

Olympic Invasives Working Group 2018 Annual Report



Bohemian knotweed on Fisher Cove Rd, Clallam County, leading to Lake Sutherland, treated for the first time as part of the Clallam County Road Department Integrated Weed Management Plan.

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



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

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January 2019
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This report can also be found at <http://www.clallam.net/weed/annualreports.html>

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Bohemian knotweed and a series of cascades on Bagley Creek near Port Angeles, Wa.

EXECUTIVE SUMMARY

Project Goal

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

Project Overview

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

2018 Overview

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

This year the following entities reported treatment/survey and landowner statistics: Clallam County Noxious Weed Control Board, Quileute Tribe, Makah Tribe, 10,000 Years Institute, Lower-Elwha Klallam Tribe, North Olympic Salmon Coalition, Washington Conservation Crops, Hood Canal Salmon Enhancement Group, Mason County Noxious Weed Control Board, and the Mason Conservation District submitted survey/treatment and landowner statistics. The Quinault Indian Nation and the North Coast/Cascade Exotic Plant Management Team (National Park) submitted GPS treatment point data only.

2018 Project Activities Summary-per County

(See Table 1 with watershed details by county, starting on page 59)

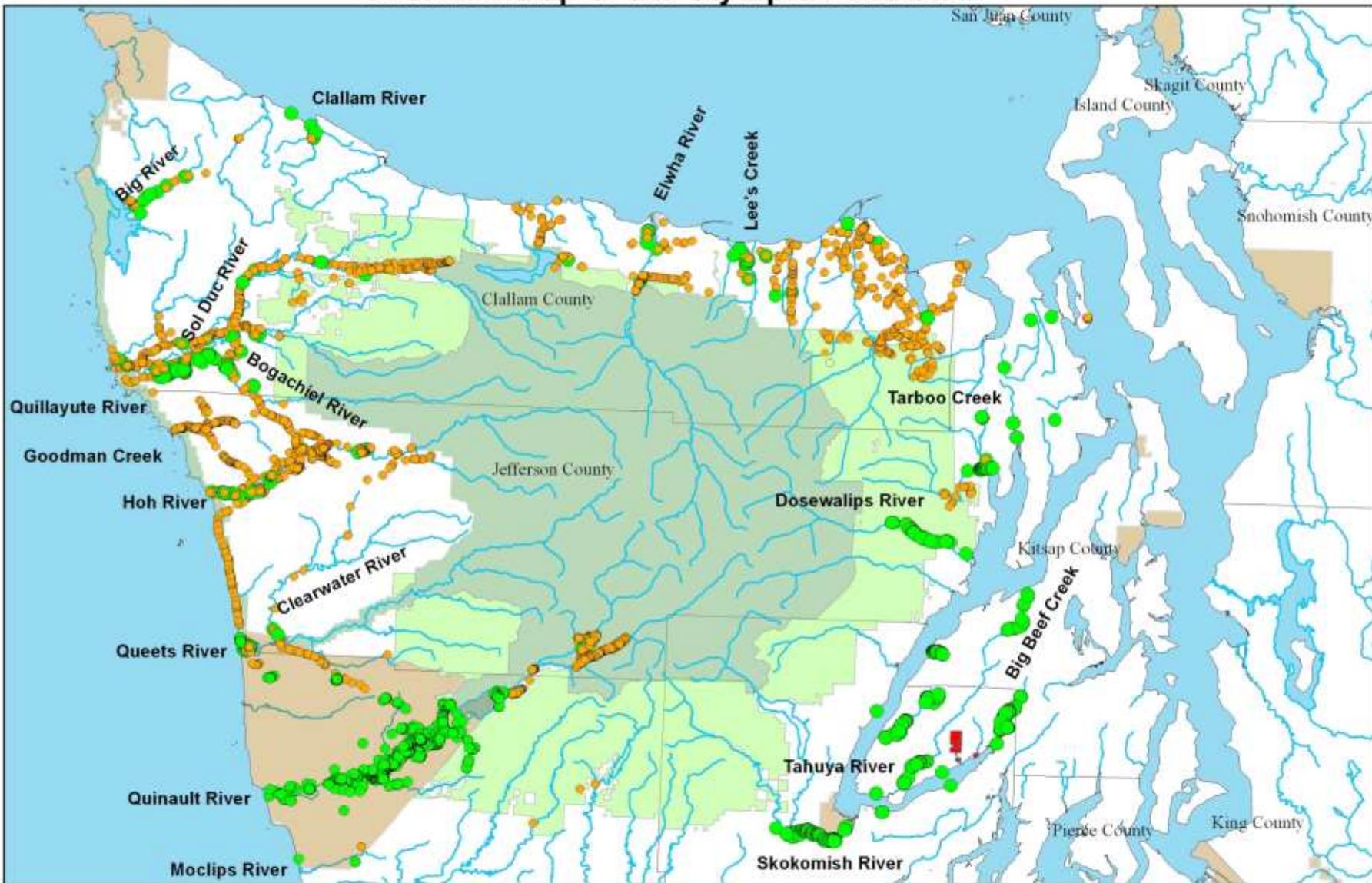
- In Clallam- 8 entities on 17 waterways managed 74 landowner agreements and obtained 13 new agreements. Knotweed and other invasives were treated across more than 148 acres over 77.2 river and road miles.
- In Jefferson- 4 entities on 8 waterways managed 122 landowner agreements and obtained 14 new agreements. Knotweed and other invasives were treated across 1,727 acres over 64.3 river miles.
- In Mason- 3 entities on 16 waterways managed 403 landowner agreements and obtained 40 new agreements. Knotweed and other invasives were treated on over 2505 acres over 35.9 river miles.
- In Kitsap County- 2 entities on 2 waterways managed 39 landowner agreements and obtained 12 new agreements. Knotweed was treated on 662 acres over 6.75 river miles.
- In Grays Harbor- 2 entities on 1 waterway managed 8 landowner agreements and obtained 4 new agreements. Knotweed and other invasives were treated on 1.8 acres over 11.9 river miles.

2018 Observations and Recommendations

- Partners continue to report successful control of knotweed across the Olympic Peninsula but continue to report newly found infestations. Surveyors should include areas beyond the river channel and areas that obscure infestations.
- Face-to-face interactions and site visits were valuable to obtain landowner permissions. Managers and crews should promote positive interactions in the field during surveys or treatment activities.
- Infestations of knotweed and invasive species on roadsides and areas outside of the riparian areas may act as sources or vectors; many partners have expanded their efforts to roadsides and upland areas. Partners should further collaborate and engage with entities to control source infestations.
- Partners observed significant infestations of spotted jewelweed, giant reed, and Bohemian knotweed producing potentially viable seed. Partners should be sure to actively share infestation information across watersheds.

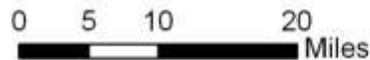
2018 Funding: Projects summarized in this report were funded by: Washington State Department of Agriculture (WSDA), the Washington State Department of Natural Resources-aquatic resource division, Washington State Legislature (WCRI), Clallam County Noxious Weed Control Board, Mason County Noxious Weed Control Board, the Salmon Recovery Funding Board and separate funding administered to the Quinault Indian Nation and the Quileute Tribe (EPA and BIA).

Overview Map of the Olympic Peninsula



Legend

Invasive Species Treated		Treated parcels		Land Ownership	
●	knotweed (sp.)	■	Treated parcels	■	Tribal
●	Other species	■	Olympic National Forest	■	Olympic National Park

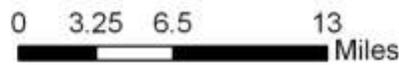


Overview Map of West Clallam County

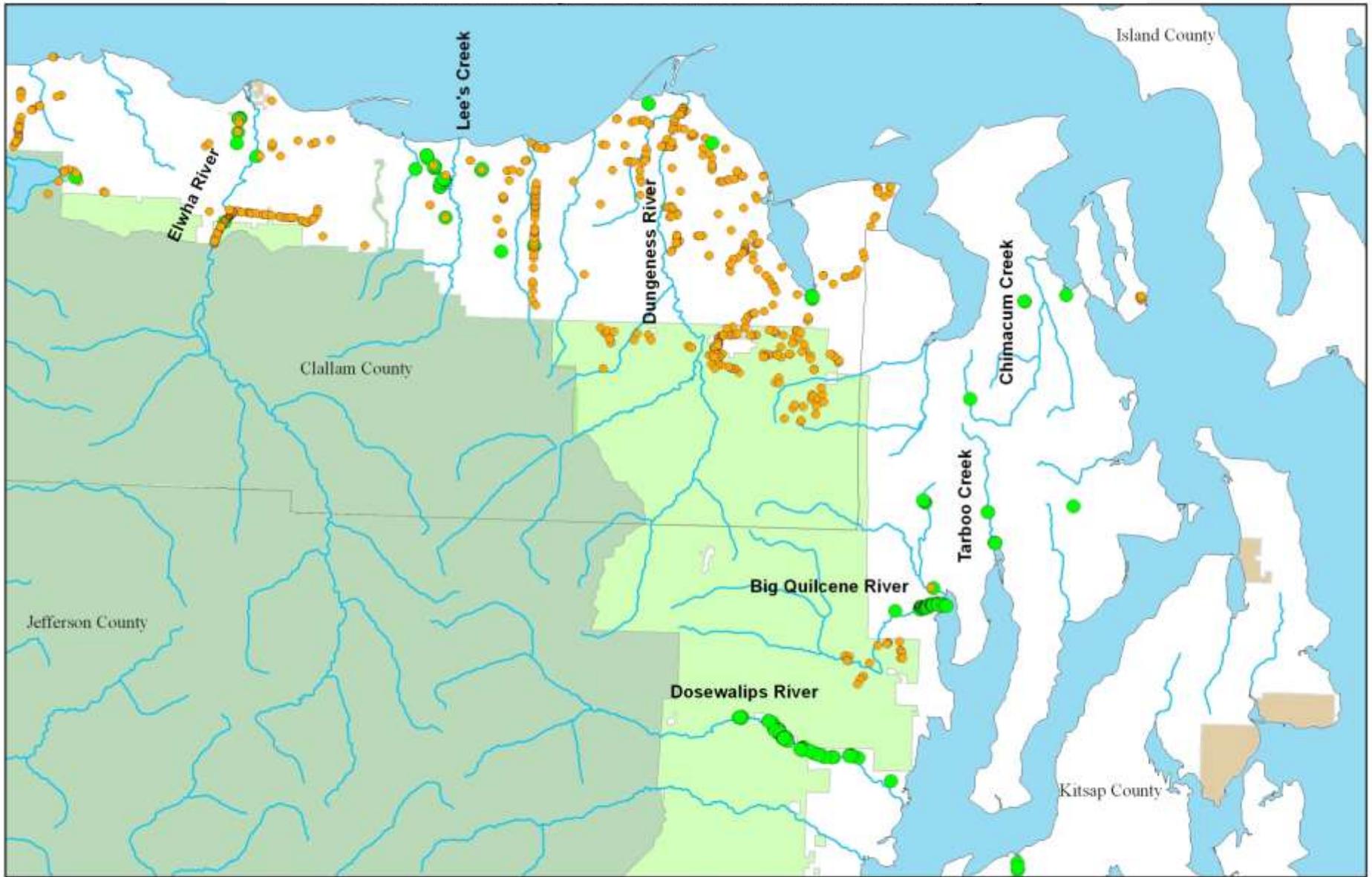


Legend

Invasive Species Treated		Treated parcels	Land Ownership
●	knotweed (sp.)		 Tribal
●	Other species		 Olympic National Forest
			 Olympic National Park

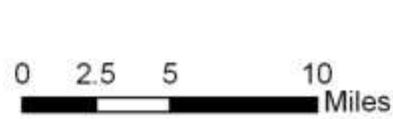


Overview Map of East Clallam and East Jefferson County

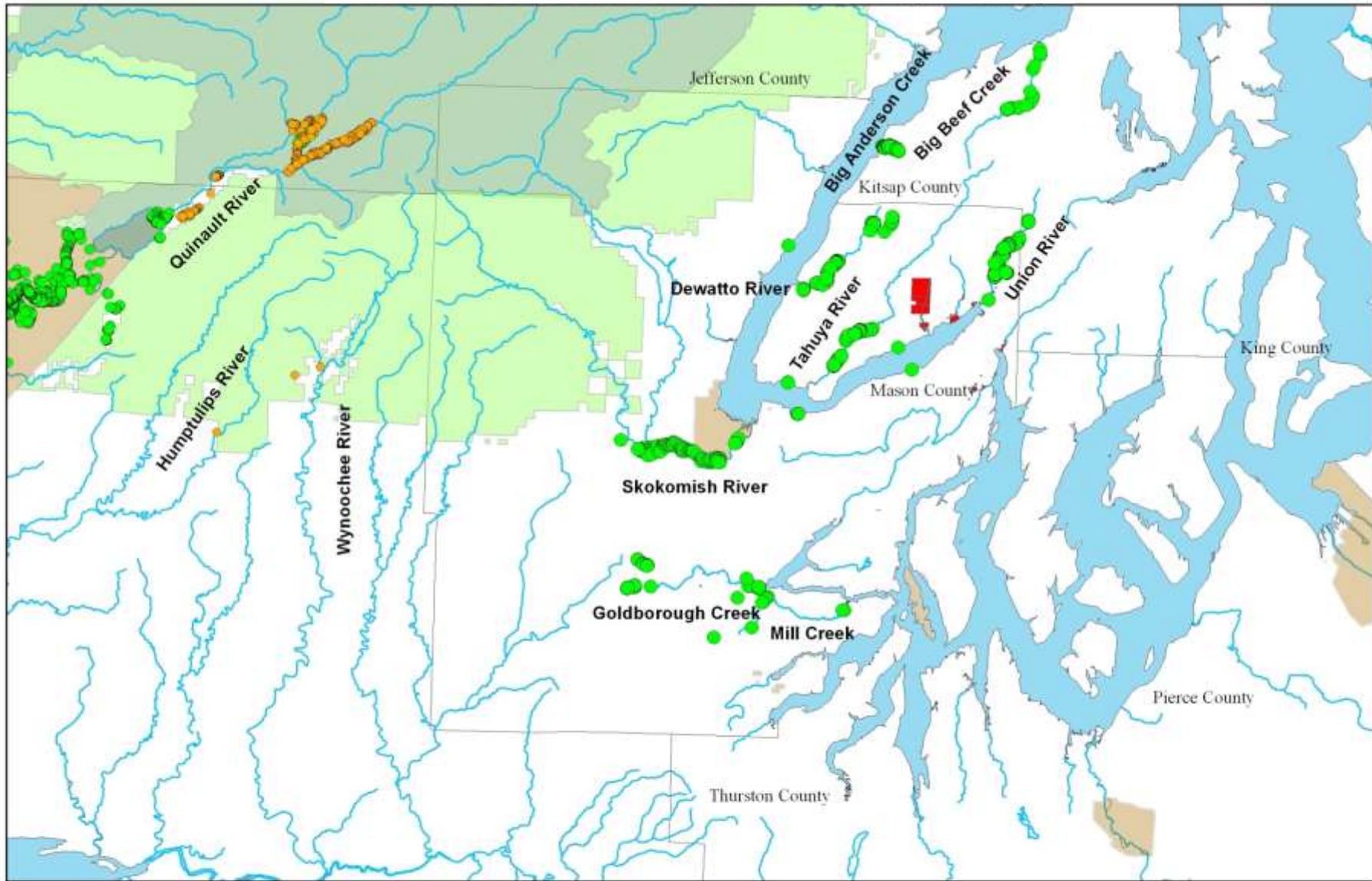


Legend

Invasive Species		Treated parcels	Land Ownership	
●	knotweed (sp.)	■	■	Tribal
●	Other species		■	Olympic National Forest
			■	Olympic National Park



Overview Map of Mason and Kistap County



Legend

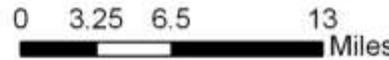
Invasive Species Treated Treated parcels

- knotweed (sp.)
- Other species

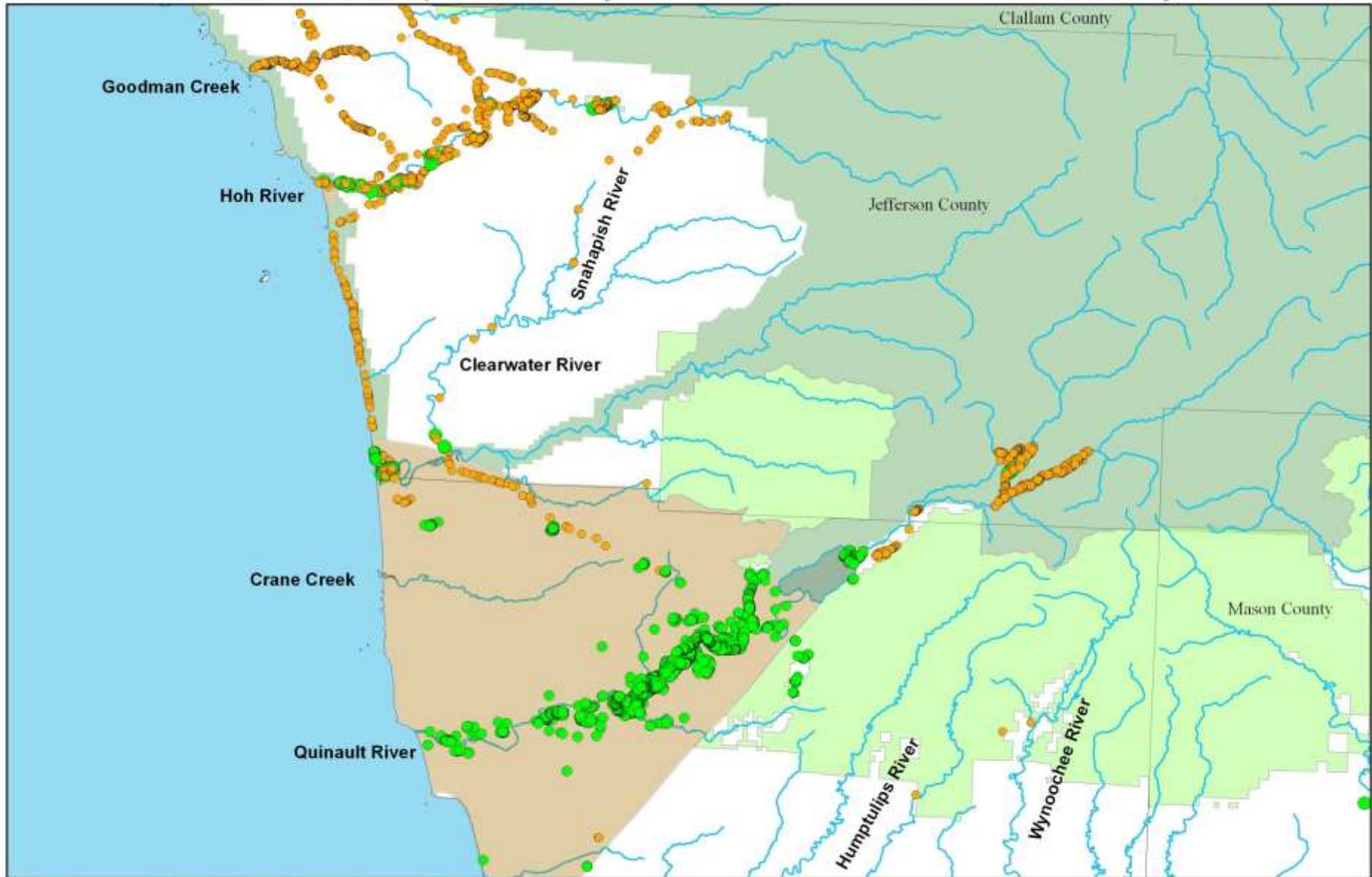
■ Treated parcels

Land Ownership

- Tribal
- Olympic National Forest
- Olympic National Park



Overview Map of Grays Harbor and West Jefferson County



Legend

Invasive Species		Treated parcels	Land Ownership	
●	knotweed (sp.)	■	■	Tribal
●	Other species		■	Olympic National Forest
			■	Olympic National Park



PROJECT DESCRIPTION

Project Goal

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

Project Overview

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

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

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

2018 PROJECT ACTIVITIES

Landowner Contacts and Agreements - (as reported to CCNWCB) All landowners were contacted in person, by letter/email or phone prior to 2018 season treatments.

Clallam County

- Clallam County Noxious Weed Control Board (CCNWCB) - managed **105 Landowner Agreements**, including **8 new** Landowner Agreements.
- North Olympic Salmon Coalition (NOSC) managed **38 Landowner Agreements**
- Quileute Tribe-Natural Resources (QNR) managed **50 Landowner Agreements**
- Makah Tribe-Natural Resources (Makah) managed **18 Landowner Agreements**, including **3 new** Landowner Agreements.
- Lower Elwha Tribe (LEKT) managed **7 Landowner Agreements**, including **6 new** Landowner Agreements.
- The 10,000 Years Institute (10KYI) managed **22 Landowner Agreements**, including **10 new** Landowner Agreements on the Quillayute watershed.

Jefferson County

- Hood Canal Salmon Enhancement Group (HCSEG) managed **108 Landowner Agreements**, including **29 new** Landowner Agreements.
- 10KYI managed **14 Landowner Agreements**, including **4 new** Landowner Agreements.
- Specific information regarding Jefferson NWCB landowner contact activity is not available.

Mason County

- Mason County Noxious Weed Control Board (MCNWCB)-managed **145 Landowner Agreements**, including **17 new** Landowner Agreements.
- HCSEG managed **160 Landowner Agreements**, including **9 new** Landowner Agreements.
- Mason County Conservation District (MCD) managed **98 Landowner Agreements**, including **14 new** Landowner Agreement.

Kitsap County

- HCSEG managed **39 Landowner Agreements**, including **12 new** Landowner Agreements.
- Specific information regarding Kitsap NWCB landowner contact activity is not available.

Grays Harbor County

- Specific information regarding Grays Harbor NWCB landowner contact activity is not available.
- 10KYI managed **8 Landowner Agreements**, including **4 new** Landowner Agreements.

Survey and Treatment:

This list summarizes knotweed and invasive control work accomplished in 2018 by members of the Olympic Invasives Working Group (OIWG) as reported to CCNWCB.

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

Clallam County

- **Dickey River:** Retreated **7.9 miles (0.89 acres)** for knotweed [QNR], **3.8 road miles (8 acres)** for non-knotweed invasives [CCNWCB].
- **Calawah River:** Treated **3.1 miles (0.57 acres)** for non-knotweed invasives [10KYI].
- **Bogachiel River:** Retreated **15.7 miles (10.55 acres)** for knotweed and invasive species [10KYI].
- **Quillayute River:** Retreated **2.5 miles (6.38 acres)** for non-knotweed invasives [10KYI].
- **Sol Duc River:** Treated **11.4 miles (1.1 acres)** for non-knotweed invasives [10KYI].
- **Big River:** Treated **6.6 miles (17.1 acres)** for knotweed and invasive species [Makah Tribe], **7.5 road miles (15 acres)** for knotweed and invasive species [CCNWCB]
- **Hoko River:** Treated non-knotweed invasive species along **9.3 road miles (18 acres)** [CCNWCB].
- **Clallam River:** Treated **0.3 miles (2.3 acres)** for knotweed [Makah Tribe], **0.7 road miles (0.2 acres)** for non-knotweed invasives [CCNWCB].
- **Deep Creek:** Treated **1.5 mile (55 acres)** for knotweed [LEKT].
- **Dry Creek:** Treated knotweed and invasive species along **0.32 miles (2 acres)** [LEKT].
- **Elwha River:** Treated knotweed and invasive species along **3 miles (5 acres)** [Lower Elwha Klallam Tribe], **2.1 road miles (2.6 acres)** for knotweed and invasive species [CCNWCB].
- **Ennis Creek:** Retreated **0.1 miles (0.1 acre)** for knotweed [CCNWCB].
- **Lee's and East Fork Lee's:** Treated **1.3 miles (3.4 acres)** for knotweed and invasive species [CCNWCB].
- **Bagley Creek:** Retreated **0.1 miles (0.5 acres)** [CCNWCB].
- **Dungeness River:** Treated **1 mile (5.5 acres)** for knotweed and invasive species [NOSC, WCC].
- **Bell Creek:** Retreated **0.25 miles (7.5 acres)** of nearby terrestrial land for non-knotweed invasives [WCC].
- **Clallam County Sites within WRIA 18, 19, 20:** Treated high priority invasive species, including knotweed along **167 miles (302 acres)** of Clallam County roads.

Jefferson County (Starting in East Jefferson)

- **Big Quilcene River:** Retreated **3.2 miles (290 acres)** for knotweed [HCSEG].
- **Little Quilcene River and Leland Creek:** Treated **5 miles (15 acres)** for knotweed [HCSEG].
- **Dosewallips:** Retreated **11 miles (1348 acres)** for knotweed [HCSEG, WCC].
- **Queets River:** Retreated **0.3 miles (13.6 acres)** for non-knotweed invasive species [10KYI, NCEPMT].
- **Snahapish River:** Retreated **0.6 acres** for non-knotweed invasives [10KYI].
- **Goodman Creek:** Retreated **8.3 miles (4.6 acres)** for non-knotweed invasives [10KYI].
- **Hoh River and Tributaries:** Retreated **36.5 miles (49.2 acres)** for knotweed and invasive species [10KYI].
- **Jefferson County Road right-of-ways:** Treated **6 acres** for knotweed [HCSEG, WCC].

Mason County:

- **Hood Canal Waterfront:** Treated **25 acres** for knotweed [HCSEG]
- **Dewatto River:** Retreated **7.5 miles (1380 acres)** for knotweed [HCSEG].
- **Tahuya River:** Retreated **6.5 miles (387 acres)** [HCSEG].
- **Union River:** Treated **4.9 miles (353 acres)** for knotweed [HCSEG], treated **3.38 acres** for knotweed and invasive species [MCNWCB]
- **Mission Creek:** Treated **0.68 miles (2.54 acres)** [MCNWCB].
- **Little Mission Creek:** Treated **0.04 miles (6.2 acres)** for knotweed and invasive species [MCNWCB].
- **Town of Allyn/North Bay:** Treated **0.18 miles (0.8 acres)** for knotweed [MCNWCB].
- **Sherwood Creek/Anderson Creek:** Retreated **1.7 miles (3.71 acres)** for knotweed [MCNWCB].
- **Stimson Creek:** Treated **2.19 river miles (6.23 acres)** for knotweed [MCNWCB, WCC].
- **Coulter Creek:** Treated **0.59 miles (4.15 acres)** for knotweed [MCNWCB].
- **Finch Creek:** Retreated **0.83 miles (1.5 acres)** for knotweed [MCNWCB].
- **Skokomish River:** Retreated **8 miles (321 acres)** for knotweed [MCD].
- **Mill and Goldsborough Creeks:** Retreated **2.4 miles (8.5 acres)** for knotweed [MCD].
- **Mason County Sites within WRIA 14, 15, 16:** Treated **0.41 miles (2.53 acres)** for knotweed and invasive species [MCNWCB].

Kitsap County

- **Big Beef Creek:** Retreated **4.8 miles (429 acres)** for knotweed [HCSEG, WCC].
- **Big Anderson Creek:** Retreated **2 miles (233 acres)** for knotweed [HCSEG, WCC].

Grays Harbor County

- **Quinault Watershed:** Treated invasive species along **11.9 miles (1.83 acres)** for knotweed and invasive species [10KYI, QIN].

Public Agencies Assisted

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

Data Management and Documentation:

- CCNWCB collected waypoints and tracklogs with Garmin GPS equipment, and/or collected and submitted site information using smartphone functions and WSDA IForm.
- CNWCB collected as much partner data as possible and submitted all shapefiles to WSDA to be added to their state-wide database.
- CCNWCB maintained the Knotweed Projects Database.
- The CCNWCB applied for National Pollution and Discharge Elimination System (NPDES) permits and completed all necessary reporting. Each entity treating near water obtained and reported under individual NPDES permits.

Outreach and Training:



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 ensuring a higher level of professionalism. 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 members’ need, we include information about the threats of other invasives and control measures to encourage a multi-species strategy.



2018 Olympic Invasive Working Group meetings spring and fall: From upper left, clockwise, Dr. Miller explains herbicide modes of action, Wendy Descamp introduces new noxious weeds to watch for, Jon Jennings summarizes proposed changes to WA’s NPDES, Chelsie Buffington outlines field hygiene techniques to prevent spreading aquatic invasives while working between water bodies.

Our spring and fall meetings were hosted by the Jamestown S’Klallam Tribe at the beautiful Cedar Room situated on Sequim Bay. Over 80 participants attended each meeting, including representatives from 5 Native American Tribes, 5 Federal agencies, 9 State agencies, 2 State Universities, 7 different counties and multiple county departments, 5 non-profits, and many private businesses such timber or restoration. 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 the **Clallam County Noxious 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 as they were available.
- CCNWCB staff highlighted our knotweed program and distributed information at **20 educational events.**

2018 PROJECT PROTOCOLS

1. Surveys and Monitoring

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

2. Project Teams

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

- **The Quileute Tribe Natural Resources crew (QNR)**, led by Garrett Rasmussen (LAQ), the Dickey Rivers.
- **The Makah Tribe (Makah)** led by Shannon Murphy (LAQ), treated knotweed sites on the Makah Reservation, Big River and the Clallam River in the vicinity of Clallam Bay/Sekiu.
- **The Clallam County NWCB crew (CCNWCB)**, consisting of Cathy Lucero (LAQ), James Knappe (LAQ), Natalie Beatty (LAQ) and Tommy Roche (LAQ), Josef Sollman (LAQ) worked on Ennis, Lees and Bagley Creeks as well as roadside and quarries with knotweed across Clallam County.
- **The North Cascades Exotic Plant Management Team** with the **National Park Service (NCEPMT)** was led by Collin McAvinchey (LAQ) and Sophie Wilhoit (LAQ). This crew treated a variety of locations across the state but specific information is not available.
- **The East Jefferson WCC with the North Olympic Salmon Coalition (NOSC)**, led by Owen French, WCC crew lead (LAQ), worked on the Dungeness River. Additional WCC crews led by Phil Kitchell and Pete Allen worked on Dungeness River and Bell Creek on behalf of Clallam County and WDFW.
- **The Lower Elwha Klallam Tribe**, consisting of Kim Williams (LAQ), Allyce Miller and Laurel Moulton (LAQ) treated Deep Creek, Dry Creek and 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. Crew also conducted treatment roadside treatment on behalf of the Jefferson County Weed Board contracted work for the Jefferson County Road Department.
- **Mason County NWCB crew (MCNWCB)** consisting of Pat Grover (LAQ) and supported by a Puget Sound Corps treated invasives on Anderson, Mission, Little Mission, Coulter, Finch, Stimson and Sherwood Creeks, the Union River, as well as North Bay and the town of Allyn.
- **The 10,000 Years Institute (10KYI)**, led by Jill Silver (LAQ) worked in MANY watersheds including Queets, Quinault, and Quillayute, Calawah, Bogachiel, Sol Duc, Hoh, and Snahapish Rivers, Goodman Creek and surrounding roads and highways.
- **Mason County Conservation District crew (MCD)**, led by Brayden Raber (LAQ), treated the Skokomish River and Mill and Goldsborough creeks.
- **The Quinault Indian Nation** activities were overseen by Greg Eide.

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 43 other invasive species such as giant hogweed, butterfly bush, reed canarygrass, herb Robert, Canada thistle, perennial pepperweed, perennial sowthistle, poison hemlock, and yellow archangel.

4. Data Collection & Equipment

Electronic data is collected differently depending on funding and technical capacity of each group. Data collection parameters listed are those used by the CCNWCB; other entities may utilize different guidelines for their data collection. Some data collection systems used in 2018 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 2018 is not available.
- The CCNWCB and Mason County NWCB used Washington State Department of Agriculture's data collection system using the cell phone app iForm, powered through ESRI. iForm was developed by the Washington State Department of Agriculture and allows for weed data points to be recorded and stored in an online server. Using iForm and its map accompaniment, ArcCollector, users are able to see previous weed data and treatment points. Weed data fields included species, infestation size, cover class, ownership type, site type, status of control, as well as optional fields for notes and images. iForm data is

available for local download and conversion into shape files. The version we use does not allow for the collection of track logs. Other entities may have used versions of ArcCollector without the use of iForm. Different entities collected different fields-which is not available at the time of this writing.

- A Trimble GEO XT instrument, using the “Data Dictionary” developed by the Olympic Invasives Working Group (OKIG) and using Pathfinder software for post-processing. A copy is available.
 - The Data Dictionary contains the following required fields: Agency Name, Collector, GIS Projection Reference, Site ID, Species of Knotweed, Cluster Type, Average Stem Height, Stem Count, Phenology, Site Type and Action.
 - The following fields are optional: Herbicide, Surfactant, Treatment, Ownership, Canopy, Substrate, Plant Erosion Potential, Site Erosion Potential, Area, Unit, and Comments. Date and Time fields.
 - Information on entities that used this method in 2018 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 as data reported to us. In previous years, herbicide use has been used as a proxy for change in biomass to help measure treatment efficacy. Due to changes in herbicide rates and formulations, this is no longer as directly comparable in many cases. This method of measuring effectiveness is only used when we have the necessary treatment details to make a comparison. Herbicide quantity and active ingredient, when available, is included in the section “Project Activities by Watershed”. Overall use will no longer be tracked in an appendix as in previous years.
- All survey and treatment data collected by Clallam County NWCB was added to a knotweed database. This database facilitates tracking of landowner contacts, agreement expiration, treatments, site status and monitoring. Beginning in 2014, treatments of additional invasive plants were included as a separate infestation record.
- The CCNWCB sends out a form to encourage uniform data collection (see Appendix II) that meets the WSDA’s reporting standards, updated in 2014. There continues to be some reporting inconsistencies between entities.

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

Examined acres-includes area searched and treated. Area was determined by the following formula: acres =length (of river corridor) in feet X width in feet of area searched /43560 (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 2018, the Hood Canal Salmon Enhancement Group, 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 2018, 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 activities are incorporated into this report to show the level of effort and collaboration that has been generated to combat the threat knotweed and other invasive species pose to our natural resources.
- Partners continue to report successful knotweed control across the Olympic Peninsula. Partners used one or several different control techniques and herbicides, depending on site conditions. The majority of knotweed treatments included a foliar application of imazapyr in a 1% solution with 1% surfactant; additional treatment techniques included stem-injection (100% glyphosate), foliar application of glyphosate (1.5%-8% solution), and to a very limited extent, foliar application of aminopyralid (0.125% solution) and triclopyr (1% solution).
- Partners reported “discovering” patches of knotweed at varying distances from historical locations of larger patches – including in and around invasive blackberries, newly created back channels, and where beavers or human activity have moved knotweed material.
- The 10KYI reported potentially viable Bohemian knotweed seed at several untreated infestations on the Bogachiel River; however the viability of the seeds has not yet been confirmed.
- Partners reported obtaining landowner permissions for locations previously not surveyed or treated which were crucial to successful control of knotweed across the entirety of a river system. Building relationships by face-to-face interactions with landowners and site visits contributed significantly to obtaining these permissions over time.
- CCNWCB reported Milestone® (aminopyralid) was effective for the control of small scotch broom (<1.5 ft. tall) but ineffective on larger plants; the herbicide was also minimally effective to control sulfur cinquefoil, spurge laurel and common tansy and was ineffective, by itself, for control of common fennel and hairy white-top.
- The 10KYI reported that imazapyr treatments on Goodman Creek may have had reduced efficacy due to tank mixes using brackish water.
- The 10KYI reported great success combining the collection and disposal of seed heads with chemical treatment, especially when treating reed canarygrass. The 10KYI crew focused on eradicating and preventing small, discrete infestations of a variety of invasive species from spreading across the landscape.
- The 10KYI identified the only infestation of giant reed (*Arundo donax*) known on the Bogachiel River –perhaps a first for the Olympic Peninsula; 10KYI intends to return and eradicate with the permission of the landowner.
- The 10KYI was able to extend their treatment season on the Hoh River into early December due to unseasonable warm temperatures and low water flows.
- Partners increasingly use smartphone applications and cloud-based data as an efficient way to share information between partners and build collaboration.
- Track logs from the GPS units still provide extremely valuable information about where crews went, areas that were missed, and to track null surveys (parcels where no knotweed was found). Tracklogs on smartphone applications have been less utilized by partners and are more challenging to record and maintain.
- Invasive plants of highest concern other than knotweed vary greatly by partner and river system, but all partners report the need and benefit to treat additional species during the course of knotweed control activities.
- The CCNWCB completed the second season of the Clallam Road Department Integrated Weed Management Plan (IWMP) and the treatment of knotweed was of highest priority. Crew treated knotweed infestations on 13 county roads and six county pits. Additionally, the IWMP contains “weed-free” requirements for all Clallam County Road department activities and contracts, to help prevent the spread of knotweed and invasive plants.
- Partners acknowledged the control of invasive plants adjacent to river corridors, such as road right-of-ways and culverts, were significant treatment areas for the overall success of control efforts , and the collaboration within the working group has increased comprehensive control efforts for many river systems.
- Partners continue to report successes with revegetation plans where knotweed has been controlled.
- The State’s knotweed program continues to be indispensable. In addition to providing base funding, it has helped provide permitting and technical advice to jump start other programs. The Olympic Invasives Working Group continues to draw a diverse membership and MANY other groups now participate in knotweed control Peninsula wide. The Weed Boards are invested in supporting these groups and interested residents county wide. In many cases this WSDA funding is being used to leverage other grants.

2019 PROJECT PRIORITIES INCLUDE

(as identified by individual partners):

In West Clallam County

- The highest priority is the Quillayute River system because it contains the most heavily infested reaches, and crews were unable to fully treat in 2018. The QNR, CCNWCB, 10KYI and the NCEPMT should combine resources to treat these areas.
- A fresh float survey of the Hoko River is needed to assess infestation status.
- The CCNWCB will collaborate with and assist the Makah Tribe where needed.
- Survey and treat sites in the Sekiu-Clallam Bay region, including Charley Creek and Clallam River.

In Central Clallam County

- Renew or obtain permissions for Peabody, Ennis, south Bagley and East Fork Lees Creeks
- Identify and treat additional knotweed infestations on county road right-of-ways.

In East Clallam County

- Due to the limited treatments on the Dungeness River because crew was deployed for fire, NOSC crews should pick up where they left off using existing permissions.

In East Jefferson County

- Increase communication between the CCNWCB and the JCNWCB to coordinate treatments in both counties. Knotweed infestations have decreased dramatically in the Big and Little Quilcene Rivers, and a multi-species approach, especially targeting spotted jewelweed and bittersweet nightshade, should be implemented.
- HCSEG, Jefferson County, USFS and Washington State Parks should continue to collaborate on surveys, treatments and revegetation plans.

In Kitsap County

- HCSEG will build upon their 2018 treatments on the Big Beef Creek system and focus on obtaining landowner permissions where additional infestations were noted.
- HCSEG will focus on the lower reaches and revegetation projects on the Big Anderson River.

In Mason County

- Key landowner permissions need to be obtained in the lower reaches of the Tahuya and Dewatto rivers. MCNWCB plans to focus on finding and treating residual knotweed outside of the immediate the stream channel (up to 30' from bank) and obscured by other vegetation.

In Grays Harbor County

- The CCNWCB received GPS data from the QIN but no narrative description of their work accomplishments or 2019 priorities-The CCNWCB will continue to support the GHNWCB to the full extent of available resources.

In West Jefferson County

- The lower reaches and access roads of Goodman Creek will be a priority for the 10KYI to control reed canarygrass.
- The 10KYI will also focus on collaboration with Jefferson County Road Department to treat herb Robert on roadsides, and treatment of invasive plants in quarries and rock sources.

RECOMMENDATIONS

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

PARTICIPATING GROUPS

Clallam County Noxious Weed Control Board
Clallam County Road Department
Clallam County Department of Community Development
Clallam County Conservation District
Clallam County Public Utility District
City of Port Angeles
Grays Harbor Noxious Weed Control Board
Grays Harbor County Road Department
Jefferson County Noxious Weed Control Board
Mason County Noxious Weed Control Board
Mason Conservation District
Snohomish County Noxious Weed Control Board
WA State Department of Natural Resources, Aquatic Resource Division, regional foresters, Natural Lands Management
WA State Department of Ecology
WA State Department of Transportation
WA State Department of Agriculture
WA State Department of Fish and Wildlife
Washington State University

US Forest Service
US Fish & Wildlife Service
USFWS National Marine Refuge
Olympic National Park
US Department of Agriculture
N. Cascades Exotic Plant Management Team/NPS
US Natural Resource Conservation Service
Jamestown S'Klallam Tribe
The Lower Elwha Klallam Tribe
The Makah Nation
The Quileute Tribe
The Quinault Indian Nation
10,000 Years Institute
North Olympic Land Trust
Hood Canal Coordinating Council
Hood Canal Salmon Enhancement Group
North Olympic Salmon Coalition
Pacific Coast Salmon Coalition
East Jefferson WCC
Puget Sound Corps
Green Crow Timber
Merrill and Ring Timber

See Appendix III for contact information

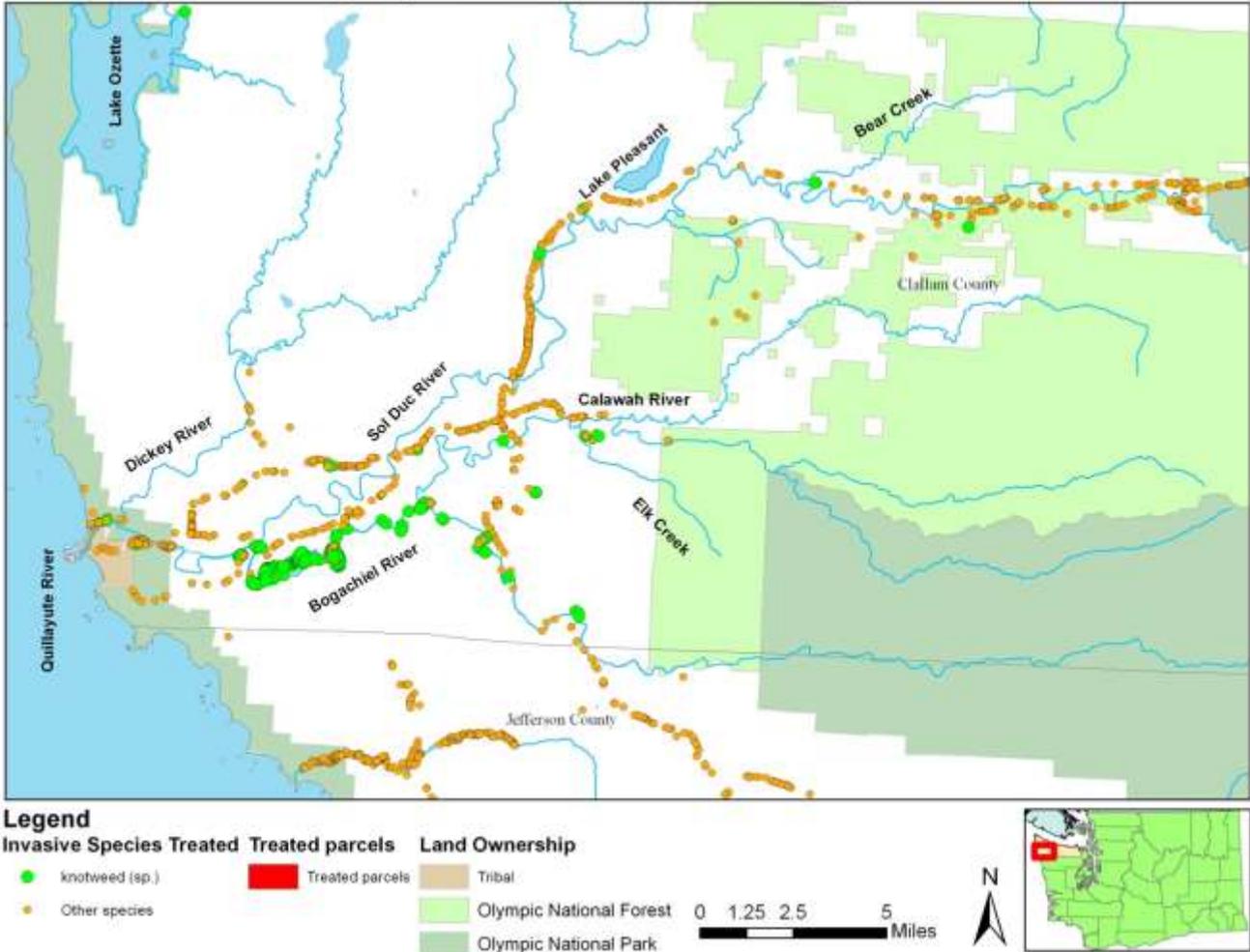
FUNDING

Projects summarized in this report were funded by: Washington State Department of Agriculture (WSDA), the Washington State Department of Natural Resources-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 Tribe (EPA and BIA).

PROJECT ACTIVITIES BY WATERSHED

CLALLAM COUNTY

Quillayute River System Overview Map



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.

2018: The 10,000 Years Institute (10KYI) conducted the majority of work throughout the Quillayute Watershed; in order to best capture the contributions of the 10KYI, a narrative of their control work by species, across the watershed is included below:

- Knotweed – Treated scattered re-sprouts from the uppermost patch on the Bogachiel River above SR 101, along the downstream fifteen miles of the Bogachiel River from SR 101 to the confluence of the Quillayute River. Knotweed was present along the river in low densities due to successful treatment from prior years. The densest populations were in the lower mile. Tansy ragwort was pulled along federal, state, county, and city roadways, along river banks and bars and in the estuary of the Quillayute River. The number of mature plants was reduced from 2017.
- Reed canarygrass – a second year of treatment was conducted at an off-channel habitat at a private off-channel spawning and rearing pond with 1.5% Aquaneat, as well as sites SR 101, Cooper Ranch, Mary Clark, La Push, and Mora Roads, and Quillayute Prairie Road were mapped and deseeded. Leyendecker Park and boat launch were also treated. Mapping and treatments were conducted along Thunder Road on the Quileute Reservation.
- St. Johnswort is spreading. 10KYI mapped and sprayed some plants with 1.5 to 2% Aquaneat.
- Scotch broom – Pulled and cut, and applied cut-stump treatment (100% Aquaneat) at the Forks Community Garden and Forks Community Hospital property. Pulled many small SB on federal, state, and county roadways and pulled and cut SB on bars on the Quillayute River above and within ONP and the Quileute Reservation.
- Everlasting peavine – Plants were mapped on SR 101, county roads, and the A-Road (ONF) and sprayed with 2% Aquaneat where permissions existed. Observed expansion of populations on the Sol Duc River, and will conduct an assessment in 2019. Sprayed EVP on the Bogachiel River during knotweed surveys, and one plant on Mora Road in Olympic National Park near Rialto Beach.
- Herb Robert – Conducted pulling treatments of seedling re-growth along trails at the UW's ONRC. Pulled, and then sprayed patches at a private residential site in the upper Bogachiel watershed where continued control efforts are being conducted by the landowner. Mora Road near the Dickey River in ONP has a growing population that has been mapped, but not yet treated.
- Yellow archangel – Re-treated two patches at a private residential site where the landowner continues to track the population. Provided guidance to a city landowner who is pulling and monitoring it as it returns. Several other residential landowners have requested help. Found a patch on state lands near Toleak Point which will be treated in 2019.
- Giant reed (*Arundo donax*) – Identified a clump on the Bogachiel River during knotweed surveys, which will be followed up on in 2019 with the landowner, to hopefully eradicate it before it spreads. According to WSDA, it is the only known site on the Olympic Peninsula.

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].
- 2017: 68 acres were surveyed and/or treated for knotweed [QNR].

In 2018: QNR surveyed 7.9 river miles along the Dickey, searching nearly 58 acres and retreating knotweed on 0.89 acres. QNR Crew used 0.34 gallons of imazapyr: about a fifth less compared to last year; overall, herbicide usage continues to decline on this river system. CCNWCB crew treated yellow archangel and tansy ragwort along Mina Smith Rd (0.23 solid acres), directly adjacent to the Dickey River.

In 2019: Continue treatments as time and resources allow. Treatments of other invasive species, like tansy ragwort, should be considered as knotweed infestations continue to decline.

Herbicide use-Dickey River (gallons)												
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Acres Treated*	140	50	95	101	NA	56	75	46	3.8	74	3.75	0.34
Total Herbicide	12.65	0.165	18	7.21	NA	2.91	4.31	2.44	2.88	1.2	1.4	0.89

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

Calawah River

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

Brief Treatment history of the Calawah River

See previous year's reports for more detailed information

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

2018: The 10KYI treated 3.12 river miles of the Calawah River for reed canarygrass, herb Robert, tansy ragwort and everlasting peavine. No knotweed was observed in their treatment area. Treatments used 0.24 gallons of AquaNeat (1.5%). Crews also expanded surveys and treatments to the A-Road, a significant nearby weed vector.

In 2019: Given that it has now been five years since the last knotweed treatment it may be worthwhile to survey and treat more of 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	2018
Acres Treated	202	100+	110	127	NA	65	64	-	-	-	-	0.57
Total Herbicide	11.12	2.31	1.59	0.24	NA	0.15	0.18	-	-	-	-	0.24

Bogachiel River

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

Brief Treatment history of the Bogachiel River

See previous year's reports for more detailed information

- 2006: A survey of the river revealed 1,336 knotweed sites [QNR].
- 2008-2010: Sections of the Bogachiel River were treated by QNR, with assistance from CCNWCB.
- 2011: The entire river was retreated for the first time [QNR, CCNWCB].
- 2012-2013: 13 river miles (131 acres) of the Bogachiel River was surveyed and/or treated [QNR].
- 2014: An additional 13 river miles (343 acres) were treated [QNR].
- 2015: No treatments took place on the Bogachiel due to funding constraints.
- 2016: 11.96 miles (77 acres) were treated [QNR, NCEPMT, CCNWCB].
- 2017: 12.9 miles (198.47 acres) were treated; purple loosestrife discovered [QNR, NCEPMT, CCNWCB]. 10KYI treated off-channel for additional invasives including reed canary grass, herb Robert, scotch broom, tansy ragwort-acre and river mile totals were not available by watershed.

In 2018: The 10KYI treated 15.7 river miles (249 acres) of the Bogachiel River for a wide variety of invasive species including knotweed, Scotch broom, reed canary grass, yellow archangel, Himalayan blackberry, Canada thistle, and more. Treatments used 1.11 gallons of Polaris (1%), 0.45 AquaNeat gallons (1.5%), and 3.09 gallons of AquaNeat (either 50% or 100% for cutstump). 10KYI crews reported at some well-established bohemian knotweed patches what appeared to be well developed, if not viable seeds. Crews identified the only infestation of giant reed (*Arundo donax*) on the Olympic Peninsula, crews did not have permission to treat.

In 2019: The partnership of the CCNWCB, NCEPMT, and QNR should continue to treat the Bogachiel River as these infestations spread into the Quillayute River. Some of the heaviest infestations in Clallam County are found in this area. The 10KYI crews should continue to leverage treatment of multiple species in this watershed.

Herbicide use- Bogachiel River (gallons)												
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Acres Treated*	4.1	900+	693	725	NA	131	131	343	-	77	198.5	10.55
Total Herbicide	0.65	33.88	77.34	62.1	NA	3.12	5.43	8.38	-	0.80	5.3	5.65

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

Quillayute River

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

Brief Treatment history of the Quillayute River

See previous year's reports for more detailed information

- 2008: The first treatments of the Quillayute River are performed, with 170 acres surveyed and/or treated [QNR].
- 2009: CCNWCB treated a county owned park situated along the Quillayute. An additional 40 acres of the river was treated [QNR].
- 2010: 0.94 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].
- 2017: 1.8 river miles, (8.2 acres) were treated for knotweed [QNR, NCEPMT, and CCNWCB]. 10KYI treated 103 road miles in the Quillayute River watershed for additional invasives including reed canary grass, scotch broom, and tansy ragwort.

In 2018: 10YKI treated 2.5 river miles of the Quillayute River for Scotch broom, reed canarygrass, tansy ragwort and everlasting peavine. No knotweed was found in their treatment area. Treatments used 1.26 gallons of AquaNeat (1.5%) and 0.78 gallons for cut-stump treatment (100%).

In 2019: The partnerships developed to treat this river system should be maintained, especially considering the evidence of success through decreased herbicide use and acreage treated. Additional invasive treatments and native plantings should be investigated to prevent emergence of other weed species.

Herbicide use-Quillayute River (gallons)												
	2007	2008	2009	2010	2011	2012	2013	2014**	2015	2016	2017 ***	2018
Acres Treated	N/A	170	40	0.5	NA	0	0.2	0	5	193*	8.2	6.38

Total Herbicide	N/A	6.77	1.7	0.64	NA	0	0.14	0	1.91	14.4	3.08	2.04
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*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 10KYI 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].
- 2017: 4.27 river miles of the Middle Sol Duc, Lake Pleasant waterfront and Wisen Creek (1.3 acres) were treated for knotweed [QNR]. County ROW adjacent to Lake Pleasant that contain knotweed was treated for the first time under an integrated weed management plan [CCNWCB].

In 2018: 10KYI treated 11.4 river miles (82.57 acres) for reed canarygrass, herb Robert, and Canada thistle. No knotweed was found in their treatment area. Treatments used 0.7 gallons of AquaNeat (1.5%). In addition to chemical control, crews included a manual focus to remove herb Robert plants and reed canarygrass seeds.

In 2019: Surveys, and follow up treatments in the Sol Duc River, Wisen Creek and Lake Pleasant should be conducted.

Herbicide Use, Lower Sol Duc River (gallons)												
	2007	2008	2009	2010	2011	2012*	2013	2014	2015	2016	2017	2018
Acres Treated	17	45	30	35	-	n/a	155	0.005	-	221**	1.3**	1.1
Total Herbicide	9.656	6.67	0.945	1.26	-	n/a	1.09	n/a	-	1.83	0.5	0.7

* Treatments occurred in 2012 but were not reported.

**includes treatments on Middle and Lower Sol Duc.

Lake Creek and Lake Pleasant

Brief Treatment history of Lake Creek and Lake Pleasant

See previous year's reports for more detailed information

- 2012: A complete survey of Lake Creek and Lake Pleasant was conducted [CCNWCB]. Most infestations were light and treated where permission was granted.
- 2013-2014: Lake Creek and Lake Pleasant were not treated due to low infestations.
- 2015: A single terrestrial knotweed infestation was treated near Lake Pleasant [CCNWCB].

- 2016: No treatments occurred.
- 2017: 0.5 acres of knotweed (2.5 road miles) was treated on West Lake Pleasant road along with other high priority invasive species. [CCNWCB].

In 2018: There were no follow-up surveys and treatments in this area this year.

In 2019: 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 lake itself. Lake Creek, a very short stretch of river, where knotweed has been absent for a couple of years, should be re-inspected for re-growth.

Forks

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

Brief Treatment history of Forks

See previous year's reports for more detailed information

2006-2009: Treatments of knotweed on private property was conducted [CCNWCB, QNR].

2010-2012: No invasives treatments were reported in Forks.

2013: 3 acres of privately owned property were treated [QNR].

2014-2016: No treatments were reported, though some may have been performed.

2017: The 10KYI treated multiple non-native species within the City of Forks (ROW, private and public owners)

In 2018: 10KYI reported that knotweed on Mill Creek, at the Forks High School, and on SR 101 at Undi Road did not re-sprout. One patch of knotweed at a residential property in the city of Forks was treated at the request of the owner. There were additional sites identified in Forks on residential land and adjacent ditches that require access agreements to be treated.

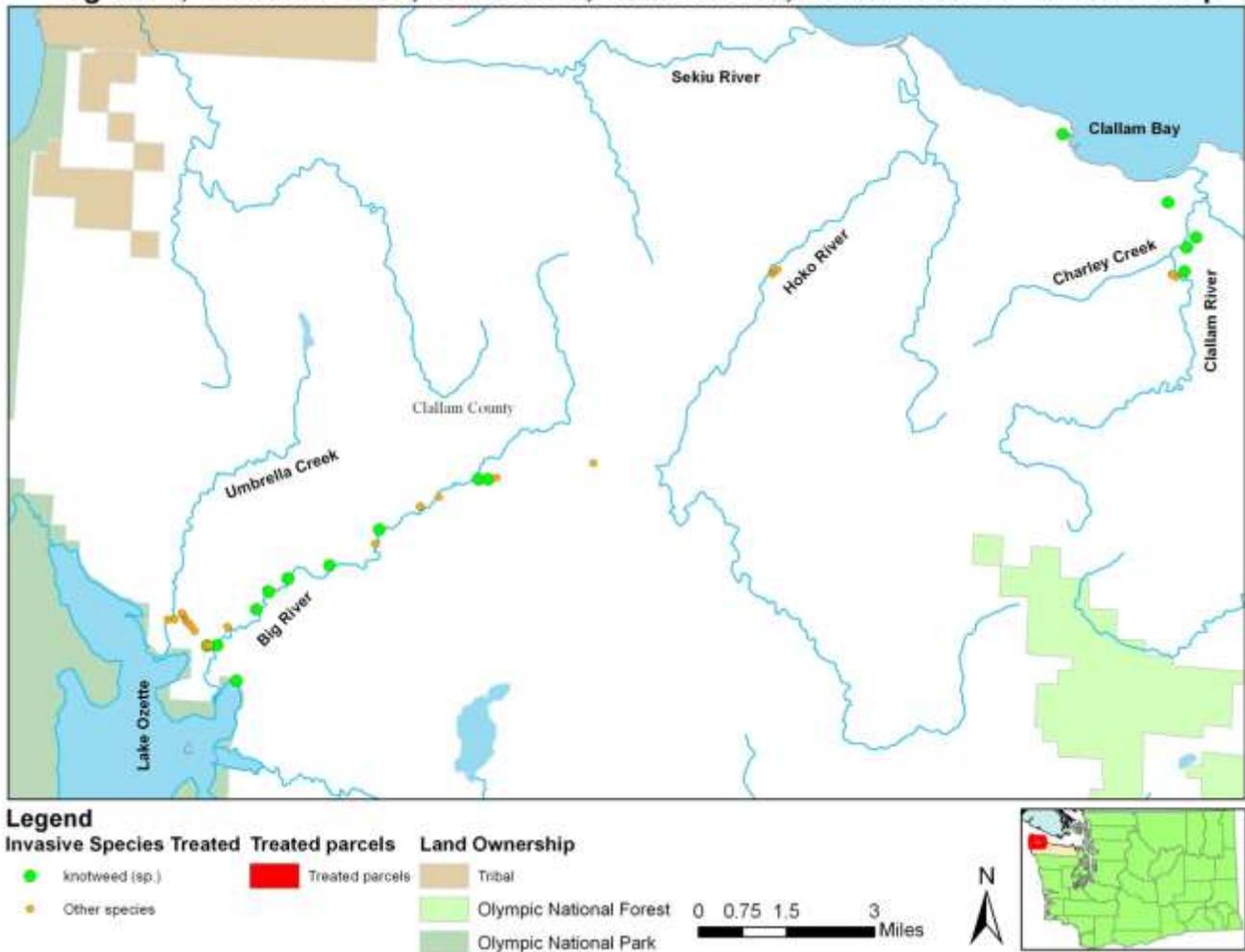
In 2019: With the close proximity of the Calawah and Bogachiel, gaining additional permissions for knotweed and butterfly bush within Forks city limits should be prioritized for this treatment area.

For more information about the Quillayute River System, please contact Garrett Rasmussen at (360) 374-2027 or garrett.rasmussen@quileutenation.org
(OR)

For more information about non-knotweed species treatments on the Quillayute River System or within the City of Forks, please contact Jill Silver at jsilver@10000yearsinstitute.org

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

Big River, Umbrella Creek, Sekiu River, Clallam River, and Hoko River Overview Map



Brief Treatment history of Big River and Hoko-Ozette Road

See previous year's reports for more detailed information

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

In 2018: The Makah surveyed 109 acres and treated 6.6 miles of the Big River for multiple invasive species, using 0.87 gallons of 4.6% Aquaneat/ 0.78% Polaris on 17.08 acres. The CCNWCB treated the entire 17.9 miles of the Hoko-Ozette Road as well as the County portion of Swan Bay, for knotweed and a variety of other high priority noxious weeds including tansy ragwort, herb Robert, and yellow archangel. The CCNWCB combined

manual and herbicide treatments using a total of 0.05 gallons of 0.125% Milestone, 0.01 gallons of 1% Vastlan and 0.001 gallons of 1% Polaris herbicide.

In 2019: Collaborate with ONP on next steps in this watershed. Perform revegetation projects as 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 [Makah]. Re-survey and treat roads system and county pits to prevent noxious weed from re-establishing and spreading to the riparian areas.

Herbicide Use-Big River-Hoko Ozette Rd (gallons)*							
	2006	2007-2010	2011-2014	2015	2016	2017	2018
River Acres Treated	60	Less than 60	Less than 25 each yr	0.1	n/a	19.56	17.08
Road Acres Treated		60 each yr					35.2
AquaNeat inj	65.4	5.04	0.54	0.19	n/a	n/a	n/a
AquaNeat foliar	0	7.88	0.12	0	n/a	1.1	0.81
Habitat or Polaris (imazapyr) foliar	0	1.82	0.78	0	n/a	0.18	0.064
Milestone (aminopyralid)**	-	-	-	-	-	-	0.05
Vastlan (triclopyr)**	-	-	-	-	-	-	0.01
Total Herbicide	65.39	14.74	1.44	0.19	n/a	1.28	1.02

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

***Milestone and Vastlan were used for roadside treatments only.*

Hoko River

Brief Treatment history of the Hoko River

See previous year's reports for more detailed information

- 2009: Control of knotweed was made mandatory on the Hoko River by the CCNWCB.
- 2012: All known knotweed on the Hoko River was treated, except for lower tidal regions where a float survey may be needed [CCNWCB].
- 2013-2015: Due to the small amount of re-growth from 2012 treatments, no treatments were performed.
- 2016: The East Jefferson Washington Conservation Corps (EJWCC) treated 1.5 river miles of the upper Hoko River.
- 2017: Knotweed treatment along Hoko-Ozette Road-(reported in Big River data) [Makah]

In 2018: Due to low infestations level, no treatments on Hoko River this year.

In 2019: 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].
- 2017-2018: Due to the low infestations levels in the Sekiu River, no treatments were performed on this system.

In 2019: Consider surveying and re-treating historic knotweed sites.

Herbicide Use-Sekiu River (gallons)***							
	2006*	2007-2010	2011-2014	2015	2016*	2017	2018
Inspected/ Known Parcels	N/A	n/a	10/11	0/14	0/14	0/14	0/14
Acres Treated	N/A	Less than 17 each yr.	Less than 6 each yr	-	n/a	-	-
AquaNeat injected	n/a	3.925	0.5	-	n/a	-	-
AquaNeat foliar	n/a	0.9	0.18	-	n/a	-	-
Habitat or Polaris (imazapyr) foliar	n/a	0.19	0.45	-	n/a	-	-
Total Herbicide	11	5.019	1.13	-	n/a	-	-

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

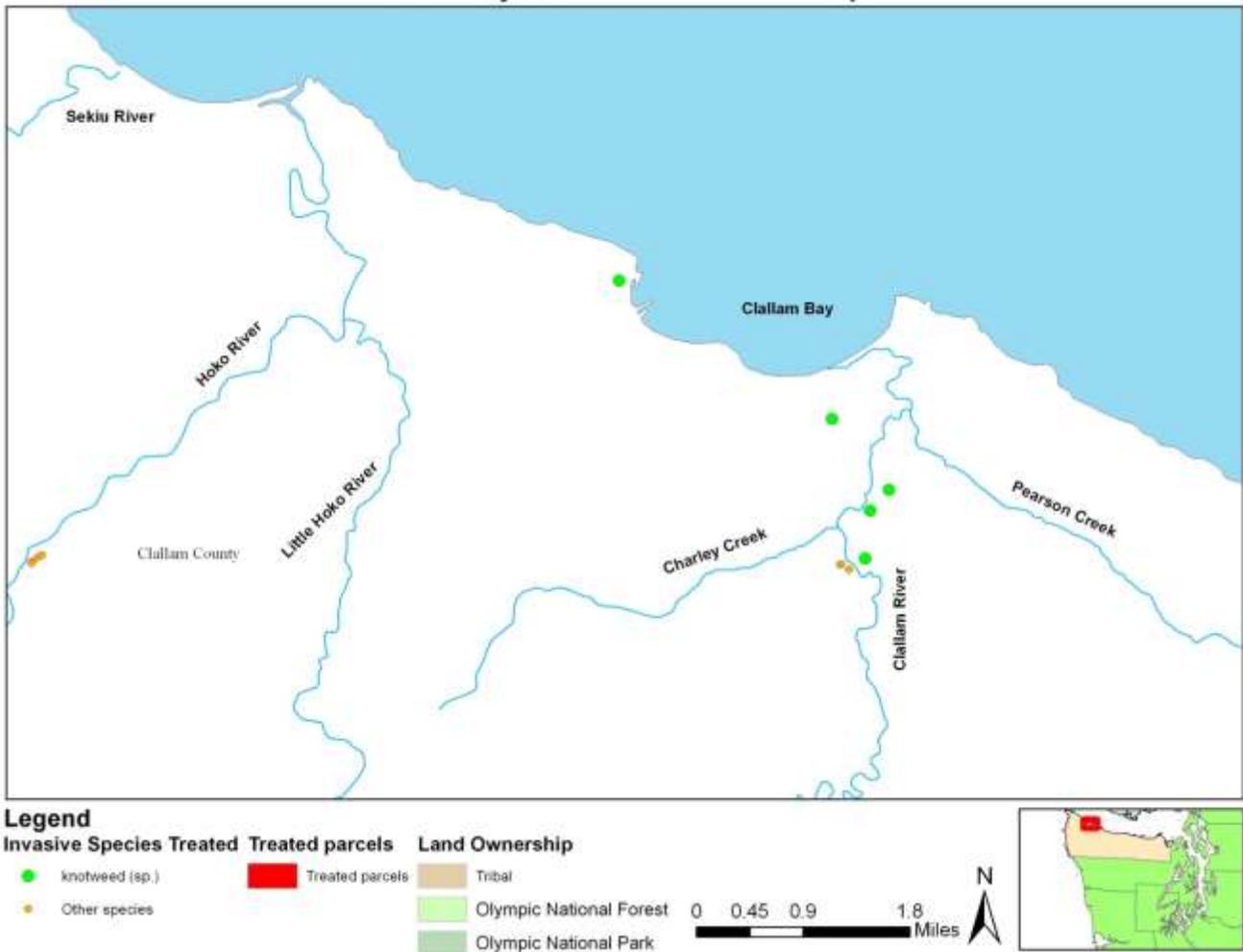
** Herbicide formulations and application methods were not provided for this report in 2014.

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

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

Highway 112, Clallam Bay, and Sekiu

Clallam Bay and Sekiu Overview Map



Highway 112

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

Sekiu and Clallam Bay

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

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.

- 2017: Limited treatments by both CCNWCB and Makah took place in this area, because of very limited infestations.

In 2018: The Makah obtained 3 new permissions and searched 9 acres for knotweed within the Clallam Bay/Sekiou and Clallam River. It appears that most of the treatments occurred on the Clallam River and will be noted in that section.

In 2019: Increased efforts should be made to obtain new permissions of parcels that may contain knotweed so that a more comprehensive survey can be performed. It is likely small patches of knotweed remain in the tidal area of Clallam Bay.

Herbicide Use-Highway 112, Clallam Bay and Sekiou (gallons)							
	2006	2007-2010	2011-2014	2015	2016	2017	2018**
Acres Treated	n/a	As much as 45 each yr.	As much as 3 each yr.	-	-	1.6	n/a
Aqua Neat injected	n/a	5.445	0.16	-	-	0	-
Aqua Neat sprayed	n/a	6.06	0.02	-	-	0.4	-
Habitat or Polaris (imazapyr) sprayed	n/a	0.23	0.07	-	-	0.06	n/a
Total Herbicide	17.9	9.79	0.2	-	-	0.46	-

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

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

Clallam River

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

Brief Treatment history on the Clallam River

See previous year's reports for more detailed information

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

In 2018: The CCNWCB treated one small (0.2 acres) roadside site of yellow archangel along Charley Creek Road near its intersection with the Clallam River; no knotweed was found post 2017 treatment in this vicinity. The Makah obtained new permissions and treated 0.3 miles of the Clallam River for knotweed using 0.815 gallons of 4.6% Aquaneat and 0.137 gallons of 0.78% Polaris on 2.265 acres.

In 2019: As time and resources allow, 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- 2018: No knotweed work was performed on Pysht River and no entity reported any non-native treatments.

In 2019: The CCNWCB should conduct surveys to examine knotweed control on the Pysht River and offer assistance to landowners with knotweed infestations.

Deep Creek

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

Brief Treatment history of Deep Creek

See previous year's reports for more detailed information

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

In 2018: The Lower Elwha Tribe was able to get farther upstream to treat knotweed than before. LEKT treated 1.5 river miles using 1.22 gallons AquaNeat (8%).

In 2019: To be determined depending on partner resources.

Herbicide Use-Deep Creek (gallons)						
	2013	2014	2015	2016	2017	2018
Acres Treated	0.5	-	-	-	0.5	5
Polaris (imazapyr) sprayed	0.033	-	-	-	0	N/A
AquaNeat (glyphosate) sprayed	0	-	-	-	0.2	1.22
Total Herbicide:	0.033	-	-	-	0.2	1.22

* 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].
- 2014-2018: No entity reported work in this area this year.

In 2019: Following a consult with partners, obtaining permissions for surveying and treatment of Salt and Nordstrom Creeks may be a priority.

Herbicide Use,-Salt Creek (gal)						
	2013	2014	2015	2016	2017	2018
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 (LEKT) Washington Conservation Corps (WCC), and North Cascades Exotic Plant Management Team with the National Park Service (NCEPMT) conducted invasive plant treatments that included very few knotweed treatments. Treatments focused primarily on reed canarygrass, which has exploded after two dam removals on this river.
- 2015: Crews noted a reduction in reed canarygrass infestations for the first time, after four years of treatments. A few knotweed patches were treated in early fall [LEKT].
- 2016: While other noxious weed treatments took place, this year was a rest year for knotweed [LEKT].
- 2017: LEKT along with a WCC crew searched 164 acres along the Elwha River and treated invasives including knotweed and other high priority species including purple loosestrife, meadow knapweed, and yellow flag iris. The NCEPMT also surveyed 3 miles of the Elwha River for treatment of non-knotweed invasive species.

In 2018: LEKT treated all noxious weeds along 3 river miles using 0.027 gallons AquaNeat (8%). New invasive species for their crew included spotted jewelweed and English hawthorne. LEKT engaged in an extensive outreach program offering to assist private landowners with their noxious weeds. Eurasian watermilfoil was discovered in the Elwha mouth estuary. There has been considerable improvement over the past several years.

The CCNWCB re-treated meadow knapweed and other high priority noxious weeds along Olympic Hot Springs Road, from its start at Highway 101 until the Olympic National Park boundary. Due to the road's close proximity with the Elwha River and the infestation severity, meadow knapweed was a high priority and there has been considerable reduction after last year's treatments in this area. 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. The NCEPMT performed work in this area but did not provide information as of this report.

In 2019: LEKT will work toward obtaining funding for noxious weed control, especially spotted jewelweed, along Indian Creek, a tributary of the Elwha River. LEKT is also working toward a noxious weed plan for reservation lands. The CCNWCB will continue county right-of-way treatment to compliment river treatments.

Dry Creek

Watershed overview and treatment history not currently available

2018: This is the first year that any entity has reported treatments on Dry Creek. The Lower Elwha Klallam Tribe reported treating Himalayan blackberry and English ivy on behalf of one landowner. LEKT treated 0.32 river miles (2 acres) using 0.7 gallons of AquaNeat (8%).

2019: Follow-up-Consult with LEKT for future plans.

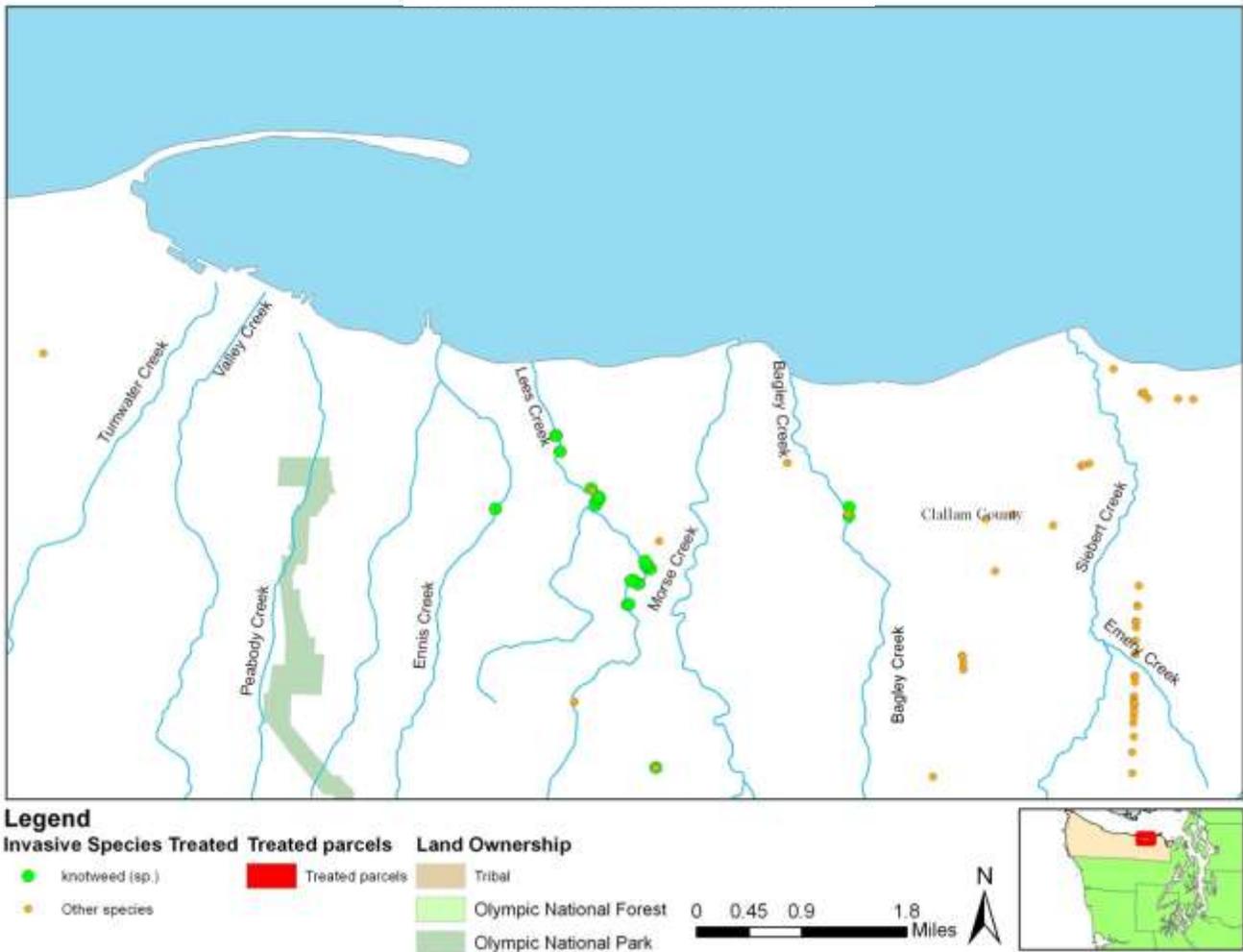
**For more information contact Kim Williams, Revegetation Field Supervisor (Lower Elwha Klallam Tribe)
360.-457-4012 ext. 7499 Kim.Williams@elwha.org**

(OR)

Jim Knape, Clallam Noxious Weed Control Board 360-417-2442, jknape@co.clallam.wa.us

Port Angeles Area Streams

Port Angeles Overview Map



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: No treatments on Valley Creek this year.

In 2019: Due to the low prevalence and highly invasive nature of purple loosestrife, historical sites with this weed should be surveyed and treated. Because treatments have not taken place here for several years, surveys and follow-up treatment as needed is recommended.

Peabody Creek

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

Brief Treatment history of Peabody Creek

See previous year's reports for more detailed information

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

In 2018: A rest year as recommended per last year's assessment.

In 2019: Surveys and treatments in upstream Peabody Creek should be integrated into the Clallam County Roadside IWM plan 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.
- 2017: 1.7 river miles of Ennis Creek were treated using 0.13 gallons of 1% Polaris was used to treat 14 parcels (9.95 acres). Very low level infestations remain in these lower reaches [CCNWB].

In 2018: The CCNWCB retreated 0.1 river miles using 0.06 gallons of 1% Polaris (0.3 acres) of Ennis Creek. Treatment focused on the single largest remaining knotweed patch just below power lines. The 2017 treatment at

this site was early season and observed to have only partial control. Unfortunately, the patch crosses into the adjacent upstream parcel where permission has not yet been granted.

In 2019: Seek upstream permissions and treat as they are obtained.

Lees Creek (E Fork Lees Creek)

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

Brief Treatment history of Lees Creek-East Fork Lees

See previous year's reports for more detailed information

- 2011: Surveys on Lees Creek discovered a small amount of knotweed, which was treated [CCNWCB].
- 2012: No treatments occurred.
- 2013: A large number of new landowner permissions allowed for treatments on 9 parcels for knotweed and yellow archangel [CCNWCB].
- 2014-2016: No treatments took place due to time and funding constraints [CCNWCB].
- 2017: 21 parcels along 1.32 river miles of Lees and East Fork Lees Creek (from mouth to 1.2 miles up Mt Pleasant Road) were surveyed for treatment. Two parcels on East Fork Lees Creek with significant knotweed were also treated. A total of 0.11 gallons of 1% Polaris was used on 10 parcels. [CNWCB]

In 2018: CCNWCB focused on treatment in upper reaches of East Lee's Creek. (Outreach in 2017 led to the discovery of the last remaining significant patches of knotweed on Lee's Creek). 2017 knotweed treatments appeared to be very effective; crew also treated minor amounts of yellow archangel and teasel. The lower reaches of Lee's Creek are in good condition. Crew treated along 0.99 river miles on both Lees and East Fork Lees using 0.03 gallons of 1% Vastlan and 0.02 gallons of 1% Polaris across 3.35 acres.

In 2019: Follow-up on upstream permissions for infestations noted on properties above power lines.

Morse Creek and Waterfront Trail

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

Brief Treatment history of Morse Creek and the Waterfront Trail

See previous year's reports for more detailed information

- 2013: Four miles of the Waterfront Trail were surveyed, and approximately 300 knotweed stems were treated. Yellow archangel was also treated on Morse Creek [CCNWCB].
- 2014- 2017: No treatments have occurred on Morse Creek.

In 2018: Low priority, no treatments this year.

In 2019: 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.
- 2017: 1.61 miles of Bagley Creek were surveyed for treatment. Roadside source patches south of Hwy 101 were treated for the first time, per the County Road Department's IWM plan. A total of 0.05 gallons of imazapyr was used to treat a total of 0.63 acres. Poison hemlock was noted and also treated at the roadside knotweed site. [CCNWCB].

In 2018: The CCNWCB gained permission to treat remaining sizeable patches of knotweed adjacent to Bagley Creek that were likely original source for downstream infestations across the highway. Crew returned this year to retreated 0.2 road miles (0.5 acres) using 0.01 gallons of 1% Vastlan and 0.02 gallons of 1% Polaris. This roadside site was part of the "source patch" treated in 2017 per the County's IWM plan); crew also re-treated poison hemlock seedlings, co-mingled at this location.

In 2019: Monitor this site for re-growth.

Herbicide use, Port Angeles Area (gallons)						
Waterway	2013	2014	2015	2016	2017	2018
Valley Creek	0.015	0.010	-	-	-	-
Peabody Creek	0.056	0.050	-	0.031	-	-
Ennis Creek	0.075	0.010	-	-	0.13	0.06
Lees Creek	0.0010	0.220	-	-	0.05	0.01
East Fork Lees Creek	0.001	0.000	-	-	0.05	0.04
Morse and Waterfront	-	0.070	n/a	-	-	-
Bagley Creek	0.038	0.0013	-	-	0.05	0.03
Total	0.186	0.3613	-	0.031	0.28	0.14

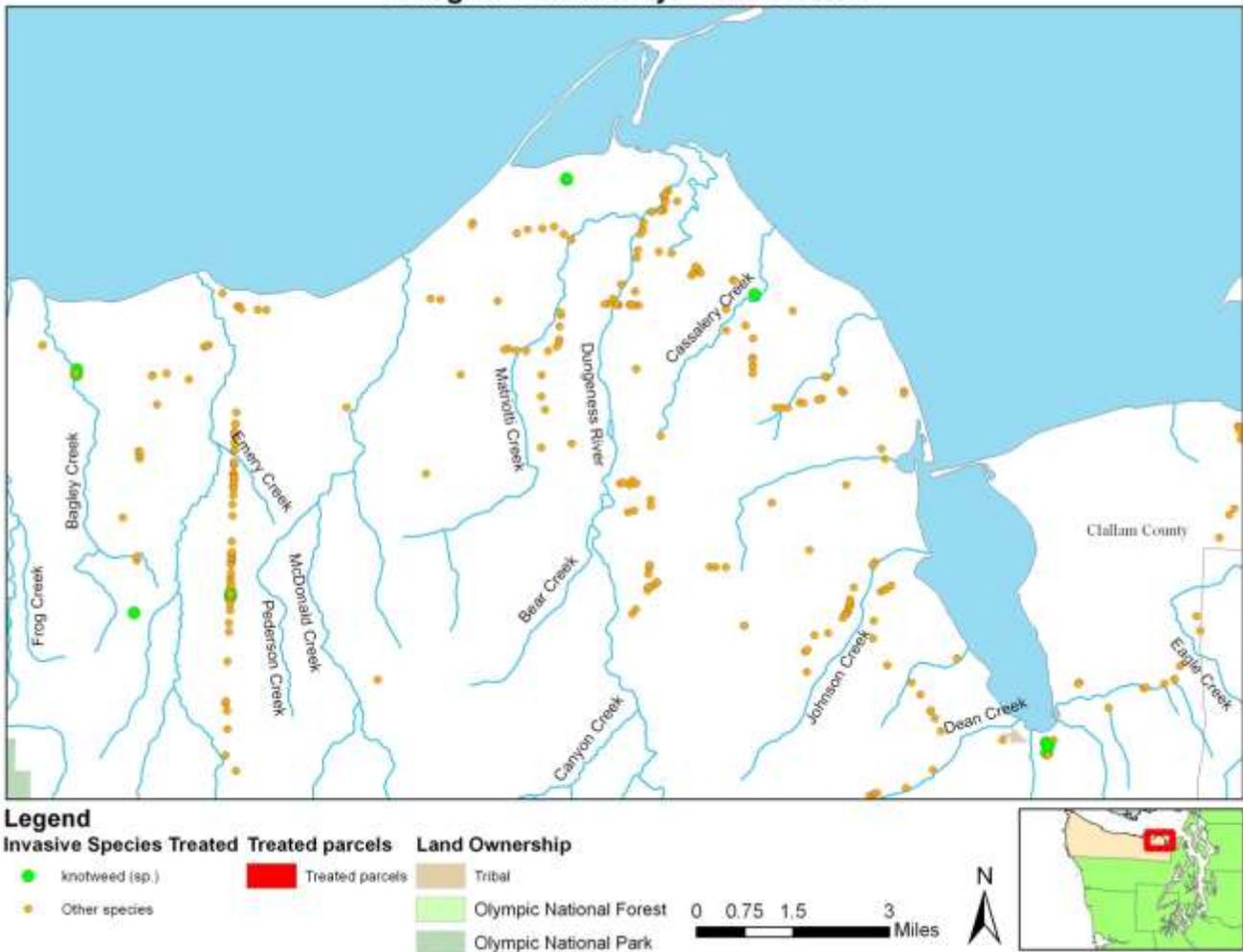
Note: Herbicide use for other noxious weeds is not included in this total.

**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 or Jim Knape, Weed Control Specialist at jknape@co.clallam.wa.us

Dungeness River Watershed

Dungeness River System Overview



Dungeness River

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

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.
- 2017: Butterfly bush and knotweed treatments continued along 1.3 river miles of the Dungeness River (24.7 acres) [WCC for NOSC]. River lupine was noted successfully filling areas once dominated by butterfly bush and knotweed. The CCNWCB surveyed and treated 4.4 acres of the Dungeness Dike (directly adjacent to the Dungeness River) for heavy poison hemlock infestations as well as Canada thistle, bull thistle, and herb Robert.

In 2018: NOSC’s WCC Crew spent 3 days on the Dungeness River to treat knotweed but was called away in response to fire. NOSC anticipated a longer timeline for treatment but the crew was called away to assist with fire camp. The CCNWCB and treated roadside noxious weed infestations in the vicinity of the Dungeness River and tributaries; treatments included 4.9 gallons of herbicide and covered 74 road miles. Treatments locations are included on the map.

In 2019: 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].
- 2017: 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 was still extremely dense in this area but poison hemlock was much reduced. [CNCWCB]

In 2018: DNR WCC crew spent 2 days on Bell Creek to treat teasel and poison hemlock using 0.02 gallons of 0.5% Transline on 7.5 acres of Washington Department of Fish and Wildlife property adjacent to Bell Creek. The poison hemlock continued to show improvement; teasel treatments focused on the perimeters to prevent the infestation from growing in extent.

In 2019: More resources should be devoted to treating the teasel and himalayan blackberry infestations at this site as they are heavily encroaching into Bell Creek, WDFW property and nearby residential properties and parks. Monitor small patch of knotweed along Bell Creek that was previously treated (near Les Schwab in Sequim).

Herbicide Use, Dungeness River and Surrounding Area (gal)						
	2013	2014	2015	2016	2017	2018
Acres Treated	0.5	8.0	27.3	40.27	35.7	13
Herbicide	0.12	0.425	N/A	2.11*	0.7*	0.72
Total Herbicide:	0.14	0.425	N/A	2.11*	0.7*	0.72

**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, Jamestown S’Klallam Tribe at (360) 681-4603, hturnbull@jamestowntribe.org

(OR) Sarah Doyle North Olympic Salmon Coalition at (360) 379-8051, sdoyle@nosc.org

(OR) Cathy Lucero, Clallam County Noxious Weed Control Coordinator at 360-417-2442 or clucero@co.clallam.wa.us or Jim Knape, Weed Control Specialist at jknape@co.clallam.wa.us

Clallam County Road Department:

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

Brief Treatment history of knotweed and Integrated Weed Management Plan

See previous [Clallam Road Department Annual Reports](#) for details:

- 2017: The first treatment season of the Road Department’s Integrated Weed Management. Knotweed was treated at **eight** County quarries or spoil disposal sites; knotweed was treated on **seven** county road right-of-ways.

In 2018: In the second season of the Road Department IWM Plan, crews identified and treated previously unknown infestations of knotweed. Infestations treated in 2017 showed positive results with significant reduction in infestation area. Crews treated knotweed with a 1% Polaris tank mixture, with a 1% Vastlan tank mixture occasionally being used where broadleaf selectivity was necessary.

Clallam County Road Department IWM crew treated knotweed infestations on **13 road right-of-ways:** Blue Mountain Rd, Cays Rd, Dan Kelly Rd, Fisher Cove Rd, Henry Boyd Rd, Hermison Rd, Hoko-Ozette Rd, Olympic Hot Springs Rd, Power Plant Rd, Rife Rd, S Bagley Creek Rd, Swan Bay Rd, and Township Line Rd. Crews treated knotweed infestations at the **six pits:** Blyn Pit, Place Pit, Quillayute Pit, Ranger Pit, Umbrella Creek Pit and Whitcomb-Diimmel Pit.

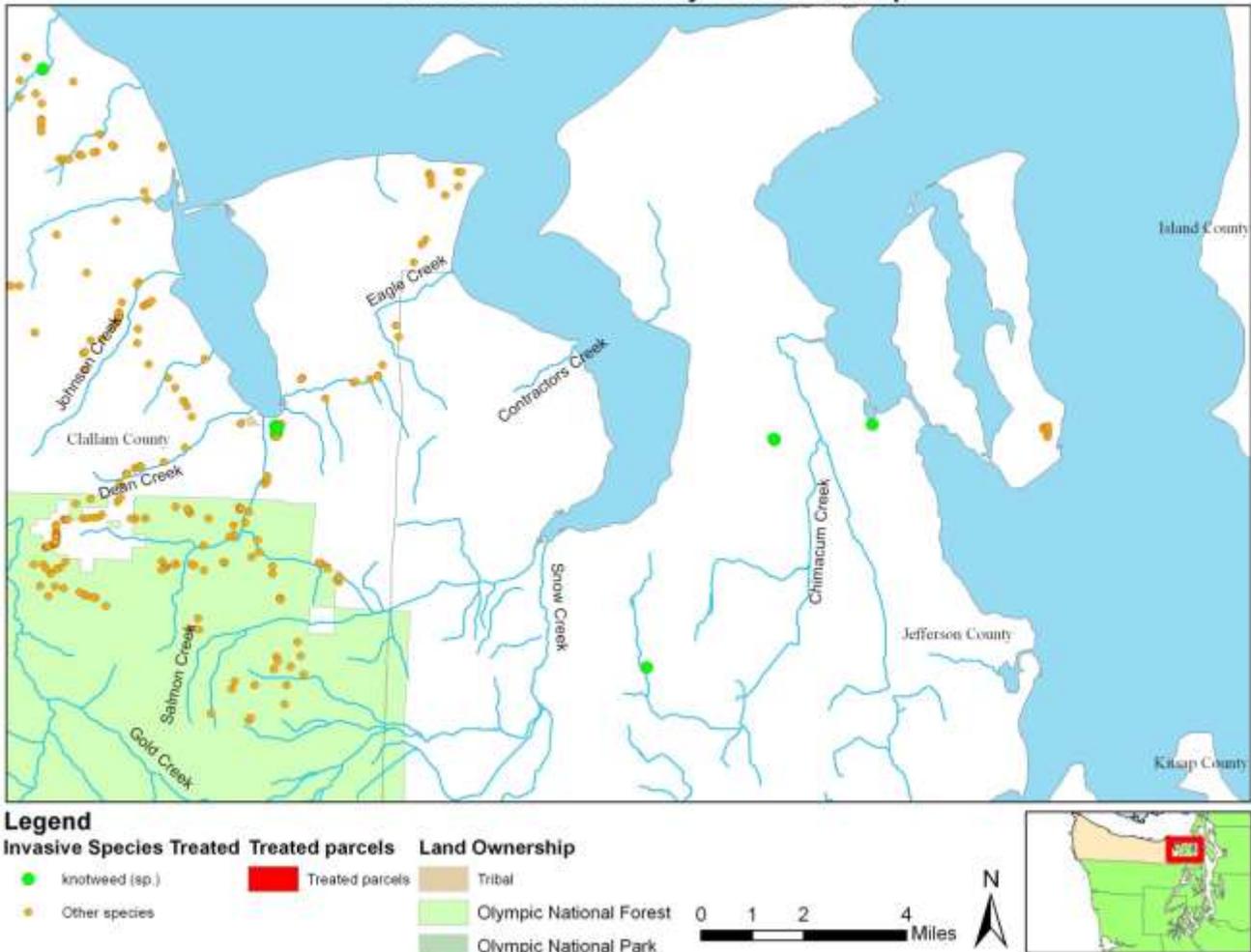
In 2019: The Clallam Road Department IWM 2019 Plan is available online at the Clallam Noxious Weed Control Board website. Input from additional stakeholders or members of the public should be addressed to the Noxious Weed Control Board.

Cathy Lucero, Clallam County Noxious Weed Control Coordinator at 360-417-2442 or clucero@co.clallam.wa.us or Jim Knape, Weed Control Specialist at jknape@co.clallam.wa.us

PROJECT ACTIVITIES BY WATERSHED—CONTINUED

EAST JEFFERSON COUNTY

East Jefferson County Overview Map



Port Townsend Area:

Brief Treatment history in the Port Townsend Area

See previous year's reports for more detailed information

Kah Tai Lagoon Park in Port Townsend:

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

Old Eaglemount Road

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

Oak Bay near Port Hadlock

- 2011: A private parcel was treated for knotweed [JCNWCB].
- 2012: No treatments were reported.
- 2013: Approximately 40 remaining canes were treated. Crew noted that teasel has spread aggressively in areas previous inhabited by knotweed [JCNWCB].
- 2017: No treatment information was reported for inclusion.

In 2018: No treatment information was reported to us for inclusion. It is possible that the Jefferson County Weed Control Board worked in several areas of Port Townsend this year.

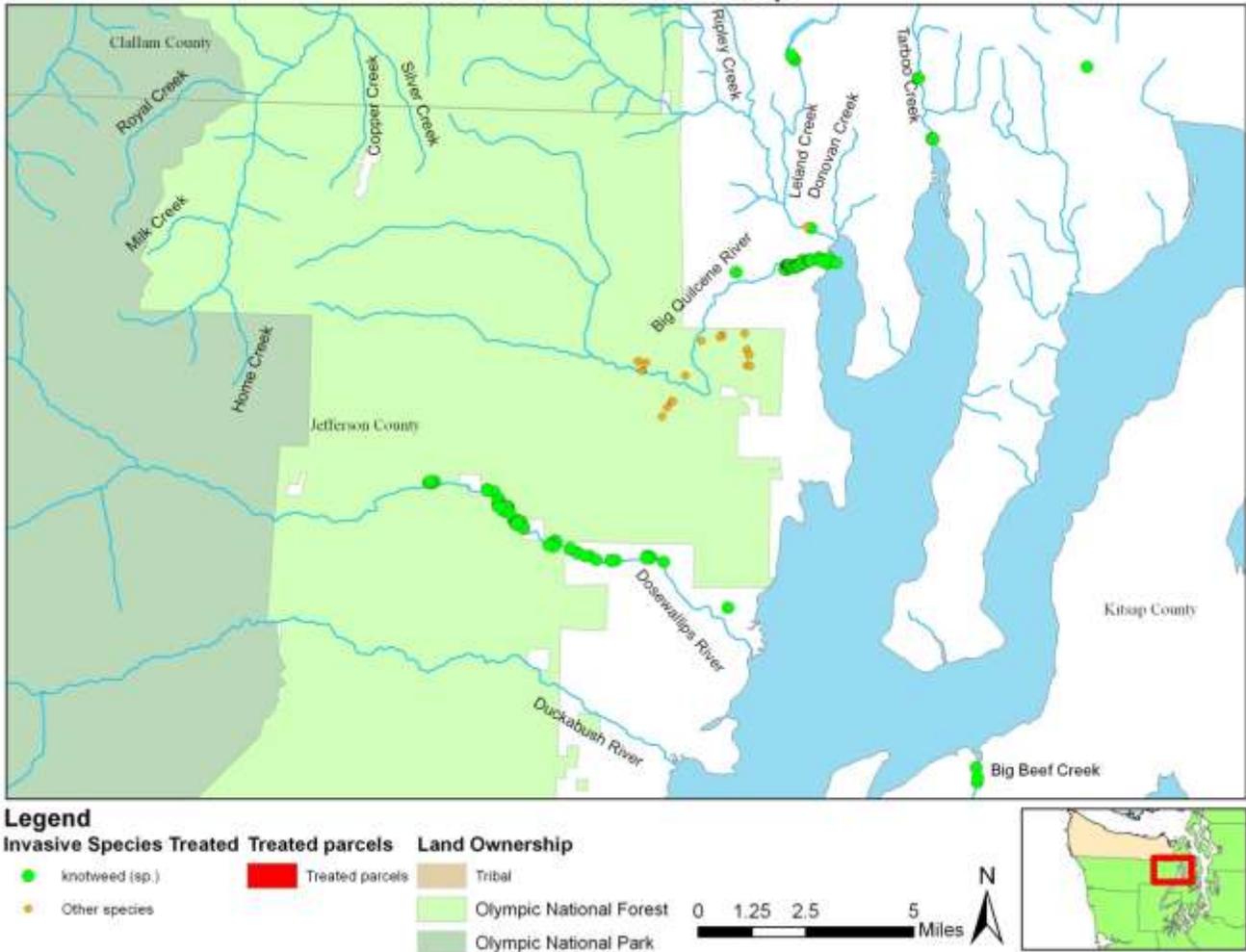
In 2019: Teasel infestations in Oak Bay should be surveyed and treated, as well as other sites in Port Townsend with historical knotweed sites. Consult Jill Silver for other control recommendations for this area. Seek treatment data for inclusion in 2019 report.

Herbicide Use, Port Townsend Area (gallons)								
	2011	2012	2013	2014	2015	2016	2017	2018
Port Townsend (several sites)	0.15	-	0.014	-	-	-	n/a	n/a
Old Eaglemount Road	0.004	-	0.0008	-	-	-	n/a	n/a
Oak Bay	1.125	-	0.01	-	-	-	n/a	n/a
Additional Jefferson County sites	-	-	-	-	-	0.37	n/a	n/a
Total Herbicide	1.279	-	0.0248	-	-	0.37	n/a	n/a

For more information regarding control in the Port Townsend area, contact Joost Besijn, Jefferson Noxious Weed Control Board Coordinator, at noxiousweeds@co.jefferson.wa.us

Quilcene Area:

Quilcene Area Overview Map



Big Quilcene River

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

Brief Treatment history of the Big Quilcene River

See previous year's reports for more detailed information

- 2008: The entirety of the river was surveyed for knotweed [JCNWCB, HCSEG].
- 2009: Treatments for knotweed took place on this river [Clallam County Noxious Weed Control Board (CCNWCB)].
- 2010: 19 days were devoted to treated knotweed on the majority of the river [North Olympic Salmon Coalition (NOSC), HCSEG].
- 2011: All previously treated knotweed sites were retreated [NOSC, JCNWCB]. Private landowners were given the opportunity for native plantings to take place on treated sites.
- 2012: All known knotweed infestations were treated [NOSC, HCSEG].

- 2013: All known knotweed infestations were retreated and a few new sites were discovered and treated [HCSEG].
- 2014: Surveys of the upper and middle reaches of Big Quilcene did not find any knotweed. Treatments and native plantings focused on the lower reaches of the river [HCSEG].
- 2015: Retreatment of known knotweed sites and revegetation continued. A total of nine sites were planted with native species [HCSEG].
- 2016: 34 acres were treated with 1.49 gallons of glyphosate [HCSEG].
- 2017: 3.2 miles of the lower Big Quilcene River treated using 0.26 gallons of Polaris to treat 375 acres. Knotweed continues to decline significantly with only 0.075 solid acres of knotweed being treated this year. Crew switched to imazapyr to increase efficacy [HCSEG/WCC].

In 2018: Knotweed survey and treatment efforts began on this river in 2010. The Big Quilcene River has a variety of knotweed species, including giant and Japanese Knotweed. In 2018, all previously treated knotweed sites were treated. Overall knotweed re-growth after treatments is not evident in the upper reaches of the river near Hwy 101, but remains consistent in the mid and lower reaches. HCSEG, with the assistance of a WCC crew, treated 3.2 river miles assisting 12 landowners. Treatments used 0.166 gallons of AquaNeat and an additional 0.038 gallons of Polaris (1%).

In 2019: Additional upstream surveys are planned to ensure that highest upstream infestations are located. HCSEG staff will inspect previous plantings along this river to determine what maintenance will need to occur. In addition to planting maintenance, HCSEG is in contact with Jefferson County to identified potential planting sites on their properties in the lower reaches of the river.

Herbicide Use, Big Quilcene River (gallons)											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Acres Treated*	13	55.75	42.75	4.06	NA	5**	6**	240	34	375	290
AquaNeat injected	2.06	0	0	0	0	0	0	0	0	0	0.166
AquaNeat sprayed	3.6	18.291	31.43	9.77	7.33	9.92	4.339	3.63	1.49	0	-
Polaris sprayed	0	0	0.94	0	0	0	0	0	0	0.26	0.038
Total Herbicide	5.66	18.291	24.1	9.77	7.33	9.92	4.339	3.63	1.49	0.26	0.2

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

***Estimate values*

Town of Quilcene

Brief Treatment history in Quilcene

See previous year's reports for more detailed information

- 2013: Several small sites were treated in mostly terrestrial areas [Jefferson Puget Sound Corp (JPSC)].
- 2014: Several additional small sites were treated around Quilcene [CCNWCB].
- 2015-**2018**: No treatments were recorded due to funding and staffing shortages.

In 2019: 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- **2018**: No treatments were recorded.

In 2019: 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-**2018**: No treatments were reported on Tarboo Creek; Infestation points only submitted by HCSEG.

In 2019: Species of concern should be surveyed and treated along Tarboo Creek to protect the relatively pristine habitats.

Little Quilcene River

The Little Quilcene River drains a basin of approximately 40 square miles. Its headwaters originate above 4,400 feet on the north slopes of Mount Townsend and its runoff is derived from both rainfall and snowmelt. The upper watershed is within the Olympic National Forest and is steeply dissected with high gradient, confined stream channels. The lower valley and the flood plain have been developed for domestic, agricultural and timber use. The lower 0.8 miles have been diked and the banks armored to protect properties in the floodplain. The Little Quilcene River discharges to Quilcene Bay approximately one mile north of the mouth of the Big Quilcene. The estuary supports populations of Chinook, pink, chum, steelhead, Coho, sturgeon and cutthroat. However, the dike system, put in place nearly 100 years ago, has disturbed tidal function in the estuary. Sediment washed downstream has caused the formation of a "delta cone": a build-up of sediment in the estuary that can bury salt marshes that provide young salmon food and protection from predators. The HCSEG owns land near the mouth of the Little Quilcene and has mounted a large restoration effort in the estuary. 35,000 cubic yards of soil have been removed and the shoreline has been moved back 400 feet.

Brief Treatment history of Little Quilcene River

See previous year's reports for more detailed information

- 2009: Knotweed near the mouth of the Little Quilcene River was discovered and treated [JCNWCB].
- 2010, 2013-2014: Remaining knotweed from the mouth of the river were retreated [East Jefferson Washington Conservation Corp (EJWCC), CCNWCB].
- 2015: One privately owned parcel was surveyed for knotweed but none was found [HCSEG].
- 2016: 2 acres of the lower reaches of the river were surveyed, where no knotweed was found [HCSEG].
- 2017: 0.2 miles of the Little Quilcene River was surveyed where only one parcel was found to have knotweed. Less than 0.001 gallon of imazapyr was used to treat 3 square feet of knotweed. [HCSEG]

In 2018: HCSEG surveyed Leland Creek, a tributary to the Little Quilcene River. Knotweed was found at several locations along Leland Creek. During the 2018 treatment season, HCSEG treated several properties in the upper reaches of Leland Creek. A significant increase in Spotted Jewelweed infestations was observed this season in both Leland Creek and Little Quilcene River systems. HCSEG reported this to the Jefferson County Weed Board and the Coordinator. Treatments used 0.064 gallons of Polaris (1%).

In 2019: HCSEG will plant several acres along Leland Creek this upcoming winter and has several other landowners who have expressed interested in potential future plantings.

Herbicide Use, Quilcene Area (gallons)								
Waterway	2011	2012	2013	2014	2015	2016	2017	2018
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	-	-	0.001	0.063
Total Herbicide	2.52	2.25	0.782	0.0700	0.02	-	0.001	0.063

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].
- 2015-2018: Due to low infestation levels, no treatments were performed on Spencer creek; there was no report of treatments in 2018.

In 2019: If time and resources allow, Spencer Creek should be surveyed and treated for all high priority weeds.

Herbicide Use, Spencer Creek (gallons)								
	2011	2012	2013	2014	2015	2016	2017	2018
Total Herbicide	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].
- 2017: 10.5 river miles surveyed; 0.13 acres of solid knotweed treated using 0.065 gallons of imazapyr.

In 2018: HCSEG notes treatments continue to be highly successful on this system; this year a noticeable reduction in the amount of knotweed was observed. Treatments used 0.164 gallons of AquaNeat (100%) and an additional 0.43 gallons of Polaris (1%).

In 2019: HCSEG will partner with USFS to undertake additional upstream surveys to ensure the most upstream infestations are addressed. Winter work for this river will include plant maintenance on a previous planting site. In addition to maintenance, HCSEG is working with Jefferson County and Washington State Parks to identify potential planting locations on their properties, focusing on islands and streamside sites.

Herbicide Use, Dosewallips River (gallons)													
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Acres Treated*	2	5	7.75	5.5	14.05	0.3	0.57	5**	1.3	5718	27.1	1348	1348
AquaNeat injected	0.77	3.175	0.8	0	0	0	0.031	0	-	-	0	0	0.164
AquaNeat sprayed	0.375	3.2	3.12	0.234	8.48	0.58	1.443	1.56	0.007	0.8	0	0	-
Polaris sprayed	0	0	0	0	0.02	0	0.02	0.003	0.03	-	0.13	0.065	0.43
Total Herbicide	1.145	6.375	3.92	0.234	8.5	0.58	1.494	1.56	0.037	0.8	0.13	0.065	0.56

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

***Estimated values*

Duckabush River

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

Brief Treatment history of the Duckabush River

See previous year's reports for more detailed information

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

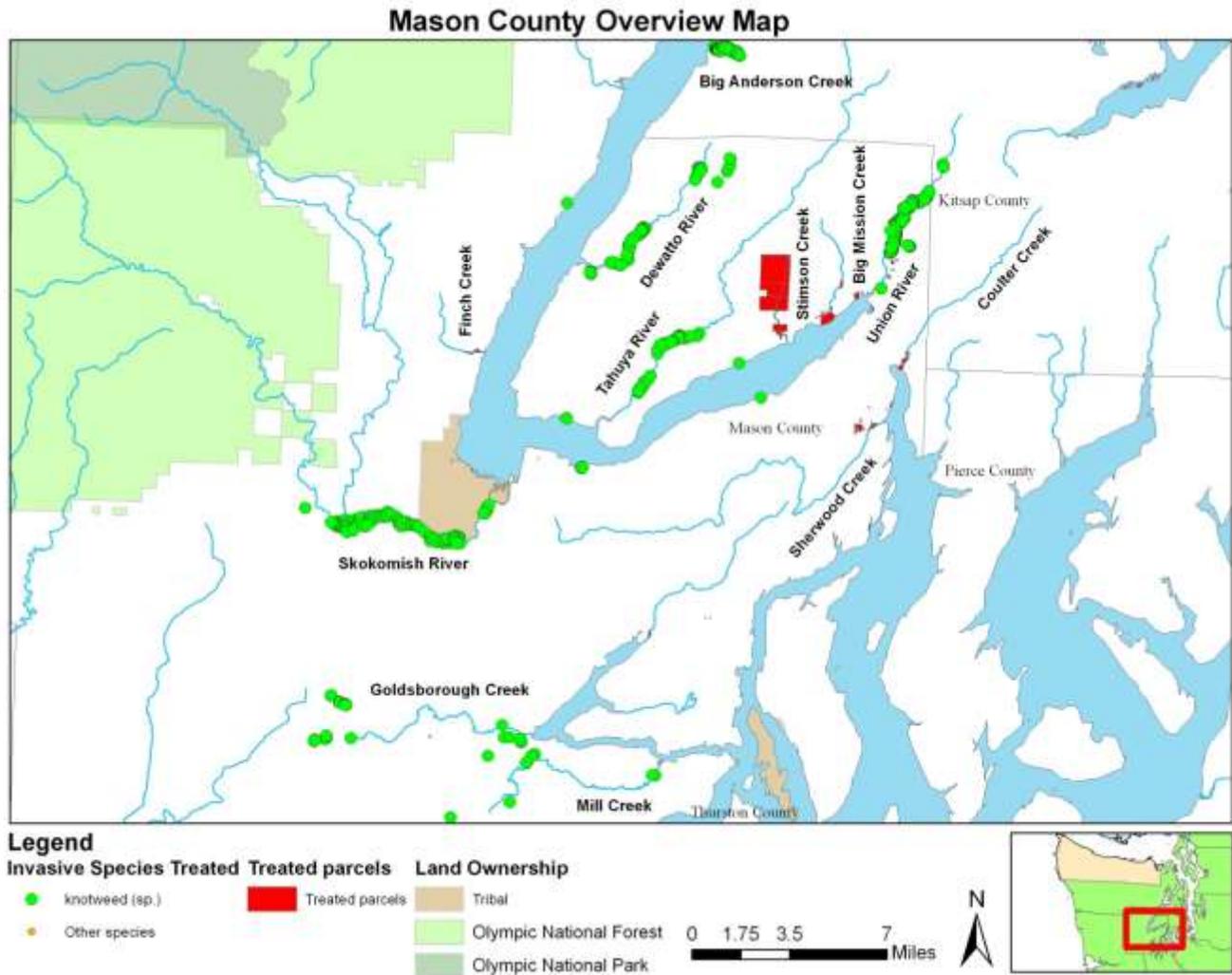
In 2019: Due to the low knotweed occurrence on the Duckabush, treatments of other invasive species of concern should be performed in its lower reaches.

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

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

PROJECT ACTIVITIES BY WATERSHED—CONTINUED

MASON COUNTY



Tahuya River

The Tahuya River is the largest stream on the Kitsap Peninsula, draining 45 square miles of land. The mainstem is 21 miles long, plus an additional 65 miles of tributaries. The numerous tributaries are an important factor in the Tahuya’s ability to produce large numbers of coho salmon. Large undeveloped parcels along the remote river banks have made 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].
- 2017: 6.5 river miles were surveyed (221 treated acres). 8 gallons of 1% Polaris was used to treat 0.06 acres of solid knotweed. [HCSEG and WCC]

In 2018: This was the eighth consecutive year, (since 2010) of knotweed surveys and treatments along the Tahuya River main stem. Where permissions have been secured, infestations mainly consist of small isolated knotweed patches. HCSEG, assisted by a WCC crew treated 6.5 river miles (387 acres), assisting 70 landowners on 194 parcels. Treatments used 0.013 gallons of Polaris (1%).

In 2019: In areas where consent for treatment has not been secured, the majority of which is located in the lowest reaches of the drainage, significant patches of knotweed are present and HCSEG is working to increase landowner participation. HCSEG staff will inspect previous plantings along this river to determine maintenance needs. In addition to plant maintenance, HCSEG is in contact with several landowners for next planting season. This river system lacks a mature conifer cover and the intent of plantings there will be focused on increasing conifer numbers

Union River

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

Brief Treatment history of Union River

See previous year's reports for more detailed information

- 2009-2013: Knotweed treatments were performed on 99 parcels each year [HCSEG].
- 2014: Crews note that while knotweed re-growth is very sparse, noxious weeds including giant hogweed, spotted jewelweed and policeman's helmet have spread into bare ground previously infested with knotweed. Native plant revegetation with primarily coniferous trees was started on 11 parcels throughout Union river.
- 2015: 4.32 river miles were surveyed for treatment [HCSEG, East Jefferson Washington Conservation Corps (EJWCC)].
- 2016: 3.45 miles of Union river was surveyed for treatment and an additional property was selected for native plantings [HCSEG, EJWCC].
- 2017: The HCSEG treated 386 acres along 4.9 river miles. Crew noted control progress has slowed in recent years and have switched exclusively to imazapyr treatments which have showed better results.

In 2018: This was the tenth consecutive year (since 2009), that HCSEG has surveyed and treated knotweed along the river mainstem and tributaries. The Union River continues to be further enveloped by nightshade and jewelweed in the lower sections of the system. MCNWCB was able to secure permission from a landowner and treat an area that had long been off-limits. With the assistance of a WCC crew, HCSEG treated 4.9 river miles of the Union River (353 acres) assisting 34 landowners. Treatments used 0.27 gallons of AquaNeat and an additional 0.35 gallons of Polaris (1%).

The MCNWCB assisted 6 landowners in the Union River watershed by treating knotweed and additional associated invasive species including Himalayan blackberry. The MCNWCB injected knotweed using 1.59 gallons of AquaNeat and used an additional 0.07 gallons of Polaris (1%) with foliar applications.

In 2019: In fall and winter of 2018-2019, HCSEG will plant two sites in lower reaches of the river.

Dewatto River

The Dewatto River mainstem is 8.7 miles in length with about 30 miles of tributaries. The river enters Hood Canal about 5.5 miles north of the Great Bend of Hood Canal, draining about 23 square miles. Several wetlands are present near the mouth, providing quality rearing habitat for juvenile salmonids. Historically, the dominant land use of the Dewatto River was timber production but the estuary remains relatively undisturbed. Access to the shore is easy in the lower reaches where the main road runs along the river. The upper reaches are often

surrounded by wetlands or thick woods, making access more challenging. Nonetheless, knotweed control has been conducted on the Dewatto River since 2009.

Brief Treatment history of Dewatto River

See previous year's reports for more detailed information

- 2009-2013: After an initial survey in 2009, all known knotweed sites have been treated along the entirety of the Dewatto River each year [HCSEG, EJWCC].
- 2014: By 2013, very few knotweed infestations remained on the river and 2014 was designated as a rest year.
- 2015: 1.12 miles of the upper reaches of the Dewatto River were treated, where the knotweed infestations were the heaviest [HCSEG, EJWCC].
- 2016: Knotweed on the river has decreased significantly since its first treatments in 2009, and only 0.75 river miles were surveyed for treatment [HCSEG, EJWCC].
- 2017: The HCSEG-WCC surveyed 22 parcels along the Dewatto River. Knotweed infestations continue to be minimal, with only 0.133 gallons of imazapyr being used on 4.9 river miles. Most infestations were found within 2.6 miles of where the Dewatto meets the Hood Canal water body. Broad scope of permission has greatly improved the efficacy of treatments. [HCSEG, WCC]

In 2018: This is the tenth consecutive year (since 2009) HCSEG has treated knotweed along the Dewatto River and its tributaries. Knotweed infestation throughout this region is mainly found in smaller “patches” spread intermittently throughout the river and treatments have been successful in reducing patch size. During the 2018 treatment season HCSEG treated knotweed on a small tributary, Blacksmith Creek, found in the upper reaches of the system during a stream survey in 2017. During the 2017 surveys, several smaller patches of knotweed were also found in a lower reach and HCSEG is currently working to gain landowner support for treatment on those properties. HCSEG, with the assistance of a WCC crew, treated 7.5 river miles of the Dewatto River assisting 8 property owners on 8 parcels. Treatments used 0.048 gallons of AquaNeat and 0.051 gallons of Polaris (1%).

In 2019: During the 2018-2019 planting season several acres will be planted along a section of the river, with an emphasis on conifer plantings.

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

Skokomish River

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

Brief Treatment history of Skokomish River

See previous year's reports for more detailed information

- 2010-2011: Knotweed on the Skokomish River was treated. No other information is available. [Mason Conservation District (MCD)].
- 2012: A new systematic top-down treatment approach was utilized and 43 acres were surveyed for treatment [MCD].
- 2013: 29 parcels of the heavily infested Skokomish Valley were treated. A partnership with the Squaxin Island Tribe also allowed for knotweed treatment in the Skookum Creek watershed [MCD].
- 2014: 24 parcels in the Skokomish Valley were retreated [MCD].
- 2015: Due to the substantial re-growth seen through glyphosate applications, the MCD switched to imazapyr foliar applications. 8.7 river miles of the Skokomish were treated.

- 2016: 12.4 miles of the upper Skokomish were treated. Switching to imazapyr seemed to provide a higher level of control compared to glyphosate applications done before 2015 [MCD].
- 2017: 15.5 river miles (442 acres) of the Skokomish River searched for knotweed and giant hogweed. Crew reported that sites upstream of Highway 101, where they have been treating for several years is seeing 80-90% control. This was first year of systematic treatment downstream of Highway 101. [MCD] With such high control, MCD has embarked on seeding and bareroot plantings as appropriate.

In 2018: The MCD treated 8 river miles (321 acres) for knotweed, using 26.7 gallons of AquaNeat (5%) and 1.4 gallons of Polaris (1%). Permission was obtained to treat a strategically located site that threatened to re-infest roughly half the river. Crew was able to treat some large patches of the first time and noted that many treated sites were showing positive results, with some nearing 100% control.

In 2019: Consider updating GPS inventory of knotweed. Continue systematic treatments Skokomish River, begin more native plantings as site condition allows.

**For more information about the Skokomish River please contact Brayden Raber,
(Mason Conservation District) 360-427-9436 ext. 120, braber@masoncd.org**

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

Watershed descriptions are not available at this time.

Brief Treatment history of Miscellaneous Mason County Sites

See previous year's reports for more detailed information

- 2013: Through a grant funded by the Department of Natural Resources, large infestations on Sherwood, Finch and Stimson Creeks were treated for the first time. Crews utilized a top-down strategy to treat the entirety of both creeks [MCNWCB, Puget Sound Corps (PSC)]. The MCNWCB also treated sites on Goldsborough Creek as well as North and Oakland Bays.
- 2014: 1.74 river miles on Sherwood and Finch Creeks, Union River, Lake Isabella and North Bay were treated for knotweed and other species of concern [MCNWCB, PSC].
- 2015: 3.7 river miles of Coulter, Finch, Stimson and Sherwood Creeks were treated for invasive species. Additional terrestrial and aquatic treatments in the towns of Allyn, Belfair, Shelton and North Bay were also conducted. Goldsborough and Mill Creeks were surveyed to prepare for future treatments [MCNWCB].
- 2016: The first large scale treatments for knotweed and giant hogweed on Goldsborough and Mill Creeks took place. 3.58 river miles on Coulter, Finch, Sherwood and Stimson Creeks were treated for invasives of concern. Terrestrial sites in Allyn, Belfair, Shelton, and North Bay were also retreated [MCNWCB].
- 2017: Treated 4.4 river miles (7 solid acres of knotweed) on 86 parcels on Coulter, Anderson, Sherwood, Finch, Mission, Little Mission, and Stimson Creeks as well as in North Bay/Allyn using a combined 7.1 gallons of glyphosate and imazapyr. Additional invasive plants, including herb Robert, policemen's helmet, and giant hogweed were treated with aminopyralid and triclopyr [MCNWCB]. 2.4 river miles were surveyed, and 3.5 acres were treated for knotweed and giant hogweed on Goldsborough and Mill Creek [MCD].

In 2018: The Mason Conservation District (MCD) assisted 61 landowners on 114 parcels while treating 2.4 river miles (8.5 acres) of Goldsborough /Mill Creek for knotweed. Treatments used 0.002 gallons of AquaNeat (5%) and 0.13 gallons of Polaris (1%). The MCD reported that treatments appear to have been very effective!

The Mason County Noxious Weed Control Board (MCNWCB) assisted 69 landowners on 76 parcels while treating 11 waterways including: 1.7 miles of Sherwood/Anderson Creeks, 0.59 river miles of Coulter Creek, 0.72 miles of Mission/Little Mission Creek, 2.19 river miles of Stimson Creek, 0.83 miles of Finch Creek, as well as miscellaneous sites within WRIAs 14, 15, and 16. All told, these treatments used 6.24 gallons of AquaNeat (injected at 100%) and 0.97 gallons of Polaris (1%) over 23 acres. MCNWCB treated additional high priority invasive species including giant hogweed, perennial sowthistle, poison hemlock, and yellow flag iris. The MCNWCB reported 70 % reduction in solid acres treated from 2017 on systems with 3-5 years of treatment.

HCSEG assisted 9 landowners with Hood Canal waterfront properties encompassing 25 acres. Treatments used 0.094 gallons of AquaNeat (injected at 100%) and 0.139 gallons of Polaris (1%).

In 2019: the MCD will focus on gaining permissions for the entirety of the Goldsborough and Mill Creek watershed and seeding in previously treated areas. The MCNWCB noted residual knotweed stems seem to be hiding a distance from the creeks, often in Himalayan blackberry patches. They plan to take additional time to search for plants, 20-30' from the water's edge.

	Herbicide Use, Mason County, 2013 (gal)		Herbicide Use, Mason County, 2015 (gal)		Herbicide Use, Mason County, 2016 (gal)		Herbicide Use, Mason County, 2017** (gal)		Herbicide Use, Mason County, 2018*** (gal)	
	Glyphosate injected	Herbicide sprayed	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	n/a	n/a	0	28.1
Tahuya River	0	8.3	0	0.69	0	0.08	0	0.08	0	0.013
Union River	5.69	8.55	0	3.48	0	1.40	0	0.7	1.86	0.43
Dewatto River	0	0.12	0	0.29	0	0.02	0	0.13	0.048	0.051
Finch Creek	2.06	0.03	0	1.49	0.4	0.2	n/a	n/a	0.096	0.057
Stimson Creek	3.0	1.15	0	0.10	0.8	0.07	n/a	n/a	0.33	0.033
Sherwood and Anderson Creek	3.23	0	0	2.58	0.8	0.49	n/a	n/a	0.57	0.15
Miscellaneous riparian sites	1.32	0.85	0	0.58	1.5	1.13*	n/a	n/a	0.67	0.20
Coulter Creek	-	-	-	-	-	-	-	-	0.15	0.09
Mission Creek	-	-	-	-	-	-	-	-	2.66	0.031
Little Mission Creek	-	-	-	-	-	-	-	-	0.49	0.1
Mill and Goldsborough Creek	-	-	-	-	-	-	-	-	n/a	0.13
Terrestrial sites	1.54	1.33	0	4.67	2.2	0.59	n/a	n/a	0.73	0.172
Total Herbicide	16.84	37.17	0	13.88	5.7	3.98	0	0.91	7.64	29.58

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

** In 2017, only total herbicide usage from MCNWCB was reported, which can be found in "total" column Totals do not include Mill and Goldsborough Creeks, which were not provided.

***Totals for 2018 have generally been rounded to two decimals.

For more information about Mason County work, please contact:

Pat Grover, (Mason Noxious Weed Control Board) 360-427-9670 ext. 592 or 360-426-5757, patricia.grover@co.mason.wa.us

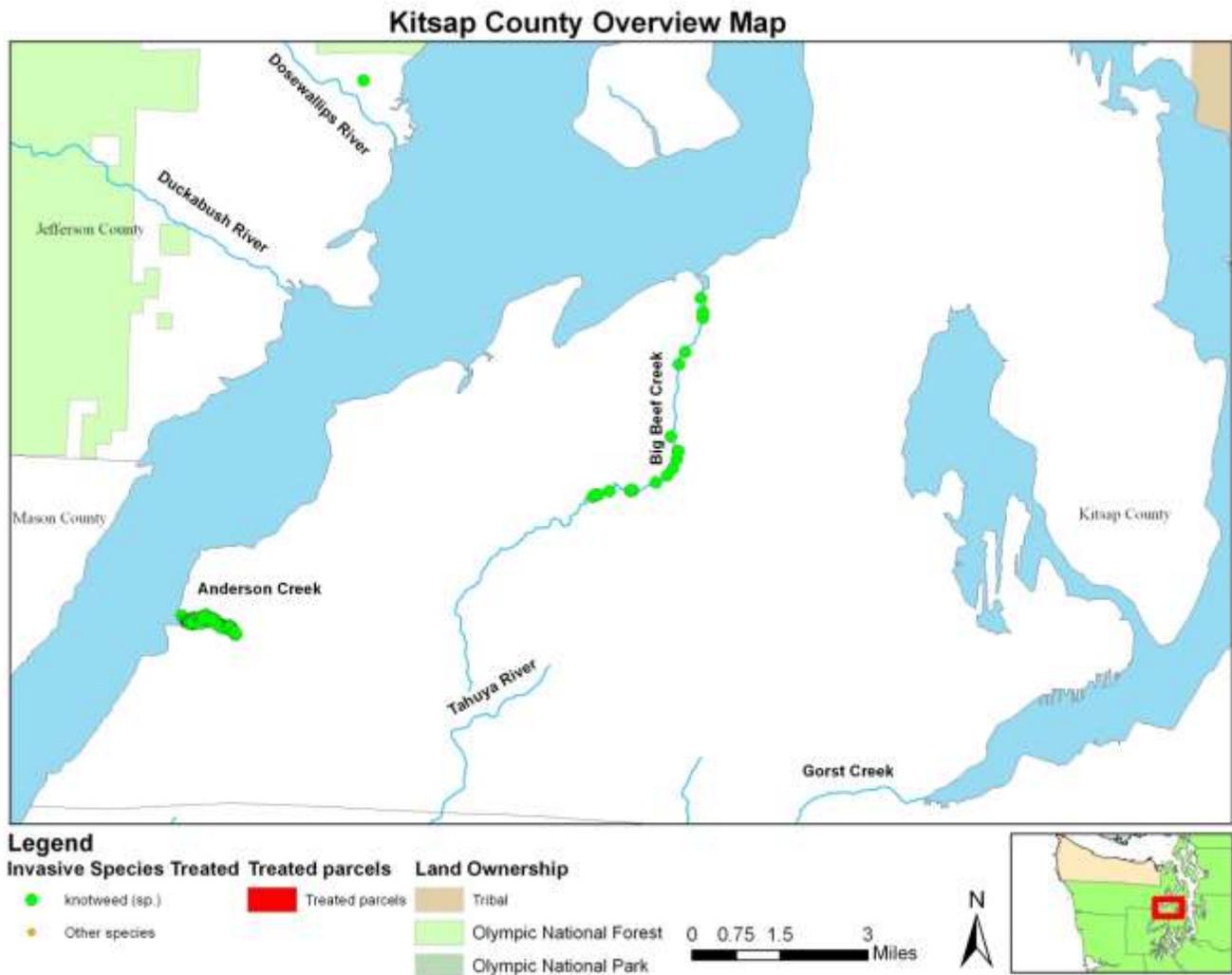
(OR)

Brayden Raber, (Mason Conservation District) 360-427-9436 ext. 120, braber@masoncd.org

(OR)

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

PROJECT ACTIVITIES BY WATERSHED—CONTINUED
KITSAP COUNTY



Big Anderson Creek

Brief Treatment history of Big Anderson Creek

See previous year's reports for more detailed information

- 2012-2015: Knotweed treatments were conducted on Big Anderson Creek, but details were not made available [HCSEG].
- 2015: 1.2 river miles were surveyed for knotweed and 13 parcels were treated [HCSEG].
- 2016: 0.77 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].
- 2017: 1.75 river miles of Big Anderson Creek were treated for knotweed. The HCSEG used 0.623 gallons of imazapyr to treat 0.44 solid acres. 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: This is the seventh consecutive year that HSEG has treated knotweed on Big Anderson Creek. Big Anderson Creek (and Union) had an overall increase in total acres of knotweed infested but recorded a reduction in the amount of herbicide applied. HCSEG attributes the increase of knotweed to several factors. During the 2018 treatment season, HCSEG refined the method for estimating area covered and switched from utilizing a Trimble to gather data points to a phone app. This switch allows us to have two people record data points, instead

of one, ensuring that we are capturing an accurate portrait of what is on the ground. HCSEG believes that in addition to the increased proficiency of data collection, a couple of other factors played a role into the change in knotweed infestation for Big Anderson Creek. This system has a large wetland complex that is home to several beavers. HCSEG staff has observed evidence of beavers transporting knotweed within this system which has increased the overall area of infestation. Furthermore, a landowner in the lower reach of Big Anderson had been mowing knotweed and spreading it to adjacent areas. HCSEG met with this landowner and he has agreed to stop all mowing until knotweed is treated/controlled. This year HSEG, with a WCC crew treated 2 river miles of Big Anderson Creek, assisting 7 landowners on 17 parcels using 0.295 AquaNeat (injected at 100%) and 0.445 gallons of Polaris (1%).

In 2019: HSEG plans conifer planting on several acres where knotweed has been successfully controlled.

Big Beef Creek

Brief Treatment history of Big Beef Creek

See previous year's reports for more detailed information

- 2015: All of Big Beef Creek was surveyed after knotweed was discovered near a restoration area [HCSEG].
- 2016: A database of landowners along Big Beef Creek was generated and permissions were solicited. 26 permissions were gained and an additional 7.8 acres were surveyed [HCSEG].
- 2017: Permissions to treat on Big Beef Creek were secured for the first time. 4.75 river miles were surveyed, 0.04 solid acres of knotweed treated. [HCSEG]

In 2018: HCSEG treatment on Big Beef Creek focused on parcels where consent had been secured. This included several state agencies' holdings which make up roughly 2/3rds of the drainage. Several large patches of yellow archangel were found on a property that is not yet participating in the knotweed control project. HCSEG has been in contact with the property owner. In addition to the yellow archangel infestations, HCSEG found a couple of smaller butterfly bushes in the middle reaches of the system and has reached out to the landowner to offer assistance with control. Treatments used 0.008 gallons of Polaris (1%).

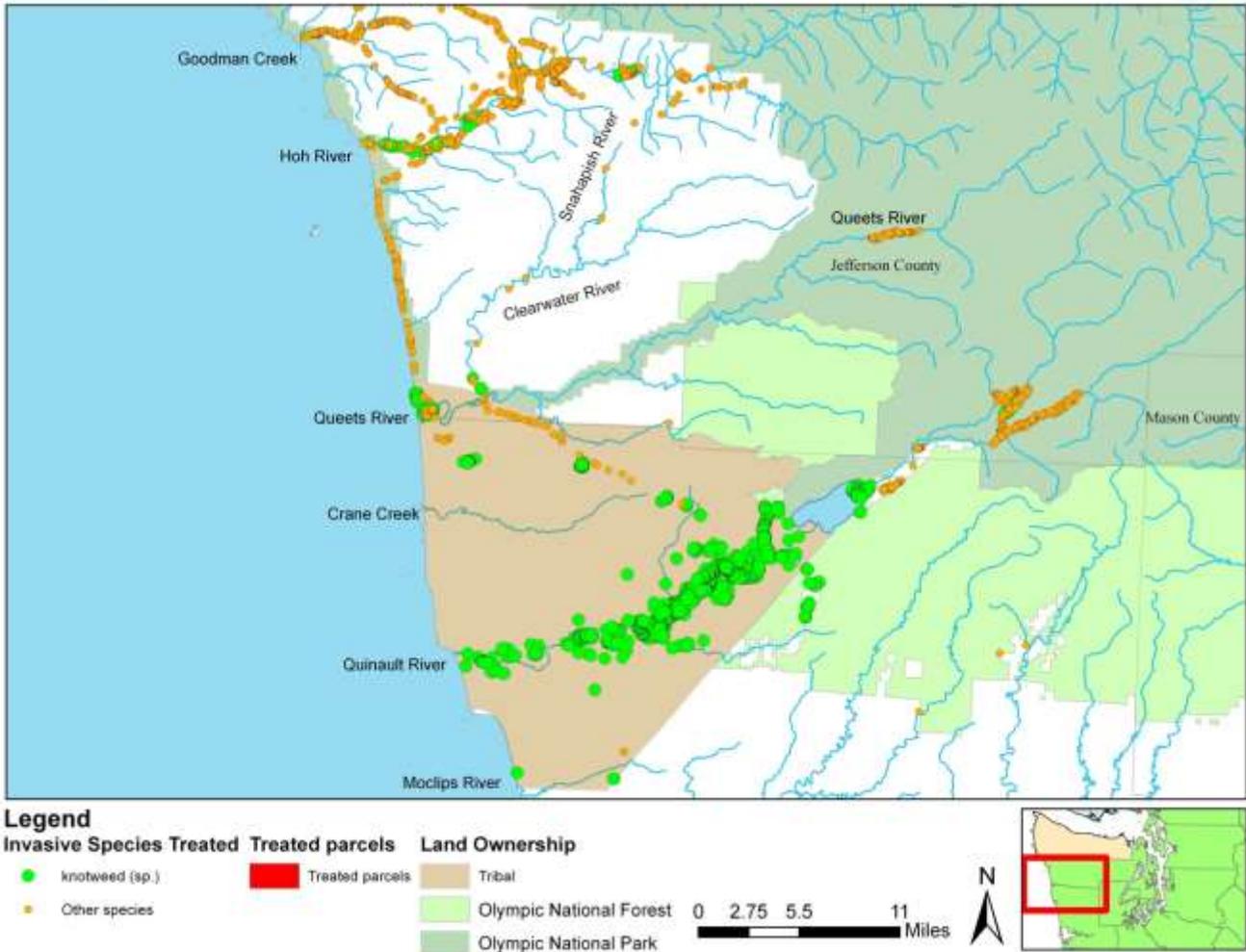
In 2019: HCSEG will focus on gaining additional landowner consent and increased support of the project.

For more information about Big Anderson and Big Beef Creeks, please contact Alex Papiez, Hood Canal Salmon Enhancement Group, at 360-275-3575 extension 24, alex@pnwsalmoncenter.org or Michelle Myers, 360-275-9722, michelle@pnwsalmoncenter.org

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

Quinault River, Lake Quinault, Queets and Clearwater Rivers

Quinault River, Lake Quinault, Queets and Clearwater River Overview Map



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

Quinault River

Tributaries and floodplain, Lake Quinault and Prairie Creek

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

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

Brief Treatment history in the Quinault River, Lake Quinault, and Prairie Creek

See previous year's reports for more detailed information

- 2007-2011: A grant made available to the Quinault Indian Tribe (QIN) allowed for knotweed control to be performed on Prairie Creek. In 2011, treatments were deemed to be very successful as infestations were greatly reduced and natural vegetation was re-establishing in treated areas.
- 2010: Funding was provided to the QIN for knotweed treatments in the Quinault River. Most of its sub-watersheds were surveyed and treated [QIN].
- 2011: The Upper Quinault River was surveyed and treated for the first time [North Cascades Exotic Plant Management Team (NCEPMT), Grays Harbor Noxious Weed Control Board (GHNWCB)].
- 2012: The Lower Quinault tributaries were treated for the first time [QIN].
- 2013: 1,000 acres of the Lower Quinault floodplains were surveyed for first time treatments. Dense stands of knotweed encompassing 43 acres treated. The Lower Quinault tributaries were also treated for a second year and a revegetation project was started [QIN]. Sections of the river within Olympic National Park boundaries were treated [NCEPMT].
- 2014: Riparian sites in the Quinault Indian Reservation were treated for knotweed and reed canarygrass by the Brittlund Company. Infestations at Lake Quinault were treated by the 10,000 Year's Institute (10KYI).
- 2015: 4 miles of the Lower Quinault River and 1,100 acres of Lake Quinault and Quinault river tributaries were retreated [10KYI, 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].
- 2017: Under the Pulling Together in Restoration project, the 10KYI surveyed 19 road miles on SR 101 and Moclips Highway and treated various invasives weeds using 2.02 gallons of Aquaneat (2%) over 180 acres. The Moclips highway was a high priority for the 10KYI as wind dispersed seeds from this area can be carried to the Upper Quinault and Queets tributaries.

In 2018: The 10,000 Years Institute reported treatment of 11.9 river miles of the Quinault River for a variety of non-native plant species including knotweed, herb Robert, reed canarygrass, Canada and bull thistle. Crew Treatments used 1.99 gallons of AquaNeat (1.5%) and 0.15 gallons of Polaris (1%). There was no inventory or treatment conducted on the Moclips Highway (SR 109, 19 miles, both sides from SR 101 to SR 109; Lower Quinault River Watershed) but an early season monitoring survey showed a significant reduction in tansy ragwort rosettes from extensive population treated in 2017.

Data points from the Quinault Indian Nation (QIN) have been included on the map, but no narrative or detailed information about activities was made available.

In 2019: Collaboration with local roads departments may be beneficial to coordinate mowing with treatments of this area.

Queets-Clearwater River

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

Brief Treatment history in Queets- Clearwater Watershed

See previous year's reports for more detailed information

- 2011: The Environmental Protection Agency (EPA) awarded a 3 year grant to the Quinault Indian Tribe (QIN) for treatments on 153,000 acres of the Queets and Clearwater Rivers. The Jefferson County

Noxious Weed Control Board (JCNWCB) was contracted to obtain landowner agreements. Approximately 2/3 of each river system was surveyed. One site was found on the Queets and the source of knotweed for both river systems was found on the Clearwater River.

- 2012: Crews treated previously surveyed knotweed infestations (2.25 acres total) and completed surveys along remaining lengths of the rivers [QIN, JCNWCB].
- 2013: All known sites on both rivers were retreated. Additional invasive species were surveyed. The large source infestation of knotweed on the Clearwater River had decreased in size substantially [QIN, JCNWCB].
- 2014: Invasive species and remaining knotweed mapped in 2013 were treated by Brittlund Company and 10KYI. Reed canarygrass was also treated at the mouth of the Queets.
- 2015: 33 river miles of the Queets and Clearwater Rivers were treated [10KYI].
- 2016: No treatments were recorded this year.
- 2017: The 10KYI surveyed 35.75 miles along Lower Queets, Clearwater and Snahapish rivers. Knotweed had continued to decline and crews treated additional invasive weeds, including reed canary grass, Canada thistle, Scotch broom, herb Robert and tansy ragwort. A total of 45 knotweed sites were treated on the first 1.58 miles of the Queets from its mouth, but only two sites were observed and treated on the entirety of the Clearwater River. Treatments of reed canary grass and Canada thistle were expanded from the Clearwater upstream to the Snahapish River and included 13 miles.

In 2018: The 10,000 Years Institute (10KYI) reported treatment of 0.3 river miles of the Lower Queets River (Queets estuary and river below RM 7) for tansy ragwort, reed canarygrass, and Canada thistle. Crews were funded through the Pulling Together in Restoration project. Treatment of 1.34 acres used 0.26 gallons of AquaNeat (1.5%) and .24 gallons of Polaris (1%). No work was conducted by the 10KYI on the Clearwater River except on roads and a campground in the watershed under the Pulling Together in Restoration project, which focuses on prevention of spread by addressing sources, vectors, and pathways and removing seeds and propagules, while treating mature plants with the most effective known methods. We conducted this work on behalf of the Quinault Indian Nation, The Nature Conservancy, and WDNR's Natural Areas program.

The 10KYI crews did not work on the Clearwater River (Tributary to the Queets at RM 7) except on roads and a campground in the watershed. While monitoring the Snahapish River (tributary to the Clearwater at RM 19), crew noted reed canarygrass had been reduced by 90%. There is concern about the increasing amount of curly dock. Treatments only occurred at a research site in partnership with WSDA to ascertain glyphosate detection in water post treatment (0.631 acres treated with 0.015 gallons of AquaNeat (1.5%). Crew mapped, de-seeded, and sprayed RCG on contributing roads including the Clearwater Mainline and C-2700 Road.

Data points from the Quinault Indian Nation (QIN) have been included on the map, but no narrative or detailed information about activities was made available.

The North Cascades Exotic Plant Management Team treated approximately 3 miles of the upper Queets for Canada thistle and Scotch broom; the data points are included in the map but no additional information was provided.

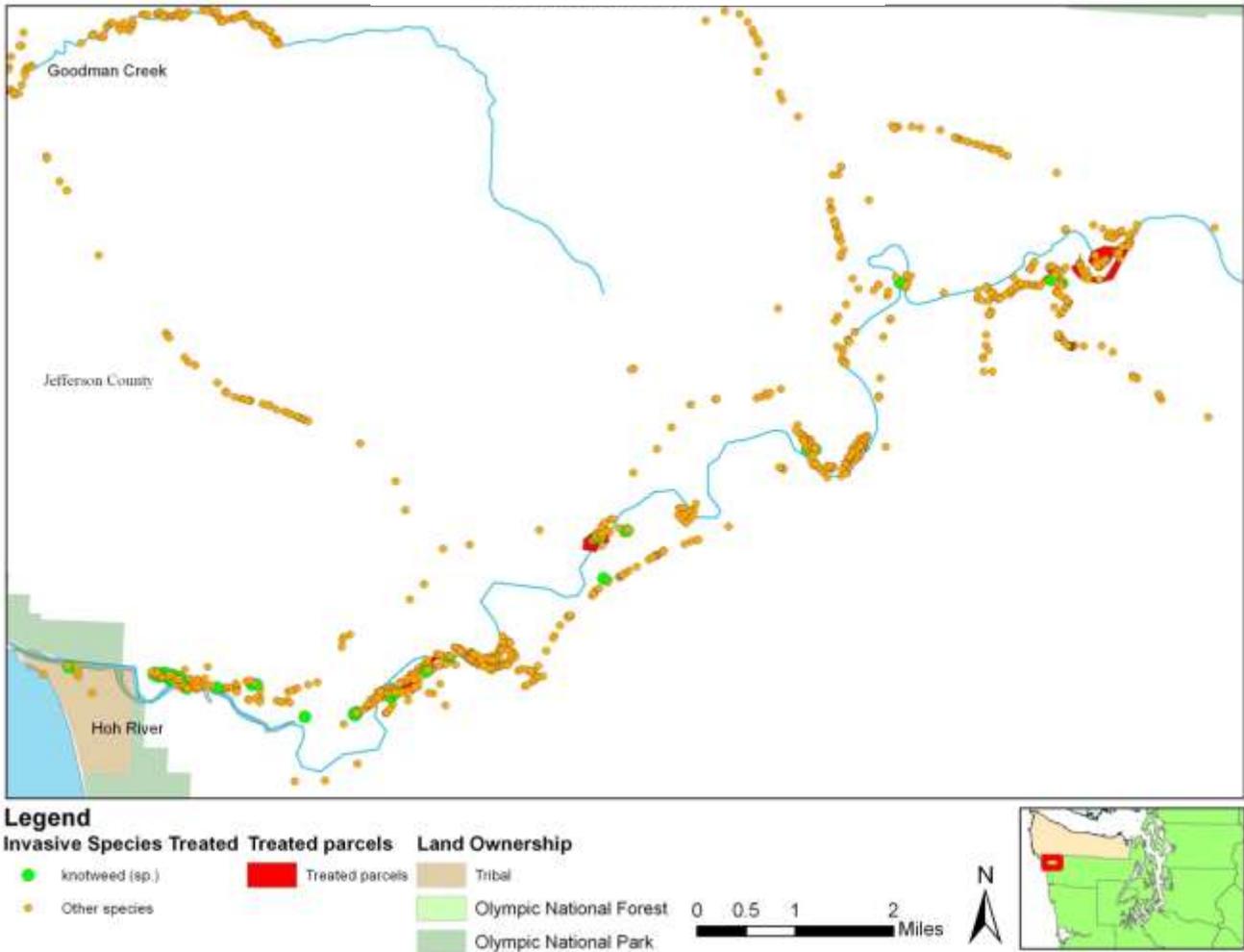
In 2019: The 10KYI plans to continue to monitor for knotweed, while controlling other high priority or infrequent non-native species.

For more information about knotweed treatment on Quinault, Queets and Clearwater Rivers, please contact Greg Eide of the Quinault Tribe at 360-276-8211, extension 7341 and at greg.eide@quinault.org,
(OR)

Jill Silver of the 10,000 Year's Institute at 360-385-0715 and jsilver@10000yearsinstitute.org.

Hoh River

Hoh River Overview Map



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

Brief Treatment history of the Hoh River

See previous year's reports for more detailed information

- 2001-2002: Treatments of knotweed were conducted through the Hoh River Knotweed Control Project [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2003: A survey of the Hoh River documented 18,585 canes in 1,247 sites dispersed over 20 river miles that were treated [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2003-2013: Annual surveys and retreatment of the 30 mile river corridor downstream of ONP land were performed each year during this time. Crews noted a substantial decrease in knotweed plant density and distribution. However, other species including reed canarygrass, herb Robert, Canada thistle and Scotch broom had spread in previously treated areas and highly disturbed shorelines. In 2011, inventorying of reed canarygrass was started Elk Creek, a Coho and steelhead spawning tributary of the Hoh River [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2014: 125 knotweed and 319 reed canarygrass sites were treated along the Hoh River mainstem [10KYI, Hoh Tribe, Hoh River Trust, ONP].

- 2015: 40 knotweed and 193 reed canarygrass infestations along the mainstem Hoh River and its side channels, gravel bars and floodplains were retreated. Crews found increased infestations of Canada thistle, herb Robert and Scotch broom due to seed movement in river channel migrations. Scotch broom and herb Robert were controlled along Highway 101 [10KYI, Hoh Tribe, Hoh River Trust, ONP].
- 2016: Invasive species were retreated along the Hoh River's 30 mile mainstem. 28 small knotweed sites were treated while over 40 acres of Scotch broom were treated using cut stump applications. Notably, reed canarygrass infestations on the Hoh are down by 90% and crew were able to treat a single hydrangea before it spread [10KYI].
- 2017: The 10KYI performed work on the Hoh River, totaling 3,562 acres searched, under the Pulling Together in Restoration Project, the Hoh Riparian Restoration Project, and the Washington State Department of Agriculture (WSDA) Knotweed program. Knotweed was treated at 37 sites (28 Bohemian, 8 Japanese, and 1 Giant), totaling 0.08 acres. Treatment focus shifted towards reed canary grass, Scotch broom, Canada thistle, and herb Robert. The 10KYI noted an explosion of herb Robert infestations along the Hoh and neighboring roadsides, but successfully coordinated with the Jefferson County Road Department to mow roadsides after herb Robert had been pulled and bagged.

In 2018: Work conducted in the Hoh River Watershed occurred under three programs - WSDA's Knotweed Control Program, the Hoh Riparian Restoration Project (Hoh RR), and the Pulling Together in Restoration project (PTIR). Hoh River knotweed control has been conducted annually since 2003 over as much of the river corridor as funding and crew size allows. In 2018, the 10KYI crew size ranged between 6 and 12 members, a welcome increase from previous years, and covered much of the 36.6 miles of river channel and floodplain in the project area west of the Olympic National Park boundary at river mile (RM 29.75).

The focus of all projects is prevention of spread by addressing sources, vectors, and pathways and removing seeds and propagules, while treating mature plants with the most effective known method. WSDA funds repeated surveys of known treatment sites, and all floodplain and channel area that received floodwaters in the previous year. PTIR funding was focused on Scotch broom on riverine gravel bars utilizing two DNR/Olympic Corrections crews plus the PTIR crews, and on state and county roadsides.

Knotweed – Knotweed points comprise the lowest number of the focal species – 46 Bohemian, 2 Giant, and 10 Japanese sites were found and 56 of the 58 were treated. As in 2017, many of the sites within the first river mile where access has been limited over the past decade. As last year, some of the plants were growing within Scotch broom stands, which were also treated this year. Mild weather and flow conditions allowed crews to continue surveys much later into the year than usual; one site was treated in early December!

Of the 58 mapped knotweed points, 77% were less than 3 feet in height, and 95% were less than 6 feet in height:

- 7% are less than 1 foot
- 70% of the points are plants less than 1-3 feet
- 18% are 4-6 feet
- 3% are 7-10 feet
- 2% are greater than 10 feet

The majority of knotweed points were under 300 ft²; the single largest point was 3150 ft². The height of the re-sprouting plants was between 1 and 3 feet while the density was reported at 25%.

Reed canarygrass – Under the Hoh Riparian Restoration Project, we conducted the fourth season of control on reed canarygrass, and observed an 82% reduction in points and infestation density over the area (4.05 acres reduced to 2.5 acres). We found and treated two new locations with dense reed canarygrass – a terrace wetland adjacent to a stream where culvert and bridgework had been conducted in the past years, and a side-channel wetland where RCG had established. Seed-heads were cut and bagged wherever possible. 10KYI reduced spray rates from previous years to 1.5% Aquaneat or 0.5% Polaris. Also, crews mapped and de-seeded reed canarygrass on contributing roads including the State's SR 101, Hoh Mainline and County Upper Hoh Road, Lower Hoh Road, and Oil City Road – under the PTIR project.

Scotch broom – Crews pulled young plants, and applied cut-stump treatment to mature plants (50% to 100% Aquaneat) on the river floodplain and riparian and gravel bar complexes, treating a total of 167 acres – some densely infested and some scattered, with another 30 acres needing the first round treatment. Scotch broom has highest density of all invasive species in the project area. Biocontrols have been distributed in the past, and again this year.

Canada thistle is the third-most dense invasive species in the Hoh River floodplain. Canada thistle was sprayed with 1.5% Aquaneat or 0.5% Polaris. Biocontrols have been distributed in the past, but are not observed to be present.

Herb Robert continues to spread. Patches were treated in over seven acres, including five miles of the Upper Hoh and Oil City roads. Again this year, 10KYI collaborated closely with the Jefferson County road crews to pull and spray before roads were mowed; crews treated infestations chemically with Vastlan once during the season.

Mature tansy ragwort plants were pulled and the flowerheads cut, bagged, & disposed at the local solid waste utility. Rosettes were dug, pulled, or sprayed with 1.5% Aquaneat or 0.5% Polaris.

Mature foxglove plants were pulled, rosettes sprayed with 1.5% Aquaneat or 0.5% Polaris.

St. Johnswort has just arrived in the watershed, on SR 101 and the Upper Hoh Road. Control was started in 2017, but mowing in seed is spreading this plant quickly. It moves into adjacent forest stands, and is so small and sparse, difficult to treat without off-target damage.

Everlasting peavine is rare in the Hoh watershed due to continuous surveys and treatment. There are only two known and previously treated sites on roadsides

Two other species arrived on roadsides 2018, wild chervil and wild carrot. Both are species found in east Jefferson County, spread by roadside mowing. Both sites were treated with Vastlan, and the county road locations are being monitored closely.

In 2019: With knotweed infestations dramatically reduced since initial treatments in 2001 (data not available), future work will also focus on other invasives, especially reed canarygrass. Revegetation projects should be performed to prevent spread of aggressive weeds in previously treated areas.

Herbicide Use, Hoh River (gallons)											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Acres Treated	1093	1000	NA	0.16	0.14	0.11	3.82	0.06	0.7*	164	49.18
AquaMaster or AquaNeat Injected or cutstump (100% or 50%)	0.0151	0.188	0.25	0.13	0	0	0	0	0	0	7.56
AquaMaster or AquaNeat Sprayed	0.5645	0.13	0.78	0.73	0.37	0	0.15	0	0	10.4	4.10
Polaris or Habitat Sprayed	0.06382	0.043	0.206	0.02	0.09	0.145	0.74	0.07	0.234	0.05	0.91
Vastlan											0.4
Total Herbicide	0.64342	0.361	1.247	0.88	0.46	0.145	0.89	0.07	0.234	*11	12.97

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

Goodman Creek

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

Brief Treatment history of the Goodman Creek

See previous year's reports for more detailed information

- 10KYI Treated 10 miles and searched 212 acres for non-knotweed invasives including; reed canarygrass, Canada thistle, Scotch broom, tansy ragwort, herb Robert, foxglove, smartweed.

2018: Work conducted by the 10KYI and found no knotweed. The work in the Goodman Creek Watershed occurred under the Pulling Together in Restoration project, in collaboration with the Pacific Coast Salmon Coalition. Crew treated 8.31 river miles (searched 219 acres) for reed canarygrass, Canada thistle, tansy ragwort and common tansy. Treatments used 0.89 gallons of AquaNeat (1.5%) and 0.47 gallons of Polaris (0.5%) on a total of 4.64 acres. Work was cut short and treatments near the mouth of the river were not completed due to water level rise.

Reed canarygrass remains a focus for this watershed and treatments have shown to be successful, but will require a minimum of four years to achieve eradication. Total treatment area was 3.4 acres (down from 21.5 acres

in 2017) and 211 plant sites (down from 520 plant sites in 2017) in the river corridor and off-channel habitats. Treatments included 1.5% Aquaneat or 0.5% Polaris and/or cut/bag seed heads. Polaris was used in the lower stretches of the river where creek water was used for tank mix. The upper stretches achieved the best control success with only 10% regrowth; the lower stretches showed less success – perhaps in part due to brackish water in tank mix or existing seedbank. 10KYI also mapped and de-seeded reed canarygrass on contributing roads to Goodman Creek including the Goodman Mainline.

Canada thistle was the second most prevalent invasive species on Goodman Creek at 0.9 acres and treated with 1.5% Aquaneat or 0.5% Polaris.

Tansy ragwort was found and treated; mature plants were pulled and the flowerheads cut, bagged, & disposed, rosettes were sprayed with 1.5% Aquaneat or 0.5% Polaris.

Scotch broom within the floodplain and riparian zone were pulled or treated with a cut-stump application of 100% Aquaneat.

Foxglove rosettes were treated with 1.5% Aquaneat or 0.5% Polaris.

Common tansy was found for the first time this year and treated.

2019: It is likely that 10KYI will target this watershed as resources are available. Additional focus should include the access roads to Goodman Creek which are heavily infested with Scotch broom.

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

Table 1: Work by County-by Watershed

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

The data was submitted to the CCNWCB in the standardized reporting template or annual reports. Values were estimated by CCNWCB if sufficient partial data was submitted, values that could not be estimated are listed as n/a^s. For more detailed information regarding 2018 treatment activities, refer to the narrative section by river system in this report. Watersheds that have historically had knotweed control activities but none reported in 2018 are included in this table with dashed (-) entries. Activities or species not reported to the CCNWCB are not included in this table.

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

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Clallam County Watersheds										
Dickey River	QNR	7.87	57.7	0.89	0.77	7/48	3	3	0	knotweed
(Mina Smith Rd)*	CCNWCB	3.8	8	8	0.23	n/a ^s	1	1	0	yellow archangel, tansy ragwort, herb Robert
Calawah River	10KYI	3.12	22	0.57	0.12	25/7	6	6	1	reed canarygrass, everlasting peavine, herb Robert, tansy ragwort
Bogachiel River	10KYI	15.7	249	10.55	4.28	35/56	8	8	5	knotweed, Scotch broom, reed canarygrass, tansy ragwort, foxglove, Canada thistle, yellow archangel, butterfly bush, everlasting peavine, St Johnswort, evergreen blackberry
Quillayute River	10KYI	2.5	3	6.38	2.01	18/30	4	4	1	reed canarygrass, Scotch broom, tansy ragwort, everlasting peavine
Sol Duc River	10KYI	11.4	82.57	1.1	0.51	21/108	4	4	3	reed canarygrass, Canada thistle, herb Robert

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
City of Forks	10KYI	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	knotweed, Scotch broom
Big River	Makah	6.6	109	17.08	0.58	20/24	13	13	0	knotweed and additional weeds
	CCNWCB	7.5	15	15	0.46	n/a ^s	1	1	0	knotweed, tansy ragwort, Scotch broom, Canada thistle, bull thistle
Hoko River	CCNWCB	9.3	18	18	0.46	n/a ^s	1	1	0	tansy ragwort, orange hawkweed, Scotch broom, Canada thistle, bull thistle
Clallam River (Charley Creek Rd)*	Makah	0.3	9	2.265	0.22	5/5	5	5	3	knotweed
	CCNWCB	0.75	1.5	0.2	0.06	n/a ^s	1	1	0	yellow archangel
Pysht River	-	-	-	-	-	-	-	-	-	-
Lake Creek, Lake Pleasant and Beaver	-	-	-	-	-	-	-	-	-	-
Lake Crescent	-	-	-	-	-	-	-	-	-	-
Deep Creek	LEKT	1.5	55	55	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	knotweed
Nordstrom Creek	-	-	-	-	-	-	-	-	-	-
Salt Creek	-	-	-	-	-	-	-	-	-	-
Elwha River (Olympic Hot Springs Rd)*	LEKT	3	5	5	n/a ^s	1/1	1	1	n/a ^s	knotweed and additional weeds
	CCNWCB	2.1	4.2	2.6	1.48	n/a ^s	1	1	0	knotweed, meadow knapweed, tansy ragwort, herb Robert
Dry Creek	LEKT	0.32	2	2	n/a ^s	1/1	1	1	n/a ^s	knotweed, invasive blackberry, English ivy
Valley Creek	-	-	-	-	-	-	-	-	-	-
Peabody Creek	-	-	-	-	-	-	-	-	-	-
Ennis Creek	CCNWCB	0.1	0.3	0.1	0.08	2/2	n/a ^s	2	n/a ^s	knotweed
Lee's Creek and East Lee's Creek	CCNWCB	1.3	4	3.4	0.1	15/15	19	15	n/a ^s	knotweed, yellow archangel, common teasel
Morse Creek	-	-	-	-	-	-	-	-	-	-
Bagley Creek	CCNWCB	0.1	0.5	0.5	0.06	1/1	1	1	1	knotweed, poison hemlock
Siebert Creek	-	-	-	-	-	-	-	-	-	-

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/ Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Bell Creek	WCC	0.25	7.5	7.5	n/a ^s	1/1	1	1	0	common teasel, poison hemlock
Dungeness River	NOSC	1	28	5.5	0.02	3/3	3	3	0	knotweed, butterfly bush, Scotch broom
Meadowbrook Creek	-	-	-	-	-	-	-	-	-	-
Total: 17 waterways	8 entities	77.16	645.3	148.1	11.4	155/302	74	67	13	19 species
Jefferson County Watersheds										
Snow Creek	-	-	-	-	-	-	-	-	-	-
Port Townsend	-	-	-	-	-	-	-	-	-	-
Lake Leland	-	-	-	-	-	-	-	-	-	-
Big Quilcene River	HCSEG	3.2	423	290	0.149	12/49	26	n/a ^s	1	knotweed
Little Quilcene River and Leland Creek	HCSEG	5	694	15	0.136	5/83	58	n/a ^s	27	knotweed
Quilcene and vicinity	-	-	-	-	-	-	-	-	-	-
Chimacum and Irondale	-	-	-	-	-	-	-	-	-	-
Tarboo Creek	-	-	-	-	-	-	-	-	-	-
Spencer Creek	-	-	-	-	-	-	-	-	-	-
Dosewallips River	HCSEG, WCC	11.0	5575	1348	0.107	8/72	24	n/a ^s	0	knotweed
Duckabush River	-	-	-	-	-	-	-	-	-	-
Queets/ Clearwater River	10KYI	0.3	85	13.59	1.4	7/17	n/a ^s	n/a ^s	0	Tansy ragwort, reed canarygrass, Canada thistle
	NCEPMT	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s
Snahapish River	10KYI	n/a ^s	n/a ^s	0.631	0.28	1/3	1	1	0	reed canarygrass, curlydock
Goodman Creek	10KYI	8.31	219	4.64	1.46	6/10	3	3	3	reed canarygrass, Canada thistle, bull thistle, smartweed, tansy ragwort, common

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Hoh River & tributaries	10KYI	36.5	1216	49.18	13.8	78/86	10	10	1	knotweed, Scotch broom, reed canarygrass, herb Robert, Canada thistle, tansy ragwort, Himalayan blackberry, evergreen blackberry, foxglove, smartweed, wild carrot, wild chervil, bull thistle, St. Johnswort
County Road System right-of-way Properties	HCSEG	n/a ^s	50	6	0.014	n/a ^s	n/a ^s	n/a ^s	n/a ^s	knotweed
Total: 8 watersheds	4 entities	64.31	8268	1727	17.4	117/320	122	14	32	16 species
Mason County Watersheds										
Tahuya River	HCSEG, WCC	6.5	713	387	0.411	14/194	70	n/a ^s	3	knotweed
Union River	HCSEG, WCC	4.9	602	353	1.78	34/90	73	n/a ^s	4	knotweed
	MCNWCB	n/a ^s	32.4	3.38	0.24	7/7	6	6	3	knotweed, creeping buttercup, hedge bindweed, Himalayan blackberry
Dewatto River	HCSEG, WCC	7.5	2213	1380	0.092	10/22	8	n/a ^s	0	knotweed
Skokomish River	MCD	8	557	321	n/a ^s	82/82	26	26	13	knotweed
Mission Creek	MCNWCB	0.68	8.24	2.54	0.79	8/14	14	8	0	knotweed
Little Mission Creek	MCNWCB	0.04	50.62	6.2	0.06	1/1	2	1	1	knotweed, butterfly bush, Himalayan blackberry, perennial sowthistle
Hood Canal waterfront	HCSEG	n/a ^s	176	25	0.035	9/9	9	n/a ^s	2	knotweed
Sherwood/Anderson Creek	MCNWCB	1.7	14	3.71	0.185	20/49	37	15	3	knotweed
Finch Creek	MCNWCB	0.83	10.06	1.5	0.45	12/38	29	42	1	knotweed
Goldsborough/Mill Creek	MCD	2.4	18	8.5	n/a ^s	32/33	72	25	1	knotweed

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Stimson Creek	MCNWCB, WCC	2.19	23.83	6.23	0.12	6/16	7	3	0	knotweed
Coulter Creek	MCNWCB	0.59	7.15	4.15	0.04	7/10	16	10	2	knotweed
North Bay/Allyn	MCNWCB	0.18	5	0.8	0.04	6/6	25	5	0	knotweed
Other sites WRIA 16	MCNWCB	n/a ^s	1.18	0.52	0.26	2/2	2	2	1	knotweed
Other sites WRIA 15	MCNWCB	0.14	20.2	0.001	0.001	1/2	1	1	1	knotweed, Scotch broom
Other sites WRIA 14	MCNWCB	0.27	4.58	2.0	0.3	7/7	6	6	5	knotweed, English ivy, giant hogweed, Himalayan blackberry, meadow knapweed, poison hemlock, perennial sowthistle, Scotch broom, yellow-flag iris
Oakland Bay	-	-	-	-	-	-	-	-	-	-
Spencer Lake	-	-	-	-	-	-	-	-	-	-
Shelton(Misc.)	-	-	-	-	-	-	-	-	-	-
Hwy 101 (Misc.)	-	-	-	-	-	-	-	-	-	-
Hwy 106 (Misc.)	-	-	-	-	-	-	-	-	-	-
Belfair (Misc.)	-	-	-	-	-	-	-	-	-	-
Liliwaup Creek	-	-	-	-	-	-	-	-	-	-
Total: 16 watersheds	3 entities	35.9	4456.3	2505.5	4.8	258/584	403	150	40	18 species
<i>Kitsap County Watersheds</i>										
Big Anderson Creek	HCSEG, WCC	2.0	300	233	2.45	17/21	7	n/a ^s	0	knotweed
Big Beef Creek	HCSEG, WCC	4.75	1066	429	0.32	4/65	32	n/a ^s	12	knotweed

Watershed	Partner(s)	River Or Road Miles	Acres Protected	Acres Treated	Solid Acres	Parcels Treated/Survey	# of Landowner Permissions	# Landowners Assisted	# New Agreements	Targeted Species
Total: 2 watersheds	2 entities	6.75	1366	662	2.77	21/86	39	n/a^s	12	1 species
Grays Harbor County Watersheds										
Quinault River	10KYI	11.9	n/a ^s	1.83	0.22	19/30	8	20	4	knotweed, bull thistle, Canada thistle, curly dock, foxglove, herb Robert, reed canarygrass, smartweed
	QIN	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s	n/a ^s
Moclips highway and SR 101	-	-	-	-	-	-	-	-	-	-
Total: 1 watershed	2 entities	11.9	n/a^s	1.83	0.22	19/30	8	20	4	7 species

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

AGENCY ACRONYMS USED IN TABLE:

- 10KYI**-10,000 Years Institute
- CCNWCB**-Clallam County Noxious Weed Control Board
- DNR-PSC**-Clallam based Puget Sound Corps, Mason based Puget Sound Corps
- DNR-WCC**-Department of Natural Resources Washington Conservation Corps
- EJWCC**-East Jefferson Washington Conservation Corps
- GHNWCB**-Grays Harbor Noxious Weed Control Board
- HCSEG**-Hood Canal Salmon Enhancement Group
- 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

Clallam County Noxious Weed Control Board

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

Jefferson County Noxious Weed Control Board

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

Mason County Noxious Weed Control Board

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

Grays Harbor County Noxious Weed Control Board

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

Mason Conservation District

Brayden Raber
360-427-9436 ext 120
braber@masoncd.org

Quileute Tribe

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

Makah Tribe

Rob McCoy
360-645-3058
rob.mccoy@makah.com

Lower Elwha Klallam Tribe

Kim Williams
360-457-4012 ext 7499
kim.williams@elwha.org

Jamestown S'Klallam Tribe

Hilton Turnbull
360-681-4603
hturnbull@jamestowntribe.org

Quinault Indian Nation

Greg Eide
360-276-8211
Greg.eide@quinault.org

Olympic National Park

Janet Coles
360-565-3073
Janet_coles@nps.gov

Olympic National National Park (North Cascades Exotic Plant Management Team)

Sophie Wilhoit
360-565-3076
sophie_wilhoit@nps.gov

US Forest Service (Olympic Region)

Cheryl Bartlett
360-956-2283
cbartlett@fs.fed.us

10,000 Years Institute

Jill Silver
360-385-0715
jsilver@10000yearsinstitute.org

Hood Canal Coordinating Council

Robin Lawlis
360-394-0046
rlawlis@hccc.wa.gov

Hood Canal Salmon Enhancement Group

Alex Papiez
360-275-3575 ext 24
alex@pnwsalmoncenter.org

Forterra

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

Center for Natural Lands Management

Patrick Dunn
360-956-9713
pdunn@cnlm.org

North Olympic Salmon Coalition

Sarah Doyle
360 379-8051
sdoyle@nosc.org

Pacific Coast Salmon Coalition

Alex Huelsdonk
360-374-8873
pacsac@olympen.com

Appendix II: WSDA Approved Report Form

2018 CLALLAM COUNTY-ROADS Herbicide/Manual Treatment Data Form

Project ID #:

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

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

Street Address: 223 E 4th St

City: Port Angeles

State: WA

Zip: 98362

Address or Exact Location of Site: Blue Mountain Road (CMP: 0-65)

PIN#:

General Activity Fields

County (circle one)	WRIA (circle one)	Project Name (from project list)	Department (circle one)	Workforce**
Clallam	15 16 17 18 19		Roads DOD Parks Other	CCNWCB (2)

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

Crew Members Present:

Jim Knipe, Tommy Roche

Site/Inventory Fields

Start Date	Stop Date	acres examined for weeds	Treatment Site (circle one)	Total Manual Infested Area Treated: (DO NOT lump plants together)	acres
<u>9/24/18</u>	<u>9/24/18</u>	<u>13</u>	Road edge/ROW Park Other		

Weeds Treated (Just the PLANTS code is OK)	Infested Area Treated (DO NOT lump plants together)	% of area examined for weeds infested with this species (lump plants together - use cover classes 1 - 9 listed below)	Manual/Herbicide or Survey
<u>CEMO</u>	<u>12 acres</u> sq ft	<u>2</u>	H <u>H</u>
<u>PORE</u>	<u>200</u> sq ft	<u>4</u>	<u>H</u>
<u>POBO</u>	<u>700,000</u> sq ft	<u>4</u>	<u>H</u>
<u>SEJA</u>	<u>10 acres</u> sq ft	<u>1</u>	<u>m/H</u>
<u>TAVU</u>	<u>500</u> sq ft	<u>4</u>	<u>H</u>
<u>CEST</u>	<u>1000</u> sq ft	<u>6</u>	<u>m/H</u>

* Cover Classes: 1 = Trace, 2 = 1 - 3%, 3 = 3 - 5%, 4 = 5 - 10%, 5 = 10 - 25%, 6 = 25 - 50%, 7 = 50 - 75%, 8 = 75 - 95%, 9 = 95 - 100%
Note: Cover classes are meant to be approximations only.

All Licensed Applicators: Name and License # Tommy Roche 96721, Jim Kroepe 87945

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

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

Application Date	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	Remarks - Weather forecast
9/24/18	10:30AM	3:30PM	62°	42	W	Clear	

Application Area (acre)	Total Volume of Mix Applied (gal)	Diluent	Special comment
13	8	Water	

Product Name	EPA Registration #	Amount of herbicide used (oz)	Herbicide Applied/Acre or other measure	Concentration Applied
Polaris	208-534	1.875 oz	0.14 oz/acre	1%
Milestone	62719-519	1.1 oz	0.08 oz/acre	0.125%
Competitor	WA: 2935-04001	5.9 oz	0.45 oz/acre	0.5%, 1%
Vastlan	62719-687	8.1 oz	0.62 oz/acre	1%
Blazen Blue	—	2.9 oz	0.27 oz/acre	0.25%

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

WA State NPDES Acres:


Notes: 1.5 gallons of 1% Polaris by 1% Competitor used on POBO.
 6.5 gallons of 0.125% Milestone, 1% Vastlan by 0.5% Competitor used on CEMO, CEST, SEJA, TAVU, POR6.

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Appendix III: Season Work Summary Reporting Form

TEMPLATE FOR KNOTWEED WORK REPORTING 2018

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

PART 1

Agency/Entity: _____

Crew Used, Crew Leader name: _____

Waterway or location: _____

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

Agency/Entity: _____

Crew Used, Crew Leader name: _____

Waterway or location: _____

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

Agency/Entity: _____

Crew Used, Crew Leader name: _____

Waterway or location: _____

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

EXPLANATION

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

PART II: NARRATIVE (SUMMARY)

Example from last year:

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

PART III

IMPORTANT!: Other information (fill in the blanks)

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

2. Any specific success story?

3. Any breakthrough treatment?

4. Progress made?

5. Recommendations for next year?

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

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

8. What partners did you work with?

9. Where was your funding from?

10. Did you sponsor any educational events?

11. Anything else we forgot to ask?

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