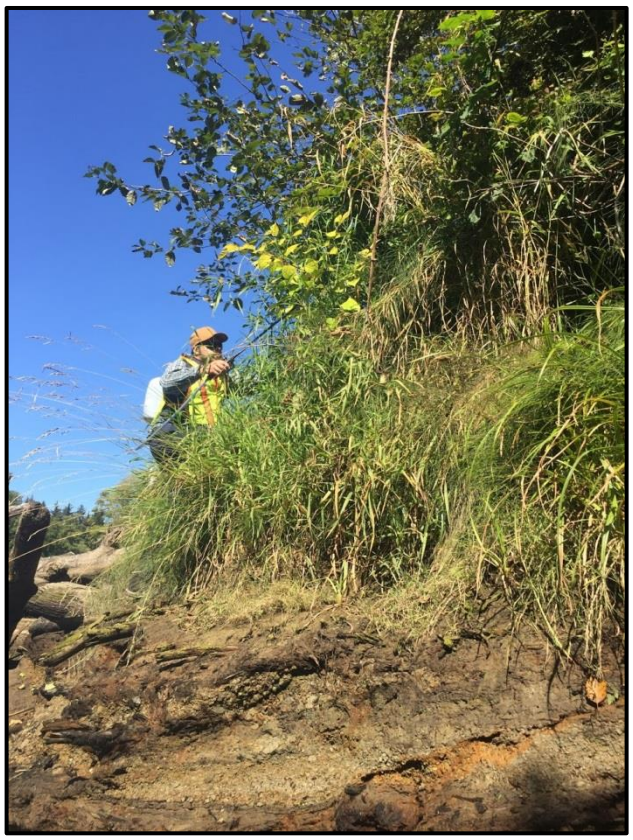
Olympic Invasives Working Group
2020 Annual Report



CCNWCB seasonal crew member treating
knotweed along the Hoko River via canoe access.

Report Prepared by

Clallam County Noxious Weed Control Board

CCNWCB staff treating a large patch of knotweed on a private parcel near Ennis Creek in Port Angeles.

Report prepared by
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December 2020

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http://www.clallam.net/weed/projects.html

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

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Bohemian knotweed re-growing one year post-treatment along upper Ennis Creek near Port Angeles and displaying damage from the residual effects of imazapyr.

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.

2020 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, Washington Conservation Crops, Hood Canal Salmon Enhancement Group, and the Mason County Noxious Weed Control Board submitted survey/treatment and landowner statistics.

2020 Project Activities Summary-per County

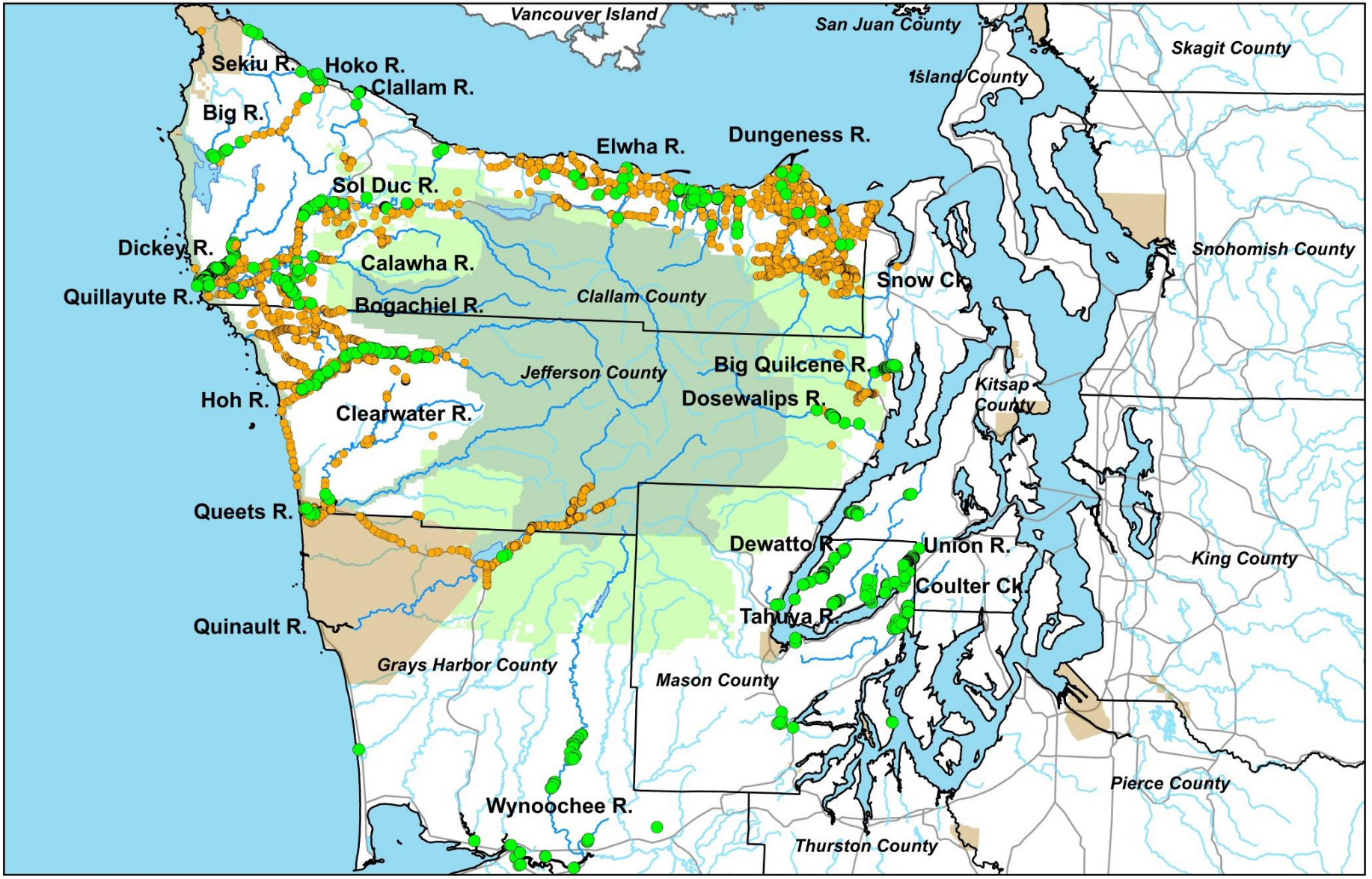
(See Table I with watershed details by county, starting on page 64)

- In Clallam- **7** entities on **19** waterways managed **290** landowner agreements and obtained **108** new agreements. Knotweed and other invasives were treated across more than **894.5** acres over **198.3** river and road miles.
- In Jefferson- **5** entities on **9** waterways managed **126** landowner agreements and obtained **29** new agreements. Knotweed and other invasives were treated across **1,216.8** acres over **182.4** river and road miles.
- In Mason- **3** entities on **12** waterways managed **335** landowner agreements and obtained **45** new agreements. Knotweed and other invasives were treated on over **63.9** acres over **36.6** river and road miles.
- In Kitsap County- **2** entities on **1** waterway managed **8** landowner agreements and obtained **0** new agreements. Knotweed was treated on **0.6** acres over **1.35** river miles.
- In Grays Harbor- **2** entities on **2** waterways managed **21** landowner agreements and obtained **15** new agreements. Knotweed and other invasives were treated on **141.6** acres over **52.4** river and road miles.

2020 Observations and Recommendations

- All partners reported having Covid-19 related challenges including: reduced staffing, lost staff hours due to quarantine, reduced treatment days, reduced interaction with partners and landowners, logistic difficulties due to needing multiple vehicles to maintain social distancing.
- Partners continue to report successful control of knotweed across the Olympic Peninsula but also report newly found infestations. Surveyors should continue to include areas beyond the river channel and areas that obscure infestations.
- Face-to-face interactions and site visits, that are valuable to obtain landowner permissions, were difficult to coordinate in 2020 due to Covid-19 precautions. Managers and crews may need to consider transitioning long-term to “socially distanced” interaction protocols. Promoting safe and positive interactions in the field during surveys or treatment activities is essential to maintaining landowner permissions.
- 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



Invasive Species

- Knotweed (spp)
- Other Species

Land Ownership

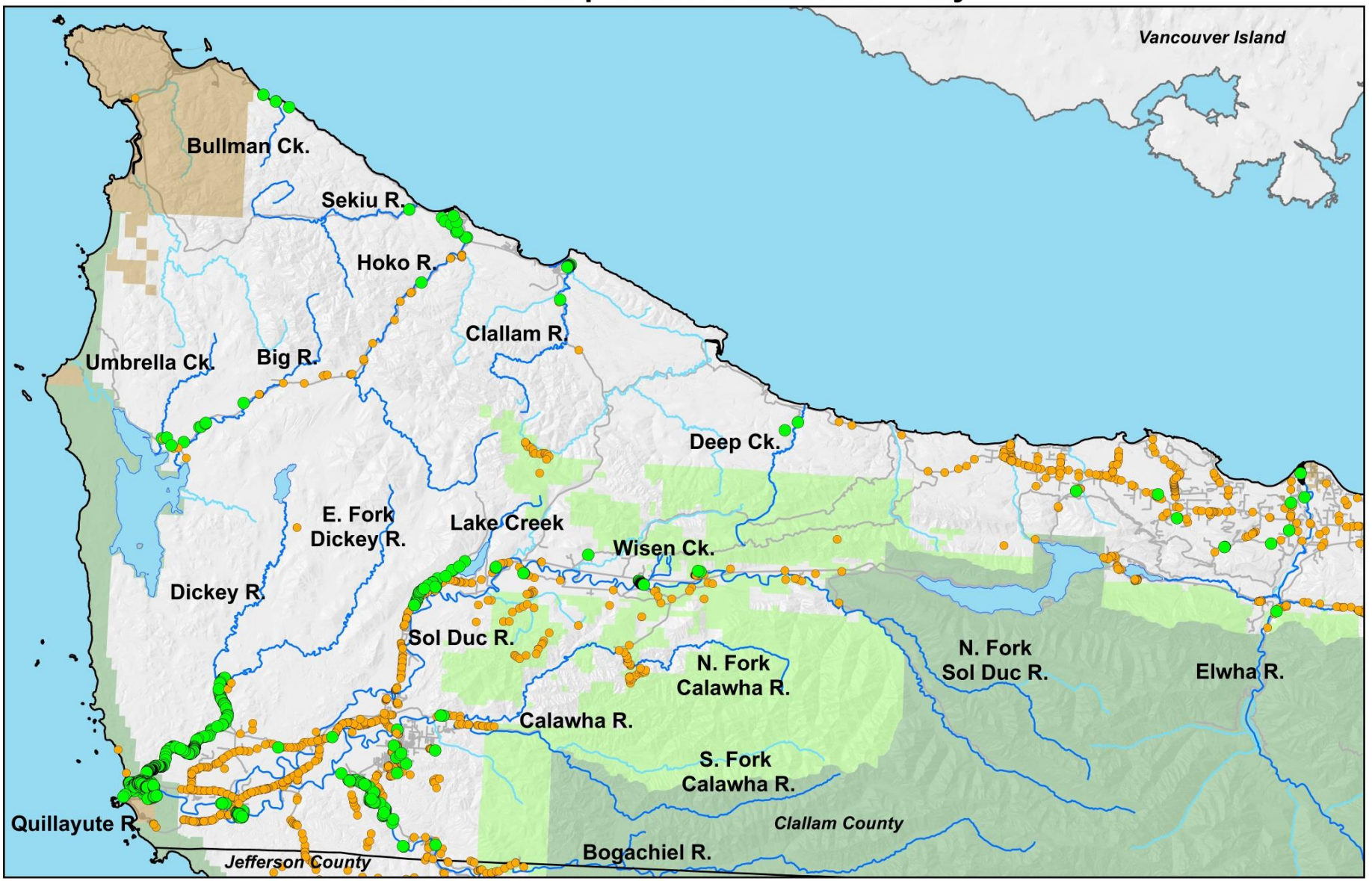
- Tribal
- Olympic National Forest
- Olympic National Park

- 2020 Treated Rivers
- Other Rivers
- Counties
- Roads

0 10 20 40 Miles

N

Overview Map of West Clallam County



Invasive Species

- Knotweed (spp)
- Other Species

Land Ownership

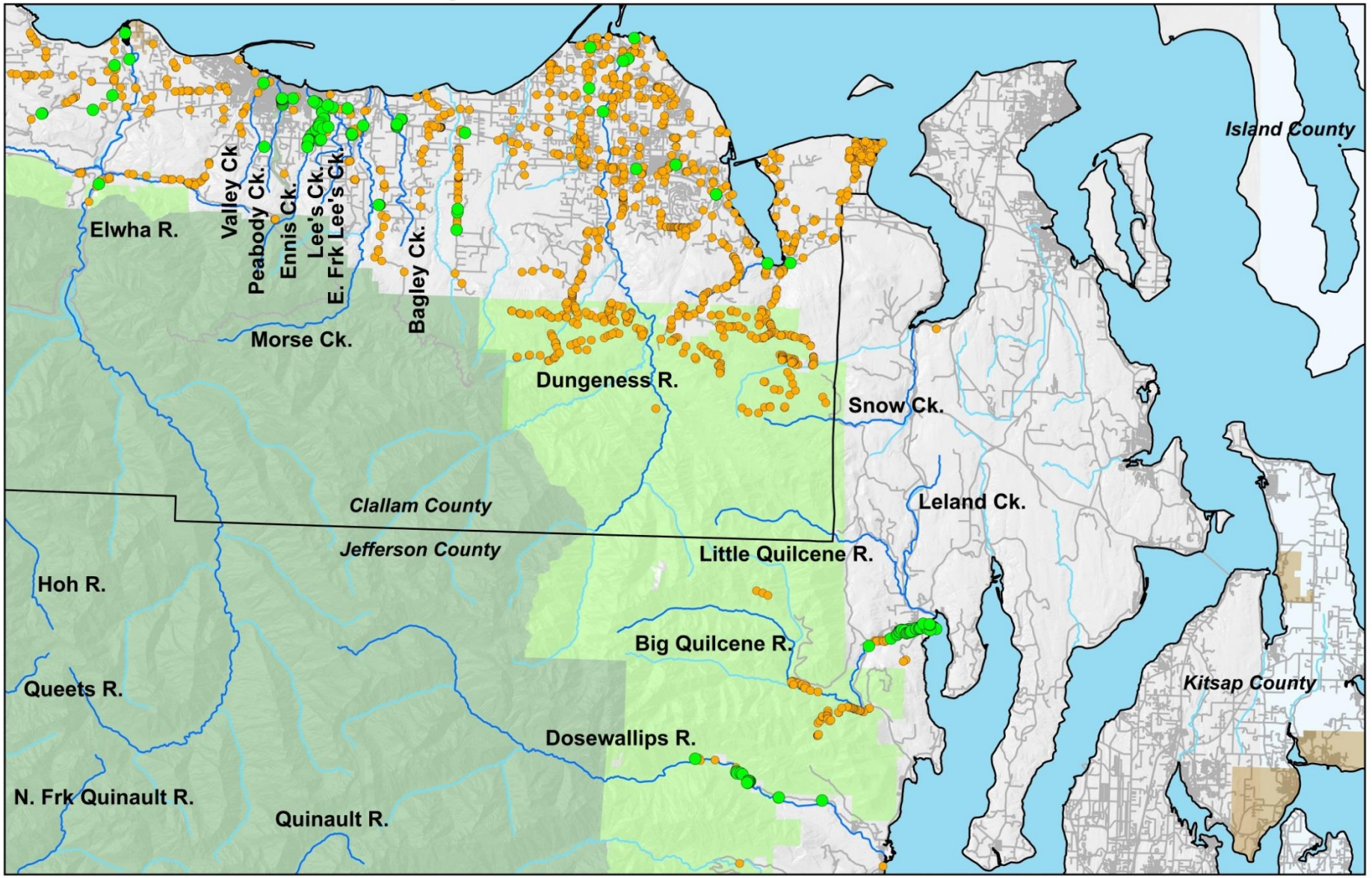
- Tribal
- Olympic National Forest
- Olympic National Park

- 2020 Treated Rivers
- Other Rivers
- Counties
- Roads

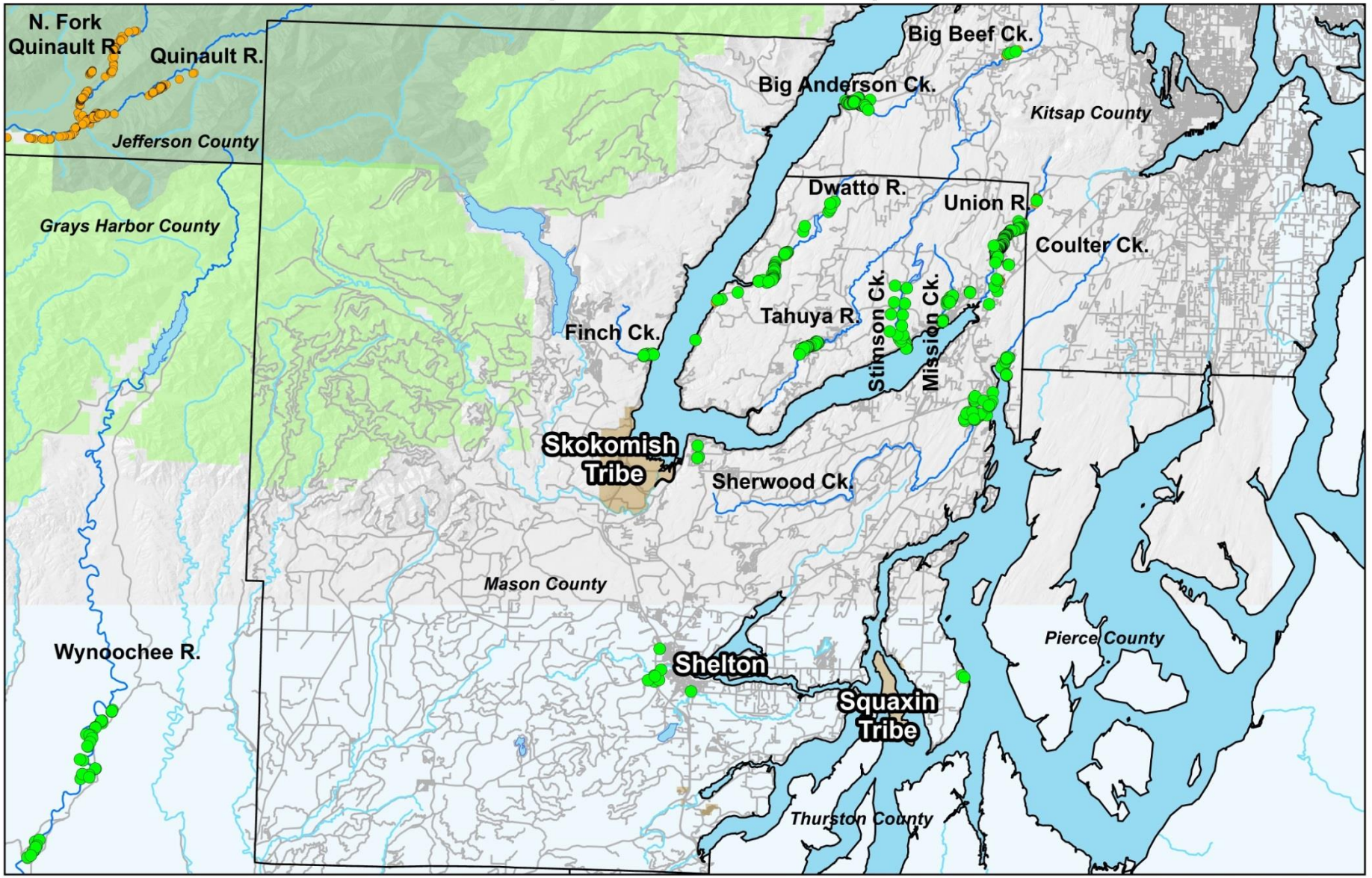
0 4 8 16 Miles

N

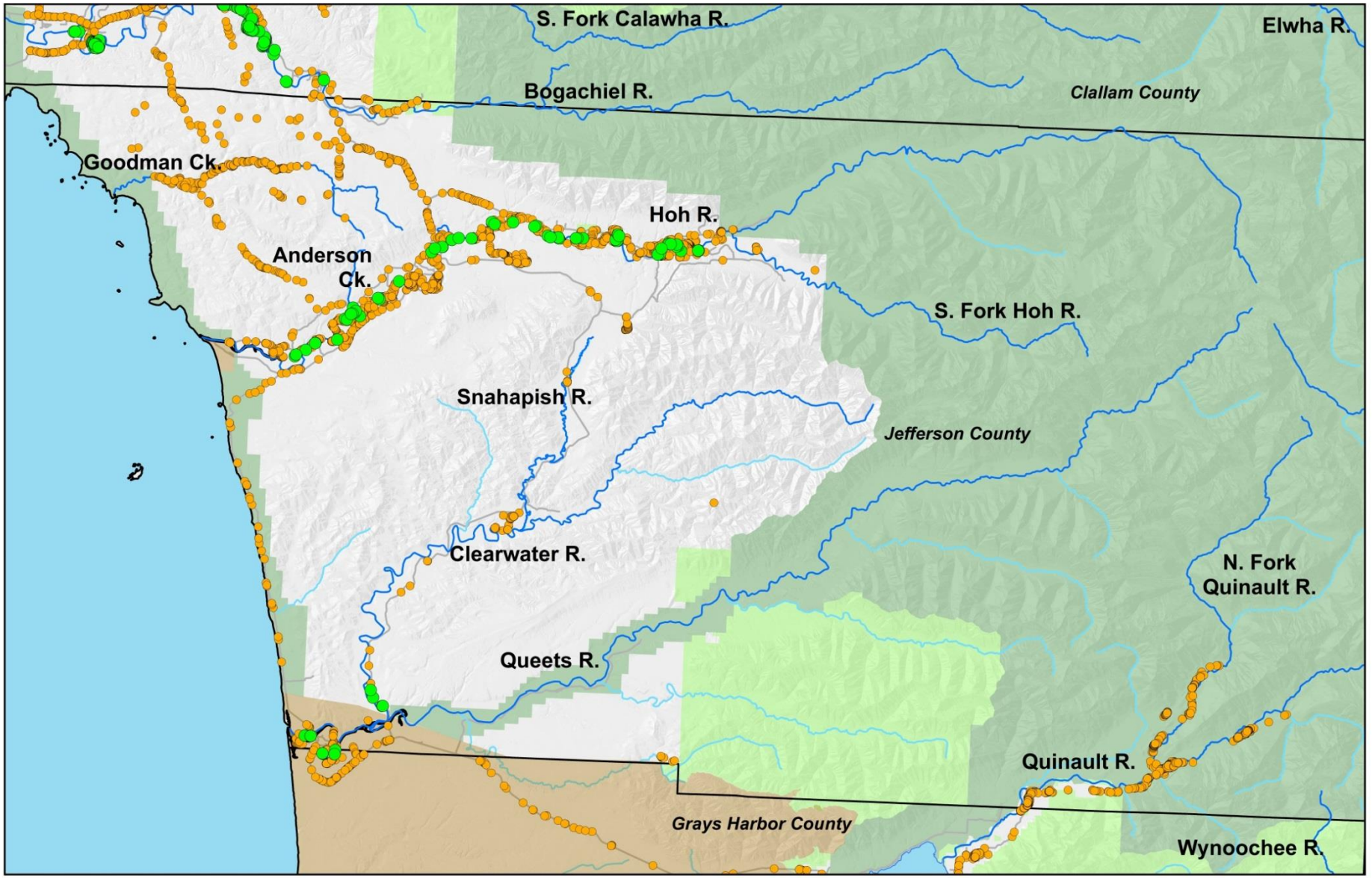
Overview Map of East Clallam and East Jefferson Counties



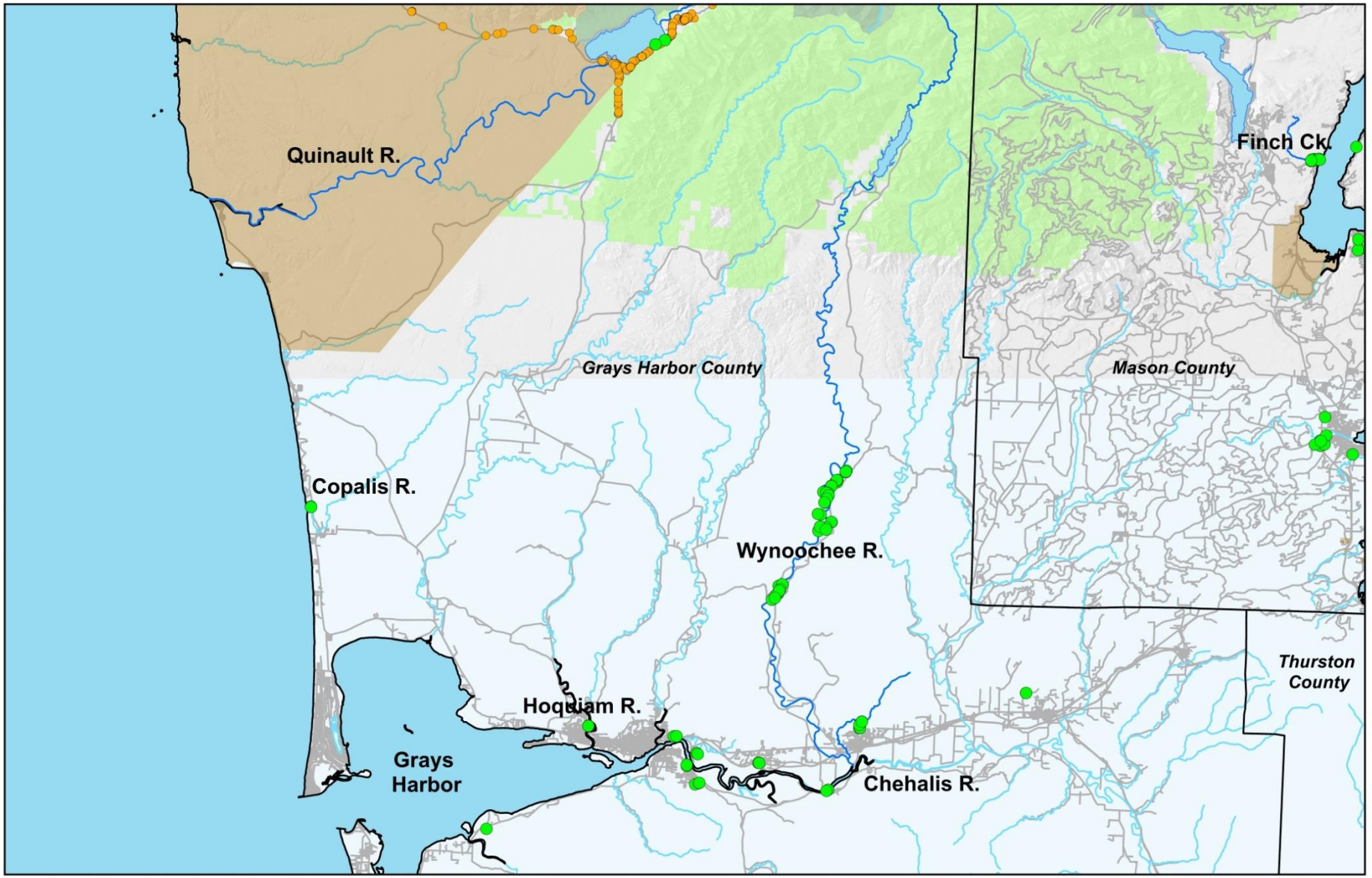
Overview Map of Mason and Kitsap Counties



Overview Map of West Jefferson County



Overview Map of Grays Harbor County



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.

2020 PROJECT ACTIVITIES

Landowner Contacts and Agreements - (as reported to CCNWCB) All landowners were contacted in person, by letter/email or phone prior to 2020 season treatments.

Clallam County

- Clallam County Noxious Weed Control Board (CCNWCB) - managed **194 Landowner Agreements**, including **19 new** Landowner Agreements.
- North Olympic Salmon Coalition (NOSC) managed **5 Landowner Agreements**, including **3 new** Landowner Agreements.
- Quileute Tribe-Natural Resources (QNR) managed **6 Landowner Agreements**.
- Makah Tribe-Natural Resources (Makah) managed **11 Landowner Agreements**.
- Lower Elwha Tribe (LEKT) did not report Landowner Agreements.
- The 10,000 Years Institute (10KYI) managed **22 Landowner Agreements,** including **1 new** Landowner Agreement.

Jefferson County

- Hood Canal Salmon Enhancement Group (HCSEG) managed **62 Landowner Agreements**, including **9 new** Landowner Agreements.
- 10KYI managed **24 Landowner Agreements**, including **3 new** Landowner Agreements.
- North Olympic Salmon Coalition (NOSC) managed **2 Landowner Agreements**, including **1 new** Landowner Agreements.
- Specific information regarding Jefferson NWCB landowner contact activity is not available.

Mason County

- Mason County Noxious Weed Control Board (MCNWCB)-managed **137 Landowner Agreements,** including **15 new** Landowner Agreements.
- HCSEG managed **188 Landowner Agreements**, including **26 new** Landowner Agreements.

Kitsap County

- HCSEG managed **61 Landowner Agreements,** including **22 new** Landowner Agreements.
- Specific information regarding Kitsap NWCB landowner contact activity is not available.

Grays Harbor County

- Grays Harbor NWCB managed **25 Landowner Agreements**, including **11 new Landowner Agreements**.
- 10KYI managed **7 Landowner Agreements**, including **1 new** Landowner Agreements.

Survey and Treatment*:*

This list summarizes knotweed and invasive control work accomplished in 2020 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 **7.9 miles** (**2 acres**) for knotweed [QNR], treated **3.4 road miles** (**5.8 acres**) for non-knotweed invasive species [CCNWCB].
- **Calawah River:** Treated **13.9 miles** (**16.5 acres**) for knotweed and invasive species [10KYI].
- **Bogachiel River:** Treated **0.25 miles** (**0.25 acres**) for knotweed [QNR], retreated **58.5 miles** (**304 acres**) for knotweed and invasive species [10KYI], treated **0.25 acres** for knotweed [CCNWCB].
- **Quillayute River:** Treated **4.4 miles** (**7 acres**) for knotweed and invasive species [QNR, CCNWCB], treated **8.1 road miles** (**60.3 acres**) and **0.5 river** miles (**1.6 acres**) for non-knotweed invasives [10KYI].
- **Sol Duc River:** Treated **44.4 road miles** (**39.1 acres**) and **0.3 river miles** (**3.1 acres**) for non-knotweed invasives [10KYI].
- **Big River:** Rereated **0.5 miles** (**0.1 acres**) for knotweed and invasive species [Makah Tribe], treated **6.6 road miles** (**0.1 acres**) for knotweed and invasive species [CCNWCB]
- **Hoko River:** Treated along **2.5 river miles** (**0.2 acre**) for knotweed [CCNWCB], treated **0.6 acre** for knotweed [Makah Tribe].
- **Clallam River:** Treated along **0.4 river miles** (**2.5 acres**) for knotweed [CCNWCB].
- **Lake Creek/Lake Pleasant:** Treated along **3.9 river miles** (**8.6 acres**) and **1.2 road miles** (**0.1 acres**) for knotweed and invasive species [CCNWCB].
- **Deep Creek:** Treated **6 acres** for knotweed [LEKT].
- **Elwha River:** Treated **11 acres** for knotweed [LEKT], treated along **1.7 road miles** (**4.1 acres**) for non-knotweed invasives [CCNWCB].
- **Valley Creek:** Treated along **0.9 river miles** (**0.25 acres**) for knotweed and invasive species [CCNWCB].
- **Peabody Creek:** Treated along **1 river mile** (**0.6 acres**) for knotweed [CCNWCB].
- **Ennis Creek:** Treated along **2.5 river miles** (**2.1 acres**) for knotweed [CCNWCB].
- **Lee's and East Fork Lee's:** Treated **0.2 river miles** (**1 acre**) for knotweed [CCNWCB].
- **Morse Creek:** Treated **0.01 acres** for knotweed [CCNWCB].
- **Bagley Creek:** Treated along **0.6 miles** (**1 acre**) knotweed [CCNWCB].
- **Dungeness River:** Treated **1 mile (9.37 acres)** for knotweed and invasive species [NOSC, WCC], treated along **2.4 river miles (53 acres)** for knotweed and invasive species [CCNWCB].
- **Dean Creek:** Treated **0.25 river miles** (**0.02 acres**) for knotweed [CCNWCB].
- **Clallam County Sites within WRIA 18, 19, 20:** Treated high priority invasive species, including knotweed along **222 miles** (**435 acres**) of Clallam County roads.

Jefferson County (Starting in East Jefferson)

- **Snow Creek:** Treated along **1.5 miles** (**16 acres**) for knotweed and invasive species [NOSC, WCC].
- **Big Quilcene River:** Treated along **3.5 miles** (**0.11 acre**) for knotweed and other species [HCSEG, WCC].
- **Dosewallips:** Treated along **4 miles** (**0.03 acres**) for knotweed and other species [HCSEG, WCC].
- **Queets River:** Treated along **20.2 road miles (59 acres)** and **4.7 river miles** (**49 acres**) for non-knotweed invasive species [10KYI].
- **Clearwater River:** Treated along **14.5 road miles** (**3 acres**) for knotweed and invasive species [10KYI].
- **Snahapish River:** Treated along **9.5 road miles** (**12.5 acres**) for non-knotweed invasives [10KYI].
- **Goodman Creek:** Treated along **15.7 road miles** (**47.1 acres**) and **7.9 river miles** (**59 acres**) for non-knotweed invasives [10KYI].
- **Hoh River and Tributaries:** Treated along **51.2 road miles** (**47.8 acres**) and **31.1 river miles** (**592 acres**) for knotweed and invasive species [10KYI].
- **Pacific Coast:** Treated along **18.8 road miles** (**21.7 acres**) for non-knotweed invasive species [10KYI].

Mason County:

- **Tahuya River:** Treated along **3.5 miles** (**0.4 acres**) for knotweed and invasive species [HCSEG, WCC].
- **Union River/Watershed:** Treated along **4.1 miles** (**0.5 acres**) for knotweed and invasive species [HCSEG, WCC], treated **0.4 acres** for knotweed [MCNWCB].

- **Dewatto River:** Treated along **3.8 miles** (**0.04 acres**) for knotweed and invasive species [HCSEG, WCC].
- **Mission Creek:** Treated along **1.4 river miles** (**17 acres**) [MCNWCB].
- **Hood Canal Watershed:** Treated **0.12 river miles** (**0.25 acres**) for knotweed [MCNWCB].
- **Sherwood Creek/Anderson Creek**: Treated **2.6 river miles** (**10.7 acres**) for knotweed [MCNWCB].
- **Finch Creek**: Treated along **2.8 river miles** (**0.8 acres**) for knotweed [MCNWCB].
- **Stimson Creek:** Treated along **2.3 river miles** (**11.6 acres**) for knotweed [MCNWCB].
- **Coulter Creek:** Treated along **2.05 river miles** (**8.25 acres**) for knotweed [MCNWCB].
- **North Bay/ Allyn:** Treated along **0.2 river miles** (**1.33 acres**) for knotweed [MCNWCB].
- **Mason County Sites within WRIA 14, 15, 16:** Treated **0.05 river miles** (**4.9 acres**) for knotweed [MCNWCB].

Kitsap County

- **Big Anderson Creek:** Treated along **1.4 miles** (**0.3 acres**) for knotweed and invasive species [HCSEG, WCC].
- **Big Beef Creek:** Treated along **1 mile** (**0.002 acres**) for knotweed and invasive species [HCSEG, WCC].

Grays Harbor County

- **Wynoochee River:** Treated along **10.6 miles** (**117.5 acres**) for knotweed [GHCNWCB].
- **Quinault Watershed:** Treated along **38.8 road miles** (**41.4 acres**) and **8.1 river miles** (**18 acres**) for knotweed and invasive species [10KYI].

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 Forks, 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 the Knotweed Projects Database.
- 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.
- 10KYI co-coordinated the 2020 Scotch Broom Ecology and Management Symposium which shared valuable information while providing an opportunity for OIWG members to gain WSDA license credits online.
- 10KYI also presented for the Middle Hoh River Resiliency Plan and the North Pacific Coast Lead Entity.
- MCNWCB continued with planned mailings requesting permission renewals and received 57 renewals of WSDA's "PERMISSION TO ENTER PRIVATE LAND AND WAIVER OF LIABILITY."
- HCSEG held outreach and education zoom meetings related to knotweed and riparian enhancement to landowners on the Big Quilcene and Big Beef Creeks; and held a zoom meeting with construction companies on our small works roster to educate them on early detection and prevention of invasive plant species, notably knotweed during construction phases of salmon restoration projects.
- CCNWCB updated the Clallam County Noxious Weed Control Board's website, including pages on knotweed.
- CCNWCB staff highlighted our knotweed program and distributed information through social media and when public contacts were possible**.**

2020 PROJECT PROTOCOLS

1. Surveys and Monitoring
CCNWCB surveys, treatments and monitoring took place from April 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 Sarah Riutzel (LAQ), treated knotweed along the Bogachiel, Dickey, and Quillayute Rivers, and Wisen Creek.
- **The Makah Tribe (Makah)** led by Shannon Murphy (LAQ) and Katie McLean, treated knotweed sites on the Makah Reservation, Big River, and in the vicinity of Clallam Bay/Sekiu/Hoko Rd.
- **The Clallam County NWCB crew (CCNWCB)**, consisting of Cathy Lucero (LAQ), Joseph Reynolds (LAQ), Shea McDonald (LAQ), Todd Coward (LAQ) worked on Bagley, Bullman, Dean, E. Lee's, Ennis, Lee's, Morse, Peabody and Valley Creeks, the Big, Bogachiel, Clallam, Dungeness, Hoko Rivers, as well as roadsides and quarries with knotweed across Clallam County.
- **The North Cascades Exotic Plant Management Team** with the **National Park Service (NCEPMT)** was led by Collin McAvinchey (LAQ) and Sophie Wilhoit (LAQ). This crew treated a variety of locations across the state but specific information is not available.
- **The East Jefferson WCC with the North Olympic Salmon Coalition (NOSC),** led by Owen French, WCC crew lead (LAQ), worked on the Dungeness River and Snow Creek.
- **The Lower Elwha Klallam Tribe,** consisting of Kim Williams (LAQ) and Allyce Miller (LAQ) treated Deep Creek, Little River, and the Elwha River.
- **The Hood Canal Salmon Enhancement Group WCC crew (HCSEG)** lead by Alex Papiez (LAQ) treated along the Big Quilcene, Dosewallips, Tahuya, Union, and Dewatto Rivers, as well as Big Anderson and Big Beef Creeks.
- **Mason County NWCB crew (MCNWCB)** consisting of Pat Grover (LAQ) treated invasives on Anderson, Mission, Coulter, Finch, Stimson and Sherwood Creeks, the Union River, Hood Canal, as well as North Bay and the town of Allyn and various other sites in WRIAs 14 & 15.
- **The 10,000 Years Institute (10KYI)**, led by Jill Silver (LAQ) worked in many watersheds including Queets, Quinault, and Quillayute, Calawah, Bogachiel, Sol Duc, Hoh, and Snahapish Rivers, Goodman Creek, and surrounding roads and highways.
- **The Grays Harbor County Noxious Weed Control Board**, led by Kiley Smith (LAQ) treated knotweed and invasives along the Wynoochee River and other sites in Grays Harbor County.

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 canarygrass, herb Robert, Canada thistle, perennial pepperweed, perennial sowthistle, poison hemlock, and yellow archangel.

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 used in 2020 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 CCNWCB and Mason County NWCB 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 signed 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 2020, 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 2020, 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

- Peninsula-wide activities are incorporated into this report to show the level of effort and collaboration that has been generated to combat the threat knotweed and other invasive species pose to our natural resources.
- Partners continue to report successful knotweed control across the Olympic Peninsula. Partners used one or several different control techniques and herbicides, depending on site conditions. The majority of knotweed treatments included a foliar application of imazapyr (1% solution) with surfactant (1% solution); additional treatment techniques included stem-injection glyphosate (100% solution), foliar application of glyphosate (1.5%-4% solution), and to a very limited extent, foliar application of aminopyralid (0.125% solution) and triclopyr (1% solution).
- Partners reported "discovering" patches of knotweed at varying distances from historical locations of larger patches.
- Partners reported obtaining landowner permissions for locations previously not surveyed or treated which were crucial to successful control of knotweed across the entirety of a river system. Building relationships by face-to-face interactions with landowners and site visits has contributed significantly to obtaining these permissions over time, although it's become challenging with current Covid-19 safety protocols.
- CCNWCB reported significantly reduced extent of knotweed infestations along the "urban" streams in Sequim and Port Angels along with further revegetation work at three sites.
- 10KYI reports that the one known giant reed site in the Bogachiel River watershed, treated in 2019, showed no new growth in 2020 and the patch appeared dead.
- 10KYI also reports collecting locally-sourced seeds of low-growing native forb and grass species in 2017, 2018 and 2020, plans to plant 2,200 cottonwood, red alder, and willow stakes this winter within the Hoh River floodplain and to further develop the revegetation program in 2021 in collaboration with coastal partners.
- MCNWCB reported success sending customized letters to two property owners owning unimproved property along Mission Creek. The customized letters were responded to within 10 days of mailing, allowing for continued treatment of knotweed on16.74 acres.
- HCSEG reports continued success with a "top down" approach to river treatments and that the uppermost knotweed infestations on the Dosewallips, Big Quilcene, and Dewatto Rivers are now further downstream compared to previous surveys.
- HCSEG will continue to plant 15 acres of new or supplemental plantings along their eight treatment rivers. HCSEG installed over 11,000 native trees and shrubs in 2019and plans to install over 17,000 native trees and shrubs during the 2020-21 winter.
- The Makah tribe reported that they were able to continue successfully treating and planting native trees at several restoration sites on Big River and knotweed infestations at these sites are almost completely gone.
- The Makah also report continued success treating private parcels in Clallam Bay/Sekiu, where a significant decrease in knotweed was observed from previous years.
- QNR reports less knotweed in certain areas along the Dickey River and on the Kitchel property along the Bogachiel River, although they noted an increase in knotweed in areas where there hasn't been treatment in 1-2years, specifically Wisen Creek and the bog-oxbow of the Dickey River.
- Most partners reported that they are either developing a revegetation plan or seeing positive results from post-treatment revegetation efforts at infestation sites.
- Partners reported that access to boats and ATVs can be very beneficial for surveys and treatment of knotweed and other invasive species.
- Partners increasingly use smartphone applications and cloud-based data as an efficient way to share information between partners and build collaboration.
- Invasive plants of highest concern other than knotweed vary greatly by partner and river system, but all partners report the need and benefit to treat additional species during the course of knotweed control activities.
- The CCNWCB completed the fourth season of the Clallam Road Department Integrated Weed Management Plan (IWMP) and the knotweed treatment was of highest priority. Crew treated knotweed infestations on 7 county roads and 3 county pits. Additionally, the IWMP contains "weed-free" requirements for all Clallam County Road department activities and contracts, to help prevent the spread of knotweed and invasive plants.
- Partners acknowledged the control of invasive plants adjacent to river corridors, such as road right-of-ways and culverts, were significant treatment areas for the overall success of control efforts, and the collaboration within the working group has increased comprehensive control efforts for many river systems.
- Partners continue to report successes with revegetation plans where knotweed has been controlled.
- The State's knotweed program continues to be indispensable. In addition to providing base funding, it has helped provide permitting and technical advice to jump start other programs. The Olympic Invasives Working Group continues to draw a diverse membership and MANY other groups now participate in knotweed control Peninsula wide. The Weed Boards are invested in supporting these groups and interested residents county wide. In many cases this WSDA funding is being used to leverage other grants.

2021 PROJECT PRIORITIES INCLUDE

(as identified by individual partners):

In **West Clallam County**

- The highest priority is the Quillayute River system because it contains the most heavily infested reaches.
- Acquisition of landowner agreements to treat knotweed and orange hawkweed infestations in Forks.
- Revisiting sites on the Sekiu River where large knotweed infestation were treated in prior years.
- The CCNWCB will continue to collaborate with, and assist, the Makah Tribe where needed.
- Acquire landowner permissions and re-survey in Charley Creek.

In **Central Clallam County**

- Continue surveys and treatments on upstream infestation on "urban" streams and coordinate with NCEMPT and ONP for sites within the National Park boundary
- Identify and treat additional knotweed infestations on county road right-of-ways.

In **East Clallam County**

- Coordinate with Jamestown S'Klallam Tribe and NOSC for surveys and treatments on the Dungeness River.

In **East Jefferson County**

- HCSEG plans to continue upriver surveys on the Dosewallips River and treat as needed.
- HCSEG, Jefferson County, USFS and Washington State Parks should collaborate on surveys, treatments and revegetation plans.
- NOSC and the WCC have surveyed the entire Snow Creek watershed and are working their way down the river from the upper most infestation. Reaching non-communicative land owners will be a priority in 2020.

In **Kitsap County**

- HCSEG will prioritize treating Big Beef Creek from Lake Symington down to the mouth and will make Big Beef the first treatment watershed starting in mid-July.
- HCSEG will give the Big Quilcene more priority than the Tahuya, because of the greater amount of landowner consent and potential of Big Quilcene moving into a control status in the next 5 years.

In **Mason County**

- MCNWCB has identified the Mission Creek watershed as their highest priority for treatment in 2021 as it contains the most heavily infested reaches and they will try an alternative approach (TBD) to contacting property owners to garner their support and permission.
- MCNWCB plans to continue to work to obtain permissions from a single property owner along Sherwood Creek and further develop a plan for reaching agreement with two property owners on Finch Creek.
- MCNWCB intends to work with DNR personnel to develop an access plan for additional survey work in the upper watersheds of Mission, Sherwood and Finch Creeks, all DNR ownerships.
- HCSEG found a large infestation of knotweed on Lilliwaup Creek below the falls in 2019 and will begin outreach this winter and spring and conduct treatment on the lower reach in 2020.
- HCSEG is working on an invasive weed flyer specific to each river, and will mail these to riverside landowners. These flyers will include identification, life history, and control methods for each weed.

In **Grays Harbor County**

- GHCNWCB will continue outreach and treatments on the Wynoochee River.
- QIN priorities were not available at the time of the writing.

In **West Jefferson County**

- 10KYI recommends increasing emphasis on invasive weed awareness and control in gravel mines and incorporating weed prevention in best roadside management practices.
- 10KYI will also focus on collaboration with Jefferson County Road Department to treat to treat prior to mowing herb Robert, reed canarygrass, everlasting peavine, tansy ragwort, common tansy, Queen Anne's lace, and St. John's-wort.

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.
- 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.
- Encourage and support more training by Ecology for WCC crews who are increasingly utilized for invasive plant control projects.
- Continue to engage and encourage timber companies to increase their involvement in monitoring, prevention and treatment of terrestrial sites, especially rock sources.
- Seek 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.

PARTICIPATING GROUPS

Clallam County Noxious Weed Control Board
Clallam County Road Department
Clallam County Department of Community Development
Clallam Conservation District
Clallam County Public Utility 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
Snohomish County Noxious Weed Control Board
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
N. Cascades Exotic Plant Management Team/NPS
US Natural Resource Conservation Service
Jamestown S'Klallam Tribe
The Lower Elwha Klallam Tribe
The Makah Nation
The Quileute Tribe
The Quinault Indian Nation
10,000 Years Institute
North Olympic Land Trust
Hood Canal Coordinating Council
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

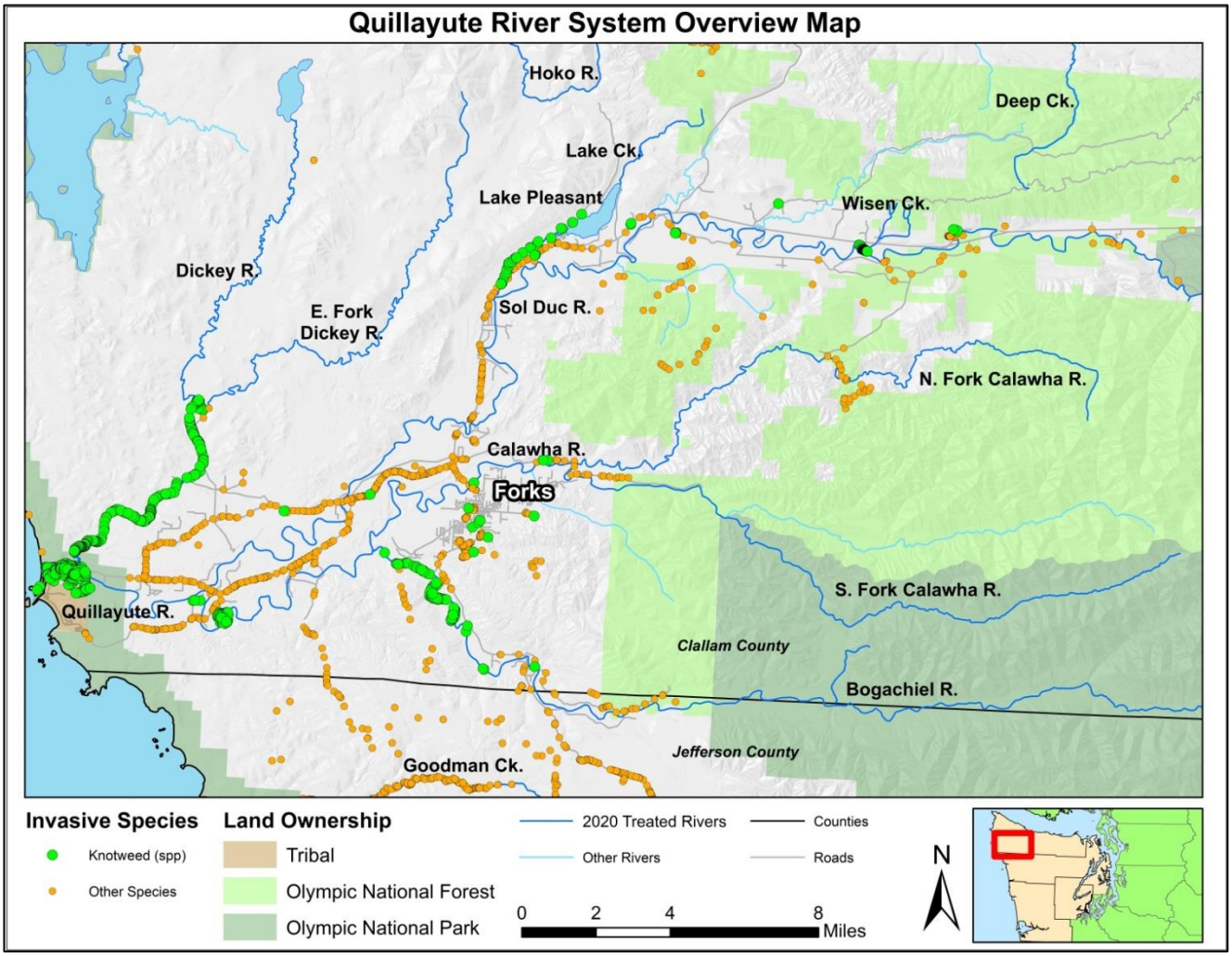
See Appendix III for contact information

FUNDING

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), 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.

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.

2020: Work was conducted by multiple entities including QIN, CCNWCB and 10KYI.
Work conducted in the Quillayute Watershed by 10KYI 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. 10KYI works in collaboration with Clallam County's NWCB, the Quileute Tribe, Olympic National Park, Olympic National Forest, WSDNR, WSDOT, the City of Forks, Olympic Natural Resources

Center, Quillayute Valley School District, Forks Community Hospital, and private landowners. In order to best capture the contributions of the 10KYI; a narrative of their control work by species, across the watershed is included below:

- Knotweed – Treated a new site on the Bogachiel east of 101 on private property, conducted river float surveys and treatment with support from WSDA on the Bogachiel River from Bogachiel State Park to Bogachiel Hatchery, retreated infestations on the lower Bogachiel, treated one site and reported two along A-Road, and reported two sites along SR 101.
- Tansy ragwort – 95% of treatment and inventory occurred along roadsides, including SR 101, SR 110, A-Road, Goodman Mainline, and Quillayute Prairie Road. Mature plants with and without flowers were pulled, and the flower heads cut, bagged and disposed at West Waste. Provided follow-up treatment at private horse pasture with a previously dense infestation; the pasture contained less than 1% of tansy ragwort flowers compared to 2019.
- Reed canarygrass – Collected seed and flower heads to prevent spread by vehicles and mowing equipment along roadsides including SR 101, SR 110, Quillayute Prairie Road, and Mora Road. Herbicide treatment occurred at river sites along the Bogachiel and on Undi Road.
- St. Johnswort – Increased treatment efforts occurred along roadsides this year with flower and seed head removal. Targeted roadsides included SR 101, SR 110, and Quillayute Prairie Road. One developed site was treated in the Sol Duc watershed.
- Scotch Broom – Cutting, piling and cut stump treatment occurred throughout the watershed at private properties including Forks Airport, Forks Hospital, Forks Community Garden, and UW's Olympic Natural Resources Center (ONRC), as well as on other private riverside properties, federal, state, and county roadsides, and timber harvest units.
- Everlasting peavine – Herbicide treatment occurred at one location along the Bogachiel River. Other inventory locations were taken at Klahowya Campground and the Quillayute estuary. More mapping and control are needed in following years.
- Herb Robert – Treated with 1.5% Aquaneat at two private properties along the Bogachiel River and removed plants with flowers and seeds on Undi Road, along trails at UW's ONRC, and at ONF sites in the Sol Duc watershed.
- Canada thistle – Treated with 1.5% Aquaneat at three private properties on the Bogachiel River and one property in the Sol Duc watershed.
- Bull thistle– Roadside treatment occurred on SR 101, Quillayute Prairie Road and Conkey Smith Road. Plants were uprooted and their flowers and seed heads were removed.
- Giant reed (Arundo donax) – The only known site on the Olympic Peninsula was identified in 2018, treated in 2019 and revisited this year with no living stalks found.
- Butterfly bush – One site along SR 101 was inventoried.
- Orange hawkweed – Inventory and treatment occurred three times throughout the summer at three different locations in the City of Forks and along SR 101 to prevent flowers from seeding. One location is regularly mowed and control continues to be difficult.
- Yellow flag iris – One population of yellow flag iris was found along Undi Road and treated with herbicide. This site will need to be monitored and re-treated.
- Himalayan and evergreen blackberry – Cut-stump treatment applied to plants along trails at UW's Olympic Natural Resource Center.

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.

<u>Brief Treatment history of the Dickey River</u>
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: QNR surveyed 7.9 river miles, searched nearly 30 acres, and treated 2 acres for knotweed, Canada thistle, evergreen blackberry, herb Robert, Himalayan blackberry, Scotch broom, and tansy ragwort. QNR crew used 0.3 gallons of imazapyr (1%) in foliar treatments. CCNWCB surveyed 3.2 road miles along the Dickey River, and treated 5.8 acres for evergreen blackberry, herb Robert, Scotch broom, and tansy ragwort. CCNWCB crew used 0.01 gallons of aminopyralid (0.125%) and 0.1 gallons of imazapyr (1%) in foliar treatments.

2021: Continue treatments as time and resources allow. Treatments of other invasive species should be maintained as knotweed infestations continue to decline.

Herbicide use-Dickey River (gallons)														
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
Acres Treated*	140	50	95	101	NA	56	75	46	3.8	74	3.8	0.9	4	**2**
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**

***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 road miles along the Calawha, searched 108 acres, and treated 16.5 acres for knotweed, evergreen blackberry, foxglove, herb Robert, Himalayan blackberry, orange hawkweed, and Scotch broom. 10KYI crew used 0.004 gallons of glyphosate (1.5-4%) and 0.001 gallons of imazapyr (1%) in foliar treatments, along with 1.6 gallons of glyphosate (50%) in cut-stump treatments.

2021: Continue to survey and treat as needed.

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

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, 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 conducted multiple surveys equivalent to 50.5 road miles along the Bogachiel River. They searched 411 acres and treated 304 acres for a wide variety of invasive species including knotweed, bull thistle, Canada thistle, everlasting peavine, foxglove, herb Robert, reed canarygrass, tansy ragwort, and yellow flag iris. 10KYI crew used 0.4 gallons of imazapyr (1-2%) and 0.2 gallons of glyphosate (1.5%) in foliar treatments, along with 0.3 gallons of glyphosate (50%) in cut-stump treatments.10KYI treated the one known giant reed site in the Bogachiel River watershed in 2019 and 2020 surveys indicate no new growth and the patch appeared dead. QNR surveyed 0.25 river miles, searched 2 acres, and treated 0.25 acres for knotweed. QNR crew used 0.06 gallons of imazapyr (1%) in foliar treatments. CCNWCB searched 1 acre adjacent to the Bogachiel River and treated knotweed on 0.25 acres. CCNWCB crew used 0.01 gallons of imazapyr (1%) in foliar treatments.

2021: 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**
Acres Treated*	4.1	900+	693	725	NA	131	131	343	-	77	199	10.6	214	**305**
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**

***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, searched 693 acres, and treated 7 acres for knotweed, Canada thistle, evergreen blackberry, herb Robert, Himalayan blackberry, Scotch broom, and tansy ragwort. QNR crew used 0.5 gallons of imazapyr (1%) in foliar treatments and 1 gallon of glyphosate (6%) in foliar and cut-stump treatments. 10YKI surveyed 0.5 river miles and 8.6 road miles along the Quillayute River. They searched 88 acres and treated 62 acres for Canada thistle, reed canarygrass, Scotch broom, and tansy ragwort. 10KYI crew used 0.02 gallons of glyphosate (50%) in cut-stump treatments.

2021: The partnerships developed to treat this river system should be maintained, especially considering the evidence of success through decreased herbicide use and acreage 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**
Acres Treated	N/A	170	40	0.5	N/A	0	0.2	N/A**	5	193*	8.2	6.4	26.5	**69**
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**

**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 for bull thistle, Canada thistle, reed canarygrass, Scotch broom, and St. John's wort. 10KYI crew used 0.05 gallons of imazapyr (1%) and 0.2 gallons of glyphosate (1.5%) in foliar treatments.

2021: 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**
Acres Treated	17	45	30	35	-	n/a*	155	0.005	-	221**	1.3**	1.1	0.005	**42**
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**

** 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. CCNWCB crew used 0.1 gallons of imazapyr (1%) in foliar treatments.

2021: 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 on sites treated in 2020.

Forks

Knotweed in the city of Forks is of concern because the town is close to the Calawah and 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.

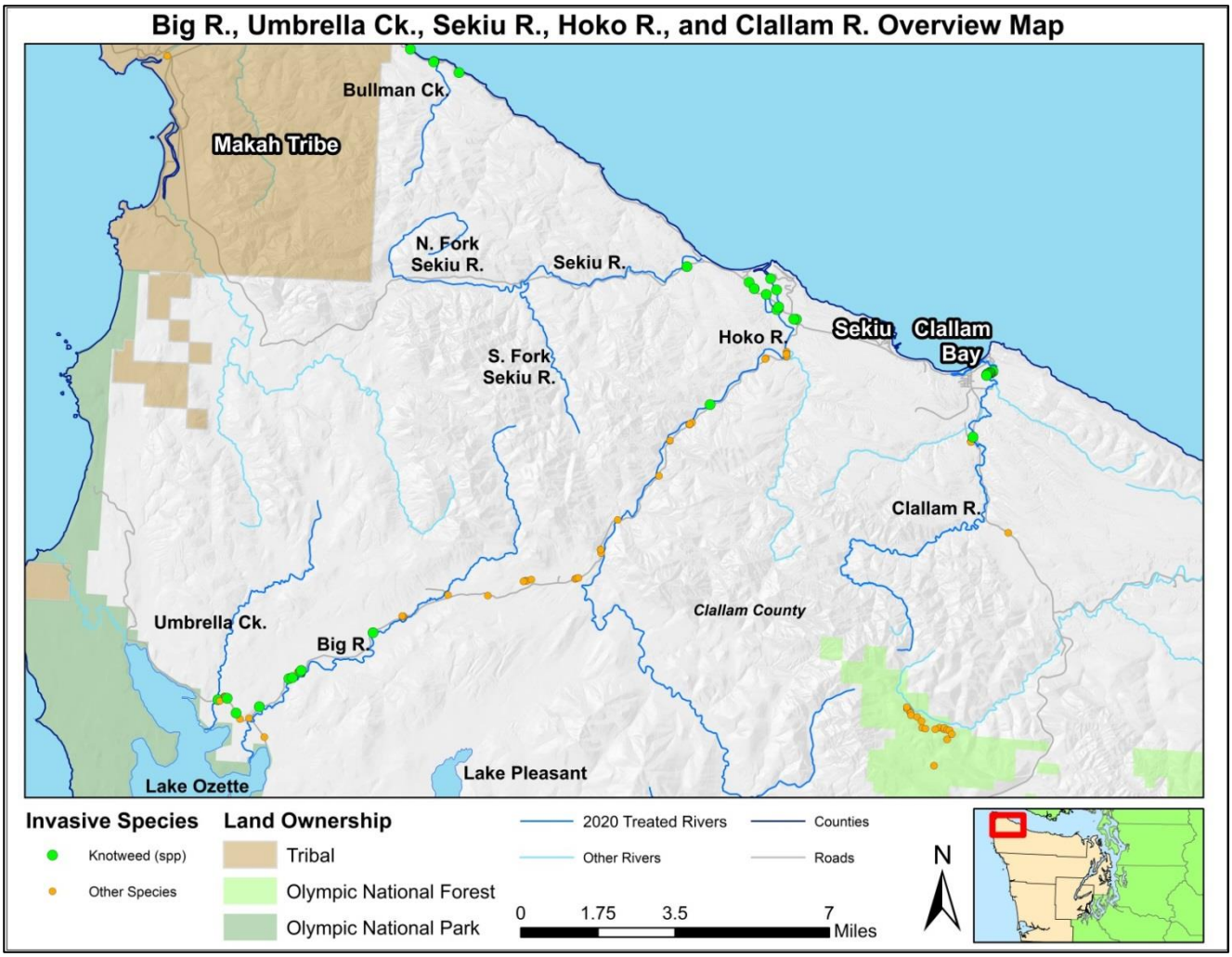
Brief Treatment history of Forks
See previous year's reports for more detailed information
2006-2009: Treatments of knotweed on private property was conducted [CCNWCB, QNR].
2010-2012: No invasives treatments were reported in Forks.
2013: 3 acres of privately owned property were treated [QNR].
2014-2016: 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: With the close proximity of the Calawah and Bogachiel, gaining additional permissions for knotweed and butterfly bush within Forks city limits should be prioritized for this treatment area.

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

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. Makah crew used 0.01 gallons of glyphosate (7%) in foliar treatments. 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 for knotweed, bull thistle, Canada thistle, evergreen blackberry, herb Robert, Himalayan blackberry, Scotch broom, St. John's wort, and tansy ragwort. CCNWCB combined manual and herbicide treatments using 0.085 gallons of aminopyralid (0.125%), 1.08 gallons of triclopyr (1-2%) and 0.04 gallons of imazapyr (1%) herbicide in foliar treatments.

2021: 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**
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**
Road Acres Treated							35.2	0.06	**0.1**
Glyphosate inj	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**
Imazapyr foliar	0	1.8	0.8	0	n/a	0.2	0.06	0.01	**0.04**
Aminopyralid**	-	-	-	-	-	-	0.05	0.01	**0.085**
Triclopyr **	-	-	-	-	-	-	0.01	0.08	**1.08**
Total Herbicide	65	14.7	1.4	0.2	n/a	1.3	1.02	0.14	**1.2**

**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. CCNWCB crew used 0.025 gallons of imazapyr (1%) in foliar treatments. 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. Makah crew used 0.08 gallons of glyphosate (4%) and 0.01 gallons of imazapyr (0.7%) in foliar treatments.

2021: 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. 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.

2021: Resurvey and treat Sekiu Rd as necessary and, possibly, retreat historic private property sites.

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

** 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.*

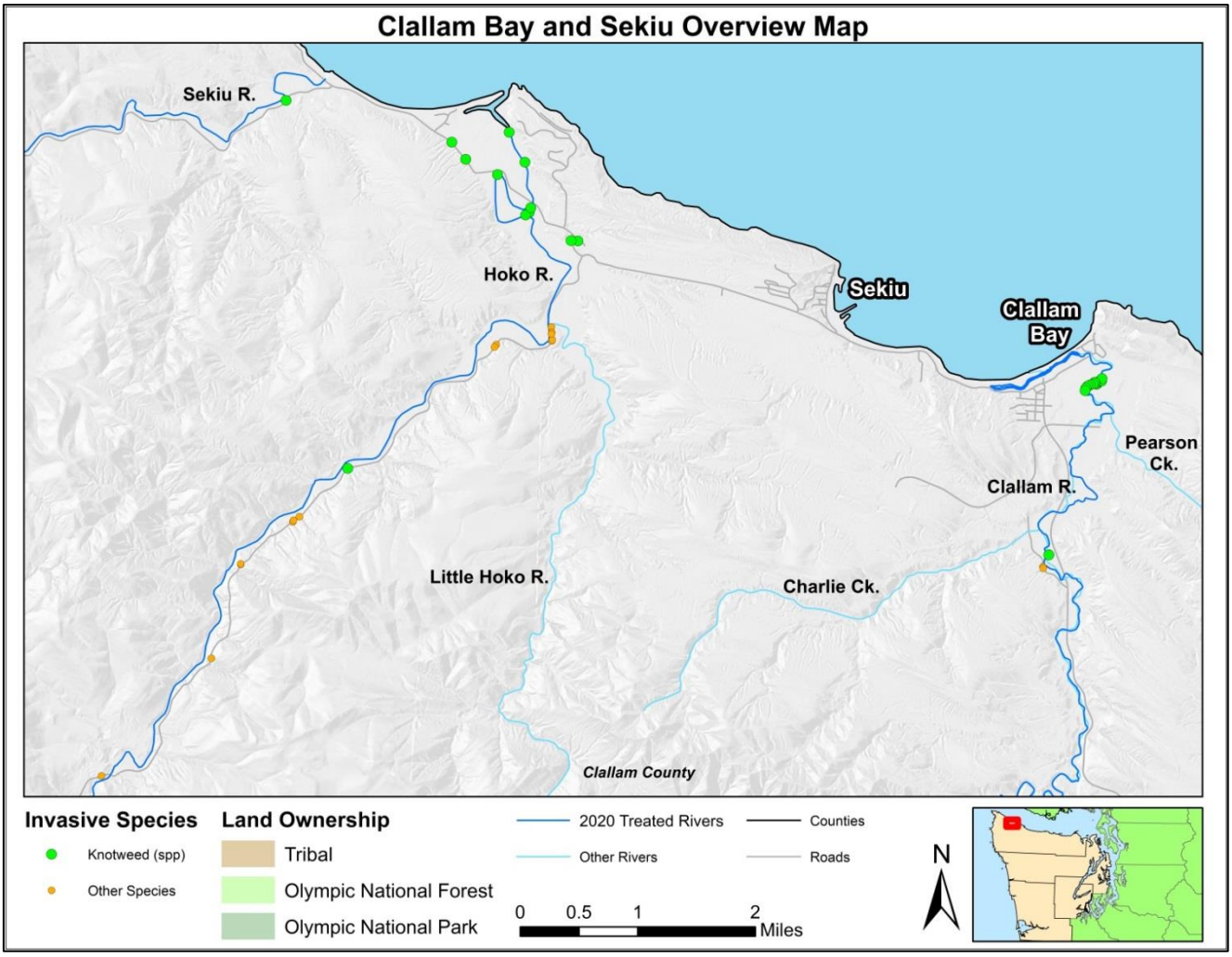
****This table has been consolidated to accommodate additional data while preserving enough information to see the downward trend the more detailed annual data showed for both level of knotweed infestation and herbicide quantities. See previous report for annual treatment detail.*

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 and 4 of those sites are included with the Hoko River data. The Makah treated 0.007 acres for knotweed at the other 2 sites along HWY 112, using 0.01 gallons of glyphosate (4%) and 0.002 gallons of imazapyr (0.7%) in foliar treatments.

2021: The Makah Tribe has landowner permission to retreat parcel sites in 2021.

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

**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 crew used 0.05 gallons of imazapyr (1%) in foliar treatments. 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. CCNWCB roads crew used 0.05 gallons of triclopyr (1.5%) and 0.004 gallons of aminopyralid (0.125%) in foliar treatments.

2021: CCNWCB will continue to survey and treat nearby roads as part of the Road Department's Integrated Weed Management Plan, and will 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 should conduct surveys to examine knotweed control on the Pysht River and offer assistance to landowners with knotweed infestations.

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 using 0.08 gallons of glyphosate (8%) in foliar treatments.

2021: To be determined depending on partner resources.

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

***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-**2020**: No entity reported work in this area this year.

2021: 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**
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 using 0.3 gallons of glyphosate (8%) in foliar treatments. LEKT also searched 10 acres on Little River and treated 1 acre for knotweed using 0.08 gallons of glyphosate (8%) in foliar treatments. 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 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 in 2020. CCNWCB will continue county right-of-way treatment to compliment river treatments.

Dry Creek

Watershed overview and treatment history not currently available

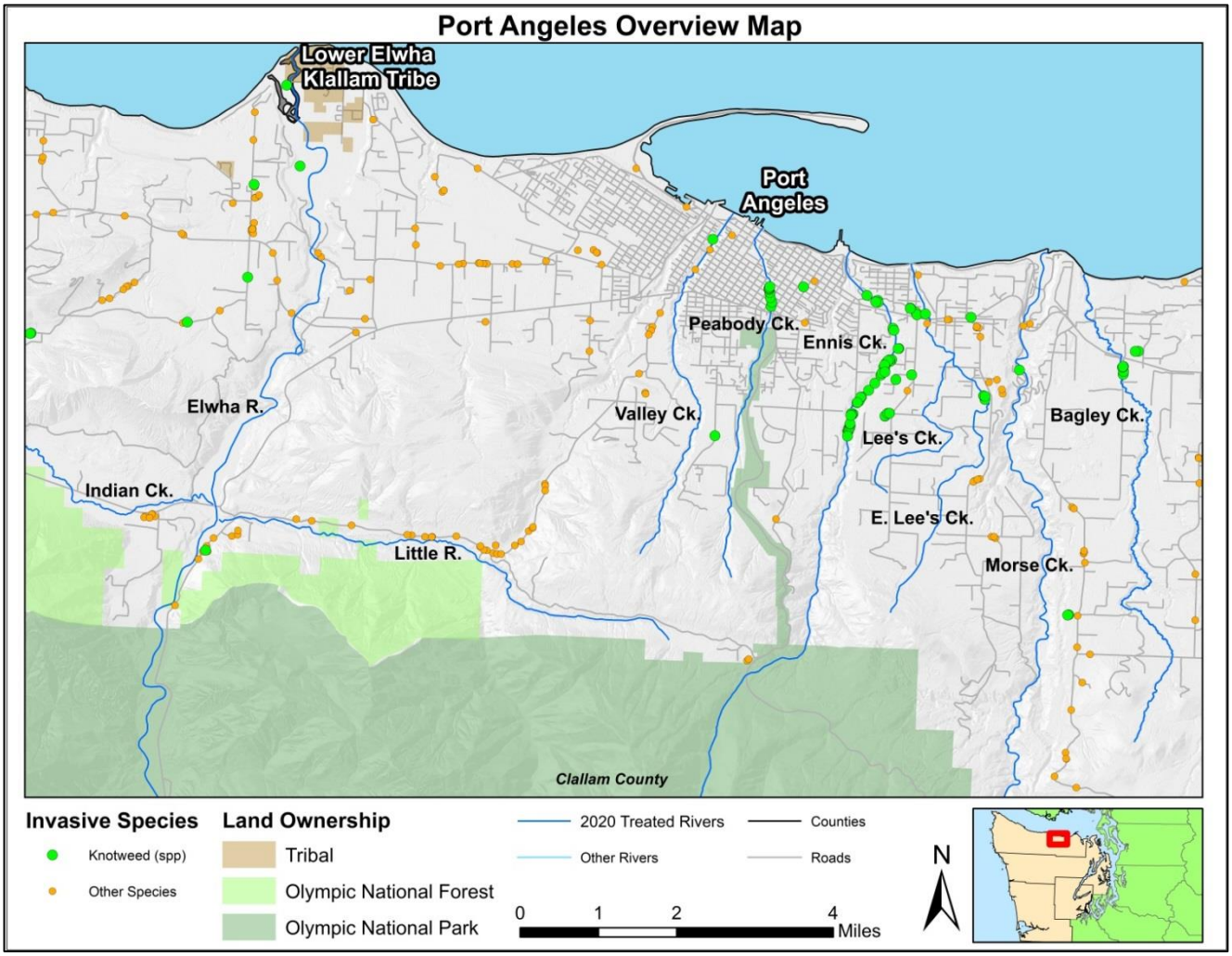
2018: This is the first year that any entity has reported treatments on Dry Creek. The Lower Elwha Klallam Tribe reported treating Himalayan blackberry and English ivy on behalf of one landowner. LEKT treated 0.3 river miles (2 acres).
2019: No treatments reported.

2020: No treatments reported.

2021: Follow-up-Consult with LEKT for future plans.

For more information about the Elwha River and treatments in the surrounding area, please contact:
Kim Williams, LEKT Revegetation Field Supervisor, 360-457-4012 ext. 7488, Kim.Williams@elwha.org
Allyce Miller, LEKT Restoration and Fisheries tech, 360-457-4012 ext. 7489 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 has been severely infested with knotweed for decades.

Brief Treatment history in Valley Creek

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. CCNWCB crew used 0.005 gallons of imazapyr (1%) in foliar treatments.

2021: CCNWCB will revisit 2020 treatment 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, lead 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. CCNWCB staff used 0.01 gallons of imazapyr (1%) in foliar treatments.

2021: CCNWCB will revisit 2020 treatment sites and retreat as needed.

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. CCNWCB crew used 0.1 gallons of imazapyr (1%) in foliar treatments.

2021: Resurvey 2020 treatment sites and retreat as needed. Continue surveys and treatments on upstream parcels we didn't survey in 2019 or 2020.

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. CCNWCB crew used 0.03 gallons of imazapyr (1%) on E. Lee's Creek and 0.001 gallons of imazapyr (1%) on Lee's Creek in foliar treatments.

2021: 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 using 0.001 gallons of imazapyr (1%) in foliar treatments.

2021: Revisit 2020 treatment site and survey downstream area around HWY 101 for knotweed and other invasive species.

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. CCNWCB crew used .07 gallons of imazapyr (1%) in foliar treatments.

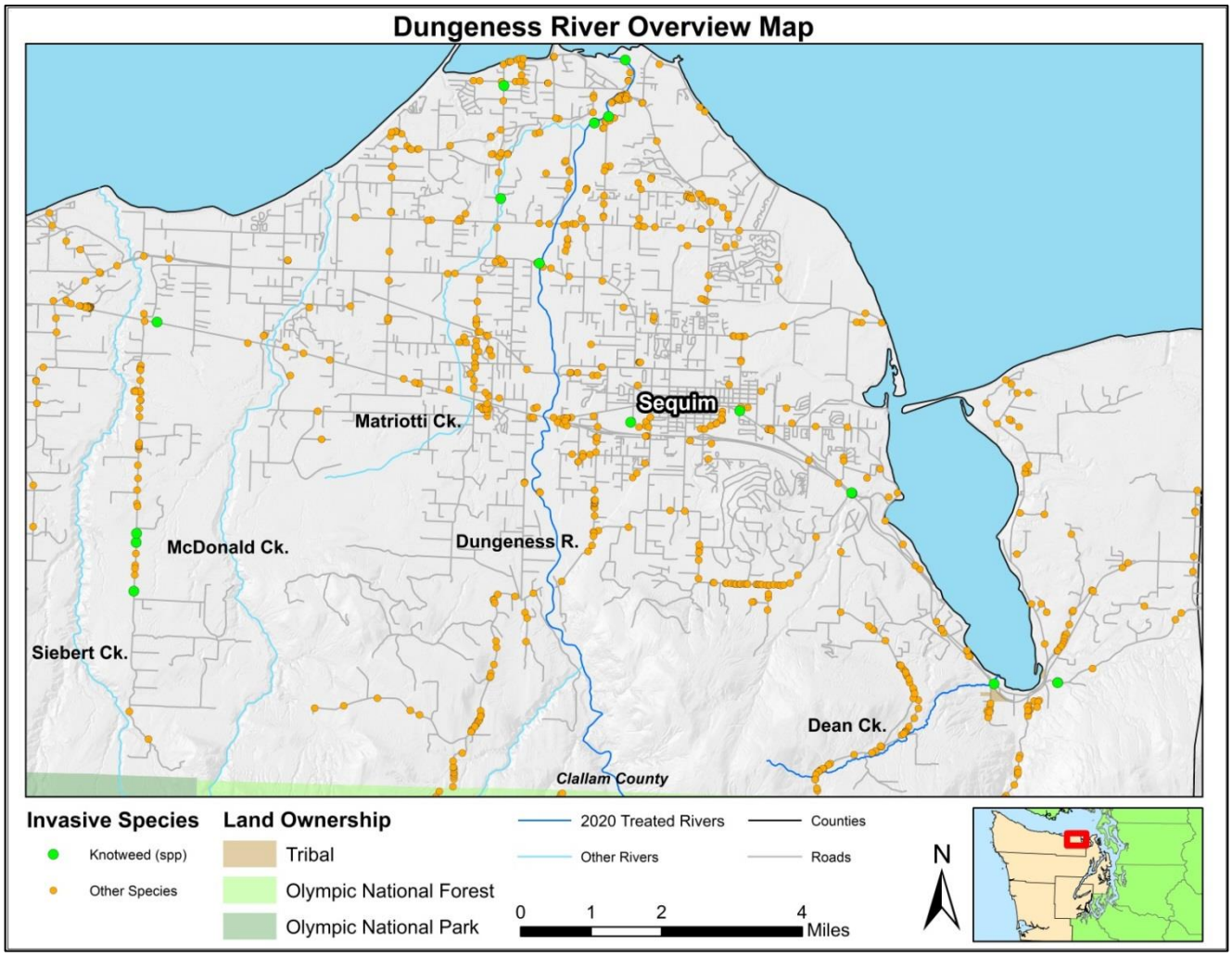
2021: Revisit 2020 treatment sites.

Herbicide use, Port Angeles Area (gallons)								
Waterway	2013	2014	2015	2016	2017	2018	2019	**2020**
Valley Creek	0.02	0.01	-	-	-	**-**	0.06	**0.005**
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**
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**

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:
Shea McDonald, Noxious Weed Control Inspector, 360-417-2000 ext. 2703, smcdonald@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. CCNWCB crew used 0.02 gallons of imazapyr (1%), 0.4 gallons of triclopyr (1.5%), 0.03 gallons of glyphosate, and 0.03 gallons of aminopyralid (0.125%) in foliar treatments. NOSC/WCC surveyed 1 river mile, searched 18 acres, and treated 9.4 acres for butterfly bush. NOSC/WCC crew used *708.5 gallons of **glyphosate mix** (4% - 50%) in foliar, cut-stump, and EZ-ject treatments. *Exact volume of herbicide used was not provided.

2021: CCNWCB will continue to survey and treat the Dungenes Dike and River's End parcels for the Clallam Department of Community Development. NOSC plans to continue retreatment of known sites and performing more native plantings. Follow up treatments of the Dungeness Dike 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: More resources should be devoted to treating the poison hemlock, 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**
Acres Treated	0.5	8.0	27.3	40.3	35.7	13	9.7	**62.4**
Total Herbicide	0.1	0.4	N/A	2.1*	0.7*	0.7	1.2	**0.5***

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

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 or Shea McDonald, Noxious Weed Control Inspector, smcdonald@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:

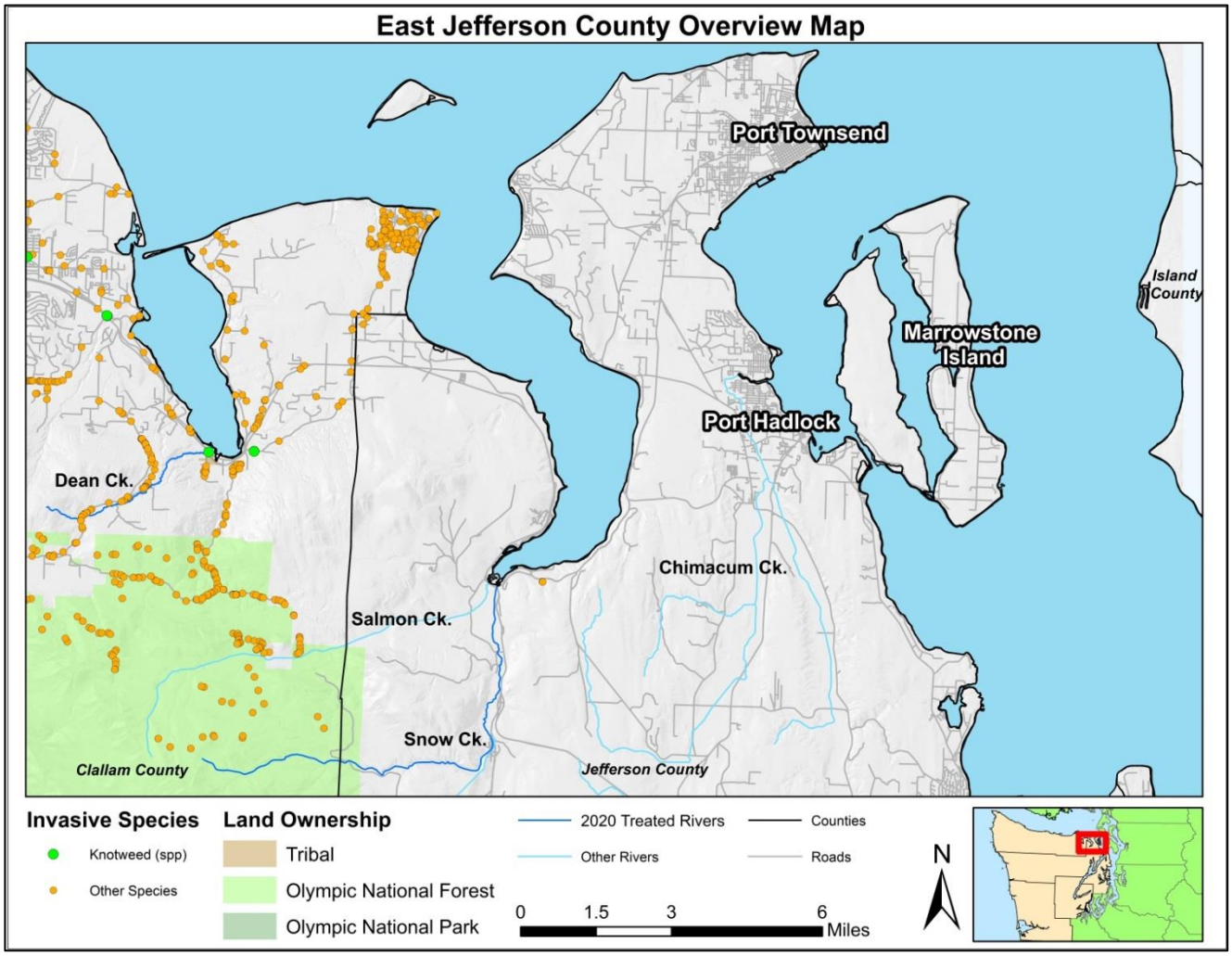
- 2017: The first treatment season of the Road Department's Integrated Weed Management. Knotweed was treated at eight County quarries or spoil disposal sites; knotweed was treated on seven county road right-of-ways.
- 2018: Clallam County Road Department IWM crew treated knotweed infestations on 13 road 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: The Clallam Road Department IWM 2021 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.

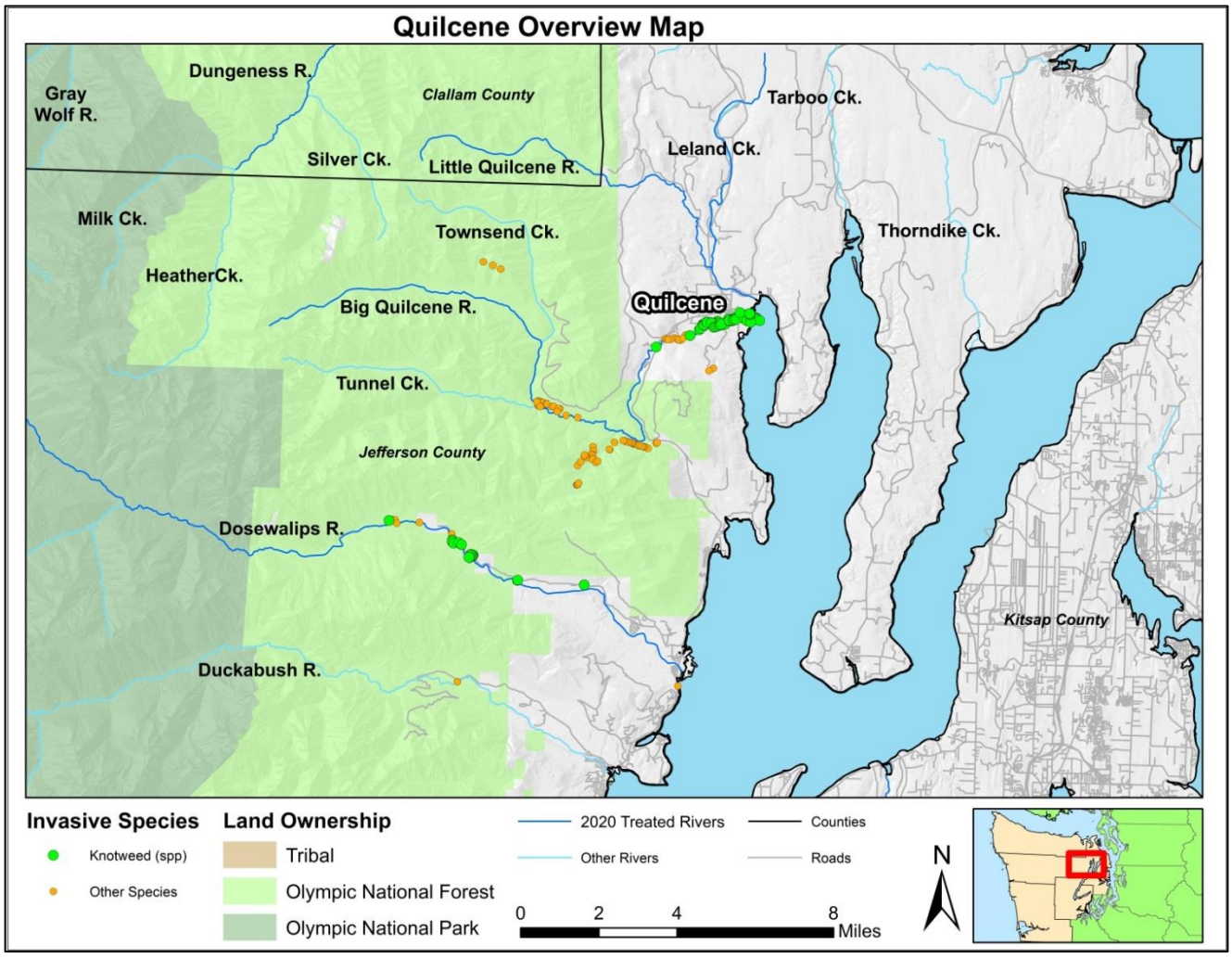
2020: No treatment information was reported for inclusion in this report.

2021: Sites in Oak Bay and Port Townsend should be treated as resources are available.

Herbicide Use, Port Townsend Area (gallons)										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
Port Townsend (several sites)	0.15	-	0.01	-	-	-	n/a	n/a	n/a	**n/a**
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**

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

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. HCSEG also observed populations of common comfrey, everlasting peavine, yellow archangel, Scotch broom, Himalyan blackberry, hedge bindweed, spotted jewelweed, ornamental bamboo, old man's beard, tansy ragwort, English ivy, English laurel, and English holly along the Big Quilcene River.

2021: HCSEG will continue treatment above and below two properties at around RM 1.5 that have not permitted treatment and remain a source for renewed infestation downstream. Once knotweed is eradicated above RM 1.5; there may be justification for a legally enforced treatment.

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

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: The Herb Beck Marina is a potential candidate for surveys and retreatment.

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: Leland's popularity as a fishing destination makes it an important riparian area for consistent knotweed surveys. HCSEG plans to re-survey Leland Creek in the summer of 2021.

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: Species of concern should be surveyed and treated along Tarboo Creek to protect the relatively pristine habitats.

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 plans to continue to monitor the area below Leland Lake and re-survey Leland Creek in 2021.

Herbicide Use, Quilcene Area (gallons)										
Waterway	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
Quilcene Town	0.6	-	0.3	0.003	-	-	-	-	-	**-**
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	**-**

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: If time and resources allow, Spencer Creek should be surveyed and treated for all high priority weeds.

Herbicide Use, Spencer Creek (gallons)										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
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 crew used 0.02 gallons of imazapyr (1%) in foliar treatments and 0.22 gallons of glyphosate (100%) for injection treatments. 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. With such a long treatment stretch, it is hard to find small plants or small patches of knotweed. Often, small knotweed patches are missed until they become 6 feet or taller and can be seen. If plants are able to produce viable seed they could potentially create a "whack a mole" problem where HCSEG will find a new patch and eradicate it but is not able to treat it before it reproduces, allowing it to reproduce vegetatively or via seed, and those new plants begin to grow and are not treated until 1-3 years after they germinate. Thorough grids, surveys, and monitoring; keeping past GPS treatment points on our field mapping devices and focusing on bringing down the upper most points; will hopefully avoid this problem. On the lower Dosewallips River, Butterfly Bush is continuing to become more abundant and may pose a greater risk to native pioneer plant communities than knotweed.

2021: HCSEG plans to continue surveys and treat as needed.

Herbicide Use, Dosewallips River (gallons)															
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
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**
Glyphosate injected	0.8	3.2	0.8	0	0	0	0.03	0	-	-	0	0	0.7	0.07	**0.22**
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**
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**

***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

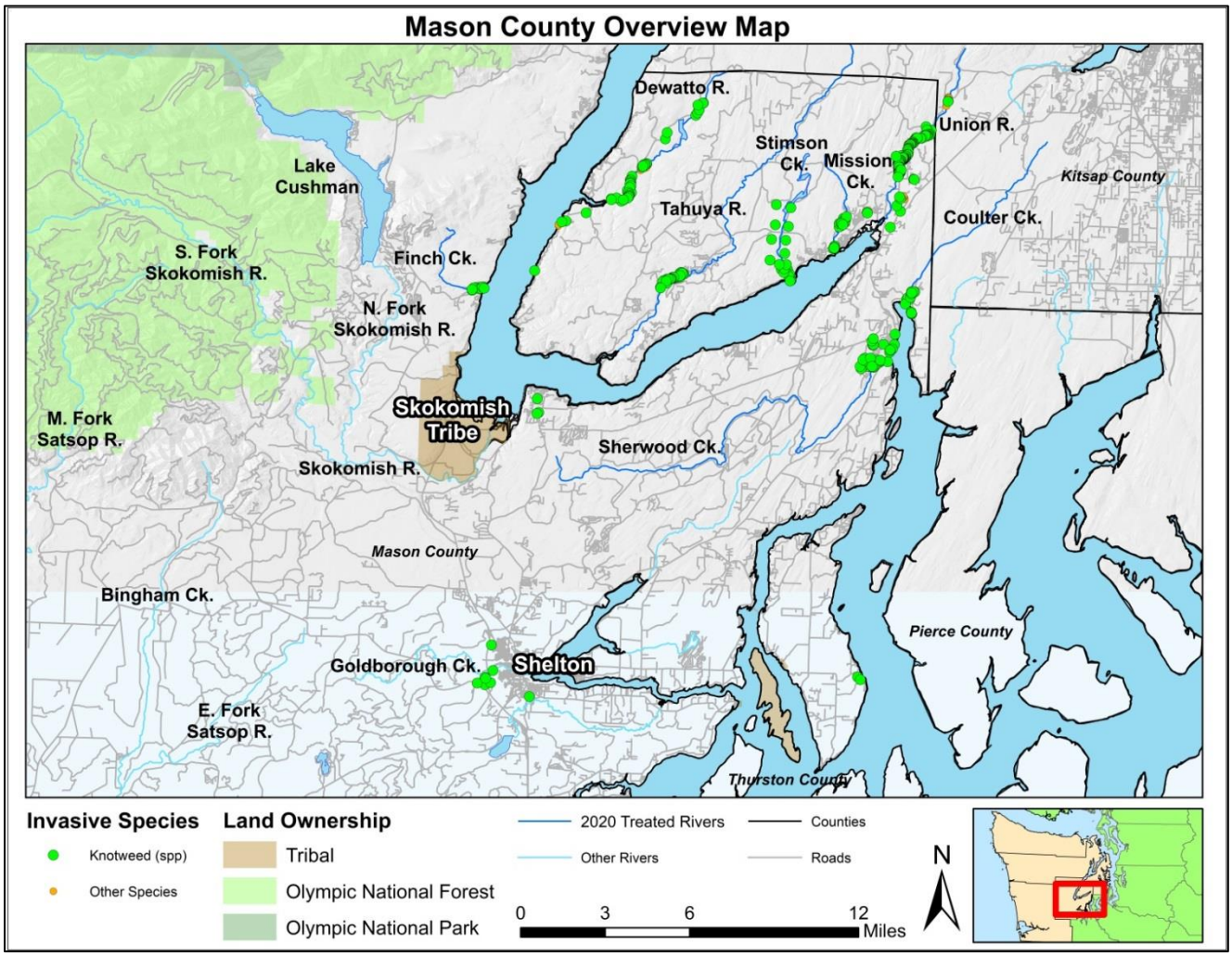
- 2006: Surveys of the Duckabush River did not reveal any knotweed [HCSEG].
- 2007: A landowner reported knotweed on their property, which was treated [CCNWCB].
- 2008-2012: The private property first treated in 2007 was retreated [CCNWCB]. In 2012, an additional complete survey was performed in which 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: Due to the low knotweed occurrence on the Duckabush, treatments of other invasive species of concern should be performed in its lower reaches.

Herbicide Use, Duckabush off-channel site (gallons)										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	**2020**
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 and WCC crew used 0.12 gallons of imazapyr (1%) in foliar treatments and 0.24 gallons of glyphosate (100%) for injection treatments. 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. HCSEG is also prioritizing replanting downstream where native canopy is lacking along the river as well as under planting deciduous dominated areas with native climax conifer species. HCSEG also purchased 5,000 slough sedge plugs which will be planted with conifers to provide a competitive ground cover.

2021: HCSEG plans to continue surveys, treatments as needed, and outreach to gain permission agreements with "holdouts."

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 and WCC crew used 0.4 gallons of imazapyr (1%) in foliar treatments and 1 gallon of glyphosate (100%) for injection treatments. 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. HCSEG conducted a full treatment on the lower Bear Creek Tributary finding an abundant amount of mature knotweed. Below Bear Creek, knotweed becomes moderately abundant and increases to becoming very abundant at the Davis Farm and downstream to the mouth. HCSEG conducted another treatment on Irene Creek tributary and gained a crucial landowner consent that has a very large infestation. Throughout the historic floodplain and on adjacent properties in the Belfair area, large patches of knotweed are likely providing sources for renewed infestation despite control work. HCSEG will continue with their river treatment, bringing down the upper most knotweed point and reducing the competitive advantage downstream. However, HCSEG will also need to collaborate with local governmental and private landowners and managers to tackle the upland knotweed infestations in the Belfair UGA and adjacent residential areas. Without these efforts, control work will not make the necessary gains to achieve future eradication. HCSEG also surveyed bamboo, bittersweet nightshade, comfrey, English holly, English ivy, giant hogweed, Himalayan blackberry, old man's beard, policeman's helmet, reed canarygrass, spotted jewelweed, and yellow archangel infestations.

MCNWCB searched 21.65 acres and treated 0.44 acres for knotweed, Canada thistle, field bindweed, and tansy ragwort. MCNWCB crew used 0.09 gallons of imazapyr (1.5%) in foliar treatments and 0.66 gallons of glyphosate (100%) for injection treatments.

2021: Spotted jewelweed and policeman's helmet continue to be issues. The timing of the seed pod production for these two annual plants is the largest issue as HCSEG knotweed field crew is often forced to walk through patches that end up ejecting seeds, exacerbating the spread of these plants via seed. HCSEG will work with local volunteers to hopefully conduct manual removal of these populations in June. HCSEG also plans to treat European coltsfoot along Bear Creek in 2021.

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 knightshade,Canada thistle, English holly, English ivy, herb Robert, old man's beard, perenial peavine, reed canarygrass, and tansy ragwort. HCSEG crew used 0.13 gallons of imazapyr (1%) in foliar treatments and 0.32 gallons of glyphosate (100%) for injection treatments. HCSEG reports that "treatment is progressing nicely" and the furthest upstream infestation is 2.5 miles further downstream than previous surveys. The river system remains largely devoid of knotweed with isolated patches and a few larger infestations. Good visual results from past treatments were observed, especially when treatments used a combination of stem injection and spray. HCSEG observed that often times when a patch looks completely controlled at first glance, it actually had a very small knotweed regrowth hiding 1-10 ft away from the treated root crown under leaves or logs.

2021: 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: Consider updating GPS inventory of knotweed. Continue systematic treatments of Skokomish River, begin more native plantings as site condition allows.

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.

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 secured MCNWCB's 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 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: 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: 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: 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: After a skip year (2020), staff will revisit permitted shoreline properties in 2021. This should allow for better treatment efficacy with larger plants.

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: 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 crew used 0.22 gallons of imazapyr (1-1.5%) in foliar treatments and 0.72 gallons of glyphosate (100%) for injection treatments. 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.
*See summary table

2021: MCNWCB will survey and treat as needed when resources allow.

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)	
	Glyphosate injected	Herbicide foliar	Glyphosate injected	Herbicide foliar	Glyphosate injected	Herbicide foliar	Glyphosate injected	Herbicide Foliar	Glyphosate injected	Herbicide Foliar	Glyphosate injected	Herbicide Foliar	Glyphosate injected	Herbicide Foliar
Skokomish River	0	16.84	N/A	N/A	n/a	n/a	n/a	n/a	0	28.1	-	-	**-**	**-**
Tahuya River	0	8.3	0	0.7	0	0.08	0	0.08	0	0.01	0.3	0.1	**0.2**	**0.1**
Union River	5.7	8.6	0	3.5	0	1.4	0	0.7	1.9	0.43	0.5	0.3	**0.9**	**0.2**
Dewatto River	0	0.1	0	0.3	0	0.02	0	0.13	0.05	0.05	0.7	0.2	**0.2**	**0.1**
Finch Creek	2.1	0.03	0	1.5	0.4	0.2	n/a	n/a	0.07	0.06	0.2	0.1	**0.4**	**0.01**
Stimson Creek	3.0	1.2	0	0.1	0.8	0.07	n/a	n/a	0.3	0.03	0.05	0.01	**0.1**	**0.03**
Sherwood & Anderson Creek	3.2	0	0	2.6	0.8	0.5	n/a	n/a	0.6	0.15	0.5	0.1	**0.6**	**0.2**
Misc. riparian sites	1.3	0.8	0	0.6	1.5	1.1*	n/a	n/a	0.7	0.2	n/a	n/a	**n/a**	**n/a**
Coulter Creek	-	-	-	-	-	-	-	-	0.2	0.09	0.3	0.1	**0.2**	**0.05**
Mission Creek	-	-	-	-	-	-	-	-	2.7	0.03	1.5	0.4	**5.6**	**0.3**
Little Mission Creek	-	-	-	-	-	-	-	-	0.5	0.1	-	-	**-**	**-**
Mill & Goldborough Creek	-	-	-	-	-	-	-	-	n/a	0.1	-	-	**-**	**-**
Terrestrial sites	1.5	1.3	0	4.7	2.2	0.6	n/a	n/a	0.7	0.2	3.1	1	**0.7**	**0.2**
Total Herbicide	16.8	37.2	0	13.9	5.7	4	0	0.9	7.6	29.6	7.2	2.3	**8.9**	**1.2**

**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:
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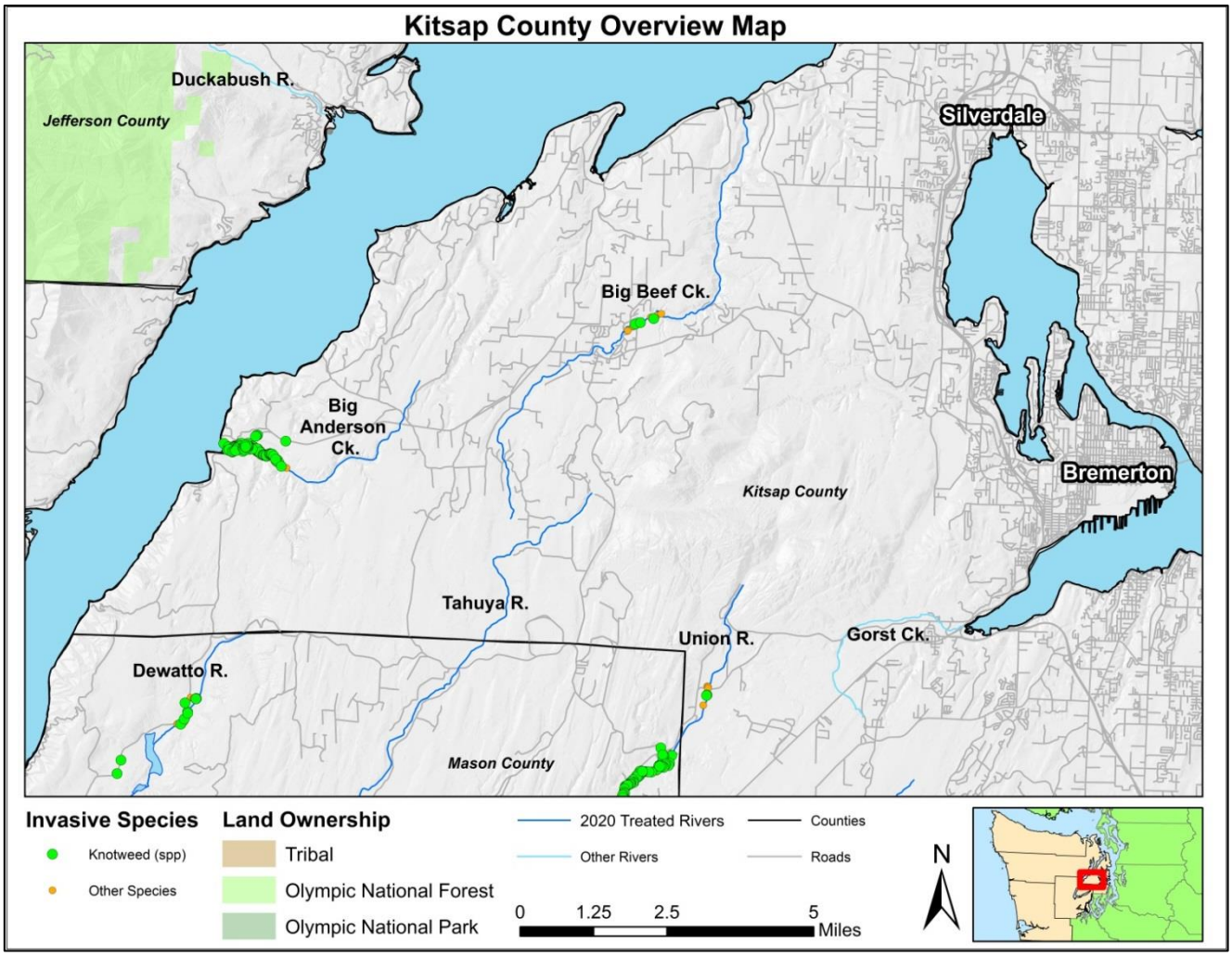
Or

Brayden Raber, (Mason Conservation District) 360-427-9436 ext. 120, braber@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 canarygrass, 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 plans to continue to survey and treat as needed.

Big Beef Creek

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

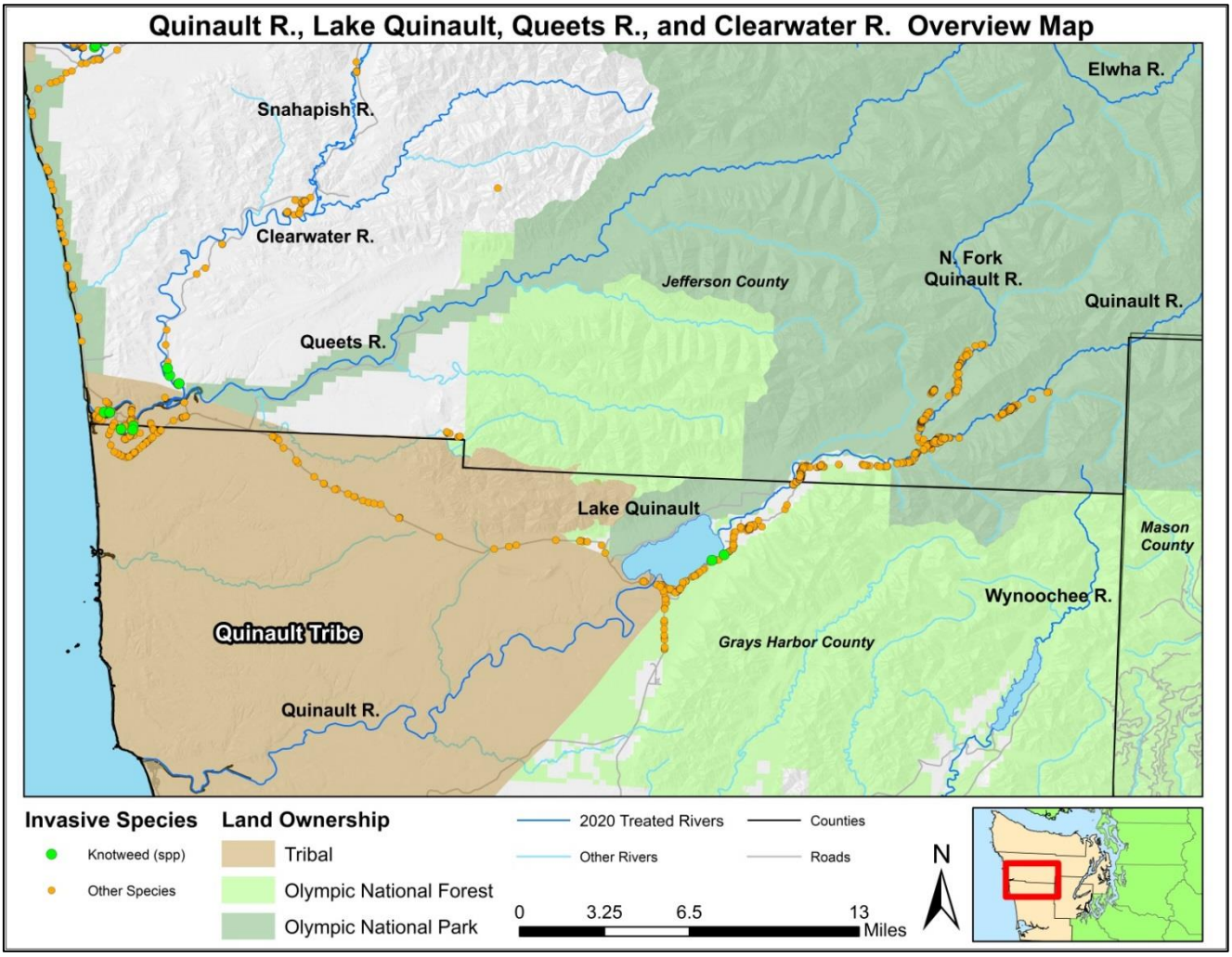
- 2015: All of Big Beef Creek was surveyed after knotweed was discovered near a restoration area [HCSEG].
- 2016: A database of landowners along Big Beef Creek was generated and permissions were solicited. 26 permissions were gained and an additional 7.8 acres were surveyed [HCSEG].
- 2017: Permissions 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].

2020: HCSEG and WCC surveyed 1 river mile, searched 6 acres, and treated 0.002 acres for knotweed. HCSEG and WCC crew used 0.005 gallons of imazapyr (1%) in foliar treatments and 0.06 gallons of glyphosate (100%) for injection treatments. 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 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, Queen Anne's lace, reed canarygrass, St. John's wort, tansy ragwort, and yellow flag iris. 10KYI crew used 0.03 gallons of imazapyr (0.5%) and 0.6 gallons of glyphosate (1.5%) in foliar treatments and 0.02 gallons of glyphosate (50%) for cut-stump treatments. Two knotweed sites were surveyed along South Shore Road but no knotweed was treated in this watershed by 10KYI, or found along SR 101.

Species inventoried, and/or and treated with herbicide or manual methods along the Quinault River include:

• Reed canarygrass – Treated extensively in this watershed, from SR 101 to river mile 6 on the North Fork and river mile 54 on the East Fork with 1.5% Aquaneat. Most of the work was in riparian areas, including along Quinault River, North Fork Quinault River, East Fork Quinault River, Alder Creek Side-Channel, Ziegler Creek, Big Creek and Irely Creek. South Shore Road, Graves Creek Road and SR 101 roadsides were deseeded. Reed canarygrass was deseeded and spot treated at Zeigler Creek/Norwood site and on two private landowners' properties.

• Herb Robert – At 49 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, North Fork Campground, and South Shore Road.

• Tansy ragwort – All 44 tansy ragwort sites in this watershed were along roadsides. These roads included SR 101, South Shore Road, and Graves Creek Road.

• Canada thistle – At many locations, the flowers were removed from this plant for manual treatment. At locations along Ziegler Creek and Alder Creek side channel, the plants were spot treated with 1.5% Aquaneat.

• Himalayan and evergreen blackberry – These non-native blackberry species were treated with a 50% Aquaneat cut stump application at three roadside sites, one floodplain site and two sites in a private pasture.

• Yellow flag iris – Two locations were surveyed in 2020. Both are growing in a pasture area on a private property adjacent to Ziegler Creek and were treated by the landowner.

2021: 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 canarygrass, 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 canarygrass, 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 canarygrass, 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, tansy ragwort. 10KYI crew used 0.06 gallons of imazapyr (0.5%) and 0.5 gallons of glyphosate (1.5%) in foliar treatments and 2.33 gallons of glyphosate (50%) for cut-stump treatments.

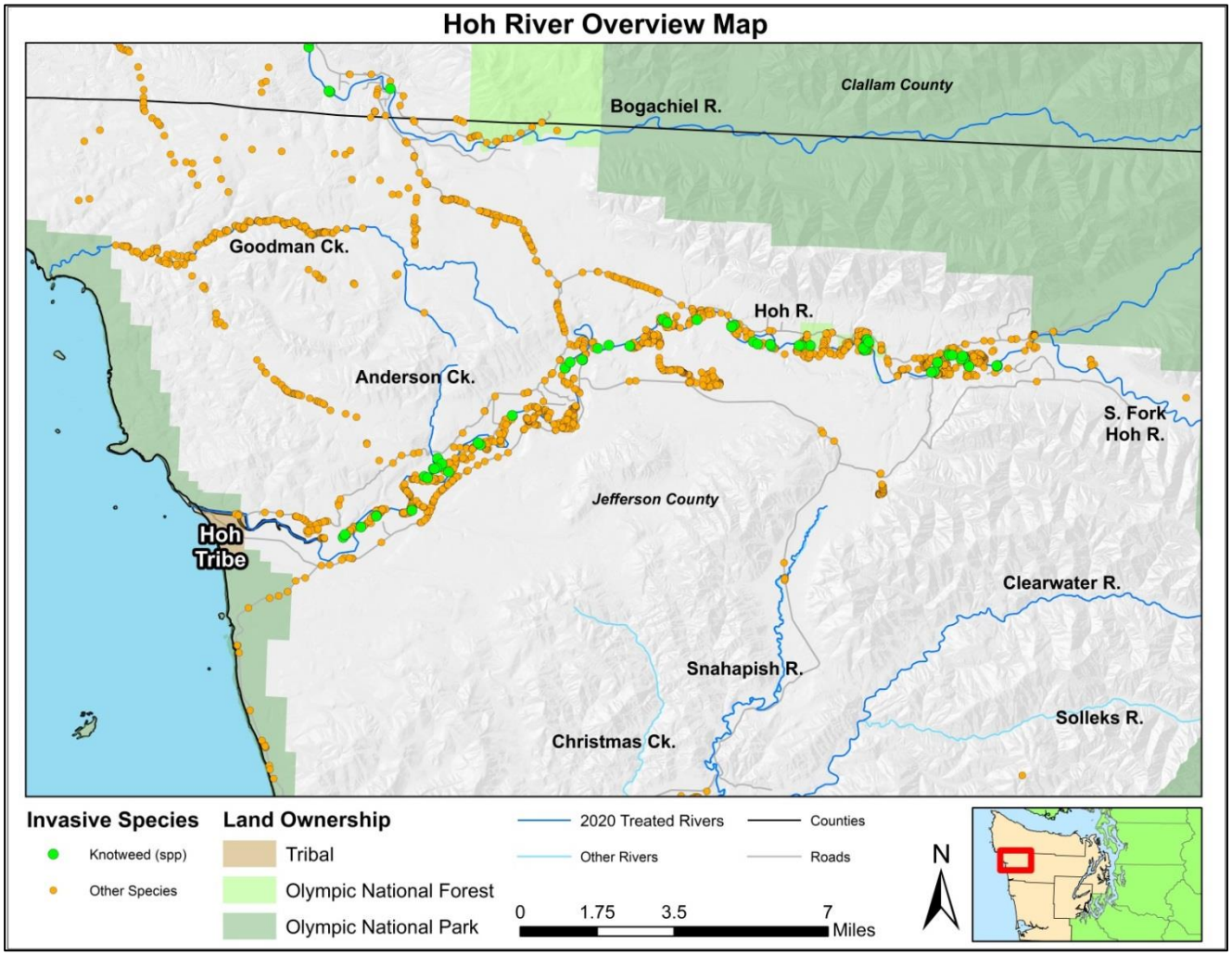
Species inventoried, and/or and treated with herbicide or manual methods in the lower Queets River include:
• Knotweed – Four sites along the Queets River were reported to the Quinault Indian Nation and treated by Total Vegetation Management.
• Tansy ragwort – Treated 1.52 acres of tansy ragwort in riparian areas from the Queets estuary to the oxbow. Roadside work was done on SR 101 and Clearwater Mainline. Sprayed plants with 1.5% Aquaneat in the most concentrated areas and pulled and removed flower heads in other less dense areas.
• Canada thistle – Treated 0.57 acres of Canada thistle between river miles 1 and 7 with 1.5% Aquaneat. Concentrated work on the Queets oxbow.
• Queen Anne's lace – Identified and treated at three sites along SR 101, south of the river.

10KYI also surveyed 14.5 road miles along the Clearwater River, searched 34.5 acres, and treated 2.8 acres for knotweed and 0.2 acres for reed canarygrass. 10KYI crew used 0.006 gallons of imazapyr (1%) in foliar treatments.
Species inventoried, and/or and treated with herbicide or manual methods in the Clearwater River include:
• Knotweed – Treated at three sites along the Clearwater Mainline.
• Reed canarygrass – One site of reed canarygrass was identified along the Clearwater Mainline. Seed heads were removed and the grass was spot treated using 1% Polaris.

2021: 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.

Brief Treatment history of the Hoh River

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 canarygrass, 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, Queen Anne's lace, reed canarygrass, Scotch broom, spotted jewelweed, St. John's wort, and tansy ragwort. 10KYI crew used 0.4 gallons of imazapyr (0.5-1%), 4.6 gallons of glyphosate (1.5%), 0.08 gallons of triclopyr (1%) in foliar treatments and 6.22 gallons of glyphosate (50%) for cut-stump treatments.

<u>Species inventoried, and/or and treated with herbicide or manual methods along the Hoh River include:</u>

• Knotweed – Found and treated throughout the Hoh River between river miles 29 and 4 at 43 sites. Treatment occurred on state, county, timber, non-profit, and private land on gravel bars, floodplains and in forested areas. No knotweed was surveyed or treated along roadsides in the Hoh Watershed.

• Reed canarygrass – Roadside treatment occurred along SR 101, Hoh Mainline, Upper Hoh Road, and Oil City Road. Used herbicide treatment along Upper Hoh Road and Hoh Mainline and deseeded plants along SR 101 and Oil City Road. River treatment happened from river mile 7 to 29. Treated 3 miles of Elk Creek, a tributary to the Hoh River, with 1.5% Aquaneat.

• Tansy ragwort – Pulled and removed flowers along roadsides including Upper Hoh Road, SR 101, Hoh Mainline, Oil City Road, and Goodman Mainline. Also treated throughout Hoh River floodplains from river mile 4 to 14.

• Scotch broom – Treated with a cut stump method at 500 sites along roadsides, gravel bars, floodplains, forested areas, pastures, and harvest units. Over 9 acres of Scotch broom were treated. Some Scotch broom individuals are suspected to be infected with a pathogen; additional monitoring will be completed in 2021 to understand the extent and impact of this pathogen.

• Herb Robert – 11 acres were treated at over 200 sites, primarily in riparian areas. Treatment was concentrated in floodplains between river miles 24 and 25 and near river mile 28. In these areas, plants were sprayed with 1.5% Aquaneat.

• St. John's wort – Treated along two roadsides – SR 101 and Upper Hoh Road. All plants had flower and seed heads removed.

• Canada thistle – Treated with 1.5% Aquaneat at 147 sites along the Hoh River.

• Himalayan and evergreen blackberry – Increased treatment of non-native blackberry occurred this year, with efforts concentrated at two large infestations near river miles 24 and 28.

• Queen Anne's lace – Two populations were retreated in the Hoh River Watershed, both on Upper Hoh Road at mile post 4 and again between mile posts 7 and 8 at riprap construction sites. Crews manually pulled and removed all plants.

• Jewelweed – First reported in 2017 and pulled for the first time in 2019 at one location on the Upper Hoh Road, near Canyon Creek. This year, the plants were sprayed before it could go to seed and then occasional plants were pulled as follow-up treatment. We will continue to monitor this area for re-growth.

2021: 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**
Acres Treated	1093	1000	NA	0.16	0.1	0.1	3.8	0.06	0.7*	164	49.2	919	**639**
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**
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**
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**
Triclopyr foliar											0.4	-	**0.08**
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**

** 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 canarygrass, Canada thistle, Scotch broom, tansy ragwort, herb Robert, foxglove, smartweed.
- 2018: 8.31 river miles treated (219 acres searched) for reed canarygrass, 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 canarygrass [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 canarygrass, Scotch broom, and tansy ragwort. 10KYI crew used 0.5 gallons of imazapyr (1%), 0.33 gallons of glyphosate (1.5%) in foliar treatments and 0.000001 gallons of glyphosate (50%) for cut-stump treatments.

Species inventoried, and/or and treated with herbicide or manual methods along Goodman Creek include:

• Knotweed – No knotweed was identified along Goodman Creek or on roadsides within the Goodman Creek watershed.

• Reed canarygrass – The fourth year of reed canarygrass treatment was conducted in this watershed. 7.5 miles of river corridor and side channels were treated with 1.5% Aquaneat. Flowers and seed heads were also removed from plants.

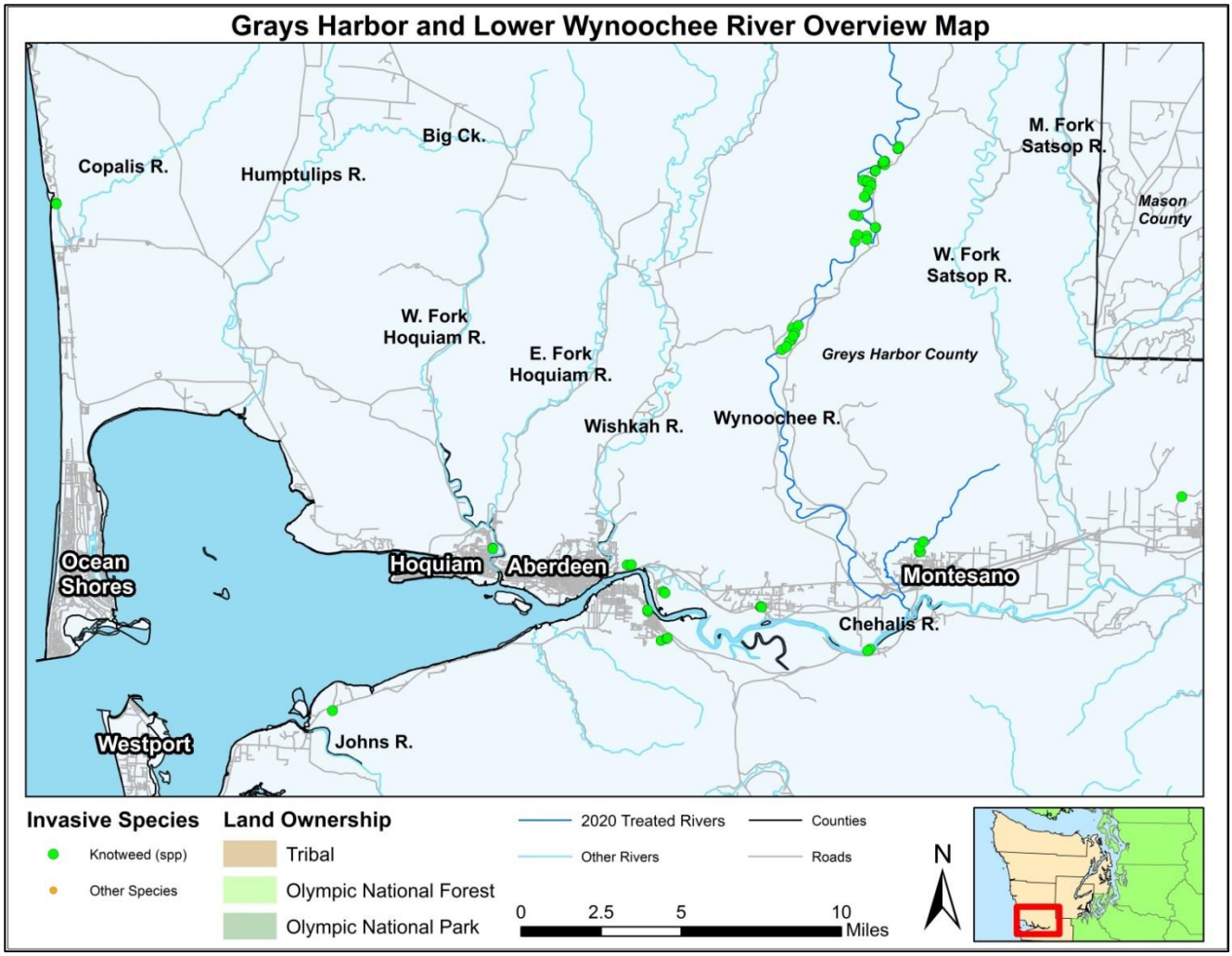
• Canada thistle – Treated along Goodman Creek and Goodman Mainline with 1.5% Aquaneat.

• Scotch broom – Cut stump treatment along Goodman Mainline and White Rock Road occurred. These represent new treatment areas that should be continued in following years.

2020: 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: Continue to survey and treat as needed for the duration of the grant period.

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

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	7.9	30	2	0.8	28/38	8	5	0	knotweed, Canada thistle, evergreen blackberry, herb Robert, Himalayan blackberry, Scotch broom, tansy ragwort
*(Mina-Smith Rd)**	CCNWCB	3.4	5.8	5.8	0.2	n/a[$]	n/a[$]	n/a[$]	0	evergreen blackberry, herb Robert, Scotch broom, tansy ragwort
Calawah River	10KYI	13.9	106	16.5	n/a[$]	30/36	9	9	0	knotweed, evergreen blackberry, foxglove, herb Robert, Himalayan blackberry, orange hawkweed, Scotch broom
Bogachiel River	10KYI	58.5	410.8	304	1.26	95/107	11	62	0	knotweed, bull thistle, Canada thistle, everlasting peavine, foxglove, herb Robert, reed canarygrass, tansy ragwort, yellow flag iris
	QNR	0.25	2	0.25	0.14	1/1	1	1	0	knotweed
	CNWCB	n/a[$]	1	0.25	0.02	1/1	1	1	0	knotweed
Quillayute River	10KYI	8.6	88	61.9	n/a[$]	29/32	4	4	0	Canada thistle, reed canarygrass, Scotch broom, tansy ragwort
	QNR	4.4	693	7	1.3	7/7	2	2	0	knotweed, Canada thistle, evergreen

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
										blackberry, herb Robert, Himalayan blackberry, Scotch broom, tansy ragwort,
Sol Duc River and	10KYI	44.7	59.4	42.2	0.4	65/79	7	7	1	bull thistle, Canada thistle, reed canarygrass, Scotch broom, St. John's wort
Wisen Crk	QNR	0.01	1.8	0.1	0.4	2/2	1	1	0	knotweed
City of Forks	-	-	-	-	-	-	-	-	-	-
Bullman Creek	CCNWCB	0.1	0.6	0.2	0.01	1/5	1	1	0	knotweed
Big River	Makah	0.5	6.2	0.8	0.004	3/4	4	4	0	knotweed, evergreen blackberry, Himalayan blackberry
	*CCNWCB	6.6	12.8	0.1	0.07	3/23	3	3	0	knotweed, herb Robert, Himalayan blackberry, Scotch broom, tansy ragwort
Hoko River	CCNWCB	2.5	71.7	0.2	0.06	5/59	9	3	0	knotweed
	Makah	n/a[$]	10	0.6	0.05	3/3	3	3	0	knotweed
Clallam River	CCNWCB	0.4	30	2.5	0.1	2/2	1	1	0	knotweed
Pysht River	-	-	-	-	-	-	-	-	-	-
Lake Creek, Lake Pleasant and Beaver	CCNWCB	3.9	20.9	8.6	0.24	16/26	10	8	2	knotweed
Lake Crescent	-	-	-	-	-	-	-	-	-	-
Deep Creek	LEKT	n/a[$]	22	6	0.02	2/2	2	2	0	knotweed
Nordstrom Creek	-	-	-	-	-	-	-	-	-	-
Salt Creek	-	-	-	-	-	-	-	-	-	-
Elwha River	LEKT	n/a[$]	120	11	0.09	4/4	4	4	0	knotweed
Dry Creek	-	-	-	-	-	-	-	-	-	-
Valley Creek	CCNWCB	1.1	5.45	0.25	0.01	2/40	4	2	0	yellow archangel
Peabody Creek	CCNWCB	1	5.6	0.6	0.02	10/66	13	4	0	knotweed, yellow archangel
Ennis Creek	CCNWCB	2.5	17	2.1	0.26	15/47	35	15	0	knotweed
Lee's Creek and East Lee's Creek	CCNWCB	0.2	2.3	1	0.06	4/5	74	4	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
Morse Creek	CCNWCB	n/a[$]	0.3	0.01	0.001	1/1	1	1	0	knotweed
Bagley Creek	CCNWCB	0.6	3.3	1	0.17	5/12	5	5	4	knotweed, poison hemlock
Siebert Creek	-	-	-	-	-	-	-	-	-	-
Bell Creek	-	-	-	-	-	-	-	-	-	-
Dungeness River	NOSC,WCC	0.01	18	9.4	3.2	7/7	4	4	0	knotweed, butterfly bush
	CCNWCB	2.4	106	53	0.7	9/9	3	3	0	knotweed, Canada thistle, comfrey, herb Robert, Himalayan blackberry, Italian arum, poison hemlock, tansy ragwort, teasel
Dean Creek	CCNWCB	0.25	1.5	.02	.01	1	1	1	0	knotweed
Total: 20 waterways	**7 entities**	**164**	**1852**	**538**	**9.7**	**349/617**	**221**	**160**	**10**	**20 species**
Jefferson County Watersheds										
Snow Creek	NOSC,WCC	1.5	47	16	1.2	4/4	2	2	1	knotweed, yellow archangel
Port Townsend	-	-	-	-	-	-	-	-	-	-
Lake Leland	-	-	-	-	-	-	-	-	-	-
Big Quilcene River	HCSEG, WCC	3.5	137	0.11	0.15	36/130	34	31	6	knotweed, bamboo, comfrey, English ivy, everlasting peavine, hedge bindweed, Himalayan blackberry, old man's beard, Scotch broom, spotted jewelweed, spotted knapweed, tansy ragwort, yellow archangel
Little Quilcene River and Leland Creek	-	-	-	-	-	-	-	-	-	-
Quilcene and vicinity	-	-	-	-	-	-	-	-	-	-
Chimacum and Irondale	-	-	-	-	-	-	-	-	-	-
Tarboo Creek	-	-	-	-	-	-	-	-	-	-
Spencer Creek	-	-	-	-	-	-	-	-	-	-
Dosewallips River	HCSEG, WCC	4	123	0.03	0.05	5/17	28	4	3	knotweed, everlasting peavine, herb Robert, Himalayan blackberry, periwinkle,

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
										poison hemlock, tansy ragwort, yellow archangel
Duckabush River	-	-	-	-	-	-	-	-	-	-
Queets/ Clearwater River	10KYI	39.4	360.2	111	1.04	39/49	6	6	2	Knotweed, Canada thistle, foxglove, Queen Anne's lace, reed canarygrass, Scotch broom, St. John's wort, tansy ragwort
Snahapish River	10KYI	9.5	34.5	12.5	0.03	3/3	2	2	0	reed canarygrass
Goodman Creek	10KYI	23.6	138.8	106.1	0.5	15/17	3	3	0	Bull thistle, Canada thistle, reed canarygrass, Scotch broom, tansy ragwort
Hoh River & tributaries	10KYI	82.3	2,113.7	639.7	8.9	135/137	12	31	1	knotweed, bull thistle, Canada thistle, evergreen blackberry, foxglove, herb Robert, Himalayan blackberry, Queen Anne's lace, reed canarygrass, Scotch broom, spotted jewelweed, St. John's wort, tansy ragwort
Pacific Coast Road System right-of-way	10KYI	18.8	50.5	21.7	n/a[$]	34/36	1	1	0	tansy ragwort, reed canarygrass, St. John's wort
Total: 8 waterways	**4 entities**	**183**	**3,005**	**907**	**12**	**271/393**	**88**	**80**	**13**	**21 species**
Mason County Watersheds										
Tahuya River	HCSEG, WCC	3.3	80	0.4	0.3	30/84	68	22	5	knotweed, butterfly bush, giant hogweed, tansy ragwort, yellow archangel
Union River	HCSEG, WCC	4.2	64	0.5	0.03	47/77	113	43	20	knotweed, bamboo, bittersweet nightshade, comfrey, English holly, English ivy, giant hogweed, Himalayan blackberry, old man's beard, policeman's helmet, reed canarygrass, spotted jewelweed, yellow archangel
	MCNWCB	n/a[$]	21.7	0.4	0.11	4/4	4	4	0	knotweed, Canada thistle, field bindweed, tansy ragwort
Dewatto River	HCSEG,	3.8	76	0.04	0.29	19/33	7	5	1	knotweed, bittersweet nightshade, Canada

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
	WCC									thistle, English holly, English ivy, everlasting peavine, herb Robert, old man's beard, reed canarygrass, tansy ragwort
Skokomish River	-	-	-	-	-	-	-	-	-	-
Mission Creek	MCNWCB	1.4	16.7	16.7	2.79	17/25	16	11	2	knotweed
Little Mission Creek	-	-	-	-	-	-	-	-	-	-
Hood Canal watershed	MCNWCB	0.1	8.1	0.25	0.004	1/4	7	1	1	knotweed
Sherwood/ Anderson Creek	MCNWCB	2.6	24	10.7	0.33	25/46	30	18	2	knotweed
Finch Creek	MCNWCB	0.8	5	0.8	0.02	11/37	26	10	2	knotweed
Goldsborough/ Mill Creek	-	-	-	-	-	-	-	-	-	-
Stimson Creek	MCNWCB	2.3	14.2	11.6	0.03	11/14	9	7	1	knotweed
Coulter Creek	MCNWCB	1	6	2.4	0.04	9/18	13	6	1	knotweed
North Bay/Allyn	MCNWCB	0.2	3.5	1.3	0.05	7/7	20	7	3	knotweed
Other sites WRIA 16	-	-	-	-	-	-	-	-	-	knotweed, giant hogweed
Other sites WRIA 15	MCNWCB	n/a[$]	0.8	0.2	0.01	2/3	4	2	3	knotweed
Other sites WRIA 14	MCNWCB	0.05	9	4.7	0.1	9/10	8	7	0	knotweed, Scotch broom, spotted knapweed
Oakland Bay	-	-	-	-	-	-	-	-	-	-
Spencer Lake	-	-	-	-	-	-	-	-	-	-
Shelton(Misc.)	-	-	-	-	-	-	-	-	-	-
Hwy 101 (Misc.)	-	-	-	-	-	-	-	-	-	-
Hwy 106 (Misc.)	-	-	-	-	-	-	-	-	-	-

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
Belfair (Misc.)	-	-	-	-	-	-	-	-	-	-
Liliwaup Creek	-	-	-	-	-	-	-	-	-	-
Total: 12 waterways	**3 entities**	**20**	**329**	**50**	**4.1**	**192/362**	**325**	**143**	**41**	**18 species**
Kitsap County Watersheds										
Big Anderson Creek	HCSEG, WCC	1.4	59	0.3	0.9	15/22	9	7	1	knotweed, butterfly bush, English holly, English laurel, Himalayan blackberry, reed canarygrass
Big Beef Creek	HCSEG, WCC	1	6	0.002	0.01	2/18	52	2	21	knotweed, bittersweet nightshade, butterfly bush, English ivy, hedge bindweed, tansy ragwort, yellow archangel
Total: 2 waterways	**2 entities**	**2.4**	**65**	**0.3**	**0.9**	**17/40**	**61**	**9**	**22**	**11 species**
Grays Harbor County Watersheds										
Wynoochee River	GHNWCB	10.2	187	117.5	10.6	26/26	25	25	11	knotweed, everlasting peavine, invasive blackberry, reed canarygrass, tansy ragwort
Ocean Shores	-	-	-	-	-	-	-	-	-	-
Quinault River	10KYI	46.9	479.5	59.5	1	43/62	7	7	1	bull thistle, Canada thistle, common tansy, evergreen blackberry, foxglove, herb Robert, Queen Anne's lace, reed canarygrass, St. John's wort, tansy ragwort
Moclips highway and SR 101	-	-	-	-	-	-	-	-	-	-
Total: 2 waterways	**2 entities**	**57**	**667**	**177**	**11.6**	**69/88**	**32**	**32**	**12**	**11 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
Rob McCoy
360-645-3058
rob.mccoy@makah.com

Lower Elwha Klallam Tribe
Kim Williams
360-457-4012 ext 7499
kim.williams@elwha.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

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)**
			Road edge/ROW Park Other	**acres**

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		

[7] **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

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:____

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

_____