to Imazapyr treatments. The table below shows herbicide use and corresponding solid acres treated over the duration of the Upper Skagit Knotweed Project.

Table 2. Upper Skagit Knotweed Control program annual herbicide use

Year	Gallons of herbicide mix	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		0.8

The amount of floodplain area protected was calculated using GIS. For the purpose of this analysis, “floodplain” was identified based on a GIS-layer developed by the Skagit River System Cooperative (SRSC) for use in the Skagit Chinook Recovery Plan (depicted as SRSC floodplain on GIS maps). The acreage protected as

listed in Table 3 below, represents the area of floodplain that is being protected from knotweed infestation through this program.

Table 3. – Estimated floodplain area protected in 2015.

Area	Acres
Upper Sauk River -Bedal to White Chuck	1,201
Upper Sauk River- White Chuck to Clear Creek	612
Middle Sauk River	2,785
Lower Sauk River	4,108
Upper Skagit River -Copper Creek to Rockport	5,627
Upper Skagit River - Newhalem to Copper Creek	1,149
Upper Skagit River - Gorge Spillway	396
Diablo	412
Cascade River	839
Suiattle River	2,153
<i>Total estimated floodplain area protected</i>	<i>19,282</i>

River miles surveyed and treated and knotweed-free areas

In 2015, SFEG staff assisted by WCC crews thoroughly surveyed within the 100-year floodplain along 53.8 mainstem river miles along the Skagit and Sauk rivers, and 23.4 miles of tributaries. In the 2015 season SFEG focused on thoroughly surveying mainstem river miles and completing tributary surveys in high priority areas. High priority tributaries include those tributaries that ranked high for salmon habitat value in the Skagit Watershed Council’s Strategic Approach for 2015 and tributaries which are clean of knotweed but are at risk for knotweed infestation due to nearby patches or roads.

SFEG surveyed the river and floodplain tributaries surveyed listed in the SWC 2015 Strategic Approach that contain significant rearing habitat for Chinook salmon (including upper Skagit, upper Sauk, upper Cascade, and Suiattle Rivers and their tributaries, Illabot Creek, Diobsud Creek, Bacon Creek, Goodell Creek)

Tributaries with known knotweed patches are surveyed each year. The longest tributary survey done this year was the Suiattle River, followed by Illabot Creek. The Suiattle River had not been surveyed since 2011 and is a priority for Chinook recovery . Though there are some roadside patches near the Suiattle River, the Suiattle floodplain was knotweed free in 2015. Illabot Creek is also identified as important priority for salmon habitat in the Chinook Recovery Plan. Illabot Creek was also surveyed this season and does have knotweed in the lower 5 miles. The lower 5 miles of Illabot Creek are surveyed each season due to the continued presence of knotweed. A summary of the river and tributary miles surveyed is provided in Table 4.

The overall results of tributary surveys were positive with a no new knotweed found on clean tributaries.

Table 4. 2015 survey results for the Upper Skagit Knotweed Control Program.

<i>Mainstem Rivers</i>	<i>Miles Surveyed</i>		<i>Description</i>	<i>Knotweed Presence</i>
Skagit River	28.5		Diablo Dam to town of Rockport (confluence of Sauk and Skagit Rivers)	Sparse to medium sized infestations throughout
Upper and Middle Sauk River	25.3		Town of Bedal (junction of N and S Fork Sauk River) to Suiattle River/Gov. Bridge	Sparse to medium infestation throughout
Lower Sauk River	0		Sauk -Suiattle Tribe surveyed lower Sauk River from 2011-2014	knotweed throughout
Total river miles:		53.8		
<i>Tributaries</i>	<i>Miles Surveyed</i>		<i>Description</i>	<i>Knotweed Presence</i>
Babcock Creek	0.7		Surveyed from SCL bridge to Skagit river, the lower 0.8 mile of the creek.	Patches only on lower .2 miles, new patches found in the creek, this area is a high priority for 2016.
Bacon Creek	1		Surveyed 1 mile from skagit river to .5 miles above the hwy 20 bridge upstream.	Knotweed-free
Beverly Creek	1.6		Lower 1.6 miles to Sauk River.	Sparse throughout lower 1.6 miles
Cascade River	0.5		Surveyed lower .5 mile from the hatchery to the Skagit.	knotweed found in the lower half mile of the cascade in 2014 in 2015. Sparse within last .5 mile of floodplain. Knotweed free in floodplain above the hatchery. Upland patches present 5 miles upstream.
Diobsud Creek	0.8		Surveyed from SCL powerlines to Skagit river, the lower 0.8 mile of the creek.	no knotweed found on creek, knotweed patches present on adjacent private properties in upland.
Damnation Creek	0.2		Surveyed from river to power lines	None along river, sparse along roads
Goodell Creek	0.6		Lower 0.6 miles to Skagit River	None along river, sparse along roads
Illabot Creek	5		Lower 5 miles below Rockport/ Cascade Rd	Very sparse in lower side channels
Murphy Creek	1		Creek surveyed below hwy 530 to Sauk River.	live knotweed patch found in creek floodplain, just above Sauk River in 2015.
Suiattle River	12		surveyed lower 12 miles of suiattle floodplain in 2015.	floodplain remains knotweed-free – there are upland patches along the road.
Total tributary miles:		23.4		
TOTAL RIVER and TRIBUTARY MILES:			77.2	

Upper Sauk Sub-Basin

The experimental eradication zone on the upper Sauk River from the community of Bedal to the White Chuck River (Mount Baker-Snoqualmie National Forest) has been rigorously surveyed and treated since the beginning of 2006 (Figure 5). This area was not treated until the US Forest Service (USFS) completed an environmental assessment and associated supplement in May of 2006. In 2015, in partnership with the USFS the area was again rigorously surveyed and treated in accordance with the prioritization strategy and previous efforts. Due to its free-flowing nature, the Sauk River in this area has high water events and floods frequently. The river changes dramatically after these high waters each year, redistributing many knotweed patches, and making complete eradication a challenging task. In 2015 the mainstem of the Sauk River changed course in several sections and the mainstem river was dry in several sections this season. Due to the dry river channel, the crew hiked into many sections instead of rafting. The warm, dry conditions allowed crews to survey new areas and to more easily spot knotweed, as it was at a mature height in July.

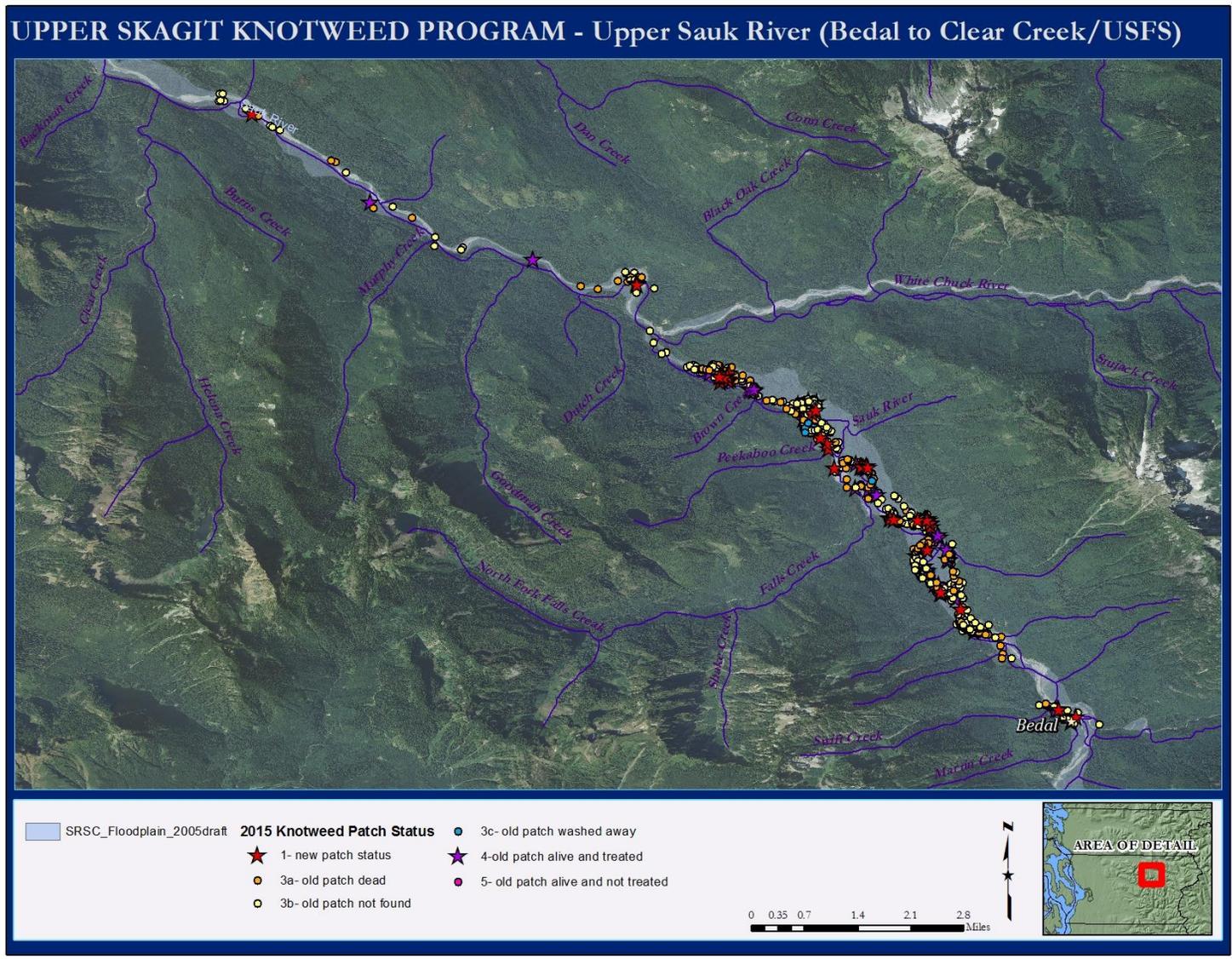
Highlights for the Upper Sauk subbasin, between the community of Bedal and U.S. Forest Service boundary at Clear Creek are listed below.

- 731 patches found in this area since 2006.
- In 2015, 35 new patches were found; comparable to the 34 new patches were found in 2014, however down from 55 new patches found in 2013. New patch numbers this year are similar to 2012 (31 new patches) and a reduction from 2011 (52 patches) and 2010 (83 patches).
- 44 old live patches at total of 79 live patches found on the USFS lands in the upper Sauk.
- 630 patches were found dead in 2015, which is an 89% elimination of knotweed.
- 100% of patches in this area were treated.

Figure 4. USFS partner with WCC crew surveying on the upper Sauk River.



Figure 5. Knotweed patch distribution in 2015 on the upper Sauk River.



Upper Skagit subbasin

The project area in the upper Skagit River subbasin is on both National Park Service (NPS) and Seattle City Light (SCL) land. SFEG worked in collaboration with SCL and the NPS, surveying and treating all areas around the towns of Diablo and Newhalem, the Gorge Spillway, and the Skagit River between Newhalem and the Copper Creek boat launch. Results from these efforts were encouraging overall, with a high success rate for patches eliminated, 95%. Also encouraging is that no old patches were found alive along the Skagit River from Newhalem to Copper Creek. Live old patches were only found in the town of Newhalem and along Babcock Creek, where five (5) new patches were found this year. The number of new patches found on Babcock Creek was disappointing; however new side channels were found that had not been previously surveyed, accounting for the majority of new patches. In 2013 and 2014 new patches were found in the floodplain of Damanation Creek. These patches were all visited in 2015 and found dead, no new live patches were found in this area.

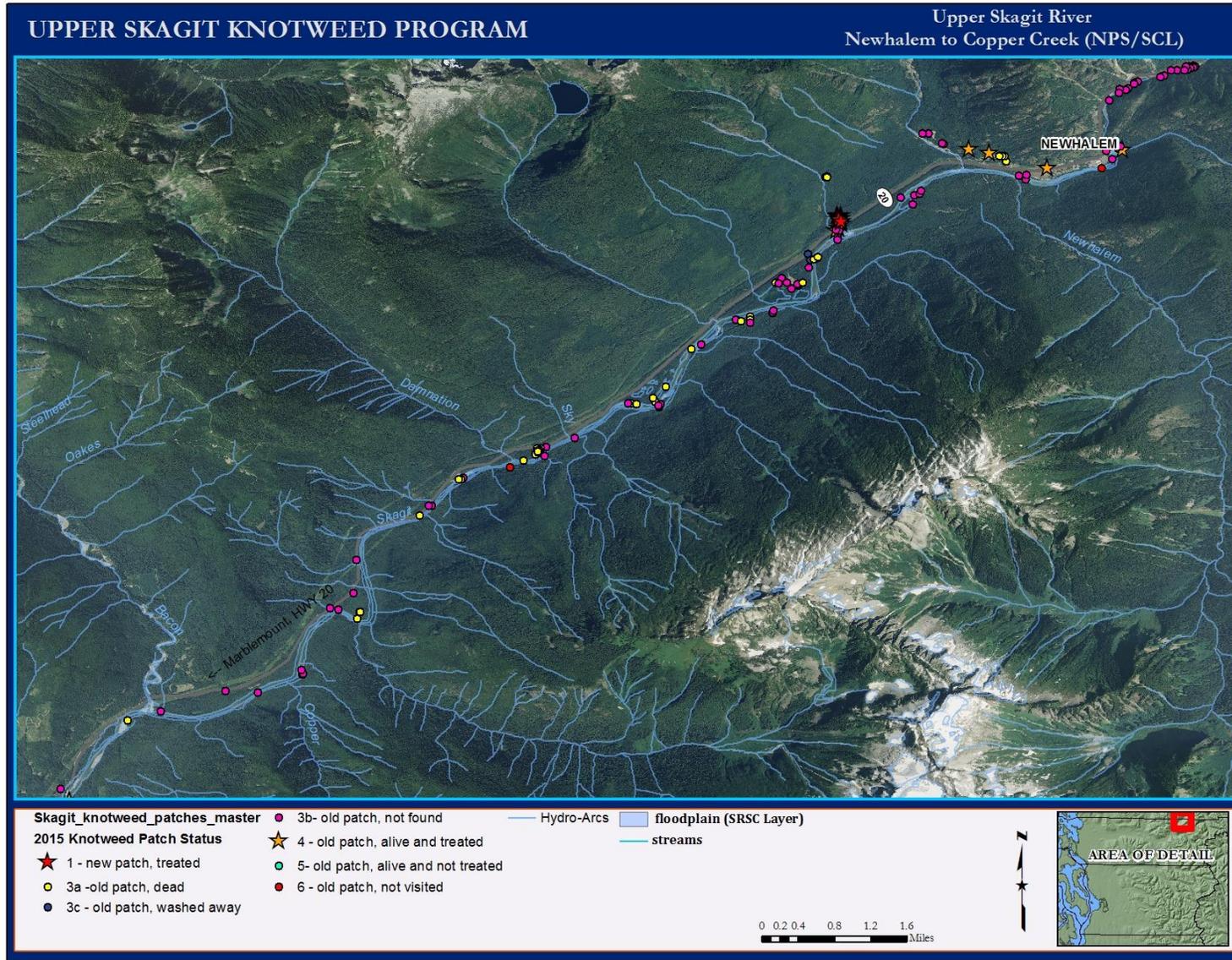
Highlights for the Upper Skagit River subbasin are listed below and depicted in Figure 7.

- 147 patches found from Diablo to Copper Creek since 2001.
- 5 new patches found, all on Babcock Creek.
- 8 old patches alive found in Newhalem and Babcock Creek.
- 95% of patches eliminated since project started, this is the percentage of dead or not found patches in the total project area above Copper Creek, this calculation does not include new patches found (up from 93% in 2014). If we include new patches the percent elimination is 91%.
- 100% of live patches found were treated.

Figure 6. WCC Crew with SCL staff before surveying the Gorge spillway.



Figure 7. Knotweed treatment in the upper Skagit subbasin.



Number of Private Landowners Assisted

The vast majority of the land within the project area is public land. We have agreements to treat knotweed on public lands with all of these agencies, including the U.S. Forest Service, Washington Department of Fish and Wildlife, Washington Department of Natural Resources, National Park Service, Skagit County Parks, The Town of Darrington and Seattle City Light. The Nature Conservancy (TNC) also holds a large amount of property in the project area and SFEG has an agreement to treat knotweed on TNC property as well.

SFEG has prioritized working within the floodplain area and therefore with all landowners in this area. When SFEG began the project in 2010 we did extensive outreach with landowners in priority areas and that had previously worked with TNC. As of 2015, SFEG is working with a total of 44 landowners. It is important to note there are some landowners who are interested in participation but unwilling to sign an agreement form. There are also some landowners who are absentee and cannot be reached. SFEG will continue to work on obtaining more agreements during the winter season and for the 2016 survey and treatment season.

The vast majority of private landowners that The Nature Conservancy had worked with beginning in 2001 are located in the Town of Darrington and other upland areas. Since the shift in focus for this project to the floodplain areas in 2008, there had been no knotweed treatment in Darrington by SFEG. Starting in 2011, the Sauk Suattle Tribe worked in partnership with Snohomish County Noxious Weed Board to perform treatment in the Town of Darrington. SFEG assisted the Tribe in providing outreach materials and landowner agreement templates.

Partners involved

The Skagit CWMA Working Group includes 19 cooperators.

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

- 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

The above cooperators attend annual meetings to offer input related to the project, and work together to ensure treatment takes place on lands represented by these organizations. SFEG is very thankful for the assistance they received from these cooperators and would specifically like to thank several organizations for their involvement during the 2015 season. The Sauk-Suiattle Indian Tribe led treatment in the Town of Darrington and the lower Sauk River. Seattle City Light also provided staff to work with SFEG and WCC during treatment in the North Cascades Park and Ross Lake National Recreation Area. Finally, our contractor WCC made the project a success with the assistance of the Department of Natural Resources Puget Sound Corps Aquatic Crew.

Outreach efforts

SFEG's Stewardship Manager and WCC crew visited landowners to distribute knotweed information and ask for permission to survey and treat knotweed. In addition, we also continue to mail letters, make phone calls, and visit those property owners where we have been unable to gain permission or where new knotweed patches have been found.

In addition to the landowners who have signed agreements, we have spent time doing outreach to other landowners in the project area. We have spoken with approximately 20 members of the public who own land within the upper Skagit basin. Information about knotweed has been posted at local grocery stores and gas stations. The knotweed brochure has also been distributed at SFEG tabling events.

SFEG will continue to hold the Skagit CWMA working group meetings in December of each year, and will continue to invite new organizations and individuals to participate.

Plans for next year

In 2016 the focus for the Upper Skagit Knotweed Program will continue to be surveying the tributaries and floodplains of the Skagit and Sauk Rivers, and conducting outreach to private landowners in those areas. In 2016 early season survey work from May –July will again focus on the Upper Sauk and any high-priority tributaries. Treatment from July – October will be prioritized on the Upper Skagit and Upper and Middle Sauk rive floodplain. If time allows we may again expand our focus to survey areas outside of the Upper Skagit Project Area. This could include important spawning tributaries to the Middle Skagit or tributaries in the Middle Skagit where extensive restoration efforts have taken place.

Select Photos from the Upper Skagit basin
The Sauk River

Figure 8. WCC Crew surveying a side channel of the Sauk River, above the White Chuck River on USFS land. Backchannels are the most common place new knotweed patches are found and can be difficult to locate and survey. These small patches can be difficult to locate and are one of the challenges in controlling knotweed on the upper Sauk.



Figure 9. WCC crew surveying for knotweed over log jam on gravel bar of the middle Sauk River. There are many log jams in the Sauk River floodplain that the crews survey for knotweed.



Figure 10. Before: Patch AP995 found on the upper Sauk in 2013, with 5 stems.



Figure 11. After: Patch AP 995 found dead in 2015, was treated in 2014 (shown in figure13).



Figure 12. New Patch AP1514, found on the mainstem Sauk River. It is very uncommon to find large patches like this along the mainstem river edges in the project area.



Figure 13. Old patch A709B was found in the understory of a back channel of the Upper Sauk. It is not uncommon to find knotweed patches growing in the understory of the floodplain. This patch represents a major problem with knotweed which is that after several years of being found dead (in this patches case 2013 and 2014) it resprouted in 2015, again supporting the method of resurveying for all patches each year.



Figure 15. Before: AP1229 along a side channel of the Middle Sauk River found alive with several stems in 2015.



Figure 16. WCC on a bar of the upper Sauk River. The crew is using a GPS unit to triangulate the location of old knotweed patch. All patch locations are recorded with GPS units when found and all of this data is loaded on to GPS units each year and used to relocate old patches. This is also a great learning opportunity for WCC.



Figure 17. Patch AP1303, was first found in 2013 with 50 stems and treated, then found with 10 stems in 2014 and found alive again in 2015 with 1 stem. This patch demonstrates the sometimes slow progress of treatment, these single remaining stems in the understory can be difficult to find at times. However it is important to note that some patches do die after 1 treatment.



Figure 18. Photo taken July 2014: Patch AP1419, was found and treated in 2014 on a side channel of the upper Sauk River. In 2015 the Sauk River shifted course and this side channel became the mainstem of the Sauk River and the location of this patch was under water this field season. This patch represents the importance of surveying side channels and illustrates the very dynamic nature of the Sauk River.



Figure 19. Shown in the photo, a section of the Sauk River mainstem, dry in June of 2015. Due to drought conditions and shifting channels sections of what was in 2014, the mainstem of Sauk River were dry this season. This made for an interested knotweed season as rafts had to be portaged across a mile of dry river bed and access routes from the road had to be found to reach the floodplain for surveys. One positive part of these dry conditions was that they allowed crews access to new sections of the floodplain while surveying.



The Skagit River

Figure 20. The Skagit River just below Marblemount. Much of the surveying on the Skagit is done by raft as there are not as many bars and back channels as on the Sauk River, since flow is controlled by the dams above Newhalem.



Figure 21. Patch KP1119 is located on USFS land below Copper Creek on the Skagit River. It was found dead after treatment in 2014, only 3 patches were found alive during 2015 survey on this section of river (Copper Creek to Marblemount).



Figure 22. SFEG with WCC crews float the banks of the Skagit surveying for knotweed patches. SFEG takes two boats to cover both sides of the river, boats stop at any backchannels or gravel bar where flooding has occurred or knotweed may be present.



Figure 23. Patch K203 is on a side channel of the Skagit below Illabot Creek. Note WCC crew member preparing to hang blue and white patch ID flagging. These flags are hung to identify all patches.



Figure 24. KP1221 was found in 2012 densely infesting a side channel of the Skagit, this patch was part of a complex of patches found on this side channel. In 2012 this patch had 40 stems, 2013, 1, 2014 none then 7 in 2015. Patches larger than 10 stems take diligence to find very small re-sprouts several years after treatment. The complexity of regrowth patterns is one of many control challenges in controlling knotweed.



Figure 25. WCC hiking Boulder Creek, the delta of this creek was the only location where we found new knotweed patches from Newhalem to Copper Creek in 2015. Knotweed on this creek likely came from contaminated solid used by SCL to build the bridge shown in photo. Emphasizing the importance of keeping soil and gravel pits weed free as they are major vectors.

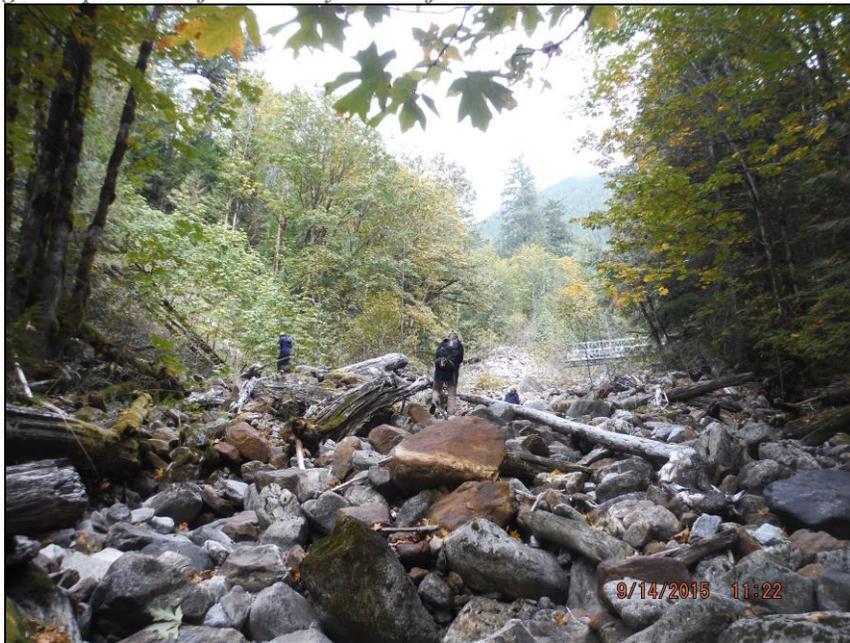


Figure 26. Patch KP1504, growing along the banks of Illabot Creek, a tributary of the Skagit River. SFEG surveys this tributary each year because it is a priority salmon stream for the federally listed Chinook Salmon. SFEG surveyed by foot 5 miles of Illabot Creek in 2015.

