Olympic Invasives Working Group
2021 Annual Report

CCNWCB crew treating knotweed along
the Sol Duc River.

Report Prepared by

Clallam County Noxious Weed Control Board

CCNWCB staff treating a large patch of knotweed along the Sol Duc River.

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This report can also be found at http://www.clallam.net/weed/annualreports.html

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MAPS:

Bohemian knotweed patch on private property along Ennis Creek

EXECUTIVE SUMMARY

Project Goal

The goal of this project is to protect the natural resources, ecosystem functions and land values in the Olympic Peninsula from the negative impacts of invasive knotweed and other non-native plants.

Project Overview

The Olympic Invasives Working Group (OIWG) is a loose-knit consortium of governments, tribes, non-profits and private landowners working together to eliminate knotweed and control invasive plants across the Olympic Peninsula. The group facilitates large-scale efforts to control invasive weeds through training, collaboration and planning across organizational or jurisdictional boundaries. This report gives a broad overview of the work across the entire Olympic Peninsula, provides historical perspective and also serves as a repository of information for the future.

2021 Overview

All of the OIWG entities continued to focus on the elimination of invasive knotweeds; however many entities have broadened their focus to include additional non-native species during the course of their work. Entities reported their annual work accomplishments to the CCNWCB and details are included in the body of this report. The county weed boards provided coordination and support within each county. The OIWG collaborated to determine priority watershed, invasive species, and identify opportunities to work cooperatively to achieve large-scale goals.

This year the following entities reported treatment/survey and landowner statistics: Clallam County Noxious Weed Control Board, Quileute Tribe, Makah Tribe, 10,000 Years Institute, Lower-Elwha Klallam Tribe, North Olympic Salmon Coalition, Hood Canal Salmon Enhancement Group, Quinault Indian Nation, Mason County Noxious Weed Control and Grays Harbor Noxious Weed Control Board submitted survey/treatment and landowner statistics.

2021 Project Activities Summary-per County

(See Table I with watershed details by county, starting on page 69)

- In Clallam- **6** entities on **14** waterways managed **167** landowner agreements and obtained **42** new agreements. Knotweed and other invasives were treated across more than **548.9** acres over **359.6** river and road miles.

- In Jefferson- **3** entities on **6** waterways managed **90** landowner agreements and obtained **0** new agreements. Knotweed and other invasives were treated across **1,444.4** acres over **281.2** river and road miles.

- In Mason- **2** entities on **10** waterways managed **275** landowner agreements and obtained **17** new agreements. Knotweed and other invasives were treated on over **14.55** acres over **22.68** river and road miles.

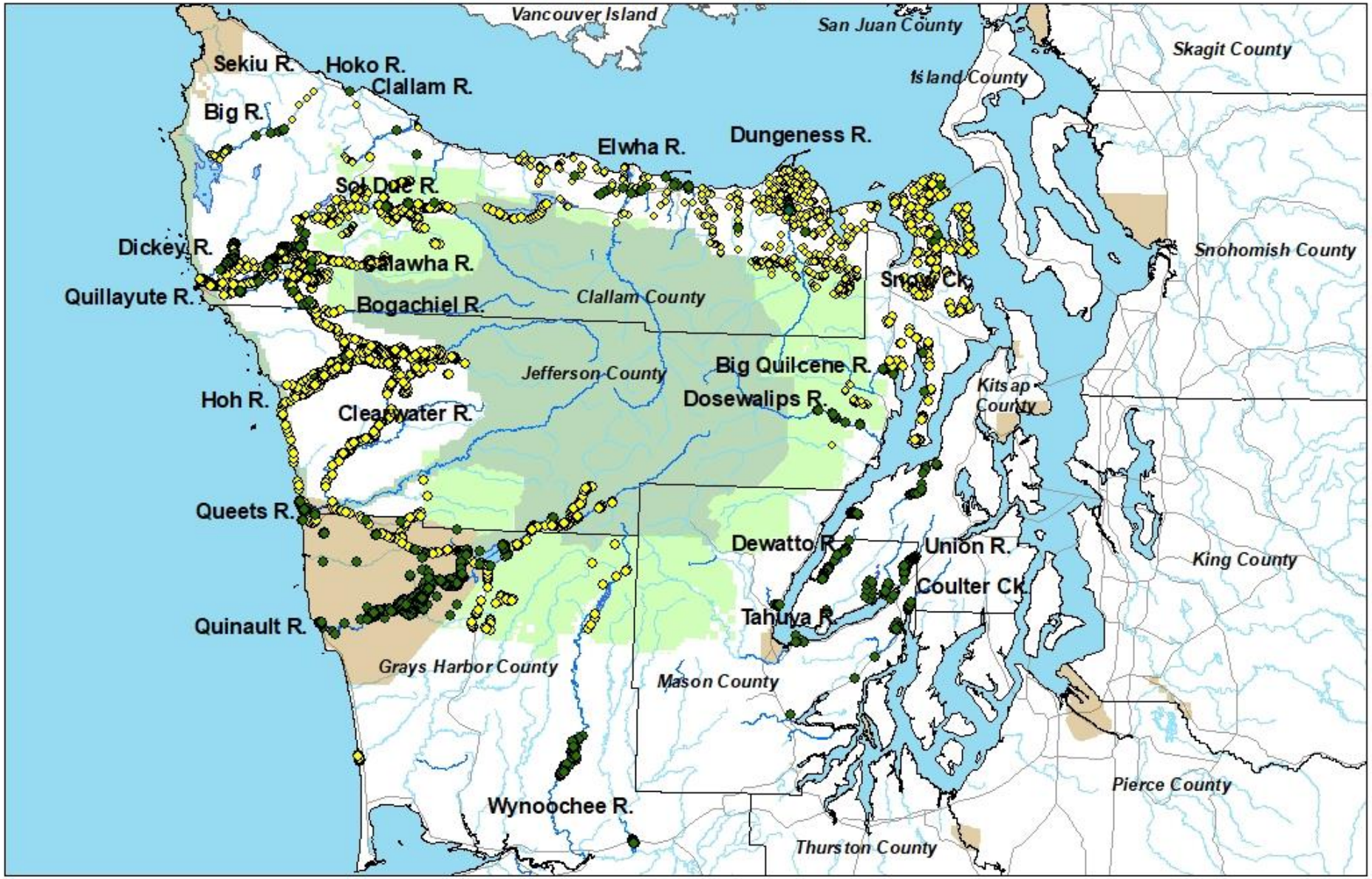
- In Kitsap County- **1** entities on **3** waterway managed **69** landowner agreements and obtained **2** new agreements. Knotweed was treated on **0.60** acres over **5.84** river miles.

- In Grays Harbor- **3** entities on **2** waterways managed **62** landowner agreements and obtained **29** new agreements. Knotweed and other invasives were treated on **1,557.93** acres over **50.17** river and road miles.

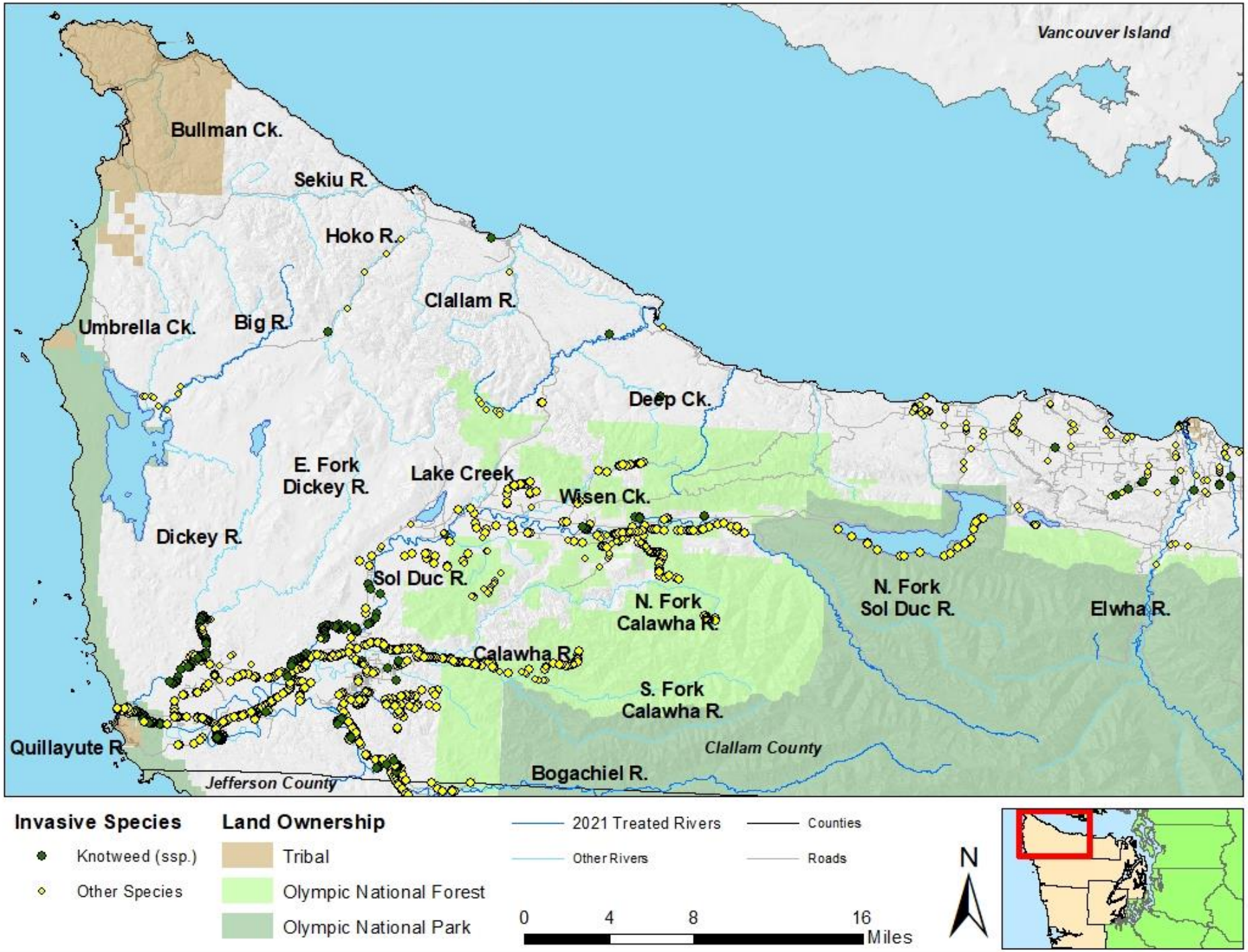
2021 Observations and Recommendations

- Partners reported returning to a new “normal” working condition. Crews were able to work together and different entities could again team up to treat invasive species.
- The reduction in the quantity of knotweed surveyed in 2021 was shared by many of the partners.
- While some partners were able to hire additional staff, others were having difficulty finding contract personnel to complete treatments. Overall, it appears that everyone was able to conduct surveys and treat areas that were in their 2021 goals.
- Infestations of knotweed and invasive species on roadsides and areas outside of the riparian areas may act as sources or vectors; many partners have expanded their efforts to roadsides and upland areas and should continue to do so.
- Partners should be certain to communicate and collaborate with entities operating in overlapping areas of activity.
- Partners should be sure to actively share infestation information across watersheds.

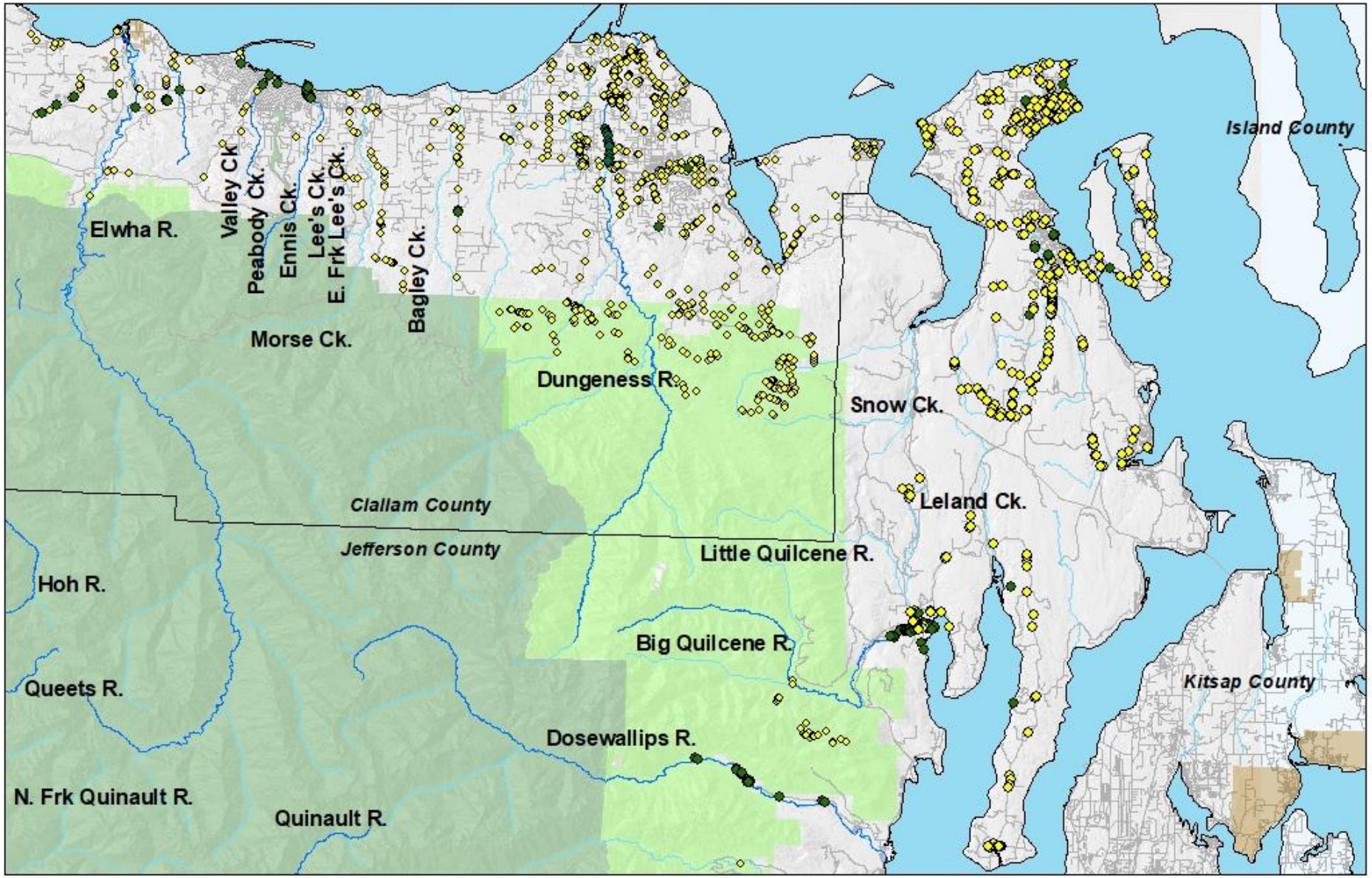
Overview Map of the Olympic Peninsula



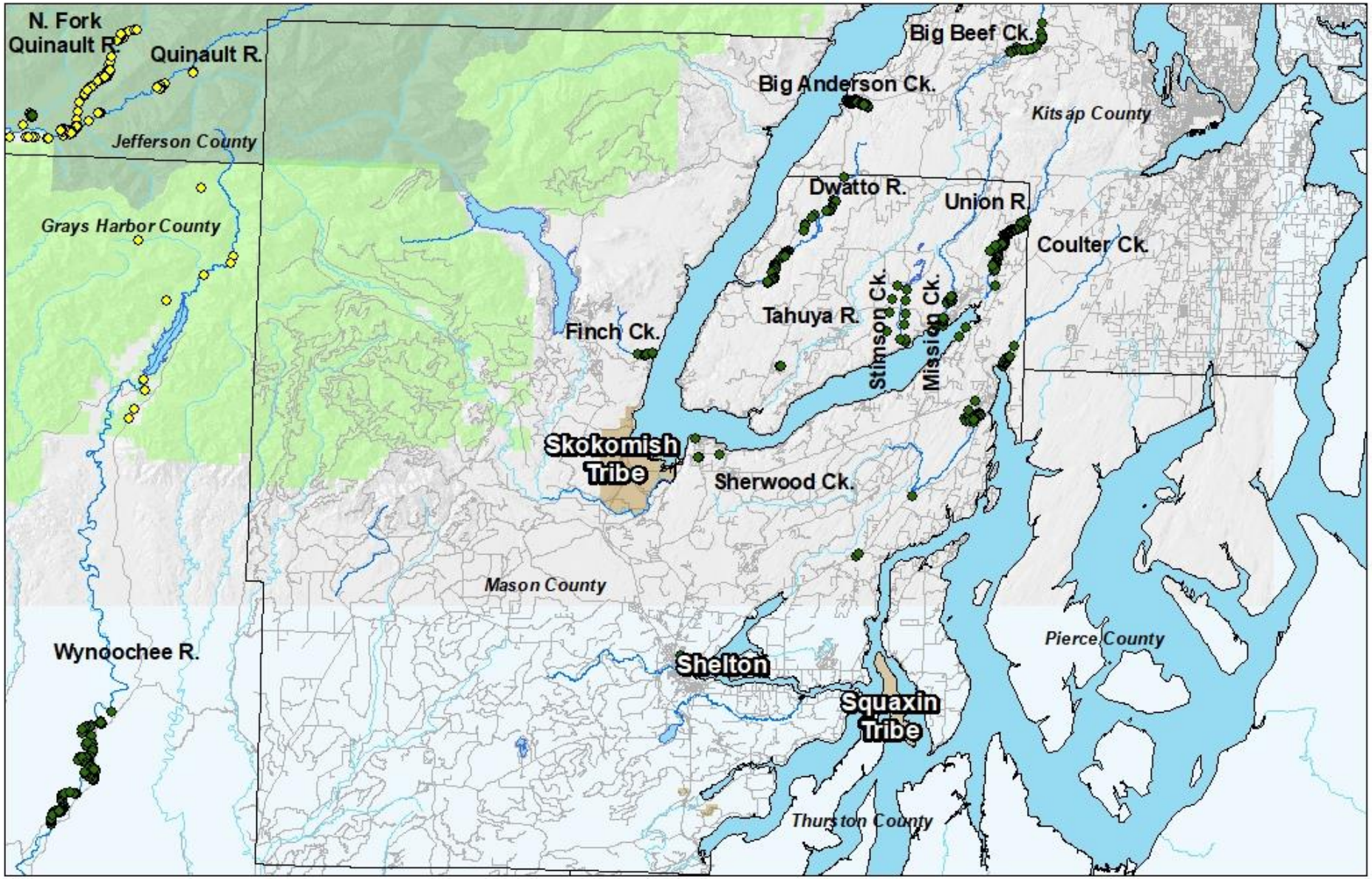
Overview Map of West Clallam County



Overview Map of East Clallam and East Jefferson Counties

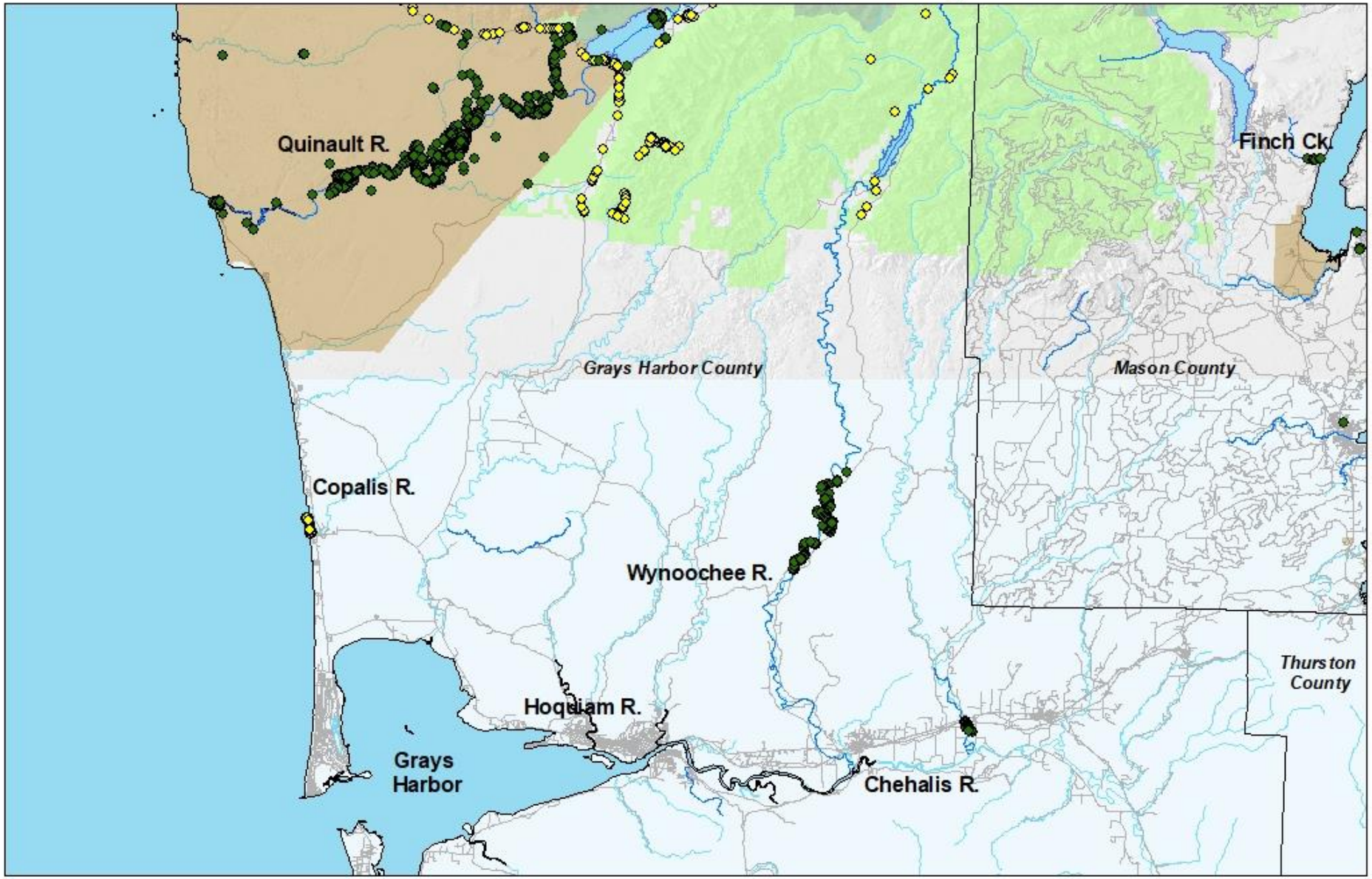


Overview Map of Mason and Kitsap Counties

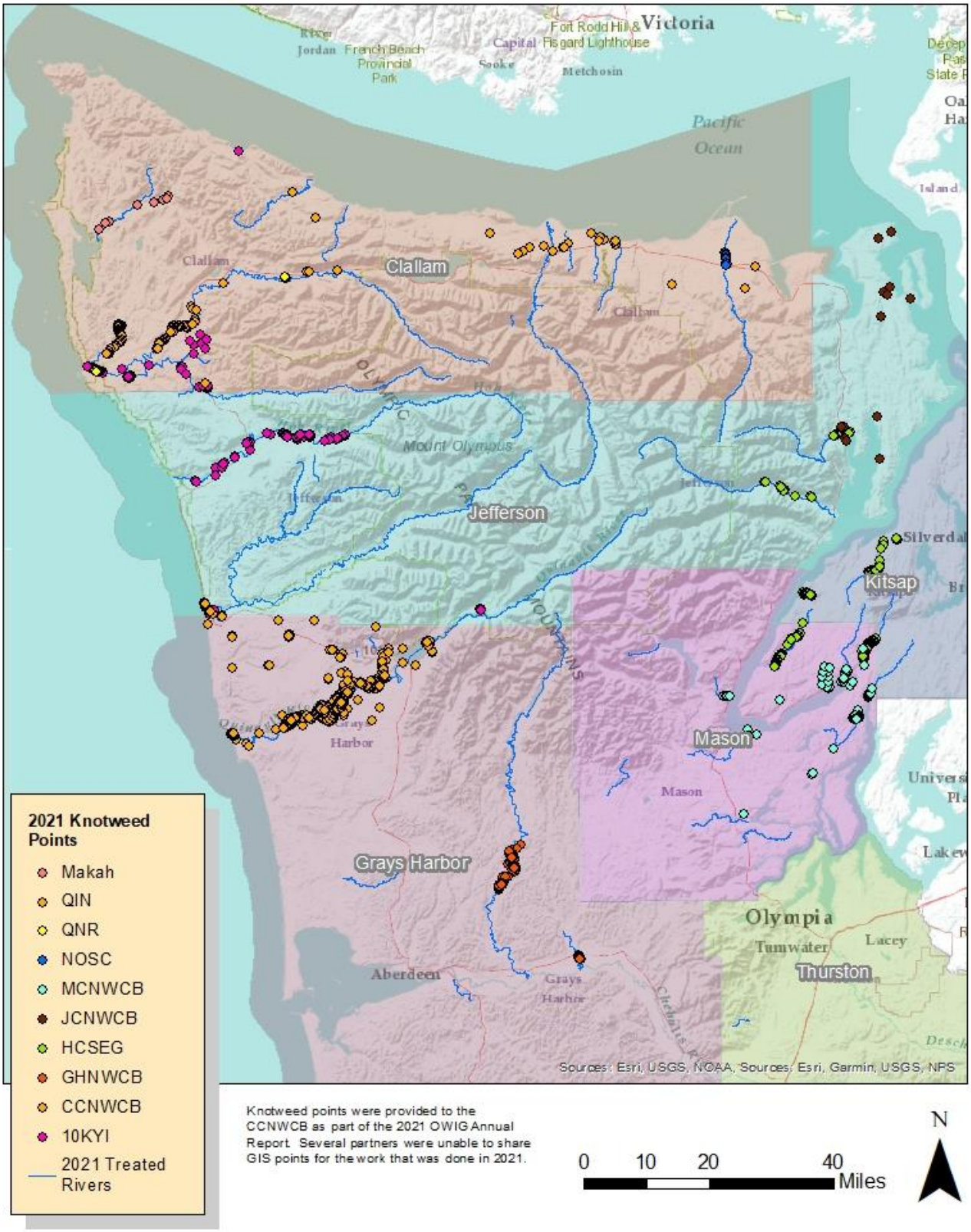


Overview Map of West Jefferson County

Overview Map of Grays Harbor County



2021 OIWG Partner Knotweed Points



PROJECT DESCRIPTION

Project Goal

The goal of this project is to protect the natural resources, ecosystem functions and land values in the Olympic Peninsula from the negative impacts of invasive knotweed and other non-native plants. Project areas are chosen for their high significance to fish and wildlife or the natural resource value to the public or tribes.

Project Overview

The Olympic Invasives Working Group (OIWG) is a loose-knit consortium of governments, tribes, non-profits and private landowners working together to eliminate knotweed and control invasive plants across the Olympic Peninsula. The group was initially formed in 2005 to facilitate large-scale, collaborative efforts to control riparian knotweed and has developed to include the control of additional invasive weeds. The group meets twice a year to exchange information, strategize control work across organizational or jurisdictional boundaries, and host training seminars.

Clallam Noxious Weed Control Board (CCNWCB), as the de facto group leader, coordinates the meetings and supports the group in various ways, including; acquiring landowner agreements, distributing herbicide, coordinating projects, and in some cases supplying a licensed aquatic applicator on site. CCNWCB's role is to "fill in the gaps" to control invasive weeds in areas not otherwise covered and educate the public on the impacts of invasive plants and best management techniques.

Our partners have sought and received independent funding and the control of knotweed and invasive plants continues to expand in all four Peninsula Counties. This report attempts to give a broad overview of work occurring across the entire Olympic Peninsula as information is provided. This report serves as a repository and we have tried to collect as much information about these projects as possible. A brief summary giving historic perspective is included, as available, to show the changes and progress the made over time.

2021 PROJECT ACTIVITIES

Landowner Contacts and Agreements - (as reported to CCNWCB) All landowners were contacted in person, by letter/email or phone prior to 2021 season treatments.

Clallam County

- Clallam County Noxious Weed Control Board (CCNWCB) - managed **212 Landowner Agreements**, including 2**8 new** Landowner Agreements.
- North Olympic Salmon Coalition (NOSC) managed **78 Landowner Agreements**, including **8 new** Landowner Agreements.
- Quileute Tribe-Natural Resources (QNR) managed **6 Landowner Agreements** including **2 new** Landowner Agreements.
- Makah Tribe-Natural Resources (Makah) managed **2 Landowner Agreements**.
- Lower Elwha Tribe (LEKT) managed **3 Landowner Agreements**.
- The 10,000 Years Institute (10KYI) managed **26 Landowner Agreements,** including **4 new** Landowner Agreements.

Jefferson County

- Hood Canal Salmon Enhancement Group (HCSEG) managed **60 Landowner Agreements**.
- 10KYI managed **40 Landowner Agreements**, including **2 new** Landowner Agreements.
- Jefferson NWCB managed 4 **Landowner Agreements**.

Mason County

- Mason County Noxious Weed Control Board (MCNWCB)-managed **128 Landowner Agreements,** including **12 new** Landowner Agreements.
- HCSEG managed **147 Landowner Agreements**, including **5 new** Landowner Agreements.

Kitsap County

- HCSEG managed **69 Landowner Agreements,** including **2 new** Landowner Agreements.
- Specific information regarding Kitsap NWCB landowner contact activity is not available.

Grays Harbor County

- Grays Harbor NWCB managed **59 Landowner Agreements**, including **26 new Landowner Agreements**.
- 10KYI managed **2 Landowner Agreements**, including **2 new** Landowner Agreements.
-

Survey and Treatment*:*

This list summarizes knotweed and invasive control work accomplished in 2021 by members of the Olympic Invasives Working Group (OIWG) as reported to CCNWCB.

Each county is ordered geographically in a clockwise direction, starting in southwest Clallam County, and locations treated within each county are similarly organized. River miles include both sides of the river bank, if surveyed and/or treated, and acreage is defined as area surveyed and/or treated. For more detailed information, see specific watershed narrative or summary in Table I.

Clallam County

- **City of Forks/Mill Creek**: Re-inventoried knotweed infestations and sent permission requests [CCNWCB].
- **Dickey River:** Treated **5.15 miles** (**75.8 acres**) for knotweed [QNR & CCNWCB], treated **1.4 road miles** (**5.8 acres**) for non-knotweed invasive species [CCNWCB].
- **Calawah River:** Treated **30.9 road miles** (**171.78 acres**) for knotweed and invasive species [10KYI].
- **Bogachiel River:** Treated **0.84 river miles (96.4 acres) and 36.36 road miles** (**135.24 acres**) for knotweed and invasive species [10KYI]
- **Quillayute River:** Treated **.95 miles** (**0.5 acres**) for knotweed and invasive species [QNR], treated **17.2 road miles** (**2.4 acres**) and **2.6 river** miles (**54.05 acres**) for knotweed and invasives [10KYI].
- **Sol Duc River:** Treated **9.2 river miles** (**97.1 acres**) for knotweed and other invasives [CCNWCB] and **0.6 river miles** (**.09 acres**) for non-knotweed invasives [QNR]. **0.08 river miles (2.46 acres) and 111.9 road miles** for invasive species [10KYI]
- **Big River:** Re-treated **0.5 miles** (**1.6 acres**) for knotweed [Makah Tribe]
- **Hoko River:** Treated 0.64 **road acres** for knotweed [Makah Tribe].
- **Deep Creek:** Treated **5 acres** for knotweed and other invasives [LEKT].
- **Elwha River:** Treated **0.5 river miles** (**12 acres)** for knotweed [LEKT]**.**
- **Valley Creek:** Treated along **0.64 river miles** (**0.004 acres**) for knotweed and invasive species [CCNWCB].
- **Ennis Creek:** Treated along **0.63 river miles** (**10.3 acres**) for knotweed and invasive species [CCNWCB].
- **Dungeness River:** Treated **4.5 river miles (90.3 acres)** for knotweed and invasive species [NOSC, WCC], treated **0.002 acres** for knotweed [CCNWCB]
- **Dry Creek:** Treated **.22 river miles ((0.45 acres)** for knotweed and invasive species [CCNWCB], treated **0.5 acres** for knotweed and other invasive species [LEKT].
- **Pysht: Treated .01 acres** for knotweed and other invasive species
- **Clallam County Sites within WRIA 18, 19, 20:** Treated high priority invasive species, including knotweed along **171 miles** (**375 acres**) of Clallam County roads.

Jefferson County (Starting in East Jefferson)

- **Big Quilcene River:** Treated along **2.2 miles** (**0.05 acres**) for knotweed and other species [HCSEG, WCC].
- **Dosewallips:** Treated along **7.35 miles** (**0.003 acres**) for knotweed and other species [HCSEG, WCC].
- **Queets River:** Treated along **45.2 road miles (58 acres)** and **0.83 river miles** (**11 acres**) for knotweed and other invasive species [10KYI].
- **Clearwater River:** Treated along **12.4 road miles** (**51.54 acres**) for non- knotweed invasive species [10KYI].
- **Snahapish River:** Treated along **9.49 road miles** (**149.98 acres**) for non-knotweed invasives [10KYI].
- **Hoh River and Tributaries:** Treated **26.39 river miles (1,124 acres) 91.56 road miles** (**47.48 acres**) for knotweed and invasive species [10KYI].
- **Upper Quinault River:** Treated **7.94 river miles (2.27 acres)** and **77.86 road miles (0.05 acres)** for knotweed and other invasive species [10KYI]
- **Others:** Treated 0.05 acres for knotweed and other invasive species [JCNWCB/WCC & NOSC/JCP].

Mason County:

- **Union River/Watershed:** Treated along **3.17 miles** (**0.8 acres**) for knotweed and invasive species [HCSEG/ WCC].
- **Dewatto River:** Treated along **10.43 river miles** (**0.12 acres**) for knotweed and invasive species [HCSEG, WCC].
- **Mission Creek:** Treated along **1.78 river miles** (**4.26 acres**) [MCNWCB].
- **Hood Canal Watershed:** Treated **0.02 acres** for knotweed [MCNWCB].
- **Sherwood Creek/Anderson Creek**: Treated **2.5 river miles** (**5.94 acres**) for knotweed [MCNWCB].
- **Finch Creek**: Treated along **0.48 river miles** (**0.42 acres**) for knotweed [MCNWCB].
- **Stimson Creek:** Treated along **2.28 river miles** (**2.46 acres**) for knotweed [MCNWCB].
- **Coulter Creek:** Treated along **0.96 river miles** (**0.66 acres**) for knotweed [MCNWCB].
- **Little Anderson Creek:** Treated **1.08 river miles (0.04 acres**) [HCSEG/WCC].
- **Mason County Sites within WRIA 14, 15, 16:** Treated **0.37 acres** for knotweed [MCNWCB].

- **Skokomish River:** Treated along **6.68 river miles (335.07 acres)** for knotweed [MCD]
- **Mill Creek:** Treated along **0.01 river miles (0.002 acres)** for knotweed [MCD]
- **Goldsborough Creek:** Treated **along 0.41 river miles (0.94 acres)** for knotweed [MCD]

Kitsap County

- **Big Anderson Creek:** Treated along **1.1 miles** (**0.58 acres**) for knotweed and invasive species [HCSEG/ WCC].
- **Big Beef Creek:** Treated along **4.74 mile** (**0.023 acres**) for knotweed and invasive species [HCSEG/WCC].

Grays Harbor County

- **Wynoochee River:** Treated along **15 miles** (**81.5 acres**) for knotweed [GHCNWCB/Brittlind Co.], treated **25.5 road miles** for invasive species [10KYI].
- **Satsop River (lower, east fork & west fork:** Treated along **2.97 river miles** (**14.6 acres**) for knotweed and invasive species [GHNWCB/WCC/Brittlind Co.].
- **Humptulips River:** Treated **5.8 road miles** for other invasive species [10KYI].
- **Quinault Reservation**: Treated **1,450 acres** of knotweed and other invasive species [QIN/Total Vegetation Mgt. LLC/Brittlin Co.].
- **North Beach**: Treated **0.9 shoreline miles (4.83 acres)** for other invasive species [10KYI].
- **Terrestrial Sites**: Treated **7.034 acres** for knotweed **[GHNWCB].**

Public Agencies Assisted

In Clallam and Jefferson Counties—treated land owned by **2 federal entities** (US Forest Service and Olympic National Park), **4 state agencies** (WA State Parks, WA Department of Natural Resources, WA Department of Fish and Wildlife, WA State Department of Transportation), and **4 local governments** (City of Port Angeles**,** City of Port Townsend, Clallam County, and Jefferson County).

Data Management and Documentation:

- CCNWCB collected waypoints and tracklogs with Garmin GPS equipment, and/or collected and submitted site information using smartphone functions and WSDA IForm.
- CNWCB collected as much partner data as possible and submitted all shapefiles to WSDA to be added to their state-wide database.
- CCNWCB maintained a Knotweed Projects Database, which consists of GIS data points given to them by the OIWG Partners. The database also consists of River Notes describing work done on each river and watershed.
- The CCNWCB applied for National Pollution and Discharge Elimination System (NPDES) permits and completed all necessary reporting. Each entity treating near water obtained and reported under individual NPDES permits.

Outreach and Training:

- The CCNWB continued to contact and coordinate with other member of the Olympic Invasives Working Group but, unfortunately, we were not able to meet in person this year due to Covid-19 precautions and associated limitations. A remote meeting is being considered for February.
- The CCNWCB conducted multiple trainings for landowners and volunteers including Clallam County Streamkeepers and Jefferson County Stream Stewards.
- 10KYI Presented at the 2021 Scotch Broom Ecology and Management Symposium.
- 10KYI Presented at Middle Hoh Resiliency Plan Leadership and Steering Committee meetings.
- 10KYI Presented at the Washington Salmon Recovery Conference.
- 10KYI Presented at the North Pacific Coast Lead Entity meetings.
- 10KYI Presented at the North Pacific Marine Resource Committee meetings.
- 10KYI Presented at the Society for Freshwater Science Annual Meeting.
- 10KYI Presented at the Quillayute River Reach Working Group meetings.
- GHNWCB teamed with 10KYI, WSU and WSDA to host pesticide training and testing course.
- GHNWCB taught classes for the Master Gardeners.
- GHNWCB wrote an article on fall weed control for the WSU Forestry Stewardship Notes.
- GHNWCB attended two outreach events.
- MCNWCB sent postcards to 78 property owners seeking support for their knotweed control efforts along Mission and Little Mission Creeks.
- CCNWCB staff distributed information on the Knotweed Program to the public when possible**.**
- CCNWCB was interviewed by KNOP radio to share the Weed Board's mission and highlights**.**
- LEKT held four educational work parties which focused on the manual removal of herb Robert**.**

2021 PROJECT PROTOCOLS

1. Surveys and Monitoring
CCNWCB surveys, treatments and monitoring took place from July 15th through October 15th. Surveys were conducted by auto, foot, and by boat.

2. Project Teams
Teams were comprised of a minimum of one licensed aquatic applicator (LAQ), and typically 2-6 crew members.

- **The Quileute Tribe Natural Resources crew (QNR)**, led by Keith Penn (LAQ), treated knotweed along the Dickey River, Quillayute River, and Sol Duc River.
- **The Makah Tribe (Makah)** led by Shannon Murphie (LAQ) and Katie McLean, treated knotweed sites on the Big River and Hoko Rd.
- **The Clallam County NWCB (CCNWCB)**, consisting of (in various configurations) Cathy Lucero (LAQ), Joseph Reynolds (LAQ), Todd Coward (LAQ), Hunter Kawie, and Austin Pelayo worked on the Dickey River, Dry Creek, Dungeness River, Ennis Creek, Sol Duc River, Pysht River, and Valley Creek, as well as roadsides and quarries with knotweed across Clallam County.
- **The East Jefferson WCC with the North Olympic Salmon Coalition (NOSC)**, the WCC lead worked on the Dungeness River.
- **The Lower Elwha Klallam Tribe (LEKT),** Allyce Miller (LAQ) treated Deep Creek and the Elwha River.
- **The Hood Canal Salmon Enhancement Group (HCSEG)** lead by Alex Papiez (LAQ) **and WCC** led by Darrell Borden treated along the Big Quilcene River, Big Anderson Creek, Dewatto River, Union River, Dosewallips River, and Big Beef Creek. HCSEG and Great Peninsula Conservancy treated along the Little Anderson Creek.
- **Mason County NWCB (MCNWCB)** consisting of Pat Grover (LAQ) treated invasives on Stimson Creek, Mission Creek, Hood Canal Watershed Basin, Finch Creek, Coulter Creek, Sherwood/Anderson Creeks and various other sites in WRIAs 14 & 15.
- **The 10,000 Years Institute (10KYI)**, led by Jill Silver (LAQ) worked in multiple watersheds including Queets, Quinault, and Quillayute, Calawah, Bogachiel, Sol Duc, Hoh, and Snahapish Rivers, Upper Quinault, and surrounding roads and highways.
- **The Grays Harbor County Noxious Weed Control Board (GHCNWCB)**, led by Kiley Smith (LAQ) teamed with Brittlind Co. to treat knotweed and invasives along the Wynoochee River and worked with WCC and Brittlind CO. on the Satsop River. GHNWCB also treated various terrestrial site throughout the Grays Harbor County.
- **The Jefferson County Noxious Weed Control Board (JCNWCB),** worked with Greg Dunbar of WCC to treat various sites in Jefferson County. Elena Smith of JCNWCB worked with Greg Dunbar of WCC, NOSC and Jefferson County Parks to treat Otter Creek and Irondale Beach County Park
- **Mason Conservation District (MCD)** led by Marissa Newby (LAQ) treated knotweed on the Skokomish River, Mill Creek and Goldsborough Creek**.**

3. Invasive Species Surveyed or Treated
Bohemian knotweed (Polygonum bohemicum) was the dominant knotweed species of concern. The next most common species was giant knotweed *(Polygonum sachalinense).* Only a few sites contained Japanese knotweed *(Polygonum cuspidatum).* No Himalayan knotweed was reported this year. Depending on the funding source and project focus, crews treated infestations of over 40 other invasives species such as giant hogweed, butterfly bush, reed canary grass, herb Robert, Canada thistle, perennial pepperweed, perennial sowthistle, poison hemlock, and yellow archangel. Shiny geranium, tansy ragwort and bittersweet nightshade were other invasive weeds that were treated by the Partners in the course of controlling knotweed.

4. Data Collection & Equipment
Electronic data is collected differently depending on funding and technical capacity of each group. Data collection parameters listed are those used by the CCNWCB; other entities may utilize different guidelines for their data collection. Some data collection systems currently in use used are described below.

- A recreational grade GPS unit (Garmin 78 CX loaded with Hunt GPS maps) with track log enabled was used to keep track of null surveys (sites that crew visited but found no knotweed). Waypoints were gathered to mark sites where knotweed was found and treated. This data collection technique was utilized by CCNWCB; data of other entities that used this method in 2020 is not available.
- The Clallam and Mason County's NWCBs also used Washington State Department of Agriculture's data collection system using the cell phone app IForm, powered through ESRI. IForm was developed by the Washington State Department of Agriculture and allows for weed data points to be recorded and stored in an online server. Using iForm and its map accompaniment, ArcCollector, users are able to see previous

weed data and treatment points. Weed data fields included species, infestation size, cover class, ownership type, site type, status of control, as well as optional fields for notes and images. iForm data is available for local download and conversion into shape files. The version we use does not allow for the collection of track logs. Other entities may have used versions of ArcCollector without the use of iForm. Different entities collected different fields-which is not available at the time of this writing.

- A Trimble GEO XT instrument, using the "Data Dictionary" developed by the Olympic Invasives Working Group (OKIG) and using Pathfinder software for post-processing. A copy is available.
    - The Data Dictionary contains the following required fields: Agency Name, Collector, GIS Projection Reference, Site ID, Species of Knotweed, Cluster Type, Average Stem Height, Stem Count, Phenology, Site Type and Action.
    - The following fields are optional: Herbicide, Surfactant, Treatment, Ownership, Canopy, Substrate, Plant Erosion Potential, Site Erosion Potential, Area, Unit, and Comments. Date and Time fields.
    - Information on entities that used this method in 2019 is not available.
- Waypoints collected with GPS units during surveys were converted into shapefiles, and added as layers to county parcel map.
- CCNWCB crews used the track log function in their GPS devices. Office staff downloaded the track logs to identify surveyed parcels that did not have knotweed.
- Herbicide use in watersheds from year to year has been tracked as data reported to us. In previous years, herbicide use has been used as a proxy for change in biomass to help measure treatment efficacy. Due to changes in herbicide rates and formulations, this is no longer as directly comparable in many cases. This method of measuring effectiveness is only used when we have the necessary treatment details to make a comparison. Herbicide quantity and active ingredient, when available, is included in the section "Project Activities by Watershed". Overall use will no longer be tracked in an appendix as in previous years.
- All survey and treatment data collected by Clallam County NWCB was added to a knotweed database. This database facilitates tracking of landowner contacts, agreement expiration, treatments, site status and monitoring. Beginning in 2014, treatments of additional invasive plants were included as a separate infestation record.
- The CCNWCB sends out a form to encourage uniform data collection (see Appendix II) that meets the WSDA's reporting standards, updated in 2014. There continues to be some reporting inconsistencies between entities.

  Definitions-per WSDA protocol as of 2017*, for all Clallam County NWCB records,*

  Examined acres-includes area searched and treated. Area was determined by the following formula: acres =length (of river corridor) in feet X width in feet of area searched /43560 (ft^2 in acre). Unless known to be otherwise, it was assumed that crews searched a minimum of a 50 foot corridor along the river.

  Treated acres-includes the gross area where plants were actually treated; does not include area searched in which plants were not found. Acres were determined from the length X width as above-taken from GPS track logs, waypoints, and spray records.

  Solid acres-based on the average calibration of individual backpack sprayers which, in 2017 averaged around 40 gallons/acre, we assumed that each gallon of mixed product would treat approximately 1000 ft^2. (Gallons of solution used per treatment X 1000)/43560 was the formula we used to calculate this total.

  Protected River Miles-was calculated by measuring the length of track logs in GIS.

5. Landowner Contacts and Agreement Management

- Landowner contact information was extracted from the county parcel database.
- Landowner Agreements were solicited by phone, letter, face-to-face contact or email.
- Standard Landowner Permission forms produced by WSDA were used and CCNWCB staff explained to landowners that they could cancel the agreement at any time.
- Landowners were contacted when the five year agreements were expiring.
- Property ownership was monitored so that new agreements could be solicited when ownership changed.
- Landowners were contacted before their property was accessed for survey or treatment.
- Landowner information was entered into a knotweed database, including contact information, site information and dates of agreement signature and expiration. The knotweed database also held narratives of all contacts with landowners, survey and treatment dates, and herbicide usage.
- Staff acquired Landowner Agreements from January through October.

6. Permits

- CCNWCB obtained a NPDES permit from WSDA for waterways and species of concern.
- Crews followed all posting and notification requirements as outlined in the permit.

- The total amount of herbicide used by CCNWCB under an NPDES permit was submitted on-line to WSDA at the end of the treatment season.

7. Treatment, Equipment, and Rate- ***NOTE:*** Additional herbicides, rates and methods used to control non-knotweed invasives are not outlined here.

*****To avoid promoting particular brand names, herbicide use by waterway in this document is listed by the active ingredient in the herbicide, the volume of the herbicide concentration used, and the rate of concentration at which the herbicide was applied. Wherever volume of "X" active ingredient is listed for the herbicide used, it should be interpreted as volume of "herbicide containing X as the active ingredient," Actual volume of active ingredient can vary by brand of herbicide.

Foliar—may be used on any site; other options for specific uses are listed below.

Equipment- low pressure, 4 gallon backpack sprayers.

Application Rate-variable,

- Up to 2% of aquatic imazapyr solution, 1% surfactant, marker dye
- Up to 6% solution of aquatic glyphosate, 1% surfactant, marker dye
- Combination of up to 4% solution aquatic glyphosate and 1%imazapyr, 1% surfactant, marker dye

Application method- spray to wet.

Injection—uses may include small sites, during inclement weather or where knotweed is mixed with desirable species, or other sites where high selectivity is critical. Canes must be at least ½ inch in diameter.
(In 2021, the Hood Canal Salmon Enhancement Group and Mason County NWCB used this method for specialized applications).

Equipment- "JK Injection Systems" injection guns.

Application rate

- 3 ml of concentrated glyphosate per cane (no surfactants or dyes). Glyphosate formulations must be approved for this method.

Application method- Knotweed canes exceeding ½ inch in diameter are injected with herbicide in a lower internode using a short injection needle. If pressure is encountered, an additional hole is punched near the top of the internode to allow air to escape as herbicide is put in. Treated canes are marked with paint to prevent retreatment.

Cut-stump —for treatment of certain woody invasive species, not used on knotweed

Equipment- brush or squirt bottle

Application rate

- 50% - 100% Glyphosate

Application method- Applied directly to the cambium layer immediately after cutting mainstem

Wipe—for small sprouts or highly selective treatments
(In 2021, no entity reported use of this method).

Equipment-foam paint brush. .

Application Rate

- 33% glyphosate solution with 10% surfactant, by volume, (or as allowed by label)

Application method Wipe herbicide onto the surface of leaves and stems. Or, cut each cane to height of three feet, wipe all sides of stem.

8. Records

- Crews filled out a WSDA approved Pesticide Application Record for each herbicide treatment. We retain original copies of Pesticide Application Records for at least seven years, as required by law.

OBSERVATIONS AND CONCLUSIONS 2021-By Organization

- [10KYI] Extreme heat in July accelerated plant maturation and senescence, decreasing reed canary grass and knotweed treatment periods by about two to three weeks. Unusually heavy rain in late-October and November interfered with late-season spray treatments for knotweed and herb Robert. Partnerships were expanded, communities more deeply engaged, additional projects were developed, and funding was obtained to continue invasive plant management and applied research.
- [LEKT] Although just a crew of one person, noted less knotweed than years prior. Only one new knotweed site found. Four known populations were non-existent this year on the Elwha River.
- [GHCNWCB] Our treatment efficacy in the upper Wynoochee after 2 years of treatments averaged about 98%.
- [HCSEG]The Dosewallips River has the lowest solid acres of knotweed out of all 6 rivers treated. The 2021 season marked a return to regular operations under a “new normal”. Progress continues to be made on all rivers despite varying levels of infestation. The most notable are Dosewallips River and Big Quilcene River. Although it was the first year of treatment since 2018 on the Big Beef Creek, the isolated nature and large stem sizes of the knotweed allowed the crew to inject and spray a large percentage of the treated patches. Because of this we are expecting a large decrease in knotweed abundance and density in 2022.
- [JCNWCB} The infestation on Toandos peninsula was new. Three new non-riparian knotweed sites also discovered but are untreated in 2021 due to landowner non-compliance or inability to treat.
- [Makah Tribe] We were able to continue successfully treating and planting native trees at several restoration sites on Big River. Knotweed infestations at these sites are almost completely gone. We continue to see noticeable differences at our restoration sites with fewer and smaller plants. One of the three sites had no knotweed treated at it.
- [MCNWCB] A knotweed success story is the ongoing project, “Evaluation of diquat for invasive knotweed control” led by David Heimer (WDFW) and Lauren Kuehne (Omfischient Consulting). A Green Diamond owned parcel in WRIA 14 with a large knotweed infestation was suggested by MCNWCB as a potential trial location for the diquat study. The study, “will use diquat, an aquatically-approved contact herbicide, to burn down spring growth in an effort to stimulate dormant bud emergence for a later treatment with the systemic herbicide, imazapyr” (WA State Commission of Pesticide Registration Application Form). Utilizing an Earth Corps crew provided by the WSDNR Aquatic Invasive Species Program, staff completed an experimental knotweed control method on a local Belfair, WA farm in which 0.018 infested acres of knotweed were covered with wire mesh in order to girdle future growth. A resident at the farm will periodically send photos of the mesh in order to determine how effective this method is.
- [QNR] This year we maintained a multi-species top-down approach to our treatments with a primary focus on knotweed species - Japanese, giant, and Bohemian, but also treated Himalayan and evergreen blackberry, purple loosestrife, tansy ragwort, Canada thistle, Scotch broom, and herb Robert.to the mouth of the Dickey River in the Quillayute Mainstem. Though limited in capacity to treat as effectively as previous years, ultimately preventative measures were taken to limit further spread. Based on previous year’s data, there appeared to be a decrease in size and frequency but starting later in the season also allowed for species to grow larger than desired.
- [QIN] More funding available than crewmembers to available to work. Contractors had trouble hiring temporary positions and it was difficult to get the people they did have working on the QIR. They had several other clients that they seemed to prioritize over the QIR project.
- [CCNWCB] We were able to gain permission to treat the lower end of Ennis Creek and survey over 51.7 acres. Because of high water level, we had to traverse the river by climbing into the woods. We discovered more knotweed outside of the normal channel area. Staffing issues and a late start hampered many of the follow up treatments that were scheduled for 2021.

- [MCD] were able to treat 33.5 new acres of knotweed across the three watersheds. Acquired permission on a property that we had never been allowed to treat before. This treatment will help gain more control of the infestation down river from it.

2022 PROJECT PRIORITIES INCLUDE

(as identified by individual partners):

In **West Clallam County**

- [Makah]We are planning to treat all of Big River next year, as there are several growing infestations.
- [QNR]Survey other areas within Quillayute River System that were limited this year due to extenuating circumstances.
- [CCNWCB] Team up with Partners to continue surveys of the Sol Duc River, the Dickey River and the Bogachiel River.

In **Central Clallam County**

- [CCNWCB] Follow up surveys to the areas treated in 2020. These areas include Bagley Creek, Peabody Creek and Ennis Creek.

In **East Clallam County**

- [CCNWCB] We will continue to survey and treat knotweed along the Dungeness River, Dean Creek and Bell Creek.

In **East Jefferson County**

- [JCNWCB] We recommended to the County Parks and NOSC to treat reoccurring Irondale Beach knotweed with Imazapyr in 2022 if possible, as it may have been treated with glyphosate year after year with varying effectiveness. We plan to use funds in 2022 to purchase backpack sprayers and related equipment, and additional herbicides as needed.
- [HCSEG] Renew current Knotweed MOU with Jefferson County and to expand the provisions.
- [HCSEG Dosewallips State Park will be a high priority for butterfly bush.

In **Kitsap County**

- [HCSEG] Surveying along the Big Beef Creek. IT has not been treated since 2018, but we are expecting a large decrease in knotweed abundance and density in 2022.

In **Mason County**

- [MCNWCB] The highest priority for treatment in 2022 will be the Mission Creek watershed as it contains the most heavily infested reaches. The program continues to build on waivers received, as neighbors are encouraged to participate by other neighbors. A combination of door knocking, unique letters, mass mailings, and encouragement of neighbor-to-neighbor communication will hopefully result in new permissions prior to the 2022 field season.
- [HCSEG] will continue to conduct outreach to gain landowner consent on the Tahuya River, to allow for a full knotweed treatment during 2022. HCSEG will begin collecting spatial data on all knotweed occurring on SR 300, SR 106, and Highway 101. Once collected HCSEG will overlay this on a parcel map for each county and hopefully work with OIWG members to contact appropriate landowners and conduct treatment.

In **Grays Harbor County**

- Make clear with the contractors that they need to dedicate crews and get people hired otherwise we won't be able to complete necessary work.

In **West Jefferson County**

- (10KYI) Continue working with project partners, road managers, and on infested gravel mines to develop and integrate best management practices to prevent the spread of invasive plants (e.g., using weed-free materials, equipment and vehicle wash stations, limiting the spread of infested soil).

RECOMENDATIONS

- Conduct pre-season communication and planning with other project managers to promote more cross boundary project opportunities.
- Update Best Management Practice documents. Consult with other knotweed control programs and WSDA before publication.
- Share GPS data collection tools, protocols and to take advantage of any technology updates.
- Discuss reporting protocols. Update *data request form* and make use of standardized formulas to normalize data received from partners. The added ability to record, view and track data using smartphone technology is a great benefit to partners and field crews. The ability to create custom data fields and tracking methods is extremely useful; however shared data must include sufficient definitions.
- Share relevant data including maps with "public view" capability to improve in-field awareness of project areas and where work is being conducted on a landscape scale.
- Perform Early Detection and Intervention of additional invasive species in conjunction with knotweed treatments where there is sufficient time and resources.
- Poll working group members for a needs assessment.
- Continue to incorporate information about other invasives in our working group meetings.
- Continue updating the CCNWCB web page to include information highlighting work by partners, including contact information.
- Continue to engage and encourage timber companies to increase their involvement in monitoring, prevention and treatment of terrestrial sites, especially rock sources.
- Seek and further define contracting standards that include control and prevention of invasive plant species.
- Increase outreach with hunters, fishers and other recreationists for Early Detection, Rapid Response of invasive species.
- Continue treatment of invasive species within the developed Clallam County Integrated Weed Management Roadside Program. Many county roads are in close proximity to riparian areas and can be a source of invasive plants to spread into riparian corridors. Encourage this strategy in other counties.

PARTICIPATING GROUPS

Clallam County Noxious Weed Control Board
Clallam County Road Department
Clallam County Department of Community Development
Clallam Conservation District
City of Port Angeles
Grays Harbor Noxious Weed Control Board
Grays Harbor County Road Department
Jefferson County Noxious Weed Control Board
Mason County Noxious Weed Control Board
Mason Conservation District
WA State Department of Natural Resources, Aquatic Resource Division, regional foresters, Natural Lands Management
WA State Department of Ecology
WA State Department of Transportation
WA State Department of Agriculture
WA State Department of Fish and Wildlife
Washington State University
US Forest Service
US Fish & Wildlife Service
USFWS National Marine Refuge
Olympic National Park
US Department of Agriculture
Jamestown S'Klallam Tribe
The Lower Elwha Klallam Tribe
The Makah Nation
The Quileute Tribe
The Quinault Indian Nation
10,000 Years Institute
Hood Canal Salmon Enhancement Group
North Olympic Salmon Coalition
Pacific Coast Salmon Coalition
East Jefferson WCC
Puget Sound Corps
Green Crow Timber
Merrill and Ring Timber

See Appendix III for contact information

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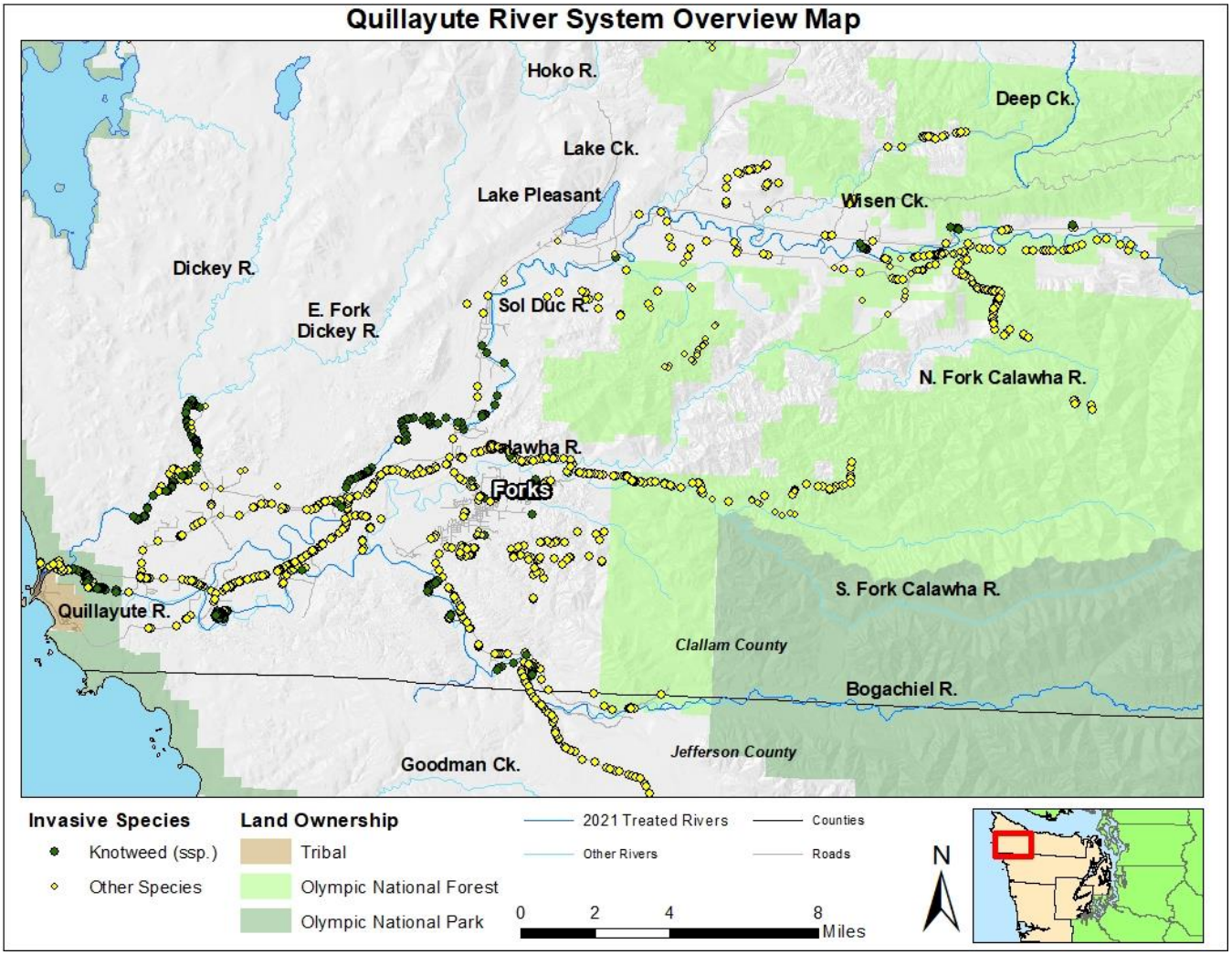
Projects summarized in this report were funded by: Washington State Department of Agriculture (WSDA), the Washington State Department of Natural Resources(WaDNR), Washington Coast Restoration & Resiliency Initiative (WCRRI) 2019-2021 Biennium, Washington State Noxious Weed Control Board (WNWCB), Clallam County Noxious Weed Control Board (CCNWCB), Mason County Noxious Weed Control Board (MCNWCB), Grays Harbor Conservation District (GHCCD), Jefferson County Noxious Weed Control Board (JCNWCB), Jefferson County Public Works & Parks Departments, City of Port Townsend, The Makah Tribe, the Salmon Recovery Funding Board (SRFB), US Fish and Wildlife Service (USFWS), National Resource Conservation Service (NRCS) Environmental Quality Incentives Program (EQUIP), Environmental Protection Agency (EPA), Bureau of Indian Affairs (BIA), One Tree Planted, Washington Coast Restoration Resiliency Initiative, Quinault Indian Nation (QIN). This is may not be a comprehensive list of funding sources utilized by organizations.

PROJECT ACTIVITIES BY WATERSHED

CLALLAM COUNTY



Quillayute River System

The Quillayute system includes the Sol Duc, Calawah, Bogachiel, Quillayute and Dickey, along with their tributaries. The entire Quillayute system is popular for fishing. The rivers host the healthiest stocks of wild winter steelhead in the Pacific Northwest. These rivers also support large runs of Chinook and Coho salmon. There are no Threatened or Endangered species within the Quillayute watershed. The Quileute Tribe works to preserve the ecosystem in its current, functioning state as a more cost-effective endeavor than restoring a system once it is degraded. Knotweed elimination is an important factor in preserving habitat for fish species. It is also important for elk and deer and other species that forage on the floodplain, where knotweed is out-competing native vegetation. Frank Geyer, Deputy Director/TFW Program Manager of Quileute Natural Resource Department has observed that elk and deer do not actively feed on knotweed and that elk have returned to calve on restoration areas previously infested with knotweed.

Dickey River

The Dickey is a large, low gradient river, draining 108 square miles, characterized by sandy bank soils and extensive off-channel fish habitat and riparian areas. The mainstem of the Dickey River flows for 8 miles from the confluence of the East and West Forks, joining the Quillayute River approximately one mile from the Quillayute's mouth on the Pacific Ocean at La Push. Knotweed infestation levels in the Dickey before treatment began were

likely the worst on the Olympic Peninsula. The source was probably an old homestead approximately a quarter of a mile upstream of the East and West Fork confluence.

Brief Treatment history of the Dickey River

See previous year's reports for more detailed information

- Knotweed treatments have been performed every year since 2002.
- 2006-2008: Lauren Urgensen, a University of Washington Graduate Student, established plots along the Dickey to study knotweed impacts and control.
- 2012: crews noted the movement of tansy ragwort into bare ground where knotweed was treated.
- 2013: 7.5 miles (75 acres) of primarily Washington Department of Natural Resources (DNR) shoreline was treated for knotweed [Quileute Nation Natural Resources (QNR)].
- 2014: Infestations on Dickey were reduced by approximately 1/3 from 2014. 7.6 river miles were surveyed and/or treated by QNR and 0.7 acres were treated by the North Cascades Exotic Plant Management Team [NCEPMT].
- 2015: 7.07 River miles (3.8 acres) of knotweed were treated [QNR, NCEPMT, Clallam County Noxious Weed Control Board (CCNWCB)].
- 2016: 7 acres were surveyed and/or treated for knotweed [QNR, CCNWCB].
- 2017: 68 acres were surveyed and/or treated for knotweed [QNR].
- 2018: 7.9 river miles (58 acres) were surveyed and 0.9 acres were treated for knotweed [QNR]. Treated 3.8 miles (8 acres) along Mina Smith Rd, directly adjacent to the Dickey River, for yellow archangel and tansy ragwort [CCNWCB].
- 2019: 7.9 river miles (30 acres) were surveyed and 4 acres were treated for knotweed [QNR]. 3.2 road miles (0.01 acres) were treated for yellow archangel and tansy ragwort along Mina Smith Rd, directly adjacent to the Dickey River.
- 2020: 7.9 river miles (30 acre) surveyed and 2 acres treated for knotweed [QNR]. CCNWCB surveyed 3.2 road miles and treated 5.8 acres on other invasive species.

2021: QNR and CCNWCB surveyed 5.15 miles for knotweed and treated 75.88 acres. Several tansy ragwort plants were treated along the river. QNR and CCNWCB used 0.105 gallons of imazapyr (1%) in foliar treatments. Due to weather and river levels, the stretch from the Rayonier site to the confluence of the Quillayute was postponed.

2022: Revisit 2021 treatments, continue and finish the lower stretch.

Herbicide use-Dickey River (gallons)															
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated*	140	50	95	101	NA	56	75	46	3.8	74	3.8	0.9	4	2	**75.88**
Total Herbicide	12.7	0.2	18	7.2	NA	2.9	4.3	2.4	2.9	1.2	1.4	0.3	0.7	0.4	**.105**

***The discrepancy between acres treated in different years may be due to different counting methods being used.* *Acres treated in 2007-2014 and 2016 are as reported but may be total acreage searched.*

Calawah River

Both the North Fork and South Fork of the Calawah River originate in the Olympic National Park. They converge close to the town of Forks and the Calawah flows into the Bogachiel on the west side of Forks. The Calawah is 31 miles in length, with a drainage basin of 133 square miles.

Brief Treatment history of the Calawah River

See previous year's reports for more detailed information

- 2006: A survey of Calawah found 344 knotweed sites of primarily giant knotweed [QNR].
- 2007-2013: The Calawah River was consistently treated [QNR]. Giant knotweed responded very well to treatments and infestations decreased significantly. See below for decreased herbicide usage.
- 2013-2017: Due to excellent response to treatments and in consideration of scarce funding, the Calawah was not treated.

- 2018: 10KYI treated 3.12 river miles of the Calawah River for reed canarygrass, herb Robert, tansy ragwort and everlasting peavine. No knotweed was observed in their treatment area. Crews also expanded surveys and treatments to the A-Road, a significant nearby weed vector.
- 2019: 10KYI made multiple treatments equivalent to 49.4 road miles along the Calawah River River for English holly, evergreen blackberry, Himalayan blackberry, Scotch broom, and yellow archangel. No knotweed was observed in their treatment area.
- 2020: 10KYI surveyed 13.9 miles and surveyed 108 acres. Knotweed and other invasive species were treated on 16.5 acres.

2021: 10KYI treated 30.9 road miles along the Calawah, 24.01 acres were treated for knotweed, broad leaf dock, Canada thistle, evergreen blackberry, herb Robert, orange hawkweed, reed canary grass, tansy ragwort and Scotch broom. 10KYI crews used .09 gallons of glyphosate (1.5%), 0.22 gallons triclopyr (0.5%, 1%) and .05 gallons of imazapyr in foliar treatments. Cut stump treatments used 1.31 gallons of glyphosate.

2022: Continue to survey and treat as needed and resources allow.

Herbicide use-Calawah River (gallons)															
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated	202	100+	110	127	NA	65	64	-	-	-	-	0.6	18.5	16.5	**24.01**
Total Herbicide	11.1	2.3	1.6	0.2	NA	0.2	0.2	-	-	-	-	0.2	1.6	1.6	**1.67**

Bogachiel River

The Bogachiel River joins with the Sol Duc, forming the Quillayute, about 4 miles from the town of La Push where the Quillayute empties into the Pacific Ocean. The Bogachiel is 46 miles in length, with a drainage basin of 154 square miles.

Brief Treatment history of the Bogachiel River

See previous year's reports for more detailed information

- 2006: A survey of the river revealed 1,336 knotweed sites [QNR].
- 2008-2010: Sections of the Bogachiel River were treated by QNR, with assistance from CCNWCB.
- 2011: The entire river was retreated for the first time [QNR, CCNWCB].
- 2012-2013: 13 river miles (131 acres) of the Bogachiel River was surveyed and/or treated [QNR].
- 2014: An additional 13 river miles (343 acres) were treated [QNR].
- 2015: No treatments took place on the Bogachiel due to funding constraints.
- 2016: 11.96 miles (77 acres) were treated [QNR, NCEPMT, CCNWCB].
- 2017: 12.9 miles (198.5 acres) were treated; purple loosestrife discovered [QNR, NCEPMT, and CCNWCB]. 10KYI treated off-channel for additional invasives including reed canary grass, herb Robert, scotch broom, tansy ragwort-acre and river mile totals were not available by watershed.
- 2018: 15.7 miles (249 acres) were treated for knotweed, Scotch broom, reed canary grass, yellow archangel, Himalayan blackberry, Canada thistle, and more. Crews reported some well-established bohemian knotweed patches with what appeared to be well developed, if not viable seeds, and the only infestation of giant reed (Arundo donax) on the Olympic Peninsula [10KYI].
- 2019: 10KYI made multiple treatments equivalent to 46.2 road miles and 12.6 river miles (214 acres) of the Bogachiel River for a wide variety of invasive species including knotweed, Scotch broom, reed canary grass, yellow archangel, Himalayan blackberry, evergreen blackberry, Canada thistle, English holly, and yellow flag iris.
- 2020: 10KYI surveyed 8 river miles and 50.5 road miles. 411 acres were surveyed and 304 acres were treated for knotweed and other invasive species. 10KYI treated the one known giant reed site in the watershed in 2019 and 2020 survey indicated no new growth. QNR surveyed 0.25 river miles, surveyed 2 acres and treated 0.25 acres for knotweed. CCNWCB surveyed 1 acre and treated on 0.25 acres.

2021: 10KYI surveyed 36.36 road miles encompassing 135.24 acres and treated 64.12 acres. The crew used 0.1375 gallons of imazapyr (1%) on foliar applications. 10KYI surveyed 0.84 river miles and treated 96.4 acres. The crew used 0.5 gallons glyphosate (1.5%) and 0.03 gallons triclopyr (1%) on foliar treatments and 0.46 gallons of glyphosate on cut stump treatments. An additional .05 gallons of glyphosate was used during injection treatments along the river. Bogachiel River: Treated a new site on the Bogachiel on private property, provided follow-up treatment on three sites on the Bogachiel, treated one site on A-Road, and treated one site at the Calawah River Park. Due to weather and COVID issues, we were not able to schedule boat support to survey and treat the intended 13 mile reach between SR 101 south of Forks and Three Rivers.
[CCNWCB] manually treated common teasel on the slopes adjacent to the Calawah River Park.

2022: CCNWCB, NCEPMT, QNR, and 10KYI should continue to coordinate, survey, and treat along the Bogachiel River. Some of the heaviest invasive infestations in Clallam County are found in this area and it's important to prevent them from spreading into the Quillayute River.

Herbicide use- Bogachiel River (gallons)															
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated*	4.1	900+	693	725	NA	131	131	343	-	77	199	10.6	214	305	**160.5**
Total Herbicide	0.65	33.9	77.3	62.1	NA	3.1	5.4	8.4	-	0.8	5.3	5.65	4.06	1	**0.99**

***The discrepancy between acres treated in different years may be due to different counting methods being used**. Acres treated in 2007-2016 are as reported but may be total acreage searched. 2017 totals only include those reported by QNR and CCNWCB.*

Quillayute River

Although the Quillayute has the largest drainage area on the Peninsula (629 square miles) the river itself is only 5.5 miles long and approximately half its length is in the coastal strip of the Olympic National Park. The Dickey, Bogachiel, Calawah, and Sol Duc all flow into the Quillayute River, making treatments along the entire Quillayute watershed extremely important.

Brief Treatment history of the Quillayute River
See previous year's reports for more detailed information

- 2008: The first treatments of the Quillayute River are performed, with 170 acres surveyed and/or treated [QNR].
- 2009: CCNWCB treated a county owned park situated along the Quillayute. An additional 40 acres of the river was treated [QNR].
- 2010: 0.9 acres of knotweed was treated [NCEPMT].
- 2011: Treatments on this river occurred, but were not reported [QNR].
- 2012: No treatments were reported on the Quillayute.
- 2013: 0.2 acres were treated [NCEPMT, QNR].
- 2014: Treatments on this river occurred, but were not reported [NCEPMT].
- 2015: 2.9 river miles of the mainstem Quillayute River was surveyed and/or treated [QNR, NCEPMT, and CCNWCB].
- 2016: The entirety of the Quillayute River was treated for the first time [QNR, NCEPMT, and CCNWCB].
- 2017:1.8 river miles, (8.2 acres) were treated for knotweed [QNR, NCEPMT, and CCNWCB]. 10KYI treated 103 road miles in the Quillayute River watershed for additional invasives including reed canary grass, scotch broom, and tansy ragwort.
- 2018: Treated 2.5 river miles (6.4 acres) of the Quillayute River for Scotch broom, reed canarygrass, tansy ragwort and everlasting peavine [10KYI]. No knotweed was found in their treatment area.
- 2019: QNR, with assistance from CCNWCB crew, made two treatments equivalent to 9.25 river miles (21.5 acres) for knotweed, Scotch broom, evergreen blackberry, Himalayan blackberry, Canada thistle, herb Robert, spotted jewelweed, tansy ragwort, and bittersweet nightshade.
- 2020: QNR surveyed 4.4 river miles, surveyed 693 acres and treated 7 acres for knotweed. 10KYI surveyed 0.5 river miles and 8.6 road miles along the Quillayute River. They surveyed 88 acres and treated 62 acres for Canada thistle, reed canary grass Scotch broom and tansy ragwort.

2021: QNR surveyed 1.9 river miles (76 acres) and treated 0.52 acres for knotweed, reed canarygrass, purple loosestrife and Scotch broom. They used 0.16 gallons of imazapyr (1%) on foliar treatments and 0.31 gallons of imazapyr (50%) on cut stump treatments. 10KYI crews surveyed 2.65 river miles and treated 54.05 acres. They used 0.11 gallons of glyphosate (1% - 2%) and 0.01 gallons of triclopyr on foliar treatments. The crew also used 0.48 gallons of glyphosate on cut stump treatments. 10KYI also surveyed 17.72 road miles (161.1 acres and treated 2.4 acres of knotweed, bittersweet nightshade, bull thistle, Canada thistle, everlasting peavine, reed canary grass, Scotch broom and tansy ragwort. The road treatments used 0.005 gallons of imazapyr for foliar treatments.

2022: The partnerships developed to treat this river system should be maintained, especially considering the evidence of success through decreased herbicide use and acreage that had to be treated. Additional invasive treatments and native plantings should be investigated to prevent emergence of other weed species.

Herbicide use-Quillayute River (gallons)															
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated	N/A	170	40	0.5	N/A	0	0.2	N/A**	5	193*	8.2	6.4	26.5	69	**56.5**
Total Herbicide	N/A	6.8	1.7	0.6	N/A	0	0.1	N/A**	1.9	14.4	3.1	2.04	4.5	1.6	**0.795**

**Treated acreage was not reported in 2016. Surveyed acres are included instead.*
*** Treatments occurred in 2014 but were not reported.*

Sol Duc River and tributaries

The Sol Duc sub-basin, within the Quillayute watershed, drains over 200 square miles. The Sol Duc River originates within Olympic National Park and stretches for nearly 20 miles before emerging from Park boundaries. It then runs for 45 miles until it joins with the Bogachiel, forming the Quillayute. It contains timber lands, agriculture, and residential development. The Sol Duc supports numerous salmonids such as Chinook, Coho, chum, sockeye, and steelhead, as well as cutthroat and rainbow trout.

Brief Treatment history of the Sol Duc River
See previous year's reports for more detailed information

- 2005: A float survey of the middle Sol Duc was conducted. Most sites were Bohemian knotweed [Clallam County Noxious Weed Control Board [(CCNWCB)].
- 2006: A survey of the Lower Sol Duc revealed 447 knotweed sites that were primarily giant knotweed [The Quileute Tribe (QNR)]. Treatments were performed on the Middle Sol Duc [CCNWCB].
- 2007-2010: Treatments of the Sol Duc River were performed by multiple entities. The North Cascades Exotic Plant Management Team (NCEPMT) treated knotweed within Olympic National Park (ONP) boundaries while QNR and CCNWCB treated the Middle and Lower Sol Duc.
- 2011: No treatments on this river were reported.
- 2012: 26.6 river miles of the Middle Sol Duc were surveyed for treatment [QNR].
- 2013: For the first time, no knotweed was found on the section of the Sol Duc within ONP boundaries [NCEPMT]. 155 acres of the Lower Sol Duc were surveyed for treatment [QNR].
- 2014: 0.005 acres of knotweed was treated within ONP boundaries [NCEPMT].
- 2015: The middle Sol Duc was surveyed for treatment. Low water levels prevented treatments in the lower reaches of the river [QNR, CCNWCB].
- 2016: 28.81 river miles of the Sol Duc were treated as well as 3 acres on Wisen Creek, a tributary of the river [QNR, CCNWCB].
- 2017: 4.27 river miles of the Middle Sol Duc, Lake Pleasant waterfront and Wisen Creek (1.3 acres) were treated for knotweed [QNR]. County ROW adjacent to Lake Pleasant that contain knotweed was treated for the first time under an integrated weed management plan [CCNWCB].
- 2018: 11.4 river miles (82.57 acres) treated for reed canarygrass, herb Robert, and Canada thistle. No knotweed was found in the treatment area [10KYI].
- 2019: 10KYI treated 39.9 road miles (0.005 acres) for knotweed, reed canarygrass, Scotch broom, herb Robert, tansy ragwort, St. John's wort, foxglove, and Canada thistle.
- 2020: 10KYI surveyed 0.3 river miles and 44.4 road miles along the Sol Duc. They searched 59.4 acres and treated 42.2 acres.

2021: 10KYI surveyed 119.9 road miles (composite of multiple surveys) and searched 227.11 acres of the Sol Duc. The crew also surveyed 0.08 river miles and treated 76.11 acres. 10KYI used 0.17 gallons of glyphosate (1.5%) and 0.05 gallons triclopyr (1%) on foliar treatments and 1.92 gallons of glyphosate (50%) on cut stump treatments. Treatments included the control of bull thistle, Canada thistle, foxglove, herb Robert and wild carrot. QNR surveyed 0.6 miles, searched 2.67 acres and treated 0.09 acres. Treatments included 0.03 gallons of imazapyr (1%) and 0.1325 gallons of glyphosate (6%) applied foliar. Treated species were knotweed and Himalayan blackberry. CCNWCB surveyed 9.2 river miles of the Sol Duc and treated 97.1 acres. They used 0.26 gallons of imazapyr (1%) to treat knotweed and tansy ragwort.

2022: Surveys and follow up treatments in the Sol Duc River and associated tributaries.

Herbicide Use, Lower Sol Duc River (gallons)															
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated	17	45	30	35	-	n/a*	155	0.005	-	221**	1.3**	1.1	0.005	42	**173.3**
Total Herbicide	9.7	6.7	1	1.3	-	n/a*	1.1	n/a	-	1.8	0.5	0.7	0.003	0.25	**2.56**

** Treatments occurred in 2012 but were not reported.*
***Includes treatments on Middle and Lower Sol Duc.*

Lake Creek and Lake Pleasant

Brief Treatment history of Lake Creek and Lake Pleasant
See previous year's reports for more detailed information

- 2012: A complete survey of Lake Creek and Lake Pleasant was conducted [CCNWCB]. Most infestations were light and treated where permission was granted.
- 2013-2014: Lake Creek and Lake Pleasant were not treated due to low infestations.
- 2015: A single terrestrial knotweed infestation was treated near Lake Pleasant [CCNWCB].
- 2016: No treatments occurred.
- 2017: 0.5 acres of knotweed (2.5 road miles) was treated on West Lake Pleasant road along with other high priority invasive species. [CCNWCB].
- 2018: There were no follow-up surveys and treatments in this area this year.
- 2019: CCNWCB surveyed 1.2 road miles and treated 0.25 acres for knotweed.
- 2020: CCNWCB surveyed 3.9 river miles and 1.2 road miles along Lake Creek and Lake Pleasant. They searched 21 acres and treated 8.6 acres for knotweed.

2021: CCNWCB treated .01 acres of knotweed and used 0.02 gallons of imazapyr (1%) to treat knotweed.

2022: CCNWCB will continue to survey and treat county roadsides near Lake Creek and Lake Pleasant as part of the Clallam County Road Department's Integrated Weed Management Plan. CCNWCB will also perform follow-up treatments as needed on sites treated in previous year.

Forks

Knotweed in the city of Forks is of concern because the town is close to the Calawah as well as a tributary of the Bogachiel. The Calawah and Bogachiel are major waterways in the Quillayute System that could be re-infested by knotweed within private property and roadsides in Forks.

Brief Treatment history of Forks
See previous year's reports for more detailed information
2006-2009: Treatments of knotweed on private property was conducted [CCNWCB, QNR].
2010-2012: No invasives treatments were reported in Forks.
2013: 3 acres of privately owned property were treated [QNR].
2014-2016: No treatments were reported, though some may have been performed.
2017: The 10KYI treated multiple non-native species within the City of Forks (ROW, private and public owners)
2018: The 10KYI treated one patch of knotweed at a residential property in the city of Forks by owner request.
2019: 10KYI reported that knotweed on Mill Creek, at the Forks High School, and on SR 101 at Undi Road did not re-sprout. One patch of knotweed at a residential property in the city of Forks was treated at the request of the owner.

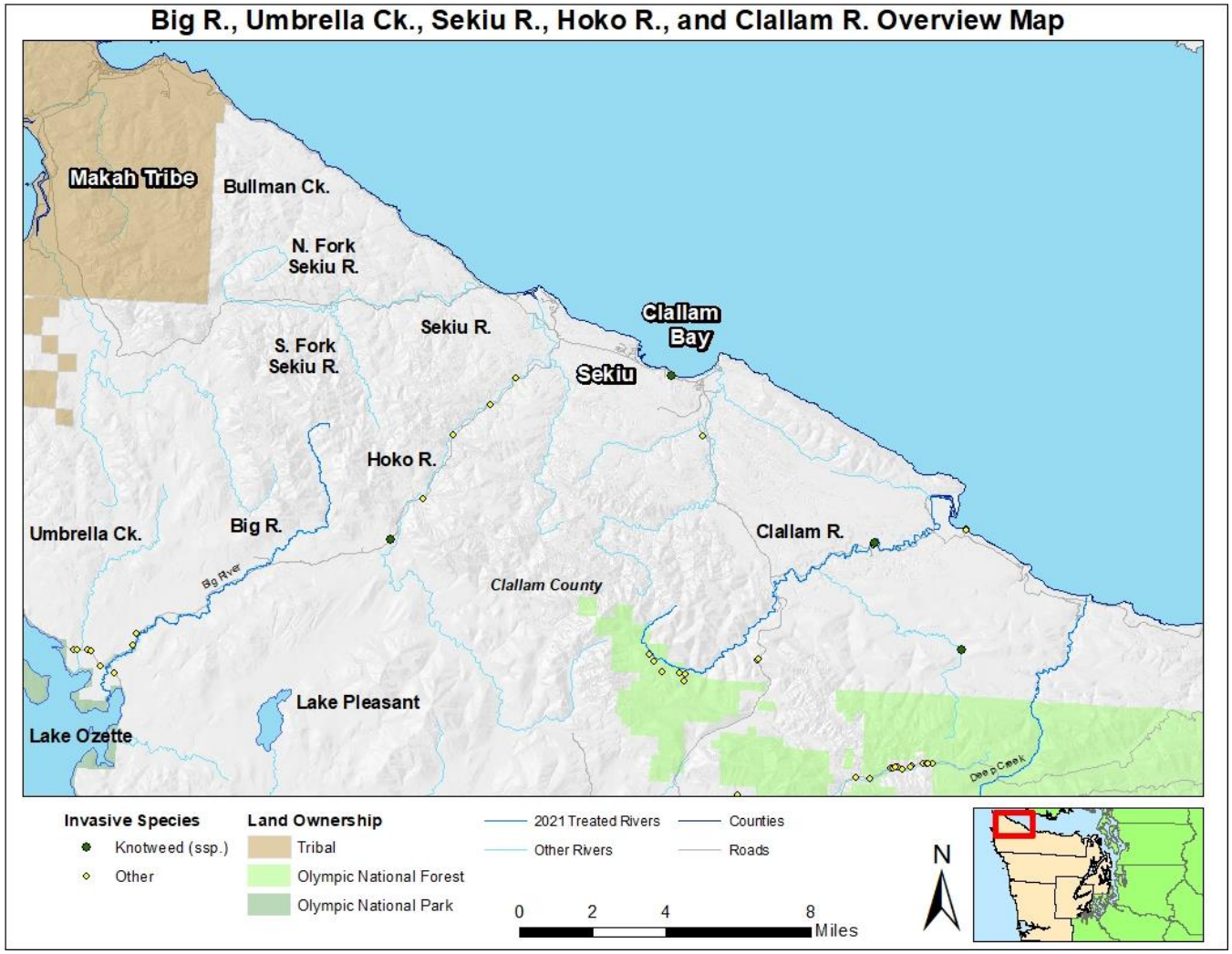
2020: CCNWCB surveyed knotweed and orange hawkweed sites in Forks and sent permission requests to property owners. Depending on the permission response, CCNWCB plans to coordinate with QNR and 10KYI to create a treatment plan.

2021: CCNWCB surveyed several sites for knotweed and treated 0.01 acres of knotweed using 0.01 gallons of imazapyr (1%). They also treated orange hawkweed on sixteen separate private parcels. A treatment on yellow archangel at the Forks Timber Museum was also accomplished during 2021. 2022: CCNWCB will continue to survey for roadside knotweed patches during the course of the Clallam County Road Department's Integrated Weed Management Plan.

2022: CCNWCB will continue to survey as part of the Clallam County Road Department's Integrated Weed Management Plan and survey historic knotweed sites.

For more information about the Quillayute River System, please contact:
Garrett Rasmussen, QNR biologist, (360) 640-2108, garrett.rasmussen@quileutenation.org
OR
For more information about non-knotweed species treatments on the Quillayute River System or within the City of Forks, please contact:
Jill Silver, 10,000 Years Institute, 360-385-0715, jsilver@10000yearsinstitute.org
OR
For more information about the Clallam County Roadside Integrated Weed Management Plan please contact:
Joe Reynolds, Clallam County NWCB Weed Control Specialist, 360-417-2000 ext. 2703,

Big River, Umbrella Creek, Sekiu River and Hoko-Ozette Road



Brief Treatment history of Big River and Hoko-Ozette Road

See previous year's reports for more detailed information

- 2009: Control of knotweed was made mandatory on the Big River [Clallam County Noxious Weed Control Board (CCNWCB)].
- 2011: High priority sites were treated [CCNWCB].
- 2012: 4 miles of the Big River were surveyed and/or treated. The CCNWCB noted a reduction in infestations from the previous year.
- 2013: Infestations at the mouth of the river were treated [North Cascades Exotic Plant Management Team (NCEPMT)].
- 2014: 4.6 river miles were surveyed and/or treated [CCNWCB].
- 2015: Treatments of the Hoko-Ozette road were first reported [Makah Tribe]. One privately owned site on Big River was treated [CCNWCB].
- 2016: 8.24 miles of Big River was treated as well as 11.4 miles of the Hoko-Ozette Road [Makah Tribe].
- 2017: 6.6 miles (19.56 acres) of the Big River treated for invasives [Makah Tribe]. The Tribe completed a complete survey for knotweed (none) but treated other non-native species.
- 2018: 6.6 miles (109 acres) of the Big River treated for invasive species [Makah Tribe]. Treated 17.9 miles of the Hoko-Ozette Road as well as the County portion of Swan Bay for knotweed and other invasives [CCNWCB].

- 2019: The Makah treated 0.8 acres for knotweed at restoration sites along the Big River. The CCNWCB treated along the entire Hoko-Ozette Road, including the 6.6 road miles next to the Big River, as well as the County portion of Swan Bay, for knotweed, tansy ragwort and herb Robert.
- 2020: The Makah surveyed 0.5 river miles, searched 6.2 acres, and treated 0.8 acres for knotweed. CCNWCB surveyed the length of Hoko-Ozette Road, including the 6.6 road miles next to the Big River, along with the County portion of Swan Bay. They surveyed 12.8 acres and treated 0.1 acres.

2021: The Makah surveyed and treated 0.64 acres for knotweed. The crew used 0.015 gallons of glyphosate and 0.0025 gallons of imazapyr. The CCNWCB treated 17.5 road miles and treated 33.8 acres. The crew used 0.03 gallons of aminopyralid (1/8%), and 0.264 gallons of triclopyr (1.5%) to treat knotweed, tansy ragwort, Scotch broom and evergreen blackberry along the roadside, and in county pits.

2022: CCNWCB will continue to survey and treat along the Hoko-Ozette Rd as part of the Clallam County Road Department's Integrated Weed Management Plan and coordinate with the Makah on their treatments.

Herbicide Use-Big River-Hoko Ozette Rd (gallons)*										
	2006	2007-2010	2011-2014	2015	2016	2017	2018	2019	2020	**2021**
River Acres Treated	60	Less than 60 each yr	Less than 25 each yr	0.1	n/a	19.6	17.1	0.8	0.8	0.0
Road Acres Treated							35.2	0.06	0.1	34.4
Glyphosate injection	65	5	0.5	0.2	n/a	n/a	n/a	n/a	n/a	**-**
Glyphosate foliar	0	7.9	0.1	0	n/a	1.1	0.8	0.03	0.01	**0.015**
Imazapyr foliar	0	1.8	0.8	0	n/a	0.2	0.06	0.01	0.04	**0.0025**
Aminopyralid**	-	-	-	-	-	-	0.05	0.01	0.085	**0.03**
Triclopyr **	-	-	-	-	-	-	0.01	0.08	1.08	**0.264**
Total Herbicide	65	14.7	1.4	0.2	n/a	1.3	1.02	0.14	1.2	**0.3115**

**This table has been consolidated to accommodate additional data while preserving enough information to see the downward trend the more detailed annual data showed for both infestations and herbicide quantities. See previous report for annual treatment detail.*
***aminopyralid and triclopyr were used for roadside treatments only.*

Hoko River

Brief Treatment history of the Hoko River

See previous year's reports for more detailed information

- 2009: Control of knotweed was made mandatory on the Hoko River by the CCNWCB.
- 2012: All known knotweed on the Hoko River was treated, except for lower tidal regions where a float survey may be needed [CCNWCB].
- 2013-2015: Due to the small amount of re-growth from 2012 treatments, no treatments were performed.
- 2016: The East Jefferson Washington Conservation Corps (EJWCC) treated 1.5 river miles of the upper Hoko River.
- 2017: Knotweed treatment along Hoko-Ozette Road-(reported in Big River data) [Makah]
- 2018: Due to low infestations level, no treatments on Hoko River this year.
- 2019: 2.8 river miles of the lower Hoko River were float surveyed and 0.02 acre were treated for knotweed [CCNWCB]. 0.08 acres were treated for knotweed at two sites near the Hoko River [Makah].
- 2020: The CCNWCB float surveyed the lower 2.5 river miles, searched 55 acres, and treated 0.2 acres for knotweed. The Makah surveyed four private parcel sites along HWY 101 near the lower Hoko River. They searched 10 acres and treated 0.6 acres for knotweed.

2021: No treatments were reported on the Hoko River during 2021.

2022: The CCNWCB will revisit sites treated in 2020 to assess effectiveness and retreat as needed, and coordinate with the Makah Tribe to survey or treat other sites along the Hoko River.

Sekiu River

The Sekiu is a low gradient coastal river with many small forested, scrub-shrub and emergent wetlands scattered throughout. It flows into the Straits of Juan de Fuca about 10 miles east of the Makah Reservation. Much of the land in the watershed is zoned for commercial forestry. Chinook, Coho and chum salmon have been recorded in the Sekiu River, as well as winter steelhead and cutthroat.

Brief Treatment history of the Sekiu River

See previous year's reports for more detailed information

- 2006: 26 patches of knotweed were treated [Makah Tribe].
- 2007-2010: Less than 10 sites total were treated by the Makah Tribe and CCNWCB. In 2010, control of knotweed was made mandatory on this river by the CCNWCB.
- 2011: Sites that had only 1-2 recurring treatments were targeted and re-treated [CCNWCB].
- 2012: All known knotweed sites were treated. On most parcels very few plants remained but two parcels, totaling 10 acres had large infestations that were treated for the first time [CCNWCB].
- 2013: Efforts focused on the two parcels discovered in 2012. Treatments were incomplete, but reduced herbicide usage (see below) indicated a significant decrease in the infestation [CCNWCB].
- 2014: Sites with difficult access were treated using canoes.
- 2015: No treatments were performed.
- 2016: Properties where re-growth was observed were retreated [Makah Tribe].
- 2017-2018**:** Due to the low infestations levels in the Sekiu River, no treatments were performed on this system.
- 2019:1.3 road miles (0.25 acres) of Sekiu Rd were surveyed and treated for knotweed and yellow archangel [CCNWCB].
- 2020: CCNWCB re-surveyed private knotweed sites outside of the county roads right-of-way and mailed landowner permission requests.

2021: No knotweed was detected during a survey of Sekiu Rd although some knotweed was noted across the river. New permission will need to be acquired, as old ones have lapsed.

2022: CCNWCB will continue to survey and treat Sekiu Rd as part of the Road Department's Integrated Weed Management Plan and, depending on response to permission requests, coordinate treatments on private parcels.

*

Herbicide Use-Sekiu River (gallons)* **										
	2006*	2007-2010	2011-2014	2015	2016*	2017	2018	2019	2020	**2021**
Inspected/ Known Parcels	N/A	n/a	10/11	0/14	0/14	0/14	0/14	n/a	14/14	**0**
Acres Treated	N/A	Less than 17 each yr.	Less than 6 each yr.	-	n/a	-	**-**	0.25	**-**	**0**
Glyphosate injected	n/a	3.9	0.5	-	n/a	-	**-**	-	**-**	**0**
Glyphosate foliar	n/a	0.9	0.2	-	n/a	-	**-**	-	**-**	**0**
Imazapyr foliar	n/a	0.2	0.5	-	n/a	-	**-**	0.005	**-**	**0**
Total Herbicide	11	5.02	1.1	-	n/a	-	**-**	0.005	**-**	**0**

Treatments took place in 2006 and 2016 but data was not reported.

*** Herbicide formulations and application methods were not provided for this report in 2014.*

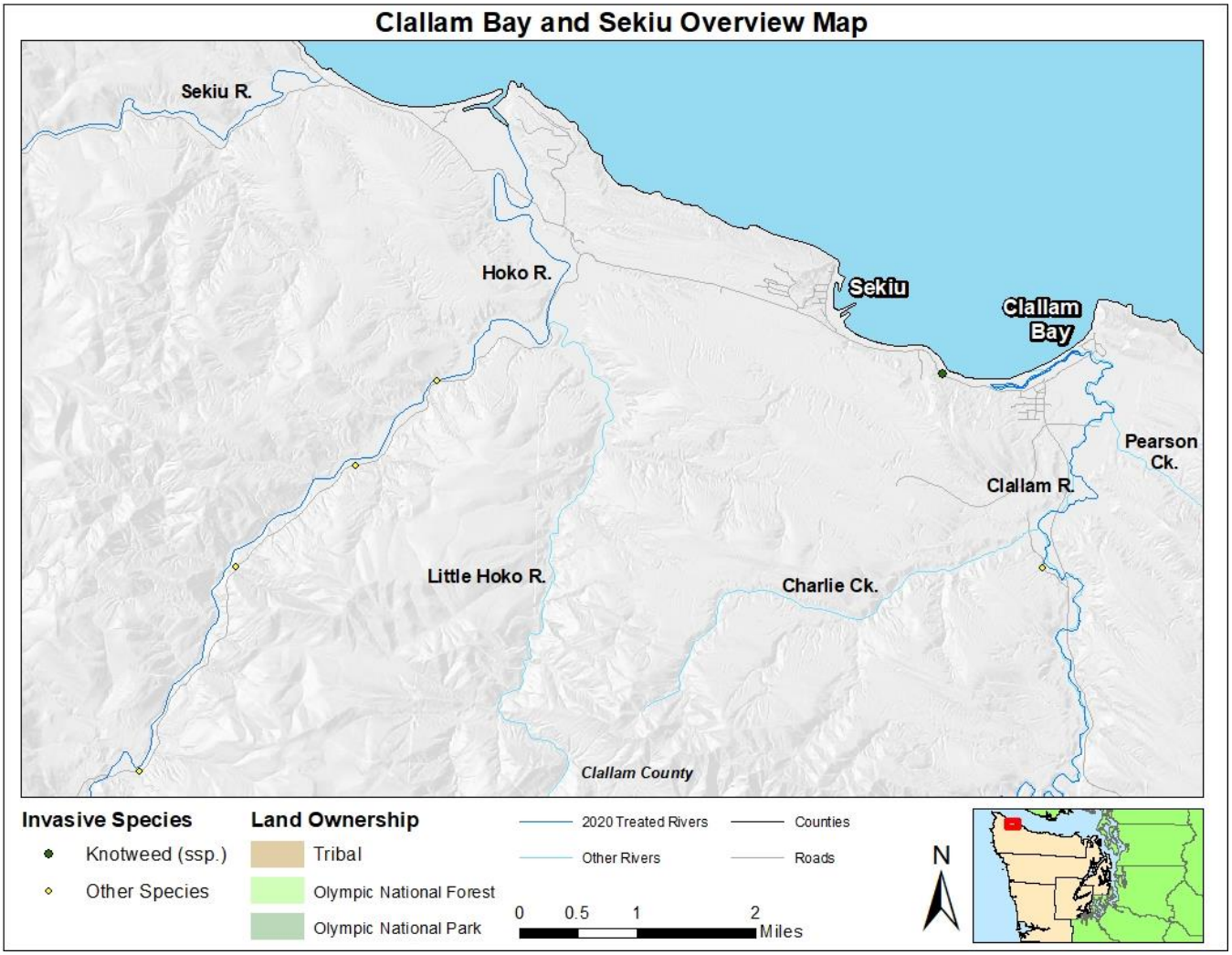
****This table has been consolidated to accommodate additional data while preserving enough information to see the downward trend the more detailed annual data showed for both level of knotweed infestation and herbicide quantities. See previous report for annual treatment detail.*

For more information about Big River and treatments in the surrounding area, please contact: Shannon Murphie, Wildlife Biologist, 360-645-3229, shannon.murphie@makah.com.

Or

Cathy Lucero, Clallam Noxious Weed Control Board, 360-417-2442, clucero@co.clallam.wa.us

Highway 112, Clallam Bay, and Sekiu



Highway 112

This highway runs west-east near the shoreline and crosses the Sekiu, Hoko and Clallam Rivers. This road is a significant vector of knotweed through movement of plant fragments in the course of road maintenance and related activities.

Sekiu and Clallam Bay

Sekiu and Clallam Bay are small coastal towns about two miles apart, consisting mostly of fishing resorts and residential properties. Knotweed in the Sekiu and Clallam Bay area has a long history, dating back to 1930. Knotweed has long been associated with the coming of the railroad, although it is not clear whether it was planted intentionally or was introduced as a contaminant.

<u>Brief Treatment history of Highway 112, Sekiu and Clallam Bay</u>
See previous year's reports for more detailed information

- 2004: Surveys of Highway 112, Sekiu, and Clallam Bay revealed large infestations in or near riparian areas [CCNWCB].
- 2006-2012: Knotweed was treated in Clallam Bay, Sekiu, and nearby coastal bluffs. Details of treatments can be found in table below [CCNWCB].

- 2014: 5 new permissions of parcels with large infestations allowed for more treatments in the two towns [CCNWCB].
- 2015-2016: No treatments were reported.
- 2017: Limited treatments by both CCNWCB and Makah took place in this area, because of very limited infestations.
- 2018: The Makah obtained 3 new permissions and searched 9 acres for knotweed within the Clallam Bay/Sekiu and Clallam River, although most of the treatments occurred on the Clallam River.
- 2019: CCNWCB treated 0.55 acres in Clallam bay for knotweed and yellow archangel. The Makah Tribe treated 0.01 acres for knotweed on parcels in Clallam Bay and Sekiu.
- 2020: CCNWCB treated knotweed nearby on the Hoko and Clallam Rivers but no treatments in the towns of Sekiu or Clallam Bay. The Makah treated 6 sites for knotweed along HWY 112. The Makah treated 0.007 acres for knotweed at the other 2 sites along HWY 112.

2021: No treatments in Clallam Bay and Sekiu were reported in 2021.

2022: A new survey of this area will be needed to see what infestations remain. Treat as landowner permissions re-acquired and as needed.

Herbicide Use-Highway 112, Clallam Bay and Sekiu (gallons)										
	2006	2007-2010	2011-2014	2015	2016	2017	2018**	2019	2020	**2021**
Acres Treated	n/a	As much as 45 each yr.	As much as 3 each yr.	-	-	1.6	n/a	0.6	0.007	**0**
Glyphosate injected	n/a	5.4	0.2	-	-	0	-	-	-	**0**
Glyphosate foliar	n/a	6.1	0.02	-	-	0.4	-	0.06	0.01	**0**
Imazapyr foliar	n/a	0.2	0.07	-	-	0.06	n/a	0.03	0.002	**0**
Total Herbicide	17.9	9.8	0.2	-	-	0.5	-	0.09	0.012	**0**

**Note: A site near the Sekiu airport and several along Hwy 112 were added in 2014. Much of the herbicide use in that year accounted for in those locations.*

***Details for these site was not broken out, but based on the number of sites shown on the map, was accounted for in full in the Clallam River section*

Clallam River

The Clallam River is a low-gradient river of approximately 13.4 miles that flows into the Straits at the town of Clallam Bay. It is a unique system in that sand and gravel frequently block the mouth of the river. This phenomenon can cause flooding and can trap anadromous fish behind the gravel bar. Coho and winter steelhead spawn in the mainstem, and in several tributaries. Moderate numbers (500 or less) of chum have been observed in the lower mainstem. In order to temporarily relieve issues caused by flooding, a channel was excavated in 1998 to allow fish to re-enter the Straits. Much of the Clallam River is owned by Clallam County and Washington State Parks. Knotweed has likely existed on the river prior to its first sighting in 1998 and has rapidly spread since.

Brief Treatment history on the Clallam River

See previous year's reports for more detailed information

- 1998: The first report of knotweed was made on this river.
- 2006: The Makah Tribe surveyed the lower portion of the Clallam River.
- 2007-2010: Increased funding allowed the Lower Elwha Klallam Tribe the assist the CCNWCB in its treatments. In 2010, control of knotweed was made mandatory on this river by CCNWCB.
- 2011-2013: All parcels on the Clallam River were treated by CCNWCB and Lower Elwha Klallam Tribe. By 2013, knotweed infestations had decreased by 75% and a pioneer patch of yellow archangel was treated before it could spread.
- 2014-2016: Due to low infestation levels, the Clallam River was not treated.
- 2018: CCNWCB treated 0.2 acres for yellow archangel on Charlie Creek Rd. The Makah Treated 0.3 miles (2.3 acres) of the Clallam River for knotweed

- 2019: CCNWCB treated 0.75 roadside miles (0.4 acres) for knotweed and yellow archangel along Charley Creek Road near its intersection with the Clallam River. The Makah treated 0.1 acres for knotweed on parcels near the Clallam River.
- 2020: CCNWCB surveyed 0.4 river miles, searched 32 acres, and treated 2.5 acres for knotweed. CCNWCB also surveyed 0.75 road miles on Charlie Creek Rd, near its confluence with the Clallam River, searched 1.5 acres, and treated 0.5 acres for yellow archangel.

2021: No treatments along the Clallam River was reported in 2021, however no knotweed was found along Charlie Creek Rd, but a small amount of remaining yellow archangel was treated..

2022: CCNWCB will continue to survey and treat nearby roads as part of the Road Department's Integrated Weed Management Plan, and will reach out to landowners to revisit sites treated on the Clallam River in 2020.

Pysht River

The Pysht River is approximately 16.3 miles long and drains into the Straits of Juan de Fuca at Pillar Point, eight miles east of Clallam Bay. The Pysht supports Coho and chum salmon and winter steelhead. The Pysht River Estuary has been the subject of an extensive restoration project in partnership with the Lower Elwha Klallam Tribe, Merrill and Ring, Clallam County, North Olympic Salmon Coalition, and other partners.

Brief Treatment history on Pysht River
See previous year's reports for more detailed information

- 2005: Two property owners notified the CCNWCB of knotweed infestations, one of which was approximately 2 acres and was being manually controlled by the landowner.
- 2006-2010: Merrill and Ring hired a crew to treat knotweed alongside the CCNWCB. By 2010, the infestation was dramatically reduced and canes found were less than three feet tall.
- 2011: No treatments were conducted on Pysht due to funding constraints and low infestation levels.
- 2012: Merrill and Ring staff surveyed their property for knotweed and CCNWCB treated surveyed infestations.
- 2013: Surveys found no knotweed and the Psyht River was treated for other invasives [CCNWCB].
- 2014: 185 small stems were treated on Merrill and Ring property as well as a new infestation of burdock [CCNWCB]. The Puget Sound Corps (PSC) treated 6 acres farther upstream for invasives including reed canarygrass, herb Robert, Canada thistle, and holly.
- 2015: 6 acres were re-treated in 2014 for invasives [CCNWCB].
- 2016- 2020: No knotweed work was performed on Pysht River and no entity reported any invasives treatment.

2021: The CCNWCB carried out a survey and treatment of knotweed and common teasel on two parcels owned by Merrill and Ring. Merrill and Ring staff conducted a knotweed survey along 0.5 miles of the Pysht River, in previously known locations, but found none.

2022: CCNWCB will survey the parcels treated in 2021 to monitor the control of the common teasel and knotweed.

Deep Creek

Deep Creek drains 11,048 acres, and the elevation ranges from zero to 3,400 feet. It historically supported significant levels of Coho and chum production, with most of the chum salmon spawning in the lower three miles. Coho and winter steelhead spawners have been documented at river mile 3.7 and 3.1 respectively. Fall Chinook used to spawn in Deep Creek but according to Mike McHenry, fisheries biologist for the Lower Elwha Klallam Tribe, they have been extirpated.

Brief Treatment history of Deep Creek
See previous year's reports for more detailed information

- 2013: Deep Creek was surveyed and treated for knotweed and other invasives including Canada thistle, bull thistle, and fox glove [PSC].
- 2014-2017: Due to funding constraints, no work was performed in Deep Creek.

- 2018: LEKT treated 1.5 river miles using 1.22 gallons glyphosate (8%).
- 2019: LEKT conducted knotweed treatments but data was grouped with Elwha data.
- 2020: LEKT searched 22 acres and treated knotweed on 6 acres at 2 sites.

2021: LEKT surveyed 25 acres and treated 5 acres using 0.08 gallons of glyphosate (8%) in a foliar application.

2022: To be determined depending on partner resources.

Herbicide Use-Deep Creek (gallons)									
	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated	0.5	-	-	-	0.5	5	N/A	6	**5**
Imazapyr foliar	0.03	-	-	-	0	N/A	N/A	0.8	**-**
Glyphosate foliar	0	-	-	-	0.2	1.2	N/A	-	**0.08**
Total Herbicide:	0.03	-	-	-	0.2	1.2	N/A	0.8	**0.08**

***Injection used on approximately 150 stems in 2017*

Salt Creek

Salt creek, with a river basin that drains 44.6 square miles, is a significant river system to restore due to its decreasing salmon habitats. Salt Creek and its tributaries provide important Coho salmon spawning and rearing habitat downstream of a passable dam at river mile 6.5. This same area used to support chum salmon and Chinook salmon was historically found farther downstream. Chum and Chinook salmon have not been documented in Salt Creek in recent years, most likely due to loss of large woody debris that supported salmon habitats. In the Salt Creek estuary, about 15 acres of tidal marsh has been lost to a road that cuts across the estuary and disconnects the salt marsh from the tidal-influenced reaches of Salt Creek. This impacts juvenile rearing of all salmonids produced from Salt Creek.

Brief Treatment history of Salt Creek
See previous year's reports for more detailed information

- 2013: Landowner Agreements from over 100 landowners on Salt Creek and one of its major tributaries with a history of knotweed, Nordstrom Creek were solicited. 19 permissions were obtained but only one parcel was treated [CCNWCB].
- 2014-**2021**: No entity reported work in this area this year.

2022: Following a consult with partners, obtaining permissions for surveying and treatment of Salt and Nordstrom Creeks may be a priority.

Herbicide Use,-Salt Creek (gal)									
	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated	1	-	-	-	-	**-**	-	**-**	**-**
Imazapyr foliar	0.02	-	-	-	-	**-**	-	**-**	**-**
Total Herbicide	0.02	-	-	-	-	**-**	-	**-**	**-**

Elwha River

The Elwha is a river in transition. Two dams were removed in 2012, and the former reservoir lake-beds and river ecology are subject to intense research and restoration efforts. The Lower Elwha Klallam Tribe actively surveys and treats invasive species in two tributaries in the lower watershed, Little River and Indian Creek, in addition to the mainstem of the Elwha River and its estuary.

Brief Treatment history of Elwha River
See previous year's reports for more detailed information

- 2011-2014: Lower Elwha Klallam Tribe (LEKT), Washington Conservation Corps (WCC), and North Cascades Exotic Plant Management Team with the National Park Service (NCEPMT) conducted invasive

plant treatments that included very few knotweed treatments. Treatments focused primarily on reed canarygrass, which has exploded after two dam removals on this river.

- 2015: Crews noted a reduction in reed canarygrass infestations for the first time, after four years of treatments. A few knotweed patches were treated in early fall [LEKT].
- 2016: While other noxious weed treatments took place, this year was a rest year for knotweed [LEKT].
- 2017: LEKT along with a WCC crew searched 164 acres along the Elwha River and treated invasives including knotweed and other high priority species including purple loosestrife, meadow knapweed, and yellow flag iris. The NCEPMT also surveyed 3 miles of the Elwha River for treatment of non-knotweed invasive species.
- 2018: LEKT treated all noxious weeds along 3 river miles using 0.027 gallons glyphosate (8%). The CCNWCB re-treated meadow knapweed and other high priority noxious weeds along Olympic Hot Springs Road, from its start at Highway 101 until the Olympic National Park boundary.
- 2019: LEKT, with 4 days of assistance from the WCC, treated 578.1 acres for noxious weeds in the Elwha and its tributary, Indian Creek. Reed canarygrass was the main targeted species while other treated species were: herb Robert, everlasting peavine, common ivy, St. John's wort, Scotch broom, common mullein, white sweetclover, old man's beard, Himalayan blackberry, Canada thistle, purple loosestrife, yellow flag iris, yellow archangel, and spotted jewelweed.
- 2020: LEKT searched 120 acres along the Elwha River and treated 11 acres for knotweed. LEKT also searched 10 acres on Little River and treated 1 acre for knotweed. LEKT reported advances in treating reed canarygrass in the lower two miles of Indian Creek, English Hawthorn on Little River, along with Canada thistle, clematis, everlasting peavine, Scotch broom and others throughout the lower Elwha watershed. LEKT has been mapping Eurasian milfoil and neighboring plants in the Elwha estuary in preparation for future treatments.

2021: LEKT surveyed 0.5 river miles and searched 265 acres. The crew treated 12 acres using 0.24 gallons of glyphosate (8%) as a foliar spray for control of knotweed, Canada thistle and reed canary grass. CCNWCB treated approximately I acre of common teasel both manually and chemically near the mouth of the river. This site was just off channel of the river, is the only known location in the area, and may be connected to the main river if there is a slight change in river flow, in the near future.

2022: LEKT will continue treatment for noxious weeds along Indian Creek, Little River, and the Elwha River. LEKT also plans to begin treating the Eurasian milfoil in the Elwha estuary discovered in 2020. CCNWCB will continue county right-of-way treatment to compliment river treatments as resources allow.

Dry Creek

Watershed overview and treatment history not currently available

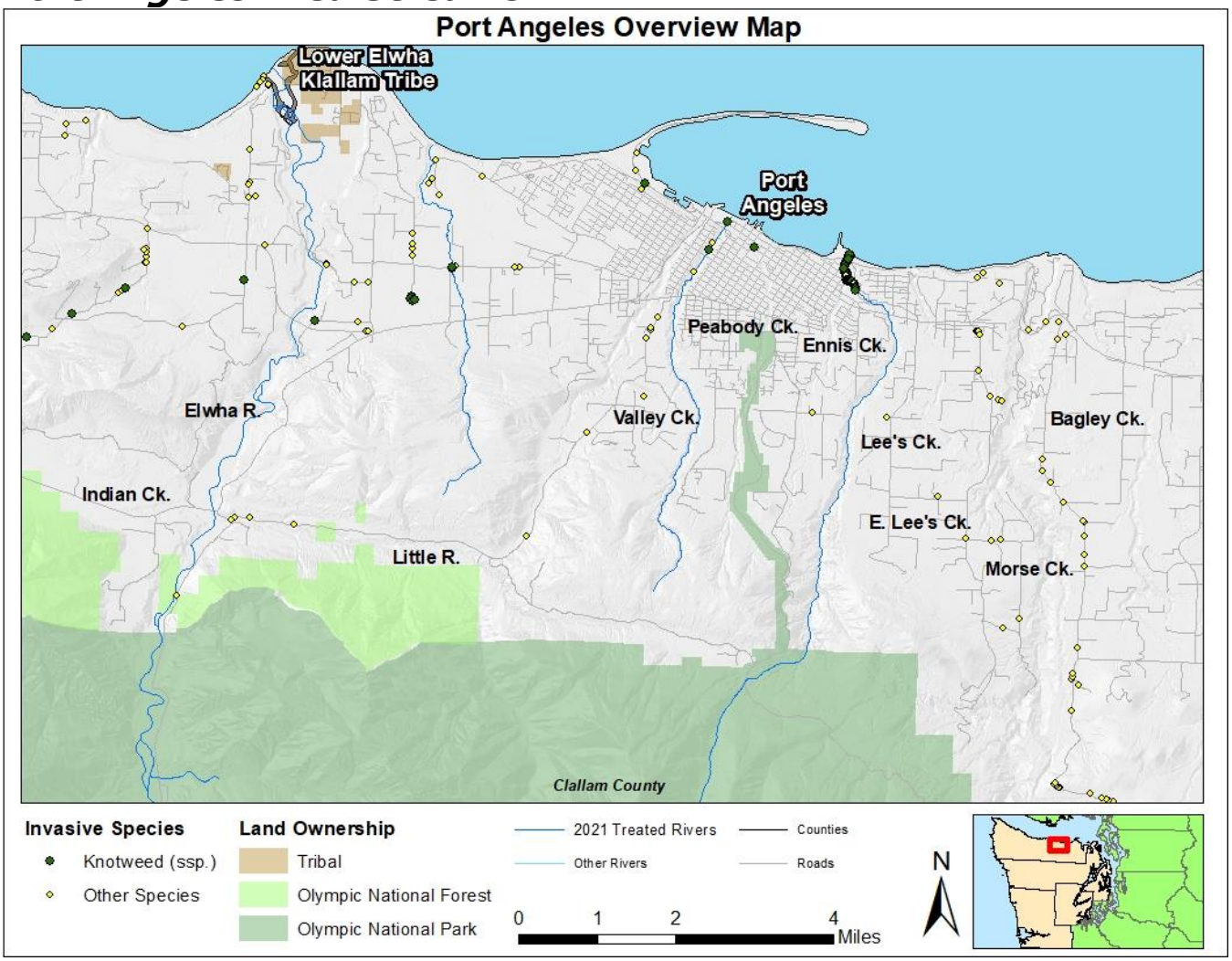
2018: This is the first year that any entity reported treatments on Dry Creek. The Lower Elwha Klallam Tribe reported treating Himalayan blackberry and English ivy on behalf of one landowner. LEKT treated 0.3 river miles (2 acres).
2019-2020: No treatments reported.

2021: LEKT surveyed one acre and treated 0.5 acres. Crews used 0.16 gallons of glyphosate (8%) as a foliar treatment to control knotweed. CCNWCB surveyed 0.22 miles and treated 0.45 acres of knotweed and poison hemlock. The crew used 0.23 gallons of imazapyr (1%) as a foliar treatment.

2022: CCNWCB will follow up on treatments done in 2021**.** Consult with LEKT for future plans.

For more information about the Elwha River and treatments in the surrounding area, please contact:
Allyce Miller, LEKT Revegetation Field Supervisor, 360-457-4012 ext. 7488, Allyce.Miller@elwha.org
Or
Cathy Lucero, Clallam Noxious Weed Control Board, 360-417-2442 of clucero@co.clallam.wa.us

Port Angeles Area Streams



Valley Creek

Valley Creek is a small stream which empties into the Port Angeles Harbor. Salmon and steelhead have probably been extinct from the creek since the late 1940's, when the final sections of the approximately 2,000-foot culvert at the mouth were installed. Recent surveys of fish in this system revealed numerous resident cutthroat trout up to 11 inches in length. The section of the creek by Valley Street had been severely infested with knotweed for decades.

<u>Brief Treatment history in Valley Creek</u>
See previous year's reports for more detailed information

- 2010: The first treatments on Valley Creek were conducted [Puget Sound Corps (PSC)].
- 2011: Bridge construction blockages prevented treatments this year.
- 2012: The PSC and a streamkeeper team performed a full survey of Valley Creek.
- 2013: One previously treated knotweed site was retreated. The only known purple loosestrife site in Port Angeles, consisting of 15 plants, was discovered on Valley creek and treated [PSC].
- 2014: 1.4 river miles were treated for knotweed, purple loosestrife, teasel, herb Robert, and other invasives [PSC].
- 2015-2017: Due to limited PSC funding, no treatments were performed.
- 2018: No treatments on Valley Creek this year.
- 2019: CCNWCB surveyed 0.9 miles and treated on 0.15 acres for knotweed, common teasel, purple loosestrife, and yellow archangel.

- 2020: CCNWCB surveyed 0.9 river miles and 0.2 road miles along Valley Creek. They searched 5.45 acres and treated 0.25 acres for knotweed, common teasel, purple loostrife, and yellow archangel.

2021: CCNWCB crew surveyed 2.37 acres and treated 0.004 acres of knotweed and yellow archangel. The crew used 0.00125 gallons of imazapyr (1%) for the treatment.

2022: CCNWCB will revisit 2021 sites and retreat as needed.

Peabody Creek

Peabody Creek is a small urban stream, draining a watershed of 2.6 square miles, with its headwaters in the northern part of the Olympic National Park. Some logging has occurred in the upper watershed but good stands of mature timber still remain. The 4.8 mile long stream flows through heavily urbanized areas of Port Angeles. Sewage was historically discharged directly into Peabody Creek and large quantities of storm water are still directed into it. Coho and possibly chum salmon were observed historically but are thought to be extirpated. Currently only cutthroat trout are known to utilize Peabody Creek.

Brief Treatment history of Peabody Creek

See previous year's reports for more detailed information

- 2009: 4 landowners, totaling approximately 0.5 river miles, gave permission to the CCNWCB to treat knotweed.
- 2010: Sites from 2009 were retreated. Surveys were performed farther upstream, where large stands of knotweed were found [CCNWCB].
- 2011-2012: Funding uncertainties prevented treatments on this river.
- 2013: 0.5 miles from the mouth of Peabody creek were treated for knotweed [CCNWCB]. A citizen science volunteer restoration project, led by the Feiro Marine Life Center, was instituted.
- 2014: One site owned by the City of Port Angeles was treated [CCNWCB].
- 2015: Citizen Science volunteers manually controlled invasive species of concern.
- 2016: 3.7 acres (0.43 river miles) of Peabody Creek were treated. Very few infestations were found [CCNWCB].
- 2017: Due to time constraints and low infestation levels, no work on Peabody Creek was performed.
- 2018: No work done this year.
- 2019: CCNWCB surveyed 0.9 miles, between 1st St. and Lauridsen Blvd., and treated 0.6 acres.
- 2020: CCNWCB surveyed 1 river mile, searched 6 acres, and treated 0.6 acres for knotweed.

2021: CCNWCB surveyed 0.25 river miles and found one plant near Lincoln Street. Treatment is awaiting private permission**.**

2022: CCNWCB will conduct further surveys to assess regrowth from previous years. Treat site noted above when private permission acquired.

Ennis Creek

Because the headwaters of Ennis Creek are at 6000' in Olympic National Park, it is significantly affected by both snowmelt and runoff. Historically Ennis Creek supported stocks of Coho, steelhead, and chum; however, Coho stocks are highly degraded. The lower reaches of Ennis Creek flow through urban areas of Port Angeles where water quality is impacted by storm water runoff. An old Rayonier mill site at the mouth of Ennis Creek has been highly disturbed and is a long time historical knotweed site.

Brief Treatment history of Ennis Creek

See previous year's reports for more detailed information

- 2007-2010: Ennis Creek near the Waterfront Trail was treated [CCNWCB, North Cascades Exotic Plant Management Team (NCEPMT)].
- 2011: Ennis Creek within the Olympic National Park (ONP) boundaries were treated [NCEPMT].
- 2012: The majority of the lower reaches of Ennis Creek were treated [CCNWCB].
- 2013: Most known knotweed sites were retreated, with the exception of the Old Rayonier mill [CCNWCB, NCEPMT].

- 2014: 0.66 river miles of lower Ennis Creek was treated [CCNWCB]. 0.01 acres of Ennis Creek were treated within ONP boundaries [NCEPMT].
- 2015-2016: No treatments on Ennis Creek were reported.
- 2017: CCNWCB surveyed 1.7 river miles and treated 10 acres on 14 parcels using 0.1 gallons of imazapyr (1%) in foliar treatments.
- 2018: CCNWCB retreated 0.1 river miles (0.3 acres) using 0.06 gallons of imazapyr (1%) of Ennis Creek.
- 2019: CCNWCB surveyed 2.8 river miles, searched 17 acres, and treated 2.1 acres for knotweed.
- 2020: CCNWCB surveyed 2.5 river miles, searched 17 acres, and treated 2.1 acres for knotweed.

2021: CCNWCB surveyed 0.63 river miles (52.7 acres) and treated 10.3 acres for knotweed and yellow archangel. The crew used 0.105 gallons of imazapyr (1%)

2022: [CCNWCB] Resurvey 2021 treatment sites and retreat as needed. Continue surveys and treatments on upstream parcels that were not searched between 2019 and 2021.

Lees Creek (E Fork Lees Creek)

Lees Creek is a medium-sized stream, entering the Strait of Juan de Fuca just east of Port Angeles. It currently supports very low numbers of anadromous salmon, limited to a few returning Coho and steelhead. It is a "naturally closed channel" through the summer, as the mouth of the channel is isolated from the Strait of Juan de Fuca by natural sand spit during low flow periods. Lees Creek has been significantly altered from its historic condition. Fish passage is constricted; large woody debris is lacking and storm water negatively impacts water quality. No active restoration or improvement actions are known in the Lees Creek watershed.

Brief Treatment history of Lees Creek-East Fork Lees
See previous year's reports for more detailed information

- 2011: Surveys on Lees Creek discovered a small amount of knotweed, which was treated [CCNWCB].
- 2012: No treatments occurred.
- 2013: A large number of new landowner permissions allowed for treatments on 9 parcels for knotweed and yellow archangel [CCNWCB].
- 2014-2016: No treatments took place due to time and funding constraints [CCNWCB].
- 2017: 21 parcels along 1.32 river miles of Lees and East Fork Lees Creek (from mouth to 1.2 miles up Mt Pleasant Road) were surveyed for treatment. Two parcels on East Fork Lees Creek with significant knotweed were also treated. A total of 0.11 gallons of 1% Imazapyr was used on 10 parcels. [CNWCB]
- 2018: CCNWCB crew treated along 0.99 river miles on both Lees and East Fork Lees using 0.03 gallons of triclopyr (1%) and 0.02 gallons of imazapyr (1%) across 3.35 acres.
- 2019: CCNWCB surveyed 2.83 miles, surveyed 17 acres, and treated 0.006 acres for knotweed using 0.006 gallons of imazapyr (1%) in foliar treatments.
- 2020: CCNWCB surveyed 0.2 river miles, searched 1.3 acres, and treated 1 acre for knotweed on E. Lee's Creek. They also searched 1 acre and treated 0.01 acres for knotweed on Lee's Creek.

2021: No surveys or treatments were conducted on Lee's Creek in 2021. New fish passage culvert completed in November.

2022: Follow-up on upstream permissions for infestations noted on properties above power lines.

Morse Creek and Waterfront Trail

While no knotweed has been found directly on Morse Creek itself, several patches of knotweed have been found in adjacent areas along the Port Angeles section of the Waterfront Trail.

Brief Treatment history of Morse Creek and the Waterfront Trail
See previous year's reports for more detailed information

- 2013: Four miles of the Waterfront Trail were surveyed, and approximately 300 knotweed stems were treated. Yellow archangel was also treated on Morse Creek [CCNWCB].
- 2014- 2018**:** No treatments have occurred on Morse Creek.
- 2019: CCNWCB treated 0.3 acres for knotweed on a parcel adjacent to Morse Creek and surveyed 0.15 miles downstream.

- 2020: CCNWCB treated 0.3 acres for knotweed on a parcel adjacent to Morse Creek parcel.

2021: No surveys or treatments were conducted

2022: Revisit 2020 treatment site and survey downstream area around HWY 101 for knotweed. Work with City of Port Angeles to treat large yellow archangel infestation along the waterfront trail..

Bagley Creek

Bagley Creek is a medium-sized independent drainage, entering the Strait of Juan de Fuca approximately 2 miles west of Green Point. Coho, fall chum salmon, and winter steelhead are the only identified anadromous fish known to exist in Bagley Creek. The watershed has experienced widespread timber harvest and conversion to residential use.

Brief Treatment history of Bagley Creek
See previous year's reports for more detailed information

- 2011: 0.75 miles of Bagley Creek were surveyed and two patches of knotweed were treated [CCNWCB].
- 2012: The source of knotweed on Bagley Creek was identified. All but two landowners in the source area consented to treatments [CCNWCB].
- 2013: 0.75 miles from the mouth of Bagley Creek was treated [Puget Sound Corp (PSC)].
- 2014: 2013 sites were retreated [CCNWCB].
- 2015-2016: No treatments on Bagley Creek were conducted.
- 2017: 1.61 miles of Bagley Creek were surveyed for treatment. Roadside source patches south of Hwy 101 were treated for the first time, per the County Road Department's IWM plan. A total of 0.05 gallons of imazapyr was used to treat a total of 0.63 acres. Poison hemlock was noted and also treated at the roadside knotweed site. [CCNWCB].
- 2018: CCNWCB crew retreated 0.2 road miles (0.5 acres) using 0.01 gallons of triclopyr (1%) and 0.02 gallons of imazapyr (1%).
- 2019: No knotweed treatments were conducted on Bagley Creek.
- 2020: CCNWCB surveyed 0.2 river miles and 0.3 road miles, searching 3.3 acres, and treated 1 acre for knotweed and poison hemlock.

2021: No surveys or treatments were conducted. New fish passage culvert installed.

2022: Revisit 2020 treatment sites.

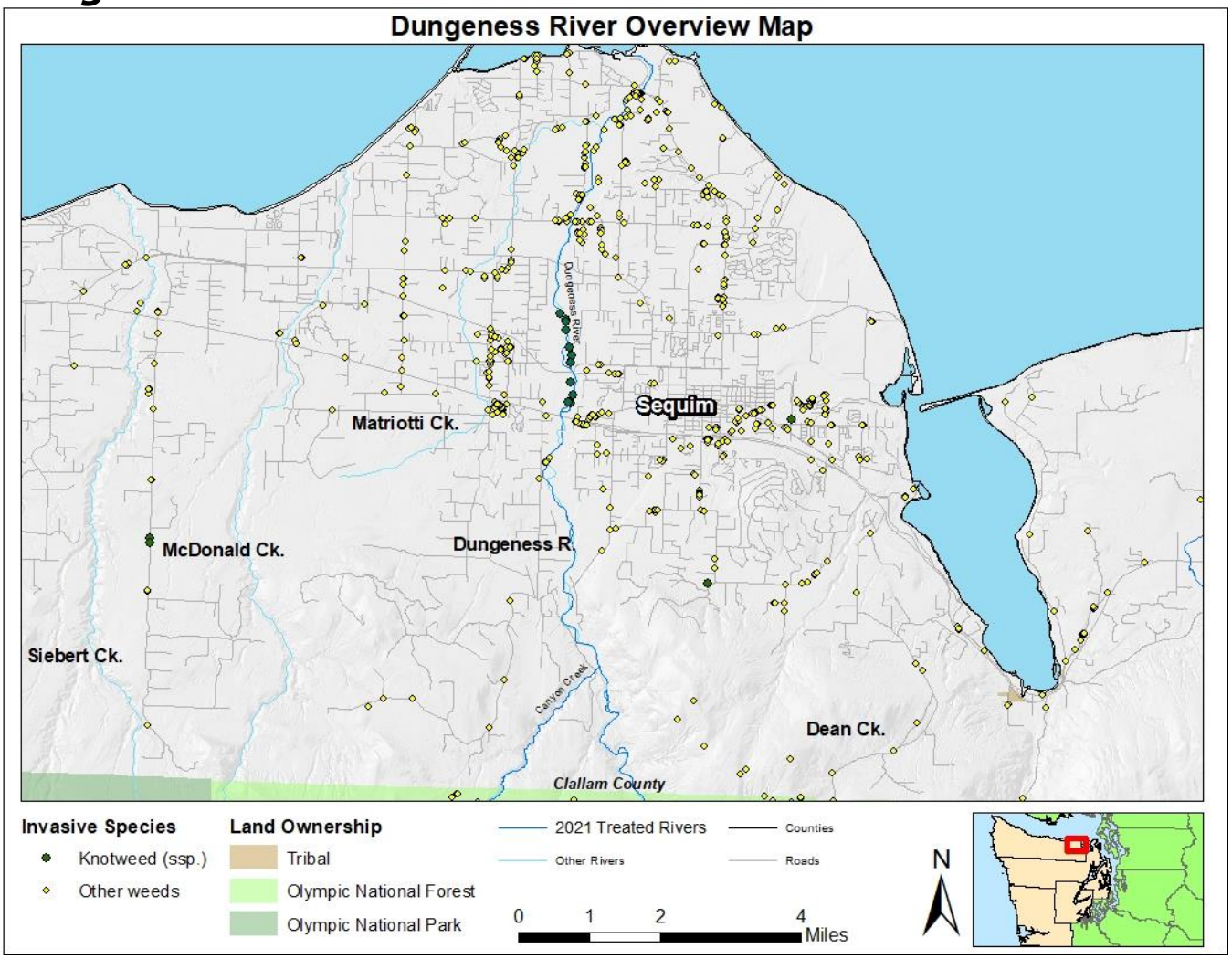
Herbicide use, Port Angeles Area (gallons)									
Waterway	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Valley Creek	0.02	0.01	-	-	-	**-**	0.06	0.005	**0.00125**
Peabody Creek	0.06	0.05	-	0.03	-	**-**	0.05	0.01	**-**
Ennis Creek	0.08	0.01	-	-	0.13	0.06	0.17	0.1	**0.105**
Lees Creek	0.001	0.2	-	-	0.05	0.01	0.03	0.001	**-**
East Fork Lees Creek	0.001	0	-	-	0.05	0.04	0.03	0.03	**-**
Morse and Waterfront	-	0.07	n/a*	-	-	-	0.005	0.001	**-**
Bagley Creek	0.04	0.001	-	-	0.05	0.03	-	0.07	**-**
Total	0.2	0.4	-	0.03	0.3	0.1	0.3	0.2	**0.10625**

Note: Herbicide use for other noxious weeds is not included in this total.
**Manual treatments of the waterfront trail were performed in 2015.*

For more information regarding Port Angeles area streams, contact:

Cathy Lucero, Clallam Noxious Weed Control Board, 360-417-2442 of clucero@co.clallam.wa.us

Dungeness River Watershed



Dungeness River

The Dungeness River, which is in the eastern portion of WRIA 18, drains 198 square miles. The mainstem extends 31.9 miles and its primary tributary, the Gray Wolf River, adds another 17.4 miles. There is an additional 256 miles of tributaries in the basin. Historically, the Dungeness was highly productive and diverse containing 11 individual salmonid populations. The Dungeness has experienced significant decreases in stock productivity levels and has been the subject of extensive habitat restoration and conservation for many years. In many cases, the Jamestown S'Klallam Tribe, in partnership with other local agencies has been instrumental in implementing restoration efforts.

<u>Brief Treatment history of the Dungeness River</u>
See previous year's reports for more detailed information

- 2004-2008: Knotweed was treated on the Dungeness River. Specific information is not available [Jamestown S'Klallam Tribe].
- 2009-2012: No treatments of knotweed occurred. Other invasives, primarily butterfly bush, were targeted for treatments [Jamestown S'Klallam Tribe].
- 2013: Knotweed and butterfly bush were treated at two county parks along the Dungeness River. A Washington Department of Fish and Wildlife critical wetland near the Dungeness River was also treated [Puget Sound Corp (PSC)].

- 2014: 7 acres of private property on the Dungeness River was treated for knotweed and butterfly bush. 33.5 acres near the mouth of the Dungeness River, where knotweed was previously record, was found to be knotweed free and was treated for other species of concern [NOSC, PSC].
- 2015: 27.3 solid acres of invasive species were treated along the Dungeness River. Crews noted that use of an "EZ-Ject" on butterfly bush provided a high level of control [NOSC, Jefferson County Washington Conservation Corp (WCC), Jamestown S'Klallam Tribe, CCNWCB].
- 2016: Knotweed, scotch broom, and Himalayan blackberry were treated on 2 river miles [NOSC]. An additional 1.16 river miles along the Dungeness dike and adjacent floodplains were treated for invasives of control [WCC]. A total of 29 acres were surveyed for treatment in 2016.
- 2017: Butterfly bush and knotweed treatments continued along 1.3 river miles of the Dungeness River (24.7 acres) [WCC for NOSC]. River lupine was noted successfully filling areas once dominated by butterfly bush and knotweed. The CCNWCB surveyed and treated 4.4 acres of the Dungeness Dike (directly adjacent to the Dungeness River) for heavy poison hemlock infestations as well as Canada thistle, bull thistle, and herb Robert.
- 2018: The CCNWCB treated roadside noxious weed infestations in the vicinity of the Dungeness River and tributaries; treatments included 4.9 gallons of herbicide and covered 74 road miles.
- 2019: CCNWCB, NOSC, and WCC coordinated to survey 1.2 river miles and treat 32.39 acres for knotweed, butterfly bush, common teasel, poison hemlock, and Canada thistle.
- 2020: CCNWCB surveyed 2.4 river miles, searched 107 acres, and treated 53 acres for knotweed, Canada thistle, comfrey, herb Robert, Himalayan blackberry, Italian arum, poison hemlock, tansy ragwort, and teasel. NOSC/WCC surveyed 1 river mile, searched 18 acres, and treated 9.4 acres for butterfly bush.

2021: NOSC/WCC surveyed 4.5 miles of the Dungeness and treated 90.3 acres for knotweed and butterfly bush. CCNWCB surveyed 0.4 acres and treated 0.002 acres for knotweed and reed canarygrass. The crew used .0025 gallons of imazapyr (1%) as a foliar treatment. CCNWCB also manually controlled common teasel and poison hemlock along the Dungeness Dike.

2022: CCNWCB will continue to survey and treat the Dungeness Dike and River's End parcels for the Clallam Department of Community Development. NOSC plans to continue surveying the lower part of the river below Railroad Bridge Park. Follow up treatments of the Dungeness Dike and the floodplain restoration area will also be crucial.

Bell Creek

Bell Creek is approximately 3.8 miles long and drains 8.9 miles of low elevation watershed. It flows from Happy Valley through the eastern portion of Sequim, into Washington Harbor at the entrance to Sequim Bay. It has been heavily influenced by irrigation runoff since the initiation of irrigation in the Sequim-Dungeness Valley.

Brief Treatment history of Bell Creek

See previous year's reports for more detailed information

- 2013: An industrial site on Bell Creek with a long history of knotweed was treated [PSC].
- 2014: No treatments were reported.
- 2015: Species of concern were treated along Bell Creek [PSC]. Specific information is not available.
- 2016: 8 acres of adjacent land owned by the Washington Department of Fish and Wildlife (WDFW) was treated for teasel, poison hemlock and other noxious weeds [WCC].
- 2017: 6.6 acres of WDFW property adjacent to Bell Creek was treated for poison hemlock and teasel. The teasel infestation was still extremely dense in this area but poison hemlock was much reduced. [CNCWCB]
- 2018: Crews treated 7.5 acres for teasel and poison hemlock on Washington Department of Fish and Wildlife property adjacent to Bell Creek [WCC].
- 2019: Crews treated teasel and poison hemlock along 0.25 miles of Bell Creek that flows through 9.7 acres of Washington Department of Fish and Wildlife property [CCNWCB, WCC].
- 2020: No treatment details were provided for this report in 2020 although WDFW staff stated that they were continuing to treat the poison hemlock and teasel.

2021: CCNWCB manually removed common teasel from 0.54 acres of the creek.

2022: More resources should be devoted to treating the poison hemlock, common teasel, and Himalayan blackberry infestations along Bell Creek, at the WDFW property, and nearby residental properties and parks.

Herbicide Use, Dungeness River and Surrounding Area (gal)									
	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated	0.5	8.0	27.3	40.3	35.7	13	9.7	62.4	**0.54**
Total Herbicide	0.1	0.4	N/A	2.1*	0.7*	0.7	1.2	0.5*	**0**

**Herbicide totals for 2016, 2017, and 2020 include Dungeness dike and Bell Creek portions only. Herbicide totals were not furnished by NOSC for 2021.*

For more information about control efforts on the Dungeness River, please contact:
Hilton Turnbull, Jamestown S'Klallam Tribe, (360) 681-4603, hturnbull@jamestowntribe.org
Or
Sarah Doyle, North Olympic Salmon Coalition, (360) 379-8051, sdoyle@nosc.org
Or
Cathy Lucero, Clallam County Noxious Weed Control Coordinator, 360-417-2442, clucero@co.clallam.wa.us

Clallam County Road Department:

The Clallam County Road IWM Plan is created and administered by the CCNWCB and the plan strives to work collaboratively to support adjacent invasive plant control programs. Roadsides are high priorities for control of weed species because they cross and link many adjacent properties and land uses, and can act as conduits for the spread of weeds. Additionally, County rock sources/soil disposal sites (pits) act as weed sources and are especially vulnerable to contamination by knotweed. Knotweed is classified as a highest priority target species in the Integrated Weed Management Plan.

Brief Treatment history of knotweed and Integrated Weed Management Plan
See previous Clallam Road Department Annual Reports for details:

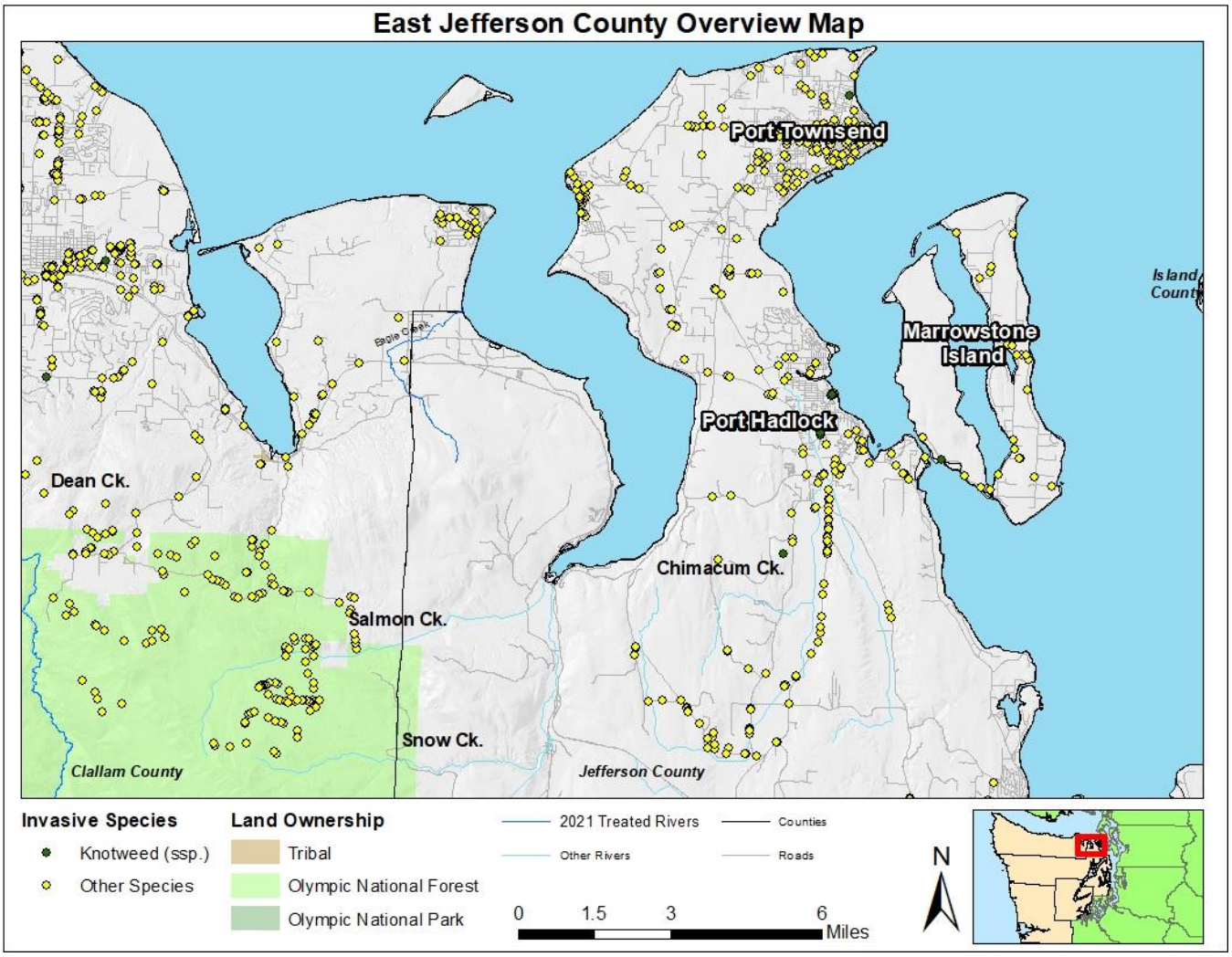
- 2017: The first treatment season of the Road Department's Integrated Weed Management. Knotweed was treated at eight County quarries or spoil disposal sites; knotweed was treated on seven county road right-of-ways.
- 2018: Clallam County Road Department IWM crew treated knotweed infestations on 13 road right-of-ways: Blue Mountain Rd, Cays Rd, Dan Kelly Rd, Fisher Cove Rd, Henry Boyd Rd, Hermison Rd, Hoko-Ozette Rd, Olympic Hot Springs Rd, Power Plant Rd, Rife Rd, S Bagley Creek Rd, Swan Bay Rd, and Township Line Rd., and at six pits: Blyn Pit, Place Pit, Quillayute Pit, Ranger Pit, Umbrella Creek Pit and Whitcomb-Diimmel Pit.
- 2019: Clallam County Road Department IWM crew treated knotweed infestations on 10 road right-of-ways: Charley Creek Rd, Blue Mountain Rd, Cooper Ranch Rd, Hermison Rd, Hoko-Ozette Rd, Jimmy-Come-Lately Rd, JoycePiedmont Rd, the Olympic Discovery Trail, Sekiu River Rd, and West Lake Pleasant Rd., and at five pits: Blyn Pit, Clallam Bay Storage Yard, Lake Creek Pit, Ranger Pit, and Umbrella Creek Pit
- 2020: Clallam County Road Department IWM crew treated knotweed infestations on 8.6 acres along 8 road right-of-ways: Cays Rd., Dan Kelly Rd., Hermison Rd, Hoko-Ozette Rd, Joyce-Piedmont Rd, Old Olympic HWY, West Arnette Rd., and West Lake Pleasant Rd, and at three pits: Quillayute Pit, Ranger Pit, and Umbrella Creek Pit.

2021: CCNWCB treated knotweed on 1.31 miles of County road right-of-ways. The roads included Shuwah, Pioneer, Deer Park Loop, Power Plant, Gagnon and West Lake Pleasant. The treated acres for these infestations was 6.26 acres.

2022: The Clallam Road Department IWM 2022 Plan is available online at the Clallam Noxious Weed Control Board website. Input from additional stakeholders or members of the public should be addressed to the Noxious Weed Control Board.

For more information about control efforts on the Dungeness River, please contact:
Cathy Lucero, Clallam County Noxious Weed Control Coordinator, 360-417-2442
clucero@co.clallam.wa.us
Or
Joe Reynolds, Weed Control Specialist, 360-417-2000 ext. 2703, jreynolds@co.clallam.wa.us

EAST JEFFERSON COUNTY



Port Townsend Area:

Brief Treatment history in the Port Townsend Area

See previous year's reports for more detailed information

Kah Tai Lagoon Park in Port Townsend:

- 2008-2011: A knotweed infestation of approximately 0.75 acres near the entrance of the park was treated [JCNWCB].
- 2012: The Park was designated for a rest year due to low infestation levels.
- 2013: Only about 20 canes of this infestation remained and were retreated.

Old Eaglemount Road

- 2010-2011: A small stand of knotweed was treated [JCNWCB].
- 2012: No treatments were reported.
- 2013: Of the previous infestations, only 4-5 stems remained and were treated.

Oak Bay near Port Hadlock

- 2011: A private parcel was treated for knotweed [JCNWCB].
- 2012: No treatments were reported.

- 2013: Approximately 40 remaining canes were treated. Crew noted that teasel has spread aggressively in areas previous inhabited by knotweed [JCNWCB].
- 2017: No treatment information was reported for inclusion.
- 2018: No treatment information was reported to us for inclusion.
- 2019: No treatment information was reported to us for inclusion.
- 2020: No treatment information was reported for inclusion in this report.

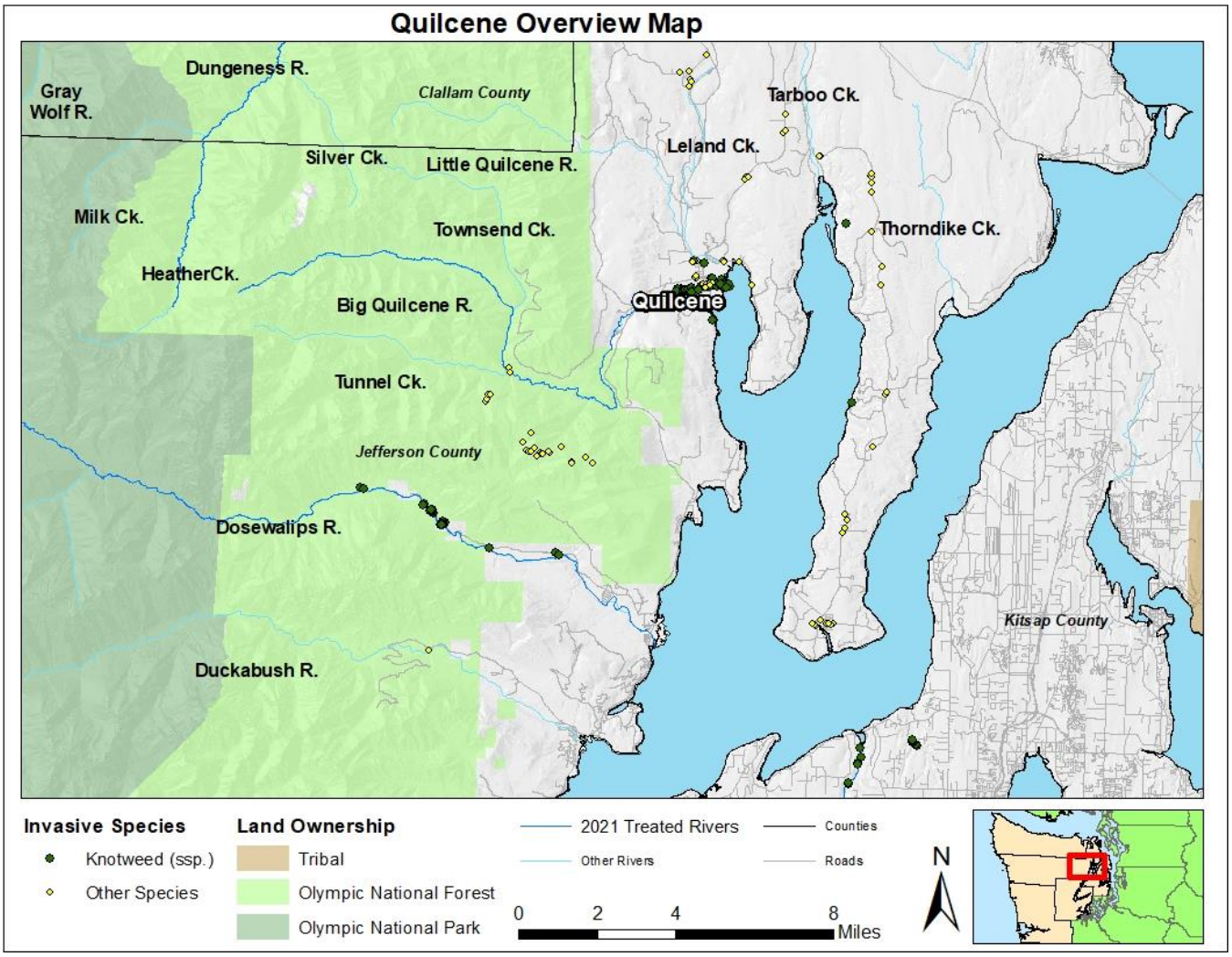
2021: JCNWCB/WCC treated the U Street walking trail in Port Townsend. The crew treated 0.04 acres of knotweed using 0.15 gallons of glyphosate (5%) as a foliar treatment. Poison hemlock was significant in Port Townsend and Jeffco Solid Waste Facility in dry sites. Large infestations of spotted knapweed were found on Solid Waste Facility property, both species treated with glyphosate foliar application. Wild chervil was mechanically controlled on county roadsides in Chimacum by WCC crew. Manual control of tansy ragwort and Scotch broom was done on Port Townsend city property and in Jeffco PUD power line corridor respectively.

2022: The JCNWCB recommends that Jefferson County Parks and NOSC treat reoccurring Irondale Beach knotweed with imazapyr in 2022 if possible, as it may have been treated with glyphosate year after year with varying effectiveness. JCNWCB plans to purchase backpack sprayers and related equipment, and additional herbicides as needed.

Herbicide Use, Port Townsend Area (gallons)											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Port Townsend (several sites)	0.15	-	0.01	-	-	-	n/a	n/a	n/a	n/a	**0.15**
Old Eaglemount Road	0.004	-	0.0008	-	-	-	n/a	n/a	n/a	n/a	
Oak Bay	1.1	-	0.01	-	-	-	n/a	n/a	n/a	n/a	
Additional Jefferson County sites	-	-	-	-	-	0.4	n/a	n/a	n/a	n/a	
Total Herbicide	1.3	-	0.03	-	-	0.4	n/a	n/a	n/a	n/a	**0.15**

For more information regarding control in the Port Townsend area, please contact:
Joost Besijn, Jefferson Noxious Weed Control Board Coordinator, noxiousweeds@co.jefferson.wa.us
or
Elena Smith, Jefferson County Noxious Weed Control Board, esmith@co.jefferson.wa.us

Quilcene Area



Big Quilcene River

The Big Quilcene River drains a basin of approximately 70 square miles, most of which is under federal ownership. The Big Quilcene mainstem is 19 miles long, with its headwaters located in the Olympic National Forest. The upper reaches of the Big Quilcene River are high gradient, highly confined channels. The City of Port Townsend has a diversion dam at river mile 9 as most of the water used in Port Townsend comes from the Big Quilcene. The middle reaches between river mile 5 and river mile 2.5 are moderate gradient channels with widened floodplains. There is Federal Fish Hatchery at river mile 3. Low gradient, unconfined channels characterize the lower 2.5 miles, while the lower mile meanders across a broad alluvial fan. The lower reaches of the Big Quilcene are a popular fishing area for chum and Coho. Large stands of giant knotweed have been visible for many years on the alluvial floodplain at the mouth—one local resident remembers playing in the knotweed 40 years ago!

Brief Treatment history of the Big Quilcene River

See previous year's reports for more detailed information

- 2008: The entirety of the river was surveyed for knotweed [JCNWCB, HCSEG].
- 2009: Treatments for knotweed took place on this river [Clallam County Noxious Weed Control Board (CCNWCB)].
- 2010: 19 days were devoted to treated knotweed on the majority of the river [North Olympic Salmon Coalition (NOSC), HCSEG].

- 2011: All previously treated knotweed sites were retreated [NOSC, JCNWCB]. Private landowners were given the opportunity for native plantings to take place on treated sites.
- 2012: All known knotweed infestations were treated [NOSC, HCSEG].
- 2013: All known knotweed infestations were retreated and a few new sites were discovered and treated [HCSEG].
- 2014: Surveys of the upper and middle reaches of Big Quilcene did not find any knotweed. Treatments and native plantings focused on the lower reaches of the river [HCSEG].
- 2015: Retreatment of known knotweed sites and revegetation continued. A total of nine sites were planted with native species [HCSEG].
- 2016: 34 acres were treated with 1.49 gallons of glyphosate [HCSEG].
- 2017: 3.2 miles of the lower Big Quilcene River treated using 0.26 gallons of imazapyr to treat 375 acres. Knotweed continues to decline significantly with only 0.075 solid acres of knotweed being treated this year. Crew switched to imazapyr to increase efficacy [HCSEG/WCC].
- 2018: All previously treated knotweed sites were retreated along 3.2 river miles, assisting 12 landowners [HSEG, WCC].
- 2019: 5.3 river miles were treated for knotweed, comfrey, everlasting peavine, Himalayan blackberry, Scotch broom, and yellow archangel, assisting 27 landowners. Herbicide use was double that of 2018 but a third of the volume used in 2016 [HSEG, WCC].
- 2020: HCSEG surveyed 3.5 river miles, searched 137 acres, and treated 0.11 acres for knotweed. HCSEG reports that treatment along the Big Quilcene River is "progressing nicely. The furthest known upstream knotweed location was 0.06 miles further downstream in 2020, near the USFS Quilcene Fish Hatchery. Invasive species infestations continue to decrease in the upper 2 of the 3.5 treated river miles and knotweed infestations are sparse and isolated.

2021: HCSEG/WCC spent six days treating on the Big Quilcene River, surveying 2.2 river miles and 173.5 acres. Knotweed, yellow flag iris, yellow archangel and comfrey were treated. The crew used a mixture of 0.02 gallons of imazapyr (1%) and 0.02 gallons of glyphosate (1%) as a foliar treatment. They also used 0.03 gallons of imazapyr (1%) alone. They also injected, using 0.13 gallons of glyphosate (100%) on the treatments. It was reported that the uppermost knotweed point at the Fish Hatchery treated in 2020 had no regrowth, moving the highest knotweed point downstream about a mile.

2022: No recommendations for this area were provided.

Herbicide Use, Big Quilcene River (gallons)														
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated*	13	55.7	42.7	4.06	NA	5**	6**	240	34	375	290	0.3	0.11	**0.05**
Glyphosate injected	2.1	0	0	0	0	0	0	0	0	0	0.2	0.5	0.3	**0.13**
Glyphosate foliar	3.6	18.3	31.4	9.8	7.3	9.9	4.3	3.6	1.5	0	-	-	-	**0.02**
Imazapyr foliar	0	0	0.9	0	0	0	0	0	0	0.26	0.04	0.09	0.07	**0.02**
Total Herbicide	5.7	18.2	24.1	9.8	7.3	9.9	4.3	3.6	1.5	0.3	0.2	0.6	0.37	**0.17**

The discrepancy between acres treated in different years may be due to different counting methods being used. *"Acres Treated" in 2008-2014 were calculated simply by adding together the acreage on all of the Pesticide Application Records and may vary depending on whether the applicator recorded strictly the area treated or the whole infested area. In 2015, 'Acres Treated' is included as reported by HCSEG. In 2011 the crew recorded strictly the acreage covered by knotweed, not the total infested area, as they had done in previous years. This accounts for the greatly reduced acreage. Data on acres actually treated was not supplied in 2013 and 2014. In 2017, the HCSEG and its WCC crew calculated acres treated using a 100 foot as the average width and multiplied this by river miles.*
***Estimate values*

Town of Quilcene

Brief Treatment history in Quilcene

See previous year's reports for more detailed information

- 2013: Several small sites were treated in mostly terrestrial areas [Jefferson Puget Sound Corp (JPSC)].

- 2014: Several additional small sites were treated around Quilcene [CCNWCB].
- 2015-**2020:** No treatments were recorded due to funding and staffing shortages.

2021: JCNWCB/WCC treated 0.002 acres of knotweed on Deer Creek Road. The crew used 0.05 gallons of glyphosate as a foliar treatment.

2022: No recommendations for this area were provided.

Lake Leland

The Lake Leland County Park is a popular fishing destination. Four distinct knotweed patches have been observed around the south end of the lake divided between County road right-of-way and private property.

Brief Treatment history in Lake Leland

See previous year's reports for more detailed information

- 2011: Sites where permissions were granted were treated for knotweed [JPSC].
- 2012: No treatments took place.
- 2013: Reed canarygrass was treated on Lake Leland and Leland Creek [JPSC].
- 2014- 2019: No treatments were recorded.
- 2020: HCSEG reports that Leland Lake was retreated and will continue to be monitored.

2021: HCSEG was unable to revisit the knotweed established below Leland Lake.

2022: No recommendations for this area were provided.

Tarboo Creek

Tarboo Creek, which drains into Dabob Bay, is a small but significant stream. There are 2,700 acres of protected riparian land, managed by many different groups including Jefferson Land Trust, Washington Department of Natural Resources (WDNR) and the Northwest Watershed Institute (NWI). The lower portion of Tarboo Creek is virtually undeveloped and it includes both conifer and deciduous forests and supports protected species such as the bald eagle, northern spotted owl and marbled murrelet.

Brief Treatment history of Tarboo Creek

See previous year's reports for more detailed information

- 2011-2013: Knotweed was treated along Tarboo Creek. [JCNWCB, NWI].
- 2014: No treatments occurred due to staffing shortages at JCNWCB.
- 2015: 1 acre was surveyed for treatment of knotweed [HCSEG].
- 2016-2018**:** No treatments were reported on Tarboo Creek; Infestation points only submitted by HCSEG.
- 2019: 30 ft^2 of knotweed was treated on a private parcel for the Northwest Watershed Institute on Tarboo Creek and approximately 85 ft^2 of knotweed on WA Department of Fish and Wildlife property near the mouth of Tarboo Creek [HCSEG].
- 2020: No treatments were reported on Tarboo Creek**.**

2021: No treatments were reported on Tarboo Creek.

2022: No recommendations for this area were provided.

Little Quilcene River

The Little Quilcene River drains a basin of approximately 40 square miles. Its headwaters originate above 4,400 feet on the north slopes of Mount Townsend and its runoff is derived from both rainfall and snowmelt. The upper watershed is within the Olympic National Forest and is steeply dissected with high gradient, confined stream channels. The lower valley and the flood plain have been developed for domestic, agricultural and timber use. The lower 0.8 miles have been diked and the banks armored to protect properties in the floodplain. The Little Quilcene River discharges to Quilcene Bay approximately one mile north of the mouth of the Big Quilcene. The estuary supports populations of Chinook, pink, chum, steelhead, Coho, sturgeon and cutthroat. However, the dike system, put in place nearly 100 years ago, has disturbed tidal function in the estuary. Sediment washed

downstream has caused the formation of a “delta cone”: a build-up of sediment in the estuary that can bury salt marshes that provide young salmon food and protection from predators. The HCSEG owns land near the mouth of the Little Quilcene and has mounted a large restoration effort in the estuary. 35,000 cubic yards of soil have been removed and the shoreline has been moved back 400 feet.

Brief Treatment history of Little Quilcene River

See previous year’s reports for more detailed information

- 2009: Knotweed near the mouth of the Little Quilcene River was discovered and treated [JCNWCB].
- 2010, 2013-2014: Remaining knotweed from the mouth of the river were retreated [East Jefferson Washington Conservation Corp (EJWCC), CCNWCB].
- 2015: One privately owned parcel was surveyed for knotweed but none was found [HCSEG].
- 2016: 2 acres of the lower reaches of the river were surveyed, where no knotweed was found [HCSEG].
- 2017: 0.2 miles of the Little Quilcene River was surveyed where only one parcel was found to have knotweed. Less than 0.001 gallon of imazapyr was used to treat 3 square feet of knotweed. [HCSEG]
- 2018: Knotweed was found at several locations during surveys of Leland Creek. An increase in Spotted Jewelweed infestations was observed this season in both Leland Creek and Little Quilcene River systems. Treatments used 0.064 gallons of imazapyr (1%) [HCSEG].
- 2019: 0.03 acres were treated for knotweed along the county ROW in an upland section adjacent to, but not in the Leland Creek floodplain. Himalayan blackberry treatment was conducted on an HCSEG parcel below Center Rd bridge [HCSEG, JCNWCB].
- 2020: HCSEG currently considers the Little Quilcene River to be in “control status” and knotweed is isolated to 4 patches below Leland Lake.

2021: HCSEG considers the Little Quilcene River to be in “controlled” status.

2022: HCSEG plans to continue to monitor the area below Leland Lake that was unable to be re-visited in 2021.

Herbicide Use, Quilcene Area (gallons)											
Waterway	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Quilcene Town	0.6	-	0.3	0.003	-	-	-	-	-	-	**0.05**
Tarboo Creek	2	2.3	0.03	-	0.02	-	-	-	-	-	**-**
Herb Beck Marina/Quilcene	-	-	0.3	0.05	-	-	-	-	-	-	**-**
Little Quilcene River	n/a	n/a	0.09	0.02	-	-	0.001	0.06	0.4	-	**-**
Total Herbicide	2.5	2.3	0.8	0.07	0.02	-	0.001	0.06	0.4	-	**0.05**

Note that 2011 and 2012 treatments were solely glyphosate. In 2013 the Weed Boards used imazapyr at 1%. There was a 90% reduction in overall use between 2013 and 2014, when imazapyr was again used.

Dosewallips/Duckabush and vicinity

Spencer Creek

Spencer Creek is a comparatively short waterway that flows into Jackson Cove in the northwest section of the Hood Canal.

Brief Treatment history of Spencer Creek

See previous year’s reports for more detailed information

- 2008-2010: One severe infestation on the upper reaches of Spencer creek was treated [CCNWCB].
- 2011: Large infestations of knotweed and giant hogweed were treated [CCNWCB].
- 2012: Retreatment of the upper reaches of the creek took place. All downstream sites where permissions were granted were also treated [CCNWCB, JCNWCB].
- 2013: The lower reaches of Spencer creek were retreated [JPSC].
- 2014: 1.7 river miles were surveyed and treated for knotweed, giant hogweed, and yellow archangel. Herbicide usage (see table below) indicates a gradual decrease in infestations [CCNWCB].
- 2015-**2020:** Due to low infestation levels, no treatments were performed on Spencer creek.

2021: No survey or treatment information was available for this area.

2022: No recommendations for survey or treatment was made available for this area.

Herbicide Use, Spencer Creek (gallons)											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Total Herbicide	1.7	3.3	0.3	0.2	-	-	-	-	-	-	-

Dosewallips River

The Dosewallips River is one of the largest rivers in Jefferson County. It flows east from the Olympic Mountains into the Hood Canal at the town of Brinnon. It drains approximately 130 square miles and includes close to 132 miles of streams and tributaries. Out of the 130 square miles, 93% is contained within the Olympic National Park and Olympic National Forest. The remaining area is rural residential, commercial, and private forested lands. The Dosewallips River supports Chinook, steelhead and Hood Canal Summer Chum, the last of which are listed as Threatened under the Endangered Species Act.

Brief Treatment history of the Dosewallips River

See previous year's reports for more detailed information

- 2006: The entire Dosewallips River was surveyed for knotweed [JCNWCB].
- 2007-2009: A combined JCNWCB/CCNWCB crew treated knotweed on the river.
- 2010: Additional surveys of upstream sites revealed more knotweed infestations, which were treated [EJWCC].
- 2011-2012: Sites discovered in 2010 were retreated [EJWCC].
- 2013: Comprehensive treatments of the entire mainstem took place this year. Upstream infestations had decreased greatly, while the lower Dosewallips still had heavy infestations [EJWCC].
- 2014: 13 miles of the river were treated for knotweed and herb Robert [CCNWCB, Jefferson Puget Sound Corps (JPSC), EJWCC].
- 2015: 12.5 miles of the Dosewallips were treated, including three new parcels and a channel newly created by an engineered log jam.
- 2016: The channel created in 2015 was retreated. In addition, 6 acres in the Dosewallips State Park were treated for species of concern [EJWCC].
- 2017:10.5 river miles surveyed; 0.13 acres of solid knotweed treated using 0.07 gallons of imazapyr (1%).
- 2018: Treatments used 0.2 gallons of glyphosate (100%) and an additional 0.4 gallons of imazapyr (1%) [HCSEG].
- 2019: 0.07 acres were treated for knotweed and the river is considered to be in near "control status." Butterfly bush and small patches of yellow archangel were also treated [HCSEG].
- 2020: HCSEG surveyed 4 miles, searched 123 acres, and treated 0.03 acres for knotweed along with butterfly bush, herb Robert, Himalayan blackberry, perenial peavine, periwinkle, poison hemlock, tansy ragwort, yellow archangel. HCSEG reports that the Dosewallips River has a small infestation of knotweed that occurs in isolated patches but extends over the length of 10.5 river miles.

2021: HCSEG/WCC spent three days surveying 7.35 river miles (421.41 acres) and treated 0.003 acres. Crews foliar treated knotweed and butterfly bush and applied 0.008 gallons imazapyr (1%). They also treated using 0.0006 gallons of glyphosate (100%) by injection. HCSEG reports that progress on the Dosewallips and the Big Quilcene River appears to be the most promising out of all target rivers. HCSEG was limited by landowner consent and could not treat on Jefferson County and WA State Parks lands.

2022: Make contact in regard to obtaining permission to treat at the Dosewallips State Park. Treat as time and resources allow.

Herbicide Use, Dosewallips River (gallons)																
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated*	2	5	7.8	5.5	14.1	0.3	0.6	5**	1.3	5718	27.1	1348	1348	0.07	0.03	**.003**
Glyphosate injected	0.8	3.2	0.8	0	0	0	0.03	0	-	-	0	0	0.7	0.07	0.22	**0.0006**
Glyphosate foliar	0.4	3.2	3.1	0.2	8.5	0.6	1.4	1.6	0.007	0.8	0	0	-	-		**-**
Imazapyr foliar	0	0	0	0	0.02	0	0.02	0.003	0.03	-	0.1	0.07	0.4	0.04	0.02	**0.008**
Total Herbicide	1.2	6.4	3.9	0.2	8.5	0.6	1.5	1.6	0.04	0.8	0.1	0.07	0.6	0.1	0.24	**0.0092**

***The discrepancy between acres treated in different years may be due to different counting methods being used.** *Acres treated in 2015 are as reported, and appears to be the total acres for parcels which received treatment. In 2017, the HCSEG and its WCC crew calculated acres treated using a 100 foot as the average width and multiplied this by river miles.*
***Estimated values*

Duckabush River

The Duckabush is one of the major waterways in Jefferson County. It originates near Mount Duckabush, within Olympic National Park, and flows into the Hood Canal south of the town of Brinnon. It is 24.5 miles long with over 50 tributaries contributing an additional 94 stream miles. The watershed covers an area of approximately 75 square miles. The upper watershed has been minimally logged and is used recreationally for hiking and camping. The lower 3.4 miles are accessible to salmon and support populations of Chinook, coho, chum and pink salmon, as well as steelhead and sea run cutthroat.

Brief Treatment history of the Duckabush River
See previous year's reports for more detailed information

- 2006: Surveys of the Duckabush River did not reveal any knotweed [HCSEG].
- 2007: A landowner reported knotweed on their property, which was treated [CCNWCB].
- 2008-2012: The private property first treated in 2007 was retreated [CCNWCB]. In 2012, an additional complete survey was performed in which no knotweed was found [HCSEG].
- 2013: Approximately 10 plants were treated near the mouth of the Duckabush [CCNWCB, JCNWCB].
- 2014-2017**:** No knotweed treatments took place on the Duckabush. Treatment of other invasive species was performed in National Forest Service lands (not reported here).
- 2018-2020: No treatments reported.

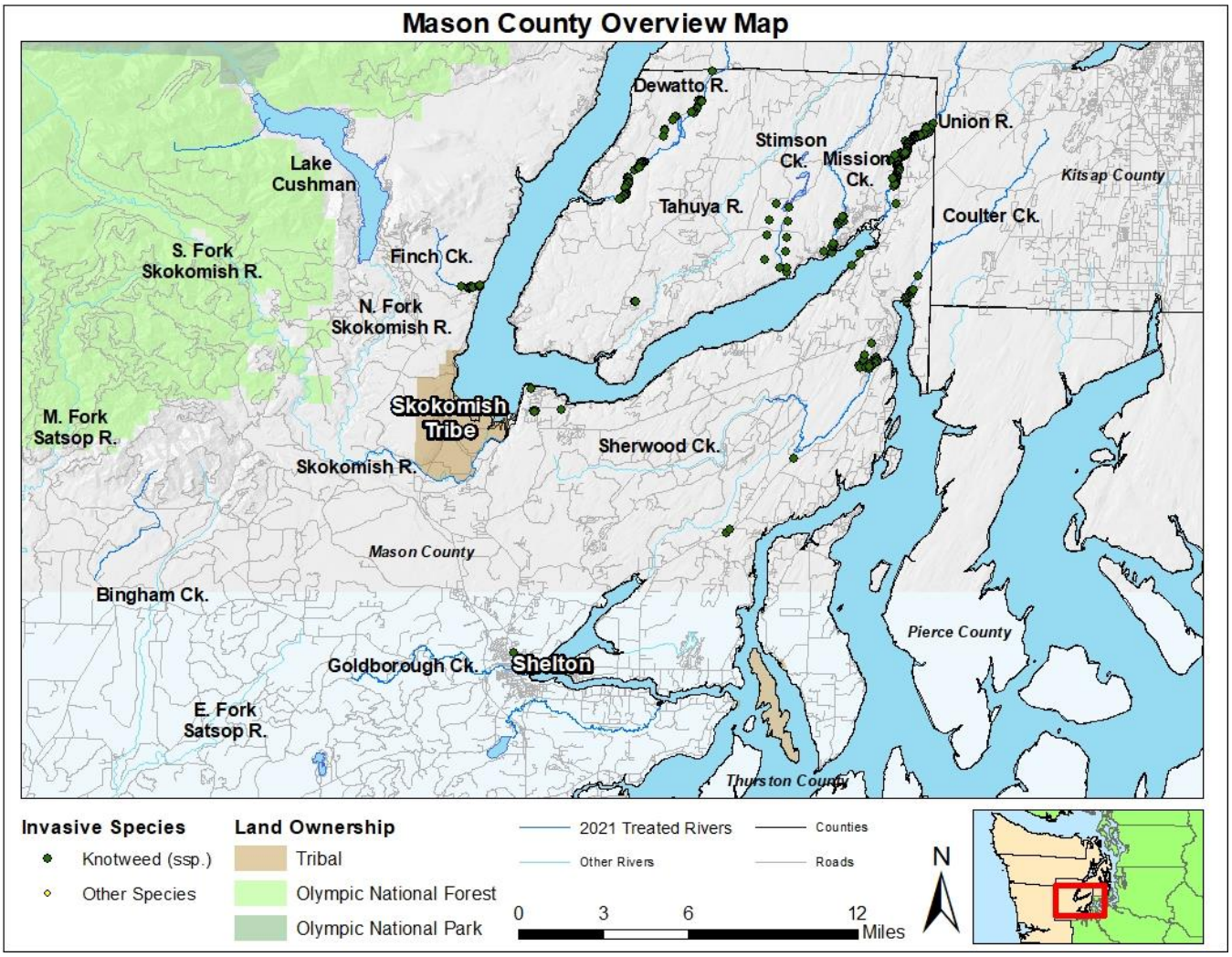
2021: No treatments reported in this area.

2022: No recommendations for future surveys or treatments in 2022 were available for this area.

Herbicide Use, Duckabush off-channel site (gallons)											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Total Herbicide	0	0.01	0.0008	-	-	-	-	-	-	-	**-**

For more information about control efforts in the Quilcene area, please contact:
Alex Papiez, Hood Canal Salmon Enhancement Group, 360-275-3575 extension 24,
alex@pnwsalmoncenter.org.

MASON COUNTY



Tahuya River

The Tahuya River is the largest stream on the Kitsap Peninsula, draining 45 square miles of land. The mainstem is 21 miles long, plus an additional 65 miles of tributaries. The numerous tributaries are an important factor in the Tahuya's ability to produce large numbers of coho salmon. Large undeveloped parcels along the remote river banks have made it difficult to access the Tahuya for complete river treatments.

Brief Treatment history of the Tahuya River

See previous year's reports for more detailed information

- 2010-2014: The first knotweed survey on the Tahuya River in 2010 revealed 98 parcels with small, intermittent patches of knotweed. These parcels were treated from 2010-2014. By 2014, infestations had decreased substantially on lower reaches of the river and were not treated [HCSEG].
- 2014-2015: Sitka Spruce and Western Red Cedar were planted on four large parcels. In 2015, retreatment of known knotweed sites was prioritized to the mid and upper Tahuya [HCSEG].
- 2016: 5.7 river miles were surveyed for treatment. 47 parcels were treated for knotweed [HCSEG].
- 2017: 6.5 river miles were surveyed (221 treated acres). 8 gallons of imazapyr (1%) was used to treat 0.06 acres of solid knotweed. [HCSEG and WCC]
- 2018: 6.5 river miles (387 acres) were treated for knotweed using 0.01 gallons of imazapyr (1%) [HCSEG].
- 2019: 10.9 river miles were surveyed and 0.83 were treated for knotweed, assisting 69 landowners on 49 parcels [HCSEG, WCC].

- 2020: HCSEG and WCC surveyed 3.25 miles, searched 80 acres, and treated 0.4 acres for knotweed, butterfly bush, giant hogweed, tansy ragwort, and yellow archangel. HCSEG reports that the Tahuya river system is one of their "most troublesome." The knotweed infestation is very abundant and small piano shaped parcels means there is a large amount of different landowners for relatively small stretches of river. HCSEG prioritized work in the upper portion of the infestation, and will continue to work on gaining landowner consent.

2021: HCSEG did not treat the Tahuya River during due to time limitations and prioritization of other systems with greater landowner support. Although, HCSEG did not conduct knotweed treatment on the Tahuya River, HCSEG has been focusing replanting efforts along the lower Tahuya River. HCSEG is in the process of planting over 20 acres of new riparian plantings and conducting stewardship on existing plantings in this area. The two main focuses have been to install cottonwood, willow, spruce and cedar in reed canary grass fields, after an initial mowing and 2% glyphosate treatment followed by two years of life rings (mowing/spraying 3 ft. diameter circles aka free to grow). An additional effort includes under planting immature deciduously dominated alder forests with shade tolerant conifers (cedar, spruce, hemlock, grand fir) and shade tolerant evergreen groundcovers such as sword fern (Upland), slough sedge (Facultative, Wet); followed by variable density thinning to open up light resources for installed conifers.

2022: HCSEG will continue to conduct outreach to gain landowner consent on the Tahuya, to allow for a full knotweed treatment during 2022. HCSEG was able to secure consent from a large multi-parcel private landowner on the Tahuya River. These parcels have never been treated for knotweed and having this new consent will increase the priority for knotweed control on the Tahuya.

Union River

The Union River mainstem is 10 miles in length and has an additional 30 miles of tributaries. The river enters Lynch Cove at the terminus of the east arm of Hood Canal, draining 24 square miles of land. The Union Reservoir supplies up to 5 million gallons of water per day to the City of Bremerton and the Puget Sound Naval Shipyard. The Union River is the only watershed in west WRIA 15 and north WRIA 14 to support a healthy run of summer chum salmon.

Brief Treatment history of Union River

See previous year's reports for more detailed information

- 2009-2013: Knotweed treatments were performed on 99 parcels each year [HCSEG].
- 2014: Crews note that while knotweed re-growth is very sparse, noxious weeds including giant hogweed, spotted jewelweed and policeman's helmet have spread into bare ground previously infested with knotweed. Native plant revegetation with primarily coniferous trees was started on 11 parcels throughout Union river.
- 2015: 4.32 river miles were surveyed for treatment [HCSEG, East Jefferson Washington Conservation Corps (EJWCC)].
- 2016: 3.45 miles of Union river was surveyed for treatment and an additional property was selected for native plantings [HCSEG, EJWCC].
- 2017: 386 acres were treated for knotweed along 4.9 river miles. Crew switched exclusively to imazapyr treatments, which have showed better results [HCSEG].
- 2018: 353 acres were treated for knotweed along 4.9 river miles [HCSEG].
- 2019: 1.68 acres were treated for knotweed along 9.3 river miles, assisting 68 landowners [HCSEG, WCC]. 2.55 acres were treated for knotweed and additional invasive species, assisting 2 landowners [MCNWCB].
- 2020: HCSEG and WCC surveyed 4.15 miles, searched 64 acres, and treated 0.5 acres for knotweed. HCSEG reports that the Union River knotweed infestation is beginning to turn for the better. Knotweed spatial extent is becoming sparser in the upper half of the treatment area. Past treatment sites are eradicated or only have small regrowth. MCNWCB searched 21.65 acres and treated 0.44 acres for knotweed, Canada thistle, field bindweed, and tansy ragwort.

2021: HCSEG/WCC spent six days on the Union River surveying 3.17 river miles and treating knotweed, bittersweet nightshade, policeman's helmet, reed canary grass, giant hogweed and yellow archangel. The survey area was 50.4 acres and treatment area was 0.08 acres. The crew used a mixture of imazapyr (1%) and glyphosate (1%), totaling 0.09 gallons each as a foliar application. Injection treatments used 0.75 gallons of

glyphosate (100%). Additional foliar applications used 0.3 gallons of imazapyr (1%). The Union River is making progress in the upper sections of the treatment area, however the mouth and Highway 300 ROW is infested with knotweed and is a highly visible infestation. HCSEG received two new landowner consents. Both of these sites contained large mature knotweed infestations that HCSEG could not treat in 2020, but was able to fully treat during the 2021 season. HCSEG pulled policeman's helmet, however it was already in flower/seed. HCSEG will share all policeman's helmet locations with Mason County NWCB, for appropriately timed control. HCSEG also treated giant hogweed and yellow archangel along the Union River. HCSEG shared all giant hogweed locations with Mason County NWCB.

2022: No recommendations for this area in 2022 were available.

Dewatto River

The Dewatto River mainstem is 8.7 miles in length with about 30 miles of tributaries. The river enters Hood Canal about 5.5 miles north of the Great Bend of Hood Canal, draining about 23 square miles. Several wetlands are present near the mouth, providing quality rearing habitat for juvenile salmonids. Historically, the dominant land use of the Dewatto River was timber production but the estuary remains relatively undisturbed. Access to the shore is easy in the lower reaches where the main road runs along the river. The upper reaches are often surrounded by wetlands or thick woods, making access more challenging. Nonetheless, knotweed control has been conducted on the Dewatto River since 2009.

Brief Treatment history of Dewatto River

See previous year's reports for more detailed information

- 2009-2013: After an initial survey in 2009, all known knotweed sites have been treated along the entirety of the Dewatto River each year [HCSEG, EJWCC].
- 2014: By 2013, very few knotweed infestations remained on the river and 2014 was designated as a rest year.
- 2015: 1.12 miles of the upper reaches of the Dewatto River were treated, where the knotweed infestations were the heaviest [HCSEG, EJWCC].
- 2016: Knotweed on the river has decreased significantly since its first treatments in 2009, and only 0.75 river miles were surveyed for treatment [HCSEG, EJWCC].
- 2017: The HCSEG-WCC surveyed 22 parcels along the Dewatto River. Knotweed infestations continue to be minimal, with only 0.133 gallons of imazapyr being used on 4.9 river miles. Most infestations were found within 2.6 miles of where the Dewatto meets the Hood Canal water body. Broad scope of permission has greatly improved the efficacy of treatments. [HCSEG, WCC]
- 2018: 7.5 river miles treated using 0.048 gallons of glyphosate and 0.051 gallons of imazapyr (1%) [HCSEG].
- 2019: 136 acres were surveyed along 7.12 river miles and 0.3 acres were treated for knotweed, bittersweet nightshade, Canada thistle, English holly, and old man's beard [HCSEG].
- 2020: HCSEG surveyed 3.8 river miles, searched 76 acres, and treated 0.04 acres for knotweed, bittersweet nightshade, Canada thistle, English holly, English ivy, herb Robert, old man's beard, everlasting peavine, reed canary grass, and tansy ragwort.

2021: HCSEG/WCC spent five days surveyed 10.43 river miles (126.1 acres) and treated 0.12 acres. The crew used a mixture of imazapyr (1%) and glyphosate (1%) and foliar applied 0.025 gallons of each chemical. Foliar applications of imazapyr (1%) alone used 0.121 gallons. Injection applications were also done using glyphosate (100%) and totaling 0.35 gallons. On the Dewatto, HCSEG conducted site visits for three large landowners with knotweed. HCSEG was able to gain permission and conduct a full treatment on all three landowner's properties.

2022: HCSEG plans to continue to survey and treat as needed.

For more information about the Tahuya, Union or Dewatto Rivers, please contact:
Alex Papiez, Hood Canal Salmon Enhancement Group, 360-275-3575 extension 24,
alex@pnwsalmoncenter.org.

Skokomish River

The Skokomish River drains a basin of about 247 square miles and empties into Anna's Bay in southern Hood Canal near Potlatch. The upper reaches of the Skokomish River lie within the Olympic National Park. The North Fork basin includes Lake Cushman, a reservoir maintained for hydroelectric power generation. The entire basin is sparsely populated, providing important habitat to terrestrial wildlife such as elk, deer, beaver, and waterfowl. Wildlife, shellfish, and finfish are important cultural and economic resources for the Tribe. The Skokomish River system also provides valuable habitat for important species of fish such as Chinook, Coho, and chum salmon; steelhead; and various trout. Wildlife, shellfish, and finfish are important cultural and economic resources for the Skokomish Indian Tribe, making restoration of the river a priority.

Brief Treatment history of Skokomish River

See previous year's reports for more detailed information

- 2010-2011: Knotweed on the Skokomish River was treated. No other information is available. [Mason Conservation District (MCD)].
- 2012: A new systematic top-down treatment approach was utilized and 43 acres were surveyed for treatment [MCD].
- 2013: 29 parcels of the heavily infested Skokomish Valley were treated. A partnership with the Squaxin Island Tribe also allowed for knotweed treatment in the Skookum Creek watershed [MCD].
- 2014: 24 parcels in the Skokomish Valley were retreated [MCD].
- 2015: Due to the substantial re-growth seen through glyphosate applications, the MCD switched to imazapyr foliar applications. 8.7 river miles of the Skokomish were treated.
- 2016: 12.4 miles of the upper Skokomish were treated. Switching to imazapyr seemed to provide a higher level of control compared to glyphosate applications done before 2015 [MCD].
- 2017:15.5 river miles (442 acres) of the Skokomish River searched for knotweed and giant hogweed. Crew reported that sites upstream of Highway 101, where they have been treating for several years is seeing 80-90% control. This was first year of systematic treatment downstream of Highway 101. [MCD] With such high control, MCD has embarked on seeding and bareroot plantings as appropriate.
- 2018: 8 river miles (321 acres) were treated for knotweed, using 26.7 gallons of glyphosate (5%) and 1.4 gallons of imazapyr (1%) [MCD].
- 2019: No treatments reported.
- 2020: No treatments reported.

2021: MCD treated 6.68 river miles and treated 335.07 acres for knotweed. The crew used 5.08 gallons of imazapyr (1%) and 11.67 gallonsof glyphosate (5%) on foliar treatments. One hundred fifty-eight parcels were surveyed and eighty-four parcels were treated.

2022: No 2022 recommendations for surveying or treatments for this area were provided**.**.

For more information about the Skokomish River, please contact:
Marissa Newby, Mason Conservation District 360-427-9436 ext. 120, mnewby@masoncd.org

Mason County Sites: Mission, Little Mission, Sherwood, Finch, Stimson, Coulter, Mill, and Goldsborough Creeks, assorted Hood Canal waterfront sites, and the towns of Allyn, Belfair, North Bay and Shelton

Big Mission Creek/Little Mission Creek

Big Mission Creek and Little Mission Creeks (WRIA 15) border both sides of Belfair State Park as they enter the marine waters of Hood Canal. Mission Creek drains about 13.7 square miles of land and includes approximately 10 miles of main stem and 10 miles of tributaries.

These creeks have an impact on commercial and recreational shellfish harvest in the area and the quality of recreational experiences at Belfair State Park.

Treatment History

MCNWCB, at the request of, and assistance from a property owner, began treatment along Mission Creek in 2008 and 2009. Knotweed control efforts were also undertaken in 2010 at the Belfair State Park. Property owners

continue to provide additional permissions. Treatments have been ongoing since 2016 with funding from the WSDA knotweed program.

No progress has been made along Little Mission Creek due to lack of cooperation from property owners**.**

2020: Mission Creek treatment efforts increased significantly this year. MCNWCB surveyed 1.36 river miles, searched and treated16.74 acres for knotweed. MCNWCB crew used 0.33 gallons of imazapyr (1.5%) in foliar treatments and 5.6 gallons of glyphosate (100%) for injection treatments. Cover of knotweed treated this year was 16.67%, an 8.67% increase in knotweed cover in treatment areas since 2019 (8%). This increase was due to the addition of two new landowner agreements with heavily infested stretches that have provided MCNWCB an ability to treat knotweed further downstream and added 6.94 searchable acres. Little progress has been made along Little Mission Creek due to lack of funding and cooperation from property owners.
*See summary below

2021: MCNWCB Progress continued on parcels newly permitted in 2020 along Mission Creek with significant knotweed infestations. MCNWCB completed treatment on 1.76 miles of Mission Creek. 19.42 acres were surveyed and 4.26 acres of knotweed were treated. Cover of knotweed treated this year was 2.35%, a 14.32% decrease in knotweed cover in treatment areas since 2020. Effective treatment on large and dense knotweed infestations in 2020 explains this significant decrease in cover. Staff continue to note the presence of butterfly bush in the Mission Creek watershed. This noxious weed often grows intermixed with large knotweed patches, and will likely expand in areas that have received treatment for knotweed. If time, funding, and permission allows, staff will begin to treat butterfly bush along Mission Creek.

[MCD] Treated 0.01 miles (0.002 acres) of Mill Creek using 0.00008 gallons of imazapyr (1%) to foliar treat knotweed. The crew also treated 0.41 miles of Goldsborough Creek using 0.012 gallons of imazapyr (1%) and 0.112 gallons of glyphosate (5%) to treat knotweed.

2022: MCNWCB has identified the Mission Creek watershed as their highest treatment priority in 2021 as it contains the most heavily infested reaches. The program continues to build on permission waivers received as neighbors are encouraged to participate. MCNWCB also plans to try an alternative approach (TBD) in contacting property owner to garner their support and permission.

Sherwood/Anderson Creek

Anderson Lake is a man-made lake that discharges into Anderson Creek, a tributary of Sherwood Creek that ultimately discharges into the North Bay of Case Inlet. Several state and federally listed priority fish species are identified as occurring in the lake.

Treatment History

In 2008, with funding from an ALEA grant, and with volunteers from the South Puget Sound Salmon Enhancement Group, the MCNWCB initiated treatment along nearly 1,000 feet of private land on Sherwood Creek. ALEA funding again supported this treatment in 2009. In 2010, the MCNWCB responded to an initial request for knotweed control along the shores of Anderson Lake. System wide treatments were initiated in 2014 with funding from the WSDA knotweed program and assistance from a Department of Natural Resources Puget Sound Corps crew. Treatments continue with all but one infested parcel currently permitted. This parcel is located within the first 0.25 miles of the creek, with no known knotweed below.

2020: MCNWC surveyed along 2.64 river miles, searched 24 acres, and treated 10.69 acres for knotweed. MCNWCB crew used 0.18 gallons of imazapyr (1.5%) in foliar treatments and 0.6 gallons of glyphosate (100%) for injection treatments. This is an increase of 0.48 treated miles and 5.6 acres treated compared to 2019. Survey on Sherwood/Anderson increased 4.36 acres from 2019. Reduction in knotweed infestations along the creek edge has allowed MCNWCB to expand survey and treatment areas. Knotweed cover stayed the same this year at approximately 3% due to the addition of two new landowner agreements with dense knotweed infestations. Areas retreated were found to have very small scattered knotweed plants.
*See summary table

2021: This year MCNWCB treated 2.50 miles of Sherwood/Anderson Creek on 5.94 infested acres. This is a decrease of 0.14 treated miles and 4.75 infested acres treated compared to 2020. Survey on Sherwood/Anderson also decreased by 5.82 acres from 2020. Effective treatment in 2019 and 2020 resulted in a significant decrease in infested acreage this year, and some sites were skipped to allow for more treatable growth in 2022.

2022: MCNWCB plans to continue to work to obtain permissions from a single property owner along Sherwood Creek.

Finch Creek

Finch Creek flows through the community of Hoodsport located along the shores of lower Hood Canal. The Department of Fish & Wildlife's Hood Canal Salmon Hatchery is located at the mouth of Finch Creek. This hatchery produces four of the five species of Pacific salmon native to Washington.

Treatment History

Initial treatments with WSDA knotweed funding began in 2013 with assistance from the Department of Natural Resources' Puget Sound Corps crew. Prior work along the system involved treatment of giant hogweed by MCNWCB with funding from Mason County and the Washington State Noxious Weed Control Board.

2020: MCNWCB surveyed along 0.78 river miles, searched 5 acres, and treated 0.83 acres for knotweed. MCNWCB crew used 0.01 gallons of imazapyr (0.75%) in foliar treatments and 0.38 gallons of glyphosate (100%) for injection treatments. Solid acres of knotweed decreased from 2019 by 0.17 acres.
*See summary table

2021: This year MCNWCB treated 0.48 miles along Finch Creek and 0.42 infested acres, a 0.41-acre decrease since 2020.

2022: MCNWCB plans to further develop a plan for reaching agreement with two property owners on Finch Creek, one to continue treatment and one to initiate treatment.

Stimson Creek

Treatment History

Knotweed control efforts were initiated along Stimson Creek in 2009 with funding from an ALEA grant. Members of the Pleasant Cove Water Association volunteered their labor to meet the terms and conditions of their Habitat Management Plan in order to meet State requirements for repair of their damaged water system. Treatments have continued with Mason County funding, support from Puget Sound Corps crews and, recently, WSDA knotweed funding.

2020: MCNWCB surveyed along river 2 miles of Stimson Creek south of the Belfair-Tahuya road, searched 14.2 acres, and treated 11.58 acres for knotweed. MCNWCB crew used 0.03 gallons of imazapyr (1%) in foliar treatments and 0.13 gallons of glyphosate (100%) for injection treatments. In addition, several isolated infestations along 0.34 miles of the creek north of the Belfair-Tahuya road were also treated. Cover class of knotweed treated this year was 0.26%.
*See summary table

2021: This year MCNWCB completed treatment on 2.28 miles of Stimson Creek and treated 2.46 infested acres. River miles include streambank north and south of NE Belfair-Tahuya Rd. MCNWCB did not treat knotweed patches at the mouth of Stimson Creek this year. Staff did complete treatment on a poison hemlock infestation earlier in the year at the mouth of Stimson Creek.

2022: MCNWCB will survey and treat as needed when resources allow.

North Bay/Allyn/Coulter Creek

North Bay and the Coulter Creek system have been identified by Pierce County and WDFW as an area of biodiversity for wildlife species and habitats within both Pierce and Mason Counties.

Treatment History

Treatment along North Bay and in the town of Allyn began in 2013 with the initial focus on marine shoreline properties. The MCNWCB expanded its control efforts to upland properties as knotweed infestation frequency and cover along the shoreline decreased

2020: Since 2019, there has been an increase of 0.93 infested acres of knotweed treated. Cover of knotweed slightly increased from 3% (2019) to 3.76% (2020) due to the addition of commercial properties in Allyn with large, dense knotweed infestations.

2021: Timing did not permit treatment on North Bay and Allyn properties during the 2021 field season.

2022: No treatments on North Bay and Allyn properties occurred in 2021 due to timing constraints. A rest year will allow for more treatable growth during the 2022 field season.

Coulter Creek

Pierce County and WDFW have identified the Coulter Creek system as an area of biodiversity for wildlife species and habitats within both Pierce and Mason Counties.
The Coulter Creek drainage basin is one of the largest streams in the WRIA 14A: Kennedy-Goldsborough watershed. The main stem of Coulter Creek is approximately eight miles long; several tributaries contribute an additional 10 to 12 miles of channel length. The headwaters of Coulter Creek and upper seven miles of the main stem are located in Kitsap County. The lower 1.9 miles are located in Mason County. A fish hatchery operated by Washington State Department of Fish and Wildlife (WDFW) is located at RM 0.25 on Coulter Creek.
Treatment History
In 2015, a parcel at the mouth of Coulter Creek, and owned by Mason County, received an initial knotweed treatment. WSDA knotweed funding supported additional treatments by the MCNWCB in cooperation with the Puget Sound Corps in 2016. WSDA funding continues to support follow-up treatments in this watershed. In 2019, the MCNWCB secured permission from E. E. Overton, a forest products company that holds 2,229 acres in the upper reach of Coulter creek.

2020**:** MCNWCB surveyed along 1 river mile, searched 6 acres, and treated 2.42 acres for knotweed. MCNWCB crew used 0.05 gallons of imazapyr (1.25%) in foliar treatments and 0.22 gallons of glyphosate (100%) for injection treatments. Cover of knotweed treated increased from 2019 (0.4%) to 2020 (1.65%) due to a new landowner permission with a dense knotweed infestation.
*See summary table

2021: In 2021, MCNWCB treated 0.96 miles along Coulter Creek and 0.66 infested acres a 1.76-acre decrease since 2020. Effective treatment in 2020 resulted in patchier infested sites and less overall acreage of knotweed.

2022: MCNWCB will survey and treat as needed when resources allow.

Brief Treatment history of Miscellaneous Mason County Sites
See previous year's reports for more detailed information

- 2013: Through a grant funded by the Department of Natural Resources, large infestations on Sherwood, Finch and Stimson Creeks were treated for the first time. Crews utilized a top-down strategy to treat the entirety of both creeks [MCNWCB, Puget Sound Corps (PSC)]. The MCNWCB also treated sites on Goldsborough Creek as well as North and Oakland Bays.
- 2014: 1.74 river miles on Sherwood and Finch Creeks, Union River, Lake Isabella and North Bay were treated for knotweed and other species of concern [MCNWCB, PSC].
- 2015: 3.7 river miles of Coulter, Finch, Stimson and Sherwood Creeks were treated for invasive species. Additional terrestrial and aquatic treatments in the towns of Allyn, Belfair, Shelton and North Bay were also conducted. Goldsborough and Mill Creeks were surveyed to prepare for future treatments [MCNWCB].
- 2016: The first large scale treatments for knotweed and giant hogweed on Goldsborough and Mill Creeks took place. 3.58 river miles on Coulter, Finch, Sherwood and Stimson Creeks were treated for invasives of concern. Terrestrial sites in Allyn, Belfair, Shelton, and North Bay were also retreated [MCNWCB].
- 2017: Treated 4.4 river miles (7 solid acres of knotweed) on 86 parcels on Coulter, Anderson, Sherwood, Finch, Mission, Little Mission, and Stimson Creeks as well as in North Bay/Allyn using glyphosate and

imazypyr. Additional invasive plants, including herb Robert, policemen's helmet, and giant hogweed were treated [MCNWCB]. 2.4 river miles were surveyed, and 3.5 acres were treated for knotweed and giant hogweed on Goldsborough and Mill Creek [MCD].

- 2018: 2.4 river miles (8.5 acres) of Goldsborough /Mill Creek were treated. 1.7 miles of Sherwood/Anderson Creeks, 0.6 river miles of Coulter Creek, 0.72 miles of Mission/Little Mission Creek, 2.19 river miles of Stimson Creek, 0.8 miles of Finch Creek, as well as miscellaneous sites within WRIAs 14, 15, and 16 were all treated using glyphosate and imazapyr over 23 acres. 25 acres of Hood Canal waterfront properties were treated for knotweed.
- 2019: The Mason County Noxious Weed Control Board (MCNWCB) assisted 105 landowners on 331 parcels including: 2.16 miles of Sherwood/Anderson Creek, 2.05 miles of Coulter Creek, 1.7 miles of Mission/Little Mission Creek, 2.1 miles of Stimson Creek, 1.1 miles of Finch Creek, as well as miscellaneous sites within WRIAs 14, 15, and 16. 2019 funding from a WSDA grant provided for treatment of giant hogweed at several properties along Finch Creek where knotweed has been treated. Perennial pepperweed, bindweed, policeman's helmet and butterfly bush have also been treated in knotweed treatment areas.
- 2020: **:** In addition to the Mason County rivers listed, MCNWCB surveyed 0.05 river miles, searched 9.8 acres on 13 parcels, and treated 4.71 acres on 11 parcels for knotweed at various sites in WRIA 14 and 15. . MCNWCB also reported treatments of butterfly bush, Canada thistle, common teasel, field bindweed, herb Robert, perennial sowthistle, and policeman's helmet in knotweed treatment areas.

2021: Various knotweed sites were treated by MCNWCB in WRIA 14 and WRIA 15. An area of 4.3 acres was searched and 0.37 acres of knotweed and Scotch broom was treated. MCNWC sent postcards to 78 property owners along Mission and Little Mission Creeks seeking support for our knotweed control efforts. The mailing resulted in now new permissions along either system. Staff will explore other options for garnering support in the 2022 field season, and are open to other agencies sharing their ideas on how to obtain permission in systems with less engaged property owners.

2022: Staff will continue to work to obtain permission from a single property owner along Sherwood Creek who has the last untreated knotweed infestation in the watershed and further develop a plan for reaching agreement with two property owners on Finch Creek. One of the two property owners along Finch Creek has granted permission in the past, but conflict with another Mason County agency has resulted in the loss of permission and general animosity towards county departments. Another property owner does not agree with the use of herbicides, so staff are exploring alternative approaches to treatment for the few knotweed plants on their property.

Mason County Summary Table:

Summary Table	Herbicide Use, Mason County, 2013 (gal)		Herbicide Use, Mason County, 2015 (gal)		Herbicide Use, Mason County, 2016 (gal)		Herbicide Use, Mason County, 2017** (gal)		Herbicide Use, Mason County, 2018*** (gal)		Herbicide Use, Mason County, 2019 (gal)		Herbicide Use, Mason County, 2020 (gal)		Herbicide Use, Mason County, 2021 (gal)	
	Glyphosate injected	Herbicide foliar	Glyphosate injected	Herbicide foliar	Glyphosate injected	Herbicide foliar	Glyphosate injected	Glyphosate injected	Herbicide Foliar	Herbicide Foliar	Glyphosate injected	Herbicide Foliar	Glyphosate injected	Herbicide Foliar	Herbicide Injected	Herbicide Foliar
Skokomish River	0	16.84	N/A	N/A	n/a	n/a	n/a	**-**	**-**	n/a	0	28.1	-	-	**-**	**16.75**
Tahuya River	0	8.3	0	0.7	0	0.08	0	**0.2**	**0.1**	0.08	0	0.01	0.3	0.1	**-**	**-**
Union River	5.7	8.6	0	3.5	0	1.4	0	**0.9**	**0.2**	0.7	1.9	0.43	0.5	0.3	**0.75**	**0.48**
Dewatto River	0	0.1	0	0.3	0	0.02	0	**0.2**	**0.1**	0.13	0.05	0.05	0.7	0.2	**0.35**	**0.71**
Finch Creek	2.1	0.03	0	1.5	0.4	0.2	n/a	**0.4**	**0.01**	n/a	0.07	0.06	0.2	0.1	**0.09**	**0.02**
Stimson Creek	3.0	1.2	0	0.1	0.8	0.07	n/a	**0.1**	**0.03**	n/a	0.3	0.03	0.05	0.01	**0.05**	**0.06**
Sherwood & Anderson Creek	3.2	0	0	2.6	0.8	0.5	n/a	**0.6**	**0.2**	n/a	0.6	0.15	0.5	0.1	**0.17**	**6.67**
Misc. riparian sites	1.3	0.8	0	0.6	1.5	1.1*	n/a	**n/a**	**n/a**	n/a	0.7	0.2	n/a	n/a	**0.20**	**0.02**
Coulter Creek	-	-	-	-	-	-	-	**0.2**	**0.05**	-	0.2	0.09	0.3	0.1	**0.02**	**0.13**
Mission Creek	-	-	-	-	-	-	-	**5.6**	**0.3**	-	2.7	0.03	1.5	0.4	**1.94**	**0.10**
Little Mission Creek	-	-	-	-	-	-	-	**-**	**-**	-	0.5	0.1	-	-	**-**	**-**
Mill & Goldborough Creek	-	-	-	-	-	-	-	**-**	**-**	-	n/a	0.1	-	-	**-**	**0.112**
Terrestrial sites	1.5	1.3	0	4.7	2.2	0.6	n/a	**0.7**	**0.2**	n/a	0.7	0.2	3.1	1	**0.92**	**0.11**
Total Herbicide	16.8	37.2	0	13.9	5.7	4	0	**8.9**	**1.2**	0.9	7.6	29.6	7.2	2.3	**4.49**	**25.16**

**Herbicide totals for 2016 do not include Mill and Goldsborough Creeks, which were not provided.*
*** In 2017, only total herbicide usage from MCNWCB was reported, which can be found in "total" column Totals do not include Mill and Goldsborough Creeks, which were not provided.*
****Totals for 2018 have generally been rounded to two decimals.*

For more information about Mason County work, please contact:
Pat Grover, Mason Noxious Weed Control Board, 360-427-9670 ext. 592 or 360-426-5757,
patriciag@co.mason.wa.us

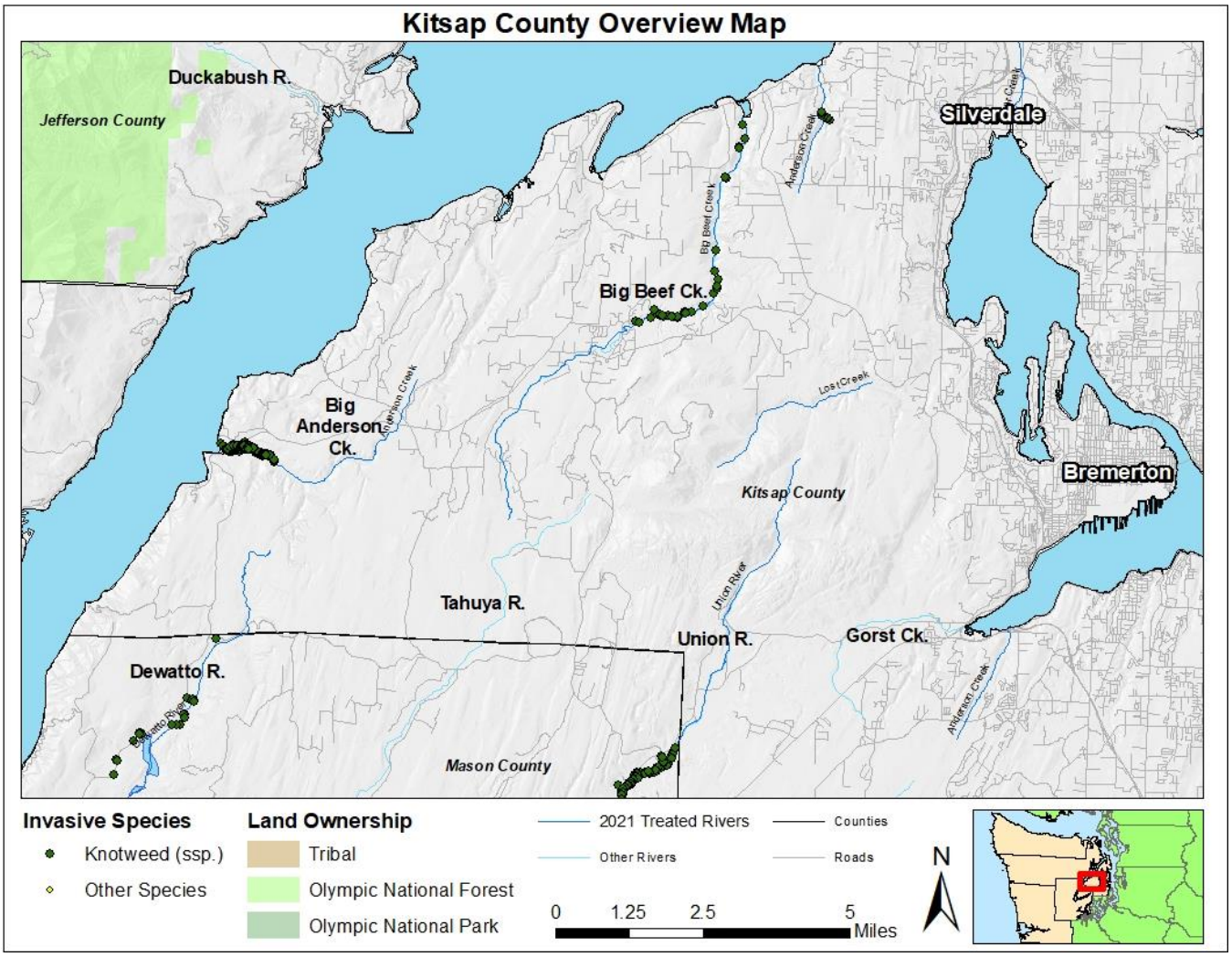
Or

Marissa Newby, (Mason Conservation District) 360-427-9436 ext. 120
mnewby@masoncd.org

Or

Alex Papiez, Hood Canal Salmon Enhancement Group, at 360-275-3575 extension 24,
alex@pnwsalmoncenter.org

KITSAP COUNTY



Big Anderson Creek

Brief Treatment history of Big Anderson Creek

See previous year's reports for more detailed information

- 2012-2015: Knotweed treatments were conducted on Big Anderson Creek, but details were not made available [HCSEG].
- 2015: 1.2 river miles were surveyed for knotweed and 13 parcels were treated [HCSEG].
- 2016: 0.77 river miles and 10 parcels were treated for knotweed. Herbicide usage has dramatically decreased in recent years [HCSEG].
- 2017: 0.44 solid acres were treated for knotweed along 1.75 river miles. Compared to 2016, the herbicide applied per river mile has decreased due to decreased infestations of knotweed and the crew switching over to using imazapyr exclusively.
- 2018: 2 river miles were treated for knotweed [HCSEG, WCC].
- 2019: 1.35 river miles were treated for knotweed [HCSEG, WCC].

2020: HCSEG and WCC surveyed 1.4 river miles, searched 59 acres, and treated 0.3 acres for knotweed. HCSEG and WCC crew used 0.4 gallons of imazapyr (1%) in foliar treatments and 0.5 gallons of glyphosate (100%) for injection treatments. Big Anderson Creek is one of HCSEG's smallest treatment systems. However, before treatment it contained a very large wall to wall knotweed infestation that dominated the shrub and juvenile tree matrix. This system has seen drastic improvements over the years but still has one of the highest treatment point densities of all of HCSEG's target rivers. Most of the knotweed patches are small and epinastic, and are losing their competitive advantage while native and secondary exotic species fill the newly opened space. Native

willow, alder and Nootka rose are making a promising comeback, as well as the unwelcomed secondary exotics such as butterfly bush, English holly, English laurel, Himalayan blackberry, reed canary grass, tansy ragwort, and creeping buttercup. HCSEG conducted a treatment late in August, instead of our usual treatment time in Mid-July to see if a later treatment would allow for increased efficacy on the small size classes of knotweed.

2021: HCSEG/WCC spent five days treating on the Big Anderson Creek. Crews surveyed 1.1 river miles and 42.9 acres. A combination of glyphosate (1%) and imazapyr (1%) were used to treat 0.58 acres. The foliar application totaled 0.13 gallons of glyphosate and 0.13 gallons of imazapyr. Foliar treatments using imazapyr alone totaled 0.20 gallons. Although Big Anderson Creek has the highest solid acres of knotweed and knotweed density, it continues to make good progress from the wall-to-wall infestation that used to occupy the riparian zone.

2022: No specific recommendations for the Big Anderson River were provided.

Big Beef Creek

Brief Treatment history of Big Beef Creek

See previous year's reports for more detailed information

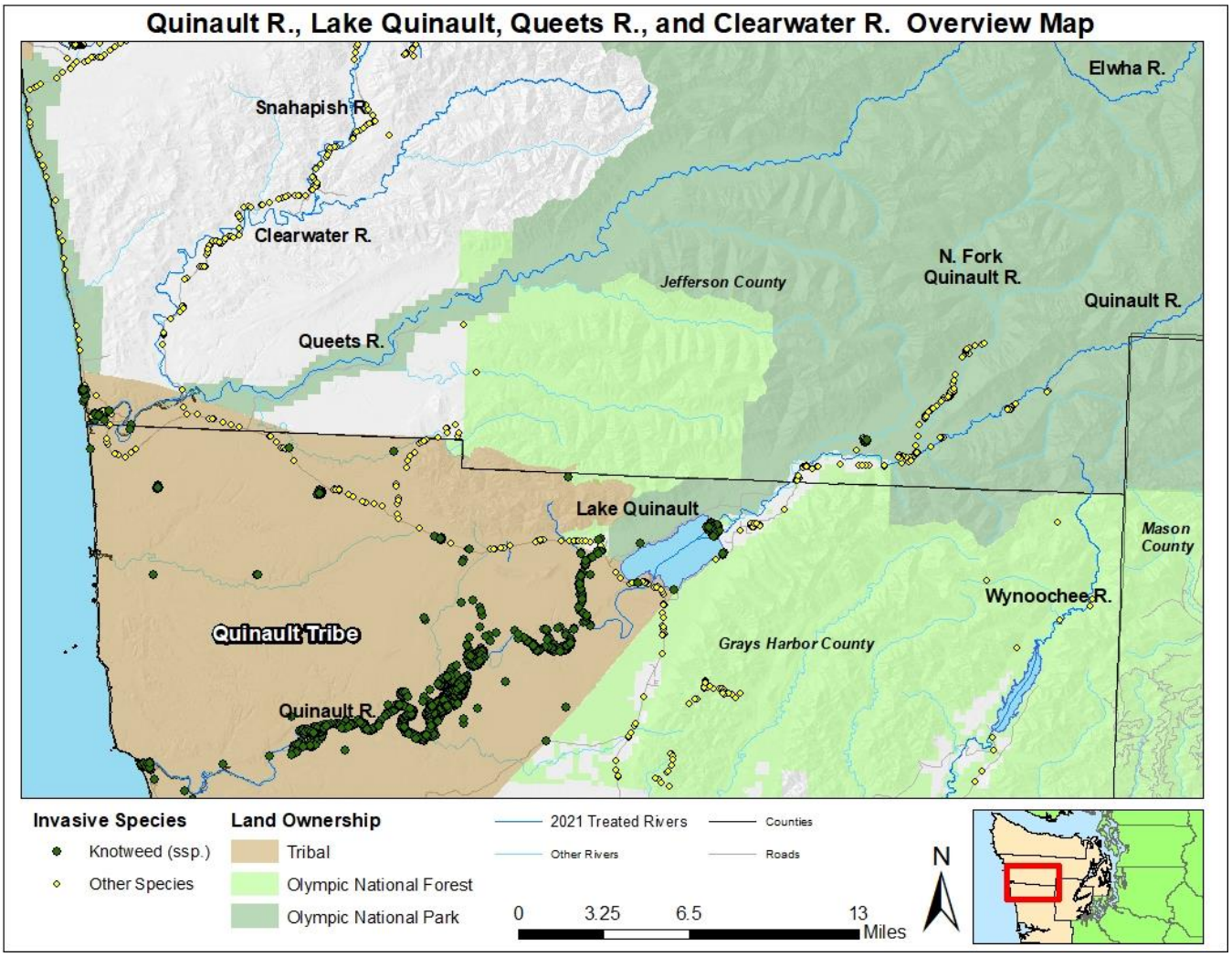
- 2015: All of Big Beef Creek was surveyed after knotweed was discovered near a restoration area [HCSEG].
- 2016: A database of landowners along Big Beef Creek was generated and permissions were solicited. 26 permissions were gained and an additional 7.8 acres were surveyed [HCSEG].
- 2017: Permissions to treat on Big Beef Creek were secured for the first time. 4.75 river miles were surveyed, 0.04 solid aces of knotweed treated. [HCSEG]
- 2018: 0.3 acres were treated for knotweed on 4 parcels along 4.75 river miles, using 0.008 gallons of imazapyr (1%) [HCSEG].
- 2019: No treatments in 2019, however previous knotweed control has been successful from Lake Symington to the mouth, where the remaining knotweed is located [HCSEG].
  HCSEG and WCC surveyed 1 river mile, searched 6 acres, and treated 0.002 acres for knotweed. HCSEG was only able to treat this system for one day. The knotweed spread remains sparse and, below Lake Symington, eradication is a reasonable goal in the next 3 years. Above Lake Symington, there is a growing knotweed infestation and HCSEG is working with local landowners to gain consent and determine where the upper most point is located.

2021: HCSEG shared knotweed locations along the Big Beef Creek Riparian Zone with Dana Coggon (Kitsap County NWCB), where landowners are refusing to allow treatment. In Kitsap County knotweed is listed for mandatory control, hopefully Kitsap County NWCB will be able to address these established populations through an enforced treatment. There is currently untreated knotweed directly above Lake Symington along Big Beef Creek, and about a half mile below the Lake Symington Spillway, which could potential re-infest areas treated in 2021. HSEG treated 4.74 river miles and searched 57.33 acres. A combination of glyphosate (1%) and imazapyr (1%) was used in treatments totaling 0.025 gallons each. Imazapyr (1%) was used alone with a total of 0.05 gallons applied. An injection treatment of glyphosate (100%) was also completed which used 0.47 gallons. On the Big Beef Creek, HCSEG treated butterfly bush, yellow archangel, perennial peavine, tansy ragwort, yellow flag iris, and hedge bindweed. Although it was the first year of treatment since 2018 on the Big Beef Creek, the isolated nature and large stem sizes of the knotweed allowed the crew to inject and spray a large percentage of the treated patches. Because of this we are expecting a large decrease in knotweed abundance and density in 2022.

2022: HCSEG plans to continue to survey and treat as needed.

For more information about Big Anderson and Big Beef Creeks, please contact:
Alex Papiez, Hood Canal Salmon Enhancement Group, 360-275-3575 extension 24,
alex@pnwsalmoncenter.org

Quinault River, Lake Quinault, Queets and Clearwater Rivers



The Quinault River, Lake Quinault and the Queets-Clearwater watershed are all included in WRIA 21. This WRIA contains some of the last remaining free-flowing large rivers in the lower 48 states. It contains areas of habitat that are relatively pristine (especially those within the Olympic National Park (ONP)), as well as areas that have been greatly affected by logging and other activities over the last century. The entire WRIA is included in the Quinault Indian Nation's (QIN) Usual and Accustomed Fishing and Hunting Area. It is a rural, sparsely-populated area where land ownership is dominated by ONP, United States Fish and Wildlife (USFS), Washington Department of Natural Resources and large timber companies. Unlike the protected marine and estuarine environments of Puget Sound and the Hood Canal, these streams drain directly into the Pacific Ocean. Fish leaving these coastal streams do not typically fare well in the Pacific Ocean, making in-stream survival of juvenile fish more significant.

Quinault River

Tributaries and floodplain, Lake Quinault and Prairie Creek

The Quinault River is 69 miles long and originates in the Olympic National Park. It flows into and out of Lake Quinault and empties into the Pacific Ocean at Taholah. The lower watershed has 68,000 acres of tributaries, 600 miles of roads and 300 miles of streams. The Quinault River has healthy stocks of sockeye and also supports

Chinook, chum and Coho. The upper reaches offer spawning and rearing habitat for federally-listed bull trout. Prairie Creek is located near the outfall from Lake Quinault and is a source of knotweed infestation in the lower Quinault River.

Brief Treatment history in the Quinault River, Lake Quinault, and Prairie Creek
See previous year's reports for more detailed information

- 2007-2011: A grant made available to the Quinault Indian Tribe (QIN) allowed for knotweed control to be performed on Prairie Creek. In 2011, treatments were deemed to be very successful as infestations were greatly reduced and natural vegetation was re-establishing in treated areas.
- 2010: Funding was provided to the QIN for knotweed treatments in the Quinault River. Most of its sub-watersheds were surveyed and treated [QIN].
- 2011: The Upper Quinault River was surveyed and treated for the first time [North Cascades Exotic Plant Management Team (NCEPMT), Grays Harbor Noxious Weed Control Board (GHNWCB)].
- 2012: The Lower Quinault tributaries were treated for the first time [QIN].
- 2013: 1,000 acres of the Lower Quinault floodplains were surveyed for first time treatments. Dense stands of knotweed encompassing 43 acres treated. The Lower Quinault tributaries were also treated for a second year and a revegetation project was started [QIN]. Sections of the river within Olympic National Park boundaries were treated [NCEPMT].
- 2014: Riparian sites in the Quinault Indian Reservation were treated for knotweed and reed canarygrass by the Brittland Company. Infestations at Lake Quinault were treated by the 10,000 Year's Institute (10KYI).
- 2015: 4 miles of the Lower Quinault River and 1,100 acres of Lake Quinault and Quinault river tributaries were retreated [10KYI, Brittland Company].
- 2016: 30.4 river miles of the Quinault River watershed were treated. Crews have noted that project areas are improving, but there are 20 heavily infested miles on the Lower Quinault River that have not been treated [QIN, Brittland Company, NCEPMT].
- 2017: Under the Pulling Together in Restoration project, the 10KYI surveyed 19 road miles on SR 101 and Moclips Highway and treated various invasives weeds using 2 gallons of glyphosate (2%) over 180 acres. The Moclips highway was a high priority for the 10KYI as wind dispersed seeds from this area can be carried to the Upper Quinault and Queets tributaries.
- 2018: 12 river miles were treated using 2 gallons of glyphosate (1.5%) and 0.15 gallons of imazapyr (1%) [10KYI].
- 2019: 136 acres were searched and 27.8 acres were treated for non-knotweed invasives over multiple treatments equivalent to 35 road miles and 9.9 river miles of the Quinault River. Reed canarygrass, Scotch broom, tansy ragwort, herb Robert, blackberry, and yellow-flag iris were treated at sites located along the South Shore Road, SR 101, and mainstem, north fork and east fork Quinault River, Bunchfield and Joe Creek Sloughs, Zeigler Creek, and Irely Creek [10KYI].
  2020: 10KYI surveyed 8.1 river miles and 38.8 road miles, searched 479.5 acres, and treated 59.5 combined acres for bull thistle, Canada thistle, common tansy, evergreen blackberry, foxglove, herb Robert, Himalayan blackberry, wild carrot, reed canarygrass, St. John's wort, tansy ragwort, and yellow flag iris. Two knotweed sites were surveyed along South Shore Road but no knotweed was treated in this watershed by 10KYI, or found along SR 101.

2021: 10KYI crews were deployed from June to October to prevent and control knotweed, reed canarygrass, Scotch broom, herb Robert, tansy ragwort, Canada thistle, bull thistle non-native blackberry, and yellow-flag iris at sites located along the South Shore Road, SR 101, and mainstem, north fork and east fork Quinault River, Alder CreekSide Channel, Zeigler Creek, and Irely Creek. Partners included ONP, ONF, the QIN and project partners, Jefferson and Grays Harbor County road departments, Grays Harbor NWB staff, and three private landowners. Totals for the 2021 knotweed treatment included eight sites were found and treated on private properties off of North Shore Road. Sprayed with a 1% imazapyr, patches were significantly smaller compared to patches found and treated in 2019. Other species treated in this watershed include Scotch broom, reed canarygrass, herb Robert, tansy ragwort, Canada thistle, Himalayan blackberry, yellow flag iris, wild carrot and St. John's wort.

[QIN] Greg Eide, ~6 crew from Total Vegetation Management, and ~6 crew from Brittlind Co surveyed all new harvest units (approximately 2000 acres) for new knotweed plants, retreated areas in the Quinault River floodplain from RM 8 to RM 20. Brittlind sprayed Scotch broom in 21 gravel pits, retreated a few plants found along Prairie Creek, and did a sweep along the Moclips highway for Scotch broom and tansy ragwort. We sprayed several far-flung knotweed plants during September. The contract crews were not available during most of September so we were not able to recheck a lot of live plants treated last year, let alone 2 river miles on the lower Quinault that have never been treated.

2022: 10KYI plans to continue to survey and treat as needed.

Queets-Clearwater River

The Queets River is 53 miles long and is mainly within the boundary of the Olympic National Park. The last four miles outside the park are within the Quinault Indian Reservation. The Queets supports stocks of Chinook, Coho, chum and steelhead; additionally, the upper reaches offer spawning and rearing habitat for federally-listed bull trout. The Clearwater River, which is 39 miles long, is one of the main tributaries. It joins the Queets at approximately river mile 4, as the Queets leaves the National Park. It also supports stocks of most salmon species. Conservation efforts are underway on the Clearwater on 3,088 acres purchased by The Nature Conservancy.

Brief Treatment history in Queets- Clearwater Watershed
See previous year's reports for more detailed information

- 2011: The Environmental Protection Agency (EPA) awarded a 3 year grant to the Quinault Indian Tribe (QIN) for treatments on 153,000 acres of the Queets and Clearwater Rivers. The Jefferson County Noxious Weed Control Board (JCNWCB) was contracted to obtain landowner agreements. Approximately 2/3 of each river system was surveyed. One site was found on the Queets and the source of knotweed for both river systems was found on the Clearwater River.
- 2012: Crews treated previously surveyed knotweed infestations (2.25 acres total) and completed surveys along remaining lengths of the rivers [QIN, JCNWCB].
- 2013: All known sites on both rivers were retreated. Additional invasive species were surveyed. The large source infestation of knotweed on the Clearwater River had decreased in size substantially [QIN, JCNWCB].
- 2014: Invasive species and remaining knotweed mapped in 2013 were treated by Brittland Company and 10KYI. Reed canarygrass was also treated at the mouth of the Queets.
- 2015: 33 river miles of the Queets and Clearwater Rivers were treated [10KYI].
- 2016: No treatments were recorded this year.
- 2017: 35.75 miles surveyed along Lower Queets, Clearwater and Snahapish rivers. Knotweed had continued to decline and crews treated additional invasive weeds, including reed canary grass, Canada thistle, Scotch broom, herb Robert and tansy ragwort. A total of 45 knotweed sites were treated on the first 1.58 miles of the Queets from its mouth, but only two sites were observed and treated on the entirety of the Clearwater River. Treatments of reed canary grass and Canada thistle were expanded from the Clearwater upstream to the Snahapish River and included 13 miles [10KYI].
- 2018: 0.3 river miles of the Lower Queets River treated for tansy ragwort, reed canary grass, and Canada thistle. Treatment of 1.34 acres used 0.26 gallons of glyphosate (1.5%) and 0.24 gallons of imazapyr (1%). Treatments on the Snahapish River (tributary to the Clearwater at RM 19) only occurred at a research site in partnership with WSDA to ascertain glyphosate detection in water post treatment (0.6 acres treated with 0.015 gallons of glyphosate (1.5%).
- 2019: 5.1 acres were treated over multiple treatments equivalent to 45.2 road miles and 2.2 river miles of the Lower Queets River for tansy ragwort, reed canary grass, and Canada thistle. 250 acres were searched over 12.4 road miles of the Clearwater River watershed and 0.01 acres were treated for knotweed along with 88.2 combined acres treated for bull thistle, curly dock, evergreen blackberry, foxglove, Himalayan blackberry, reed canary grass, and Scotch broom.
- 2020: 10KYI surveyed 4.7 river miles and 20.2 road miles along the Queets River, searched 325.7 acres, and treated 108 combined acres for Canada thistle, foxglove, Queen Anne's lace, Scotch broom, St. John's wort, and tansy ragwort.

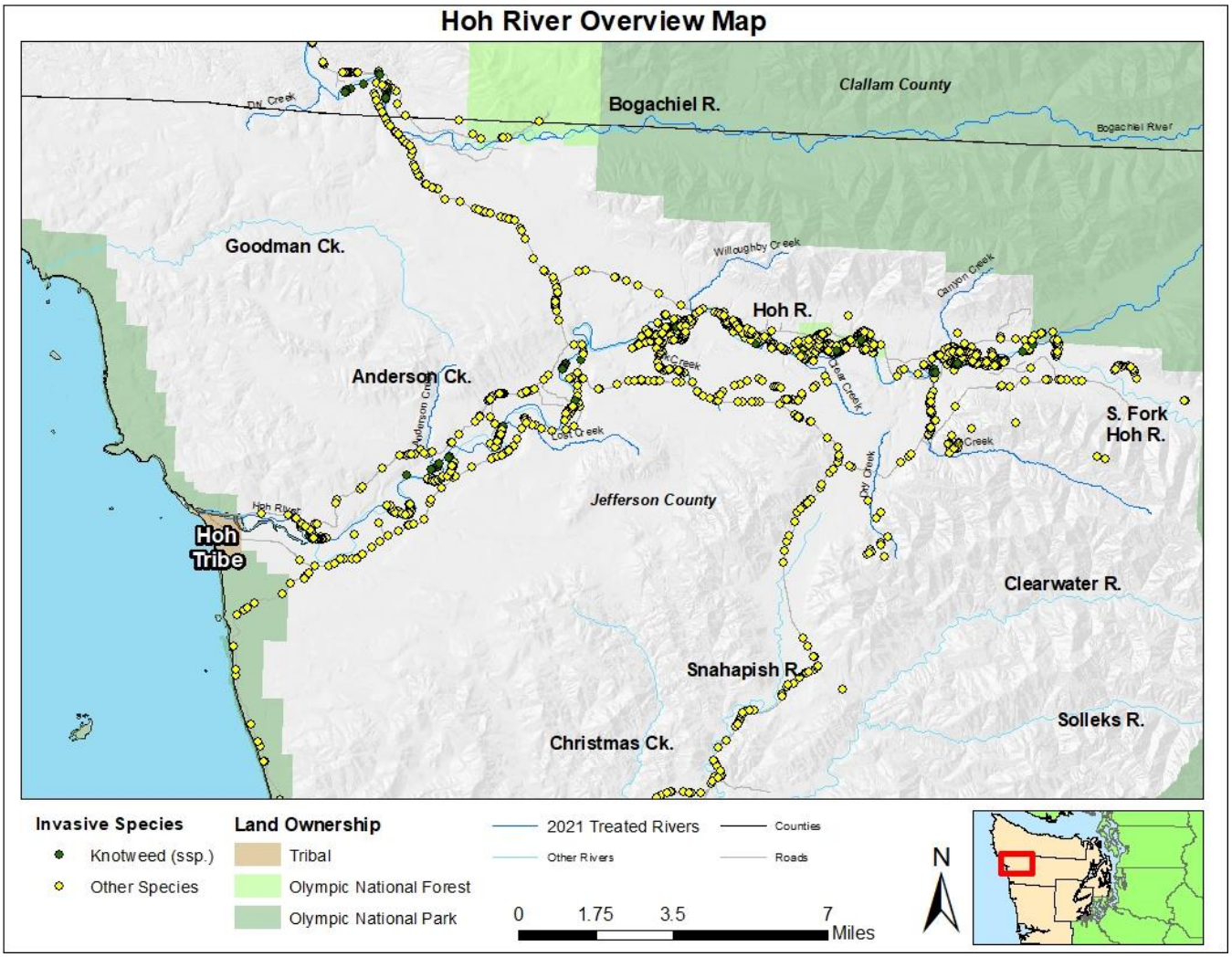
2021: [10KYI] No knotweed was found along the Hoh-Clearwater mainline within the Clearwater Watershed. Scotch broom, reed canarygrass and St. John's wort were treated during surveys of this watershed. In collaboration with the Quinault Division of Natural Resources, treatments to 11 knotweed sites were found and treated at Queets Estuary. Sprayed plants with 2% glyphosate and 1.5% imazapyr. Other species treated were tansy ragwort, Canada thistle and reed canarygrass.

[QIN] sprayed tansy and knotweed in the Queets estuary along with 10KYI (comprised of nearly 20 crew) one day. QIN surveyed the Queets River from the campground down to the mouth for tansy. No plants were observed until Matheny creek, and then from Salmon River down; huge patches are everywhere all the way to the reservation boundary. Need to reach out to Olympic National Park for treatment.

2022: The 10KYI plans to continue to monitor for knotweed, while controlling other high priority or infrequent non-native species.

For more information about knotweed treatment on Quinault, Queets and Clearwater Rivers, please contact:
Greg Eide of the Quinault Tribe, 360-276-8211, extension 7341, greg.eide@quinault.org,
Or
Jill Silver, 10,000 Year's Institute, 360-385-0715, jsilver@10000yearsinstitute.org.

Hoh River



The 300 square mile watershed is famous for wild stocks of winter steelhead, fall Coho, and spring/summer and fall Chinook salmon. Restoration and maintenance of a functional mature riparian forest is considered a primary component of a salmon recovery strategy by the WRIA 20 salmon recovery and watershed planning groups. Knotweed eradication is critical to restoration of riparian habitats and so the Hoh River Knotweed Control Project has been underway in the Hoh watershed since 2001. The Hoh knotweed infestation initiated from a single clump identified by Hoh Tribe field staff in 1999, located at an old homestead near the Olympic National Park (ONP, river mile 29.75). The clump was eroded and spread down the river during a winter flood.

<u>Brief Treatment history of the Hoh River</u>
See previous year's reports for more detailed information

- 2001-2002: Treatments of knotweed were conducted through the Hoh River Knotweed Control Project [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2003: A survey of the Hoh River documented 18,585 canes in 1,247 sites dispersed over 20 river miles that were treated [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2003-2013: Annual surveys and retreatment of the 30 mile river corridor downstream of ONP land were performed each year during this time. Crews noted a substantial decrease in knotweed plant density and distribution. However, other species including reed canarygrass, herb Robert, Canada thistle and Scotch broom had spread in previously treated areas and highly disturbed shorelines. In 2011, inventorying of reed canarygrass was started Elk Creek, a Coho and steelhead spawning tributary of the Hoh River [10KYI, Hoh Tribe, Hoh River Trust, ONP].

- 2014: 125 knotweed and 319 reed canarygrass sites were treated along the Hoh River mainstem [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2015: 40 knotweed and 193 reed canarygrass infestations along the mainstem Hoh River and its side channels, gravel bars and floodplains were retreated. Crews found increased infestations of Canada thistle, herb Robert and Scotch broom due to seed movement in river channel migrations. Scotch broom and herb Robert were controlled along Highway 101 [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2016: Invasive species were retreated along the Hoh River's 30 mile mainstem. 28 small knotweed sites were treated while over 40 acres of Scotch broom were treated using cut stump applications. Notably, reed canarygrass infestations on the Hoh are down by 90% and crew were able to treat a single hydrangea before it spread [10KYI].
- 2017: The 10KYI performed work on the Hoh River, totaling 3,562 acres searched, under the Pulling Together in Restoration Project, the Hoh Riparian Restoration Project, and the Washington State Department of Agriculture (WSDA) Knotweed program. Knotweed was treated at 37 sites (28 Bohemian, 8 Japanese, and 1 Giant), totaling 0.08 acres. Treatment focus shifted towards reed canary grass, Scotch broom, Canada thistle, and herb Robert. The 10KYI noted an explosion of herb Robert infestations along the Hoh and neighboring roadsides, but successfully coordinated with the Jefferson County Road Department to mow roadsides after herb Robert had been pulled and bagged.
- 2018: Crew covered much of the 36.6 miles of river channel and floodplain in the project area west of the Olympic National Park boundary at river mile (RM 29.75). Knotweed points comprise the lowest number of the focal species – 46 Bohemian, 2 Giant, and 10 Japanese sites were found and 56 of the 58 were treated. Crews treated Canada thistle, herb Robert, St. John's wort, tansy ragwort, reed canary grass, and foxglove either manually or with Glyphosate (1.5%) or Imazapyr (0.5%), they treated 167 acres of Scotch broom with Glyphosate (50-100% cut-stump) [10KYI].
- 2019: 2,114 aces were searched along 30 river miles and 51.2 road miles and 153.3 acres were treated for knotweed while 765.7 acres were treated for non-knotweed invasive species [10KYI].
- 2020: 10KYI surveyed 31.1 river miles and 51.2 road miles, searched 2,113.7 acres, and treated 47.8 acres for knotweed and 591.9 combined acres for bull thistle, Canada thistle, evergreen blackberry, foxglove, herb Robert, Himalayan blackberry, wild carrot, reed canary grass, Scotch broom, spotted jewelweed, St. John's wort, and tansy ragwort.

2021: [10KYI] Knotweed was found scattered throughout the Hoh River between river miles 30 and 3 at 64 sites during surveys for all other species during spring and summer, and treated in the fall. Treatment occurred on state, county, timber, non-profit, and private land on gravel bars, floodplains and in forested areas. No knotweed was found along roadsides in the Hoh Watershed. Other species inventoried, and/or and treated with herbicide or manual methods included reed canarygrass, tansy ragwort, Scotch broom, herb Robert, St. John's wort, Canada thistle, wild carrot, jewelweed and everlasting peavine.

2022: 10KYI plans to survey and treat as needed.

Herbicide Use, Hoh River (gallons)														
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
Acres Treated	1093	1000	NA	0.16	0.1	0.1	3.8	0.06	0.7*	164	49.2	919	639	**1,124**
Glyphosate injected or cutstump (100%, 50%, or 25%)	0.02	0.2	0.25	0.13	0	0	0	0	0	0	7.6	14.6	6.22	**7.92**
Glyphosate foliar	0.6	0.1	0.8	0.7	0.4	0	0.2	0	0	10.4	4.1	3.6	4.6	**4.93**
Imazapyr foliar	0.06	0.04	0.2	0.02	0.09	0.1	0.7	0.07	0.2	0.05	0.9	0.3	0.4	**0.95**
Triclopyr foliar											0.4	-	0.08	**-**
Clopyralid foliar														**0.04**
Total Herbicide	0.6	0.3	1.2	0.9	0.5	0.1	0.9	0.07	0.2	*11	13	18.6	11.3	**13.84**

** 2017 total herbicide usage includes above totals plus 0.525 gallons of concentrated Element 3A (triclopyr) used on non- knotweed invasives.*

Goodman Creek

This fourteen mile river stands alone between the Hoh and Quillayute watersheds and empties into the pacific through a gap in a rocky headland.

Brief Treatment history of the Goodman Creek

See previous year's reports for more detailed information

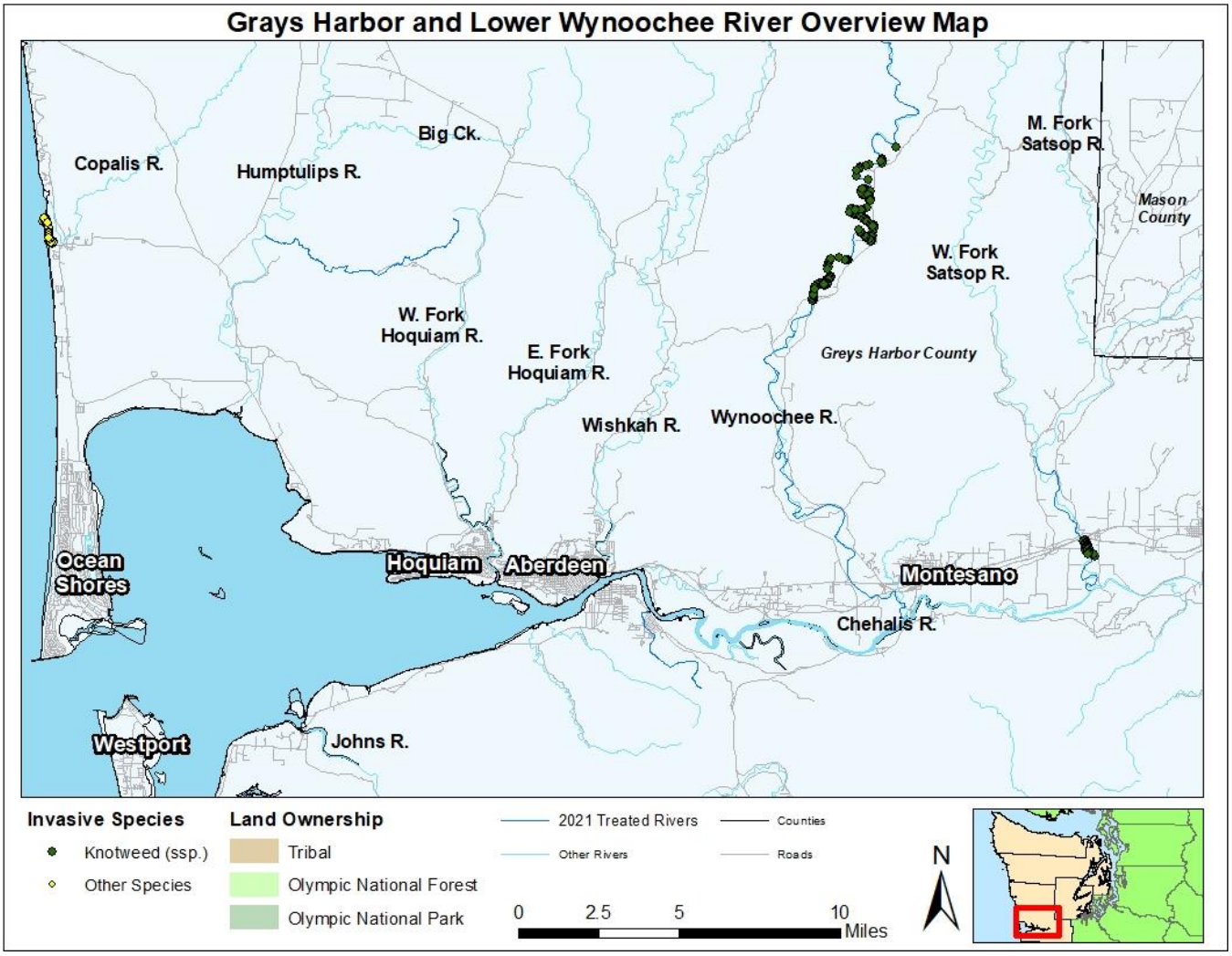
- 2017: 10KYI Treated 10 miles and searched 212 acres for non-knotweed invasives including; reed canary grass, Canada thistle, Scotch broom, tansy ragwort, herb Robert, foxglove, smartweed.
- 2018: 8.31 river miles treated (219 acres searched) for reed canary grass, Canada thistle, tansy ragwort and common tansy. Treatments used 0.89 gallons of glyphosate (1.5%) and 0.47 gallons of imazapyr (0.5%) on a total of 4.6 acres.
- 2019: 10KYI surveyed 9.8 river miles and 7.8 road miles, searched 243 acres, and treated 196 combined acres for Canada thistle and reed canary grass [10KYI].
- 2020: 10KYI surveyed 7.9 river miles and 15.7 road miles, searched 138.8 acres, and treated 106 combined acres for bull thistle, Canada thistle, reed canary grass, Scotch broom, and tansy ragwort

2021: No surveys or treatments were reported for this area.

2022: 10KYI will continue to survey this watershed, and treat as needed, when resources are available.

For more information about knotweed treatment on the Hoh River and in the Goodman Creek Watershed, please contact:
Jill Silver, 10,000 Years Institute, at 360-385-0715 jsilver@10000yearsinstitute.org.

Wynoochee River



This 60 mile river starts in the south-central edge of Olympic National Park and flows south into the Chehalis River, with a drainage basin of 218 square miles.

Brief Treatment history of the Wynoochee

2018: GHNWCB and WSDA surveyed the Wynoochee River for the most upstream patch of knotweed, found at approximately river mile 25, followed by a ground survey for knotweed locations and access points on either side of the river. Landowners in the region were contacted to gauge receptivity of control for knotweed, including Green Diamond Resource Co., Weyerhaeuser and several private landowners.

2019: GHCNWCB received grant funding from WSDA for a project to control invasive Japanese/Bohemian knotweed on the Wynoochee River for the period of July 1, 2019 to June 30 2021. 900 acres were searched over 7 river miles and 103.75 acres were treated for knotweed [GHNWCB].

2020**:** GHNWCB surveyed 10.2 miles, searched 187.1 acres, and treated 117.5 acres for knotweed. GHNWCB crew and partners used 7 gallons of imazapyr (1-2%) in foliar treatments.

2021: GHNWCB reported progress on the Wynoochee was very successful and starting treatments on the East, West and lower Satsop River was significant progress in expanding their knotweed program. GHNWCB also reported that the biggest success story for the program was the progress made on the Wynoochee, treating 13 river miles through dense knotweed and having positive relations with all the landowners.

The Grays Harbor NWCB was awarded a grant from the Washington Coast Restoration and Resiliency Initiative that allowed the program to hire two full time employees and hire contractors to continue knotweed control on the Wynoochee River. The two hired employees and the contractor crew began retreating knotweed sites in the upper Wynoochee River. Control efficacy after two years of treatment was approximately 98%. The crews moved quickly through these areas and started treating new areas of knotweed downriver. The hired contractors worked from mid-August to mid-October on the Wynoochee River, moving through roughly 300 acres of infested riparian zones and 13 river miles. The two newly hired staff and Noxious Weed Control Board Coordinator retreated knotweed sites for landowners throughout Grays Harbor as well as working with new landowners on the east and west fork Satsop River. Many of the re-treatment sites had 98%-100% control.

Grays Harbor Noxious Weed Control Board started the knotweed season off on the lower Satsop River. A cooperative weed management area was established for the Satsop River to control knotweed in collaboration with the WDFW, the Grays Harbor Conservation District and the DNR. The DNR provide two weeks of WCC crews to help with knotweed control above the WDFW large woody debris project in the lower Satsop River. The long term plan is to reduce the amount of knotweed spreading from upriver into the construction zone of the large woody debris project while simultaneously beginning a top down approach on the east and west fork of the river. The WCC crews controlled knotweed over 30 acres on private and WDFW property.

GHNWCB/Brittlind Co. treated 15 rivers miles along the Wynoochee River, searching 320 acres and treating 81.5 acres. 22.22 gallons of imazapyr (1% - 1.5%) was used on the treatments.

[10KYI]In the Humptulips and Wynoochee Watersheds, crews worked alongside Olympic National Forest to complete invasive plant treatment along several forest service roads. No knotweed was found or treated in this area. No knotweed was found In the Copalis River watershed.

2022: [GHNWCB] Continue to work collaboratively across agencies. Work to gain additional landowner access and have staff continue ground treatments.

For more information about knotweed treatment in Grays Harbor County, please contact:
Kiley Smith, Grays Harbor County Noxious Weed Control Board Coordinator, 360-482-2934, kiley.smith2@wsu.edu

Jill Silver, 10,000 Years Institute, at 360-385-0715 jsilver@10000yearsinstitute.org.

Table 1: Work by County-by Watershed

The following table was compiled by the Clallam County Noxious Weed Control Board (CCNWCB) and includes knotweed and invasive-plant control project data from various partners across the Olympic Peninsula. The table includes both public outreach and treatment data and is organized by watershed and county in the order presented in the narrative section of this report. Watersheds with work completed by multiple entities are shown in the same row, either denoted by a space to indicate the entities worked independently or comma to indicate a joint project.

The data was submitted to the CCNWCB in the standardized reporting template or annual reports. Values were estimated by CCNWCB if sufficient partial data was submitted, values that could not be estimated are listed as n/a[$]. For more detailed information regarding 2020 treatment activities, refer to the narrative section by river system in this report. Watersheds that have historically had knotweed control activities but none reported in 2020 are included in this table with dashed (-) entries. Activities or species not reported to the CCNWCB are not included in this table.

The table includes: the **River Miles** or **Road Miles** - the total linear distance searched or treated; the **Acres Protected**, the total acreage searched for knotweed or invasive species; the **Acres Treated**, the total acreage where treatments occurred (manual or chemical); the **Solid Acres**, the estimated aggregated acres with 100% coverage of knotweed or target species; the **Parcels Treated/Surveyed**; the outreach statistics of **# Landowner Permissions** obtained, the **# Landowners Assisted**, and **# New Agreements** obtained; and the invasive **Targeted Species**. A complete list of terms, agency acronyms and expanded definitions is included at the end of the table.

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Clallam County Watersheds										
Dickey River	QNR/ CCNWCB	5.15	75.8	75.8	0.8264	19/19	1	0	0	knotweed, tansy ragwort
*(Mina-Smith Rd)**	CCNWCB	2.4	4.7	4.7	0.5	n/a[$]	n/a[$]	n/a[$]	0	tansy, evergreen blackberry, Scotch broom
Calawah River	10KYI	30.9	171.78	24.01	0.82	31/38	11	11	4	knotweed, evergreen blackberry, foxglove, herb Robert, Himalayan blackberry, orange hawkweed, Scotch broom, reed canary grass, wild carrot
Bogachiel River	10KYI	37.2	135.24	135.24	0.8574	52/54	14	14	2	knotweed, bull thistle, Canada thistle, everlasting peavine, foxglove, herb Robert, reed canarygrass, tansy ragwort, yellow flag
Quillayute River	10KYI	20.37	161.1	56.45	0.206	16/16	9	9	0	knotweed, Canada thistle, reed canarygrass, Scotch broom, tansy ragwort, everlasting peavine
	QNR	0.95	38	0.5	0.372	n/a	2	2	0	

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Sol Duc River and	10KYI	111.98	227.11	2.46	0.466	65/74	6	15	0	bull thistle, Canada thistle, foxglove, herb Robert, wild carrot
Wisen Crk	QNR	0.08	2.6	0.1	0.122	2/2	3	2	2	knotweed
	CCNWCB	9.2	97.1	97.1	0.597	36/171	0	0	0	knotweed, tansy ragwort
City of Forks	-	-	-	-	-	-	-	-	-	-
Bullman Creek	-	-	-	-	-	-	-	-	-	-
Big River	Makah	0.5	n/a	1.6	0.005	2/3	2	2	0	knotweed
Hoko River	CCNWCB	17.5	33.8	33.8	1.423	n/a	n/a	n/a	n/a	knotweed, tansy ragwort, evergreen blackberry
	Makah	n/a	0.64	0.64	0.075	12/12	8	8	0	knotweed
Clallam River	-	-	-	-	-	-	-	-	-	
Pysht River	CCNWCB	-	6.5	.01	.046	2/3	1	1	1	knotweed, common teasel, burdock
Lake Creek, Lake Pleasant and Beaver	CCNWCB	.10	2.13	0.045	0.045	n/a	n/a	n/a	n/a	knotweed
Lake Crescent	-	-	-	-	-	-	-	-	-	-
Deep Creek	LEKT	n/a[$]	25	5	0.023	1/1	1	1	0	knotweed
Nordstrom Creek	-	-	-	-	-	-	-	-	-	-
Salt Creek	-	-	-	-	-	-	-	-	-	-
Elwha River	LEKT	0.5	265	12	0.069	3/10	1	4	0	knotweed, Canada thistle, reed canary grass
Dry Creek	CCNWCB	0.22	2.76	0.45	0.056	3/3	3	3	2	knotweed, poison hemlock
	LEKT		1	0.5	0.046	1/1	1	1	0	knotweed
Valley Creek	CCNWCB	0.64	2.37	0.004	0.003	1/1	1	1	0	yellow archangel
Peabody Creek	-	-	-	-	-	-	-	-	-	
Ennis Creek	CCNWCB	0.63	61.7	10.3	0.241	20/20	1	1	1	knotweed, yellow archangel

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Lee's Creek and East Lee's Creek	-	-	-	-	-	-	-	-	-	-
Morse Creek	-	-	-	-	-	-	-	-	-	-
Bagley Creek	-	-	-	-	-	-	-	-	-	knotweed, poison hemlock
Siebert Creek	-	-	-	-	-	-	-	-	-	-
Bell Creek	-	-	-	-	-	-	-	-	-	-
Dungeness River	NOSC,WCC	4.5	n/a	90.3	0.195	43/78	78	28	8	knotweed, butterfly bush
	CCNWCB		0.4	0.002	0.006	1/1	1	1	0	knotweed, reed canarygrass
Dean Creek	-	-	-	-	-	-	-	-	-	
Total: 27 waterways	**7 entities**	**167.17**	**1,024.3**	**311.26**	**4.007**	**310/507**	**118**	**79**	**14**	**15 species**
Jefferson County Watersheds										
Snow Creek	-	-	-	-	-	-	-	-	-	
Port Townsend	JCNWCB /WCC	-	0.8	0.043	0.069	1/4	1	1	0	knotweed
Lake Leland	-	-	-	-	-	-	-	-	-	-
Big Quilcene River	HCSEG/ WCC	2.2	173.5	0.05	0.118	26/130	32	13	0	knotweed, yellow flag iris, yellow archangel, common comfrey
Little Quilcene River and Leland Creek	-	-	-	-	-	-	-	-	-	-
Quilcene and vicinity	JCNWCB/ WCC	-	2.5	0.002	0.023	1/1	1	1	0	bittersweet nightshade
Chimacum and Irondale	-	-	-	-	-	-	-	-	-	-
Tarboo Creek	-	-	-	-	-	-	-	-	-	-
Spencer Creek	-	-	-	-	-	-	-	-	-	-
Dosewallips River	HCSEG, WCC	7.35	421.41	0.003	0.020	6/74	28	4	0	knotweed, butterfly bush
Duckabush River	-	-	-	-	-	-	-	-	-	-

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Queets/ Clearwater River	10KYI	58.39	235.45	120.54	0.643	11/14	4	4	0	knotweed, Canada thistle, common tansy, reed canarygrass, Scotch broom, St John's wort, tansy ragwort
Snahapish River	10KYI	9.49	114.44	149.98	0.410	4/4	2	2	0	reed canarygrass, Scotch broom, St John's wort
Goodman Creek	-	-	-	-	-	-	-	-	-	-
Hoh River & tributaries	10KYI	117.95	1,812.7	1,171.4	11.01	85/88	12	31	0	Knotweed, broad dock bull thistle, buttercup, Canada thistle, evergreen blackberry, everlasting peavine, foxglove, herb Robert, Himalayan blackberry, wild carrot, reed canarygrass, Scotch broom, smartweed, spotted jewelweed, St John's wort
Pacific Coast Road System right-of-way	-	-	-	-	-	-	-	-	-	-
Total: 7 waterways	**4 entities**	**195.38**	**2,761**	**1,442**	**12.293**	**134/315**	**80**	**56**	**0**	**22 species**
Mason County Watersheds										
Tahuya River	-	-	-	-	-	-	-	-	-	
Union River	HCSEG/ WCC	3.17	50.4	0.08	0.931	51/82	124	41	2	knotweed, bittersweet nightshade, policeman's helmet, reed canarygrass, giant hogweed, yellow archangel
Dewatto River	HCSEG/ WCC	10.43	126.1	0.12	0.341	20/33	9	7	2	knotweed, butterfly bush, reed canary grass, Canada thistle
Skokomish River	MCD	6.68	708	335.07	17.034	84/158	54	28	8	knotweed
Mission Creek	MCNWCB	1.78	19.42	4.26	0.10	17/17	15	11	1	knotweed

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Little Mission Creek	-	-	-	-	-	-	-	-	-	-
Hood Canal watershed	MCNWCB	n/a	0.3	0.2	.02	2/2	17	2	1	knotweed
Sherwood/ Anderson Creek	MCNWCB	2.5	18.18	5.94	0.31	22/46	31	18	2	knotweed
Finch Creek	MCNWCB	0.48	2.91	0.42	0.04	10/34	25	10	1	knotweed
Goldsborough/ Mill Creek	-	-	-	-	-	-	-	-	-	-
Stimson Creek	MCNWCB	2.28	13.82	2.46	0.01	8/10	10	6	0	knotweed
Coulter Creek	MCNWCB	0.96	5.82	0.66	0.01	10/10	14	8	0	knotweed
North Bay/Allyn	-	-	-	-	-	-	-	-	-	
Other sites WRIA 16	-	-	-	-	-	-	-	-	-	
Other sites WRIA 15	MCNWCB	n/a	0.23	0.23	0.02	4/4	7	4	2	knotweed
Other sites WRIA 14	MCNWCB	n/a	4.07	0.14	0.06	6/6	9	6	5	knotweed
Oakland Bay	-	-	-	-	-	-	-	-	-	-
Spencer Lake	-	-	-	-	-	-	-	-	-	-
Shelton(Misc.)	-	-	-	-	-	-	-	-	-	-
Hwy 101 (Misc.)	-	-	-	-	-	-	-	-	-	-
Hwy 106 (Misc.)	-	-	-	-	-	-	-	-	-	-
Belfair (Misc.)	-	-	-	-	-	-	-	-	-	-
Liliwaup Creek	-	-	-	-	-	-	-	-	-	-
Total: 11 waterways	**4 entities**	**28.28**	**949.31**	**14.515**	**18.872**	**234/402**	**315**	**141**	**14**	**8 species**

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Kitsap County Watersheds										
Big Anderson Creek	HCSEG/ WCC	1.1	42.9	0.58	0.758	12/24	9	7	0	knotweed
Big Beef Creek	HCSEG/ WCC	4.74	57.33	0.023	0.185	11/70	60	5	2	knotweed, bittersweet nightshade, butterfly bush, yellow archangel, everlasting peavine, tansy ragwort, yellow flag iris, common comfrey, hedge bindweed
Total: 2 waterways	**2 entities**	**5.84**	**100.23**	**0.603**	**0.943**	**23/94**	**69**	**12**	**22**	**9 species**
Grays Harbor County Watersheds										
Wynoochee River	GHNWCB	15	320	81.5	39.855	66/66	39	39	16	knotweed
	10KYI	25.5	36.64	n/a	n/a	6/6	1	1	1	broad leafed dock, bull thistle, Canada thistle, evergreen blackberry, foxglove, Himalayan blackberry, knapweed, reed canary grass, Scotch broom, St. John's wort, tansy ragwort
Ocean Shores	-	-	-	-	-	-	-	-	-	-
Quinault River	10KYI	85.8	291.68	2.32	0.541	39/40	8	8	0	knotweed, bull thistle, Canada thistle, common tansy, herb Robert, Himalayan blackberry, orange hawkweed, reed canary grass, Scotch broom, St. John's wort, tansy ragwort
	QIN	6,200	1,450	n/a	n/a	20/na	n/a	n/a	n/a	knotweed, Scotch broom
Moclips highway and SR 101	-	-	-	-	-	-	-	-	-	-
Total: 2 waterways	**2 entities**	**6,285.8**	**1,741.7**	**2.32**	**0.541**	**59/40**	**8**	**8**	**0**	**14 species**

*CCNWCB completed treatments of knotweed and invasive species on Clallam County right-of-way directly adjacent to waterways in the listed watershed.

AGENCY ACRONYMS USED IN TABLE:
10KYI-10,000 Years Institute
CCNWCB-Clallam County Noxious Weed Control Board
DNR-PSC-Clallam based Puget Sound Corps, Mason based Puget Sound Corps
DNR-WCC-Department of Natural Resources Washington Conservation Corps
EJWCC-East Jefferson Washington Conservation Corps
GHNWCB-Grays Harbor Noxious Weed Control Board
HCSEG-Hood Canal Salmon Enhancement Group
LEKT-WCC-Lower Elwha Tribe based Washington Conservation Corps
MCD-Mason Conservation District
MCNWCB-Mason County Noxious Weed Control Board
NCEPMT-North Cascades Exotic Plant Management Team
ONP-WCC-Olympic National Park based Washington Conservation Corps
PCSC-Pacific Coast Salmon Coalition
QIN-Quinault Indian Nation
QNR-Quileute Indian Tribe-Natural Resources
TNC-The Nature Conservancy

TERM DEFINITIONS*:*
Agency: name of organization that performed the work-may not be the same agency that managed the project
Watershed/Waterway: Riparian area where treatments occurred. Some areas were combined if there was not detailed information broken out.
River/Shore miles: One mile of river-includes both banks, (**not** counted as separate miles like road shoulders). Data was estimated from track logs, measuring in GIS, or other information as available. NOTE: Some entities may have included re-treatment miles, (river or road) in their total; this accounts for some treated areas exceeding the river or road's actual length. We have included the data as reported to us.
Area Protected: Ideally, length of river searched, times average width of the area actually searched. It is an indicator of the area that had to be canvassed while looking for knotweed that was interspersed. CCNWCB used a 50 foot width when there was no information to the contrary. When an entity reported only total acres of a parcel, we assumed a 50 foot width unless there was information to the contrary. Other entities calculated and reported this total differently.
Area Treated: This indicated the area of plants treated without lumping them together. Some entities included anything protected (surveyed), as treated area. Some only reported total parcel area, which may or may not have been surveyed or was only partially treated. Weed boards report treated area as the area encompassed (either estimated by paces, visual or GPS measured) by the farthest extent of the target species. If the infestation is distinctly patchy, the patches are instead summed up within a site and reported.
Solid Acres: Area of treated plants if they are all lumped together. WSDA has directed the Weed Boards to estimate this total based on the average calibrated gallons of mix/acre. For example, if backpack sprayers are calibrated to deliver 43 gallons/acre-this is approximately 1000 sq feet treated/gallon of mix. The formula would then be gallons of mix X 1000 sq feet/43,560 sq feet =solid acres. This was sometimes estimated from the rate and total gallons of herbicide used, and then plugged into the above formula assuming one gallon of mix equaled 1000 square feet treated.
Parcels Treated/Parcels Survey: This information was not uniformly supplied. The intent is to give a sense of how many parcels actually had plants to treat, how many had to be surveyed to find infestations. For weed boards it was calculated from number of distinct parcels where crew recorded GPS waypoints. GPS Track logs can provide a count of the number of parcels surveyed.
Total # of Permissioned Parcels: The total number of parcels encompassed by Land Owner Agreements within a project area. This figure gives a sense of how much area is involved and is connected to how many landowners had to participate.

Landowners Assisted: The number of landowners on whose land you actually worked during the season. Because permissions typically are given for four years, this number may differ from the total number of landowners from whom you have acquired permission. As knotweed projects mature or as time allows, crews may not go to every property for which they have permission.

Species Treated*:* For the most part, the projects in the table are knotweed focused. However, it is important to start showing the increasing complexity of projects that consider multiple species and the frequency with which they are now occurring around the Peninsula. Early infestations of additional invasives were sometimes treated in the course of treating knotweed. The Puget Sound Corps crews working under the auspices of Clallam be tasked with control of multiple species impacting riparian corridors either during the course of knotweed treatments or otherwise. **Please note** that Clallam County NWCB has only reported additional weed species work that was in the same vicinity or contiguous with knotweed projects.

Appendix I: Contact Information

This list encompasses agencies treating knotweed. Please see our website for past and present working group attendees and their contact information—www.clallam.net/weed

Clallam County Noxious Weed Control Board
Cathy Lucero, Noxious Weed Control Coordinator
360-417-2442
clucero@clallam.co.wa.us

Jefferson County Noxious Weed Control Board
Joost Besijn, Noxious Weed Control Coordinator
360-379-5610 ext. 205
noxiousweeds@co.jefferson.wa.us

Mason County Noxious Weed Control Board
Pat Grover, Noxious Weed Control Coordinator
360-427-9670 ext 592
PatriciaG@co.mason.wa.us

Grays Harbor County Noxious Weed Control Board
Kiley Smith, Noxious Weed Control Coordinator
360-482-2265
kileysmith2@wsu.edu

Mason Conservation District
Marissa Newby
360-427-9436 ext 120
mnewby@masoncd.org

Quileute Tribe
Garrett Rasmussen
360-374-2027
garrett.rasmussen@quileutenation.org

Makah Tribe
Shannon Murphie
360-360-645-3229
shannon.murphie@makah.com

Lower Elwha Klallam Tribe
Allyce Miller
360-457-4012 ext 7489
allyce.miller@elwa.org

Jamestown S'Klallam Tribe
Hilton Turnbull
360-681-4603
hturnbull@jamestowntribe.org

Quinault Indian Nation
Greg Eide
360-276-8211
Greg.eide@quinault.org

Olympic National Park
Janet Coles
360-565-3073
Janet_coles@nps.gov

Olympic National Park (North Cascades Exotic Plant Management Team)
Sophie Wilhoit
360-565-3076
sophie_wilhoit@nps.gov

US Forest Service (Olympic Region)
Cheryl Bartlett
360-956-2283
cbartlett@fs.fed.us

10,000 Years Institute
Jill Silver
360-385-0715
jsilver@10000yearsinstitute.org

Hood Canal Coordinating Council
Robin Lawlis
360-394-0046
rlawlis@hccc.wa.gov

Hood Canal Salmon Enhancement Group
Alex Papiez
360-275-3575 ext 24
alex@pnwsalmoncenter.org

Forterra
Kurt Schlimme
206-905-6954
kschlimme@forterra.org

Center for Natural Lands Management
Patrick Dunn
360-956-9713
pdunn@cnlm.org

North Olympic Salmon Coalition
Sarah Doyle
360 379-8051
sdoyle@nosc.org

Pacific Coast Salmon Coalition
360-374-8873

Appendix II: WSDA Approved Report Form

Washington State Department of Agriculture
Plant Protection Division
PO Box 42560
Olympia, WA 98504-2560
(360) 902-1853

PESTICIDE APPLICATION RECORD
(Knotweed)

NOTE: This form must be completed same day as the application and it must be retained for 7 years (Ref. Chapter 17.21 RCW)

1. YEAR OF PESTICIDE APPLICATION	MONTH OF APPLICATION	DAY OF APPLICATION	START TIME OF APPLICATION	STOP TIME OF APPLICATION

2. NAME OF PERSON FOR WHOM PESTICIDE WAS APPLIED	FIRM NAME (IF APPLICABLE)		
STREET ADDRESS	CITY	STATE	ZIP

3. LICENSED APPLICATORS NAME (IF DIFFERENT FROM #2 ABOVE)	LICENSE NUMBER		
FIRM NAME (IF APPLICABLE)	TELEPHONE NUMBER		
STREET ADDRESS	CITY	STATE	ZIP

4. PERSON "A" WHO APPLIED PESTICIDE (IF DIFFERENT FROM #3 ABOVE)	PERSON "A" LICENSE NUMBER	PERSON "B" WHO APPLIED PESTICIDE	PERSON "B" LICENSE NUMBER
PERSON "C" WHO APPLIED PESTICIDE	PERSON "C" LICENSE NUMBER	PERSON "D" WHO APPLIED PESTICDE	PERSON "D" LICENSE NUMBER

5. APPLICATION CROP OR SITE	6. TOTAL AREA TREATED (ACRE, SQ. FT., ETC.)

7. Please list all information for each pesticide in the tank mix (including surfactants) or pesticide injected:

(a) Product Name	(b) EPA Reg. No.	(c) Total Amount of Herbicide Applied in Area Treated **(in gallons)**	(d) Herbicide Applied/Acre (or other measure)	(e) Concentration Applied

8. Address or **geographical coordinates** of application: _____
NOTE: If the application is made to one or more acres of agricultural land, the field location must be shown on the map on page two of this form.

9. Wind direction and estimated velocity during the application: _____
(The permit requires foliar treatments to occur when the wind is less than 10 miles per hour)

10. Temperature during the application: _____

11. Apparatus license plate number (if applicable): _____

12. ☐ Ground ☐ Injection

13. Plant Specific Information (check one in each row):

Plant density:	☐ Seedlings/Regrowth from shoots	☐ Scattered stand	☐ Dense stand
Height of plant:	☐ Less than 1 foot	☐ 1 to 5 feet	☐ 5 feet or taller

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14. Location of Application (If the application covers more than one township or range, please indicate the township & range for the top left section of the map only):

Township: _____ N

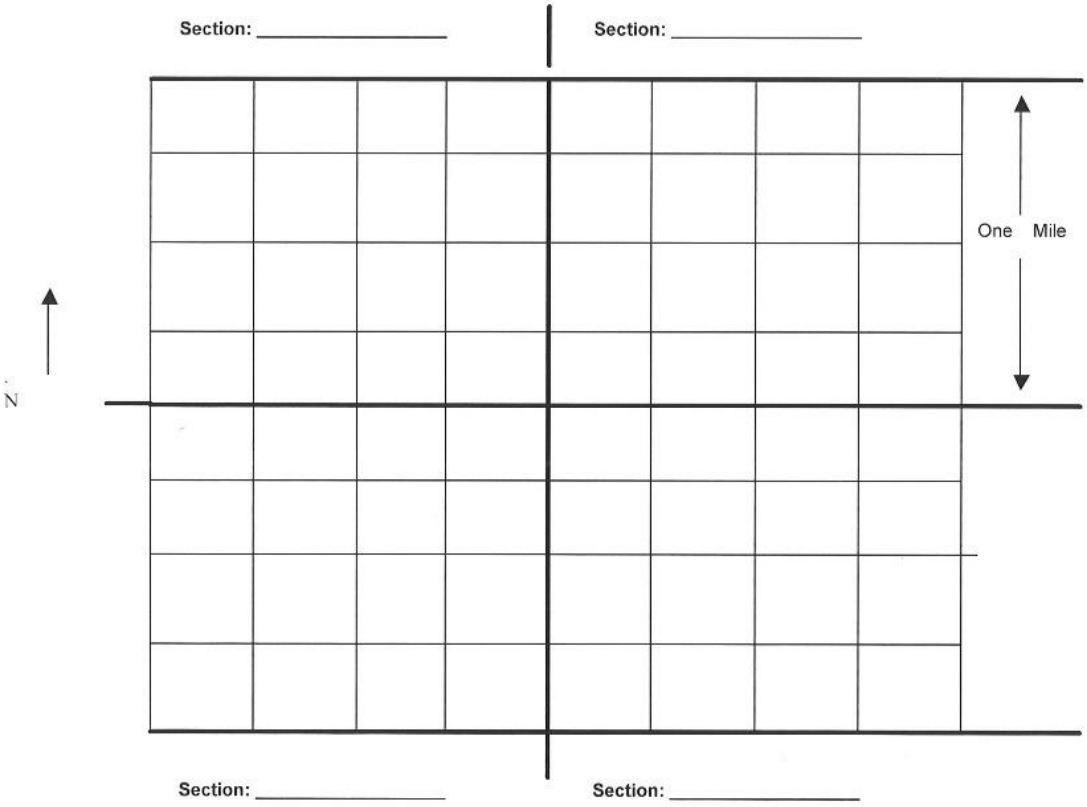
Range: E or W (please indicate) _____

Section(s): _____

County: _____

Please Note:

This map is divided into 4 sections with each section divided into quarter-quarter sections.
Please complete it by marking the appropriate section number(s) on the map and indicate as accurately as possible the location of the area treated.



15. Miscellaneous Information:

20__ CLALLAM COUNTY-ROADS
Herbicide/Manual Treatment Data Form

Project ID #:

Project Complete? **Y** or **N** (add notes)

Name of Entity/Person for whom Treatment was applied: Clallam County

Street Address: 223 E 4 th St City: Port Angeles State: WA Zip: 98362

Address or Exact Location of Site:

PIN#:

General Activity Fields

County (circle one)	WRIA (circle one)	Project Name (from project list)	Department (circle one)	Workforce**
Clallam	15 16 17 18 19		Roads Parks DCD Other	

****Workforce:** County Name, WCC Crew Name, County Weed Board

Crew Members Present:

Site/Inventory Fields

Start Date	Stop Date	acres examined for weeds	Treatment Site (circle one)	**Total Manual Infested Area Treated: (DO NOT lump plants together)** acres
			Road edge/ROW Park Other	

Weeds Treated (Just the PLANTS code is OK)	**Infested Area Treated** (DO NOT lump plants together)	% of area examined for weeds infested with this species (lump plants together – use cover classes 1 - 9 listed below)	**M**anual/**H**erbicide or **S**urvey
	sq ft		
	sq ft		
	sq ft		
	sq ft		
	sq ft		

[Y] **Cover Classes: 1** = Trace, **2** = 1 – 3%, **3** = 3 – 5% **4** = 5 – 10%, **5** = 10 – 25%, **6** = 25 – 50%, **7** = 50 – 75%, **8** = 75 –95%, **9** = 95 – 100%

Note: Cover classes are meant to be *approximations only*.

All Licensed Applicators: Name and License # _____

Firm Name: Clallam County Noxious Weed Control Board Phone # 360-417-2442

Firm Address: 223 E 4th St, Suite 15 City: Port Angeles State: WA Zip: 98362

Application Date	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	Remarks – Weather forecast

Application Area (acre)	Total Volume of Mix Applied (gal)	Diluent	Special comment
		Water	

Product Name	EPA Registration #	Amount of herbicide used (oz)	Herbicide Applied/Acre or other measure	Concentration Applied

Was this application made as a result of a permit? Yes No
If yes, Permit # _____

WA State NPDES Acres:

Notes: # Interactions:

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Appendix III: Season Work Summary Reporting Form

2020

TEMPLATE FOR KNOTWEED WORK REPORTING 2019

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity:____

Crew Used, Crew Leader name:____

Waterway or location:____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Weed Species Treated

Agency/Entity:____

Crew Used, Crew Leader name:____

Waterway or location:____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Weed Species Treated

Agency/Entity:____

Crew Used, Crew Leader name:____

Waterway or location:____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Weed Species Treated

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Example from last year:

Jefferson County—*Weed board staff treated Spencer Creek, Tarboo Creek and a number of small sites. A WCC crew, funded by both North Olympic Salmon Coalition (NOSC) and the Hood Canal Salmon Enhancement Group (HCSEG) re-treated the entire Big Quilcene, Little Quilcene, Dosewallips and Duckabush Rivers. Jefferson County Noxious Weed Control Board (JCNWCB) received funding from the Quinault Indian Nation to acquire landowner permission for knotweed survey and control in the Queets-Clearwater watershed.*

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

_____

2. Any specific success story?

_____

3. Any breakthrough treatment?

_____

4. Progress made?

_____

5. Recommendations for next year?

_____

6. Tell us about additional weed species that you treated.

_____

7. Is there a reveg or management plan in place?

_____

8. What partners did you work with?

_____

9. Where was your funding from?

_____

10. Did you sponsor any educational events?

_____

11. Anything else we forgot to ask?

_____

12. Please include contact information—contact person, address, phone number, email and website

_____

Appendix IV: 2021 Partner Knotweed Work Reporting Completed Forms

KNOTWEED WORK REPORTING 2021

PART 1

Agency/Entity: 10,000 Years Institute

Crew Used, Crew Leader name: 10KYI/ Jill Silver, Celia Thurman, Devin Chastain, Eli DeMatteis, Mathew Nichols, Raena Anderson, Sarah Watkins, Tristan Tumaua

Waterway or location: Quillayute River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
17.72 (Roads) 2.65 (Rivers)	161.1	2.40 0.001 20.70 5.60 25.95 1.80	7% <1% 3% 30% 5% 10%	Polaris Aquaneat Aquaneat Aquaneat Aquaneat Vastlan	1% 1% 1.5% 2% 50% 0.5%	0.005 0.0001 0.02 0.09 0.48 0.01	0.50 0.01 1.50 4.50 0.96 2.0	Spray Spray Spray Spray Cut-stump Spray	16	16	9	9 plus public users	0	5/4	Bohemian Knotweed Bittersweet nightshade Bull thistle Canada thistle Everlasting peavine Foxglove Perennial sowthistle Reed canarygrass Scotch broom St. John's wort Tansy ragwort

Waterway or location: Calawah River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
30.91 (Roads)	171.78	0.04	20%	Polaris	1%	0.05	5.14	Spray	31	38	11	11 plus public users	4	5/6	Bohemian knotweed Japanese Knotweed
		3.20	30%	Aquaneat	1.5%	0.09	6.00	Spray							Broad dock
		4.82	80%	Aquaneat	50%	1.31	2.61	Cut-stump							Buttercup
		2.15	30%	Vastlan	0.5%	0.07	13.50	Spray							Canada Thistle
		13.44	3%	Vastlan	1%	0.15	14.75	Spray							Evergreen blackberry
															Herb Robert
															Orange hawkweed
															Oxeye daisy
															Queen Anne's lace
															Reed canarygrass
															Scotch broom
															Smooth hawkweed
															St. John's wort
															Tansy ragwort

Waterway or location: Bogachiel River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
36.36 (Roads) 0.84 (Rivers)	135.24	64.12 0.0004 75.44 20.06 0.88	2% 85% 4% 40% 10%	Polaris Aquaneat Aquaneat Aquaneat Vastlan	1% 100% 1.5% 50% 1%	0.1375 0.05 0.50 0.46 0.03	13.75 0.05 33.50 0.92 2.91	Spray Injection Spray Cut-stump Spray	52	54	14	14 plus public users	2	5/9	Bohemian knotweed Bull thistle Canada thistle English holly Evergreen blackberry Foxglove Herb Robert Himalayan blackberry Reed canarygrass Scotch broom St. John's wort Tansy ragwort Yellow archangel

Waterway or location: Sol Duc River ****ALL OTHER SPECIES****

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated NO KNOTWEED
111.9 (Roads) 0.08 (Rivers)	227.11	2.46 70.64 3.01	7% 4% 7%	Aquaneat Aquaneat Vastlan	1.5% 50% 1%	0.17 1.92 0.05	11.62 3.84 4.84	Spray Cut-stump Spray	65	74	6	15	0	4/2	Bull thistle Canada thistle Foxglove Herb Robert

															Queen Anne's lace Reed canarygrass Scotch broom St. John's wort Tansy ragwort

Waterway or location: Hoh River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
91.56 (Roads) 26.39 (Rivers)	1812.67	47.48 1.55 4.43 471.12 609.89 22.97 12.88 1.14	10% <1% 5% 4% 10% 3% 10% 3%	Polaris Aquaneat Aquaneat Aquaneat Aquaneat Polaris Polaris Transline	1% 1% 1.33 % 1.5% 50% 0.5% 1% 0.78 %	0.11 0.02 0.20 4.71 7.92 0.21 0.74 0.04	11.00 2.00 14.93 313.77 15.84 42.66 74.00 5.50	Spray Spray Spray Spray Cut-stump Spray Spray Spray	85	88	12	31 plus public users	0	6/6	Bohemian knotweed Japanese knotweed Broad dock Bull thistle Buttercup Canada thistle Evergreen blackberry Everlasting peavine Foxglove Herb Robert Himalayan Blackberry Queen Anne's lace Reed canarygrass Scotch broom Smartweed Spotted jewelweed

															St. John's wort Tansy ragwort

Waterway or location: Queets River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
45.18 (Roads) 0.83 (Rivers)	72.29	58.00 11.01 0.001	1% 1% 75%	Polaris Aquaneat Aquaneat	1.5% 2% 50%	0.15 0.31 0.002	10.20 15.30 0.004	Spray Spray Cut-stump	7	9	2	2	0	2/0	Bohemian knotweed Canada thistle Common tansy Reed canarygrass Scotch broom St. John's wort Tansy ragwort

Waterway or location: Clearwater River ****ALL OTHER SPECIES****

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated **NO KNOTWEED**
12.38 (Roads)	163.16	45.00 6.54	1% 10%	Aquaneat Aquaneat	1.5% 50%	0.003 0.39	1.73 0.78	Spray Cut-stump	4	5	2	2	0	2/0	Reed canarygrass Scotch broom St. John's wort

															Tansy ragwort

Waterway or location: Snahapish River **ALL OTHER SPECIES**

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated NO KNOTWEED
9.49 (Roads)	114.44	45.00 104.98	1% 25%	Aquaneat Aquaneat	1.5% 50%	0.007 7.06	3.77 14.12	Spray Cut-stump	4	4	2	2	0	2/0	Reed canarygrass Scotch broom St. John's wort

Waterway or location: Upper Quinault River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
77.86 (Roads) 7.94 (Rivers)	291.68	0.052 0.01 0.89 1.21 0.04 0.12 0.0004	25% 3% 10% 25% 35% 8% 25%	Polaris Aquaneat Aquaneat Aquaneat Polaris Polaris Polaris	1% 1% 1.5% 50% 0.75 % 1% 50%	0.0075 0.02 0.16 0.16 0.03 0.01 0.002	0.75 7.50 10.50 0.32 3.50 1.00 0.004	Spray Spray Spray Cut-stump Spray Spray Cut-stump	39	40	8	8 plus public users	0	4/4	Bohemian knotweed Bull thistle Canada thistle Common tansy Herb Robert Himalayan blackberry Orange hawkweed

															Reed canarygrass Scotch broom St. John's wort Tansy ragwort Yellow flag iris

Waterway or location: Humptulips River ****ALL OTHER SPECIES****

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated NO NOTWEED
5.8 (Roads)	57.69	N/A	N/A	N/A Manual treatment only	N/A	N/A	N/A	N/A	6	6	1	1	1	1/0	Broad dock Bull thistle Canada thistle Evergreen blackberry Foxglove Himalayan blackberry Knapweed Reed canarygrass Scotch broom St. John's wort Tansy ragwort

Waterway or location: Wynoochee River ****ALL OTHER SPECIES****

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs	Other Weed Species Treated NO KNOTWEED

						(total gal)								Private Owner	
25.5 (Roads)	36.64	N/A	N/A	N/A Manual treatment only	N/A	N/A	N/A	N/A	3	3	1	1	1	1/0	Tansy ragwort

Waterway or location: North Beach Grays Harbor County **ALL OTHER SPECIES**

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated NO KNOTWEED
0.9 (Shoreline)	47.40	4.83	75%	Aquaneat	50%	1.05	2.10	Cut-stump	2	2	1	1 plus public users	1	1/0	Scotch broom

PART II: NARRATIVE (SUMMARY)

QUILLAYUTE RIVER Watershed (includes the Sol Duc, Bogachiel, Calawah, Dickey, and Quillayute Rivers):

Crew Hours: 3,310

Work conducted in the Quillayute Watershed was funded by the 2019-2021 Pulling Together in Restoration (PTIR) project through the Washington Coast Restoration and Resiliency Initiative (WCRRI), which focuses on preventing the spread of invasive species by targeting sources, vectors and pathways for spread and removing seeds and propagules.

- Knotweed – Treated a new site on the Bogachiel on private property, provided follow-up treatment on three sites on the Bogachiel, treated one site on A-Road, and treated one site at the Calawah River Park. Due to weather and COVID issues, we were not able to schedule boat support to survey and treat the intended 13 mile reach between SR 101 south of Forks and Three Rivers.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Tansy ragwort – 50% of treatment and inventory occurred along roadsides, including SR 101, SR 110, Quillayute Prairie Road, Mora Road, A-Road, Calawah Way, Bogachiel Way, FS-2902, and B-2132. Mature plants with and without flowers were pulled, and the flower heads cut, bagged and disposed at West Waste. Provided manual and herbicide follow-up treatment at a private horse pasture and treated two new private horse pastures within the city of Forks. On the Quillayute River, manual treatment was completed at Richwine Bar, and manual and herbicide treatment occurred on two of the Quillayute Estuary islands in partnership with Quileute Natural Resources. Cinnabar moth caterpillars, a biocontrol of tansy ragwort, were found on plants along SR 110.
- Reed canarygrass – Collected seed and flower heads to prevent spread by water, vehicles, and mowing equipment along roadsides including FS-2929, SR 101, SR 110, Mora Road, Wilson Road, and Undi Road. Herbicide treatment occurred at one private property on the Sol Duc River, along SR

110, A-Road, and one SSHEAR site on the Bogachiel River. Patches were inventoried for future treatment along FS-2902, FS-30, B-6500, Bockman Creek, Shuwah Creek, and two SSHEAR sites on the Dickey River.

- Scotch broom – Cutting, piling and cut stump treatment occurred throughout the watershed at private properties including Forks Airport, Forks Hospital, Forks Community Garden, Forks Sand and Gravel, as well as on other private riverside properties, federal, state, and county roadsides, and timber harvest units.
- St. John's wort – Treatment efforts occurred along roadsides this year with flower and seed head removal and herbicide treatment. Targeted roadsides included SR 110 and Quillayute Prairie Road. One new site was inventoried for future treatment on the Quillayute River. Klamathweed beetles, a biocontrol of St. John's wort, were found on plants along Quillayute Prairie Road.
- Herb Robert – Treated with 1.5% Aquaneat at two private properties along the Bogachiel River and removed plants with flowers and seeds on Wilson Road, A-Road, FS-2929, H-to-Z, and Cooper Ranch Road.
- Canada thistle – Treated with 1.5% Aquaneat at two private properties on the Bogachiel River and one SSHEAR site, and treated with 1% Polaris at one private property on the Bogachiel River
- Everlasting peavine – Herbicide treatment occurred at one location along the Quillayute River. Other inventory locations were taken along A-Road. More mapping and control are needed in following years.
- Bull thistle – Manual treatment occurred at on site on the Quillayute River and at Wilson Boat Launch, as well as roadside treatment on SR 110. Plants were uprooted and their flowers and seed heads were removed.
- Giant reed – The only known site on the Olympic Peninsula was identified in 2018, treated in 2019 and revisited in 2021 with no living stalks found. Part of the original patch area had eroded into the Bogachiel River, and future surveys will be needed to ensure eradication both at the site and to ensure that no live rhizome fragments made it downriver.
- Orange hawkweed – Herbicide treatment occurred at UW's Olympic Natural Resource Center (ONRC). Inventory and manual treatment occurred along SR 101 and SR 110 to prevent flowers from seeding.
- Himalayan and evergreen blackberry – Cut-stump treatment applied to plants along the harvest unit across from Mary Clark Pit and at UW's ONRC.
- English holly – Cut-stump treatment applied to plants along UW's ONRC trails.
- Yellow archangel – Treated with 1% Polaris at one private property along SR 101.
- Queen Anne's lace – Ten new sites were found and treated along SR 101. Plants were pulled and bagged for disposal.

HOH RIVER Watershed:

Crew Hours: 9,892

Work in the Hoh River Watershed was funded by the 2019-2021 Pulling Together in Restoration (PTIR) project through the WCRRI. Knotweed control in the Hoh River has been conducted by 10KYI since 2003.

- Knotweed – Found scattered throughout the Hoh River between river miles 30 and 3 at 64 sites during surveys for all other species during spring and summer, and treated in the fall. Treatment occurred on state, county, timber, non-profit, and private land on gravel bars, floodplains and in forested areas. No knotweed was found along roadsides in the Hoh Watershed.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Reed canarygrass – Roadside treatment occurred along Hoh Mainline, Upper Hoh Road, Oil City Road, and SR 101. Plants were deseeded prior to herbicide treatment along Upper Hoh Road, Hoh Mainline and Oil City Road. Two patches on Oil City Road and sites along SR 101 received only manual treatment. River treatment was conducted at sites between river mile 29 and 4. Retreated scattered regrowth on 3 miles of Elk Creek, left-bank tributary to the Hoh River, with 1.5% Aquaneat and 1% Polaris.
- Tansy ragwort – Pulled and removed flowers along roadsides including Hoh Mainline, Oil City Road, and SR 101. Upper Hoh Road did not have flowering plants this year. Also treated throughout Hoh River floodplains from river mile 11 to 3.
- Scotch broom – Treated with a cut-stump method at 300 sites along roadsides, gravel bars, floodplains, forested areas, pastures, gravel mines, and harvest units. Over 500 acres of Scotch broom were treated. Seed weevil biocontrols were found at two sites in the Hoh watershed.
- Herb Robert – Over 440 acres were treated across more than 300 sites, primarily in riparian areas. Treatment was concentrated in floodplains between river miles 29.5 to 19. Treated2 miles of Owl Creek, a left bank tributary to the Hoh River. In these areas, plants were sprayed with 1.5% Aquaneat and 1% Polaris. Flowering plants were pulled and bagged prior to herbicide treatment. Roadside treatment occurred along Oil City Road and Upper Hoh Road.
- St. John's wort – Two new sites were found and treated; one patch at river mile 29 and one along Owl Creek. All plants had flower and seed heads removed and sprayed with 1.5% Aquaneat.
- Canada thistle – 180 acres of Canada thistle were treated with 1.5% Aquaneat at 168 sites along the Hoh River. River treatment happened from river mile 30 to 3. Evidence of biocontrols distributed in 2013 not seen – should be revisited.
- Himalayan and evergreen blackberry – Treatment of non-native blackberry occurred this year between river miles 29 to 19 and along Owl Creek using a cut-stump method.
- Queen Anne's lace – Three populations were found in the Hoh watershed, a new one between milepost 7.5 to 8 along a riprap revetment along the Upper Hoh Road and 2 sites on SR 101. Plants were pulled and bagged for disposal at SR 101 sites. The Upper Hoh Road population was treated two times this year, flowers were removed and bagged prior to herbicide treatment and then plants were sprayed with 0.78% Transline.
- Jewelweed – First reported in 2017, pulled for the first time in 2018, and again in 2019, and sprayed for the first time in 2020 at one location east of Canyon Creek on the Upper Hoh Road near milepost 10.5. Western Federal Highway Administration (WFH) replaced the Canyon Creek culvert with a bridge at milepost 10.5 along Upper Hoh Road. Seedlings were found and sprayed five times between April and July with 0.5% Polaris or 1% Aquaneat. WFH moved infested materials into spoils deposition pits dug to contain the infested material at a private gravel mine near the site, washed equipment and directed contaminated surface water into the pits, and covered the contaminated materials with uncontaminated forest spoils from a forested roadbank. One additional site was found on the Upper Hoh Road at a pullout near milepost 9.9. Plants in flower, seeds were dehiscing, but plants were pulled and bagged for disposal. Multiple surveys in the river floodplain from the original site to this new site have not found seedlings, but must be repeated in spring, summer, and fall of 2022.
- Everlasting peavine – One site was found and treated along the Upper Hoh Road near milepost 8. Plants were sprayed with 0.78% Transline.

SNAHAPISH RIVER Watershed (Tributary to the Clearwater at RM 19):

Crew Hours: 371

Funded by WCRRI, invasive plant surveys and treatments were conducted along the Hoh-Clearwater Mainline. No knotweed was found along the Hoh-Clearwater Mainline within the Snahapish Watershed.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Scotch broom – 22 sites were treated along the Hoh-Clearwater Mainline. Individual and small patches of Scotch broom were cut-stump treated using 50% Aquaneat. Larger patches were inventoried for future treatment.
- Reed canarygrass – One site was found and treated along the Hoh-Clearwater Mainline. Florets were cut and bagged for disposal, and then the patch was sprayed with 1.5% Aquaneat.
- St. John's wort – Five sites were found and treated along the Hoh-Clearwater Mainline. All plants had flower and seed heads removed and sprayed with 1.5% Aquaneat.

CLEARWATER RIVER Watershed (Tributary to the Queets at RM 7):

Crew Hours: 360

Work conducted in the Clearwater Watershed was funded through the PTIR project. No knotweed was found along the Hoh-Clearwater mainline within the Clearwater Watershed.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Scotch broom – 40 sites were treated along the Hoh-Clearwater Mainline. Individual and small patches of Scotch broom were cut-stump treated using 50% Aquaneat, as well as patches surrounding culverts. Larger patches were inventoried for future treatment. 8.26 acres of Scotch broom was treated at a state gravel mine within the Clearwater Watershed.
- Reed canarygrass – Six sites were found and treated along the Hoh-Clearwater Mainline. Florets were cut and bagged for disposal, and then the patch was sprayed with 1.5% Aquaneat.
- St. John's wort – Three sites were found and treated along the Hoh-Clearwater Mainline. All plants had flower and seed heads removed and sprayed with 1.5% Aquaneat.

LOWER QUEETS RIVER (Queets Estuary):

Crew Hours: 175

Work completed in the Queets Watershed was funded through the PTIR project.

- Knotweed – In collaboration with the Quinault Division of Natural Resources, 11 sites were found and treated at Queets Estuary. Sprayed plants with 2% Aquaneat and 1.5% Polaris.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Tansy ragwort – Surveyed and treated tansy ragwort across 58 acres at the Queets Estuary. Flowers and seed heads were cut and bagged; stems that were easy to pull were pulled, soil was removed from the roots, and stems were broken. Stems that were difficult to pull and rosettes were sprayed with 2% Aquaneat and 1.5% Polaris. About 80% less flowering plants were found in 2021, compared to 2020 densities.
- Canada thistle – Treated 10.8 acres of Canada thistle at Queets Estuary. Sprayed plants with 2% Aquaneat and 1.5% Polaris.
- Reed canarygrass — Six patches were found and treated at the Queets Estuary. Florets were removed and bagged, and then sprayed with 2% Aquaneat and 1.5% Polaris.

UPPER QUINAULT WATERSHED (Upper Quinault River Watershed including floodplains along the mainstem, north fork, and east fork)

Crew Hours: 1,096

Crews were deployed from June to October to prevent and control knotweed, reed canarygrass, Scotch broom, herb Robert, tansy ragwort, Canada thistle, bull thistle non-native blackberry, and yellow-flag iris at sites located along the South Shore Road, SR 101, and mainstem, north fork and east fork Quinault River, Alder Creek Side Channel, Zeigler Creek, and Irely Creek. Partners included ONP, ONF, the Quinault Indian Nation and project partners, Jefferson and Grays Harbor County road departments, GHC NWB staff, and three private landowners. Funding was provided by WCRRI through PTIR.

- Knotweed – Eight sites were found and treated on private properties off of North Shore Road. Sprayed with a 1% Polaris, patches were significantly smaller compared to patches found and treated in 2019.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Scotch broom – 0.61 acres of Scotch broom was treated along East Fork Quinault using a cut-stump application with 50% Aquaneat.
- Reed canarygrass – Florets were cut and bagged along South Shore Road and in riparian areas, including along Quinault River, North Fork Quinault River, East Fork Quinault River, Alder Creek, Big Creek, Irely Creek, and Zeigler Creek. Patches were sprayed on two private properties surrounding Zeigler Creek.
- Herb Robert – At 58 sites, herb Robert was pulled and/or its flowers and seeds were removed and disposed of. Riparian locations included Alder Creek side channel, East Fork Quinault River, and North Fork Quinault River. Other locations included Graves Creek Road and South Shore Road.
- Tansy ragwort – Eight tansy ragwort sites were found and treated along South Shore Road, Graves Creek Road, and SR 101 – a significant reduction compared to 2020 when 44 sites were treated.
- Canada thistle – Flowers were removed from this plant for manual treatment at Alder Creek Side Channel, North Fork Quinault River, and North Shore Road. At two private properties along Ziegler Creek, the plants were spot treated with 1.5% Aquaneat.
- Himalayan blackberry – One patch was treated with a 50% Aquaneat cut-stump application in a private pasture.
- Yellow flag iris – Four sites were found and treated in 2021. Both are growing in a pasture area on a private property adjacent to Ziegler Creek. Patches were treated twice, sprayed with either 0.75% or 1% Polaris and cut-stump treated using 50% Polaris.
- Queen Anne's lace – One site was found and treated along South Shore Road. The plant was pulled and bagged for disposal.
- St. John's wort – Flower and seed heads were removed and disposed of from five sites along the South Shore Road and North Shore Road.

LOWER QUINAULT & RAFT Watersheds:

Crew Hours: 56

In the Lower Quinault watershed, roadside work along SR101 occurred south to mile post 123. Crews were deployed in July and August. Partners include WSDOT and QIN, and funding was provided by WCRRI through PTIR. No knotweed was found or treated in this area.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Scotch broom – In collaboration with QIN, 0.6 acres of Scotch broom was treated at a developed site. QIN crew chainsawed Scotch broom and 10KYI crew applied 50% Aquaneat to the stumps. Four sites were found along SR 101 and treated using the cut-stump application.
- Reed canarygrass – Six sites were found and treated along SR 101. Florets were cut and bagged for disposal.
- Common tansy – Two clumps were deadheaded along SR 101.
- Hawkweed spp. – One rosette was found and pulled along SR 101. One large patch was flagged and mapped for future treatment.
- Tansy ragwort – At 37 sites, tansy ragwort plants were deadhead and pulled. Soil was removed from the roots and stems were broken.
- St. John's wort – Plants were deadheaded at eight sites along SR 101. Flower and seed heads were bagged for disposal.

HUMPTULIPS & WYNOOCHEE Watersheds:

Crew Hours: 652

In the Humptulips and Wynoochee Watersheds, crews worked alongside Olympic National Forest to complete invasive plant treatment along FS-2140, FS-22, FS-2210, FS-2258, FS-2259, FS-2270, and FS-2280. Crews targeted Scotch broom, tansy ragwort, Canada thistle, St. John's wort, bull thistle, non-native blackberry, knapweed, and broad dock. Funding was provided by WCRRI through PTIR. No knotweed was found or treated in this area.

NORTH BEACH GRAYS HARBOR COUNTY (Griffiths-Priday State Park):

Crew Hours: 624

Work in Copalis River watershed was conducted at Griffiths-Priday State Park in partnership with Grays Harbor County Noxious Weed Control Board and Washington State Parks & Recreation. Funding was provided by WCRRI through PTIR. No knotweed was found or treated in this area.

Other species inventoried, and/or and treated with herbicide or manual methods include:

- Scotch broom – 4.8 acres of Scotch broom were inventoried and treated with cut-stump application of 50% Aquaneat.

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

Extreme heat in July accelerated plant maturation and senescence, decreasing reed canarygrass and knotweed treatment periods by about two to three weeks. Mature Scotch broom on open terraces appeared dead! Then, unusually heavy rain in late-October and November interfered with late-season spray treatments for knotweed and herb Robert. Despite crew member COVID quarantines, extreme heat and rainfall, and air quality hazards from wildfire smoke, 10KYI restoration crews were able to work to prevent and control multiple species at over 3,500 sites and 2,900 acres in coastal watersheds between Lake Crescent in north central Clallam County west to the coast and down to the Humptulips watershed and North Beach areas in north Grays Harbor County.

Partnerships were expanded, communities more deeply engaged, additional projects were developed, and funding was obtained to continue invasive plant management and applied research. Continued efforts to find and stop the spread of Queen Anne's lace, orange

hawkweed, everlasting peavine, and spotted jewelweed are significant. A specific example is that a collaboration with Clallam Conservation District took shape as private pastureland owners called for help with tansy ragwort in pastureland with livestock in Forks and other nearby rural farms where 10KYI team would do a site visit and review the infestation and logistics for treatment, outline treatment options and a plan to the landowner, and then introduce to CCD for a visit to improve grazing quality and other issues, and then go back to support with treatment and education for landowner follow-up. Word-of-mouth spread to others, and good work got done.

2. Any specific success story?

Persistent efforts to treat and contain Queen Anne's lace along SR 101 and the Upper Hoh Road have proven successful in preventing the spread of this invasive plant into pastures and meadows, despite the prevalence along roadsides east of Lake Crescent and north of Aberdeen.

3. Any breakthrough treatment?

This year we started cribbing willow, red alder, and black cottonwood seedlings in research plots and mature Scotch broom control sites, and western redcedar in floodplain forests with cut Scotch broom plants to protect the early successional and targeted browse species from elk damage. We will continue implementing and monitoring the effectiveness of this strategy in 2022.

4. Progress made?

Absolutely! Continuous and persistent multiple-species invasive species prevention and control must be integrated into every aspect of landscape management to get ahead and stay ahead.

5. Recommendations for next year?

Continue working with project partners, road managers, and on infested gravel mines to develop and integrate best management practices to prevent the spread of invasive plants (e.g., using weed-free materials, equipment and vehicle wash stations, limiting the spread of infested soil).

6. Tell us about additional weed species that you treated.

See above.

7. Is there a reveg or management plan in place?

Over 500 pounds of native grass and forb seeds were distributed along roadsides and riparian corridors. We are advocating for the development of a Native Plant Salvage (NPS) Program, establishment of a NPS Program facility, and the development of a local nursery to grow out seedlings for riparian restoration in order to plant genetically appropriate, locally-sourced native species for revegetation efforts in coastal watersheds – including Quillayute, Queets, and Hoh.

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8. What partners did you work with?

Our partners include:

Olympic National Park
Olympic National Forest
Washington State Department of Natural Resources, Olympic Region
Washington State Department of Transportation
Washington State Parks and Recreation
Clallam County NWCB
Clallam County Conservation District
Jefferson County Public Works (Roads)
Grays Harbor County NWCB
Quileute Tribe
Hoh Tribe
Quinault Indian Nation
City of Forks
The Nature Conservancy
Pacific Coast Salmon Coalition
Trout Unlimited
Wild Salmon Center
Private residential and forest landowners
…. and more.

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9. Where was your funding from?

Through the State RCO under the Washington Coast Restoration and Resiliency Initiative (WCRRI) for the 2019-2021 Biennium

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10. Did you sponsor any educational events?

We presented at numerous public meetings and workshops including:

- Scotch Broom Ecology and Management Symposium
- Washington Salmon Recovery Conference - 2021
- North Pacific Coast Lead Entity meetings

- North Pacific Marine Resource Committee meetings
- Middle Hoh Resiliency Plan Leadership and Steering Committee meetings
- Society for Freshwater Science Annual Meeting
- Quillayute River Reach Working Group meetings
- Jefferson County Noxious Weed Control Board meetings

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11. Anything else we forgot to ask?

No, but thank you for asking.

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12. Please include contact information—contact person, address, phone number, email and website

Raena Anderson, Project Coordinator
10,000 Years Institute
PO Box 1081
Forks, WA 98331
randerson@10000yearsinstitute.org
www.10000yearsinstitute.org

TEMPLATE FOR KNOTWEED WORK REPORTING 2020

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables) PART

1

Agency/Entity: Makah Tribe

Crew Used, Crew Leader name: Makah Wildlife, Shannon Murphie

Waterway or location: Big River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.5	6.21	1.6	1-2%	Aquanea t	7	0.017	0.23	Spay Bottle	2	3	2	2	0	0/4	N/A

Agency/Entity: Makah Tribe

Crew Used, Crew Leader name: Makah Wildlife, Shannon Murphie

Waterway or location: Hoko Road

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
	0.32	0.32	1-2%	Aquanea	4.6	1.96	1.65	Backpack	6	6	4	4	0	1/3	N/A
	0.32	0.32	1-2%	Polaris	0.78	0.32	1.65	Backpack	6	6	4	4	0	1/3	N/A

Agency/Entity:

Crew Used, Crew Leader name:

Waterway or location:

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Example from last year:

Jefferson County—*Weed board staff treated Spencer Creek, Tarboo Creek and a number of small sites. A WCC crew, funded by both North Olympic Salmon Coalition (NOSC) and the Hood Canal Salmon Enhancement Group (HCSEG) re-treated the entire Big Quilcene, Little Quilcene, Dosewallips and Duckabush Rivers. Jefferson County Noxious Weed Control Board (JCNWCB) received funding from the Quinault Indian Nation to acquire landowner permission for knotweed survey and control in the Queets-Clearwater watershed.*

The Makah Wildlife Department staff continued treating their Big River restoration sites for the 5th consecutive year. They also treated the old county pit near Umbrella Creek and continued to partner with private landowners in the Clallam Bay/Sekiu area where significant progress was noted at these infestations, re-treatment is planned for 2021.

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work? We were able to continue successfully treating and planting native trees at several restoration sites on Big River. Knotweed infestations at these sites are almost completely gone.

2. Any specific success story? We continue to see noticeable differences at our restoration sites with fewer and smaller plants. One of the three sites had no knotweed treated at it.

3. Any breakthrough treatment? No

4. Progress made? Significant decrease in knotweed observed at Big River restoration sites.

5. Recommendations for next year? We are planning to treat all of Big River next year, as there are several growing infestations.

6. Tell us about additional weed species that you treated. We continued to treat significant patches of reed canarygrass at the Big River restoration sites, we have noticed an increase in volunteer native vegetation this year. We also treated other noxious weeds at these sites, including Himalayan/evergreen blackberry, common tansy, herb Robert, and thistle species.

7. Is there a reveg or management plan in place? Yes, but only at the designated restoration sites, outlined in our plan for the Salmon Recovery Funding Board Grant, 10 year plan.

8. What partners did you work with? N/A

9. Where was your funding from? Makah Tribe

10. Did you sponsor any educational events? No

11. Anything else we forgot to ask? No

12. Please include contact information—contact person, address, phone number, email and website

Shannon Murphie, 360-645-3229, shannon.murphie@makah.com

TEMPLATE FOR KNOTWEED WORK REPORTING 2021

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity: Jefferson County Noxious Weed Control

Crew Used, Crew Leader name: WCC, Greg Dunbar

Waterway or location: 1055 Deer Creek Rd, Quilcene

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
n/a	2.5	100 ft^2	20-30 stems	Aquaneat	5%	6.4 oz	1 gal	Backpack sprayer	1	1	1	1	0	0/1	Manual control of bittersweet nightshade

Agency/Entity: Jefferson County Noxious Weed Control

Crew Used, Crew Leader name: WCC, Greg Dunbar

Waterway or location: U Street walking trail, Port Townsend (non riparian)

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
n/a	0.8	1890ft^2	50-100 stems	Aquaneat	5%	19.2	3 gal	Backpack sprayer	1	4	1	1	0	1/0	No

Agency/Entity: North Olympic Salmon Coalition, Jefferson County Parks

Crew Used, Crew Leader name: WCC, Greg Dunbar (June), and JCNWB Assistant Coordinator Elena Smith (Oct)

Waterway or location:____Otter Creek, Irondale Beach County Park in Port Hadlock_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
n/a	unknown	15 ft^2	unknown	Aquanea t	5%	3.2 oz	0.5 gal	Backpack sprayer	1	unknown	1	1	0	1/0	No
n/a	0.5 acre	0.005 (200 ft^2)	15-35 stems	Aquanea t	8%	10.25 oz	1 gal	Backpack sprayer	1	2	1	1	0	1/0	No

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Jefferson County—*A WCC crew, funded by Jefferson County Noxious Weed Control Board (JCNWCB), treated an isolated knotweed patch on the edge of beach on Toandos peninsula in June after a landowner call. The same WCC crew treated a patch along a walking trail in upper Port Townsend near Cherry St and a reoccurring riparian patch of knotweed at Irondale Beach County Park in June at the request of the North Olympic Salmon Coalition (NOSC). Assistant Coordinator Elena Smith re-treated this patch again in October at the request of NOSC and Jefferson County Parks Dept.*

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

The infestation on Toandos peninsula was new. Three new non-riparian knotweed sites also discovered but are untreated in 2021 due to landowner non-compliance or inability to treat. Enforcements were not feasible this year due to lack of Board members and lack of time/staff from the County Prosecuting Attorney's office.

2. Any specific success story?

Not for knotweed, but it was the first year of our 5 year plan to control all known poison hemlock infestations in Fort Worden, funded by a partnership between the JCNWCB and the Friends of Fort Worden.

3. Any breakthrough treatment?

_____

____

4. Progress made?

39 landowner contacts were made about noxious weed presence, 24 were resolved. Added a list of businesses in East Jefferson County who indicated they provide some form of weed control, list is now available on our website. JCNWCB hired a part-time Assistant Coordinator and appointed a new board member, Christine Heycke, for region 2._____

5. Recommendations for next year?

We recommended to the County Parks and NOSC to treat reoccurring Irondale Beach knotweed with Imazapyr in 2022 if possible, as it may have been treated with glyphosate year after year with varying effectiveness. We plan to use funds in 2022 to purchase backpack sprayers and related equipment, and additional herbicides as needed.

6. Tell us about additional weed species that you treated.

No other species treated on knotweed sites. Poison hemlock was significant in Port Townsend and Jeffco Solid Waste Facility in dry sites. Large infestations of Spotted knapweed were found on Solid Waste Facility property, both species treated with glyphosate foliar spray. Chervil was mechanically controlled on county roadsides in Chimacum by WCC crew. Manual control of Tansy ragwort & Scotch broom was done on Port Townsend city property and in Jeffco PUD power line corridor respectively.

7. Is there a reveg or management plan in place?
JCNWCB will continue monitoring knotweed sites in 2022 for re-treatment

8. What partners did you work with?
For knotweed sites: WCC, NOSC, Jefferson County Public Works & Parks Depts, City of Port Townsend

9. Where was your funding from?
For knotweed: Jefferson County and MOU contracts with Jefferson County PUD & City of Port Townsend

10. Did you sponsor any educational events?
Nothing specifically about knotweed

11. Anything else we forgot to ask?

12. Please include contact information—contact person, address, phone number, email and website
Elena Smith, Assistant Coordinator, 121 Oak Bay Rd, Port Hadlock WA 98339, 360-379-5610 (extension # is currently not working…)
Esmith@co.jefferson.wa.us, https://www.co.jefferson.wa.us/195/Noxious-Weed-Control-Board

TEMPLATE FOR KNOTWEED WORK REPORTING 2021

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity: Grays Harbor Noxious Weed Control Board

Crew Used, Crew Leader name: Brittlind Co. Inc. & Noxious Weed Control Board Staff in lower reaches

Waterway or location: Wynoochee River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
13	300	79	80%	Imazapyr	1.5%	2769.3oz	1675.7	Foliar	60	60	33	33	15	33/0	
2	20	2.5	70%	Imazapyr	1%	75.5oz	60.4	Foliar	6	6	6	6	1	1/5	

Agency/Entity: Grays Harbor Noxious Weed Control Board

Crew Used, Crew Leader name: Washington Conservation Corps (provided by DNR), Noxious Weed Control Board Staff, Brittlind Co. Inc.

Waterway or location: Satsop River, lower, east fork, & west fork

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
2	30	7	90%	Imazapyr	1%	720oz	576	Foliar	7	7	5	5	5	1/4	
.25	3	1.6	70%	Imazapyr	1%	17.5oz	14	Foliar	1	2	1	1	1	1	
.72	10	6	50%	Imazapyr	1%	84.50z	44	Foliar	1	1	1	1	1	1	

Agency/Entity: Grays Harbor Noxious Weed Control Board

Crew Used, Crew Leader name: <u>Grays Harbor Noxious Weed Control Board Staff</u>
Waterway or location: Terrestrial Sites around Grays Harbor

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement		No. Public vs Private Owner	Other Weed Species Treated
	10	7.034	50%	Imazapyr	1%	129.75	103.8	Foliar	13	13	13	13	3		1/12	

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Example:

Grays Harbor Noxious Weed Control Board started the knotweed season off on the lower Satsop river. A cooperative weed management area was established for the Satsop river to control knotweed in collaboration with the WDFW, the Grays Harbor Conservation District and the DNR. The DNR provide two weeks of WCC crews to help with knotweed control above the WDFW large woody debris project in the lower Satsop river. The long term plan is to reduce the amount of knotweed spreading from upriver into the construction zone of the large woody debris project while simultaneously beginning a top down approach on the east and west fork of the river. The WCC crews controlled knotweed over 30 acres on private and WDFW property.

The Grays Harbor Noxious Weed Control Board was awarded a grant from the Washington Coast Restoration and Resiliency Initiative that allowed the program to hire two full time employees and hire contractors to continue knotweed control on the Wynoochee river. The two hired employees and the contractor crew began retreating knotweed sites in the upper Wynoochee river. Control efficacy after two years of treatment was approximately 98%. The crews moved quickly through these areas and started treating new areas of knotweed downriver. The hired contractors worked from mid August to mid October on the Wynoochee river, moving through roughly 300 acres of infested riparian zones and 13 river miles.

The two newly hired staff and Noxious Weed Control Board Coordinator retreated knotweed sites for landowners throughout Grays Harbor as well as working with new landowners on the east and west fork Satsop river. Many of the re-treatment sites had 98%-100% control.

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

_This year was significant because we were able to hire two full time employees as well as the collaboration across agencies such as the WDFW, DNR, and Conservation Districts.

2. Any specific success story?

_One the biggest success story for our program was the progress we made on the Wynoochee river, treating 13 river miles through dense knotweed and having positive relations with all the landowners in the valley.

3. Any breakthrough treatment?

Our treatment efficacy in the upper Wynoochee after 2 years of treatments averaged about 98%.

4. Progress made?

__Our progress on the Wynoochee was very successful and starting treatments on the East, West, and lower Satsop river was significant progress in expanding our knotweed program.

5. Recommendations for next year?

__To continue to work collaboratively across agencies. Working together on these projects can help with gaining landowner access as well as boots on the ground treatments.

6. Tell us about additional weed species that you treated.

We treated poison hemlock, tansy ragwort, Scotch broom, butterfly bush, Canada thistle, bull thistle, purple loosestrife, spotted jewelweed, and blackberry.

7. Is there a reveg or management plan in place?
As of now we do not have a plan for the re-planting but hope that after this year's treatment we will have 100% control and can begin planting and connect the landowners to the Conservation District's Voluntary Stewardship program to assist with plantings.

8. What partners did you work with?
Grays Harbor County Conservation District, Department of Natural Resources, Washington State Dept. of Agriculture, Chehalis Basin Land Trust, Stream Team, Washington State Parks, 10,000 Years Institute, The Quinault Indian Nation, and the Chehalis Tribe.

9. Where was your funding from?
Our funding comes from the Grays Harbor County General Fund, Washington Coast Restoration Resiliency Initiative, an Interagency Agreement with the Grays Harbor Conservation District, and the WSDA Knotweed Program.

10. Did you sponsor any educational events?
We worked with the 10,000 Years Institute, WSU, and WSDA, to host a pesticide training and testing course in the spring. Taught classes for the Master Gardeners, wrote an article on Fall weed control for the WSU Forestry Stewardship Notes, attended two outreach events and plan on hosting workshops this winter to educate landowners on tansy ragwort control.

11. Anything else we forgot to ask?

12. Please include contact information—contact person, address, phone number, email and website
Kiley Smith, P.O. Box 3018 Elma WA 98541, 360-482-2934, Kiley.smith2@wsu.edu, www.extension.wsu.edu/graysharbor

TEMPLATE FOR KNOTWEED WORK REPORTING 2021

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity: Quileute Tribe

Crew Used, Crew Leader name: Quileute Natural Resources Crew, Keith Penn

Waterway or location: Quillayute River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.95	38	0.5		Imazapyr	1%	0.096875 gal	15.94 gal	Foliar			2		0		Reed Canary, Iris, Purple Loose Strife,
0.95	38	0.02		Imazapyr	50 %	0.03125	0.0625	Stump Cut							Scotch Broom

Agency/Entity: Quileute Tribe

Crew Used, Crew Leader name: Quileute Natural Resources Crew, Keith Penn

Waterway or location: Sol Duc

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.5	2.08	0.085		Imazapyr	1%	0.03	3	Foliar			2	2	2		
0.1	0.59	0.015		Glyphosate	6%	0.1325	2.32	Foliar			1	0	0		Him. Blackberry, general weeds

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Quileute Tribe:

Given restructuring and learning curve the primary goal of the 2021 season for the Quileute Natural Resources Knotweed Crew was to treat known problem areas in partnership with other entities to gain experience and maintain previous years treatments to limit spread until able to operate at full capacity with a full crew. This year we maintained a multi-species top-down approach to our treatments with a primary focus on Knotweed species - Japanese, Giant, and Bohemian, but also treated Himalayan and vergreen Blackberry, Purple loosestrife, tansy ragwort, Canada Thistle, Scotch broom, and Herb Robert. The crew focused on treatments within the Quillayute river system, both on Reservation and private land, along the Sol Duc and Dickey Rivers. The crew worked in partnership with the Clallam County Invasive Plant Crew, attempted to re-treat the entire Dickey mainstem, in partnership with

National Park EPMT the crew treated the Mora Campground River and Thunder Field Bars, and with the 10-Thousand Year Institute treated the island near the mouth of the Dickey River in the Quillayute Mainstem. Though limited in capacity to treat as effectively as previous years, ultimately preventative measures were taken to limit further spread.

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

Based on previous years data, there appeared to be a decrease in size and frequency but starting later in the season also allowed for species to grow larger than desired.

2. Any specific success story?

Partnering with National Park EPMT in treating Mora and Thunder Field Bars, we were able to treat both areas thoroughly even with limited weather opportunities and get firsthand training on identifying problem species.

3. Any breakthrough treatment?

Treating the Dickey Mainstem, it was evident from amount of pesticide used how effective previous treatments have been in maintaining Knotweed, walking a large portion allowed for a thorough treatment limited to one side, but with rafts were able to treat both banks effectively in a timely manner.

4. Progress made?

Gained a large amount of experience from numerous entities as well as perspective on treatment methods.

5. Recommendations for next year?

Survey other areas within Quillayute River System that were limited this year due to extenuating circumstances.

6. Tell us about additional weed species that you treated.

Reed Canary grass within the Thunder Field and Jewel weed within the Mora Campground Bar.

7. Is there a reveg or management plan in place?

No reveg or management plan in place.

8. What partners did you work with?

Clallam County Invasive Plant Crew, National Park EPMT, and 10-Thousand Year Institute.

9. Where was your funding from?

EPA.

10. Did you sponsor any educational events?

No.

11. Anything else we forgot to ask?

No.

12. Please include contact information—contact person, address, phone number, email and website

Keith Penn – TFW Biologist
P.o. Box 187
La Push Wa, 98350
Cell: (360) 640-2108
Keith.penn@quileutetribe.com

HOOD CANAL SALMON ENHANCEMENT GROUP (HCSEG) - KNOTWEED WORK REPORTING 2021
(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity: HCSEG
Crew Used, Crew Leader name: WCC, Darrell Borden
Waterway or location: Big Anderson Creek

Miles treated	Acres searched	Acres treated	Cover class	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
1.1	42.9	0.58	1.35 %	Polaris + AquaNeat	1%	16.9 oz (Polaris) 16.9 oz (AquaNeat)	13	Foliar	12	24	9	7	0	0 / 9	NA
				Polaris	1 %	26 oz	20	Foliar							

Agency/Entity: HCSEG
Crew Used, Crew Leader name: WCC, Darrell Borden
Waterway or location: Big Quilcene River

Miles treated	Acres searched	Acres treated	Cover class	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
2.2	173.5	0.05	0.03 %	Polaris + AquaNeat	1%	2.6 oz (Polaris) 2.6 oz (AquaNeat)	2	Foliar	26	130	32	13	0	2 / 30	Yellow Flag Iris, Yellow Archangel, Common Comfrey
				Polaris	1 %	3.9 oz	3	Foliar							
				AquaNeat	100 %	17 oz	0.13	Injection							

Agency/Entity: HCSEG
Crew Used, Crew Leader name: WCC, Darrell Borden
Waterway or location: Dewatto River

Miles treated	Acres searched	Acres treated	Cover class	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
10.43	126.1	0.12	0.09 %	Polaris + AquaNeat	1%	3.25 oz (Polaris) 3.25 oz (AquaNeat)	2.5	Foliar	20	33	9	7	2	1 / 8	Butterfly Bush, Reed Canarygrass, Canada Thistle
				Polaris	1 %	15.6 oz	12	Foliar							
				AquaNeat	100 %	46 oz	0.36	Injection							

Agency/Entity: HCSEG
Crew Used, Crew Leader name: WCC, Darrell Borden
Waterway or location: Union River

Miles treated	Acres searched	Acres treated	Cover class	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
3.17	50.4	0.08	0.15 %	Polaris + AquaNeat	1%	11.7 oz (Polaris) 11.7 oz (AquaNeat)	9	Foliar	51	82	124	41	2	2 / 122	Bittersweet Nightshade, Policeman's Helmet, Reed Canarygrass, Giant Hogweed,
				Polaris	1 %	39 oz	30	Foliar							
				AquaNeat	100 %	97 oz	0.76	Injection							

															Yellow Archangel.

Agency/Entity: HCSEG
Crew Used, Crew Leader name: WCC, Darrell Borden
Waterway or location: Dosewallips River

Miles treated	Acres searched	Acres treated	Cover class	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
7.35	421.41	.003	0.001 %	Polaris	1 %	1.11 oz	0.85	Foliar	6	74	28	4	0	3 / 25	Butterfly Bush
				AquaNeat	100 %	0.8 oz	0.006	Injection							

Agency/Entity: HCSEG
Crew Used, Crew Leader name: WCC, Darrell Borden
Waterway or location: Big Beef Creek

Miles treated	Acres searched	Acres treated	Cover class	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
4.74	57.33	0.023	0.04%	Polaris + AquaNeat	1%	3.25 oz (Polaris) 3.25 oz (AquaNeat)	2.5	Foliar	11	70	60	5	2	2 /58	Bittersweet Nightshade, Butterfly Bush, Yellow Archangel, Perennial Peavine, Tansy
				Polaris	1 %	6.63 oz	5.1	Foliar							
				AquaNeat	100%	61 oz	0.48	Injection							

															Ragwort, Yellow Flag Iris, Common Comfrey, Hedge Bindweed.

Agency/Entity: HCSEG
Crew Used, Crew Leader name: HCSEG and Great Peninsula Conservancy
Waterway or location: Little Anderson Creek

Miles treated	Acres searched	Acres treated	Cover class	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
1.08	12.8	0.04	0.31 %	Polaris	1 %	3.9 oz	3	Foliar	3	6	14	3	1	0 / 14	English Holly, English Laurel
				AquaNeat	100 %	70 oz	0.55	Injection							

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River—eg Sekiu River
River miles treated	*River miles from highest upstream knotweed point to the river mouth.
Acres searched (protected)	*Dewatto, Big Beef, and Dosewallips were calculated by multiplying river miles by an average width of 100ft. *All other rivers were calculated in ArcGIS by drawing a polygon around survey points.
Acres treated	*Solid Acres of knotweed calculated by using the field calculator in the ArcMap attribute table. WCC recorded area of each treated knotweed point, this is the sum total of treated knotweed area (actual knotweed).
Cover Class	*Cover class—Acres treated (solid knotweed) divided by acres searched.
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	*In oz
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons

Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Hood Canal Salmon Enhancement Group (HCSEG) completed knotweed treatments and surveys on the Union River, Dewatto River, Big Anderson Creek, Big Beef Creek, Little Anderson Creek, Big Quilcene River, and the Dosewallips River. Little Quilcene River is considered in control status, however HCSEG was unable to revisit the knotweed established below Leland Lake during the 2021 season. HCSEG did not treat the Tahuya River during 2021, due to time limitations and prioritization of other systems with greater landowner support. HCSEG spent six days on the Union River, five days on the Dewatto River, five days on Big Anderson Creek, four days on Big Beef Creek, two days on Little Anderson Creek, six days on Big Quilcene River, and three days on the Dosewallips River.

HCSEG continues to prioritize a top down approach, starting treatment and survey at the furthest upstream location of knotweed and then working downstream. During the first day of treatment on each system, HCSEG used a 1% Polaris + 1% AquaNeat mixture. After, the first day HCSEG used a 1% Polaris mixture in backpack sprayers. Our field crew would generally carry 3 backpack sprayers and 2 JK Injection Tools. Very large patches of knotweed were spot sprayed with backpack mounted sprayers only, medium and small sized patches large enough for injection were injected and sprayed, if there were sensitive native or ornamental plants adjacent to the knotweed, the knotweed would only be injected. Plants too small to inject were spot sprayed with backpack mounted sprayers. All knotweed found was surveyed using ArcGIS Field Maps and a Bluetooth GPS. Data collected follows the data collection dictionary outlined in the 2009 Hood Canal Regional Knotweed Control Strategy. Knotweed control work was carried out by HCSEG staff and the Washington Conservation Corps (WCC) led by crew supervisor Darrell Borden.

The level of impact knotweed has on a watershed can be inferred by knotweed density and abundance. Where abundance equals the solid acres of knotweed per river, and density equals (solid knotweed / area surveyed) of each river.

- **Solid Acres of Knotweed Per River.** Big Anderson Creek has the highest solid acres of knotweed out of all 6 rivers treated. The Dosewallips River has the lowest solid acres of knotweed out of all 6 rivers treated. Dewatto River has the second highest solid acres of knotweed, however, this is mainly due to large upland patches found on Manke and Rayonier timber parcels which are located within the watershed but not in the floodplain or channel migration zone.
    - 1) Big Anderson (0.58 acres)
    - 2) Dewatto River (0.12 acres)
    - 3) Union River (0.08 acres)
    - 4) Big Quilcene River (0.05 acres)

- 5) Big Beef (0.023 acres)
- 6) Dosewallips River (0.003 acres)

- **Knotweed Density (Cover Class Percentage).** Cover class can be thought of as the density of knotweed occupying the riparian zone. Although some rivers may have a large amount of solid acres of knotweed, if it is over several miles and occurs on a very wide floodplain, the impact of knotweed on riparian structure, function and diversity may be small. In order to accurately assess the impact of knotweed, looking at both solid acres of knotweed and cover class percentage is essential. Big Anderson Creek has the highest solid acres of knotweed out of all 6 rivers treated. The Dosewallips River has the lowest solid acres of knotweed out of all 6 rivers treated.
  - 1) Big Anderson (1.35%)
  - 2) Union River (0.15%)
  - 3) Dewatto River (0.09%)
  - 4) Big Beef Creek (0.04%)
  - 5) Big Quilcene River (0.03%)
  - 6) Dosewallips River (0.001%)

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

The 2021 season marked a return to regular operations under a "new normal". HCSEG and WCC were able to shuttle vehicles following state and organizational COVID-19 protocols, which significantly saved time. This allowed HCSEG to complete full treatments on all projects rivers with the exception of the Tahuya River. Progress on the Dosewallips River and Big Quilcene River appears to be the most promising out of all target rivers. Big Beef Creek and Dewatto River are responding well to treatments but still have a few areas with large patches of knotweed. The Union River is making progress in the upper sections of the treatment area, however the mouth and Highway 300 ROW is infested with knotweed and is a highly visible infestation. Although Big Anderson Creek has the highest solid acres of knotweed and knotweed density, it continues to make good progress from the wall-to-wall infestation that used to occupy the riparian zone.

2. Any specific success story?

HCSEG was able to do a full treatment on Big Beef Creek, for the first time since 2018, from Lake Symington Spillway to the mouth. On the Union River, HCSEG received two new landowner consents, one on Courtney Creek tributary and one on the lower mainstem of the Union. Both of these sites contained large mature knotweed infestations that HCSEG could not treat in 2020, but was able to fully treat during the 2021 season. On the Dewatto River, HCSEG conducted site visits three large landowners with knotweed. HCSEG was able to gain permission and conduct a full treatment on all three landowner's properties. On Big Quilcene, the uppermost knotweed point at the Fish Hatchery treated in 2020 had no regrowth, moving the highest knotweed point downstream about 1 mile.

3. Any breakthrough treatment?

Besides the success stories mentioned in question 2, HCSEG was able to team up with the Great Peninsula Conservancy to conduct a knotweed treatment on Little Anderson Creek. GPC was able to secure consent from a landowner whose property contained the upper most knotweed point. With permission secured HCSEG and GPC conducted a thorough treatment of knotweed.

Although not a breakthrough treatment yet, HCSEG was able to secure consent from a large multi-parcel private landowner on the Tahuya River. These parcels have never been treated for knotweed and having this new consent will increase the priority for knotweed control on the Tahuya.

4. Progress made?
Progress continues to be made on all rivers despite varying levels of infestation. The most notable are Dosewallips River and Big Quilcene River. Although it was the first year of treatment since 2018 on the Big Beef Creek, the isolated nature and large stem sizes of the knotweed allowed the crew to inject and spray a large percentage of the treated patches. Because of this we are expecting a large decrease in knotweed abundance and density in 2022.

5. Recommendations for next year?
HCSEG's current Knotweed MOU with Jefferson County is set to expire December 30th, 2021. HCSEG will work with Jefferson County Noxious Weed Control Board to get this approved by the County Commissioner's Office. We will also work to expand the conditions of the contract from "knotweed only" to "All Jefferson County Noxious Weeds Designated for Mandatory Control". Which will hopefully allow HCSEG to treat the growing Butterfly Bush population on the lower Dosewallips River near the Lazy C Community and an isolated Poison Hemlock patch along the Dosewallips River Rd.
HCSEG has reached out several times to WA State Parks, specifically Dosewallips State Park, to control their knotweed and butterfly bush, but have not heard anything back. If anyone knows of a contact person, please reach out to Alex Papiez.
HCSEG will continue to conduct outreach to gain landowner consent on the Tahuya River, to allow for a full knotweed treatment during 2022.
JK Injection Tools now has new injection tools in stock and HCSEG plans to purchase two additional injectors for 2022 season. Including a new spray nozzle attachment, which will allow the crew to spray a 15% glyphosate solution on small knotweed plants. HCSEG will prioritize this high solution only on small plants that are currently in the upper knotweed infestation on each river system, to avoid unnecessarily high applications of herbicide.
HCSEG will begin collecting spatial data on all knotweed occurring on SR 300, SR 106, and Highway 101. Once collected HCSEG will overlay this on a parcel map for each county and hopefully work with OIWG members to contact appropriate landowners and conduct treatment.
HCSEG shared knotweed locations along the Big Beef Creek Riparian Zone with Dana Coggon (Kitsap Noxious Weeds), where landowners are refusing to allow treatment. In Kitsap County knotweed is listed for mandatory control, hopefully Kitsap Noxious Weeds will be able to address these established populations through an enforced treatment. There is currently untreated knotweed directly above Lake Symington along Big Beef Creek, and about a half mile below the Lake Symington Spillway, which could potential re-infest areas treated in 2021.

6. Tell us about additional weed species that you treated.
On the Big Quilcene River HCSEG treated yellow flag iris, yellow archangel, and common comfrey (upland areas only). On the Dewatto, HCSEG treated butterfly bush, and Canada thistle. On the Union, HCSEG pulled Policeman's Helmet, however it was already in flower/seed. HCSEG will share all Policeman's Helmet locations with Mason County Noxious Weeds, for appropriately timed control. HCSEG also treated giant hogweed, and yellow archangel along the Union River. HCSEG shared all giant hogweed locations with Mason County Noxious Weeds. HCSEG treated butterfly bush along the Dosewallips River, but was limited by landowner consent and could not treat on Jefferson County and WA State Parks lands. On the Big Beef Creek, HCSEG treated butterfly bush, yellow archangel, perennial peavine, tansy ragwort, yellow flag iris, and hedge bindweed. On Little Anderson creek, HCSEG injected English holly and laurel. On the Big Beef Creek, and Union River, HCSEG surveyed large

bittersweet nightshade infestations. HCSEG will share these with Kitsap Noxious Weed Control board, to help the push towards registering bittersweet nightshade as a state listed noxious weed.

7. Is there a reveg or management plan in place?
HCSEG continues to plant 15 acres of new riparian habitat every two years along Hood Canal Summer Chum streams. In addition, HCSEG received a new stewardship grant which will allow HCSEG to conduct maintenance on existing plantings.
Although, HCSEG did not conduct knotweed treatment on the Tahuya River, HCSEG has been focusing replanting efforts along the lower Tahuya River. HCSEG is in the process of planting over 20 acres of new riparian plantings and conducting stewardship on existing plantings in this area. The two main focuses have been to install cottonwood, willow, spruce and cedar in reed canarygrass fields, after an initial mowing and 2% glyphosate treatment followed by two years of life rings (mowing/spraying 3 ft diameter circles aka free to grow). And under planting immature deciduously dominated alder forests with shade tolerant conifers (cedar, spruce, hemlock, grand fir) and shade tolerant evergreen groundcovers sword fern (Upland), slough sedge (Facultative, Wet); followed by variable density thinning to open up light resources for installed conifers.

8. What partners did you work with?
Pat Grover, Mason County Noxious Weeds. Joost Besijn, Jefferson County Noxious Weeds. Dana Coggon, Kitsap County Noxious Weeds. Great Peninsula Conservancy. Hood Canal Coordinating Council.
9. Where was your funding from?
Salmon Recovery Funding Board (SRFB), WSDA Knotweed Grant

10. Did you sponsor any educational events?
No

11. Anything else we forgot to ask?
12. Please include contact information—contact person, address, phone number, email and website

Alex Papiez
Stewardship Coordinator
Hood Canal Salmon Enhancement Group
Office - (360) 275-3575 ext. 124
Cell - (360) 584-4188
alex@pnwsalmoncenter.org

Mendy Harlow
Executive Director
Hood Canal Salmon Enhancement Group
(360) 275-3575 ext. 123
mendy@pnwsalmoncenter.org

TEMPLATE FOR KNOTWEED WORK REPORTING 2021

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity:_____Quinault Indian Nation_____

Crew Used, Crew Leader name: __Total Vegetation Management LLC; Brittlin Co. Inc.; Greg Eide

_____

Waterway or location: ___Quinault reservation_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
	6000	1300		Imazapyr	1.5 %			Backpack or hand sprayer					0	USA in Trust	Knotweed
	200	150		Trichlopyr	3%			Tank sprayer from back of truck	20					USA in trust	Scotchbroom

Agency/Entity:_____

Crew Used, Crew Leader name:_____

Waterway or location:_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated

Agency/Entity:_____

Crew Used, Crew Leader name:_____

Waterway or location:_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on

Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Example:
Quinault Indian Nation- Greg Eide, ~6 crew from Total Vegetation Management, and ~6 crew from Brittlind Co surveyed all new harvest units (approximately 2000 acres) for new knotweed plants, retreated areas in the Quinault River floodplain from RM 8 to RM 20. Brittlind sprayed scotchbroom in 21 gravel pits, retreated a few plants found along prairie creek, and did a sweep along the moclips highway for scotchbroom and tansey ragwort. I sprayed several far-flung knotweed plants during the month of September. Almost the whole month of September, the contract crews were not available so we were not able to recheck a lot of live plants treated last year, let alone 2 river miles on the lower Quinault that have never been treated. We sprayed tansey and knotweed in the Queets estuary with Jill Silver and almost 20 of her crew one day. I surveyed the Queets river from the campground down to the mouth for Tansey. No plants observed until Matheny creek, and then from Salmon river down, huge patches are everywhere all the way to the reservation boundary. Need to reach out to NPS to do something about it. Met monthly with the Grays Harbor Noxious Weed Board (am chair of the board) hired 2 new technicians to work full time year round with the Coordinator.
Jefferson County—*Weed board staff treated Spencer Creek, Tarboo Creek and a number of small sites. A WCC crew, funded by both North Olympic Salmon Coalition (NOSC) and the Hood Canal Salmon Enhancement Group (HCSEG) re-treated the entire Big Quilcene, Little Quilcene, Dosewallips and Duckabush Rivers. Jefferson County Noxious Weed Control Board (JCNWCB) received funding from the Quinault Indian Nation to acquire landowner permission for knotweed survey and control in the Queets-Clearwater watershed.*

PART III
IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?
   More funding available then crewmembers to pay to work. Contractors had trouble hiring temporary positions and it was difficult to get the people they did have working on the QIR. They had several other clients that they seemed to prioritize over the QIR project.

2. Any specific success story?
_We were able to treat several gravel pits that were infested with scotchbroom that has never been treated before (~20 pits)
_____
___
3. Any breakthrough treatment?
_____Not really
_____
4. Progress made?
_____Yes_____
_____
5. Recommendations for next year?
__Make clear with the contractors that they need to dedicate crews and get people hired otherwise we won't be able to complete
_____
__
6. Tell us about additional weed species that you treated.
_____
____
7. Is there a reveg or management plan in place?
_____
____
8. What partners did you work with?
_Jill Silver, Grays Harbor County Noxious Weed Control Board, Grays Harbor County Roads Dept.
_____
___
9. Where was your funding from?
_____QIN, BIA, SRFB
_____
10. Did you sponsor any educational events?
_____No_____
_____
11. Anything else we forgot to ask?
_____
____
12. Please include contact information—contact person, address, phone number, email and website
_____

TEMPLATE FOR KNOTWEED WORK REPORTING 2021

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity: Mason Conservation District

Crew Used, Crew Leader name: _MCD Crew, Marissa Newby

Waterway or location: __Skokomish River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
6.18	354	302.37		Polaris (Imazypyr)	1%	5.08	508.5	Backpack Sprayer	78	79	27	22	4	4/18	
0.5	354	33.07		Aquaneat (Glyphosate)	5%	11.67	233.5	Backpack Sprayer	6	79	27	6	4	0/4	

Agency/Entity:_Mason Conservation District

Crew Used, Crew Leader name:___MCD Crew, Marissa Newby

Waterway or location:____Mill Creek

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.01	0.1	0.002		Polaris (Imazypyr)	1%	0.00008	0.008	Backpack Sprayer	1	3	5	1	0	0/1	

Agency/Entity:_Mason Conservation District_____
Crew Used, Crew Leader name:__MCD Crew, Marissa Newby_____
Waterway or location:___Goldsborough Creek_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.4	5	0.69		Polaris (Imazypyr)	1%	0.012	1.185	Backpack Sprayer	17	18	20	16	1	3/13	
0.01	5	0.25		Aquaneat (Glyphosate)	5%	0.1	2	Backpack Sprayer	1	18	20	1		1/0	

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory

Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Example:

Jefferson County—*Weed board staff treated Spencer Creek, Tarboo Creek and a number of small sites. A WCC crew, funded by both North Olympic Salmon Coalition (NOSC) and the Hood Canal Salmon Enhancement Group (HCSEG) re-treated the entire Big Quilcene, Little Quilcene, Dosewallips and Duckabush Rivers. Jefferson County Noxious Weed Control Board (JCNWCB) received funding from the Quinault Indian Nation to acquire landowner permission for knotweed survey and control in the Queets-Clearwater watershed.*

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

__We were able to treat 33.5 new acres of knotweed across the three watersheds.

_____

__

2. Any specific success story?

_____

____

3. Any breakthrough treatment?

_We acquired permission on a property that we had never been allowed to treat before. This treatment will help gain more control of the infestation down river from it.

_____

___

4. Progress made?

__Approximately 33.5 new acres were treated this year between the three watersheds.

_____

_

5. Recommendations for next year?

6. Tell us about additional weed species that you treated.

7. Is there a reveg or management plan in place?
Yes. The treated areas will be replanted with native shrubs and conifers at a high density.

8. What partners did you work with?

9. Where was your funding from?

10. Did you sponsor any educational events?
No educational events were sponsored surrounding knotweed.

11. Anything else we forgot to ask?

12. Please include contact information—contact person, address, phone number, email and website
Marissa Newby
Habitat Restoration Crew Lead
Mason Conservation District
450 W Business Park Rd
Shelton, WA 98584
360.427.9436 ext. 120

TEMPLATE FOR KNOTWEED WORK REPORTING 2021

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity:__Lower Elwha Klallam Tribe_____

Crew Used, Crew Leader name: _Allyce Miller_____

Waterway or location: _Deep Creek_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
n/a	25	5	30 stems	Aquaneat	8%	10.24 oz	1	Foliar spray	1	1	1	1	0	Private	Canada thistle, reed canary grass

Agency/Entity:__ Lower Elwha Klallam Tribe _____

Crew Used, Crew Leader name:__ Allyce Miller

_____

Waterway or location:__Elwha River_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
.5	265	12	65 stems	Aquaneat	8%	30.72 oz	3	Foliar Spray	3	10	1	1	0	1 private vs 2 public	Canada thistle, reed canary grass, scotch broom

Agency/Entity:_ Lower Elwha Klallam Tribe _____
Crew Used, Crew Leader name:_ Allyce Miller

_____

Waterway or location:_Dry Creek_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
n/a	1	.5	60	Aquaneat	8%	20.48 oz	2	Foliar spray	1	1	1	1	0	private	none

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on

Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Example:

Lower Elwha Klallam Tribe Revegetation-

This season we treated a collective 653 acres, worked with two tribal youth through a summer internship for 120 hours each, worked with WCC for 7 collective weeks, and volunteers for 111 hours of noxious weed control work. We held 4 educational work parties which mostly involved pulling herb Robert. Worked with 7 landowners on the Elwha River and surrounding Tributaries on Noxious Weed control. Unfortunately found a thriving population of Buddlei Davidii, butterfly bush, on a remote part of the Elwha that we worked hard to eradicate. Will definitely put effort into treatment next year there.

PART III

IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

__A crew of one person, myself Allyce Miller noted less knotweed than years prior. Only one new knotweed site found

_____

__

2. Any specific success story?

___Far less knotweed than years prior- its working!

_____

_

3. Any breakthrough treatment?

___Four known populations were non-existant this year on the Elwha River

_____

_

4. Progress made?

__Yes!_____

_____

5. Recommendations for next year?

__More landowner outreach perhaps? Urban knotweed is seemingly harmless but could spread

_____

__

6. Tell us about additional weed species that you treated.

___Unfortunately there was a thriving population of Butterfly Bush on the Elwha found- lots of effort went into eradication of that.

7. Is there a reveg or management plan in place?
_Yes

8. What partners did you work with?
__None for knotweed. The rest of noxious weed control season with WCC- NOSC and DNR crews. Conservation District for several volunteer parties. ONP crew for work in the upper Elwha River.

9. Where was your funding from?
__Several grants- EPA, WDFW, Surfboard legislature money, State, Tribe.

10. Did you sponsor any educational events?
__Yes- 4 educational work events.

11. Anything else we forgot to ask?
___Timing specifics?

12. Please include contact information—contact person, address, phone number, email and website
__Allyce Miller; allyce.miller@Elwha.org; (360)457-4012 x7489

TEMPLATE FOR KNOTWEED WORK REPORTING 2021
(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1
Agency/Entity:___North Olympic Salmon Coalition_____
Crew Used, Crew Leader name: _Port Hadlock WCC_____

Waterway or location: __Dungeness River_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
3.5		61.54		Glyphos			8.19	Foliar	36	39	39	21	5	6/15	Butterfly Bush
1		28.76		Imazypyr			0.30	Foliar	7	39	39	7	3	2/5	

Agency/Entity:_____
Crew Used, Crew Leader name:_____
Waterway or location:_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated

Agency/Entity:_____
Crew Used, Crew Leader name:_____
Waterway or location:_____

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)

Example:

Jefferson County—*Weed board staff treated Spencer Creek, Tarboo Creek and a number of small sites. A WCC crew, funded by both North Olympic Salmon Coalition (NOSC) and the Hood Canal Salmon Enhancement Group (HCSEG) re-treated the entire Big Quilcene, Little Quilcene, Dosewallips and Duckabush Rivers. Jefferson County Noxious Weed Control Board (JCNWCB) received funding from the Quinault Indian Nation to acquire landowner permission for knotweed survey and control in the Queets-Clearwater watershed.*

PART III
IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?

_____

_____

2. Any specific success story?

_____

_____

3. Any breakthrough treatment?

_____

_____

4. Progress made?

_____

_____

5. Recommendations for next year?

_____

_____

6. Tell us about additional weed species that you treated.

_____

_____

7. Is there a reveg or management plan in place?

_____

_____

8. What partners did you work with?

_____

_____

9. Where was your funding from?

_____

_____

10. Did you sponsor any educational events?

_____

_____

11. Anything else we forgot to ask?

_____

_____

12. Please include contact information—contact person, address, phone number, email and website

**via email: For the narrative:

Nate Roberts, NOSC Stewardship Coordinator, and Lexi Wagor, our former WCC intern, did extensive on-foot surveys for Knotweed on the Dungeness. They were able to pinpoint the upper most infestation and get permission from the landowners to treat the large patch of knotweed. The crew then worked their way down below Highway 101 treating knotweed. We still have the lower part of the river below RR Bridge Park to continue surveying and treating for these upcoming seasons.

TEMPLATE FOR KNOTWEED WORK REPORTING 2021

(Please fill in one form for each waterway if possible—or let us know if you are aggregating all your work-feel free to copy extra tables)

PART 1

Agency/Entity: Clallam County Noxious Weed Control Board

Crew Used, Crew Leader name: Cathy Lucero, Staff

Waterway or location: Sol Duc River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
9.2	97.1	97.1	2	imazapyr	1%	.26 gal	26	Backpack	36	171			0		SEJA

Agency/Entity:

Crew Used, Crew Leader name: Cathy Lucero, Staff

Waterway or location: Ennis Creek

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.63	51.7	10	2	imazapyr	1%	0.075	7.5	Backpack	18	18	1	1	1	0/1	LAGA
	0.5	0.25	2	imazapyr	1%	0.005	0.5	Backpack	1	1	1	1	1	0/1	DIFU
	0.5	0.05	6	imazapyr	1%	0.025	2.5	Backpack	1	1	1	1	1	0/1	

Agency/Entity:_____
Crew Used, Crew Leader name: Todd Coward
Waterway or location: Dry Creek

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.12	0.36	0.05	2	imazapyr	1%	0.00007	0.125	Backpack	1	1	1	1	1	0/1	
0.1	1.6	0.39	3	imazapyr	1%	0.02	2	Backpack	1	1	1	1	1	0/1	
	0.8	0.01	4	imazapyr	1%	0.003	0.3	Backpack	1	1	1	1	1	0/1	COMA

Agency/Entity: Clallam County Noxious Weed Control Board
Crew Used, Crew Leader name: Cathy Lucero, Staff
Waterway or location: Pysht River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
	6.5	0.01	4	imazapyr	1%	0.02	2	Backpack	1	3	1	1	1	0/1	DIFU/ARMI

Agency/Entity: Clallam County Noxious Weed Control Board

Crew Used, Crew Leader name: Todd Coward

Waterway or location: Dungeness River

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
	0.4	0.002	1	imazapyr	1%	0.00125	0.125	Backpack	1	2	1	1	1	0/1	PHAR

Agency/Entity: Clallam County Noxious Weed Control Board

Crew Used, Crew Leader name: Cathy Lucero, Staff

Waterway or location: Valley Creek

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
0.64	2.37	0.004	1	imazapyr	1%	0.00125	0.125	Backpack	1	1	1			0/1	

Agency/Entity: Clallam County Noxious Weed Control Board

Crew Used, Crew Leader name: CCNWCB IVM Department, Joe Reynolds

Waterway or location: County Roadways/ROWs

Miles treated	Acres searched	Acres treated	Cover class OR #stem	Herbicide used	Rate	Amount Of Concentrate (total)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcel Surveyed	No. Landowner Permissions	No. Landowner Helped	No. New Agreement	No. Public vs Private Owner	Other Weed Species Treated
1.31	4.9	1.9		imazapyr	1%	0.068	7.7	Backpack	2	2	2	2		2/0	

EXPLANATION

Agency	Who you are—eg, Hood Canal Salmon Enhancement Group
Crew used and leader's name	Crew—eg East Jefferson WCC, with name of leader
Waterway or location	River or general area—eg Sekiu River or Forks.
River miles treated	One mile of river-includes both banks, (**not** counted as separate miles like road shoulders)
Acres searched (protected)	Ideally, length of river searched, times average width. If you do it differently, please tell us how you derived your estimate. (ie, if you count an entire parcel, even if you haven't searched it, please indicate this.)
Acres treated	As above
Number of stems (or cover class)	Aggregate number of stems treated, if possible (or cover class—percentage of treated area occupied by the plants—eg, 1%, 20% etc)
Herbicide used	Product name
Herbicide Rate	%
Amount of concentrate	In gallons
Total amount of mix applied	Total amount of mixed herbicide applied, in gallons
Application method	Self explanatory
Number of parcels treated	Total number of parcels where control work was done
Number of parcels surveyed	Total number of parcels that were surveyed
Number of landowner permissions	One permission may cover multiple parcels
Number of landowners helped	Number whose property you actually worked on
Numbers of public\private landowners	Eg, if you have 25 permission forms and 6 are from public agencies such as WDFW, write 6\19
Other weed species treated	Did you treat weeds besides knotweed?

PART II: NARRATIVE (SUMMARY)
Example:
CCNWCB:

PART III
IMPORTANT!: Other information (fill in the blanks)

1. What was significant about this year's work?
We had a significant staffing change in 2021. There was a large learning curve to overcome for the new employee. There was a late start to the treatments due to receiving the contract later than usual. The inability to coordinate with other partners face to face due to COVID protocols hampered planning and surveying in western Clallam County.

2. Any specific success story?
The ability to gain a treatment consent from Rayonier to treat the mouth of Ennis Creek. We were able to treat over 10 acres of shoreline for knotweed.

3. Any breakthrough treatment?
No, we will be surveying 2021's treatments to see if our timing was correct for several of the later treatments.

4. Progress made?
The ability to treat the mouth of Ennis Creek and the treatment of over 9 miles of the Sol Duc River by boat. We also collaborated with the QNR to treat a stretch of the Dickey River

5. Recommendations for next year?
We will have a solid work plan for treatments in 2022 due to improved planning and staff knowledge and familiarity.

6. Tell us about additional weed species that you treated.
During our knotweed treatments, we also controlled yellow archangel, tansy ragwort and common teasel. We also controlled several new species. We surveyed and treated Scotch thistle, goat's rue and gorse within the county.

7. Is there a reveg or management plan in place?
Not for knotweed, but we continued work on our pollinator plant program within the County's mitigation sites.

8. What partners did you work with?
QNR, 10KYI

9. Where was your funding from?
WSDA Knotweed Grant

10. Did you sponsor any educational events?
No
11. Anything else we forgot to ask?
No

12. Please include contact information—contact person, address, phone number, email and website

Cathy Lucero, Noxious Weed Control Coordinator
360-417-2442
clucero@clallam.co.wa.us

OIWG KNOTWEED WORK REPORTING 2021

Agency/Entity: *MCNWCB*

Crew Used, Crew Leader name: *MCNWCB*

1) Acres searched was derived from river miles treated x **50'.**

STIMSON CREEK– WRIA 15

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Amount of Mix Applied - total (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
2.28	13.82	2.46	0.01	0.41%	Polaris	1.25	0.06	4.56	Foliar	8	10	10	6	0	1:9	n/a
					AquaNeat	100	0.05	0.05	Injection							

1) Acres searched was derived from river miles treated x **90'.**

MISSION – WRIA 15

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
1.78	19.42	4.26	0.10	2.35%	Polaris	1.25	0.10	8.05	Foliar	17	17	15	11	1	1:14	n/a
					AquaNeat	100	0.50	0.50	Injection							
					Roundup Custom	100	1.44	1.44	Injection							

1) Acres searched was derived by adding total infested area if a thorough survey of property was not completed and/or by digitizing the survey area on ArcGIS.

HOOD CANAL WATERSHED BASIN – WRIA 16

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
0	0.30	0.02	0.02	100%	Polaris	1.5	0.02	1.33	Foliar	2	2	17	2	1	1:16	n/a
					AquaNeat	100	0.01	0.01	Injection							
					Roundup Custom	100	0.19	0.19	Injection							

1) Acres searched was derived from river miles treated x **50'.**

FINCH – WRIA 16

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
0.48	2.91	0.42	0.04	9.52%	Polaris	1.25	0.02	1.50	Foliar	10	34	25	10	1	2:23	n/a
					AquaNeat	100	0.09	0.09	Injection							

1) Acres searched was derived from river miles treated x **50'.**

COULTER CREEK – WRIA 15

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
0.96	5.82	0.66	0.01	1.52%	Polaris	1.25	0.13	10.11	Foliar	10	10	14	8	0	2:12	n/a
					AquaNeat	100	0.02	0.02	Injection							

1) Acres searched was derived by adding total infested area if a thorough survey of property was not completed and/or by digitizing the survey area on ArcGIS.

VARIOUS – WRIA 14

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
0	4.07	0.14	0.06	42.86%	Polaris	1.25	0.04	3.32	Foliar	6	6	9	6	5	0:9	n/a
					AquaNeat	100	0.77	0.77	Injection							

1) Acres searched was derived by adding total infested area if a thorough survey of property was not completed and/or by digitizing the survey area on ArcGIS.
2) Two different rates of Polaris were used in this WRIA. The most commonly used rate is reported.

VARIOUS – WRIA 15

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
0	0.23	0.23	0.02	8.70%	Polaris	1.25	0.07	5.60	Foliar	4	4	7	4	2	0:7	CYSC4
					AquaNeat	100	0.15	0.15	Injection							

1) Acres searched was derived from river miles treated X **60'.**

SHERWOOD CREEK/ANDERSON CREEK – WRIA 14

River Miles Treated	Acres Searched	Acres Treated (infested)	Acres Treated (solid)	Cover Class	Herbicide Used	Rate	Amount of Concentrate - total (gal)	Total Amount of Mix Applied (gal)	Application Method	No. Parcels Treated	No. Parcels Surveyed	No. Landowner Permissions	No. Landowners Helped	No. New Agreements	Public : Private Owner	Other Weed Species Treated
2.50	18.18	5.94	0.31	5.22%	Polaris	1.25	0.08	6.67	Foliar	22	46	31	18	2	1:30	n/a
					AquaNeat	100	0.17	0.17	Injection							

Explanation of how Unique Metrics were Derived	
River Miles Treated	This year, river miles were digitized by measuring the intersection of treated watercourses with parcels that received treatment on ArcGIS.
Acres Searched	For WSDA funded waterways, we multiplied river miles treated by average survey width and converted to acres because these systems received the most thorough surveys. For locations that were terrestrial/non-riparian NPDES treatments, acres searched was derived by adding total infested area if a thorough survey of property was not completed and/or by digitizing the survey area on ArcGIS.
Acres Treated (infested vs. solid)	Both numbers are calculated in the field by the crew and listed on application records. **Cover class** is derived by Solid ac/Infested ac x 100.
Rate of Polaris	In 2021, varying rates of Polaris were applied depending on site conditions. Thus, an average was taken of rate applied, and then rounded up to the nearest percentage known to be applied (i.e. 1.25%, or 1.5%).

PART II: NARRATIVE (SUMMARY)

Mason County Noxious Weed Control – *Weed Board staff continued treatments along Sherwood/Anderson Creek, Coulter Creek, Finch Creek, Stimson Creek, and Mission Creek with WSDA knotweed funding. Timing did not permit treatment on North Bay and Allyn properties during the 2021 field season. Staff treated numerous knotweed infestations located throughout Mason County at the request of private property owners with program funds.*

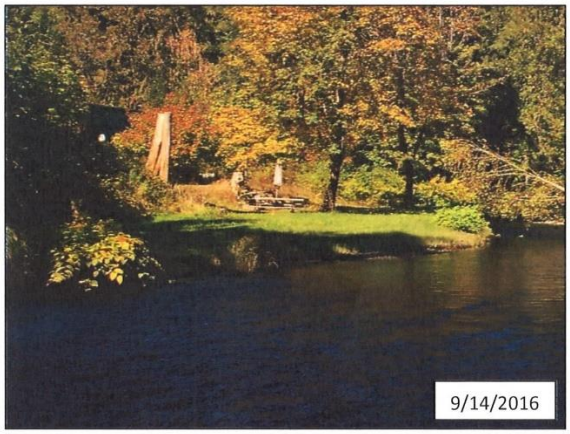
Sherwood/Anderson Creek

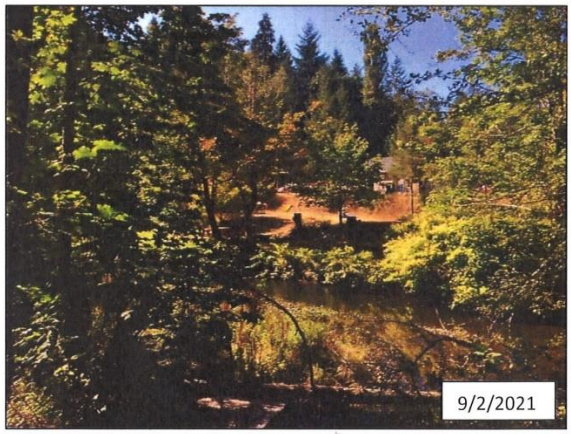
Anderson Lake is a man-made lake that discharges into Anderson Creek, a tributary of Sherwood Creek that ultimately discharges into the North Bay of Case Inlet. Several state and federally listed priority fish species are identified as occurring in the lake.

Treatment History

In 2008, with funding from an ALEA grant and volunteers from the South Puget Sound Salmon Enhancement Group, the MCNWCB initiated treatment along nearly 1,000 feet of private land on Sherwood Creek. ALEA funding again supported this treatment in 2009. In 2010, the MCNWCB responded to an initial request for knotweed control along the shores of Anderson Lake. System wide treatments were initiated in 2014 with funding from the WSDA knotweed program and assistance from a Department of Natural Resources Puget Sound Corps crew. Treatments continue with all but one infested parcel currently permitted. This parcel is located within the first 0.25 miles of the creek, with no known knotweed below.

This year MCNWC treated 2.50 miles of Sherwood/Anderson Creek on 5.94 infested acres. This is a decrease of 0.14 treated miles and 4.75 infested acres treated compared to 2020. Survey on Sherwood/Anderson also decreased by 5.82 acres from 2020. Effective treatment in 2019 and 2020 resulted in a significant decrease in infested acreage this year, and some sites were skipped to allow for more treatable growth in 2022.





Despite repeated attempts to gain permission from a landowner with knotweed and streambank frontage in the first 0.25 miles of Sherwood Creek, MCNWCB has yet to be successful. MCNWCB will continue to try different tactics to gain permission.

North Bay/Allyn/Coulter Creek

Pierce County and WDFW have identified the North Bay system as an area of biodiversity for wildlife species and habitats within both Pierce and Mason Counties.

Treatment History

Treatment along North Bay and in the town of Allyn began in 2013 with the initial focus on marine shoreline properties. MCNWCB expanded its control efforts to upland properties as knotweed infestation frequency and cover along the shoreline decreased. No treatments on North Bay and Allyn properties occurred in 2021 due to timing constraints. A skip year will allow for more treatable growth during the 2022 field season.

Coulter Creek

Pierce County and WDFW have identified the Coulter Creek system as an area of biodiversity for wildlife species and habitats within both Pierce and Mason Counties.

The Coulter Creek drainage basin is one of the largest streams in the WRIA 14A: Kennedy-Goldsborough watershed. The main stem of Coulter Creek is approximately eight miles long; several tributaries contribute an additional 10 to 12 miles of channel length. The headwaters of Coulter Creek and upper seven miles of the main stem are located in Kitsap County. The lower 1.9 miles are located in Mason County. A fish hatchery operated by Washington State Department of Fish and Wildlife (WDFW) is located at RM 0.25 on Coulter Creek.

Treatment History

In 2015, a parcel at the mouth of Coulter Creek owned by Mason County received an initial knotweed treatment. WSDA knotweed funding supported additional treatments by MCNWCB in cooperation with the Puget Sound Corps in 2016. WSDA funding continues to support follow-up treatments in this watershed. In 2019, the MCNWCB secured permission from E. E. Overton, a forest products company that holds 2,229 acres in the upper reach of Coulter creek.

In 2021, MCNWCB treated 0.96 miles along Coulter Creek and 0.66 infested acres a 1.76-acre decrease since 2020. Effective treatment in 2020 resulted in patchier infested sites and less overall acreage of knotweed.

Finch Creek

Finch Creek flows through the community of Hoodsport located along the shores of lower Hood Canal. The Department of Fish & Wildlife's Hood Canal Salmon Hatchery is located at the mouth of Finch Creek. This hatchery produces four of the five species of Pacific salmon native to Washington.

Treatment History

Initial treatments with WSDA knotweed funding began in 2013 with assistance from the Department of Natural Resources' Puget Sound Corps crew. In addition, continued work along the system involves treatment of giant hogweed by MCNWCB with funding from Mason County, the Washington State Noxious Weed Control Board, and WSDA.

This year MCNWCB treated 0.48 miles along Finch Creek and 0.42 infested acres, a 0.41-acre decrease since 2020.

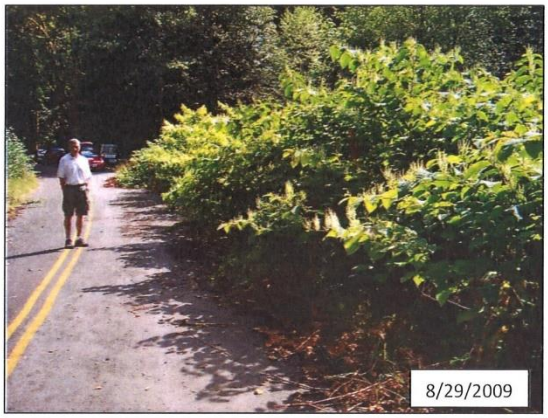
Stimson Creek

Treatment History

Initial knotweed control efforts along Stimson Creek began in 2009 with funding from an ALEA grant. Members of the Pleasant Cove Water Association volunteered their labor to meet the terms and conditions of their Habitat Management Plan in order to meet State requirements for repair of their damaged water system.

Treatments continue with Mason County funding, support from Puget Sound Corps crews and, more recently, WSDA knotweed funding.

This year MCNWCB completed treatment on 2.28 miles of Stimson Creek and treated 2.46 infested acres. River miles include streambank north and south of NE Belfair-Tahuya Rd. MCNWCB did not treat knotweed patches at the mouth of Stimson Creek this year. Staff did complete treatment on a poison hemlock infestation earlier in the year at the mouth of Stimson Creek.



Knotweed on the Pleasant Cove Water Association property extended from Stimson Creek to NE Elfendahl Pass Rd ROW. Volunteer support in 2009 resulted in a significant decrease in knotweed patches on this property, but lingering plants remain.

Big Mission Creek/Little Mission Creek

Mission Creek and Little Mission Creeks (WRIA 15) border both sides of Belfair State Park as they enter the marine waters of Hood Canal. Mission Creek drains about 13.7 square miles of land and includes approximately 10 miles of main stem and 10 miles of tributaries.

These creeks have an impact on commercial and recreational shellfish harvest in the area and the quality of recreational experiences at Belfair State Park.

Treatment History

MCNWCB began treatment along Mission Creek in 2008 at the request of and with assistance from an engaged property owner. Knotweed control efforts were also undertaken in 2010 at Belfair State Park. Property owners along Mission Creek continue to provide additional permissions, albeit slowly. MCNWCB staff completed a postcard mailing to Mission and Little Mission Creek property owners prior to the 2021 field season. The mailing resulted in no new permissions, although two landowners responded by reporting knotweed in the surrounding Belfair area. Treatments have been ongoing since 2016 with funding from the WSDA knotweed program.

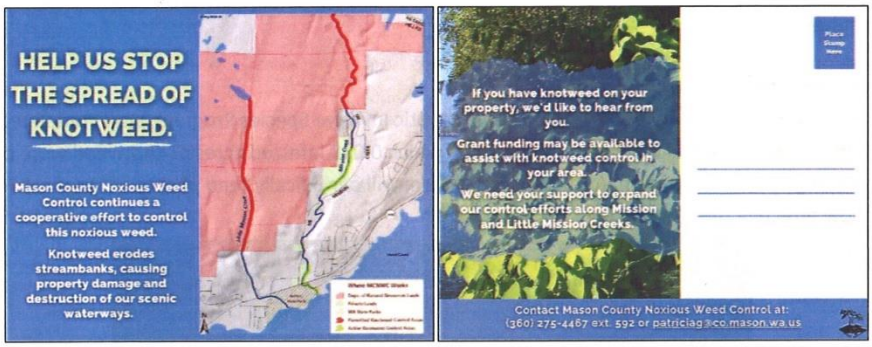
No progress has been made along Little Mission Creek due to lack of cooperation from property owners.

Progress continued on parcels newly permitted in 2020 along Mission Creek with significant knotweed infestations. MCNWCB completed treatment on 1.76 miles of Mission Creek. 19.42 acres were surveyed and 4.26 acres of knotweed were treated. Cover of knotweed treated this year was 2.35%, a 14.32% decrease in knotweed cover in treatment areas since 2020. Effective treatment on large and dense knotweed infestations in 2020 explains this significant decrease in cover.

PART III

1. What was significant about this year's work?

MCNWC sent postcards to 78 property owners along Mission and Little Mission Creeks seeking support for our knotweed control efforts. The mailing resulted in now new permissions along either system. Staff will explore other options for garnering support in the 2022 field season, and are open to other agencies sharing their ideas on how to obtain permission in systems with less engaged property owners.

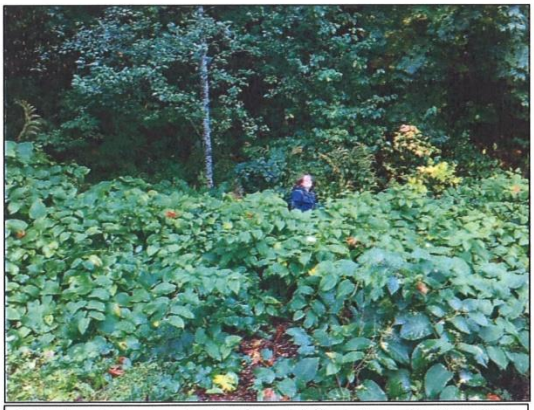


This postcard was sent to Mission and Little Mission Creek property owners, including those who have granted permission.

Funding for knotweed control work was finalized on August 17, 2021, which resulted in a relatively short field season for knotweed control. In addition, the treatment window was shortened by above average rainfall in October, a month during which we are often able to continue treatments.

2. Any specific success story?

Several non-WSDA funded knotweed treatments occurred this year throughout Mason County. One treatment of note occurred on a property owned by citizens who are apprehensive about the use of herbicide. Through a word of mouth referral by a member of the Lower Hood Canal Watershed Coalition, staff scheduled a site visit with the property owners to assess the knotweed infestation and discuss approaches to control. Staff subsequently gained permission and treated the knotweed infestation.



Kela stands amongst a knotweed infestation after injecting stems. This knotweed site had the potential to impact a newly installed French drain This treatment and property owner follow-up will inhibit further growth.

Another knotweed treatment occurred after staff stopped to talk to a landowner with a large knotweed infestation in WRIA 14. After the initial discussion, the landowner reached out to MCNWCB to schedule treatment on their property. The property owner and another resident signed volunteer agreements and assisted staff with the treatment. This knotweed infestation had the potential to impact a drain field. That same day, a nearby property owner stopped by to see the knotweed control efforts taking place and gave MCNWCB permission to treat a knotweed patch on their property as

well. MCNWCB staff hope that ongoing relationships with property owners in Mason County will result in more knotweed contacts and subsequently fewer knotweed infestations.

Another knotweed success story is the ongoing project, "Evaluation of diquat for invasive knotweed control" led by David Heimer (WDFW) and Lauren Kuehne (Omfischient Consulting). A Green Diamond owned parcel in WRIA 14 with a large knotweed infestation was suggested by MCNWCB as a potential trial location for the diquat study. The study, "will use diquat, an aquatically-approved contact herbicide, to burn down spring growth in an effort to stimulate dormant bud emergence for a later treatment with the systemic herbicide, imazapyr" (WA State Commission of Pesticide Registration Application Form).

3. Any breakthrough treatment?

Utilizing an Earth Corps crew provided by the WSDNR Aquatic Invasive Species Program, staff completed an experimental knotweed control method on a local Belfair, WA farm in which 0.018 infested acres of knotweed were covered with wire mesh in order to girdle future growth. A resident at the farm will periodically send photos of the mesh in order to determine how effective this method is.

Staff and members of the Earth Corps crew lay cement blocks on top of the wire mesh in order to prevent lift from the knotweed growth.

4. Progress made?

Yes, nine new Mason County Knotweed permissions and four new WSDA permissions were obtained to treat knotweed in Mason County.

5. Recommendations for next year?

Staff will continue to work to obtain permission from a single property owner along Sherwood Creek who has the last untreated knotweed infestation in the watershed and further develop a plan for reaching agreement with two property owners on Finch Creek. One of the two property owners along Finch Creek has granted permission in the past, but conflict with another Mason County agency has resulted in the loss of permission and general animosity towards county departments. Another property owner does not agree with the use of herbicides, so staff are exploring alternative approaches to treatment for the few knotweed plants on their property.

The highest priority for treatment in 2022 will be the Mission Creek watershed as it contains the most heavily infested reaches. The program continues to build on waivers received, as neighbors are encouraged to participate by other neighbors. A combination of door knocking, unique letters, mass mailings, and encouragement of neighbor-to-neighbor communication will hopefully result in new permissions prior to the 2022 field season.

The upper watersheds of Mission, Sherwood and Finch Creeks need additional survey work. The upper reaches of all three watersheds are on DNR land. MCNWCB will reapply for the DNR Land Use License in order to complete knotweed treatment of any knotweed found. We plan to work with DNR personnel to develop an access plan based on their knowledge of those areas.

6. Tell us about additional weed species that you treated.

No additional noxious weed species were treated in knotweed areas this year, other than one minor exception of scotch broom treatment at a terrestrial site as requested by the homeowner. Instead of the treatment of additional weed species, staff focused on surveys along systems.

Staff continue to note the presence of butterfly bush in the Mission Creek watershed. This noxious weed often grows intermixed with large knotweed patches, and will likely expand in areas that have received treatment for knotweed. If time, funding, and permission allows, staff will begin to treat butterfly bush along Mission Creek.

In addition, MCNWC staff have treated giant hogweed, tansy ragwort, meadow knapweed, spotted knapweed, perennial pepperweed, and shiny geranium in areas outside of knotweed treatment areas.

Butterfly bush intermingling with a large knotweed patch on a property that staff were granted permission to treat last year.

7. Is there a reveg or management plan in place? No

8. What partners did you work with? N/A

9. Where was your funding from? County General Fund and WSDA Knotweed funding.

10. Did you sponsor any educational events? No

11. Anything else we forgot to ask? No

12. Please include contact information—contact person, address, phone number, email and website

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