



Crews from Quileute Natural Resources, North Cascades Exotic Plant Management Team with the National Park Service, and Clallam County Noxious Weed Control Program treating knotweed on Quillayute River.

## **2017 Olympic Invasives Working Group**

Report Prepared by  
**Clallam County Noxious Weed Control Board**



A patch of knotweed found growing on Ennis Creek in Port Angeles.

Report prepared by  
Rachel Bowen  
Cathy Lucero  
**Clallam County Noxious Weed Control Board**

December 2017  
223 East 4<sup>th</sup> Street Ste 15  
Port Angeles WA 98362  
360-417-2442  
[clucero@co.clallam.wa.us](mailto:clucero@co.clallam.wa.us)  
<http://www.clallam.net/weed/projects.html>

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

# CONTENTS

EXECUTIVE SUMMARY.....	1
PROJECT DESCRIPTION.....	8
Project Goal.....	8
Project Overview.....	8
2017 Overview.....	8
2017 PROJECT ACTIVITIES.....	7
2017 PROJECT PROTOCOLS.....	11
OBSERVATIONS AND CONCLUSIONS.....	14
RECOMMENDATIONS.....	15
PARTICIPATING GROUPS.....	16
FUNDING.....	16
PROJECT ACTIVITIES BY WATERSHED.....	17
CLALLAM COUNTY.....	17
Quillayute River System.....	17
Sol Duc River and tributaries.....	20
Forks.....	21
Big River and Hoko-Ozette Road.....	22
Hoko River.....	23
Sekiu River.....	23
Highway 112, Clallam Bay, and Sekiu.....	25
Clallam River.....	26
Pysht River.....	26
Elwha River.....	28
Port Angeles Area Streams.....	29
Dungeness River and surrounding watershed.....	33
EAST JEFFERSON COUNTY.....	35
Port Townsend Area:.....	35
Quilcene Area:.....	40
Big Quilcene River.....	40
Tarboo Creek.....	42
Little Quilcene River.....	42
Dosewallips/Duckabush and vicinity.....	39
Spencer Creek.....	39
Dosewallips River.....	39
Duckabush River.....	40
MASON COUNTY.....	41
Tahuya River.....	41
Union River.....	42
Dewatto River.....	42
Skokomish River.....	43
KITSAP COUNTY.....	47
Big Anderson Creek.....	49
Big Beef Creek.....	49
WEST JEFFERSON COUNTY AND GRAYS HARBOR COUNTY.....	50
Quinault River.....	50
Hoh River.....	53
Table 1. Work by County-by Watershed.....	52
Appendix I: Contact Information.....	61
Appendix II-WSDA Approved Report Form.....	62
Appendix III- Season Work Summary Reporting Form.....	64

## 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 impacts caused by invasive knotweeds and other exotic plants that are just beginning to invade.

### Project Overview

The Olympic Invasives Working Group (OIWG) is a loose-knit consortium of governments, tribes, non-profits and private landowners, working together since 2005 to eliminate knotweed and other invasive weeds in riparian habitat. The group meets twice a year for the purpose of sharing information and strategically planning for knotweed control across jurisdictional boundaries. The Clallam County Noxious Weed Control Board (CCNWCB), as the de facto group leader, coordinates the meetings and supports the work of other group members by acquiring Landowner Agreements, coordinating projects and in some cases, supplying an aquatic applicator. CCNWCB's role is to "fill in the gaps" by controlling invasives in areas not otherwise covered and educates the community about knotweed impacts and control. Most partners use independent funding sources.

### 2017 Overview

Multiple entities are involved in controlling invasive knotweeds. Most include control of other invasives to their work plans. Details of work by all groups who responded to requests for data can be found in the body of this report. Weed Boards continued to coordinate and support the work of other entities in their own counties.

In Clallam County CCNWCB focused on areas that had not been monitored for several years, where sufficient landowner agreements were still in force and where we had strong partnerships that allowed us to pool resources. Specific requests for assistance from both private landowners and other partners were also prioritized. The CCNWCB treated portions of Ennis, Bagley, and Lees Creek, as well as sites in Clallam Bay and Bullman Beach. The Quileute Tribe (QNR), CCNWCB, and North Cascades Exotic Plant Management Team with the National Park Service (NCEPMT) surveyed and treated on the Bogachiel and Quillayute Rivers. Together, we have made significant progress on knotweed in this watershed. Independently, the QNR treated portions of the Bogachiel, Dickey and Sol Duc Rivers. The Makah Tribe surveyed and treated knotweed along Big River, Umbrella Creek, Hoko-Ozette Road, the town of Sekiu and Clallam Bay, and on the Makah Reservation. The 10,000 Years Institute (10KI) treated roadsides within the Quillayute watershed as well as off channel habitats of the Quillayute River. The Elwha Klallam Tribe, in conjunction with Olympic National Park and NCEPMT, performed non-native treatments for the restoration of post-dam Elwha River. In addition, NCEPMT also performed treatments on invasive species on Lake Crescent and Hurricane Ridge. The Elwha Klallam Tribe treated knotweed in Deep Creek, where treatments have not been performed in 4 years. The North Olympic Salmon Coalition (NOSC) partnered with the Jamestown S'Klallam Tribe to continue their multi-year project treating invasives and revegetation on the Dungeness River.

In East Jefferson County, the Hood Canal Salmon Enhancement Group (HCSEG) treated for knotweed along the Dosewallips, Little Quilcene and Big Quilcene Rivers.

In Mason County, the HCSEG worked on the Union, Tahuya, and Dewatto Rivers. The Mason County Noxious Weed Control Board (MCNWCB) controlled knotweed and other high priority invasives on Mission, Anderson, Little Mission, Coulter, Finch, Sherwood, and Stimson Creeks. The entity also performed treatments on invasive species in North Bay, portions of Highway 106, and the town of Allyn. The Mason County Conservation District (MCD) surveyed and controlled invasives in the Skokomish River and Goldsborough and Mill Creeks.

In Kitsap County, the HCSEG treated knotweed on Big Anderson and Big Beef Creeks.

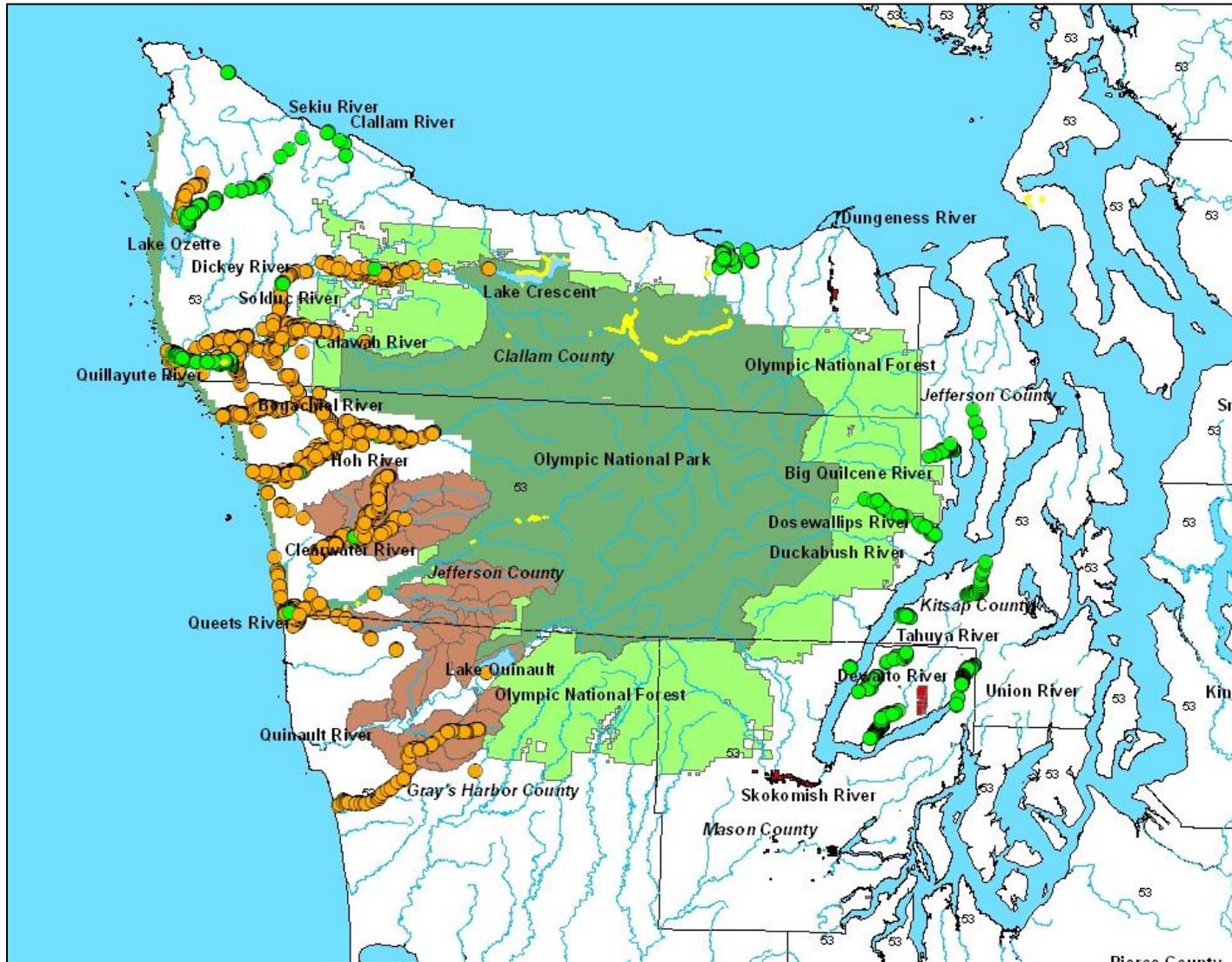
In West Jefferson and Grays Harbor Counties, the 10KI treated roadsides for non-native species in the Quinault, Queets, and Quillayute watersheds. They also performed invasive species control on the Lower Queets, Clearwater, Hoh, and Snahapish Rivers as well as Goodman creek. The NCEPMT also performed treatments on the Queets River within the Olympic National Park boundary.

### 2017 Project Activities Summary-per County

*(See Table 1 with watershed details by county, starting on page 55)*

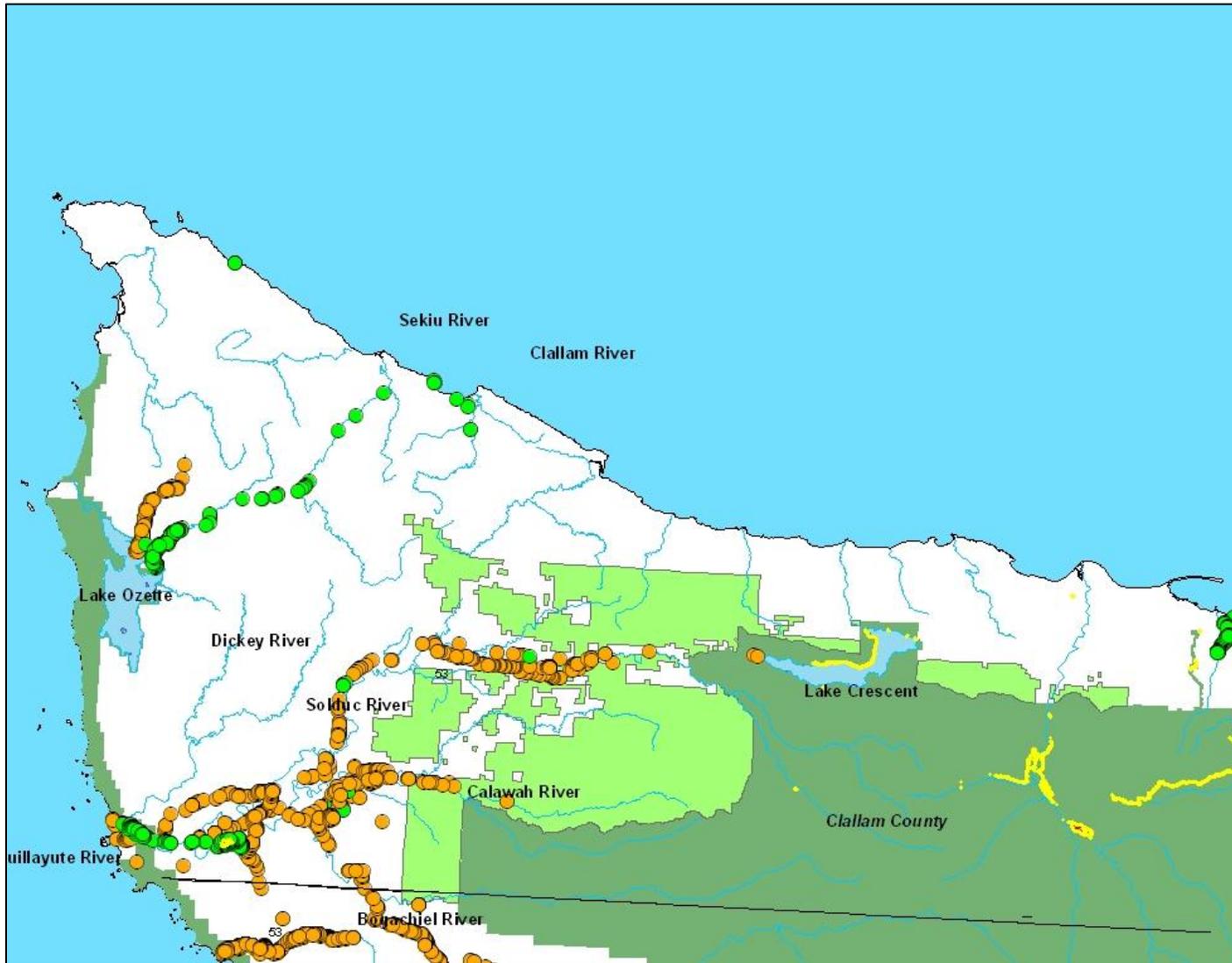
- In Clallam-9 entities on 13 waterways, managed more than 177 landowner agreements and obtained 17 new agreements. Knotweed was treated across over 118.3 acres on 63.4 river miles.
- In Jefferson- 3 entities on 7 waterways managed over 93 landowner agreements and obtained 10 new agreements. Knotweed and other invasives were treated across more than 1,940 acres on 89.6 river miles.
- In Mason- 3 entities on 13 waterways, managed 429 landowner agreements and obtained 103 new agreements. Knotweed and other invasives were treated on over 2000 acres on 38.4 river miles.
- In Grays Harbor- 1 entity treated invasive species on 6.7 acres over 40 road miles.
- In Kitsap County- 1 entity treated knotweed on 2 waterways and helped 38 landowners. Knotweed was treated on 586 acres over 6.5 river miles.

## OVERVIEW MAP OF THE OLYMPIC PENINSULA



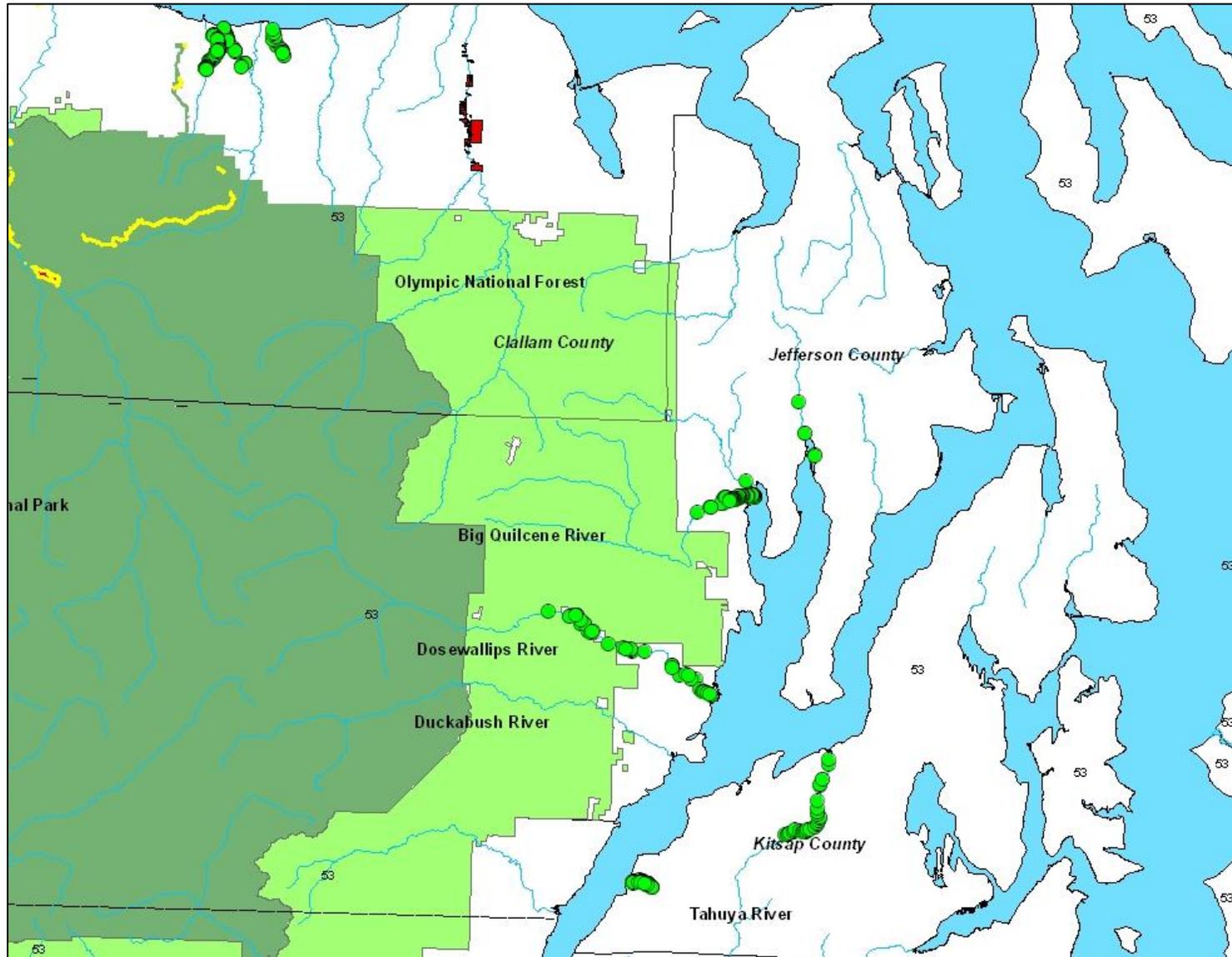
*Green circles indicate knotweed treatments, orange circles indicate additional invasive species treatments. Red polygons represent parcels surveyed and/or treated for invasive species. Yellow tracklogs are work areas of the NCEPMT. Brown polygons indicate the Quinault Indian Nation project area.*

## OVERVIEW MAP OF WEST CLALLAM COUNTY



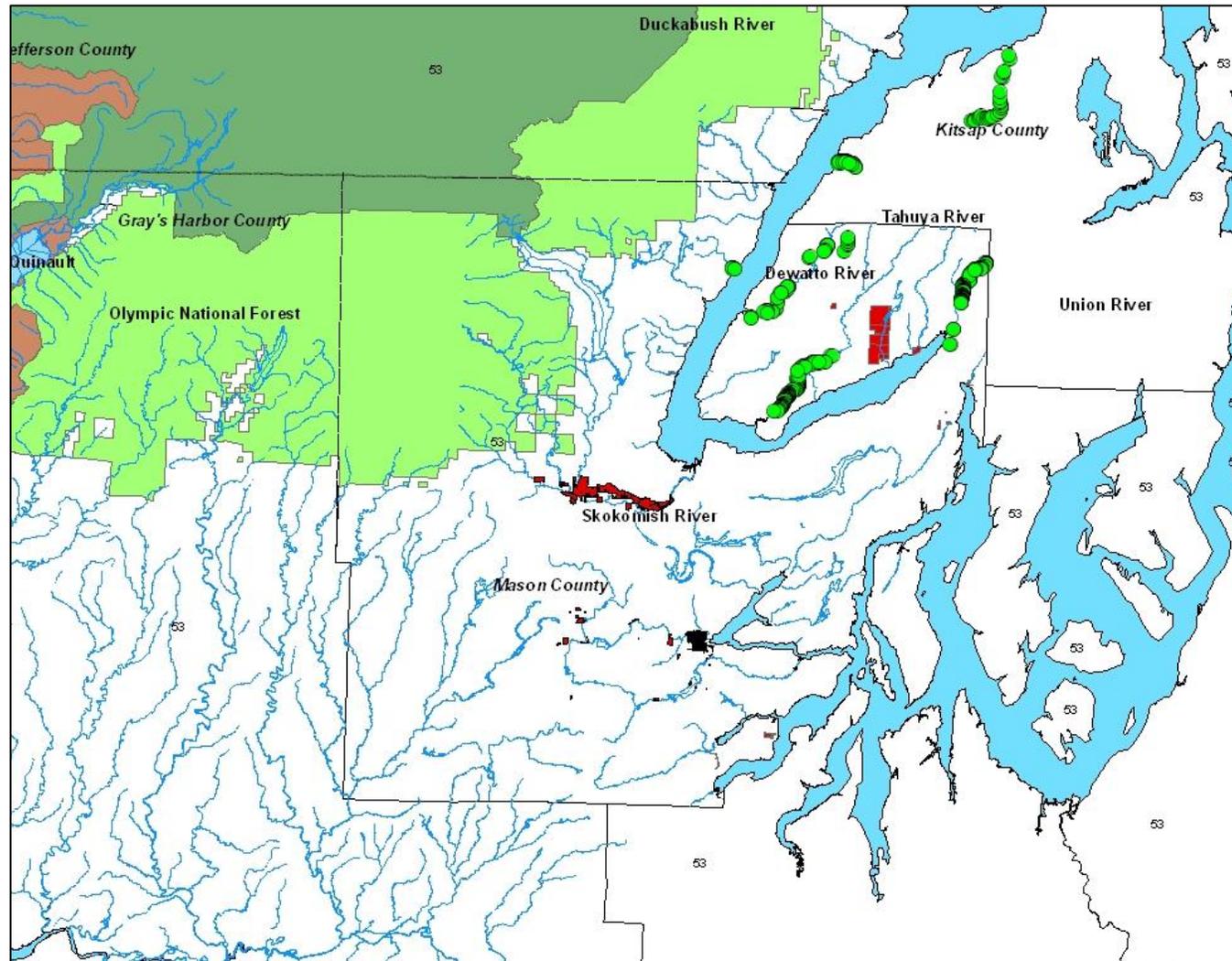
*Green circles indicate 2017 knotweed treatments, orange circles indicate additional invasive species treatments. Yellow tracklogs are work areas of the NCEPMT.*

## OVERVIEW MAP OF EAST CLALLAM COUNTY AND EAST JEFFERSON COUNTY



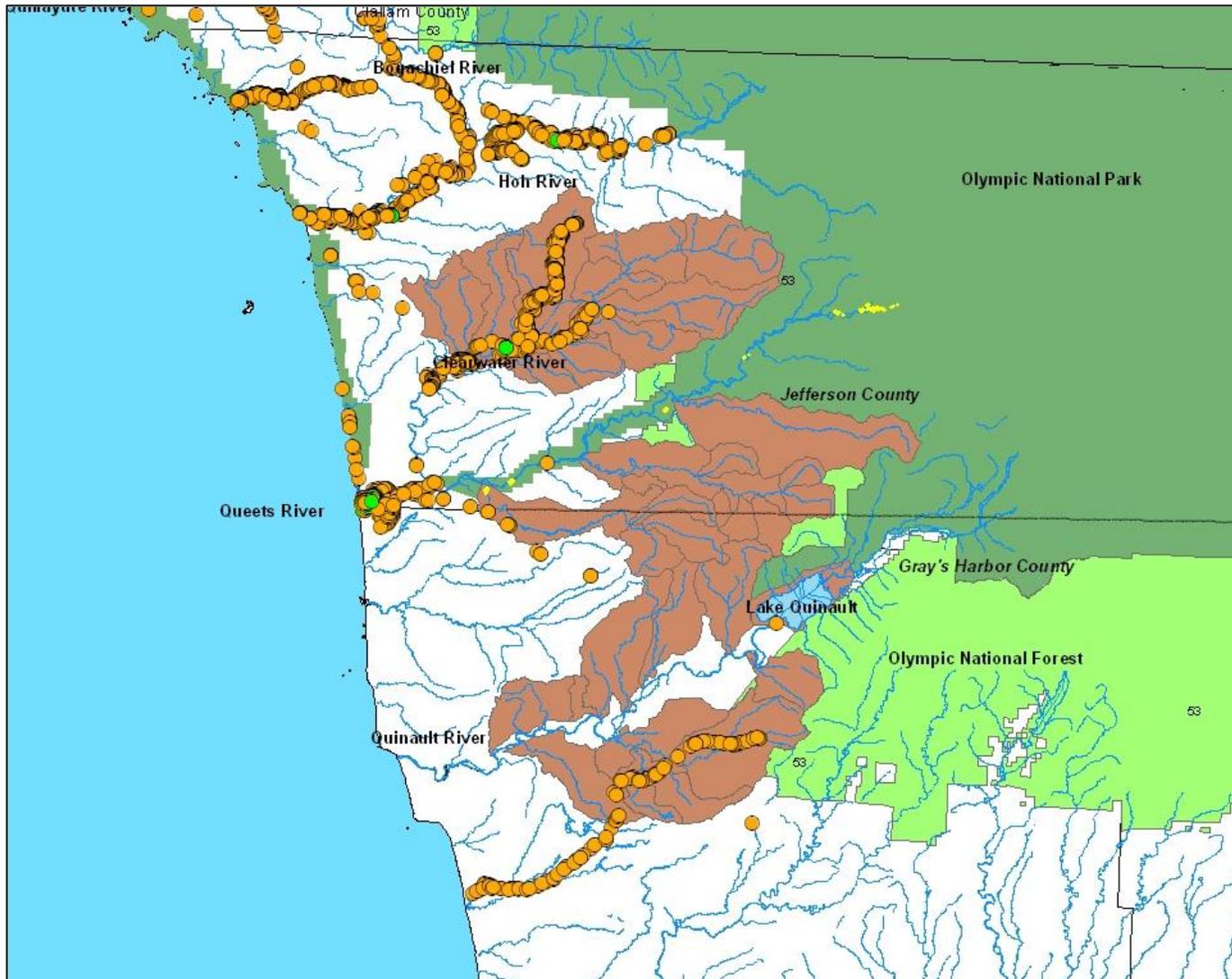
*Green circles indicate 2017 knotweed treatment; red polygons represent parcels treated for knotweed and/or butterfly bush. Yellow tracklogs are work areas of the NCEPMT.*

## OVERVIEW MAP OF MASON COUNTY AND KITSAP COUNTY



*Red polygons indicate surveyed and/or treated parcels for invasive species. Green circles indicate knotweed treatment areas.*

## OVERVIEW MAP OF GRAYS HARBOR COUNTY AND WEST JEFFERSON COUNTY



**Green circles indicate 2017 knotweed treatments, orange circles indicate additional invasive species treatments. Yellow tracklogs are work areas of the NCEPMT. Brown polygons indicate the Quinault Indian Nation project area.**

## PROJECT DESCRIPTION

### Project Goal

The goal of this project is to protect the natural resources, ecosystem functions and land values throughout the Olympic Peninsula from the negative impacts of invasive knotweed and other high priority weeds. The project focuses on riparian areas in rivers with high significance to fish and wildlife, and their natural resource value to the public or tribal entities.

### Project Overview

The Olympic Invasives Working Group (OIWG) is a loose-knit consortium of governments, tribes, non-profits and private landowners, working together since 2005 to eliminate knotweed and other invasives in riparian habitats. The group meets twice a year to share information and strategically plan knotweed control across jurisdictional boundaries. Clallam County Noxious Weed Control Board (CCNWCB), as the de facto group leader, coordinates the meetings and supports the work of other group members in many ways including; acquiring landowner agreements, distributing herbicide, coordinating projects, and in some cases supplying a licensed aquatic applicator. CCNWCB's role is to "fill in the gaps" by controlling invasives in areas not otherwise covered and educate the community about knotweed impacts and control.

Our partners have sought and received independent funding and knotweed control 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 this group has made over time.

## 2017 PROJECT ACTIVITIES

**Landowner Contacts and Agreements-(as reported to CCNWCB)** All landowners were contacted in person, by letter/email or phone prior to 2017 season treatments.

### Clallam County

- Clallam County Noxious Weed Control Board (CCNWCB) - managed **131 Landowner Agreements**, including **5 new** Landowner Agreements.
- North Olympic Salmon Coalition (NOSC)-managed **38 Landowner Agreements**, including **3 new** Landowner Agreements on the Dungeness River.
- Quileute Tribe-Natural Resources (QNR)-number of landowner agreements is not available.
- The 10,000 Years Institute (10KI) - managed **8 Landowner Agreements**, including **6 new** Landowner Agreements on the Quillayute watershed.

### Jefferson County

- Hood Canal Salmon Enhancement Group (HCSEG)-managed **53 Landowner Agreements**, including **2 new** Landowner Agreements.
- 10KI-managed **40 Landowner Agreements**, including **14 new** Landowner Agreements.
- Specific information regarding Jefferson NWCB landowner contact activities is not available.

### Mason County

- Mason County Noxious Weed Control Board (MCNWCB)-managed **126 Landowner Agreements**, including **55 new** Landowner Agreements.
- (HCSEG)-managed **184 Landowner Agreements**, including **13 new** Landowner Agreements.
- Mason County Conservation District (MCD) - managed **119 Landowner Agreements**, including **47 new** Landowner Agreements.

### Kitsap County

- HCSEG- managed **38 Landowner Agreements**.

### Grays Harbor County

- Specific information regarding Grays Harbor NWCB landowner contact activities is not available.
- 10KI-managed **1 Landowner Agreement**.

## Survey and Treatment:

This list summarizes knotweed work accomplished in 2017 and reported to CCNWCB by members of the Olympic Invasives Working Group (OIWG) and is not a comprehensive list of activities of all OIWG partners. 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. Total work performed on each river system is grouped together unless work was reported by watershed, in which the data is described separately. For detailed information, see specific watershed narrative or summary in Table I.

### Clallam County

- **The Quillayute Watershed:** Treated invasives on **0.35 river miles and 103 road miles (421 acres)** [10KI].
- **Bogachiel River:** Retreated along **12.6 miles (367 acres)** [QNR, CCNWCB, NCEPMT].
- **Quillayute River:** Retreated along **5.9 miles (150 acres)** [QNR, CCNWCB, NCEPMT].
- **Sol Duc and Tributaries:** Retreated along **4.3 miles (45 acres)** [QNR, CCNWCB].
- **Dickey River:** Retreated **7.9 miles (67.9 acres)** [QNR].
- **Big River:** Surveyed and/or retreated invasive species along **6.6 miles (19.6 acres)** [Makah Tribe].
- **Umbrella Creek:** Surveyed and/or treated non-knotweed invasives on **1.4 miles** [Makah Tribe].
- **Clallam Bay, Sekiu, and Hwy 112:** Treated **1.7 acres** [CCNWCB, Makah Tribe].
- **Bullman Beach:** Treated **0.7 acres** [CCNWCB].
- **Lake Creek, Lake Pleasant:** Treated **1.2 road miles (7.2 acres)** [CCNWCB].
- **Clallam River:** Treated along **1.3 road miles (1.9 acres)** [CCNWCB].
- **Deep Creek:** Retreated **1.0 mile (18 acres)** [Lower Elwha Tribe Klallam Tribe].
- **Lake Crescent:** Treated invasives on **5.5 miles** of the Spruce Railroad Trail along Lake Crescent [NCEPMT].
- **Elwha River:** Retreated invasive species across **12 miles (164 acres)** [Lower Elwha Klallam Tribe, NCEPMT].
- **Ennis Creek:** Retreated **1.7 miles (13.9 acres)** [CCNWCB].
- **Lees and East Fork Lees:** Treated along **1.3 miles (6.6 acres)** [CCNWCB].
- **Bagley Creek:** Retreated along **1.6 miles (2 acres)** [CCNWCB].
- **Dungeness River:** Retreated **1.3 miles (47.5 acres)** [NOSC].
- **Bell Creek:** Retreated **6.6 acres** of nearby terrestrial land [CCNWCB].

### Jefferson County (Starting in East Jefferson)

- **Big Quilcene River:** Re-treated **3.2 miles (375 acres)** [HCSEG].
- **Little Quilcene River:** Treated **0.2 miles (5 acres)** [HCSEG].
- **Dosewallips:** Retreated **10.5 miles (6223 acres)** [HCSEG].
- **Queets River:** Retreated **7.2 miles (971 acres)** [10KI, NCEPMT].
- **Clearwater River:** Treated **13 river miles and 58 road miles (492 acres total)** [10KI].
- **Snahapish River:** Treated **15.5 miles (261 acres)** for non-knotweed invasives [10KI].
- **Goodman Creek:** Treated **10 miles (212 Acres)** for non-knotweed invasives [10KI].
- **Hoh River and Tributaries:** Monitored and re-treated **30 river miles (3562 acres)** [10KI].

### Kitsap County

- **Big Beef Creek:** Retreated **4.8 miles (708 acres)** [HCSEG].
- **Anderson Creek:** Retreated **1.7 miles (157 acres)** [HCSEG].

### Mason County:

- **Anderson Creek:** Retreated invasive species on **0.84 river miles (6.04 acres)** [MCNWCB].
- **Mission Creek:** Retreated for invasive species across **85.1 acres** [MCNWCB].
- **Little Mission Creek:** Retreated invasives on **40 acres** [MCNWCB].
- **Dewatto River:** Retreated **4.9 miles (2189 acres)** [HCSEG].
- **Union River:** Treated **4.9 miles (434 acres)** [HCSEG].
- **Tahuya River:** Retreated **6.5 miles (870 acres)** [HCSEG].
- **Town of Allyn:** Treated invasive species on **9.2 acres** [MCNWCB].
- **Sherwood Creek:** Retreated invasive species on **108.9 acres** [MCNWCB].
- **North Bay:** Retreated invasives across **27 acres** [MCNWCB].
- **Stimson Creek:** Treated **1.9 river miles (94.8 acres)** [MCNWCB].
- **Coulter Creek:** Retreated invasives on **0.5 river miles (132.6 acres)** [MCNWCB].
- **Finch Creek:** Retreated invasives on **1 mile (100.4 acres)** [MCNWCB].
- **Skokomish River:** Retreated invasives over **15.5 miles (442 acres)** [MCD].
- **Mill and Goldsborough Creeks:** Retreated invasives on **2.4 miles (25 acres)** [MCD].
- **Highway 106:** Treated invasives species on **20 miles** [MCNWCB].

- **Other Mason County Sites:** Treated invasives on **26.22 acres** [MCNWCB].

Grays Harbor County

- **Quinault Watershed:** treated invasive species across **40 miles** of Highway 101 and Moclips Highway [10KI].

**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, the Port of Port Angeles, City of Forks, and Clallam County).

**Data Management and Documentation:**

- CCNWCB maintained the **Knotweed Projects Database** for **Clallam** and **Jefferson County Noxious Weed Control Boards**.
- The CCNWCB applied for National Pollution and Discharge Elimination System (NPDES) permits.

**Outreach and Training:**



Spring OIWG attendees at the Jamestown S’Klallam Tribal campus listen to an informative presentation.

- The CCNWCB continued to coordinate meetings of the Olympic Invasives Working Group. These meetings are a forum for exchanging information and ideas, networking and pooling resources. They also help us identify future needs, data gaps, obstacles and solutions to problems. The meetings help licensed applicators accrue required education credits with topics that best serve their needs, thus creating a higher professional standard. Meetings have expanded and attract a more diverse audience every year. As a function of this group interaction, we have identified the need to control additional invasive plant species of special concern. Therefore, depending on the member’s need, we include information about the threats of other invasives and control measures to encourage a multi-species strategy.



OIWG Meeting-From top left clockwise: Dr. Andy MacKinnon discusses forest ecology; John Bornsworth presents tactics to promote long-term landscape health in residential communities; Fall OIWG attendees listen to a roundtable discussion of the treatments performed by participating entities in the 2017 field season; Eric Lee-Mader discusses the health of pollinator species in the Pacific Northwest and revegetation considerations for promoting native pollinators.

Our spring and fall meetings were hosted by the Jamestown S’Klallam Tribe at the beautiful Cedar Room situated on Sequim Bay. Approximately 80 participants attended each meeting, including representatives from 5 Native American Tribes, 6 Federal agencies, 8 State agencies, 1 State University, 7 counties, and 9 non-profits. A total of twelve pesticide credits were offered for the over 40 applicators who attended both meetings. Workshop evaluations highly rated the overall program and felt future workshops would be valuable.

- Staff updated **Clallam County Weed Control Board’s website**, including several pages on knotweed—the minutes of meetings of the Olympic Invasives Working Group as well as PowerPoint presentations of speakers as they were available.
- CCNWCB staff highlighted our knotweed program and distributed information at **19 educational events**.

## 2017 PROJECT PROTOCOLS

### 1. Surveys and Monitoring

CCNWCB surveys, treatments and monitoring took place from April 27<sup>th</sup> through October 12<sup>th</sup>. Surveys were conducted by foot and by boat.

### 2. Project Teams

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

- **The Quileute Tribe Natural Resources crew (QNR)**, led by Garrett Rasmussen (LAQ), worked on the Quillayute, Sol Duc, Bogachiel and Dickey Rivers.
- **The Makah Tribe**, led by Rob McCoy (LAQ), treated knotweed sites on the Makah Reservation, Big River, and Hoko-Ozette Road. He also surveyed and treated Umbrella creek for non-knotweed invasives.
- **The Clallam County NWCB crew (CCNWCB)**, consisting of Cathy Lucero (LAQ), Rachel Bowen (LAQ), and James Knape (LAQ) worked on the Quillayute, Sol Duc, Bogachiel Rivers as well as Ennis, Lees and Bagley Creeks. They also treated sites on Bullman Beach, Sekiu and terrestrial land adjacent Bell Creek.
- **The North Cascades Exotic Plant Management Team with the National Park Service (NCEPMT)** was led by Collin McAvinchey (LAQ) and Sophie Wilhoit (LAQ), and treated the Sol Duc, Bogachiel, Queets and Elwha Rivers. The team also treated sites on Hurricane Ridge near Morse Creek and Lake Crescent.
- **The East Jefferson WCC with the North Olympic Salmon Coalition (NOSC)**, led by Owen French (LAQ), worked on the Dungeness River.
- **The Lower Elwha Klallam Tribe**, consisting of Kim Williams (LAQ), Allyce Miller and Laurel Moulton (LAQ) treated Deep Creek and worked with Olympic National Park to treat the Elwha River.
- **The Hood Canal Salmon Enhancement Group WCC crew (HCSEG)** led by Alex Papiez (LAQ) treated on the Big and Little Quilcene, Dosewallips, Union, Tahuya and Dewatto Rivers, as well as Anderson and Big Beef Creeks.
- **Mason County NWCB crew (MCNWCB)** consisting of Pat Grover (LAQ) Keith Reitz (LAQ) and Justin Yim (LAQ) treated invasives on Anderson, Mission, Little Mission, Coulter, Finch, Stimson and Sherwood Creeks as well as North Bay and the town of Allyn.
- **The 10,000 Years Institute (10KI)**, led by Jill Silver (LAQ) worked on the Queets, Quinault, and Quillayute watersheds and along surrounding roads and highways.
- **Mason County Conservation District crew (MCD)**, led by Brayden Raber (LAQ), treated the Skokomish River and Mill and Goldsborough creeks.

### 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 25 other invasives species such as giant hogweed, butterfly bush, reed canarygrass, Herb Robert, Canada thistle, 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 2017 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 2017 is not available.
- The CCNWCB, Mason County NWCB and the Makah Tribe tested a new data collection method 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.

- 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 autofilled.
  - Information on entities that used this method in 2017 is not available.
- Waypoints collected 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. 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 (square feet 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 back pack sprayers which in 2017 averaged around 40 gallons/acre, we assumed that each gallon of mixed product would treat approximately 1000 sq feet. (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 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.

**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 1% 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 2017, the Mason County NWCB and the Elwha Klallam Tribe 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.

**Wipe**—for small sprouts or highly selective treatments

**(In 2017, 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, as required by law.

## OBSERVATIONS AND CONCLUSIONS

- Peninsula-wide knotweed activities are incorporated into this report to show the level of effort and collaboration that has been generated to combat the threat knotweed poses to our natural resources.
- Track logs from the GPS units provide extremely valuable information about where crews went, areas that were missed and to track null surveys (parcels where no knotweed was found).
- The new IForm and ArcCollector apps are a good accompaniment to GPS data. Currently, these smart phone applications do not record track logs and are not adequate replacements to current GPS units. However, IForm data can be customized to include fields that are most relevant to each entity and point collection on this system is straightforward. Having aerial photographs of work areas has been extremely helpful in orienting crews in the field. The online server can also track treatments from multiple entities on a river system that can be shared between groups.
- There are still inconsistencies in reported accomplishments between entities- another review of data collection and protocols to renew consensus among partners may be needed.
- Partners continue to report declining levels of knotweed across the Olympic Peninsula. Many groups have included treatments of other invasives of concern when performing knotweed treatments.
- Although much more difficult, an all-species approach will augment the restoration of riparian habitats where knotweed treatments are occurring. Information about additional invasives treatment is being collected and gradually added to the OIWG report to show this effort and focal species shift. (*See Table I*)
- Successful invasive plant control has provided many entities with an opportunity to incorporate revegetation projects into their work plans. Native plantings have taken place in the Dungeness and Big Rivers, as well as in Mason County waterways.
- The tenacious nature of knotweed and its ability to re-appear after successful treatments requires a much longer monitoring and follow-up cycle than any other species to date.
- A number of landowner permissions are expiring and we need to plan and budget for obtaining new agreements for next year's priority waterways.
- 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.
- Most partners are moving towards 1% imazapyr as their preferred treatment as knotweed infestations are reduced. The Hood Canal Salmon Enhancement Coalition has switched exclusively to imazapyr after observing greater control from 2016 treatments with this herbicide when compared to glyphosate. The Mason CNWCB is experimenting with the use of triclopyr plus aminopyralid for knotweed in a grass dominated site. The CCNWCB continues to see good results from 1% imazapyr/1% surfactant which was used for all riparian treatments except where crews came upon knotweed when doing non-knotweed specific control work. CCNWCB experimented with using 0.125% aminopyralid in three sites where small knotweed plants were present in manicured lawns in the Sekiu area. In 2018, it will be interesting to see the level of control aminopyralid provided in 2017.
- Treatment resulting from the collaboration between CCNWCB, Quileute Tribe, and the North Cascades Exotic Plant Management Team for the National Park Service in the Quillayute watershed was a huge success this season. These partnerships are important to reduce knotweed in the once highly infested Quillayute River. Most of the major river systems in this watershed have been treated at least once. Notably, two large (approximately 0.5 solid acres each) sites that were treated by this group in 2016 were reduced by 85% in 2017. In this watershed, crews also found and treated a small infestation of purple loosestrife that has never been seen in this area before!
- In their treatments of Port Angeles area streams the CCNWCB found more knotweed than expected, especially in Lees and East Fork Lees Creeks. A new infestation of yellow archangel was also discovered and treated in Lees Creek.
- The CCNWCB had its first field season with the new Integrated Weed Management Program for county roadsides and we believe that this program can help decrease movement of knotweed from roadsides to riparian areas. 4.7 road miles were treated for knotweed in Clallam County in 2017. Now that effective treatment of Clallam County pits and roadsides are possible, we hope to see a decrease in weed infestations in riparian habitats located near roadsides and culvert construction sites using materials from county owned pits.
- The North Olympic Salmon Coalition has noticed huge successes in riverbank lupine plantings colonizing areas previously inhabited by knotweed and butterfly bush on the Dungeness River.
- The 10,000 Years Institute has been making progress in reed canarygrass treatments in the Hoh River and tributaries through comprehensive treatments of the river itself as well as neighboring roadways.

## RECOMMENDATIONS

- 2018 project priorities: In **West Clallam County**, the highest priority continues to be the Quillayute River system. Though good progress was made in 2017 due to the collaboration between the QNR, NCEPMT and CCNWCB, the Quillayute River continues to be one of the heaviest infested waterways. A float survey of the Hoko River is needed. The CCNWCB would also like to collaborate with and assist the Makah Tribe with treatments where needed. Survey and treat sites in the Sekiu-Clallam Bay region, including Charley Creek and Clallam River. In **Mid- Clallam County**, further permissions for Peabody, Ennis, south Bagley and East Fork Lees Creeks needs to be pursued for 2018 treatments. As the level of invasive species decrease, further native plantings should be performed on the Dungeness River. In **East Jefferson County**, dialogue between the CCNWCB and JCNWCB needs to be prioritized to coordinate treatments in both counties. Knotweed infestations have decreased dramatically in the Big and Little Quilcene Rivers, and a multi-species approach should be considered. In **Kitsap County**, the Hood Canal Salmon Enhancement Group (HCSEG) plans on thoroughly treating Big Beef Creek for all invasives. This group only treated knotweed on Big Beef and Big Anderson Creeks, but took waypoints for other invasives. Treating these invasive species should be prioritized in 2018, especially as knotweed populations are declining on both of these river systems. In **Mason County**, native grass seeding will be taking place in the Mills and Goldsborough Creeks, which have been fully surveyed and treated for the first time this year. In **Grays Harbor County**, many of the activities in this county were not reported to the OIWG this year due to staffing changes in the county's NWCB. Communication between Gray's Harbor NWCB and the CCNWCB should be reestablished to better track treatments taking place in Grays Harbor. In **West Jefferson County**, 2017 was the first year of reed canarygrass treatments on Goodman Creek. As this creek lies between the Hoh and Quillayute watersheds, retreatment of this river is a high priority.
- Plan pre-season communication with other project managers to promote more cross boundary project opportunities.
- Discuss reporting protocols. Update *data request form* and make use of standardized formulas to normalize data received from partners.
- Update Best Management Practice documents. Consult with other knotweed control programs and WSDA before publication.
- Perform Early Detection and Intervention in conjunction with knotweed treatments where there is sufficient time and resources.
- 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 more training by Ecology for inexperienced WCC crews who are increasingly utilized for invasive control work.
- 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 take invasives issues into account, especially as Clallam County updates its Shoreline Master Plan.
- Increase outreach with hunters, fishers and other recreationists for Early Detection, Rapid Response of invasive species.
- Continue treatment of invasive species within the newly developed Clallam County Integrated Weed Management Roadside Program. Many county roads are in close proximity to riparian areas and can be a source of invasives into waterways. All known roadsides containing knotweed should be included in the 2018 work plan.
- Further simplify NPDES reporting by requiring only total herbicide usage per watershed.

## **PARTICIPATING GROUPS**

Clallam County Noxious Weed Control Board  
Grays Harbor Noxious Weed Control Board  
Jefferson County Noxious Weed Control Board  
Mason County Noxious Weed Control Board  
Mason Conservation District  
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  
WA State Department of Natural Resources  
WA State Department of Ecology  
WA State Department of Transportation  
WA State Department of Agriculture  
WA State Department of Fish and Wildlife

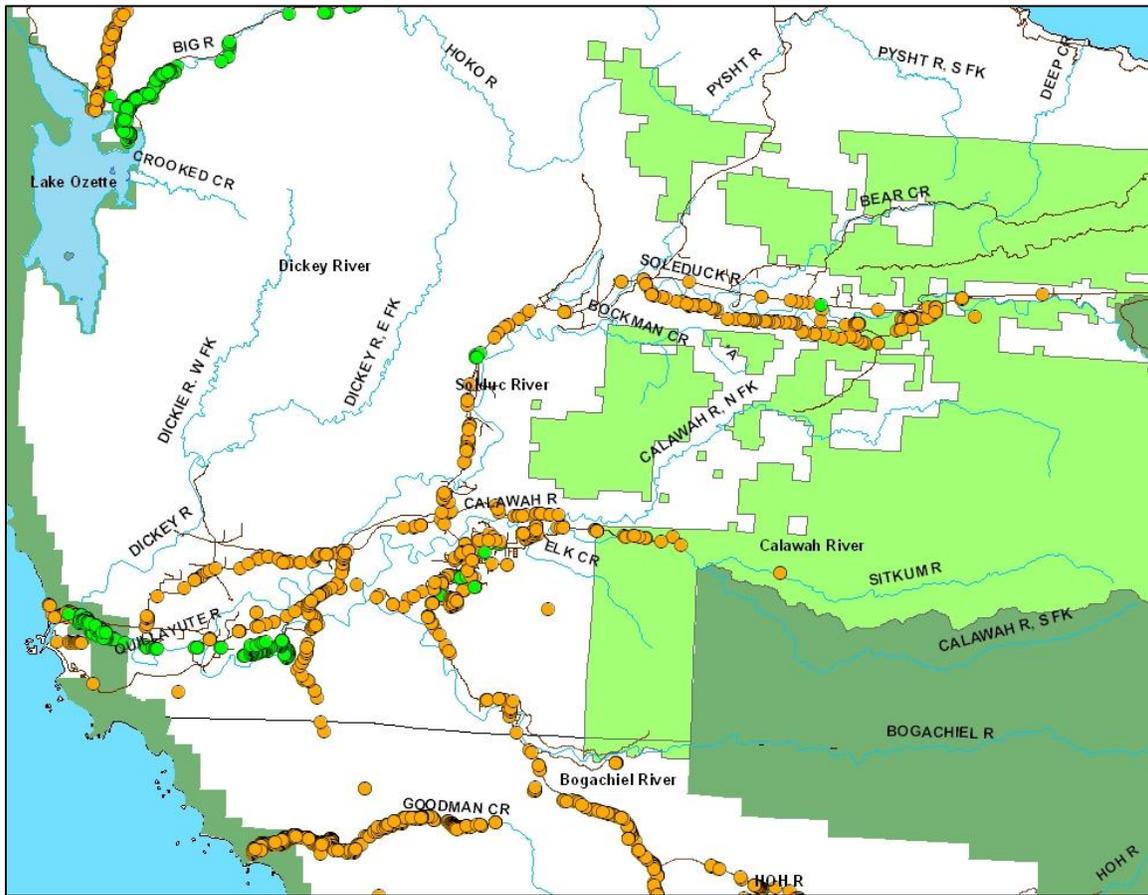
Washington State University  
Jamestown S'Klallam Tribe  
The Lower Elwha Klallam Tribe  
The Makah Nation  
The Quileute Nation  
The Quinault Indian Nation  
10,000 Years Institute  
Hoh River Trust  
North Olympic Land Trust  
Hood Canal Coordinating Council  
Hood Canal Salmon Enhancement Group  
North Olympic Salmon Coalition  
Pacific Coast Salmon Coalition  
Forterra  
Center for Natural Lands Management  
East Jefferson WCC  
Clallam Puget Sound Corps  
***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-aquatic resource division, Washington State Legislature (WCRI), Clallam County Noxious Weed Control Board, the Salmon Recovery Funding Board and separate funding administered to the Quinault Indian Nation and the Quileute Nation (EPA).

# PROJECT ACTIVITIES BY WATERSHED

## CLALLAM COUNTY



**Quillayute River System:** Green circles indicate knotweed treatments; orange circles treatments of additional invasive species.

### 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, with as many as 19,000 fish returning. These rivers also support large runs of Chinook and Coho salmon. There are no Threatened or Endangered species within the Quillayute watershed. The Quileute Tribe works to preserve the ecosystem in its current, functioning state as a more cost-effective endeavor than restoring a system once it is degraded. Knotweed elimination is an important factor in preserving habitat for fish species. It is also important for elk and deer and other species that forage on the floodplain, where knotweed is out-competing native vegetation. Frank Geyer, Deputy Director/TFW Program Manager of Quileute Natural Resource Department has observed that elk and deer do not actively feed on knotweed and that elk have returned to calve on restoration areas previously infested with knotweed.

### Dickey River

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

### Brief Treatment history of the Dickey River

See previous year's reports for more detailed information

- Knotweed treatments have been performed every year since 2002.
- 2006-2008: Lauren Urgensen, a University of Washington Graduate Student, established plots along the Dickey to study knotweed impacts and control.
- 2012: crews noted the movement of tansy ragwort into bare ground where knotweed was treated.
- 2013: 7.5 miles (75 acres) of primarily Washington Department of Natural Resources (DNR) shoreline was treated for knotweed [Quileute Nation Natural Resources (QNR)].
- 2014: Infestations on Dickey were reduced by approximately 1/3 from 2014. 7.63 river miles were surveyed and/or treated by QNR and 0.65 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: 74 acres were surveyed and/or treated for knotweed [QNR, CCNWCB].

**In 2017:** QNR surveyed 7.9 river miles along the Dickey, searching nearly 68 acres and retreating knotweed on 3.75 acres. Crew used 1.4 gallons of imazapyr: a slight increase compared to last year but overall, herbicide usage is declining on this river system.

**In 2018:** Continue treatments as time and resources allow. Treatments of other invasive species, like tansy ragwort, should be considered as knotweed infestations decline.

Herbicide use-Dickey River (gallons)											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Acres Treated*	140	50	95	101	NA	56	75	46	3.8	74	3.75
Total Herbicide	12.65	0.165	18	7.21	NA	2.91	4.31	2.44	2.88	1.2	1.4

\*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 funding, the Calawah was not treated.

**In 2018:** Given that it has now been four years since the last knotweed treatment it may be worthwhile to survey and treat the Calawah River for knotweed and other invasives, if time and funding allows.

Herbicide use-Calawah River (gallons)											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Acres Treated	202	100+	110	127	NA	65	64	-	-	-	-
Total Herbicide	11.12	2.31	1.59	0.24	NA	0.15	0.18	-	-	-	-

### 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].

**In 2017:** The CCNWCB, NCEPMT and QNR treated 12.9 river miles with 5.3 gallons of imazapyr. A total of 367 acres along the Bogachiel River were surveyed, 198.47 acres of which were treated for knotweed. Notably, this team discovered a new infestation of purple loosestrife on this river! Purple loosestrife has never been documented on the Bogachiel, so it was a significant victory to treat the weed before it could spread. The 10,000 Year Institute also did extensive work on the Quillayute River system, including the Bogachiel River, on non-native species. A large patch of knotweed was treated on US 101 near the Bogachiel River and the entity also did control work on off-channel habitats for reed canary grass, herb robert, scotch broom, tansy ragwort, and other weed species.

**In 2018:** The partnership of the CCNWCB, NCEPMT, and QNR should continue to treat the Bogachiel River as its infestations spread into the Quillayute River, where some of the heaviest infestations in Clallam County are found.

Herbicide use- Bogachiel River (gallons)											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Acres Treated*	4.1	900+	693	725	NA	131	131	343	-	77	<b>198.5</b>
Total Herbicide	0.65	33.88	77.34	62.1	NA	3.12	5.43	8.38	-	0.80	<b>4.6</b>

*\*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 ½ 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: 0.94 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].

**In 2017:** The QNR worked with CCNWCB and the NCEPMT to treat 1.8 miles of the Quillayute River. Of the 120 acres surveyed, 8.2 acres were treated for knotweed. Infestations along the Quillayute River continue to decrease due to the sustained efforts of the QNR and partners. Herbicide usage also decreased from last year (See below). With the 10KI's treatment of other invasives on 103 road miles on the Quillayute River watershed, there is a holistic weed management effort in place to decreasing many invasive species on this river system.

**In 2018:** The partnerships developed to treat this river system should be maintained, especially considering the evidence of river restoration 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***
Acres Treated	N/A	170	40	.5	NA	0	0.2	0	5	193*	<b>8.2</b>
Total Herbicide	N/A	6.77	1.7	0.64	NA	0	0.14	0	1.91	14.4	<b>3.08</b>

\*Treated acreage was not reported in 2016. Surveyed acres are included instead.

\*\* Treatments occurred in 2014 but were not reported.

\*\*\* Only includes values provided by QNR. The 10KI used 19.4 gallons of herbicide on 0.53 acres on the Bogachiel, Sol Duc, and Quillayute Rivers.

## 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].

**In 2017:** The Quileute Tribe searched 45 acres, treating 1.3 acres total along the Sol Duc near Lake Pleasant and Wisen Creek. The tribe reported 4 new permissions in these areas that allowed for treatments that have not been performed in the past. A total of 4.27 river miles of the Middle Sol Duc River were treated with 0.5 gallons of imazapyr and QNR was able to help 7 landowners this year.

**In 2018:** Follow up treatments of the Lower Sol Duc should be conducted.

Herbicide Use, Lower Sol Duc River (gallons)											
	2007	2008	2009	2010	2011	2012*	2013	2014	2015	2016	2017
Acres Treated	17	45	30	35	-	n/a	155	0.005	-	221^	<b>1.3^</b>
Total Herbicide	9.656	6.67	0.945	1.26	-	n/a	1.09	n/a	-	1.83	<b>0.5</b>

\* 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.

**In 2017:** CCNWCB treated 0.5 acres of knotweed on West Lake Pleasant road. Roadsides are known vectors for knotweed and other invasives to spread throughout the county and should be considered high priorities for treatments near riparian areas. A total of 0.003 gallons of imazapyr was used on 5.5 acres.

**In 2018:** Now that a holistic weed treatment program is in place for county roadsides adjacent to riparian areas, roadsides near Lake Creek and Lake Pleasant should be surveyed for invasives, as well as the lakes themselves.

## 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: No treatments were reported, though some may have been performed.

**In 2017:** The 10KI performed control of various non-native species in Forks including road right-of-ways, private and public landowners. Knotweed was controlled along roadsides and at Forks High School. One private landowner allowed the 10KI to cut a 10 foot tall butterfly bush within the town. Scotch broom was manually controlled or treated via cut stump with concentrated Aquaneat at the Forks Community Garden as well as along city roadsides.

**In 2018:** With the close vicinity 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 at (360) 374-2027 or [garrett.rasmussen@quileutenation.org](mailto:garrett.rasmussen@quileutenation.org)**

**For more information about non-knotweed species treatments on the Quillayute River System, please contact Jill Silver at [jsilver@10000yearsinstitute.org](mailto:jsilver@10000yearsinstitute.org)**

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



**Big River, Umbrella Creek, and Hoko- Ozette Road.** Green circles indicate surveys and treatments of knotweed infestations in 2017. Orange circles represent non-knotweed invasive species treatments on Umbrella Creek.

### 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].

**In 2017:** The Makah treated invasives along 6.6 miles (19.56 acres) of the Big River, from its junction with Lake Ozette to approximately 1 mile south of the River's intersection with Highway 112 (See below for herbicide usage). Crew noticed a decrease in stems from previous year's treatments and plan on performing revegetation projects in 2018 on knotweed and reed canarygrass sites treated along Big River. Umbrella Creek was

inventoried and treated for the first time this year. Umbrella Creek is knotweed free but it and Big River were treated for other non-native species including herb Robert, yellow archangel, reed canary grass, and bugleweed. **In 2018:** Perform revegetation projects, provided through a grant from the Salmon Recovery Funding Board, on reed canarygrass and knotweed treatment sites along Big River. Continue treatment of knotweed and other non-natives in Big River, Hoko-Ozette road, and Umbrella creek as landowner permissions and funding allows.

<b>Herbicide Use-Big River and Hoko-Ozette Road (gallons)</b>												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Inspected/Known Parcels	-	-	30/42 (est)	39/43	24/34	12/34	15/34	3/34	21/34	1/34	n/a	<b>24/34</b>
Acres Treated	60	28	57	57	22	10.4	25	3	10.01	0.1	n/a	<b>19.56</b>
AquaNeat injected	65.39	1.24	0	3.5	0.3	0.496	0.04	0	0	0.19	n/a	<b>n/a</b>
AquaNeat sprayed		3.3	1.876	1.3	2.28	0.12	0	0	0	0	n/a	<b>1.1</b>
Habitat or Polaris (imazapyr) sprayed	0	0.6	0.305	0.32	0.594	0.03	0.42	.07	.26	0	n/a	<b>0.18</b>
Total Herbicide	65.39	5.14	2.181	5.12	3.174	0.646	0.46	.07	.26	0.19	n/a	<b>1.28</b>

## 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.

**In 2017:** The Makah Tribe treated knotweed along the Hoko- Ozette Road, a large portion of which runs parallel of the Hoko River. The herbicide usage reported for this effort is included with treatments along the Big River in the table above. Due to access issues along the Hoko River, surveys and treatments of the Hoko River downstream of its intersection with 112 still need to be performed.

**In 2018:** Performing float surveys of the Hoko River should be investigated if permissions are in place. The condition of the lower Hoko River is largely unknown, and a partnership between the CCNWCB and the Makah Tribe should be developed to survey this 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].

**In 2017:** Due to the low infestations levels in the Sekiu River, no treatments were performed on this system.  
**In 2018:** surveying and retreatment of sites with histories of knotweed should be performed.

<b>Herbicide Use-Sekiu River (gallons)</b>												
	2006*	2007	2008	2009	2010	2011	2012	2013	2014**	2015	2016*	2017
Inspected/ Known Parcels	N/A		1/11	10/11	10/11	10/11	10/11	9/13	13/14	0/14	0/14	<b>0/14</b>
Acres Treated	N/A	1.78	2	16	8.5	1.17	5.9	2.79	1.68	-	n/a	-
AquaNeat injected	n/a	0.1	1.7	0	2.125	0.25	0.25	0	n/a	-	n/a	-
AquaNeat sprayed	n/a	0.18	0.06	0.487	0.18	0.18	0	0	n/a	-	n/a	-
Habitat or Polaris (imazapyr) sprayed	n/a	0.02	0.007	0.122	0.045	0.045	0.276	0.125	n/a	-	n/a	-
<b>Total Herbicide</b>	<b>11</b>	<b>0.3</b>	<b>1.767</b>	<b>0.609</b>	<b>2.35</b>	<b>0.475</b>	<b>0.526</b>	<b>0.125</b>	<b>0.032</b>	<b>-</b>	<b>n/a</b>	<b>-</b>

\* 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.

**For more information about Big River and treatments in the surrounding area, please contact Rob McCoy at 360-645-3058 and [rob.mccoy@makah.com](mailto:rob.mccoy@makah.com) or Shannon Murphie at 360-645-3229 and [shannon.murphie@makah.com](mailto:shannon.murphie@makah.com).**

## Highway 112, Clallam Bay, and Sekiu



**Sekiu, Clallam Bay, and Highway 112.** Green circles indicate knotweed treatments in 2017.

### 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 came as a contaminant.

#### Brief Treatment history of Highway 112, Sekiu and Clallam Bay

*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.

**In 2017:** The CCNWCB treated one small (0.1 acres) roadside site in Clallam Bay, west of Clallam Bay West Park. The Makah Tribe also treated knotweed on private property in Clallam Bay and Sekiu, using 0.456 gallons of 4.6% Aquaneat/ 0.78% Polaris on 1.5 acres.

**In 2018:** Increased efforts should be made to obtain new permissions of parcels that may contain knotweed as permissions for this area are sparse.

<b>Herbicide Use-Highway 112, Clallam Bay and Sekiu (gallons)</b>												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Parcels Inspected/Known Parcels	n/a	n/a	55/67 (est)	67/68	18/68	2/68	2/68	0/68	73/73	-	0/73	n/a
Acres Treated	n/a	25	45	26	3.25	1.8	2	-	3.31	-	-	<b>1.6</b>
Aqua Neat injected	n/a	3.5	1.945	0	0	0.16	0	-	n/a	-	-	<b>0</b>
Aqua Neat sprayed	n/a	6.06	1.224	0.45	0.4	0.02	0	-	n/a	-	-	<b>0.4</b>
Habitat or Polaris (imazapyr) sprayed	n/a	0.23	0.29	0.155	0.1	0.005	0.066	-	n/a	-	-	<b>0.06</b>
<b>Total Herbicide</b>	<b>17.9</b>	<b>9.79</b>	<b>3.459</b>	<b>0.605</b>	<b>0.5</b>	<b>0.185</b>	<b>0.066</b>	<b>-</b>	<b>.074*</b>	<b>-</b>	<b>-</b>	<b>0.46</b>

*\*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.*

## 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 to 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.

**In 2017:** The CCNWCB treated 0.002 solid acres of knotweed on Charley Creek Road near its intersection with the Clallam River. This was the only site found in the 1.9 miles surveyed along the roadside. The crew also found a pioneer infestation of yellow archangel that was also treated. The Clallam River was not directly surveyed or treated this year.

**In 2018:** If funding allows, Clallam River and its nearby roadsides should be surveyed and treated for invasives of concern.

## 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 will be 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 over the next few years.

### 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 Pysht 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- 2017: No knotweed work was performed on Pysht River and no entity reported any non-native treatments.

**In 2018:** 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].
- 2014-2016: Due to funding constraints, no work was performed in Deep Creek.

**In 2017:** The Lower Elwha Klallam Tribe searched 18 acres in Deep Creek and injected 41.36 ounces of glyphosate in approximately 150 stems of knotweed

**In 2018:** the site should be surveyed to study the level of control achieved with this treatment and depending on treatment efficacy, Deep Creek may be a good candidate for a rest year.

<b>Herbicide Use-Deep Creek (gallons)</b>					
	2013	2014	2015	2016	<b>2017</b>
Acres Treated	0.5	-	-	-	<b>0.5</b>
Polaris (imazapyr) sprayed	0.033	-	-	-	<b>0</b>
Aquaneat (glyphosate) sprayed	0	-	-	-	<b>41.36*</b>
Total Herbicide:	0.033	-	-	-	<b>41.36</b>

\*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].
- 2014-2017: No work was performed on Salt or Nordstrom Creeks.

**In 2018:** Considering that the agreements gained in 2013 are now expired and the significance of Salt Creek for salmon habitats, time and funding should be allocated to gaining more permissions on the entirety of Salt Creek. The surveying and treatment of Salt and Nordstrom Creeks should also be prioritized.

<b>Herbicide Use,-Salt Creek (gal)</b>					
	2013	2014	2015	2016	2017
Acres Treated	1	-	-	-	-
Polaris (imazapyr) sprayed	0.015	-	-	-	-
Total Herbicide	0.015	-	-	-	-

### **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.

### Brief Treatment history of Elwha River

See *previous year's reports* for more detailed information

- 2011-2014: Lower Elwha Klallam Tribe, 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 [Lower Elwha Klallam Tribe].
- 2016: While other noxious weed treatments took place, this year was a rest year for knotweed [Lower Elwha Klallam Tribe].

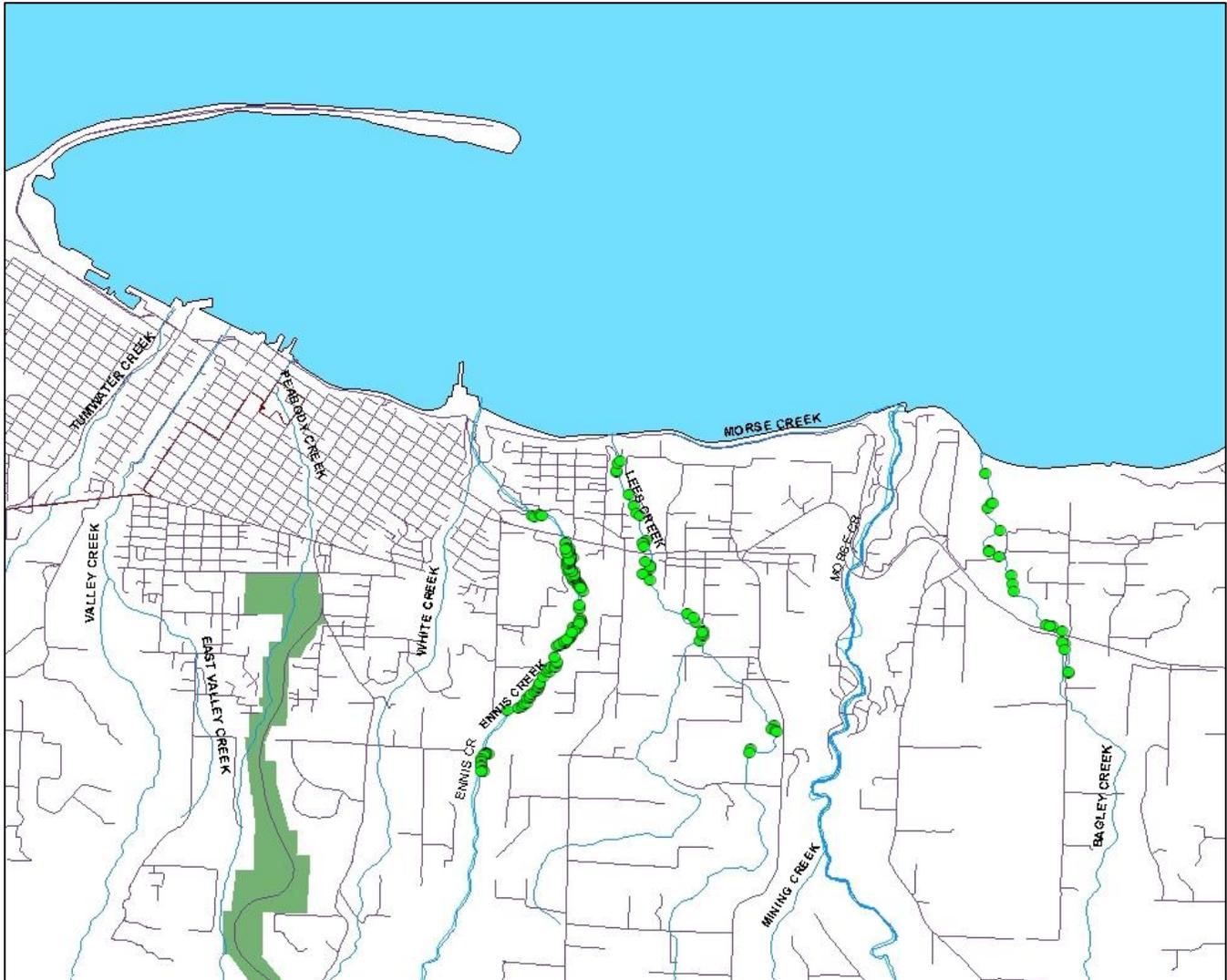
**In 2017:** The Lower Elwha Klallam tribe along with a WCC crew searched 164 acres along the Elwha River and treated invasives including knotweed. Many areas along the Elwha have seen improvement, including the estuary where 60 purple loosestrife and yellow flag iris plants were treated. These crews have begun treating a wider variety of invasives including old man's beard, knapweed species, and Canada thistle as the knotweed infestations decline. The NCEPMT also surveyed 3 miles of the Elwha River for treatment of non-knotweed invasive species.

The CCNWCB controlled meadow knapweed along Olympic Hot Springs Road, from its start at Highway 101 until the Olympic National Park boundary. Due to the road's close proximity with the Elwha River and the infestation severity, there is a high priority for retreatment here. With multiple entities performing control of many species, we hope to decrease weed movement in this river system and allow native plants to take hold in former lake-beds and other areas that have been highly disturbed.

**In 2018:** Retreat Olympic Hot Springs Road for meadow knapweed and other invasives of concern. Focus on working with landowners along the river to control their noxious weeds. The Lower Elwha Klallam tribe plans on continuing noxious weed treatments, especially reed canarygrass, and performing revegetation in previously treated sites.

**For more information contact Kim Williams, Revegetation Field Supervisor [kim.williams@Elwha.org](mailto:kim.williams@Elwha.org)  
Lower Elwha Tribe Fisheries Biologist [Mike.McHenry@elwha.nsn.us](mailto:Mike.McHenry@elwha.nsn.us) or Josh Chenoweth Olympic  
National Park Restoration Botanist [joshua\\_chenoweth@nps.gov](mailto:joshua_chenoweth@nps.gov)**

## Port Angeles Area Streams



**Port Angeles Area Streams.** Green circles indicate 2017 knotweed treatments performed by the Clallam County Noxious Weed Control Board (CCNWCB).

### 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.

**In 2018:** Due to the low prevalence and highly invasive nature of purple loosestrife, historical sites with this weed should be surveyed and treated.

### **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].

**In 2017:** Due to time constraints and low infestation levels, no work on Peabody Creek was performed.

**In 2018:** Surveys and treatments upstream Peabody Creek should take place as most restoration work performed has been in lower portions of the creek, where knotweed infestations are low.

### **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.

**In 2017:** 1.7 river miles of Ennis Creek were treated by the CCNWB from the end of East Scrivner road to approximately 0.2 miles from the end of East Ennis Creek Road, where permissions were granted. 0.13 gallons of 1% Polaris was used to treat 14 parcels (9.95 acres). Most sites did not have heavy infestations and many of these sites can be designated as a rest year for 2018.

**In 2018,** treatment and garnering permissions should be prioritized farther upstream this creek.

## 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 a 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

*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].

**In 2017:** 21 parcels along 1.32 river miles of Lees and East Fork Lees Creek were surveyed for treatment. Treatments started approximately 1.2 miles up Mount Pleasant road in Port Angeles and went down to the mouth of the creek. Two parcels on East Fork Lees Creek with significant knotweed were also treated. A total of 0.11 gallons of 1% Polaris was used on 10 parcels. While treating East Fork Lees Creek, crew noticed other properties upstream that had heavy infestations of knotweed.

**In 2018:** Gaining permissions and treating knotweed on East Fork Lees Creek should be prioritized.

## 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- 2017: No treatments have occurred on Morse Creek.

**In 2018:** Previous treatments that found knotweed on the top of the bluff from the Waterfront Trail should be surveyed and treated.

## 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.

**In 2017:** 1.61 miles of Bagley Creek were surveyed for treatment. Notably, 6 parcels south of US 101 were surveyed for knotweed, and the 4 parcels treated all had infestations of 500 square feet or larger. 0.5 acres of South Bagley Creek Road where Bagley Creek is less than 200 feet from the roadside were also treated. South Bagley Creek Road has had a large knotweed infestation for many years, and has contributed to the heavy infestations south of 101. Now that herbicide use on Clallam County roadsides is possible, the infestations in this area should decrease with consistent treatments. 11 parcels from north of 101 to the mouth of Bagley Creek were

also treated. A total of 0.05 gallons of imazapyr was used to treat a total of 0.63 acres. Crew noted one parcel on South Bagley Creek Road with a large infestation of knotweed where permission was not granted.

**In 2018:** Pursue permission to treat all parcels in the source area of Bagley Creek and perform re-treatments on South Bagley Creek Road.

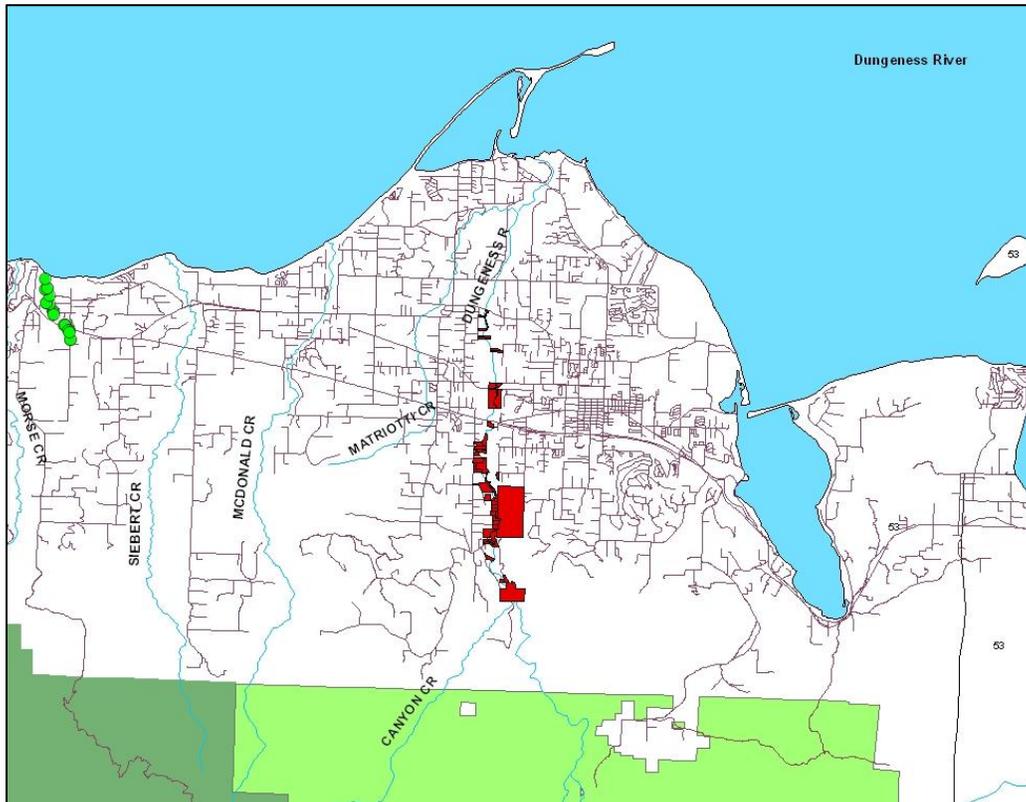
<b>Herbicide use, Port Angeles Area (gallons)</b>					
Waterway	2013	2014	2015	2016	<b>2017</b>
Valley Creek	0.015	0.010	-	-	-
Peabody Creek	0.056	0.050	-	0.031	-
Ennis Creek	0.075	0.010	-	-	<b>0.13</b>
Lees Creek	0.0010	0.220	-	-	<b>0.05</b>
East Fork Lees Creek	0.001	0.000	-	-	<b>0.05</b>
Morse and Waterfront	-	0.070	n/a	-	-
Bagley Creek	0.038	0.0013	-	-	<b>0.05</b>
<b>Total</b>	<b>0.186</b>	<b>0.3613</b>	-	0.031	<b>0.28</b>

*Note: Herbicide use for other noxious weeds is not included in this total.*

*\*Manual treatments of the waterfront trail were performed in 2015.*

**For more information regarding Port Angeles area streams, contact Cathy Lucero, Clallam County Noxious Weed Control Coordinator at 360-417-2442 or [clucero@co.clallam.wa.us](mailto:clucero@co.clallam.wa.us)**

## Dungeness River Watershed



**East Clallam County.** Red polygons represent parcels treated for butterfly bush and knotweed by the East Jefferson WCC under the North Olympic Salmon Coalition (NOSC). Green circles represent knotweed treatments by CCNWCB.

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.

### Brief Treatment history of the Dungeness River

*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.

**In 2017:** Butterfly bush and knotweed treatments continue along the Dungeness River. 1.3 river miles (24.7 acres) were surveyed for treatment by the East Jefferson WCC, under NOSC, this year. Almost every site south of highway 101 has now been surveyed and treated and only a few gaps in permissions remain. The crew has also seen success in their riverbank lupine plantings to fill in areas that were once dominated by butterfly bush and knotweed.

The CCNWCB surveyed 4.4 acres of the Dungeness Dike and used 0.3 gallons of Vastlan (triclopyr) to treat heavy infestations of poison hemlock, as well as other invasives including Canada thistle, bull thistle, and herb Robert. The Dungeness Dike is a popular area for walking and also borders farmland and a creamery, making eradication of the poison hemlock in the area a priority.

**In 2018:** With an increase in funding, the NOSC plans to devote further resources to filling in missing permissions, 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].

**In 2017:** The CCNWCB treated 6.6 acres of WDFW property adjacent to Bell Creek, using 0.3 gallons of Vastlan (triclopyr) to treat poison hemlock and teasel. The teasel infestation is still extremely dense in this area but only 0.15 solid acres of poison hemlock was treated this year.

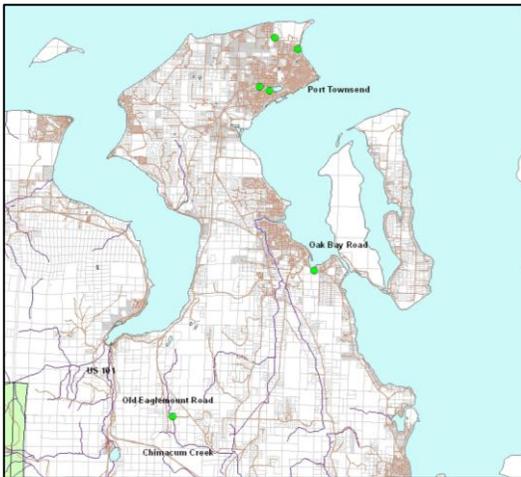
**In 2018:** More resources should be devoted to treating the teasel and himalayan blackberry infestations at this site as they are heavily encroaching into Bell Creek, nearby residential properties and parks.

<b>Herbicide Use, Dungeness River and Surrounding Area (gal)</b>					
	2013	2014	2015	2016	<b>2017</b>
Acres Treated	0.5	8.0	27.3	40.27	<b>35.7</b>
Herbicide	0.12	.425	N/A	2.11*	<b>0.7*</b>
Total Herbicide:	0.14	.425	N/A	2.11*	<b>0.7*</b>

*\*Herbicide totals for 2016 and 2017 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 at (360) 681-4603, [hturnbull@jamestowntribe.org](mailto:hturnbull@jamestowntribe.org) or Sarah Doyle at (360) 379-8051, [sdoyle@nosc.org](mailto:sdoyle@nosc.org)**

**PROJECT ACTIVITIES BY WATERSHED—CONTINUED**  
**EAST JEFFERSON COUNTY**



**Port Townsend area:** Green circles indicate 2013 knotweed treatments by CCNWCB and Jefferson County Noxious Weed Control Board (JCNWCB).

**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].

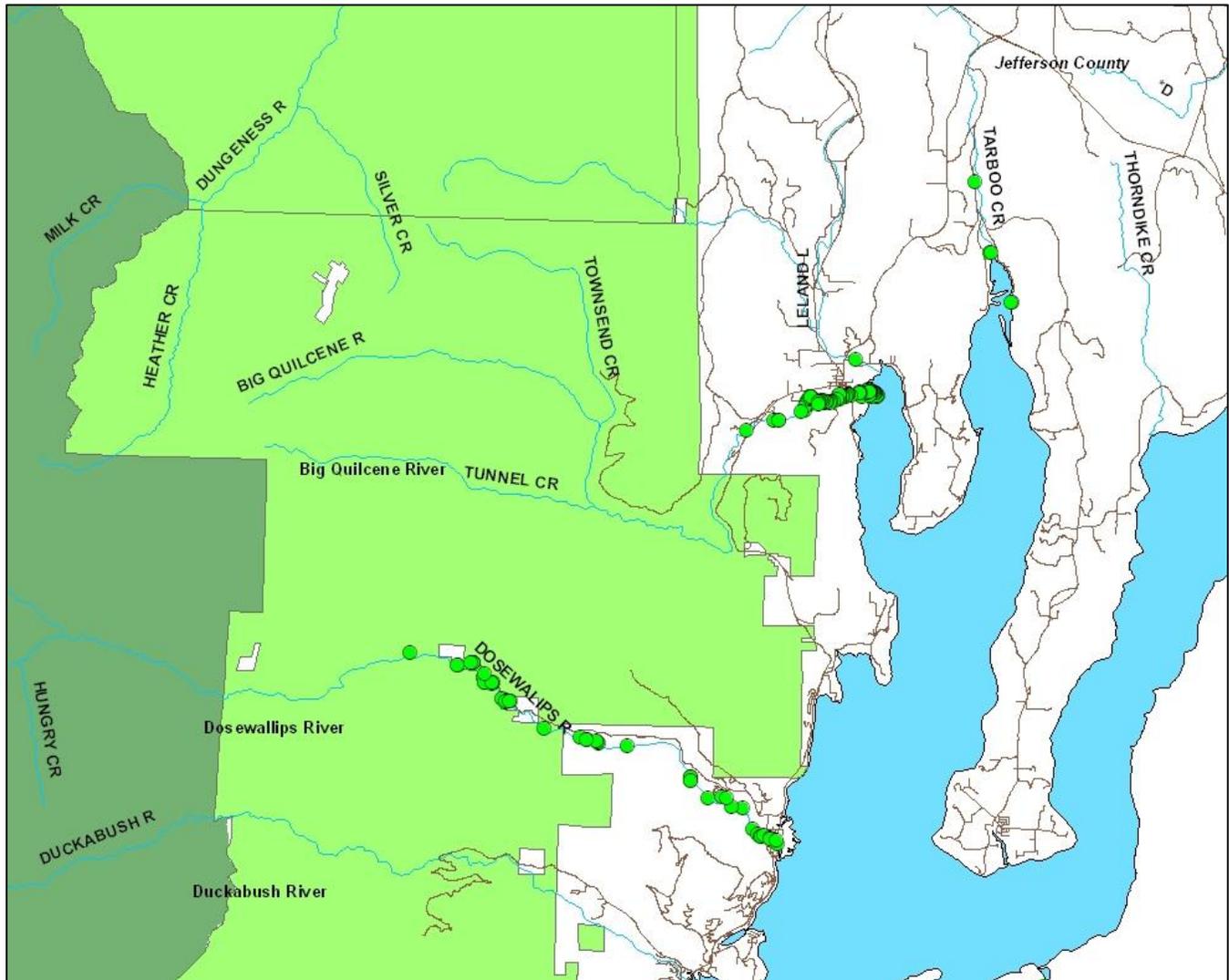
**In 2017:** No treatment information was provided to the CCNWCB for this year's report.

**In 2018:** Teasel infestations in Oak Bay should be surveyed and treated, as well as other sites in Port Townsend with historical knotweed sites.

<b>Herbicide Use, Port Townsend Area (gallons)</b>							
	2011	2012	2013	2014	2015	2016	2017
Port Townsend (several sites)	0.15	-	0.014	-	-	-	-
Old Eaglemount Road	0.004	-	0.0008	-	-	-	-
Oak Bay	1.125	-	0.01	-	-	-	-
Additional Jefferson County sites	-	-	-	-	-	0.37	-
<b>Total</b>	<b>1.279</b>	<b>-</b>	<b>0.0248</b>	<b>-</b>	<b>-</b>	<b>0.37</b>	<b>-</b>

**For more information regarding control in the Port Townsend area, contact Mallore Weinheimer, Assistant Coordinator, at [mweinheimer@co.jefferson.wa.us](mailto:mweinheimer@co.jefferson.wa.us)**

## Quilcene Area:



**Quilcene area:** Green circles indicate knotweed treatments by the Hood Canal Salmon Enhancement Group (HCSEG).

### 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.

**In 2017:** The HCSEG crew treated 3.2 miles of the lower Big Quilcene River, using 0.26 gallons of Polaris to treat 375 acres. The amount of herbicide used along the Big Quilcene River continues to decrease with declining knotweed infestations, with only 0.075 solid acres of knotweed being treated this year. The HCSEG and its crew have noted that the most effective treatments have resulted from using imazapyr and switched to using it exclusively this year.

**In 2018:** these sites should be surveyed for retreatment and the HCSEG plans on using a grant through the Salmon Recovery Fund (RCO) to plant natives, especially conifers, in areas that were previous inhabited by knotweed.

<b>Herbicide Use, Big Quilcene River (gallons)</b>										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Acres Treated*	13	55.75	42.75	4.06	NA	5 (est)	6 (est)	240	34	<b>375</b>
AquaNeat injected	2.06	0	0	0	0	0	0	0	0	<b>0</b>
AquaNeat sprayed	3.6	18.291	31.43	9.77	7.33	9.92	4.339	3.63	1.49	<b>0</b>
Polaris AQ sprayed	0	0	0.94	0	0	0	0	0	0	<b>0.26</b>
Total Herbicide	5.66	18.291	24.1	9.77	7.33	9.92	4.339	3.63	1.49	<b>0.26</b>

*\*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.*

## **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].
- 2015-2017: No treatments were recorded due to funding and staffing shortages.

**In 2018:** 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- **2017**: No treatments were recorded.

**In 2018:** Leland's popularity as a fishing destination makes it an important riparian area for consistent knotweed treatments. Surveys and retreatment should take place as needed.

### **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-**2017**: No treatments were reported on Tarboo Creek.

**In 2018:** Species of concern should be surveyed and treated along Tarboo Creek in order to protect its pristine ecological 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].

**In 2017:** 0.2 miles of the Little Quilcene River was surveyed by the HCSEG, 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.

**In 2018:** The Little Quilcene River has very low knotweed infestations and is a good candidate for a rest year and a shift in target species to more prevalent weeds of concern.

Herbicide Use, Quilcene Area (gallons)							
Waterway	2011	2012	2013	2014	2015	2016	2017
Quilcene Town	0.56	-	0.325	0.003	-	-	-
Tarboo Creek	1.96	2.25	0.03	-	0.02	-	-
Herb Beck Marina/Quilcene	-	-	0.34	0.05	-	-	-
Little Quilcene River	n/a	n/a	0.09	0.017	-	-	<b>0.001</b>
Total	2.52	2.25	0.782	0.0700	0.02	-	<b>0.001</b>

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].
- 2015-2017: Due to low infestation levels, no treatments were performed on Spencer creek.

**In 2018:** If time and resources allow, Spencer Creek should be surveyed and treated for all high priority weeds.

Herbicide Use, Spencer Creek (gal)							
	2011	2012	2013	2014	2015	2016	2017
Herbicide use	1.69	3.29	0.32	0.19	-	-	-

### 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].

**In 2017:** The HCSEG surveyed 10.5 miles of the Dosewallips River and treated 0.13 acres of solid knotweed using 0.065 gallons of imazapyr. A total of 69 parcels were surveyed, 12 of which were found to have knotweed. The herbicide usage/ acreage treated on the Dosewallips River have consistently decreased each year.

**In 2018:** As the knotweed infestations decline the focus of treatments on the Dosewallips could transition to other invasive species as well as native plantings, as funding allows.

Herbicide Use-Dosewallips River (gallons)												
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Acres Treated*	2	5	7.75	5.5	14.05	0.3	0.57	5 (est)	1.3	5718	27.1	<b>1348</b>
AquaNeat injected	0.77	3.175	0.8	0	0	0	0.031	0	-	-	0	<b>0</b>
AquaNeat sprayed	0.375	3.2	3.12	0.234	8.48	0.58	1.443	1.56	.007	0.795	0	<b>0</b>
Polaris AQ sprayed	0	0	0	0	0.02	0	0.02	0.003	.03	-	0.13	<b>0.065</b>
Total Herbicide	1.145	6.375	3.92	0.234	8.5	0.58	1.494	1.56	0.037	0.795	0.13	<b>0.065</b>

*\*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.*

## 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).

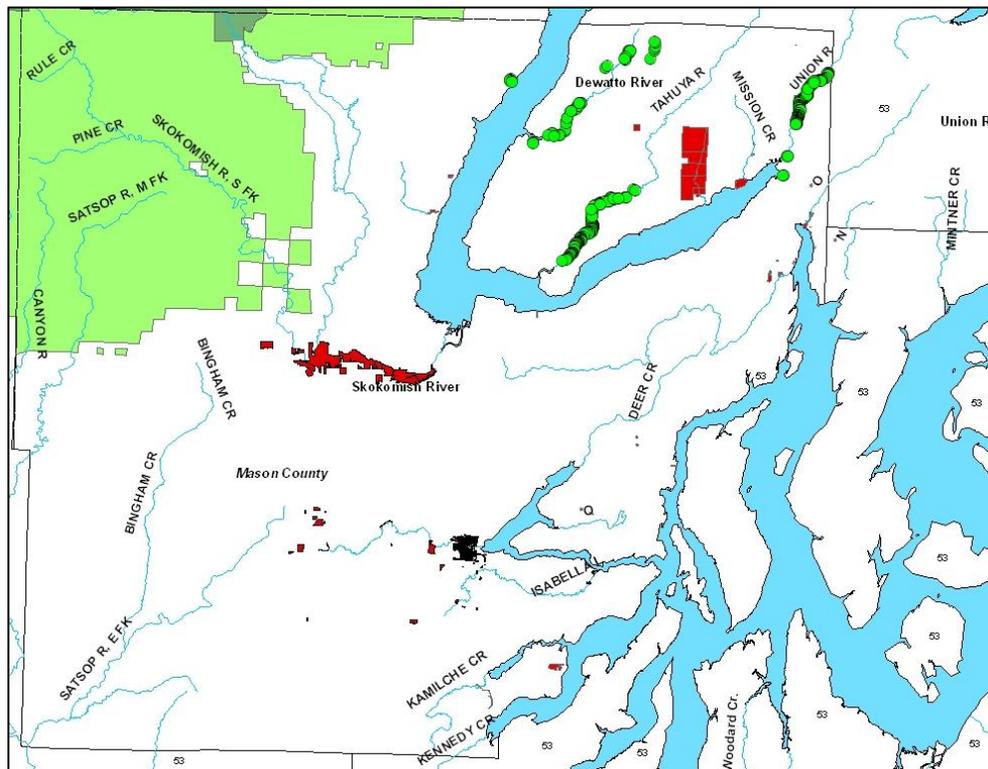
**In 2018:** Due to the low knotweed occurrence on the Duckabush, treatments of other invasive species of concern should be performed in its lower reaches.

Herbicide Use, Duckabush off-channel site (gallons)						
2011	2012	2013	2014	2015	2016	2017
0	0.01	0.0008	-	-	-	-

**For more information about control efforts in the Quilcene area contact Tamara Cowles with the HCSEG, at 360-275-3575 extension 24 or [tamara@pnwsalmoncenter.org](mailto:tamara@pnwsalmoncenter.org)**

## PROJECT ACTIVITIES BY WATERSHED—CONTINUED

### MASON COUNTY



**Mason County.** Red polygons indicate parcels treated by Mason County Noxious Weed Control Board (MCNWCB) and Mason Conservation District (MCD). Green circles indicated knotweed work performed by the Hood Canal Salmon Enhancement Group (HCSEG).

### 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 access to the Tahuya for complete river treatments difficult.

#### 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: 5.73 river miles were surveyed for treatment. 47 parcels were treated for knotweed [HCSEG].

**In 2017:** The HCSEG and its WCC crew surveyed 6.5 miles of the Tahuya River, treating 221 acres and helping 28 landowners with their infestations. 8 gallons of 1% Polaris was used to treat 0.06 acres of solid knotweed.

**In 2018:** Focus on native plantings and treatment of other invasive species to prevent weed species from spreading into sites previously inhabited by knotweed.

## 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].

**In 2017:** The HCSEG treated 386 acres along 4.9 river miles. Of the 66 parcels surveyed, 55 were treated with 0.7 gallons of imazapyr. Progress on Union River has been slower in recent years but the HCSEG crew has started to use imazapyr exclusively this year and expect to see higher control of the treated infestations in 2018.  
**In 2018:** The HCSEG plans on further extending their revegetation projects in many Mason County riparian areas.

## 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 for 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].

**In 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. Having permissions for most of the river system has greatly improved the efficacy of treatments.

**In 2018:** Treatment of the remaining knotweed and other invasive infestations as well as transitioning into revegetation projects should be performed on the Dewatto and neighboring river systems.

**For more information about the Tahuya, Union or Dewatto Rivers please contact Tamara Coles, 360-275-3575 ext. 24 [tamara@pnwsalmoncenter.org](mailto:tamara@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].

**In 2017:** The Mason Conservation District searched 442 acres along 15.5 river miles of the Skokomish River for knotweed and giant hogweed. Sites upstream of Highway 101, where they have been treating since they began treatments on this river system, are now seeing 80-90% control. Systematic treatments downstream of Highway 101 were also performed for the first time this year. With such high levels of control, the MCD has also started seeding and bareroot planting efforts along this river system.

**In 2018:** Systematic treatments of downstream Skokomish River should be performed so that native plantings can be expanded throughout the river system.

**For more information about the Skokomish River please contact Mitch Redfern at the Mason Conservation District, 360-427-9436 ext 115 or [mitch@masoncd.org](mailto:mitch@masoncd.org)**

## Other Mason County Sites

### 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. An additional 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].

**In 2017:** The MCNWCB surveyed 4.4 river miles and treated 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. A combined 7.1

gallons of glyphosate and imazypyr were used for these sites. The MCNWCB also used aminopyralid and triclopyr to treat other non natives including herb Robert, policemen’s helmet, and giant hogweed.

The MCD completed their first comprehensive treatments of knotweed and giant hogweed on Goldsborough and Mill Creek this year. 2.4 river miles were surveyed and only 3.5 acres of the total 25 acres surveyed were treated on this watershed. The addition of 43 new landowner agreements this year has allowed for the most thorough treatment of Mill and Goldsborough creek to date.

**In 2018:** the MCD will focus on gaining permissions for the entirety of the Goldsborough and Mill Creek watershed and seeding in previously treated areas.

Herbicide Use, Mason County, 2013 (gal)			Herbicide Use, Mason County, 2015 (gal)		Herbicide Use, Mason County, 2016 (gal)		Herbicide Use, Mason County, 2017** (gal)	
	Glyphosate injected	Herbicide sprayed	Glyphosate injected	Herbicide sprayed	Glyphosate injected	Herbicide sprayed	Glyphosate injected	Herbicide Sprayed
Skokomish River	0	16.84	N/A	N/A	n/a	n/a	<b>n/a</b>	<b>n/a</b>
Tahaya River	0	8.3	0	0.69	0	0.08	<b>0</b>	<b>0.08</b>
Union River	5.69	8.55	0	3.48	0	1.40	<b>0</b>	<b>0.7</b>
Dewatto River	0	0.123	0	0.29	0	0.02	<b>0</b>	<b>0.13</b>
Finch Creek	2.06	0.03	0	1.49	0.4	0.2	<b>n/a</b>	<b>n/a</b>
Stimson Creek	3	1.15	0	0.10	0.8	0.07	<b>n/a</b>	<b>n/a</b>
Sherwood Creek	3.23	0	0	2.58	0.8	0.49	<b>n/a</b>	<b>n/a</b>
Other riparian sites	1.32	0.85	0	0.58	1.5	1.13*	<b>n/a</b>	<b>n/a</b>
Terrestrial sites	1.54	1.33	0	4.67	2.2	0.59	<b>n/a</b>	<b>n/a</b>
<b>Total</b>	<b>16.84</b>	<b>37.173</b>	<b>0</b>	<b>13.88</b>	<b>5.7</b>	<b>3.98</b>	<b>5.49</b>	<b>2.7232</b>

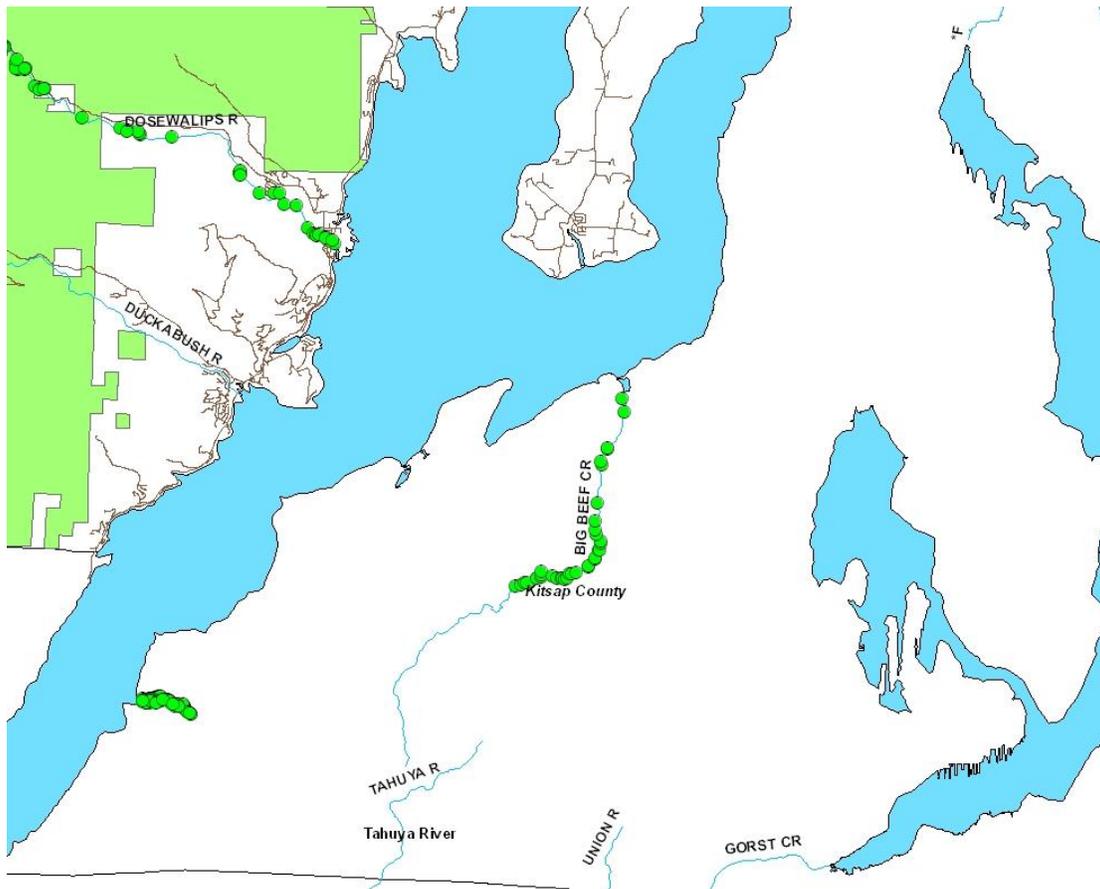
\*Herbicide totals for 2016 do not include Mill and Goldsborough Creeks, which were not provided.

\*\* 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.

**For more information about Mason County work, please contact Pat Grover, 360-427-9670 ext. 592 [patriciaq@co.mason.wa.us](mailto:patriciaq@co.mason.wa.us) or Mitch Redfern, 360-427-9436 ext. 115 [mitch@masoncd.org](mailto:mitch@masoncd.org)**

## PROJECT ACTIVITIES BY WATERSHED—CONTINUED

### KITSAP COUNTY



**Kitsap County.** Green circles represent knotweed treatments performed by the Hood Canal Salmon Enhancement Group (HCSEG).

### **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 miles of Big Anderson Creek were treated. Herbicide usage has dramatically decreased in recent years. 4.36 gallons of glyphosate was applied to 10 parcels in 2016 while in 2014 the crew used over 22 gallons on 13 parcels [HCSEG].

**In 2017:** The HCSEG used 0.623 gallons of imazapyr to treat 0.44 solid acres of knotweed along 1.75 miles of Big Anderson Creek. Compared to 2016, the herbicide applied per river mile has decreased by 5.3 gallons, due to decreased infestations of knotweed and the crew switching over to using imazapyr exclusively.

**In 2018:** Sites treated with imazapyr this year should be surveyed to analyze control level after switching from glyphosate. Depending on infestation control from this year, Big Anderson Creek may be a good candidate for a rest year in 2018 or 2019.

## **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].

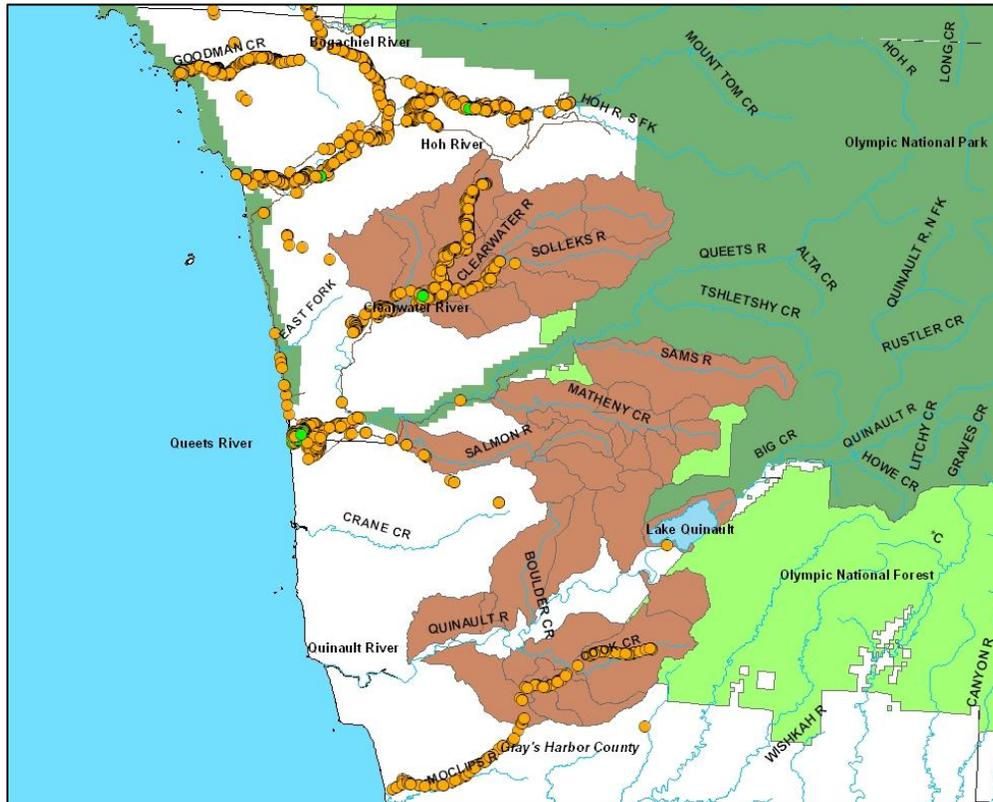
**In 2017:** Big Beef Creek was treated for the first time by HCSEG. 4.75 river miles were surveyed along 65 parcels. Across this area, 0.04 solid acres of knotweed was treated with 0.160 gallons of imazapyr. All treatments took place 4.75 miles in from where Big Beef Creek meets with Puget Sound.

**In 2018:** Garnering additional permissions for parcels farther inland along Big Beef Creek should be prioritized as infestations near the creek's mouth have decreased substantially.

**For more information about Big Anderson and Big Beef Creeks, please contact Tamara Coles, 360-275-3575 ext. 24 [tamara@pnwsalmoncenter.org](mailto:tamara@pnwsalmoncenter.org) or Michelle Myers, 360-275-9722 [michelle@pnwsalmoncenter.org](mailto:michelle@pnwsalmoncenter.org)**

# PROJECT ACTIVITIES BY WATERSHED—CONTINUED WEST JEFFERSON COUNTY AND GRAYS HARBOR COUNTY

## Quinault River, Lake Quinault, Queets and Clearwater Rivers



**Quinault Indian Nation.** Brown polygons indicate the Quinault Indian Nation project area. Green circles and orange circles indicate knotweed and other invasive species, respectively, treated by 10,000 Institute.

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.

### **The 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 over 43 acres were 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 Brittlund Company. Infestations at Lake Quinault were treated by the 10,000 Year's Institute (10KI).
- 2015: 4 miles of the Lower Quinault River and 1,100 acres of Lake Quinault and Quinault river tributaries were retreated [10KI, Brittlund 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, Brittlund Company, NCEPMT].

**In 2017:** Under the Pulling Together in Restoration project, the 10KI surveyed 19 road miles on SR 101 and Moclips Highway for invasives including tansy ragwort, reed canarygrass, Scotch broom, herb Robert, and foxglove. Out of the 180 acres searched, 4.4 acres of tansy ragwort and 2.1 acres of foxglove were treated with a total of 101 gallons of 2% Aquaneat, or were manually controlled. Though the Moclips highway only runs along the Moclips River for 3.5 miles, this project has been a high priority for the 10KI as wind dispersed seeds from this area can be carried to the Upper Quinault and Queets tributaries. Future work with the Pulling Together in Restoration Project with the 10KI will focus on addressing potential seed sources and vectors in this area. It is suspected that an attempt to mow to control this area has been contributing the spread of tansy ragwort over the last five years.

**In 2018:** Collaboration with local roads departments may be beneficial to coordinate mowing with treatments of this area.

## **Queets-Clearwater Watershed**

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 has decreased in size substantially [QIN, JCNWCB].

- 2014: Invasive species and remaining knotweed mapped in 2013 were treated by Brittlund Company and 10KI. Reed canarygrass was also treated at the mouth of the Queets.
- 2015: 33 river miles of the Queets and Clearwater Rivers were treated [10KI].
- 2016: No treatments were recorded this year.

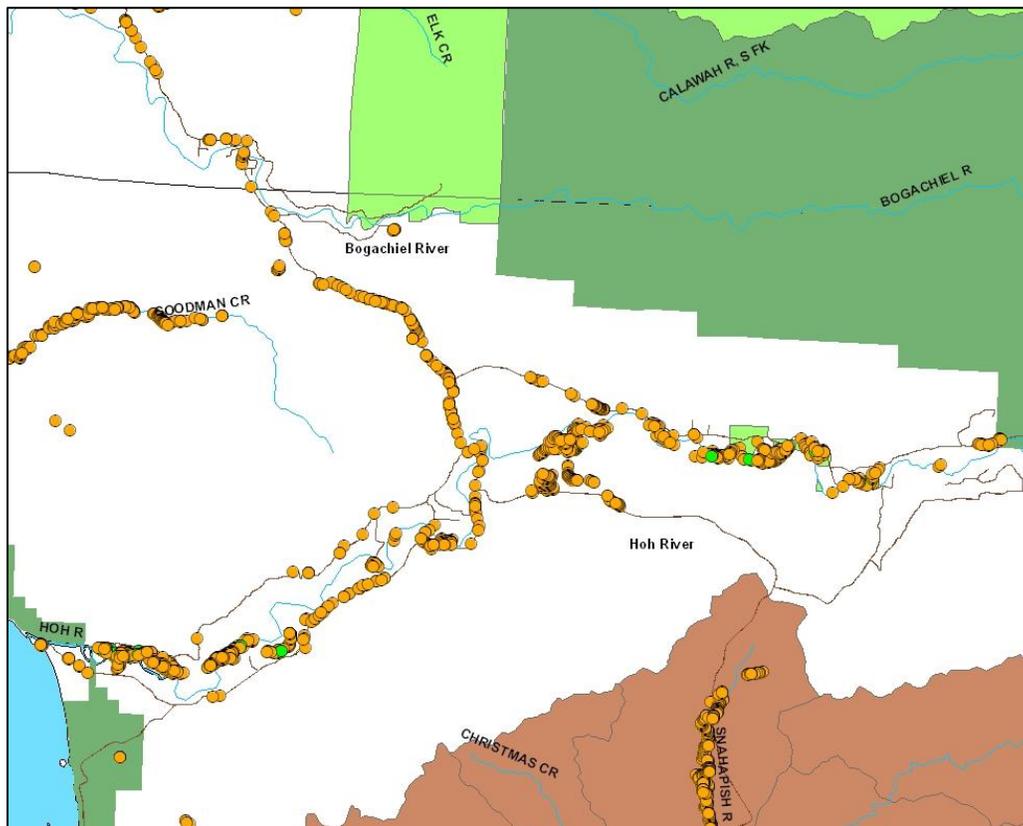
**In 2017:** A total of 35.75 miles along the Lower Queets, Clearwater, and Snahapish rivers were surveyed by the 10KI for all invasive species. Knotweed continues to decline in this watershed. 45 knotweed treatments sites were treated on the first 1.58 miles of the Queets from its mouth and only two sites were treated on the entirety of Clearwater River. All other efforts were devoted to other non-natives, focusing primarily on reed canarygrass, Canada thistle, Scotch broom, herb Robert, and tansy ragwort. For the first time this year, 13 miles of the Snahapish river was mapped and treated for reed canarygrass. The Snahapish River flows into the Clearwater River, where reed canarygrass treatments have been ongoing for two years now. Pre-emptive treatments of the otherwise pristine Snahapish River will help control infestations further downstream. Canada thistle was also treated on this river system with 1% Polaris or 2% Aquaneat.

Tansy Ragwort was a large focus of this year's treatments, especially on the Lower Queets River. Only 2.03 acres of knotweed species were found this year on the Lower Queets River and reed canarygrass infestations are also small. In comparison, the 10KI treated 40.7 acres of tansy ragwort, which were especially dense near the mouth of the Queets River. The NCEPMT also performed invasive treatments along 3.78 miles of upper Queets, within the Olympic National Park boundaries (ONP).

**In 2018:** The 10KI plans to continue controlling knotweed while shifting focus to other non-natives like tansy ragwort.

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

## Hoh River



**Hoh River.** Green circles indicate 2017 knotweed treatments; orange circles indicate other invasive species, the brown polygon denotes a portion of Quinault Indian Nation project areas.

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 [10KI, 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 [10KI, 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 have 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 [10KI, Hoh Tribe, Hoh River Trust, ONP].
- 2014: 125 knotweed and 319 reed canarygrass sites were treated along the Hoh River mainstem [10KI, 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 [10KI, 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 [10KI].

**In 2017:** The 10KI performed work on the Hoh River under the Pulling Together in Restoration Project, the Hoh Riparian Restoration Project, and the Washington State Department of Agriculture (WSDA) Knotweed program. Of the focal species in this watershed, knotweed had the lowest prevalence this year. 28 Bohemian, 8 Japanese, and 1 Giant knotweed sites were found and treated with 1% Polaris or 2% Aquaneat. With knotweed declining in this area, focal species have shifted to the treatment of reed canarygrass, Scotch broom, Canada thistle and herb Robert. A total of 3,562 acres were searched for all invasives on the Hoh River. 0.08 acres of this area was treated for knotweed while 164 acres were treated for other non-natives. The 10KI have noted an explosion in herb Robert infestations along the Hoh and neighboring roadsides, but this year they have successfully coordinated with the Jefferson County Roadside Department to coordinate mowing of roadsides after herb Robert has been pulled and bagged.

**In 2018:** With knotweed infestations dramatically reduced since initial treatments in 2001, work in 2018 and beyond will focus on other invasives, especially reed canarygrass. Revegetation projects should be performed to prevent spread of aggressive weeds in previously treated areas.

<b>Herbicide Use, Hoh River (gallons)</b>										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Acres Treated	1093	1000	NA	0.16	0.14	0.11	3.82	0.06	0.7*	<b>164</b>
AquaMaster or AquaNeat Injected	0.0151	0.188	0.25	0.13	0	0	0	0	0	<b>0</b>
AquaMaster or AquaNeat Sprayed	0.5645	0.13	0.78	0.73	0.37	0	0.153	0	0	<b>10.4</b>
Polaris AQ or Habitat Sprayed	0.06382	0.043	0.206	0.02	0.09	0.145	0.745	0.07	0.234	<b>0.05</b>
Total Herbicide	0.64342	0.361	1.247	0.88	0.46	0.145	0.898	0.07	0.234	<b>*11</b>

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

**For more information about knotweed treatment on the Hoh River, please contact Jill Silver, 10,000 Years Institute, at 360-385-0715 or [jsilver@10000yearsinstitute.org](mailto:jsilver@10000yearsinstitute.org).**

## Table 1: Work by County-by Watershed

This table lists control and survey data from knotweed projects across the Olympic Peninsula. The Clallam County Noxious Weed Control Board (CCNWCB) gathered this data from partners; data was estimated or designated as n/a<sup>\$</sup> when incomplete data was given. River systems where no treatments occurred and/or reported are labeled with a dash. The standardized reporting template used by participating entities can be found in Appendix III. This table is not a comprehensive list of all invasive plant control in the Olympic Peninsula as some partners did not report their work to the CCNWCB in 2017. Not all species treated are listed in this table. For more detail on treated species, refer to narratives by river system in this report.

The table is organized in the following order: Clallam, Jefferson, Mason and Grays Harbor. Watersheds are generally in the same order as narratives in this report and move clockwise, starting in west Clallam County. (This order is a historic reflection of where work first occurred). Multiple agencies may have worked within the same watershed. The totals in each river system reflect the sum of all work done on the river system by all partners unless data was reported by watershed, in which work is written separately. An explanation of agency acronyms can be found at the end of the table along with definitions of terms used in the header column.

Partner(s)	Watershed/ Waterway	River Or road Miles**	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Species/misc notes
<b>Clallam County Waterways-Starting West Clallam clockwise to East Clallam</b>										
QNR, NCEPMT, CCNWCB	Quillayute River	5.91	150	31.7	n/a <sup>\$</sup>	7/48	3	3	0	knotweed, purple loosestrife
10KI	Quillayute Watershed (Sol Duc, Bogachiel, Quillayute)	0.35 river miles/ 103 road miles	421	0.533	n/a <sup>\$</sup>	4/46	6	8	6	knotweed, tansy ragwort, reed canarygrass, Canada thistle, Scotch broom
QNR, CCNWCB	Bogachiel River	12.6	367	12.37	n/a <sup>\$</sup>	6/6	6	6	1	knotweed
QNR	Dickey River	7.9	67.9	3.75	n/a <sup>\$</sup>	n/a <sup>\$</sup>	4	4	1	knotweed
Makah	Big River and Hoko- Ozette Rd	6.6	19.56	19.56	0.2	19/24	24	24	0	knotweed, yellow archangel, herb Robert, bugleweed
	Umbrella Creek	1.4	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	yellow archangel, Herb Robert, bugleweed
	Makah Reservation	n/a	n/a <sup>\$</sup>	1.09	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	knotweed
	Hoko River	-	-	-	-	-	-	-	-	-

Partner(s)	Watershed/ Waterway	River Or road Miles**	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Species/misc notes
	Seki River	-	-	-	-	-	-	-	-	-
	Seki, Clallam Bay and Highway 112	n/a	0.1	0.1	0.01	1/1	1	1	0	knotweed
CCNWCB	Clallam River	1.3 road miles	1.9	0.002	0.002	n/a	1	1 (Clallam County)	0	knotweed
	Pysht River	-	-	-	-	-	-	-	-	-
QNR	Sol Duc River	4.27	45	1.3	n/a <sup>s</sup>		7	7	4	knotweed
CCNWCB	Lake Creek, Lake Pleasant and Beaver	1.2 road miles	7.2	0.5	0.0075	n/a	2	1 (Clallam County)	n/a	knotweed
10KI	Forks	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	Knotweed, butterfly bush, Scotch broom
NCEPMT	Lake Crescent	5.5	n/a <sup>s</sup>	n/a <sup>s</sup>	0.001	n/a <sup>s</sup>	1	1	0	Canada thistle, Scotch broom, peavine, Herb Robert
Elwha Klallam Tribe	Deep Creek	1	18	0.000003	0.000003	1/1	1	1	0	knotweed
	Nordstrom Creek	-	-	-	-	-	-	-	-	-
	Salt Creek	-	-	-	-	-	-	-	-	-
Elwha Klallam Tribe, WCC, NCEPMT	Elwha River	12	164	0.003	0.003	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	n/a <sup>s</sup>	knotweed, reed canarygrass, yellow flag iris, purple loosestrife
CCNWCB	Valley Creek	-	-	-	-	-	-	-	-	-
	Peabody Creek	-	-	-	-	-	-	-	-	-
	Ennis Creek	1.7	13.9	9.95	0.1	14/20	28	8	0	knotweed
	Lees Creek	1.3	6.6	5.4	0.3	10/21	18	8	1	knotweed, yellow archangel
	East Fork Lees Creek	-	-	-	-	-	9	-	-	-
	Morse Creek	-	-	-	-	-	-	-	-	-
	Bagley Creek	1.6	2	0.63	0.006	7/17	26	5	1	knotweed
	Siebert Creek	-	-	-	-	-	-	-	-	-
	Bell Creek	n/a	6.6	6.6	3.3	1/1	2	1	0	teasel, poison hemlock

Partner(s)	Watershed/ Waterway	River Or road Miles**	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Species/misc notes
NOSC	Dungeness River	1.3	47.5	24.77	n/a	17/17	38	17	3	knotweed, butterfly bush, scotch broom
	Meadowbrook Creek	-	-	-	-	-	-	-	-	-
	Misc Clallam County	-	-	-	-	-	-	-	-	-
<b>Clallam Co. Totals</b>	<b>9 entities/13 waterways</b>	<b>63.4</b>	<b>1,340</b>	<b>118.3</b>	<b>3.9<sup>\$</sup></b>	<b>87/202</b>	<b>177</b>	<b>96</b>	<b>17</b>	<b>22 species controlled</b>
<b>Jefferson County Waterways-Starting East Jefferson clockwise to West Jefferson</b>										
	Snow Creek	-	-	-	-	-	-	-	-	-
	Port Townsend	-	-	-	-	-	-	-	-	-
	Lake Leland	-	-	-	-	-	-	-	-	-
HCSEG	Big Quilcene River	3.2	375	375	0.07	25/55	26	25	1	knotweed
	Little Quilcene River	0.2	5	5	0.0005	1/1	1	1	0	knotweed
	Quilcene and vicinity	-	-	-	-	-	-	-	-	-
	Chimacum and Irontdale	-	-	-	-	-	-	-	-	-
	Tarboo Creek	-	-	-	-	-	-	-	-	-
	Spencer Creek	-	-	-	-	-	-	-	-	-
HCSEG	Dosewallips River	10.5	6223	1348	0.14	12/69	26	12	1	knotweed
	Duckabush River	-	-	-	-	-	-	-	-	-
10KI, NCEPMT	Queets/Clearwater River	20.25	1463	2.03	n/a <sup>\$</sup>	49/67	19	19	2	knotweed, reed canarygrass, tansy ragwort, Scotch broom, foxglove, Canada thistle, peavine, Himalayan blackberry
	Snahapish River	15.5	261	22.6	n/a <sup>\$</sup>	7/7	1	4	1	reed canarygrass, Canada thistle, blackberry (sp)
	Goodman Creek	10	212	23.89	n/a <sup>\$</sup>	8/8	3	3	3	reed canarygrass, Canada thistle, Scotch broom, tansy ragwort, Herb Robert, foxglove, smartweed
	Hoh River &	30	3562	164.07	1.64	61/160	17	17	2	Knotweed, reed

Partner(s)	Watershed/ Waterway	River Or road Miles**	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Species/misc notes
	tributaries									canarygrass, Canada thistle, tansy ragwort, foxglove
<b>Jefferson Co. Totals</b>	<b>3 entities/7 waterways</b>	<b>89.6</b>	<b>12,101</b>	<b>1940.6</b>	<b>1.85<sup>s</sup></b>	<b>163/367</b>	<b>93</b>	<b>81</b>	<b>10</b>	<b>12 species controlled</b>
<b>Mason County Waterways</b>										
HCSEG	Union River	4.9	434	386	0.31*	50/66	84	50	6	knotweed
MCNWCB	Mission Creek	n/a <sup>s</sup>	85.12	n/a <sup>s</sup>	n/a <sup>s</sup>	18/18	16	12	2	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert
	Little Mission Creek	n/a	40	n/a <sup>s</sup>	n/a <sup>s</sup>	1/1	1	1	1	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert
HCSEG	Tahuya River	6.5	870	221	0.07	28/190	96	28	3	knotweed
	Dewatto River	4.9	2189	1827	0.02	13/22	4	4	4	knotweed
	Liliwaup Creek	-	-	-	-	-	-	-	-	-
	Hood Canal waterfront	-	-	-	-	-	-	-	-	-
MCNWCB	Allyn (Misc. terrestrial sites)	n/a	9.23	n/a <sup>s</sup>	n/a <sup>s</sup>	13/15	10	3	2	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert
	Finch Creek	1	100.42	n/a <sup>s</sup>	n/a <sup>s</sup>	42/44	28	24	2	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert
	Sherwood Creek	n/a <sup>s</sup>	108.88	n/a <sup>s</sup>	n/a <sup>s</sup>	32/32	20	5	9	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert

Partner(s)	Watershed/ Waterway	River Or road Miles**	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Species/misc notes	
MCD	Skokomish River	15.5	442	109	n/a <sup>\$</sup>	7/134	49	47	4	knotweed, giant hogweed	
	Goldsborough/Mill Creek	2.4	25	3.5	n/a <sup>\$</sup>	21/83	70	68	43	knotweed, giant hogweed	
MCNWCB	Belfair (Misc. terrestrial/aquatic)	-	-	-	-	-	-	-	-	-	
	Stimson Creek	1.9	94.85	n/a <sup>\$</sup>	n/a <sup>\$</sup>	6/7	5	3	1	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert	
	Coulter Creek	0.51	132.65	n/a <sup>\$</sup>	n/a <sup>\$</sup>	20/21	15	6	2	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert	
	North Bay	n/a <sup>\$</sup>	27	n/a <sup>\$</sup>	n/a <sup>\$</sup>	16/23	13	8	11	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert	
	Anderson Creek	0.84	6.04	n/a <sup>\$</sup>	n/a <sup>\$</sup>	11/13	11	8	10	knotweed, tansy ragwort, policeman's helmet, giant hogweed, Herb Robert	
	Oakland Bay	-	-	-	-	-	-	-	-	-	
	Spencer Lake	-	-	-	-	-	-	-	-	-	
	Shelton (Misc. terrestrial/aquatic)	-	-	-	-	-	-	-	-	-	
	Hwy 101 (Misc)	-	-	-	-	-	-	-	-	-	
	Hwy 106 (Misc.)	20 road miles	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	n/a <sup>\$</sup>	knotweed, tansy ragwort, policeman's helmet, giant hogweed
	Other sites (misc)	n/a	26.22	n/a <sup>\$</sup>	n/a <sup>\$</sup>	14/14	7	3	3	-	

Partner(s)	Watershed/ Waterway	River Or road Miles**	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Species/misc notes
<b>Mason Co. Totals</b>	<b>3 entities/13 waterways</b>	<b>38.4<sup>§</sup></b>	<b>4,590.3<sup>§</sup></b>	<b>2,546.5<sup>§</sup></b>	<b>7.4***</b>	<b>292/683</b>	<b>429</b>	<b>270</b>	<b>103</b>	<b>5 species controlled</b>
<b>Grays Harbor County Waterways</b>										
10KI	Moclips highway and SR 101	40 road miles	180	6.75	n/a <sup>§</sup>	10/10	1	1	1	tansy ragwort, reed canarygrass, scotch broom, Herb Robert, foxglove
<b>Grays Harbor co.</b>	<b>1 entity/ 0 waterways</b>	<b>n/a</b>	<b>180</b>	<b>6.7</b>	<b>n/a<sup>§</sup></b>	<b>10/10</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>5 species controlled</b>
<b>Kitsap County Waterways</b>										
HCSEG	Big Anderson Creek	1.75	157	157	0.4	12/12	7	7	0	knotweed
HCSEG	Big Beef Creek	4.75	708	429	0.04	15/65	31	15	0	knotweed
<b>Kitsap Co. Totals</b>	<b>1 entity/ 2 waterways</b>	<b>6.5</b>	<b>865</b>	<b>586</b>	<b>0.4</b>	<b>27/77</b>	<b>38</b>	<b>22</b>	<b>0</b>	<b>1 species controlled</b>

\*Solid acres calculations made for foliar applications only; injection treatments not included.

\*\* Mileage in this table are river miles, unless otherwise specified. Total miles for each county are **river miles only**.

^Treated acres not reported; treated acres therefore reported as equivalent to protected acres.

§Incomplete; some data not reported.

\*\*\* MCNWCB reported 7 solid acres of treated invasives, but did not describe solid acres per river system. Solid acres were therefore added to Mason County totals only.

#### **AGENCY ACRONYMS USED IN TABLE:**

**10KI**-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

**LEK-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.

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](http://www.clallam.net/weed)

### Clallam County Noxious Weed Control Board

Cathy Lucero- Noxious Weed Control Coordinator  
360-417-2442  
[clucero@clallam.co.wa.us](mailto:clucero@clallam.co.wa.us)

### Jefferson County Noxious Weed Control Board

Mallore Weinheimer, Assistant Coordinator  
360-379-5610 ext. 205  
[mweinheimer@co.jefferson.wa.us](mailto:mweinheimer@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](mailto:PatriciaG@co.mason.wa.us)

### Grays Harbor County Noxious Weed Control Board

360-482-2265

### Mason Conservation District

Mitch Redfern  
360-427-9436 ext 115  
[mitch@masoncd.org](mailto:mitch@masoncd.org)

### Quileute Tribe

Garrett Rasmussen  
360-374-2027  
[garrett.rasmussen@quileutenation.org](mailto:garrett.rasmussen@quileutenation.org)

### Makah Tribe

Rob McCoy  
360-645-3058  
[rob.mccoy@makah.com](mailto:rob.mccoy@makah.com)

### Lower Elwha Klallam Tribe

Kim Williams  
360-457-4012 ext 7499  
[kim.williams@elwha.org](mailto:kim.williams@elwha.org)

### Jamestown S'Klallam Tribe

Hilton Turnbull  
360-681-4603  
[hturnbull@jamestowntribe.org](mailto:hturnbull@jamestowntribe.org)

### Quinault Indian Nation

Greg Eide  
360-276-8211  
[Greg.eide@quinault.org](mailto:Greg.eide@quinault.org)

### North Cascades Exotic Plant Management Team with the National Park Service

Sophie Wilhoit  
360-565-3076  
[sophie\\_wilhoit@nps.gov](mailto:sophie_wilhoit@nps.gov)

### Olympic National Park

Janet Coles  
[Janet\\_coles@nps.gov](mailto:Janet_coles@nps.gov)

### US Forest Service (Olympic Region)

Cheryl Bartlett  
360-956-2283  
[cbartlett@fs.fed.us](mailto:cbartlett@fs.fed.us)

### 10,000 Years Institute

Jill Silver  
360-385-0715  
[jsilver@10000yearsinstitute.org](mailto:jsilver@10000yearsinstitute.org)

### Hood Canal Coordinating Council

Robin Lawlis  
360-394-0046  
[rlawlis@hccc.wa.gov](mailto:rlawlis@hccc.wa.gov)

### Hood Canal Salmon Enhancement Group

Tamara Cowles  
360-275-3575 ext 24  
[tamara@pnwsalmoncenter.org](mailto:tamara@pnwsalmoncenter.org)

### Forterra

Kurt Schlimme  
206-905-6954  
[kschlimme@forterra.org](mailto:kschlimme@forterra.org)

### Center for Natural Lands Management

Patrick Dunn  
360-956-9713  
[pdunn@cnlm.org](mailto:pdunn@cnlm.org)

### North Olympic Salmon Coalition

Sarah Doyle  
360 379-8051  
[sdoyle@nosc.org](mailto:sdoyle@nosc.org)

### Pacific Coast Salmon Coalition

Carl Chastain  
360-374-8873  
[pacsac@olympen.com](mailto:pacsac@olympen.com)

# Appendix II-WSDA Approved Report Form

## 2016 Washington Conservation Corps 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 Weed Board*

Street Address: *306996 Hwy 101* City: *Brinnon* State: *WA* Zip: *98320*

Address or Exact Location of Site: *Doseywallips State Park*  
PIN#:

### General Activity Fields

County (circle one)	WRIA (circle one)	Project Name (from project list)	Owner (circle one)	Workforce**
Clallam Jefferson	Mason 17	<i>Doseywallips River/state Park</i>	Private Non-Profit Public	<i>WCC</i>

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

Crew Members Present: *Theodore Lasky, Michael Ervin, Briana Spencer, Jamie Becker, Alexis*

### 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)
<i>8/15/16</i>	<i>8/15/16</i>	<i>6</i>	Road edge/ROW Riparian Forest Other	<i>.4</i> 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)	Manual/Herbicide	
<i>Knotweed</i>	<i>.1</i> acres	<i>2</i>	<i>H</i>	
<i>Tansy ragwort</i>	<i>.2</i> acres	<i>6</i>	<i>M/H</i>	
<i>Herb robert</i>	<i>.1</i> acres	<i>4</i>	<i>M/H</i>	
<i>Reed canarygrass</i>	<i>.2</i> acres	<i>7</i>	<i>H</i>	
<i>Canada thistle</i>	<i>.2</i> acres	<i>5</i>	<i>H</i>	

~~more on reverse~~

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.

**Herbicide Application**

All Licensed Applicators: Name and License # Theodore Lasky 91829

Firm Name: \_\_\_\_\_ Phone # \_\_\_\_\_

Firm Address \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Application Date	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	Remarks - Weather forecast
8/15/16	1100	1600	72	1-3	NE	0	

Application Area (acres)	Total Volume of Mix Applied (gal)	Diluent	Special comment
1.1	18	Water	

Product Name	EPA Registration #	Amount of herbicide used (oz)	Herbicide Applied/Acre or other measure	Concentration Applied
Polaris	228-534	12	10.9 oz/ac	0.5%
Liberate	34704-04008	12	10.9	0.5%
Blazon	N/A	12	10.9	0.5%

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

WA State NPDES Acres:	Bankfull Acres: FS ONLY	Acres Treated within 150' of Water-FS ONLY

Notes: Weed

	Treated acres	% Cover	m/h M/H
Scotch broom	.1	2	H
Everlasting Peavine	.1	1	H
Mullein	.1	2	H



## NARRATIVE (SUMMARY)

### Example from this year:

**Quileute Tribe**— “Natural Resource staff re-treated the entire Dickey River, the upper 2/3<sup>ds</sup> of the Bogachiel, and the lower portion of the Quillayute River. Staff did spot treatments in the Sol Duc River basin including one section of the main stem that was not treated last season, Private landowners on Lake Pleasant, and Wisen Creek. Clallam County and the National Park crews helped cover a tremendous amount of ground with us in both the Quillayute and Bogachiel systems; we would like to thank them for their hard work and help!”

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

---

7. What partners did you work with?

---

8. Where was your funding from?

---

9. Did you sponsor any educational events?

---

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

---