2010
Olympic Knotweed Working Group

Knotweed Workshop in Forks, August 2010

prepared by

Clallam County Noxious Weed Control Board

Knotweed in Port Angeles 2010

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EXECUTIVE SUMMARY

PROJECT GOAL

The goal of this project is to protect the natural resources, ecosystem functions and land values in Clallam and Jefferson Counties from the impacts of invasive knotweeds. .

PROJECT OVERVIEW

The Olympic Knotweed Working Group (OKWG) is a loose-knit consortium of governments, tribes, non-profits and private landowners, working together since 2005 to eliminate invasive knotweed from riparian areas in Clallam and Jefferson Counties. (See list of participants on page 12.) The group meets twice a year for the purpose of sharing information and creating a strategic plan for knotweed control. Clallam County Noxious Weed Control Board (CCNWCB), as the *de facto* group leader, coordinates the meetings and supports the work of other group members by acquiring Landowner Agreements, distributing herbicide, coordinating projects and in some cases supplying an aquatic applicator. CCNWCB also attempts to "fill in the gaps" by controlling knotweed in areas not otherwise covered and educates the community about knotweed impacts and control.

2010 OVERVIEW

More groups were involved in knotweed control on the Olympic Peninsula in 2010 than in previous years and a new Working Group was formed in Grey's Harbor County.

Clallam and Jefferson Counties continued to work closely together and our primary focus in 2010 was involving landowners in monitoring and controlling their own knotweed, rather than doing it for them. We wrote to all landowners known to have knotweed, including major timber companies, explaining that we are gradually shifting responsibility for knotweed monitoring and control to landowners, while providing as much assistance as our funding allows. We met with timber company representatives and we offered six public workshops for landowners at different locations throughout Clallam and Jefferson Counties. .

We focused treatments on four rivers—the Big, Hoko, Sekiu and Clallam Rivers, where control is now required. We expanded treatments on Ennis Creek and Peabody Creek (Port Angeles streams flowing into the Straits of Juan de Fuca), because we were successful in getting permission from more landowners. In Jefferson County, staff treated a number of small knotweed sites. A WCC crew, funded by the Salmon Recovery Funding Board, did extensive treatment on the Big Quilcene River and surveyed and partially treated the Dosewallips, finding plants much further upstream than were found in the 2006 survey.

Clallam and Jefferson County Weed Boards continued to coordinate the work of other entities, acquired landowner permissions, supplied herbicide, kept records, did NPDES reporting, trained crews and sometimes supplied an aquatically-licensed applicator for other groups

2010 ACCOMPLISHMENTS

In 2010 CCNWCB and OKWG partners:

- Managed **232 existing Landowner Agreements**, solicited and obtained **34 new Landowner Agreements** (covering 481 parcels—see Appendix II)
- Surveyed, treated or re-treated approximately **140 miles of rivers or streams and 40** miles of road.
- Worked with **14** other OKWG partners, representing a mix of federal, state, tribal and local entities
- Offered **six Knotweed Workshops** (on the Big River and in Sekiu, Forks, Port Angeles, Port Hadlock and Sequim). All were extensively advertized through posters, newspaper articles and advertisements, radio and email, as well as personal invitations that were mailed.
- Acquired an NPDES permit for aquatic use and did reporting associated with it.
- Coordinated a spring and a fall meeting of the OKWG
- Distributed herbicide to other Olympic Knotweed Working Group (OKWG) members. Members reported a total of approximately **187 gallons** of herbicide. (See Appendix I for a table of herbicide use)

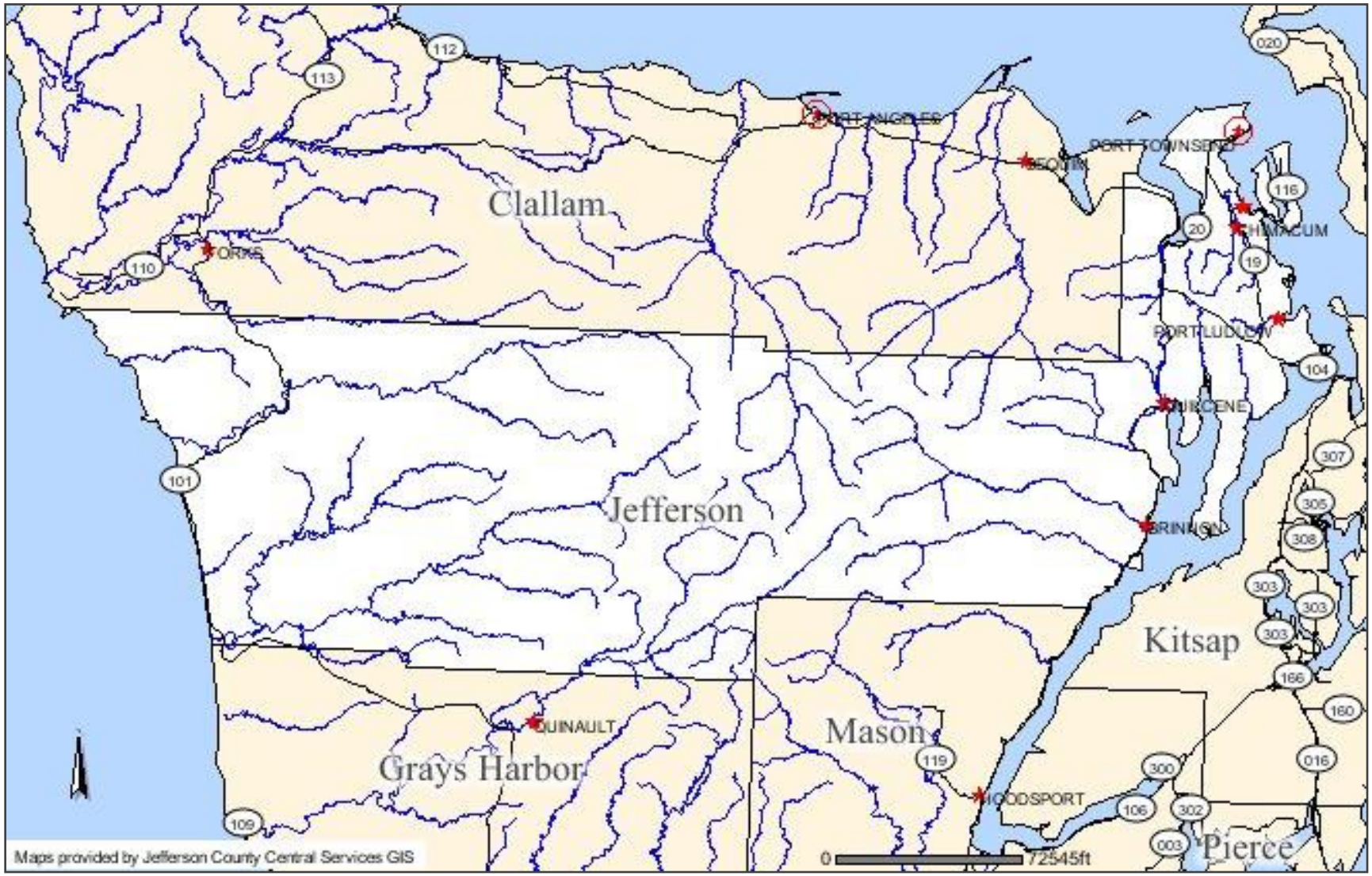
STAFF HOURS

Clallam and Jefferson County Noxious Weed Control Boards' staff spent a total of 1.382 hours on knotweed projects in 2010. Only 35% of staff time was spent monitoring and treating knotweed, a considerable decrease from previous years. 29% of time was spent on outreach—a great increase, indicative of the shift in emphasis our program has undergone.

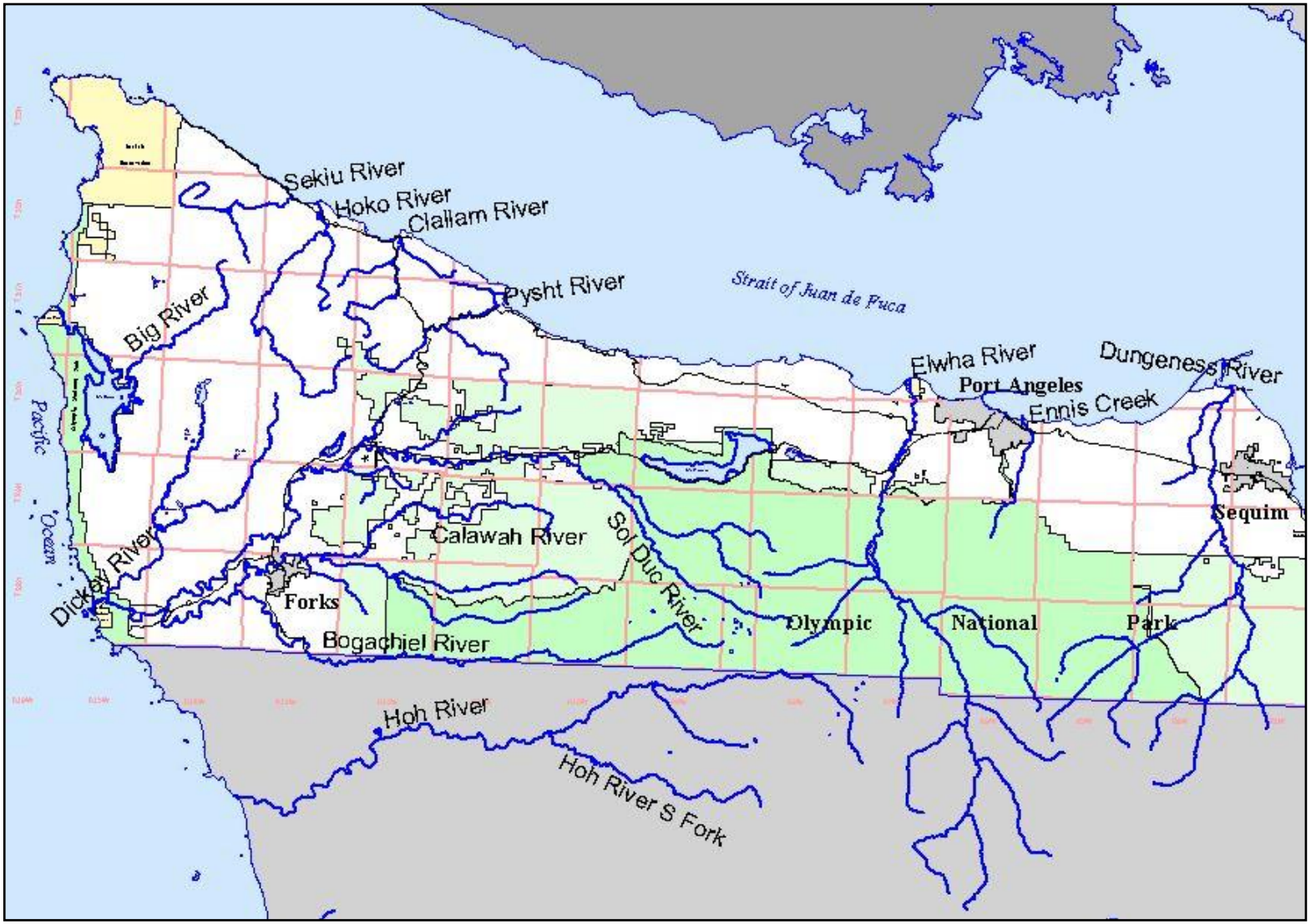
FUNDING

These projects were funded by: Washington State Department of Agriculture (WSDA), Clallam County Noxious Weed Control Board, and separate funding administered by the Quinault Indian Nation, 10,000 Years Institute, the Quileute Nation, North Olympic Salmon Coalition, the Hood Canal Salmon Enhancement Group and Mason County Conservation District**.**

OVERVIEW MAP OF THE OLYMPIC PENINSULA



OVERVIEW MAP OF CLALLAM COUNTY AND WEST JEFFERSON COUNTY



OVERVIEW MAP OF EAST JEFFERSON COUNTY

PROJECT DESCRIPTION

Project Goal

The goal of this project is to protect the natural resources, ecosystem functions and land values in Clallam and Jefferson Counties and the rest of the Olympic Peninsula from the negative impacts of invasive knotweed. The project focused on riparian areas; rivers were chosen for their high significance to fish and wildlife or their natural resource value to public or tribal entities.

Project Overview

The Olympic Knotweed Working Group (OKWG) is a loose-knit consortium of governments, tribes, non-profits and private landowners, all working to eliminate invasive knotweed from riparian areas in Clallam and Jefferson Counties and the rest of the Olympic Peninsula. The group has met twice a year since 2005 for the purpose of sharing information and creating a strategic plan for knotweed control. Clallam County Noxious Weed Control Board (CCNWCB), as the *de facto* group leader, coordinates the meetings and supports the work of other group members. We also attempt to "fill in the gaps" by controlling knotweed in areas not otherwise covered.

2010 Overview

More groups were involved in knotweed control on the Olympic Peninsula in 2010 than in previous years and a new Working Group was formed in Grey's Harbor County. See the 2010 Summary on the following page for details of work by all groups.

Clallam and Jefferson Counties continued to work closely together and our primary focus in 2010 was involving landowners in monitoring and controlling their own knotweed, rather than doing it for them. This shift in emphasis occurred for two reasons. First, because years of treatment have reduced most infestations down to a few small plants which are not in water and are therefore easier for landowners to control. Second, we know funding from the state cannot continue indefinitely and we are attempting to transition to landowner control of knotweed, believing this to be the only long-term solution. To achieve this goal we wrote to all landowners known to have knotweed, including major timber companies, most of who own large amounts of land in multiple watersheds. We explained that we are gradually shifting responsibility for knotweed monitoring and control to landowners, while providing as much assistance as our funding allows. We met with timber company representatives and we offered six public workshops for landowners at different locations throughout Clallam and Jefferson Counties. The workshops covered knotweed biology, control techniques and safe and responsible use of herbicides. Equipment and supplies were made available to landowners who attended a workshop.

We focused treatments on four rivers—the Big, Hoko, Sekiu and Clallam Rivers, where control is now required. To make the transition as smooth as possible we allocated some crew time to each river and monitored and treated most known sites and met with landowners. We treated late in the season, September and October, knowing that plants on sites that have been treated several times would not appear until late. Two landowners (one on the Clallam and one on the Sekiu), who had previously refused permission, allowed us to treat in 2010, realizing they would eventually have to do it themselves.

We expanded treatments on Ennis Creek and Peabody Creek (Port Angeles streams flowing into the Straits of Juan de Fuca), because we were successful in getting permission from more landowners.

In Jefferson County, staff treated a number of small knotweed sites. A WCC crew, funded by the Salmon Recovery Funding Board, did extensive treatment on the Big Quilcene River and surveyed and partially treated the Dosewallips, finding plants much further upstream than were found in the 2006 survey.

Clallam and Jefferson County Weed Boards continued to coordinate the work of other entities, acquired landowner permissions, supplied herbicide, kept records, did NPDES reporting, trained crews and sometimes supplied an aquatically-licensed applicator for other groups

Knotweed control programs go through different stages of maturity. During early stages of a program most effort is focused on developing landowner relationships and determining the extent of the problem through surveys and performing initial treatments. As large stands are reduced, crews begin to spend more time searching for plants than performing treatments. As a program matures, increasing active landowner participation becomes imperative because it is the best long term strategy, and a fundamental part of any successful weed control project. Active landowner involvement is also crucial because it allows program resources to be shifted to other problem areas—in this case, other knotweed infested rivers. Because we have been treating knotweed in west Clallam County for many years, we have already reached the final stage. However, in the Port Angeles area and in Jefferson County we are still surveying, finding new infestations and working to get landowner permission to treat.

2010 Summary

This list summarizes work accomplished in 2010 and reported to CCNWCB by all members of the Olympic Knotweed Working Group (OKWG).

- Managed **232 existing Landowner Agreements**. [Clallam County Noxious Weed Control Board (CCNWCB) and Jefferson County Noxious Weed Control Board (JCNWCB)]
- Solicited and obtained **34 new Landowner Agreements** [CCNWCB and JCNWCB].
- Many agreements covered multiple parcels. We are currently managing agreements on **481** parcels [CCNWCB and JCNWCB]
- Wrote to **187 landowners** in the west end of Clallam County, asking them to monitor and control their own knotweed, but offering to help as funding allowed.
- Wrote to **193 landowners**, inviting them to a Knotweed Workshop (West end landowners and Big Quilcene River landowners were included in this mailing, but timber companies and public agencies were not)
- Offered **six Knotweed Workshops** (on the Big River and in Sekiu, Forks, Port Angeles, Port Hadlock and Sequim). All were extensively advertized through posters, newspaper articles and advertisements, radio and email, as well as the personal invitations that were mailed.
- Additionally, Weed Board staff mentioned our knotweed program at **33 other educational events**
- Took equipment and supplies to different locations in Clallam and Jefferson Counties, for use by workshop attendees. Made arrangements with licensed applicators to be in charge of equipment and supplies, and to document treatments.
- Loaned tools to 6 private landowners so they could treat their own knotweed.
- Met with representatives of timber companies whose land has knotweed, to explain their responsibility and to ask for cooperation.
- Helped **107 private landowners** by monitoring, treating or re-treating knotweed [CCNWCB, JCNWCB, and the East Jefferson WCC crew]
- Directly treated land owned by **6 public entities** including **3** state agencies (WA State Parks, WA Department of Natural Resources and WA Department of Fish and Wildlife), **1** city (Port Angeles) and **2** counties (Clallam and Jefferson) (CCNWCB and JCNWCB)
- Treated on Prairie Creek, Boulder Creek, Upper Quinault River, Lake Quinault and Neilton Creek [Quinault Indian Nation and Gray's Harbor NWCB]
- Monitored and re-treated on the Hoh River [10,000 Years Institute, CCNWCB and The North Cascades Exotic Plant Management Team with the National Park Service].
- Treated or re-treated **4 miles (101 acres)** of the Dickey River [Quileute Nation and The North Cascades Exotic Plant Management Team with the National Park Service]
- Treated or re-treated **6 miles (127 acres)** on the Calawah River [Quileute Nation]
- Treated or re-treated **10 miles (725acres)** on the Bogachiel River [Quileute Nation]
- Treated or re-treated **0.5 acres** on the Quillayute River [The North Cascades Exotic Plant Management Team with the National Park Service].
- Monitored and re-treated **5 miles (22 acres)** of the Big River [CCNWCB and The North Cascades Exotic Plant Management Team with the National Park Service].
- Monitored and re-treated approximately **18 miles** of the Hoko-Ozette Road [CCNWCB].
- Treated or re-treated **1 mile (8.5 acres)** on the Sekiu River [CCNWCB].
- Monitored, treated or re-treated **2 miles (18.25 acres)** of the Hoko River [CCNWCB].
- Monitored, treated or re-treated **14 parcels (5.5 acres)** in the Sekiu-Clallam Bay area and on Highway 112 [CCNWCB].
- Monitored and re-treated **3 miles (20 acres)** on the Clallam River [CCNWCB].
- Controlled **4 sites** on the Pysht River [Burdick Family and CCNWCB].
- Treated or re-treated **20 miles (35 acres)** on the Sol Duc River [Quileute Tribe and The North Cascades Exotic Plant Management Team with the National Park Service].
- Treated or re-treated several sites on the Elwha River [Lower Elwha Klallam Tribe]
- Treated **¼ mile** on Valley Creek, ½ **mile** of Peabody Creek and **1 mile** of Ennis Creek [CCNWCB and The North Cascades Exotic Plant Management Team with the National Park Service].

- Monitored and re-treated **4 sites (2.2 acres)** on Snow Creek and Salmon Creek[CCNWCB and JCNWCB]
- Treated or re-treated **4 miles (56 acres)** of the Big Quilcene River [JCNWCB, Hood Canal Salmon Enhancement Group and East Jefferson WCC crew]
- Treated **0.5 acres)** at the mouth of the Little Quilcene River [Hood Canal Salmon Enhancement Group]
- Surveyed **12.5 miles** and treated **14.5 acres** on the Dosewallips River [East Jefferson WCC crew, funded by SRFB through North Olympic Salmon Coalition]
- Treated or re-treated other small sites in Jefferson County, on Spencer Creek, the Duckabush River, Fulton Creek, Lake Leland and various roadsides [CCNWCB and JCNWCB]
- Treated or re-treated **56 acres** on the Union River, **1.7 acres** on the Dewatto River and **4.1** acres on the Tahuya River [Hood Canal Salmon Enhancement Group]
- Treated **47 acres** on the Skokomish and other sites in Mason County [Mason County Conservation District, Mason County NWCB, Cascade Land Conservancy and WCC]
- Coordinated a spring and a fall meeting of the OKWG [CCNWCB]
- Distributed herbicide to other Olympic Knotweed Working Group (OKWG) members. Members reported a total of approximately **187 gallons** of herbicide. (See Appendix I for a table of herbicide use)

2010 Project Procedures

1. Surveys and Monitoring

- Surveys and monitoring were conducted from June 9th to October 13th, on foot or by boat.
- A boat was supplied by a landowner for surveying the Hoko River.

2. Project Teams

- Teams were typically comprised of 2-4 people and always included a licensed aquatic applicator unless sites being treated were strictly terrestrial.
- Jill Silver (licensed aquatic applicator) and crew hired by the Quinault Indian Nation worked on Prairie Creek, the Upper Quinault River and other Gray's Harbor county waterways…….
- Jill Silver (100,000 Year Institute—licensed aquatic applicator) and a crew from the Pacific Salmon Coalition, hired by 10,000 Years Institute, worked on the Hoh River
- The Quileute Nation crew, led by Garrett Rasmussen (licensed aquatic applicator), worked on the Bogachiel, Calawah, Dickey and Sol Duc Rivers.
- Cathy Lucero, Ben Eyestone, Angela Fletcher (all licensed aquatic applicators), Bret Carey and occasionally Eve Dixon (licensed aquatic applicator), made up the Clallam County Noxious Weed Control Board team which worked on sites on Ennis and Peabody Creeks in Port Angeles and Spencer creek in Jefferson County.
- Eve Dixon (licensed aquatic applicator), and (at different times) Bret Carey, Leo Sprinzen and Rafael Ojeda worked on sites in the west end of Clallam County.
- Owen French (JCNWCB--licensed aquatic applicator), treated small sites in Jefferson County, on Snow Creek, Lake Leland and on roadsides.
- The Hood Canal Salmon Enhancement Group, led by Mendy Harlow, (licensed aquatic applicator), treated on the Union, Dewatto and Tahuya Rivers, on the Hood Canal in Mason County
- A WCC crew, led by Owen French, treated sites at the mouth of the Little Quilcene River, did extensive treatments on the Big Quilcene River and surveyed and began treatments on the Dosewallips River.
- The North Cascades Exotic Plant Management Team with the National Park Service worked on knotweed populations within the Olympic National Park boundary on the Hoh, Dickey, Quillayute, Big, Sol Duc and Elwha Rivers and on Ennis Creek

3. Invasive Species Surveyed or Treated

Bohemian knotweed (*Polygonum bohemicum*) was the dominant knotweed species of concern. The next most common species was giant knotweed (*Polygonum sachalinense*). Only a few sites contained Japanese knotweed *(Polygonum cuspidatum)*. Himalayan knotweed *(Polygonum polystachyum)* was looked for but not found on a previously-treated site. A small population of Himalayan knotweed was treated within Olympic National Park.

4. Data Collection & Equipment

- Electronic data is collected on a Trimble GEO XT instrument, using the "Data Dictionary" developed by the Olympic Knotweed Working Group (OKWG) and using *Pathfinder* software for post-processing.
- The Data Dictionary contains the following required fields: Agency Name, Collector, GIS Projection Reference, Site ID, Species of Knotweed, Cluster Type, Average Stem Height, Stem Count, Phenology, Site Type and Action.
- The following fields are optional: Herbicide, Surfactant, Treatment, Ownership, Canopy, Substrate, Plant Erosion Potential, Site Erosion Potential, Area, Unit, and Comments. Date, and Time fields autofilled.
- All participants in the Olympic Knotweed Working Group used the same data dictionary or sections thereof so that data taken in different places by different people could be grouped, summarized and mapped
- A recreational grade GPS unit (Garmin 78 CX loaded with TOPO 24K) with track log was used to keep track of null surveys (sites that crew visited but found no knotweed)

5. Landowner Contacts and Agreements

- We converted data points from our surveys into shapefiles, added them as layers to the county parcel map and extracted landowner information.
- We solicited Landowner Agreements by phone, letter, face-to-face contact or email.
- We used the standard Landowner Permission forms produced by WSDA. CCNWCB staff explained to landowners that they could cancel the agreement at any time.
- If re-survey or re-treatment was necessary on a property with an existing Agreement we wrote to the landowner ahead of time to let them know that crews would be returning to their property this season.
- Early in the year we checked ownership of all properties where we had an agreement. If ownership had changed we wrote to the new owners and asked if they would sign a new agreement.
- Because the Landowner Agreements extend for only five years, some had expired in 2010 so we wrote to those owners asking if they would renew.
- Now that knotweed control is a requirement on the Big, Hoko, Sekiu and Clallam Rivers, we were able to get agreements from one landowner on the Clallam and one on the Sekiu who had previously been unwilling.
- We maintained an Excel spreadsheet for knotweed landowners on each watershed, with contact information, site address and date the Agreement was signed.
- Staff worked on Landowner Agreements from February though September. (See Appendix II for a Table of Landowner Agreements).

6. Permits

- CCNWCB and JCNWCB obtained NPDES permits from WSDA for water ways of concern.
- Crews followed all posting and notification requirements as outlined in the permit.
- Total amounts of herbicide used by CCNWCB and JCNWCB crews were submitted on-line to WSDA at the end of the treatment season. (Work done by 10,00 years Institute and by the East Jefferson WCC crew was covered under the JCNWCB permit)
- We submitted copies of Pesticide Application Records pertaining to aquatic sites to WSDA.

7. Treatment, Equipment, and Rate

CCNWCB and JCNWCB treatments took place from June 9th though October 13th. Other entities may have had a more extended season.

Three methods of herbicide application were considered—injection, foliar and wipe, as follows:

Injection—injecting undiluted herbicide directly into the stem
Equipment consisted of JK Injection Systems hand injection guns.
Rate applied was 3-5 mls of 100% solution per cane (no surfactants or dyes added). Glypro, Aqua Master or AquaNeat, all glyphosate-based formulations, were used.

- Crews could chose to inject canes greater than ½ inch in diameter, except on sites where doing so would exceed the maximum legal herbicide use per acre.
- We injected into the lower internode.
- We used short needles and if we encountered pressure while trying to inject we punched a relief hole in the stem and injected herbicide below the relief hole.
- We marked injected canes with a spot of paint to prevent treating the same cane twice.

Foliar—spraying plants that were too small to inject; or where plant density was great enough to exceed allowable rates per acre with injection
Equipment consisted of low pressure, Solo Backpack Sprayers, 4 gallon capacity
Rate applied varied, but was generally either a 6% solution of Glypro, Aqua Master or AquaNeat, or a 4% solution of a glyphosate-based product with 1% of an imazapyr-based product, either Habitat or Polaris AQ. We also added 1-2% of Agri-Dex or Competitor (surfactant) and 0.5% of Blazon Blue (marker dye).

Wipe—applying herbicide to the surface of the leaves and stems with a foam paint brush. Effective when treating small sprouts or when there is a need to be highly selective.
Rate a 33% solution with 10% surfactant, by volume, (as allowed by label)

- This method was not used in 2010 because it is so labor-intensive.

8. Records

- Crews filled out a Pesticide Application Record, as developed by the WSDA for knotweed, for each herbicide treatment.
- Crews recorded acres treated on the Pesticide Application Record. For the purpose of this report, the total acres treated in each watershed were calculated simply by adding the acres treated on each Record from that watershed.

Outreach

Outreach to landowners was a major focus in 2010. Early in the year we discussed our strategy and goals and began writing to landowners. The letters were specific to each watershed or area and explained what we would like landowners to do and how the Weed Board could help. In Clallam Bay, Sekiu, Forks and on Highway 112, we asked landowners check their knotweed and treat it themselves because most sites in those areas are terrestrial and have been treated repeatedly, so remaining plants are small and easy to treat. Early in the year we did not know if funding would be available after June 30th, but we said in the letters that we might be able to provide limited equipment and supplies.

A similar letter was sent to all Sol Duc knotweed owners. We did not consider the Sol Duc River a top priority, because many sites on the mid-Sol Duc had no knotweed present in 2009 and because the Quileute Nation's crew was able to treat the lower portion in 2010.

In 2010 knotweed control became mandatory on the Clallam and Sekiu Rivers; it was already required on the Big and Hoko. We wrote to all landowners on these rivers, explaining landowner responsibility, under the law and asking them to monitor, looking for small plants that could re-infest, and treat plants themselves if possible. We offered to provide treatments near water and any technical assistance possible.

All letters were mailed by April 21st, 2010. In May and June we made follow-up phone calls, asking people if they had received the letter, and assessing their willingness to monitor and treat their own knotweed. Several were already doing so and most landowners that actually lived on site were very cooperative. A few landowners wrote back saying they lived out the area and would be unable to monitor or treat. In these situations we either monitored and treated ourselves later in the year or arranged for a neighbor to look out for plants and contact us if they found any.

Because timber companies are large landowners in the watersheds where knotweed control is now mandatory we made a special effort to contact them.

- On July 22nd we met with the west end foresters from Green Crow and Olympic Range (its subsidiary). These companies own hundreds of acres on the Big, Hoko and Sekiu Rivers. They accepted that they now have a responsibility to control knotweed on these rivers and because they do not have an aquatic applicator on staff they will ask the Weed Board for help as necessary.
- On August 11th we met with Candace Cahill, a silviculturist with Rayonier, and talked at some length about how Rayonier will incorporate knotweed monitoring and control into their forestry programs. (Rayonier owns land on the Big, Clallam and Hoko Rivers, as well as the Sol Duc and Lake Creek where control is not currently required.)
- We met several times with Joe Murray, a forester with Merrill and Ring, which has subsidiaries—Ring Family and JLCG LLC. These companies own land on the Pysht and on the Big River and they paid their crew to monitor knotweed populations on those rivers. CCNWCB sent a licensed (aquatic) applicator to treat on their land.
- We met several times with Jerry Clarke, the west end forester for Hawthorn Timber, which owns land on the Big and Hoko Rivers. Because he also works for Jefferson Conservation District he was already aware of knotweed and looking out for it. We supplied shape files of previous knotweed sites to all the timber companies.

Knotweed Workshop in Port Angeles

Dates and Locations of Workshops:

July 28th, 5:30 to 7:30 pm
9082 Hoko-Ozette Road
Clallam Bay WA 98326

August 4, 5:00 to 7:30 pm
Sekiu Community Hall
42 Rice Street
Sekiu WA 98381

August 19, 5:30 to 7:30
Sportsman's Club
Sportsman's Club Road
Forks WA 98331

August 25, 5:30 to 7:30
Raymond Carver Room
Port Angeles Library
2010 S Peabody Street
Port Angeles WA 98362

September 8, 5:30 to 7:30
Jefferson County Library
620 Cedar Avenue
Port Hadlock WA 98339

September 15, 5:30 to 7:30
North Olympic Library
630 N Sequim Avenue
Sequim WA 98382

The workshops covered knotweed biology and impacts, together with hands-on control recommendations and demonstrations. We offered two pesticide re-certification credits for each workshop; some commercial applicators as well as public operators took advantage of this, broadening our outreach audience. We prepared posters to publicize our workshops and a handout sheet for landowners telling them what they should and should not do and giving our contact information. (See Appendices III and IV)

Those who attended a workshop became eligible to borrow equipment and supplies from the county weed board. We placed these supplies in different locations around both counties (the Cowan Ranch on the Hoko River, Forks, Port Angeles and Port Hadlock), so that people would not have to drive too far to get them. In all cases a licensed applicator was in charge and kept records.

A total of 46 people attended a session. Attendance got better as the season progressed and we stepped up our publicity efforts. Six landowners took advantage of our offer of borrowing equipment and supplies and we feel we have made a good start on the transition to landowner control of knotweed. We also learned a lot and made many contacts that will save a great deal of time if we implement a similar program in 2011.

Funding

Projects summarized in this report were funded by: Washington State Department of Agriculture (WSDA), Clallam County Noxious Weed Control Board, the Salmon Recovery Funding Board (through North Olympic Salmon Coalition) and separate funding administered by the Quinault Indian Nation, 10,000 years Institute, the Quileute Nation, Hood Canal Salmon Enhancement Group and Mason County Conservation District.

Participating Groups

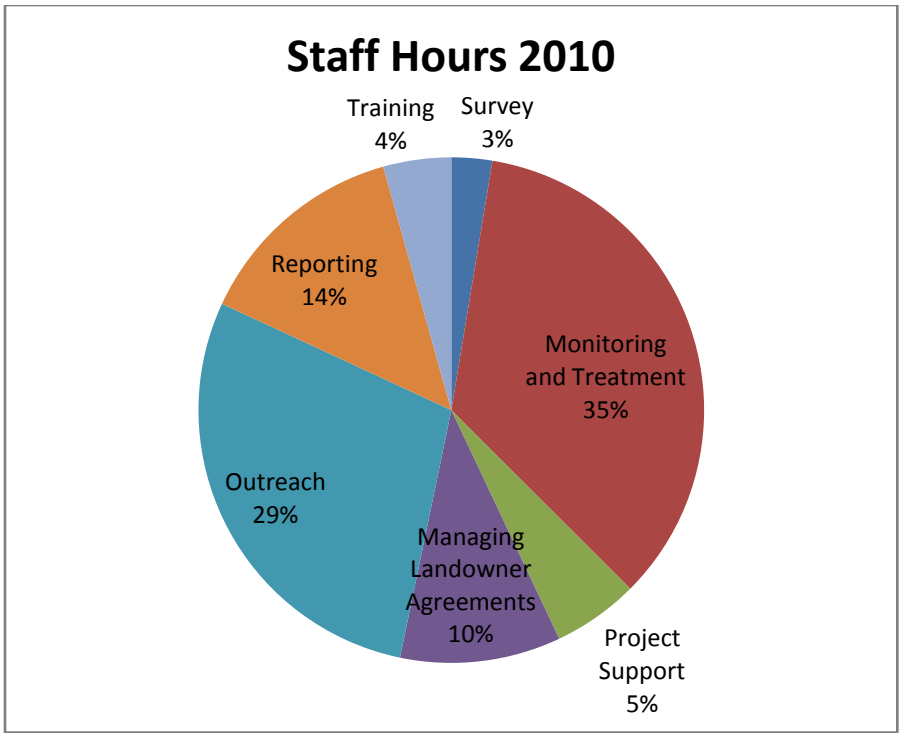
Clallam County Noxious Weed Control Board
Jefferson County Noxious Weed Control Board
US Forest Service (Olympic Region)
Clallam Conservation District
Jefferson Conservation District
The Quileute Nation
The Lower Elwha Klallam Tribe
Jamestown S'Klallam Tribe
10,000 Years Institute
The Olympic National Park—North Cascades Exotic Plant Management Team
Hood Canal Coordinating Council
Hood Canal Salmon Enhancement Group
North Olympic Salmon Coalition
East Jefferson WCC crew
Mason County Conservation District
The Quinault Indian Nation

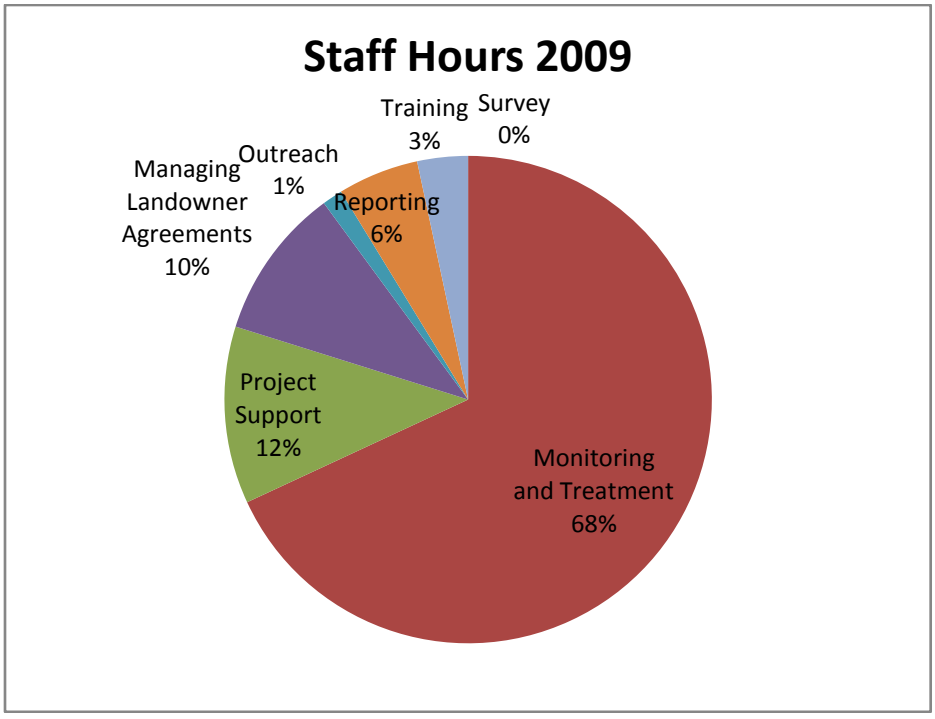
Staff Hours

This section reports only on hours worked by CCNWCB and JCNWCB staff. Staff spent a total of 1382 hours on knotweed projects in 2010. Staff hours were categorized in the following manner:

- **Survey** includes driving time and data collection ("survey" means looking in new areas)
- **Monitoring and Treatment** includes driving time, time spent looking for plants, actual application periods, setup before, and cleanup afterwards ("monitoring" means checking already-treated sites)
- **Project Support** includes driving time, providing spreadsheets to the crew, general crew oversight, applying for permits, and acquiring and maintaining supplies and equipment
- **Managing Landowner Agreements** includes researching land ownership, preparing spreadsheets, writing to, phoning or emailing landowners, driving time, time taken to establish an agreement with the landowner, and re-contacting landowners when crews will be on their property.
- **Outreach** includes driving time, time spent preparing presentations or printed materials for handout and mailings, posting notices, travel time to and from a presentation, the presentation itself along with question periods afterwards, and any follow-up with citizens/agencies afterwards.
- **Reporting** includes reviewing Pesticide Application Records, compiling data, reporting herbicide use and preparing an Annual Report.
- **Training** includes time spent training crew in data collection, treatment methods, and any other necessary job tasks

CCNWCB and JCNWCB 2010 STAFF HOURS							
Survey	**Monitoring and Treatment**	**Project Support**	**Managing Landowner Agreements**	**Outreach**	**Reporting**	**Training**	**Total Hours**
36	482	76	142	396	190	60	1382





Comparing 2010 and 2009 hours clearly shows the shift in emphasis of our program

Many other agencies contributed to the implementation of the summarized accomplishments. These hours are not included in the totals given above.

Observations and Conclusions

- Several new, large treatments were undertaken by partners, and were reflected in an overall increase in herbicide use.
- Herbicide expended on re-treatments continues to decline. (See table on 62)
- Re-treatments were deliberately delayed until late August to more effectively coincide with plant growth. Unfortunately, September was an unusually wet month which hampered our treatments.
- Funding uncertainty early in the season made planning difficult and delayed some program activities.
- We did not have a west end crew dedicated solely to knotweed. Hiring crew mid-season for knotweed treatments did not allow sufficient time to develop experience and expertise, and they lacked valuable local knowledge.
- Crew lumped treatments on large undeveloped parcels together, making it difficult to analyze data or to track progress on any one site over time.
- Having a professional crew survey the Dosewallips proved more effective than using volunteers.
- The family that has been controlling their knotweed exclusively by pulling/digging for the past five years continued to dig. They believe they have good control and are now in a maintenance program.
- The Jefferson County policy banning herbicide use on county roads was amended to allow spot treatments of noxious weeds. This enabled treatment of knotweed on some roadside sites where aquatic resources were threatened.
- Control is now required on four rivers-- Big, Hoko, Sekiu and Clallam. Crews gained access to sites they would otherwise have been unable to treat. It was also the first step in turning responsibility for control over to the landowners in areas where little knotweed remains.
- Resident landowners are more willing to monitor and treat their own knotweed than those who live elsewhere.
- We have moved to a parcel based record keeping system
- Tracking ownerships, maintaining relationships, and documenting treatments has become increasingly complex and time consuming as our program has expanded.
- Our outreach efforts were effective. Landowners showed a high level of awareness and activity, even when they had not responded to us directly.
- As public awareness about knotweed increased, we received more reports of knotweed on terrestrial sites. Knotweed Workshops not only provided an avenue for landowners to deal with these sites themselves but also were an opportunity to learn about other invasive species.
- Incorporating information about the CREP program with our Knotweed Workshop was a great way to highlight Conservation District services and exposed landowners to a possible means of paying for costs associated with a wide-range of restoration activities, including invasive species control.
- Our program is at different stages of maturity in different areas. In the west end of Clallam County and on the Hoh River in Jefferson County, knotweed surveys and control work have been done for at least four years and in some cases as many as nine years (on the Dickey). Where work has been ongoing for so long, very few large plants are left, infestations have been pulled back from waterways and it is appropriate to consider making landowners responsible.
- Around Port Angeles and in Jefferson County the program is at an earlier stage. We are still surveying, raising public awareness, working to get landowner agreements, and treating large stands of knotweed, many of them in or near water. Landowner control may not be feasible for several years.
- The State's knotweed program has been indispensible. As well as supplying funding, it has helped us with permitting and technical advice. We greatly appreciate the leadership and guidance supplied by WSDA, especially in these tough economic times. The Olympic Knotweed Working Group is expanding and MANY other groups are now doing knotweed control work on the Olympic Peninsula. (See Summary on Page 9) The Weed Boards are supporting these groups and in many cases WSDA funding is being used to leverage other funds.

Recommendations

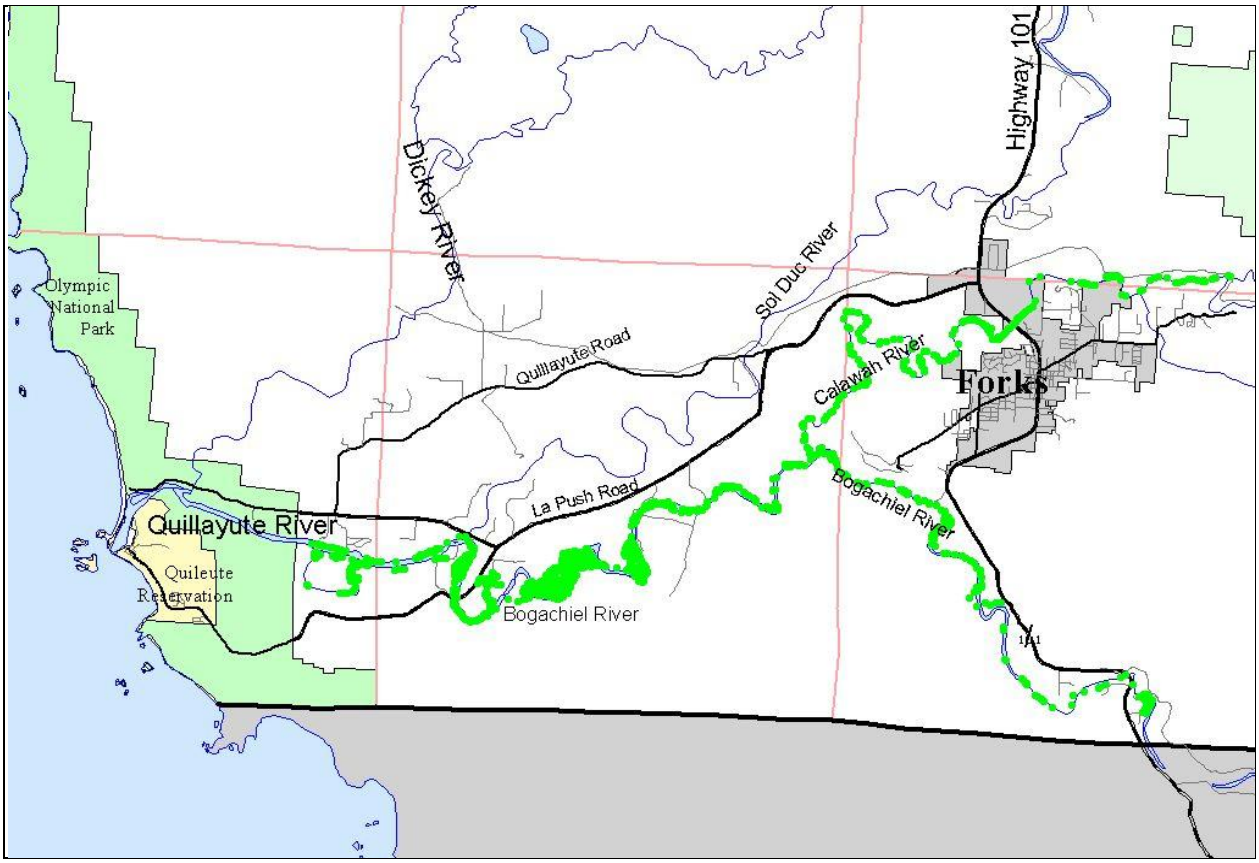
- Continue to nurture relationships that encourage landowners who live on site to control knotweed themselves.
- Continue to work with timber companies, who are LARGE land managers, and who have begunto incorporate knotweed control into their programs.
- Embed and increase education and outreach because funding will not likely be available indefinitely. An expectation of landowner responsibility for controlling their own knotweed is the only long-term solution to keeping knotweed populations under control and/or eliminating them. Setting that expectation from the beginning may take more effort initially, but will return better results in the long term.
- Consider making knotweed control mandatory in the City of Forks, where only one site has not been controlled.
- Continue to survey and treat in the Port Angeles streams (Valley, Peabody and Ennis). Make sure we have found the farthest upstream infestations on Peabody and Ennis.
- Move towards using an Access database rather than Excel spreadsheets to keep track of visits and treatments on knotweed sites. This was investigated, but not implemented, in 2010.
- Improve training for both field and office staff on equipment use and data management.
- Work with Clallam County Commissioners and/or County Roads to get permission to treat roadside knotweed sites. Routine maintenance activities on roadsides are a major vector for knotweed spread.
- Support the work of other groups doing knotweed control, but also work more closely with partners obtaining grants to ensure that expenses for weed boards' services, such as landowner contact and long term monitoring, are incorporated into a proposal. Weed boards need to get reimbursed if they offer significant help or become obligated for long term services.
- Work with partners to develop projects that take a holistic view and identify which partner is best suited to implementing each component to avoid overlap and undue competition.
- Provide a representative to watershed groups (such as lead entities) to ensure an invasive species management plan is incorporated into restoration proposals and to work towards grant schedules that allow for longer timelines for implementation.
- Keep lines of communication as OPEN as possible, doing our best to include all groups doing weed control. We need to ensure that other invasives do not take over after knotweed is removed.

PROJECT ACTIVITIES BY WATERSHED

QUILLAYUTE RIVER SYSTEM

Crews

Treatment— The Quileute Tribe crew, led by Garrett Rasmussen, and the North Cascades Exotic Plant Management Team with the National Park Service



Bright green dots indicate knotweed sites surveyed in 2006 on the Quillayute, Bogachiel and Calawah. Data for the Dickey is not available.

The Quillayute system includes the Sol Duc, Calawah, Bogachiel, Quillayute and Dickey, along with their tributaries. The Sol Duc and its tributaries are dealt with separately. 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 in some years. 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 is endeavoring to preserve the ecosystem in its current, functioning state believing this to be easier and more cost-effective 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, biologist with the Quileutes, has observed that elk and deer do not actively feed on knotweed and that elk have returned to calve on sites previously infested with knotweed.

• **Dickey River**

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

In 2002 the Dickey system was chosen as a first priority for knotweed control because of the known (although extensive) confinement of knotweed infestations to the lower reaches, and the importance of the Dickey River to the Quileute Tribe's fishery.

In 2003 and 2004 the Quileute Natural Resources (QNR) treated over 4.5 miles of stream and associated off channel and riparian areas (417,000 knotweed stems on 135 sites).

In 2005 QNR monitored and retreated each site as necessary. Additionally, the North Cascades Exotic Plant Management Team with the National Park Service treated the remaining mile of knotweed within the Park boundary at La Push.

In 2006 QNR worked on knotweed control on the Dickey from June to October. Lauren Urgensen, a University of Washington Graduate student studying knotweed impacts and control, had established plots along the Dickey as part of her study. QNR worked with her by treating certain plots and by staying out of others. They also helped the Olympic National Park in 2006 in their efforts to control knotweed within their ownership in the lower Dickey River.

In 2007 the Quileutes did a follow-up treatment along the entire stretch from the East/West Fork confluence to the National Park Boundary. This included at least eight miles of riparian area along the river covering some estimated 140 acres of previously treated sites.

In 2008 QNR treated some single plants in the upper five miles of river. The lower 4.5 miles still had plants remaining from the research plots established by Lauren Urgenson which the Quileutes refrained from treating. Lauren's research was concluded in 2008.

In 2009 the Quileutes followed up with treatments on the Dickey, helped at times by the CCNWCB crew. The crew treated the research plots, using almost 17 gallons of herbicide. The crew noticed new plants emerging late in the season, after they had sprayed.

In 2010 the Quileutes monitored and re-treated knotweed sites on the Dickey in early July and again in early September. Again, a great number of new plants were found late in the season. No large patches of knotweed are left on the Dickey but there are still a number of small, stunted single plants and finding them has become quite a challenge. Frank Geyer, biologist with the Quileute Nation, says there has been a remarkable recovery of the stream banks along the Dickey since the project was started seven years ago.

Herbicide use, Dickey River (gallons)				
	2007	**2008**	**2009**	**2010**
Acres Treated	140	50	95	101
Total Herbicide:	**12.65**	**0.165**	**18**	**7.21**

• **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.

In 2006 the Quileutes surveyed the Calawah, recording 344 sites, all downstream from the North Fork-South Fork confluence.

In 2007 the Quileutes treated approximately 202 acres of land on the Calawah River. Most of this was giant knotweed and responded well to treatment.

In 2008 the Quileutes found very few surviving plants. Bohemian knotweed in terrestrial areas of the Calawah was treated.

In 2009 the Quileutes again monitored and re-treated the Calawah, finding a few large patches that had possibly been overlooked in previous years. Only 1.59 gallons of herbicide were used.

In 2010 the Quileutes did an early-season assessment of the Calawah River and found no large patches of knotweed remaining but there was a small amount of re-growth from previously-treated areas. A very small amount of re-treatment was done.

Herbicide use, Calawah River (gallons)				
	2007	**2008**	**2009**	**2010**
Acres Treated	202	100+	110	127
Total Herbicide:	**11.12**	**2.31**	**1.59**	**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.

In 2006 the Quileutes surveyed the Bogachiel, recording 1,336 sites. Knotweed infestation on the Bogachiel was so extensive it was not attempted immediately and attention was focused on the Dickey.

In 2008 the Quileutes began comprehensive treatment of knotweed on the Bogachiel, treating several times from River Mile 16.5 (believed to be the upstream source of knotweed) down to the Bogachiel Fish Hatchery at RM 9. The Quileutes successfully applied to US Fish and Wildlife Service for funding to enable two more years of treatment.

In 2009 the CCNWCB provided grant match by assisting the Quileutes with treatments on the Bogachiel. The combined crew spent 8 or 9 days working together and the Quileutes spent well over a month working alone, covering only about two and a half miles, the infestations being so dense. Over 77 gallons of herbicide were used.

In 2010 the Quileutes treated the remaining stretch of the Bogachiel, from where they left off in 2009, down to the confluence with the Sol Duc. The entire Bogachiel River has now been treated once and the Quileute Nation has received positive feedback from landowners near the lower end of the river, who are impressed with the progress being made.

Herbicide use, Bogachiel River (gallons)				
	2007	**2008**	**2009**	**2010**
Acres Treated	4.1	900+	693	725
Total Herbicide:	**0.65**	**33.88**	**77.34**	**62.1**

• **Quillayute River**

Although the Quillayute has the largest drainage area on the Peninsula (629 square miles) it is only 5 ½ miles long and approximately half its length is in the coastal strip of the Olympic National Park.

In 2008 the Quileute Tribe treated knotweed on the Quillayute River for the first time. Most treatments were done in response to landowner requests but some were on land owned by the Tribe.

In 2009 the CCNWCB crew spent approximately 3 days treating knotweed on the Quillayute, at and around the Quillayute River Park, owned by Clallam County.

In 2010 the Quileutes did no work on the Quillayute River but they have funding for two more years of knotweed treatments and intend to continue work on the Quillayute River in 2011. The North Cascades Exotic Plant Management Team with the National Park Service treated 0.94 acres of knotweed on both the Quillayute and the Dickey, within the Olympic National Park.

Clallam County Noxious Weed Control Board supplied herbicide to the Quileutes for their 2010 knotweed treatments

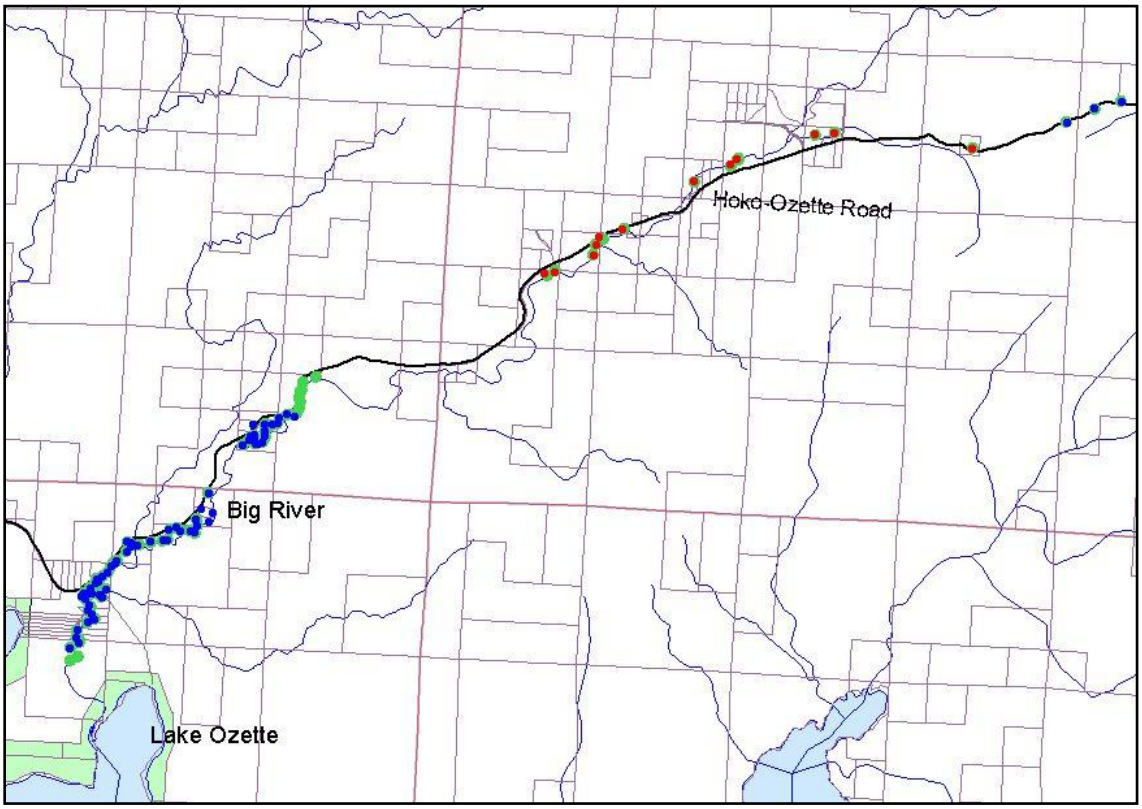
Herbicide use, Quillayute River (gallons)				
	2007	**2008**	**2009**	**2010**
Acres Treated	N/A	170	40	.5
Total Herbicide:	**N/A**	**6.77**	**1.7**	**0.64**

For more information about the Quillayute River System, please contact Frank Geyer at (360) 374-2027 or frank.geyer@quileutenation.org

BIG RIVER AND HOKO-OZETTE ROAD

Crew

Treatment—Eve Dixon, Rafael Ojeda and Leo Sprinzen and the North Cascades Exotic Plant Management Team with the National Park Service



Bright green indicates sites surveyed and recorded in 2007. Blue indicates treatment in 2010 and red indicates no plants found in 2010. Because virtually all our work this year was re-treatment crews did not take electronic data points. Office staff created shape files, based on spray records and notes made by field crews. Some sites were not visited because they are owned by timber companies who are doing their own monitoring.

• BIG RIVER

The Big River is one of several large, low elevation, low gradient streams that drain into Lake Ozette, the third largest natural lake in Washington. Lake Ozette empties through the Ozette River into the Pacific Ocean. The Ozette Basin is approximately 88 square miles and Lake Ozette itself lies within the Olympic National Park in western Clallam County. Major land uses within the Big River watershed include timber production, agriculture, recreation and wildlife preservation (in Olympic National Park).

The Ozette basin supports stocks of coho, sockeye, and kokanee (resident) salmon, small numbers of Chinook and chum salmon, steelhead and cutthroat trout (sea-run and resident), as well as many other native and exotic fish. Sockeye salmon were listed as Threatened under the Endangered Species Act in 1999. It is believed that knotweed infestations, by displacing native vegetation and all of its benefits, are impacting both spawning sites and habitat for juvenile salmonids.

Local residents report that knotweed infestations have been present on the Big River since the 1940s but before 2002 it was not present in significant quantities. By 2004 knotweed had spread to become an extensive monoculture along some of the stream banks. The North Cascades Exotic Plant Management Team has been treating knotweed in the Olympic National Park since 2004, when knotweed first became established within the National Park boundary.

• **HOKO-OZETTE ROAD**

Because the Hoko-Ozette Road closely follows the Big River for approximately six miles, and at times comes within a few feet of it, knotweed surveys and control work were undertaken there and considered as part of the Big River project.

Treatment

In 2004 approximately ½ mile of knotweed on the Big River was chemically treated as a pilot project.

In 2005 treatment began in earnest; approximately 14.95 miles of the Hoko-Ozette Road were surveyed and over 100 separate sites were treated. 1.8 miles of the Big River were treated or re-treated. CCNWCB applied for and was awarded a grant from the National Fish and Wildlife Foundation (NFWF) to treat knotweed.

In 2006 the Makah Tribe surveyed six miles of the upper Big River (including one mile of Boe Creek) and in June the same year a Clallam County crew inventoried the knotweed infestations in approximately six miles of the lower Big River. The Makah surveyors found 16 knotweed sites and the CCNWCB recorded 635 individual points, all thought to be Bohemian knotweed. Early in 2006 CCNWCB hired a five-person local crew who worked with the Makahs, treating or re-treating 12 miles of the Big River and 18 miles of the Hoko-Ozette Road, using 65.39 gallons of herbicide.

In July 2007, CCNWCB re-surveyed the Big River. During the winter of 2006-2007 the river had moved considerably within its flood plain and flooding had occurred. Because of the flooding and movement of the river it was difficult or even impossible to find individual sites that had been recorded in 2006. Also, although there has been much discussion within the OKWG as to what constitutes a "site" there is still no clear consensus on how a "site" is determined. Further, the knotweed infestations had been reduced considerably by the treatments given in 2006. For all of these reasons, a different method for determining sites was used in 2007. Fewer readings were taken and they were taken approximately 150 feet apart, or where there was a clearly discernible gap of at least 50 feet between plants. Seventy-nine sites were recorded in July 2007. These sites were obviously larger in area and each one encompassed multiple sites from the previous year. This survey is still being used as a baseline survey. Only 5.14 gallons of herbicide were used in 2007—a reduction of 90%.

In 2008 the Makah crew, assisted by CCNWCB, re-treated all known sites on the Big River and the Hoko-Ozette Road. North Cascades Exotic Plant Management Team with the National Park Service treated within their jurisdiction, in the lower portion of the river. Even though more acres were covered, herbicide use was reduced by 50% from the previous year.

In 2009 the Makah Tribe, who had previously done a large amount of surveying and treating of knotweed on the Big River, had no funding for knotweed work. Consequently, the CCNWCB crew worked on the Big River in addition to many other west end waterways. North Cascades Exotic Plant Management Team with the National Park Service treated within their jurisdiction, in the lower portion of the river, treating just 0.001 acre.

In 2009 the Clallam County Noxious Weed Control Board **made knotweed control mandatory** on the Big River and within its flood plain. Faced with the prospect of having to treat knotweed himself or allow a crew to do it, one landowner who had refused permission to treat for many years finally signed a Landowner Agreement form. Our crew spent two days injecting on that site, using 3.5 gallons of herbicide. Otherwise, most of the work done in 2009 was re-treatment of previously treated sites.

In 2010 our focus was on outreach and education because we knew that on most sites knotweed populations had been significantly reduced and landowners could realistically monitor and control themselves. Also, we were aware that funding will not be continued indefinitely and that turning responsibility over to the landowners is the only way to achieve knotweed control long-term.

On March 31st we wrote to all landowners on the Big River known to have knotweed (See Appendix for a sample letter). Follow-up phone calls were made in April and May, reminding landowners that knotweed control is now their responsibility, but we are willing to help as much as we can, especially if plants are near water and have to be treated by a licensed applicator.

We held a number of community meetings for landowners, to train them in monitoring and control techniques, and we provided equipment and supplies to people who took the training. We placed these supplies at different locations in Clallam and Jefferson Counties so that people did not have to travel too far to get them or return them. The first of these workshops was held at a private home on the Big River, specifically targeting that small community. Residents were also invited to additional meetings which took place in Sekiu, Forks and other cities. They were given a choice of dates and locations.

Because much of the land in the Big River flood plain is owned by timber companies we met with their representatives and asked them to have their forestry crews monitor knotweed sites, treat themselves if possible and contact us if plants were found near water so that we could send an aquatically licensed applicator to spray. The timber companies were very cooperative and Merrill and Ring had their crew survey and record knotweed locations. CCNWCB sent a licensed applicator to assist with treatment.

The Big River is one of our top priorities because of our long history of knotweed work there which has resulted in landowners being required to control infestations themselves. However, we wanted to make the transition to required control as smooth as possible, so to get a sense of what landowners could do themselves, we sent a crew out to survey and treat. Some sites on the Big River are now knotweed-free—especially those where the landowner lives on site and is actively involved in monitoring and control. Knotweed on the site that was treated for the first time in 2009 was much reduced but some plants persisted and we treated thoroughly again in 2010. This year the owner let us spray, although in 2009 he had insisted on injection only, because he was concerned about herbicides affecting his cats. Trust and communication with this particular landowner are much improved.

In 2009 we noted that apart from the large amount of herbicide injected on a single parcel, acreage treated and herbicide use had not changed significantly since 2008. In 2010 we face a similar situation. Acreage treated, taken from the spray records, has decreased, and so has overall herbicide used. However, if we deduct the herbicide used on the single parcel where treatments began in 2008, we see that herbicide used elsewhere has actually increased slightly, even though fewer acres were treated. (see table below

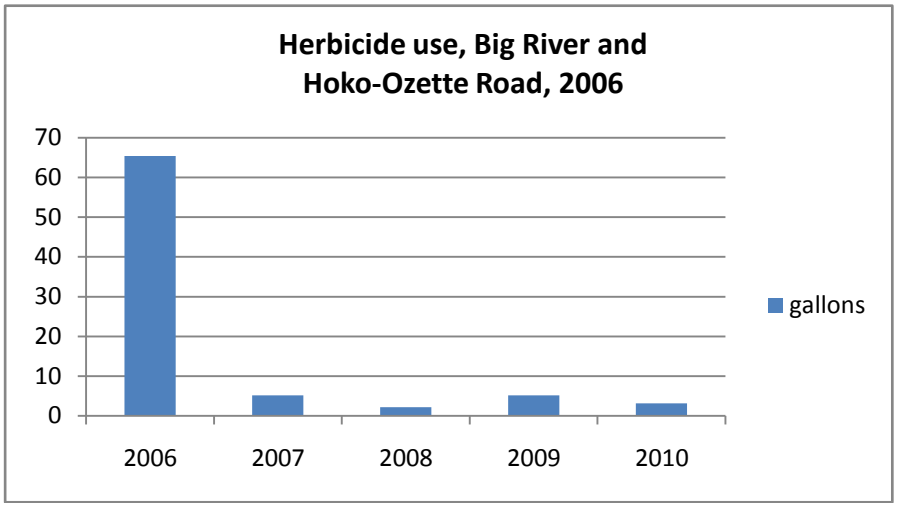
Herbicide Use, Big River and Hoko-Ozette Road (gallons)					
	2006	**2007**	**2008**	**2009**	**2010**
Parcels Inspected/Known Parcels			30/42 (est)	39/43	24/34
Acres Treated		28	57	57	22
Aqua Neat or Glypro injected:		1.24	0	3.5 (all on Parcel A)	0.3 (All on Parcel A)
AquaNeat or Glypro sprayed:		3.3	1.876	1.3	2.28
Habitat (imazapyr) sprayed:	0	0.6	0.305	0.32	0.594
Total Herbicide:	**65.39**	**5.14**	**2.181**	**5.12**	**3.174**
Herbicide Used on Parcel treated in 2008	0	0	0	3.5	1.3
Herbicide Used Elsewhere				**1.62**	**1.84**

Note: The term "Inspected" is used, rather than "treated" because in many cases crews looked for plants but did not find them. "Acres Treated" were calculated 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. The discrepancy between acres treated in different years may be due to different counting methods being used. The number of Known Parcels has decreased because some parcels originally on the spreadsheet were actually on different waterways or had never had knotweed. A number of sites were not visited in 2010 either because they are known to be knotweed-free or because timber companies are doing their own monitoring.

Crews reported that some sites which had been treated for 5 or 6 years still had many small plants remaining, which were found and treated. It seems that knotweed on the Big River is particularly hard to kill and we do not know why. It could potentially be a genetic factor, but we did wonder if the water that crews have been using may have interfered with the herbicide's effectiveness. We tested the water in two locations where crews had been getting it and recommended that they use water from the Cowan Ranch (on the Hoko-Ozette Road) because its acidity and hardness were in an acceptable range. It could also be that flooding in 2008 disbursed knotweed remaining.

North Cascades Exotic Plant Management Team with the National Park Service treated within their jurisdiction, in the lower portion of the river, treating **0.04 acre**. Knotweed control on the Big River began in 2004, making it the watershed in which CCNWCB had been involved for the longest and it has been an excellent example of private, county, tribal and federal landowners working together towards a common goal. This was taken a step further in 2010 when the Makah Tribe purchased several parcels of land on the river, which will eventually be turned over to North Olympic Land Trust, to be conserved in perpetuity for conservation and habitat. Jeremy Gilman, Makah Tribe Fisheries staff, has undertaken to monitor and control knotweed on these parcels. The knotweed control and an invasive plant survey performed by CCNWCB was used as match to facilitate the purchase.

Knotweed populations on the Big River have been greatly reduced, and knotweed impacts on the river system are now slight. However, because the remaining plants are so hard to kill we have more concerns about re-infestation here than in other watersheds.

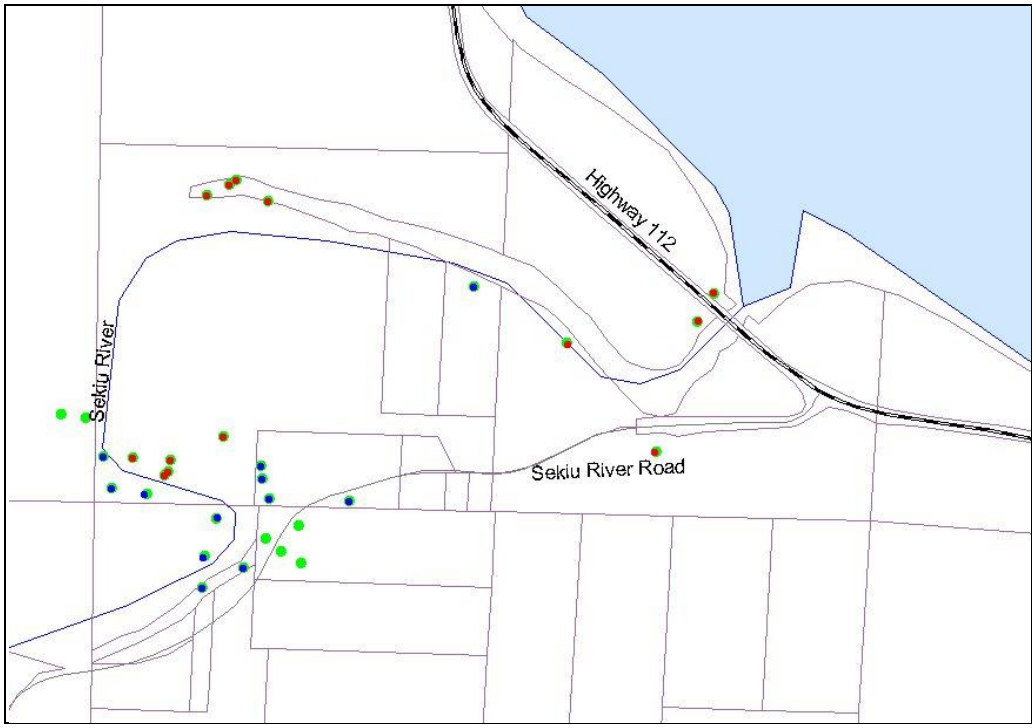


The rise in herbicide use in 2009 was caused by large amounts of herbicide being injected on a site where the owner had previously refused to give permission. Given the lack of data and inconsistencies of our data collection, decline in herbicide use is probably one of the best indicators of decline in knotweed plant mass and efficacy of treatments. Herbicide use appears to have declined slightly in 2010, but see the discussion above, preceding the table.

SEKIU RIVER

Crew

Treatment—Eve Dixon, Bret Carey and Rafael Ojeda (CCNWCB)



Bright green indicates sites surveyed and recorded in 2006. Blue indicates treatment in 2010 and red indicates no plants found in 2010. Because virtually all our work this year was re-treatment crews did not take electronic data points. Office staff created shape files, based on spray records and notes made by field crews.

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.

In 2006 the Sekiu had a dense, yet discrete infestation of knotweed stretching less than a mile from the mouth. The Makah Tribe treated 26 patches ranging from three canes to well over 200. The treated area covered 4.7 acres. A fairly large infestation on one property was not treated due to lack of permission.

In 2007 only four treatments were performed. Two sites, including a new site near the mouth of the river, were treated by CCNWCB. Two other sites were treated by the Makahs.

In 2008 only one treatment was made—a landowner who had refused permission in 2006 signed a Landowner Agreement and CCNWCB treated the site. This appears to have been the only site treated in 2008, possibly due to a lack of communication between the CCNWCB and the Makahs.

In 2009 almost all known sites on the Sekiu River were re-treated by the CCNWCB crew; the Makahs did no knotweed control work off reservation. The site which was treated for the first time in 2008 showed approximately 75% reduction in size. Two landowners still had not given permission for treatment and obtaining permission from them was a priority for 2010.

In 2010, as with other major west end rivers, our focus was on outreach and education, because we knew that on most sites knotweed populations had been significantly reduced and landowners could realistically monitor and control themselves. Also, we were aware that funding would not be continued indefinitely and that turning

responsibility over to the landowners is the only way to achieve knotweed control in the long run. Only one site of knotweed untreated because of lack of permission remained, therefore, Clallam County Noxious Weed Control Board **made knotweed control mandatory on the Sekiu and Clallam Rivers** (it had already been made mandatory on the Big and Hoko Rivers in 2009).

On March 31st we wrote to all landowners on the Sekiu River known to have knotweed (See Appendix for a sample letter). Follow-up phone calls were made in April and May, reminding landowners that knotweed control was now their responsibility, but we were willing to help as much as we could, especially if plants are near water and had to be treated by a licensed applicator.

We held a number of community meetings for landowners, to train them in monitoring and control techniques, and we provided equipment and supplies to people who took the training. We placed these supplies at different locations in Clallam and Jefferson Counties so that people did not have to travel too far to get them or return them. All Sekiu River residents known to have knotweed were invited to the meetings and were given a choice of dates and locations.

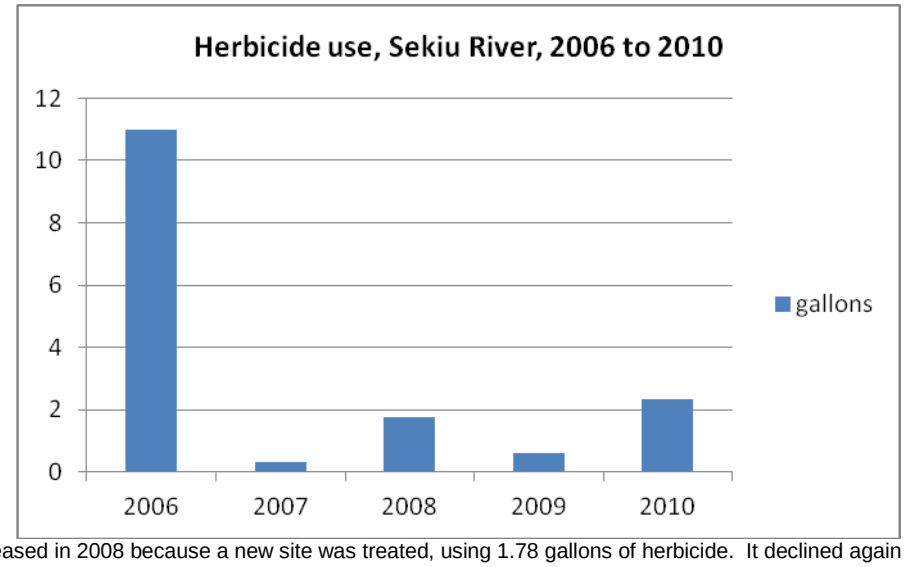
Because much of the land in the Sekiu River flood plain is owned by timber companies we met with their representatives and asked them to have their forestry crews monitor knotweed sites, treat themselves if possible and contact us if plants were found near water so that we could send an aquatically licensed applicator to spray.

Even though knotweed control on the Sekiu River is now mandatory, it is a priority watershed and we are attempting a gradual transition, so we sent a crew out to survey and treat. A few sites had plants remaining, but they were small and scattered and were re-treated. Towards the end of the season one landowner, who has consistently refused to allow crews on his property to treat, finally relented when faced with the possibility of enforcement and we injected plants there in mid-October, using 2.125 gallons of herbicide.

Virtually all parcels on the Sekiu River were visited in 2010 and treated as necessary. Very few plants remain on most parcels and several landowners are looking out for knotweed and treating it themselves, which is our long-term goal. Knotweed impacts have been greatly reduced. We were fortunate in getting permission to treat one "hold-out" and re-treatment on that site will be a priority in 2011.

Herbicide Use, Sekiu River (gallons)					
	2006	**2007**	**2008**	**2009**	**2010**
Parcels Inspected/ Known Parcels			1/11	10/11	10/11
Acres Treated		1.78	2	16	8.5
AquaNeat injected:		0.1	1.7	0	2.125
AquaNeat sprayed:		0.18	0.06	0.487	0.18
Habitat (imazapyr):	0	0.02	0.007 (Polaris)	0.122	0.045
Total Herbicide:	**11**	**0.3**	**1.767**	**0.609**	**2.35**

Note: The term "inspected" is used, rather than "treated" because in many cases crews looked for plants but did not find them. "Acres Treated" 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.

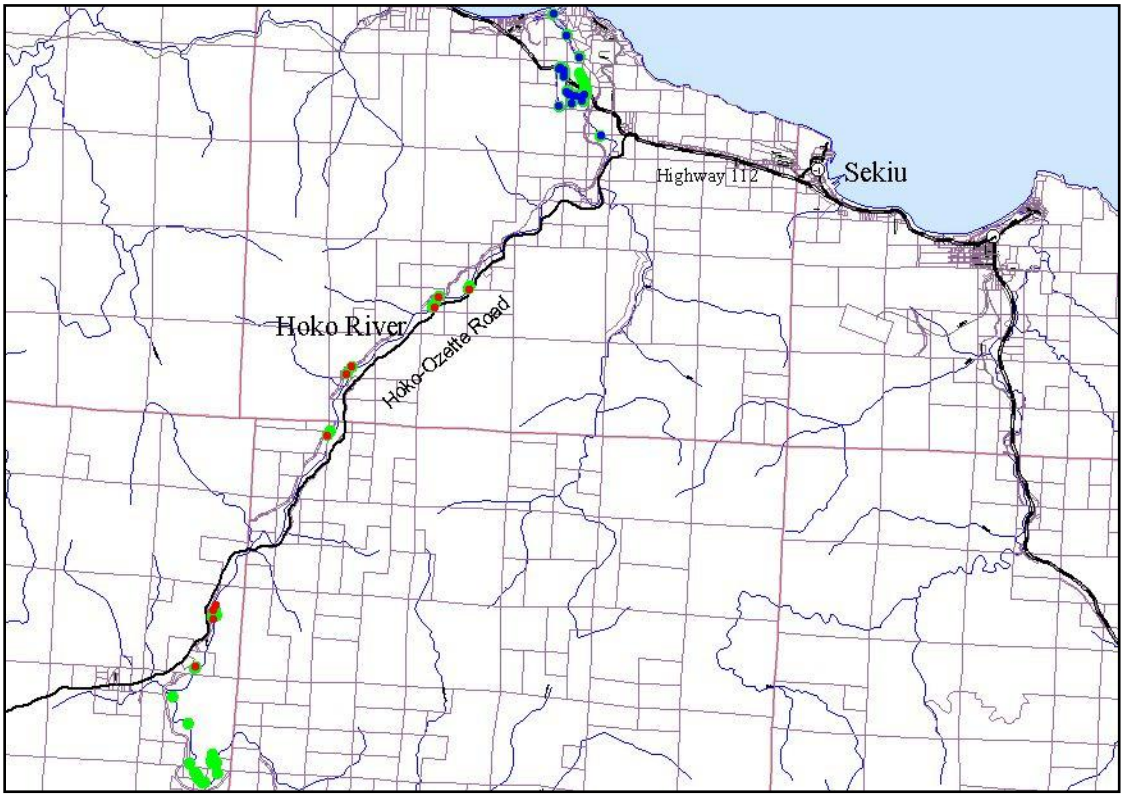


Herbicide use increased in 2008 because a new site was treated, using 1.78 gallons of herbicide. It declined again in 2009 because all applications were re-treatments and all were foliar spray, not injection. Herbicide use increased in 2010 when another site was treated for the first time by injection, using 2.125 gallons of herbicide.

HOKO RIVER

Crew

Treatment— Eve Dixon, Bret Carey, Rafael Ojeda (CCNWCB)



Bright green indicates sites surveyed and recorded in 2006. Blue indicates treatment in 2010 and red indicates no plants found in 2010. Because virtually all our work this year was re-treatment crews did not take electronic data points. Office staff created shape files, based on spray records and notes made by field crews. The upstream sites were not visited in 2010 because plants have not been seen there for several years and because they are owned by timber companies who are doing their own monitoring.

The Hoko River flows into the Straits at Eagle Point, about a mile and a half east of the Sekiu River. There is a small residential community known as "The Vista" near its mouth, and Washington State Parks owns a considerable amount of land, also near the mouth, which will eventually become a State Park. The Hoko River supports runs of Chinook, coho, chum and winter steelhead.

In early June of 2006 the Makah Tribe conducted a float survey on approximately 12 river miles of the Hoko. Giant knotweed was the dominant species found, mostly in sporadic patches, which were treated by the Makahs the same year.

In June 2007 the Makahs re-surveyed and continued treatment. Because of the steepness of the river banks, crews had to be ferried by boat from the mouth.

In 2008 the Makahs continued herbicide treatment on the Hoko River. Knotweed plants were still present but were smaller. No plants were large enough to inject. As the table below shows, a larger area was treated but less herbicide was used. One landowner was still unwilling to have us treat, due to concerns about the effects of herbicides on animal and human health.

In 2009 knotweed control was made mandatory on the Hoko River, as well as the Big River. The landowner who had previously refused treatment was quite willing once control became mandatory. Crew sprayed or injected approximately a gallon and half of herbicide on that site, monitored and re-treated most of the other sites.

No plants were found on several previously-treated sites, particularly those upstream from the Hoko-Ozette Road. Difficult access prevented crews from re-treating sites near the mouth.

In 2010, as with other major west end rivers, our focus was on outreach and education, because we knew that on most sites knotweed populations had been significantly reduced and landowners could realistically monitor and control themselves. Also, we were aware that funding would not be continued indefinitely and that turning responsibility over to the landowners is the only way to achieve knotweed control in the long run. .

On March 31st we wrote to all landowners on the Hoko River known to have knotweed (See Appendix for a sample letter). Follow-up phone calls were made in April and May, reminding landowners that knotweed control is now their responsibility, but we are willing to help as much as we can, especially if plants are near water and have to be treated by a licensed applicator.

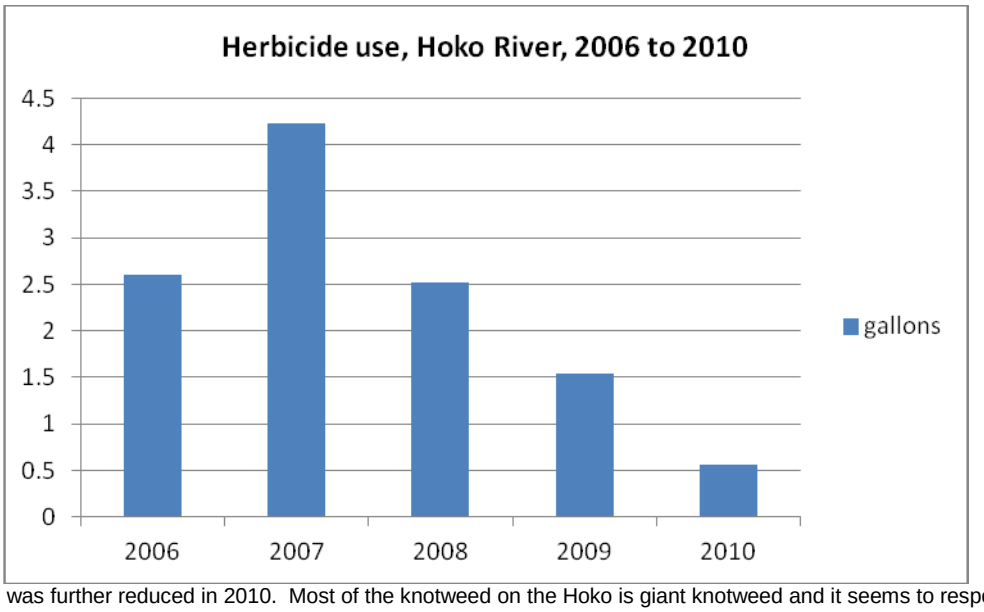
We held a number of community meetings for landowners, to train them in monitoring and control techniques, and we provided equipment and supplies to people who took the training. We placed these supplies at different locations in Clallam and Jefferson Counties so that people did not have to travel too far to get them or return them. All Hoko River residents were invited to a meeting and given a choice of dates and locations.

Because much of the land in the Hoko River flood plain is owned by timber companies we met with their representatives and asked them to have their forestry crews monitor knotweed sites, treat themselves if possible and contact us if plants were found near water so that we could send an aquatically licensed applicator to spray.

Even though knotweed control on the Hoko River is mandatory, it is a priority watershed and we are attempting a gradual transition, so we sent a crew out to survey and treat. A few sites had some plants remaining and these were re-treated. A homeowner near the mouth of the Hoko supplied a boat and our crew was able to inspect and treat an infestation at the mouth, where difficult access has precluded treatment in the past. Knotweed on the site which was treated for the first time in 2009 had been reduced by about 85% and was re-treated. Most of the knotweed on the Hoko River is giant knotweed, which responds better than other species to treatment and knotweed impacts on the Hoko are greatly reduced.

Herbicide Use, Hoko River (gallons)					
	2006	**2007**	**2008**	**2009**	**2010**
Parcels Inspected/Known Parcels			25/32 (est)	23/32	18/32
Acres Treated		5.82	17.16	12	18.25
AquaNeat injected:		1.63	0	1.218	0
AquaNeat sprayed:		2.52	2.27	0.26	0.45
Habitat (imazapyr):		0.075	0.246	0.063	0.113
Total Herbicide:	**2.6**	**4.225**	**2.516**	**1.541**	**0.563**

Note: The term "inspected" is used, rather than "treated" because in many cases crews looked for plants but did not find them. "Acres Treated" 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.

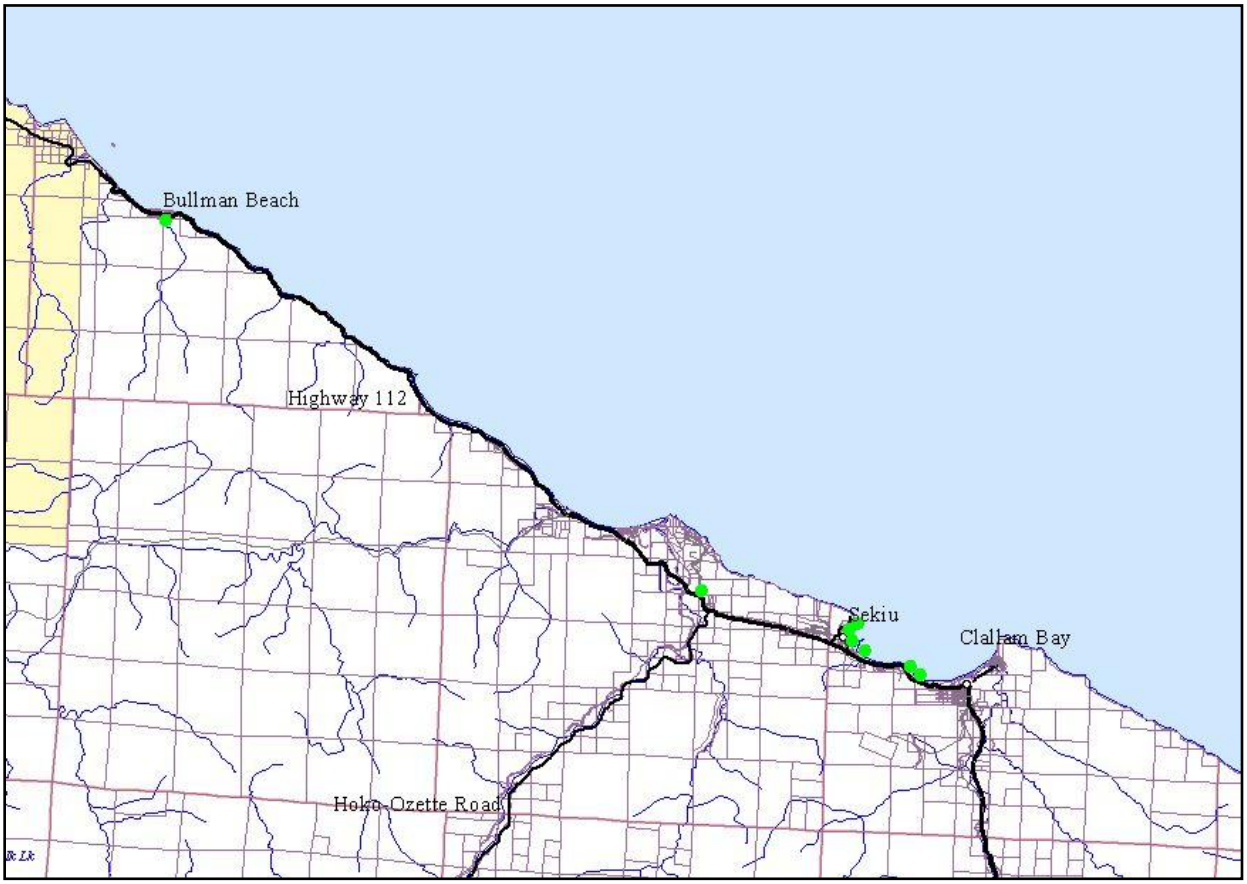


Total herbicide use was further reduced in 2010. Most of the knotweed on the Hoko is giant knotweed and it seems to respond to treatments better than other species.

SEKIU, CLALLAM BAY AND HIGHWAY 112

Crew

Treatment—Eve Dixon, Bret Carey, Rafael Ojeda (CCNWCB)



Bright green indicates sites treated in 2010.

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

• Highway 112 runs west-east near the shoreline and crosses the Sekiu, Hoko and Clallam Rivers. The Hoko-Ozette Road, which heads south-west from Highway 112, runs very close to both the Hoko River and the Big River. Both these roads serve as significant vectors of knotweed through movement of plant fragments in the course of road maintenance and related activities.

• Bullman Beach is a small beach community on Highway 112 at Bullman Creek, a few miles east of the Makah Reservation. An infestation of knotweed there has been treated for several years.

By 2004 there were large stands of knotweed in both Clallam Bay and Sekiu and along Highway 112. Many of the infestations were in or close to water (Straits of Juan de Fuca). Some residents found the knotweed stands overwhelming and desired to eradicate it from their community.

In 2006 CCNWCB hired local residents to educate landowners about knotweed and collect permission forms. The Makah Tribe and CCNWCB treated in Sekiu and Clallam Bay. The community appreciated the help given by CCNWCB and our efforts in this area helped pave the way when approaching landowners in other areas.

In 2007 the Makahs and CCNWCB re-surveyed the entire area. They observed a tremendous decrease in the number and size of canes in both towns. However, several new sites were noted in 2007. Some of these were very small ones that had simply been overlooked in previous years, in some cases the knotweed had spread onto neighboring property and in yet other cases crews realized the knotweed was actually on more parcels than they had previously realized. This highlights one of the major differences between working in towns such as Clallam Bay, Sekiu or Forks, with small parcels and many landowners, and working on rivers where most parcels cover many acres. We acquired nineteen new Landowner Agreements and the crew treated knotweed. Staff worked with landowners in Sekiu and Clallam Bay who wanted to control their own terrestrial knotweed.

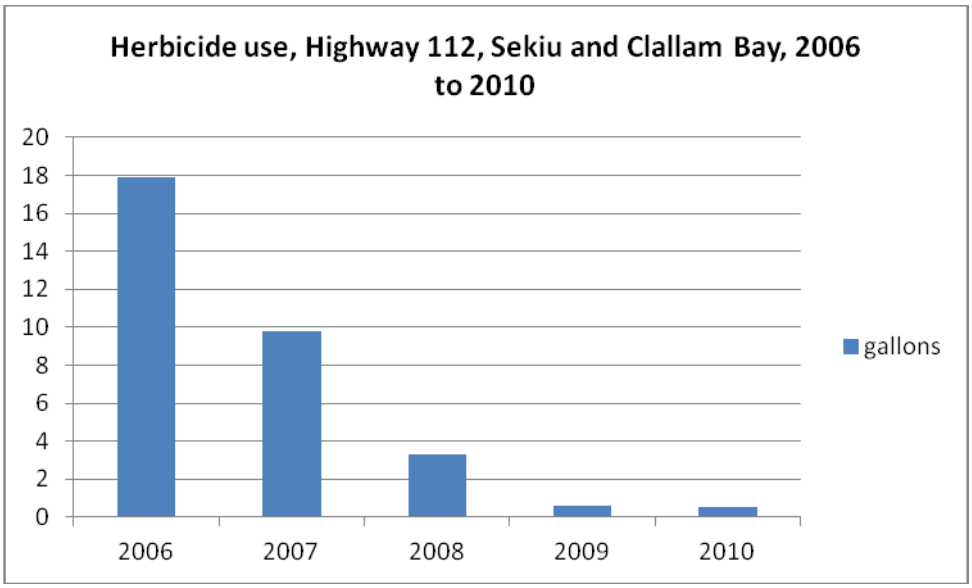
In 2008 crews monitored known sites and re-treated as necessary. They also found several new sites, obtained Landowner Permission and treated. On 19 out of 50 sites no knotweed was found. (For the purpose of this report a parcel is looked on as a site.) Our efforts to engage landowners in treating their own knotweed were set back by the unfortunate death of Charles DeVaney, the staff member who had been mainly responsible for that aspect of the project.

In 2009 the CCNWCB crew monitored and re-treated all known sites. On 33 out of 68 parcels no knotweed was found. On two parcels, plants were so small they were dug. Remaining knotweed populations in Clallam Bay and Sekiu are now very small. We plan to encourage landowners to be responsible for monitoring and control of terrestrial sites in 2010.

In 2010 we did not visit all the knotweed sites in Clallam Bay and Sekiu, because many of them are strictly terrestrial (and therefore low priority), have been treated for years and many sites have no remaining plants. Those that do remain are small and many landowners are now actively involved in knotweed monitoring and control. As discussed above, our focus was on outreach and education. In April we wrote to all landowners in the area known to have knotweed, explaining we would not have a crew out this year, asking them to monitor and spray their own knotweed, and giving some control recommendations. In August we held a training workshop in Sekiu which was extensively advertised locally through posters, radio, newspaper and email. Equipment and supplies were made available to landowners who took our training.

Treatments were focused on beach sites, including Bullman Beach, near the Makah Reservation, where a few plants still remain after several years of treatment. Crew walked the entire beach between Sekiu and Clallam Bay and treated all plants found. Although not all parcels were specifically visited, we drove through Clallam Bay and Sekiu many times in the course of the field season and no knotweed plants were seen in either town, except for the beach sites which were treated. This is in marked contrast to the huge stands of knotweed seen in both towns as recently as 2005. Our treatments have been very effective. Better still, many residents are aware of knotweed and are actively looking for it and treating it on their own property. As has been discussed, this is our long-term goal.

Herbicide Use, Highway 112, Clallam Bay and Sekiu (gallons)					
	2006	**2007**	**2008**	**2009**	**2010**
Parcels Inspected/Known Parcels			55/67 (est)	67/68	18/68
Acres Treated		25	45	26	3.25
Aqua Neat injected		3.5	1.945	0	0
Aqua Neat sprayed		6.06	1.224	0.45	0.4
Habitat (imazapyr):		0.23	0.29	0.155	0.1
Total Herbicide:	**17.9**	**9.79**	**3.459**	**0.605**	**0.5**

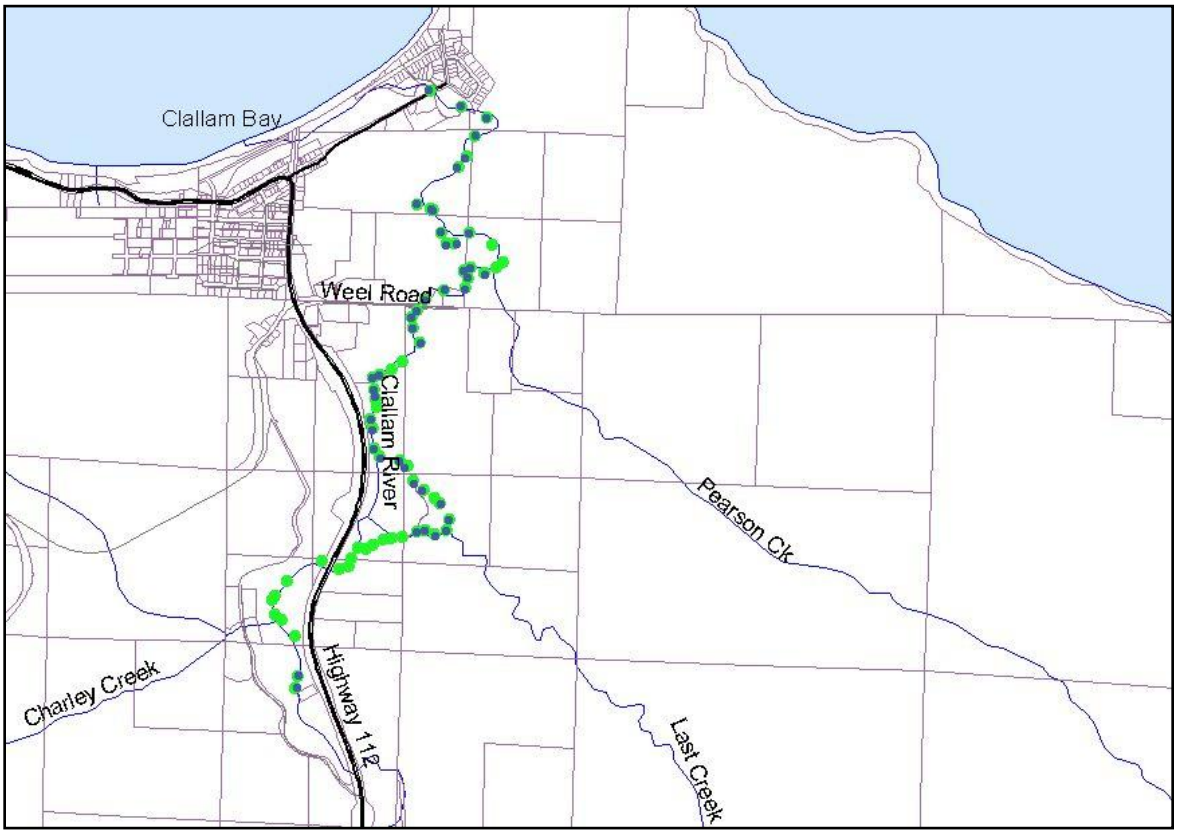


Herbicide use in the whole area decreased steadily from 2006 to 2009 and remained low in 2010. Some plants on the beach were injected because they were large and rain precluded spraying. Otherwise, herbicide use in 2010 would have been less.

CLALLAM RIVER

Crew

Treatment—Eve Dixon, Bret Carey, Leo Sprinzen (CCNWCB)



Bright green indicates sites surveyed and recorded in 2006. Blue indicates treatment in 2010. Some sites were not visited because of unknown access or bad weather.

The Clallam is a low-gradient river, flowing 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 with no way to escape to the safety of the ocean, making them easy prey. In 1998 a channel was excavated to allow fish to escape. It was effective but was only a temporary solution. There is a popular County Park at the mouth, and also a large portion of land owned by Washington State Parks.

The Clallam River is about 13.4 miles long. 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.

The first reported sightings of knotweed on the Clallam River were around 1998 and it has spread rapidly since then (Mike McHenry, Lower Elwha fish biologist, pers. com), although it is likely to have been present, but unnoticed, for much longer.

In 2006 the Makah Tribe surveyed the lower portion of the Clallam River. Sixty-eight knotweed sites were recorded. 75% of sites had mostly canes over six feet tall, and 35% had more than 200 canes. It should be noted that in 2006, when this survey was done, the largest category available in the Data Dictionary was >200. In reality, many of the sites had 1,000, 2,000 or even more canes.

In 2007 funding from a NFWF grant with the Clallam Conservation District became available for the Lower Elwha Klallam Tribe to treat the knotweed on the Clallam River. This was done with the help of an aquatic licensed

applicator from CCNWCB. Landowner agreements were solicited and 11 out the 14 landowners approached signed an agreement with us.

In 2008 the Lower Elwha Klallam Tribe again treated knotweed on the Clallam River, with the help of an aquatic licensed applicator from CCNWCB. Landowner agreements were already in place from 2007; one more was signed in 2008. Although roughly the same acreage was treated in 2008 as in 2007 (21.5 acres, compared with 26), herbicide use dropped tremendously, particularly in regard to the amount of herbicide injected.

In 2009 Clallam County Noxious Weed Control Board monitored and treated knotweed on the Clallam River. No knotweed was found on 6 parcels where it had been present in 2006 (when the survey was done), but some sites that had been treated for 2 years still had hundred of stems, either missed or inadequately treated in previous years. Two landowners still have not given us permission to treat; one of them is on the furthest upstream known knotweed site and we will continue trying to get permission.

In 2010, as with other major west end rivers, our focus was on outreach and education, because we knew that on most sites knotweed populations had been significantly reduced and landowners could realistically monitor and control themselves. Also, we were aware that funding would not be continued indefinitely and that turning responsibility over to the landowners is the only way to achieve knotweed control in the long run. The Clallam County Noxious Weed Control Board **made knotweed control mandatory** on the Sekiu and Clallam Rivers (it had already been made mandatory on the Big and Hoko Rivers in 2009).

On March 31st we wrote to all landowners on the Clallam River known to have knotweed (See Appendix for a sample letter). Follow-up phone calls were made in April and May, reminding landowners that knotweed control is now their responsibility, but we are willing to help as much as we can, especially if plants are near water and have to be treated by a licensed applicator.

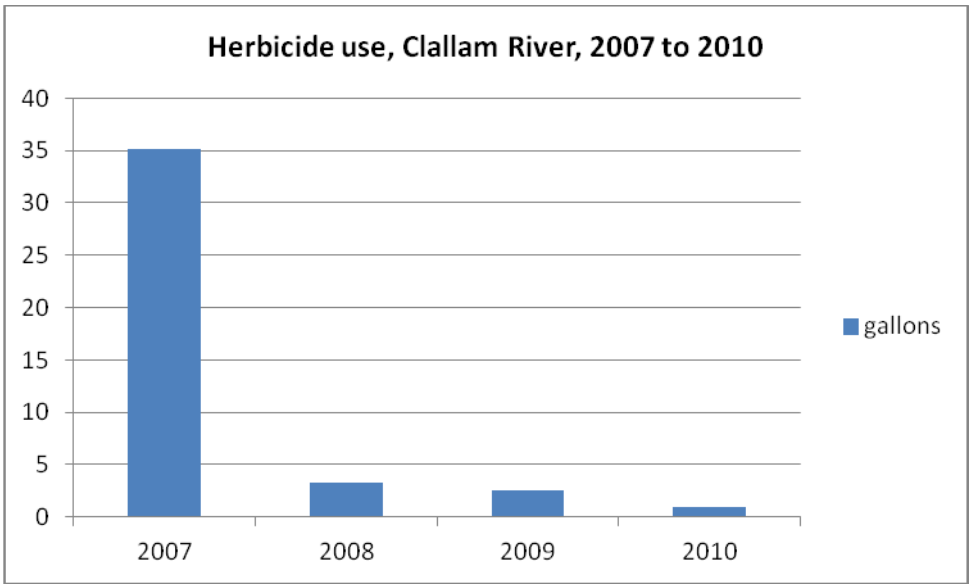
We held a number of community meetings for landowners, to train them in monitoring and control techniques, and we provided equipment and supplies to people who took the training. We placed these supplies at different locations in Clallam and Jefferson Counties so that people did not have to travel too far to get them or return them. All Clallam River residents were invited to a meeting and were given a choice of dates and locations.

Even though knotweed control on the Clallam River is now mandatory, it is a priority watershed and we are attempting a gradual transition, so we sent a crew out to survey and treat. We were finally successful in getting permission form the furthest up-stream landowner, who had refused for several years to let crews onto the property. Making control mandatory proved effective, as it has in other watersheds. When people know that enforcement is a possibility they are more willing to allow our crew to treat. We injected knotweed plants on that site in early September. Access to some parcels proved difficult because of dense vegetation and before re-surveying and treating in 2011 access points should be located.

Not all sites on the Clallam River were visited in 2010, partly because of difficult access but also because our treatment window was so short and bad weather made it even shorter. However, on the previously-treated sites visited very few plants were seen and crews had to search hard to find them.

Herbicide Use, Clallam River (gallons)				
	2007	**2008**	**2009**	**2010**
Parcels Inspected/Known Parcels	16/20	16/20	18/20	13/20
Acres Treated	26	21.5	55	18.75
AquaNeat injected:	32.95	0.52	0	0.43
AquaNeat sprayed:	2.14	1.34	2.05	0.401
Polaris (imazapyr):	0	0.34	0.53	0.1
Total Herbicide:	**35.09**	**3.28**	**2.58**	**0.931**

Note: "Acres Treated" 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.



Herbicide use decreased dramatically from 2007 to 2008, as usually happens after the initial treatment and it has declined steadily since then, despite almost half a gallon being injected in 2010, on a previously-untreated site.

PYSHT RIVER

Crew

Treatment—Eve Dixon, Bret Carey, Burdick Family (manual treatment)

Bright green indicates sites surveyed and recorded in 2006. Blue indicates treatment in 2010.

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.

In 2005 knotweed on the Pysht was first observed and treated. No complete survey was taken that year, but two property owners notified CCNWCB of knotweed infestations. One of these owners was Merrill & Ring, which owns a large amount of land on the Pysht including a tree farm near the mouth. They were enthusiastic about controlling their knotweed and hired a crew to do the work, with help from CCNWCB.

The other landowners who came forward were the Burdicks, who had a knotweed infestation covering 80,000 square feet. In 2005 they started manually digging knotweed as an alternative to herbicide use.

In 2006 Merrill and Ring hired a crew who treated their knotweed sites with help from CCNWCB. The crew noticed good results from the previous year's treatments—one site of approximately 3,060 square feet had been covered with knotweed in 2005. By 2006 only 50 to 100 canes remained; they were about 3 feet tall. 5 separate sites were treated in 2006, including infestations of around 4,000 square feet on both sides of the Old Sappho-Pysht Highway.

The Burdicks continued digging or pulling and spent about 50 person-hours on the project. Over the summer, they reported growth of up to two feet a month. In October 2006, the area contained 150 small canes, the majority reaching approximately three inches. This represented considerable success and it seemed that the infestation was contained, and there was practically no chance of the knotweed getting into the river system.

In 2007 Merrill and Ring again hired a crew who treated their knotweed sites with help from CCNWCB. The Burdicks observed considerable re-growth of their knotweed in the spring but they remained optimistic and pulling or digging continued; about 28 person-hours were dedicated to the project in 2007.

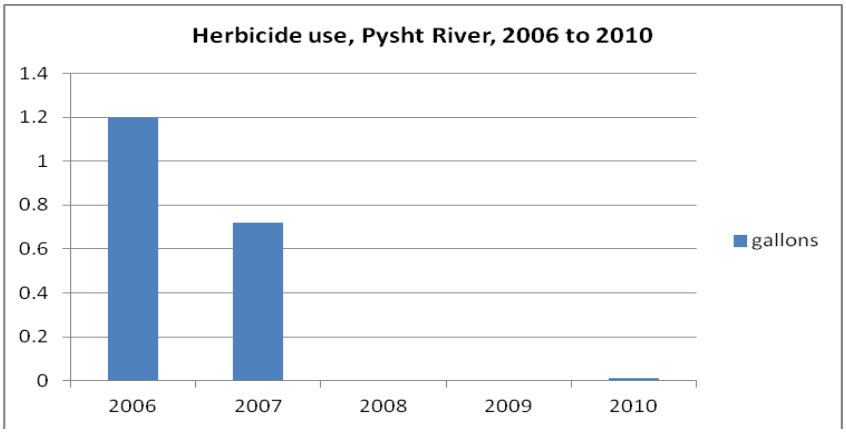
In 2008 CCNWCB again worked with a crew hired by Merrill and Ring; they treated three separate sites. Knotweed populations on Merrill & Ring properties had been greatly reduced; no knotweed remained on one side of the Old Sappho-Pysht Highway and only a handful of small plants were on the other side. Only one day was spent treating knotweed on the Pysht and very small amounts of herbicide were used.

The Burdicks visited their knotweed site four times with four people each time, monitoring and digging or pulling. The Burdicks feel that they are making progress but that complete control may take another four years. Disposal continues to be a problem for them. They would like to burn because pulled or dug plants have so much capacity for regeneration. On one occasion they observed about a foot of regrowth had occurred in six days on a pile of discarded material. New leaves were even opening. However, burning is not allowed in the summer and when the ban is lifted the site is difficult to access and the plants are so wet that burning them is difficult. They have decided to be content with covering piles with black plastic, but will cover them extremely well, because plants can sprout even inside the plastic. Older plants however, are decomposing under the plastic, even large root wads.

In 2009 an aquatic applicator from CCNWCB treated 6 or 6 small patches on Merrill & Ring property. The Burdicks continued digging, putting 16.5 man-hours into the project. They feel that they are gaining ground but may never completely eradicate knotweed from their property. They were concerned at finding a few outliers which may have sprouted from plants washed out of their piles of dug plants. They will be more diligent about covering the piles and watching for outliers in the future.

In 2010 a crew from CCNWCB, including a licensed aquatic applicator, again treated some small patches on Merrill and Ring property on the Pysht. The same crew treated a few plants on the old Pysht-Sappho Highway, which runs alongside the Pysht River. The Burdicks continued digging, even though it was hard getting across the river in the spring because the water was so high. They feel they have got good control and are now in a maintenance program. They still have concerns about the occasional outliers they find, and are not sure if they were simply missed or if they are regrowth from roots left in the ground. The Burdicks have noted that knotweed does not rot. Piles of stalks that have been covered with visqueen for years have scarcely been reduced in size.

Herbicide Use, Pysht River, (gallons)					
	2006	**2007**	**2008**	**2009**	**2010**
Glyphosate	N/A	0.72	0.00375	0.00375	0.008
Polaris	N/A		0.000937	0.000937	0.002
Total	**1.2**	**0.72**	**0.004687**	**0.004687**	**0.01**



Herbicide use appears to have increased slightly, partly because the site on the Pysht-Sappho Highway was treated, and also because it is difficult to accurately measure such small amounts of herbicide

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 cutthrout and rainbow trout. North Cascades Exotic Plant Management Team with the National Park Service treated a small patch of Himalayan knotweed (0.001 acres) in the upper part of the river. CCNWCB operated only in the mid and lower sections of the Sol Duc because the upper section is within the Olympic National Park. The mid and lower Sol Duc are dealt with separately because treatment on the mid Sol Duc has taken place for longer than treatment on the lower Sol Duc. Lake Creek is also discussed separately so it can be shown in more detail

• Mid Sol Duc

In 2005, Clallam County Noxious Weed Control Board (CCNWCB) conducted a float survey on the mid section of the Sol Duc River (from the Park boundary to Whitcomb-Diimell boat launch on Highway 101). The Snider Work Center was the furthest upstream site found.

In 2006 CCNWCB solicited and obtained 29 landowner permissions from landowners in the mid-section of the Sol Duc. Only one landowner would not give permission to use herbicide. Treatment of the mid-section took place in September and October, mainly on foot except that one day the Quileute Tribe provided a boat and rower to treat sites that could not be accessed by foot. Seventy-one separate sites were treated. All plants treated were Bohemian except for one giant knotweed site and a Himalayan knotweed site near Sappho (the only known Himalayan knotweed on the Peninsula). Knotweed was noted on Bear Creek for the first time.

In 2007 a combined Quileute/CCNWCB crew monitored and re-treated as necessary all of the sites in the mid-Sol Duc. The one landowner who had refused permission in 2006 did allow the crew to treat knotweed on his property from the river. This was an important step, because it was the largest site on the Sol Duc. Crews reported that knotweed was much reduced—sites that had consisted of 200 to 400 canes were down to 20 or 30. Some spray records reported 90% control from the previous year's treatment. Crew also treated the sites on Bear Creek for the first time and spent several days treating a site in Sappho, owned by Rayonier, on both sides of Highway 101.

In 2008 a combined Quileute/CCNWCB crew re-treated the entire river. This was the third year of treatment on the mid Sol Duc and plants were greatly reduced in size and number. Very few sites had plants over five feet tall and epinastic growth was observed in some sites, as a result of previous year's treatments. No Himalayan knotweed, which had been re-treated in 2007, was visible. Herbicide use declined, despite almost 5 gallons being used on sites on Wisen Creek that were treated for the first time in 2008.

In 2009 the 2-person CCNWCB crew worked alone on the mid Sol Duc. Three years of treatment had greatly reduced knotweed populations and the crew reported that on 36 parcels, (out of 62), no knotweed was found. We obtained a new landowner agreement for a site on Bear Creek and the crew injected 30 plants there and sprayed another 40. Other sites on Bear Creek were re-treated, 140 or so plants still remaining (some epinastic). The Rayonier-owned parcels at Sappho still had at least 800 plants, mostly less than 3 feet tall and many epinastic. About 200 plants still remained on Hillstrom Road and were treated. Wisen Creek was treated again—herbicide use there dropped from more than 6 gallons to less than 1. Very few plants were found on any sites other than the ones mentioned.

In 2010 the Clallam County Noxious Weed Control Board did few treatments on the Sol Duc, instead focusing on outreach and landowner education, with the goal of eventually making all landowners responsible for controlling knotweed. We believe this to be the only way to achieve long-term control, since we know our program cannot be funded indefinitely. The furthest upstream infestation, at the Snider Work Center, was treated on September 14th by a CCNWB crew working on Forest Service projects. All sites on the Mid Sol Duc have been treated for four years and are greatly reduced. All Sol Duc landowners with knotweed were written to in April, explaining that we would like them to monitor and control, but offering help where needed. Workshops for

landowners were held in several locations, including Forks and Port Angeles. All Sol Duc River landowners were invited to a workshop and given a choice of dates and locations. Equipment and supplies were made available to people who attended a workshop. The Quileute Nation's crew spent some time in late August surveying and treating the Sol Duc from Maxfield Road down to the confluence with the Bogachiel River. Because most of this work took place in the Lower Sol Duc, those figures are shown in that section, on Page

- **Lake Creek, Lake Pleasant and Beaver**

Lake Creek is one of the major tributaries to the Sol Duc and it contains some of most productive coho habitat in the Quillayute system; these coho include a unique, resident population. All of the sockeye in the entire Quillayute system spawn in Lake Pleasant, which they access via Lake Creek.

Major knotweed infestations had been seen on Lake Creek for several years and during the 2006 season some control work was done on the lower portion of Lake Creek and on two properties near Lake Pleasant. Both the Lake Pleasant sites were significant in size and had plants over six feet tall.

In 2006, the Quileutes surveyed Lake Creek and recorded 106 sites. Almost half of the sites had canes taller than six feet, and 41% had 200 or more canes. However, ">200" was the highest category available in the Data Dictionary at that time (more categories were added later). In some cases the surveyor wrote a better estimate of the number in the "Comments" column. Fifteen sites were estimated to have between 200 and 1,000 stems; ten were estimated to have 1,000 to 2,000 and 11 were thought to have over 2,000.

In 2007 the CCNWCB crew treated all of the sites on Lake Creek identified in the 2006 survey. They also treated some additional sites on Lake Pleasant as well as a site in the nearby community of Beaver.

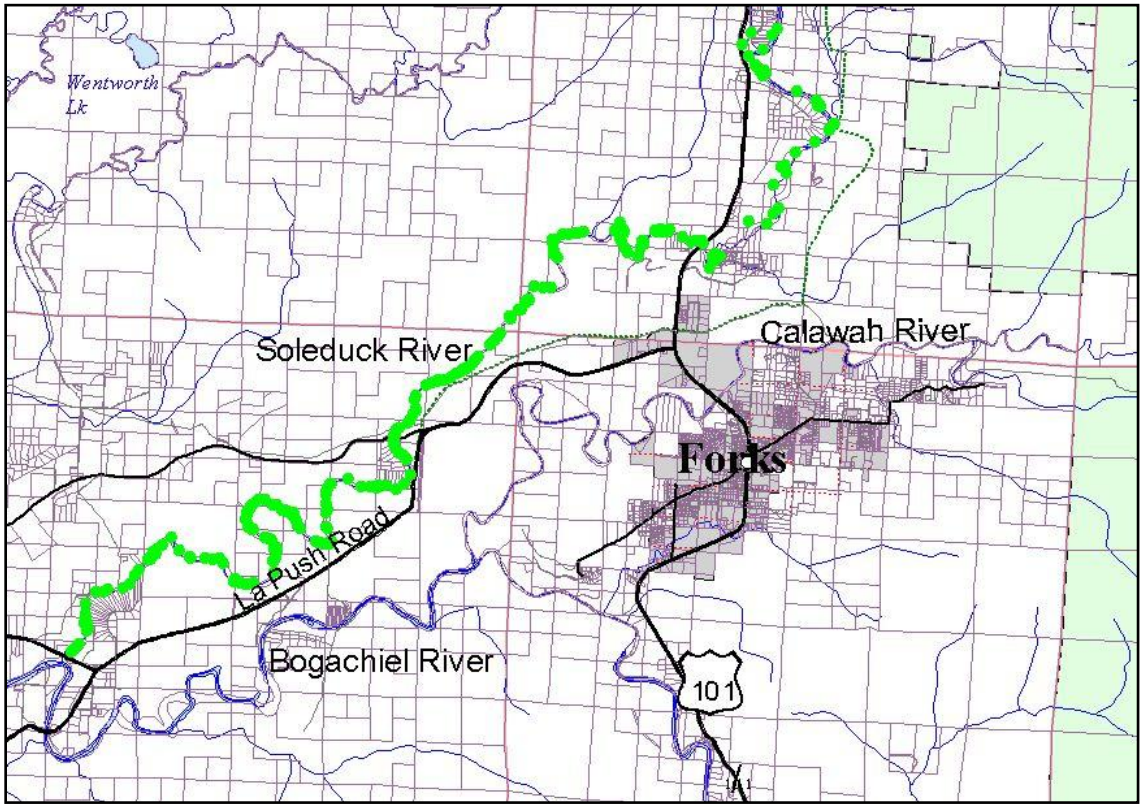
In 2008 the same team monitored all sites and re-treated as necessary. Two new sites were treated on Lake Pleasant.

In 2009 treatment continued. Although this was the third year of treatment, herbicide use increased slightly, mainly because the crew treated Lake Creek in August and September, when plants had been able to reach full size.

In 2010 CCNWCB did no treatments on Lake Creek or Lake Pleasant. However, a landowner there attended our landowner training session in Sekiu, and was actively involved in controlling not only his own but also his neighbors' knotweed. This is EXACTLY the type of result we were hoping for when we began our outreach efforts. Also, much of the land on Lake Creek is owned by Rayonier Timberlands and we met with their silviculturist and discussed knotweed monitoring and control. Rayonier will eventually incorporate this into their forestry program.

Similar outreach took place as has been described in previous sections. We wrote to landowners in April, explaining we would not be able to send a crew out this year, asking them to monitor and spray their own knotweed, and giving some control recommendations. We held training workshops in Sekiu, Forks and other locations. All were extensively advertised locally through posters, radio, newspaper and email. Equipment and supplies were made available to landowners who took our training.

Lower Sol Duc



Bright green indicates sites surveyed in 2006. We do not have detailed data, but believe that in 2010 the Quileute crew treated all knotweed found in this section of the river.

In June 2006 the Quileute Tribe surveyed the lower section of the river (from Whitcomb-Diimell to the confluence with the Bogachiel). They recorded 447 sites. Almost half the sites had canes taller than six feet. 15% of sites had 200 or more canes; however, ">200" was the highest category available in the Data Dictionary at that time (more categories were added later). Some sites had many more the 200, possibly even thousands of canes. More than half of the sites recorded in the lower Sol Duc were identified as giant knotweed, in contrast to the mid-section, which was virtually all Bohemian.

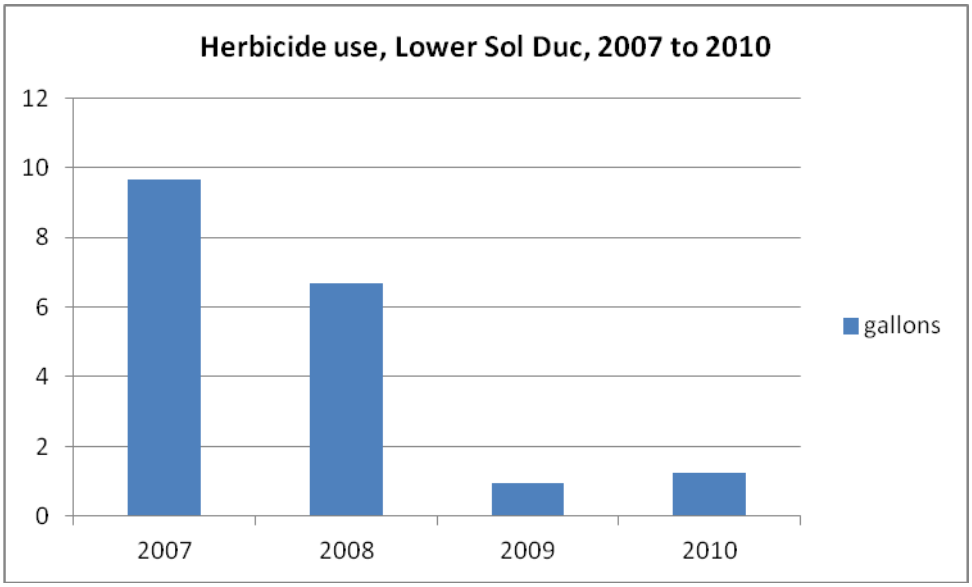
In 2007 CCNWCB acquired six new Landowner Agreements for work in the lower portion of the river. A combined CCNWCB/Quileute crew treated all known sites on the lower Sol Duc. Rafts were used to facilitate access.

In 2008 the combined CCNWCB/Quileute crew monitored and re-treated all sites on the lower Sol Duc. Crew did not re-take data points there in 2008 because of time constraints and lack of satellites. A crew member made notes on maps which show that the largest site treated had 600 stems and on several sites the plants treated were under 3 feet in height, indicating that the first year's treatments were moderately successful in reducing the size and numbers of knotweed plants Crew found knotweed plants that had been treated in 2007 still flourishing on islands in the river near the Sol Duc-Bogachiel confluence and found plants in wooded areas of the floodplain which had been overlooked in 2007.

In 2009 the Clallam County Noxious Weed Control Board crew and the Quileutes spent 3 days in June treating the lower Sol Duc. All plants found were less than 5 feet tall and considerably less herbicide was used than in the previous year, but it is very likely that some re-growth occurred after the treatments were finished.

In 2010 the Quileute Nation's crew spent some time in late August surveying and re-treating the Sol Duc from Maxfield Road down to the confluence with the Bogachiel River. Previous treatments have been quite successful, but the Quileutes are still finding small healthy plants in places where there were none the previous year. In the fall of 2009 the Quileutes, while doing elk surveys, had spotted a couple of large patches in an overflow channel of the Sol Duc, and were able to treat them in 2010.

Herbicide Use, Lower Sol Duc River (gallons)				
	2007	**2008**	**2009**	**2010**
Parcels Inspected/All Known		20/26 (est)	26/26	26/26
Acres Treated	17	45	30	35
AquaNeat injected	1.125	0	0	0
AquaNeat sprayed	8.187	6.2	0.79	1.26
Polaris AQ:	0.344	0.166	0.155	0
Total Herbicide	**9.656**	**6.67**	**0.945**	**1.26**



It will be seen that herbicide use increased in 2010, probably because plants were treated later in the year, more were found and they were bigger and took more herbicide to treat.

All known knotweed infestations in the Sol Duc River from the Olympic National Park boundary to the Sol Duc's confluence with the Bogachiel have now been treated for four years. A considerable decline in bio-mass has been observed and many sites have no visible knotweed plants.

FORKS

Knotweed has been observed in the city of Forks for several years and it is of concern because Forks is close to both the Calawah and the Bogachiel. One tributary to the Bogachiel passes through Forks and close to some of the knotweed sites. The Calawah and Bogachiel are major waterways in the Quillayute System. Both rivers have knotweed which the Quileute Tribe is trying to eradicate and there is fear of re-infestation if the Forks sites go unchecked.

In 2006 CCNWCB became aware of a large Bohemian knotweed infestation in a gravel pit at the County Shop in Forks. We treated the site twice in 2006. In June the same year the Quileutes surveyed knotweed in Forks and recorded 51 sites. 47% of the knotweed stems seen in Forks were taller than six feet and many of the sites (41%) had more than 200 canes. However, since ">200" was the highest category available in the Data Dictionary at that time, some patches may have been larger. (More categories were added to the Data Dictionary later, so surveys taken from 2007 onwards are more representative.)

In 2007 a herbicide training was held in Forks and as a practical exercise several crews went out and treated at least 10 of the knotweed sites. Monitoring, treatment and re-treatment continued throughout the summer. CCNWCB crews and the Quileutes treated Forks sites on several occasions, including the County Shop, Rayonier Gravel Pit, Forks Industrial Park and several other commercial sites in and around Forks

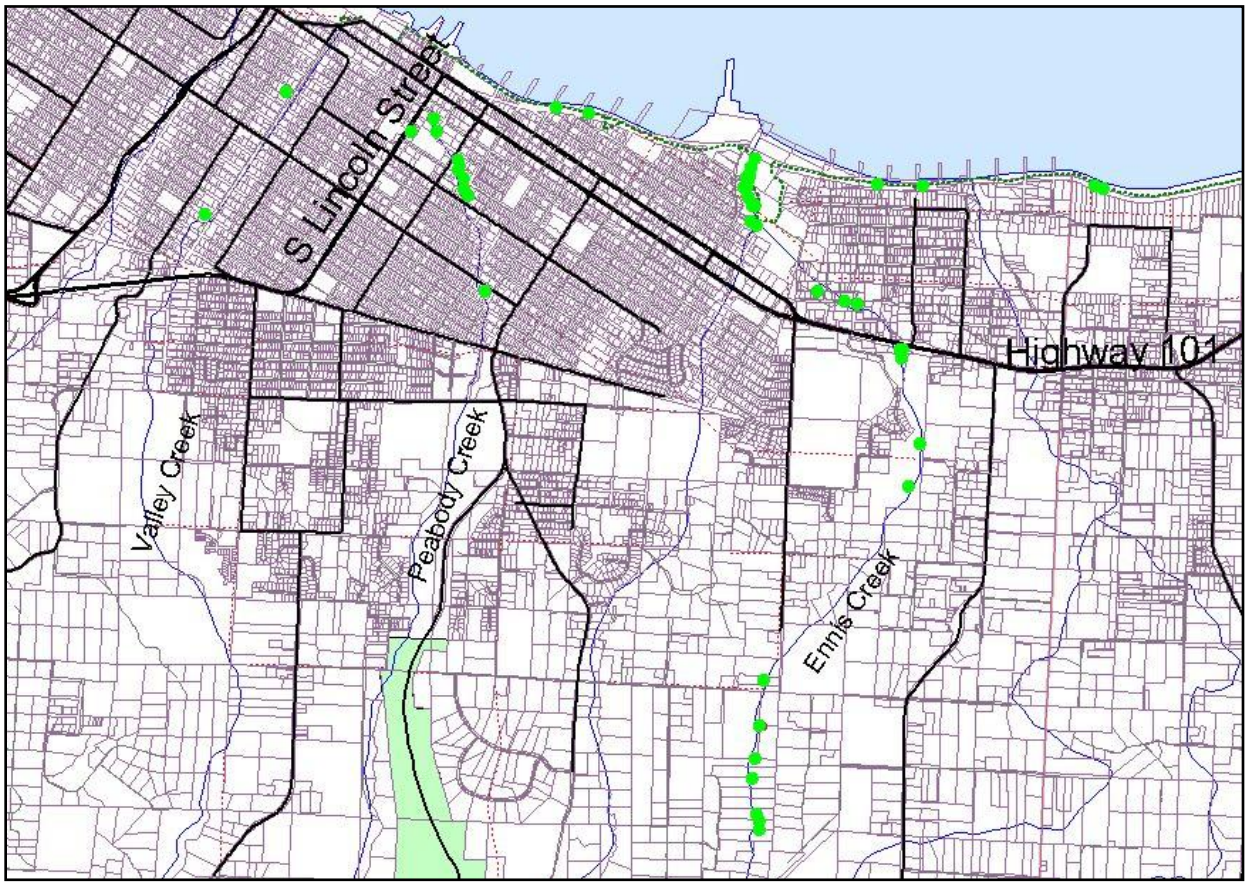
In 2008 all sites were monitored and re-treated as necessary. Several new sites were discovered and new Landowner Agreements obtained. Land parcels in Forks are mostly small, residential parcels. Consequently, a knotweed infestation may cover 3 or 4 different parcels and the crews sometimes experienced difficulties in knowing exactly which property plants were on. In some cases plants were determined to cover more properties than we had Landowner Agreements for and we had to try to get more. Several completely new sites were found during the summer and we had to solicit new Landowner Agreements and were not always successful in obtaining new Agreements in time for that year's treatment.

In 2009 we continued to treat knotweed in Forks, treating one new site and monitoring and re-treating where necessary. The crew reported that 15 (out of 30) parcels had no remaining knotweed and all other sites are reduced in size and number of stems. One landowner with a large infestation still has not given permission to treat. Working with this landowner next year should be a priority.

In 2010 no knotweed treatments took place in Forks, because most sites are strictly terrestrial (and therefore low priority), have been treated for many years, plants are small and many landowners are now actively involved in knotweed monitoring and control. As discussed above, our focus was on outreach and education. In April we wrote to all landowners in the area known to have knotweed, explaining we would not have a crew out this year, asking them to monitor and spray their own knotweed, and giving some control recommendations. We held training workshops for landowners in Sekiu, Forks and Port Angeles, to give people a choice of dates and locations. Equipment and supplies were made available to landowners who took our training.

One landowner in Forks, with a large infestation, has persistently refused permission to treat. Because so much work has already been done in Forks and because of it's proximity to major waterways we may require control there in 2011 to encourage the landowner in question to allow our crews to treat or to hire someone for the task.

PORT ANGELES STREAMS



Bright green indicates sites treated in 2010

VALLEY CREEK

Crew

Treatment—Ben Eyestone (CCNWCB)

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 heavily infested with knotweed for some time and treatment has been ongoing for several years.

In 1999 CCNWCB and the Boy Scouts manually removed knotweed from a small section of the road and revegetated the area with native plants. This treatment was temporary; extensive re-growth occurred almost immediately.

2002 saw the culmination of a restoration project which brought the previously culverted section of the creek to the surface and established a small park at the estuary, but did not address the knotweed problem. By 2003 knotweed became established at the estuary.

In 2006 Valley Creek, being very close to the CCNWCB office, was useful as a training ground for new employees. Portions of the site were visited three times in the season and were injected or sprayed with 2.3 gallons of herbicide.

In 2007 CCNWCB re-treated the Valley Creek site, spraying or injecting 1.52 gallons of herbicide.

In 2008 CCNWCB treated roughly two acres, including a first-time treatment of the estuary, injecting a total of 0.0625 gallons of Aquaneat.

In 2009 CCNWCB treated the Valley Creek site again (not the estuary), using 0.023 gallons of AquaNeat and spending one day digging.

In 2010 we re-treated the remaining plants on Valley Creek, using 0.005 gallons of Aqua Neat, on approximately ¼ acre.

PEABODY CREEK

Crew

Treatment—Cathy Lucero, Ben Eyestone, Eve Dixon and Angela Fletcher (CCNWCB)

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 stormwater 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.

Peabody Creek is close to the Clallam County Noxious Weed Control Board office and employees often notice stands of knotweed on or close to the creek. In 2009 we asked for and received permission to treat from 4 landowners whose property covered about ½ mile of the creek, within the City of Port Angeles. We do not at this point know how far upstream knotweed occurs.

In 2010 our crew surveyed further upstream than we treated last year, and found large stands of knotweed. They were able to do this because there are trails running from Lincoln Street south to Eighth Street (see above map), following the creek. Having found much more knotweed than expected we wanted to look further. We identified all landowners on Peabody Creek and wrote to them asking for permission to survey and/or treat knotweed. Response was disappointing; we still have permission from only 12 out of 24 total landowners and one landowner, who we know has a fairly extensive infestation, is so opposed to our program that he wrote to the local paper to express his disapproval. All sites that we treated last year were much reduced and were re-treated, but we were unable to move much further upstream. Doing so will be a priority in 2011.Herbicide used decreased in 2010 because most of our work was re-treatments and the plants remaining were few and small

Herbicide use, Peabody Creek (gallons)		
	2009	**2010**
Acres Treated	7.89	6.25
AquaNeat sprayed	1.98	0.135
Total Herbicide	**1.98**	**0.135**

ENNIS CREEK

Crew

Treatment—Cathy Lucero, Ben Eyestone, Angela Fletcher and Bret Carey (CCNWCB) and North Cascades Exotic Plant Management Team with the National Park Service.

Because the headwaters of Ennis Creek are at 6000', in the Olympic National Park, it is significantly affected by both snowmelt and runoff. This type of system typically has the highest stock diversity of anadromous fish. Historically Ennis Creek supported stocks of coho, steelhead, and chum. Currently coho stocks are highly degraded. Steelhead and cutthroat numbers are higher.

The lower reaches of Ennis Creek flow through urban areas of Port Angeles where water quality is impacted by stormwater runoff. An old Rayonier mill site is at the mouth of Ennis Creek and this portion of the creek has been rocked, channelized and the riparian corridor highly degraded. The old mill site has had a significant knotweed infestation for many years.

In 2007 CCNWCB and the Lower Elwha Klallam Tribe treated the lower portion of Ennis Creek and some sites on the adjacent Discovery Trail. 0.68 gallons of herbicide was sprayed or injected.

By 2008 an additional Landowner Agreement had been procured from the owners of several acres of land on Ennis Creek, south of Highway 101, with heavy knotweed infestations. In 2008 we thought that this site may be the highest upstream knotweed infestation on Ennis Creek. The CCNWCB crew treated this site, and also re-treated sites owned by Rayonier and the City of Port Angeles. A total of 1.34 gallons of Aquaneat was sprayed or injected over 6 acres of Ennis Creek.

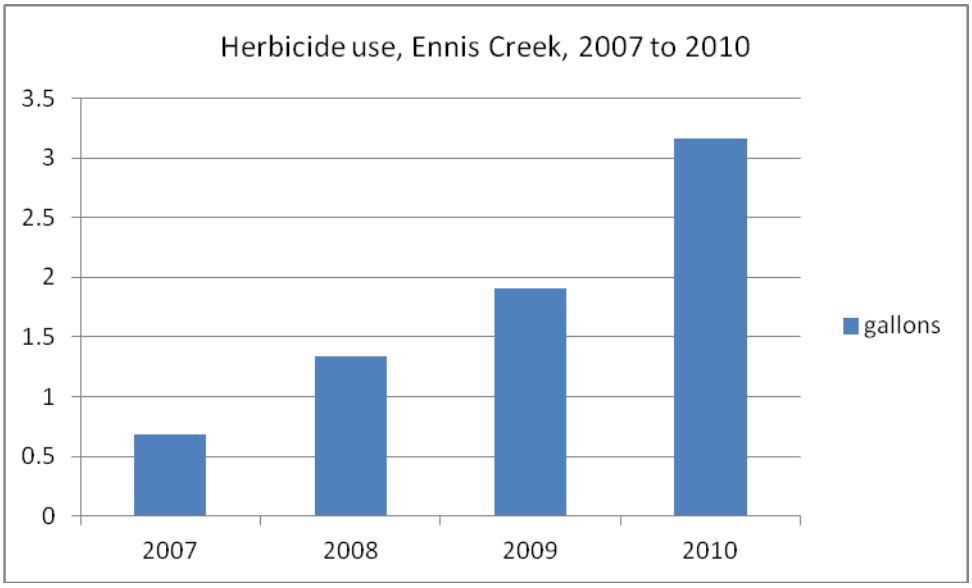
In 2009 treatment continued. We received a report of knotweed at least half a mile upstream from where we thought the furthest upstream point was. We contacted that landowner and received permission to treat. This new information created the need for a full survey of the creek. This is difficult for two reasons. First, Ennis Creek flows though a deep ravine with steep sides and difficult access. Second, there are many landowners on the creek and getting permission from them all to survey has been difficult. Contacting or re-contacting them all is a priority for 2010.

We believe the source of Ennis Creek knotweed is an old botanical garden, situated where the Olympic National Park now is. The North Cascades Exotic Plant Management Team with the National Park Service treated 0.001 acres of knotweed on a tributary to Ennis Creek, within the National Park

In 2010 we identified and contacted ALL landowners on Ennis Creek, asking for permission to survey and/or treat knotweed. We now have permission from 35 out of 46 landowners and will continue to seek permission in 2011. One landowner near the mouth, with an extensive patch of knotweed, gave permission to treat after being reluctant to do so for over a year. We treated knotweed on at least 11 previously-untreated parcels and re-treated all sites that we had worked on before. Difficult access, bad weather and lack of time prevented us from doing a full-scale survey but we are making headway with control in Ennis Creek. North Cascades Exotic Plant Management Team with the National Park Service treated within their jurisdiction, near Lake Dawn, treating 0.396 acre.

Knotweed on the Waterfront Trail in Port Angeles was also treated in 2010

Herbicide Use, Ennis Creek (gallons)				
	2007	**2008**	**2009**	**2010**
Acres Treated		6	7.5	35
AquaNeat injected :		1	0	1
AquaNeat sprayed		0.34	1.91	1.636
Polaris AQ		0	0	0.815
Total Herbicide	**0.68**	**1.34**	**1.91**	**3.641**



Herbicide use has increased as more parcels are treated

Because we have been treating knotweed in the Port Angeles area for less time than in the west end, we did not focus so extensively on transitioning to landowner control. We did hold a training workshop in Port Angles and one in Sequim. Both were well attended, mainly by people who have terrestrial knotweed sites that they want to control. We feel that our outreach efforts over the years have raised awareness of knotweed and its impacts.

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 are 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.

In 2004, the Jamestown S'Klallam Tribe located the uppermost knotweed infestation in the Dungeness mainstem. With some technical assistance from the CCNWCB, the tribe surveyed and treated 8.3 river miles of the Dungeness and most of the adjacent flood plain areas for knotweed. 1,272 sites were located and treated in 2004-2005; most of these sites were very small. It appeared that over 95% of known knotweed sites had been eliminated.

In 2006, Jamestown S'Klallam Tribe continued monitoring and treating knotweed on 8.3 miles of the river. A total of 357 sites were treated along the Dungeness with a median cane density of 1,808 stems. This is a decrease from median cane densities of 8,616 in 2005, and 17,067 in 2004.

In 2007 the Tribe continued to monitor and re-treat over approximately 400 acres of floodplain along 8 river miles. Only 127 plants were found in 2007 with a median cane density of 631 stems, requiring less than two gallons of herbicide to treat.

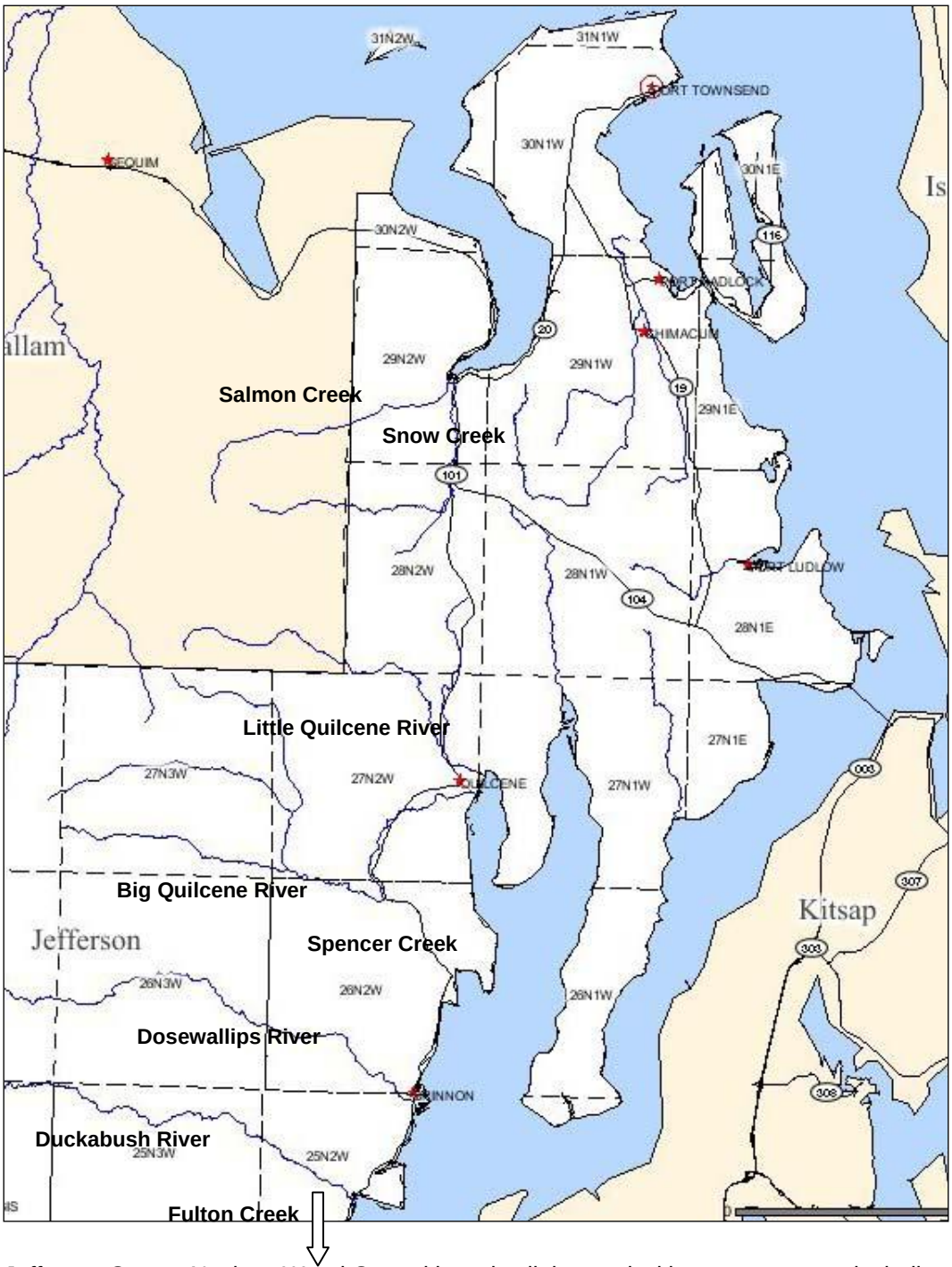
In 2008 the Tribe monitored and re-treated the same area. 322 plants were found with a median cane density of 1,340 stems, requiring 1.5 gallons of herbicide to treat. That is an increase from the median cane density of 631 found in 2007. Although the majority of occurrences were small (2-5 stems per plant); that is still over twice as many stems found in 2008 as in 2007. Herbicide application in 2006 and 2007 was mostly foliar because most stems were too small to inject and it is possible that foliar applications alone may not be as effective as injection, or injection and foliar. Also, late fall or early winter flood events may have transported live fragments downstream to new sites.

In 2009 and 2010 the Tribe did not survey or treat for knotweed. They focused their attention on other invasives, particularly butterfly bush.

For more information, please contact Hilton Turnbull at (360) 681-4603 or hturnbull@jamestowntribe.org.

OVERVIEW MAP OF EAST JEFFERSON COUNTY

Because the following sections concern sites in East Jefferson County, an overview map of the east portion of the county is repeated here.



In 2010 the Jefferson County Noxious Weed Control board collaborated with many partners, including the Hood Canal Salmon Enhancement Group (HCSEG), the North Olympic Salmon Coalition (NOSC) and the Hood Canal Coordinating Council (HCCC) to implement knotweed control efforts in Jefferson County. We have worked closely with the Hood Canal Coordinating Council since 2008 to develop a regional control strategy for Hood Canal. The Regional Control strategy is a set of guidelines that set forth how to collect data and control knotweed in a

coordinated fashion with all the other agencies on the Hood Canal. This document can be found at the Hood Canal Coordinating Councils website http://hccc.wa.gov/Salmon+Recovery/HCRKCS/default.aspx. This strategy helps all the partners better utilize and share resources. For example, the JCNWCB was able to utilize a WCC crew that NOSC funded from a SRFB Riparian Enhancement grant. These funds covered crew time to conduct treatment on the Big Quilcene, and to assess and treat the Dosewallips River. The WSDA funding paid for JCNWCB time to obtain landowner permissions and to provide oversight and reporting for NPDES permitting. WSDA funding also paid for herbicide used on the Big River and Dosewallips

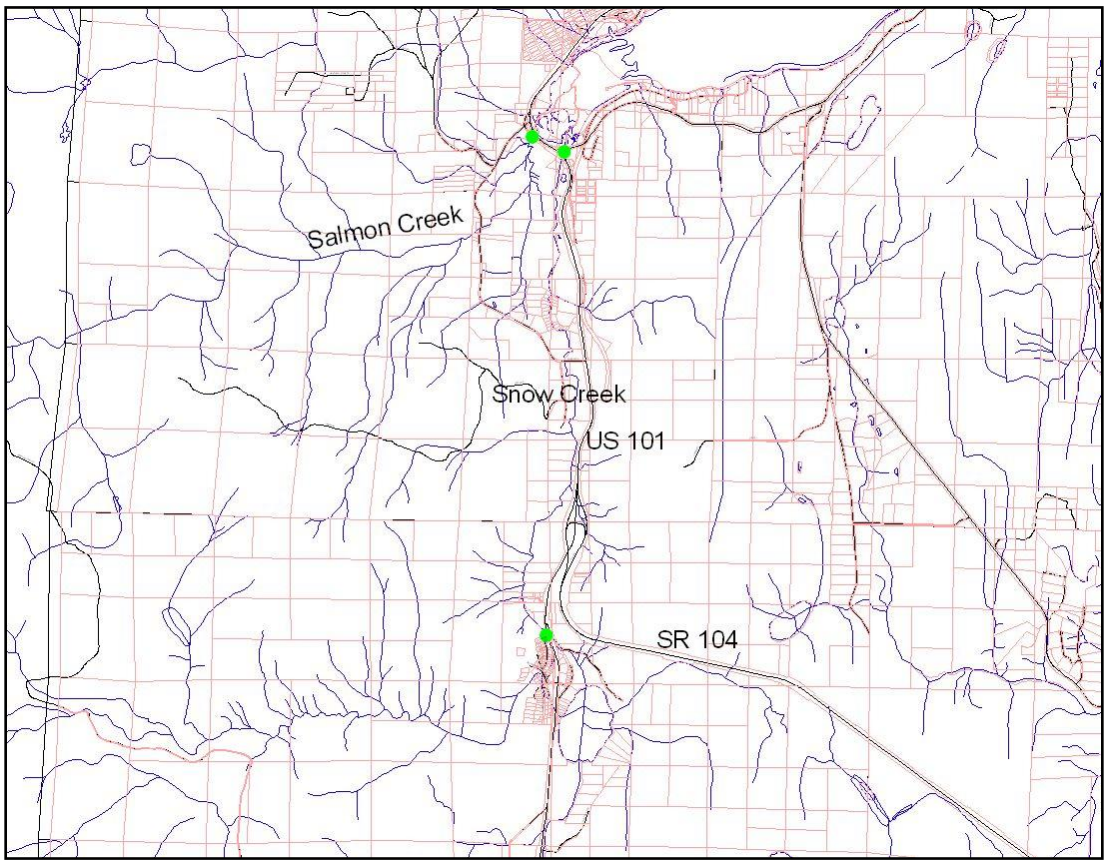
We intend to continue this partnership next year and work closer with the HCSEG to implement a third year of treatment on the Big Quilcene and to begin developing riparian revegetation plans for treated parcels. In addition we will work with them to complete the Dosewallips assessment and conduct more treatment. The crew from HCSEG will be paid for using an additional SRFB grant to continue control efforts in South Eastern Jefferson County in 2011.

Additionally, crews from CCNWCB and JCNWCB treated small knotweed patches in Jefferson County.

SNOW CREEK AND SALMON CREEK

Crews

Treatment—Eve Dixon, Angela Fletcher, Ben Eyestone and Owen French (JCNWCB/CCNWCB)



Bright green indicates treatment in 2010.

Snow Creek and Salmon Creek both flow into the south end of Discovery Bay, where a lumber mill operated until the 1950s. Habitat for salmonids and other species has been seriously impacted for many years because thousands of cubic yards of scrap wood blocked tidal flow. Ammonia and sulfur have been leaching into the water, degrading water quality. A restoration project was started in July, 2008, and was completed by the end of that year. The wood waste was removed, along with five derelict buildings, exposing the old marsh surface and restoring the original tide level. Native marsh vegetation is expected to return in three to four years.

In 2006 Clallam and Jefferson Noxious Weed Control Boards began treating knotweed on Snow and Salmon Creeks. Three sites were treated on Snow Creek and one on Salmon Creek.

In 2007 we monitored and re-treated as necessary. We also located two more sites, acquired Landowner Agreements and treated. Towards the end of the 2007 we acquired a Landowner Agreement to treat a large infestation visible from Highway 101, above Snow Creek.

In 2008 we treated that site, monitored all other known sites and re-treated as necessary. Two more sites were found and Landowner Agreements obtained.

In 2009 we re-treated all known sites on Snow Creek and the small site on Salmon Creek (only 2 stems remained). Landowner permission was finally obtained for a small site near the mouth of Snow Creek (first seen in 2007) and it was treated in October. We are still unsure as to how much knotweed is on Snow Creek or how far upstream it extends. A full survey would be appropriate but some landowners on the creek are resistant.

In 2010 a few sites were re-treated. Owners of some other sites were contacted—knotweed there has almost gone and the landowners are confident they can monitor and control it themselves.

Herbicide Use, Snow Creek and Salmon Creek (gallons)					
	2006	**2007**	**2008**	**2009**	**2010**
Acres Treated	0.5	1	4.35	11	2.2
AquaNeat injected :	0.71	0.369	0.3	0	0
Aqua Neat wiped	0	0.039	0	0	0
AquaNeat sprayed	0.035	0	1.03	1.714	0.37
Polaris sprayed	0	0	0	0	0.06
Total Herbicide	**0.745**	**0.408**	**1.33**	**1.714**	**0.43**

PORT TOWNSEND AND OTHER JEFFERSON COUNTY SITES

A knotweed infestation of approximately 0.75 acres has been present for many years at an entrance to the Kah Tai Lagoon Park in Port Townsend. It is highly visible to the public and, being adjacent to the lagoon, winter floods create a potential for plant parts to be moved off site. In the spring of 2008 the Jefferson County Weed Board asked the City of Port Townsend for permission to chemically treat the Kah Tai knotweed. The City granted permission, despite their normal no-herbicide policy and asked the weed board to also treat several other knotweed patches on city-owned property.

All treatments conducted in Port Townsend were by injection or wipe, and notices were sent out to neighboring residents before treatment, explaining what we were doing and why, and that the chemicals we were using were safe when used correctly and responsibly. Public reaction was generally positive.

In 2009 re-growth had occurred on all sites. Some plants at the Kah Tai Lagoon were large enough to inject (the ones that could not be reached in 2008). These were injected. All others were too small and were sprayed with a small hand-held sprayer. Again, the small amount of public reaction was favorable.

In 2010 all Port Townsend knotweed had gone, except for a few remaining plants at the Kah Tai lagoon. These were not treated but will be sprayed next year when they are larger.

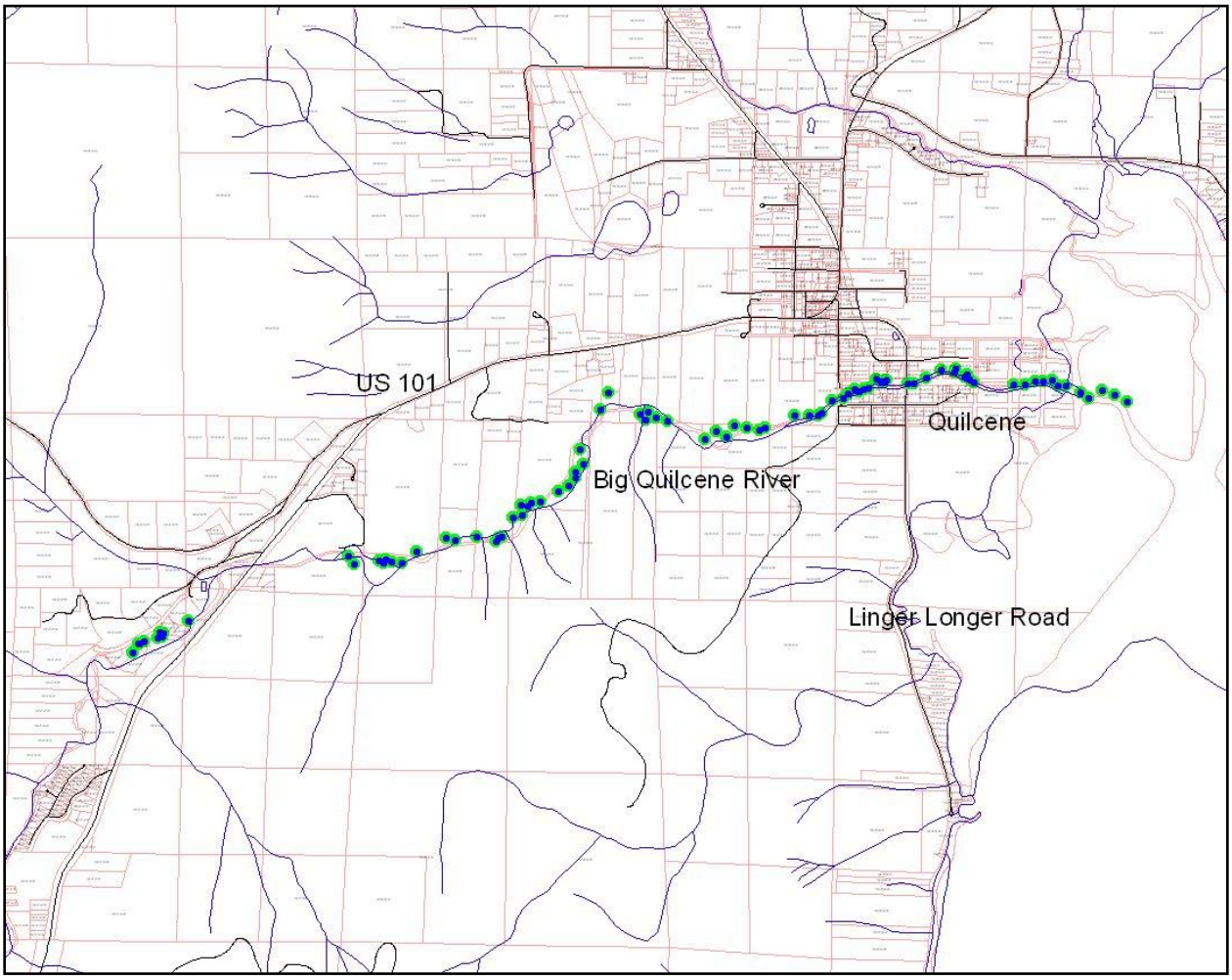
A large knotweed patch had been noted earlier on Old Eaglemount Road, close to a tributary of Chimacum Creek, and several large patches around Lake Leland. In December of 2009 the JCNWCB had got permission to spot spray certain weeds on certain county roads, including these knotweed patches. Some private landowners were involved, landowner permissions were acquired and these sites were treated, using 1.047 gallons of herbicide.

Because we have been treating knotweed in East Jefferson County for less time than in the west end of Clallam or Jefferson, we did not focus so extensively on transitioning to landowner control. We did hold training workshops in Port Angles, Sequim and Port Hadlock. Equipment and supplies were made available in all three locations to people who had attended a workshop. Several people took advantage of this and sprayed their own knotweed and we were encouraged by the response.

BIG QUILCENE RIVER

Crews

Treatment—Eve Dixon (JCNWCB), Julie Easton and Michelle Myers (Hood Canal Salmon Enhancement Group) and the East Jefferson WCC crew, led by Owen French (funded by NOSC, with a SRFB grant).



Bright green indicates knotweed sites recorded in 2008. Blue indicates treatment in 2010.

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 at a high elevation in the Olympic National Forest. The largest tributaries to the Big Quilcene are Townsend Creek, Tunnel Creek and Penny Creek. The headwaters of both Townsend Creek and Tunnel Creek are at high elevations and the entire length of both tributaries is on Olympic National Forest land. Penny Creek starts at a considerably lower elevation and flows through private and state-owned land. Penny Creek was included in our survey but Townsend Creek and Tunnel Creek were not.

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; most of the water used in Port Townsend comes from the Big Quilcene.

The middle reaches between River Mile 5 and RM 2.5 are moderate gradient channels with widened floodplains. There is Federal Fish Hatchery at the confluence of the Big Quilcene River and Penny Creek, 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, the main species being 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!

In 2008 JCNWCB and the Hood Canal Coordinating Council surveyed the river to determine how far upstream the infestation went. The furthest upstream knotweed found on the Big Quilcene mainstem was a little upstream from the Fish Hatchery. Dense populations were found half a mile downstream from the Hatchery and they continued intermittently to the mouth. One site was found on Penny Creek, about 3 miles upstream from its confluence with the Big Quilcene. The owner had been controlling it for many years but had not succeeded in eliminating it. No knotweed was found further upstream on Penny Creek.

Data points were added to ArcView and landowner information extracted. All landowners with knotweed were written to and about half of those contacted (13 out of 28) signed and returned the Landowner Agreement.

A knotweed crew from Clallam County spent four days injecting and spraying, starting with the furthest upstream location.

In 2009 work continued. All landowners with knotweed who had not already given permission were written to again and by mid-season all but two had signed the landowner agreement. We were especially pleased to get permission from Washington Department of Fish and Wildlife, to treat the large infestations near the mouth.

A crew from Clallam County Noxious Weed Control Board, consisting of three to five people, spent 7 full days on the Big Quilcene spraying knotweed. Previously treated sites were re-treated and the mouth and other sites were treated for the first time. Because knotweed patches at the mouth were so large the crew was unable to fully treat each patch, but “ringed” each one, treating all that they could reach from the outside.

Restoration work (engineered log jams and channel diversion) was begun in 2008 on land owned by the Skokomish Indian Nation, a little downstream from the Federal Fish Hatchery, on a site with knotweed. We were unsuccessful in getting permission to treat that site in 2008, but were able to treat in 2009, with help from a Tribal crew.

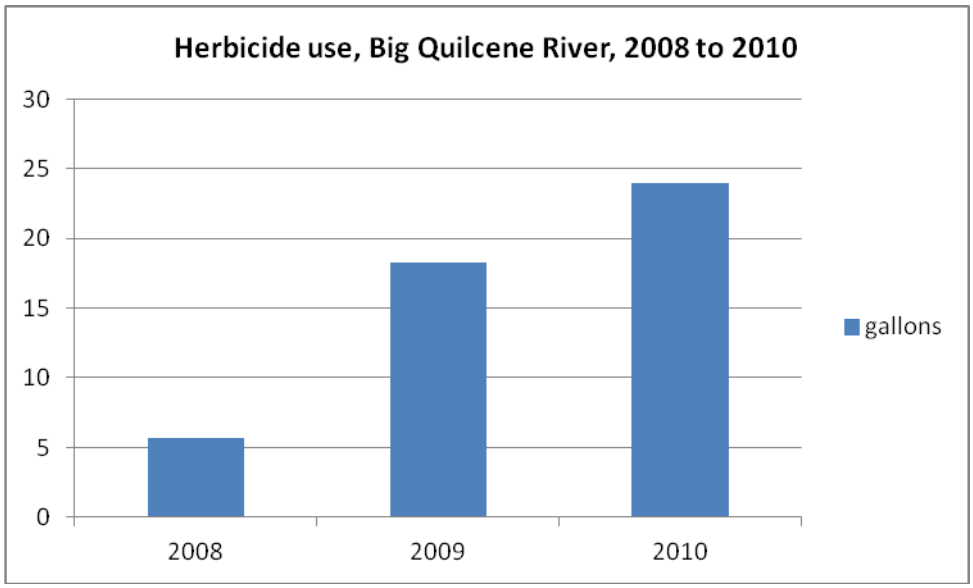
A valuable partnership was formed in 2009 when JCNWCB and several other groups, including North Olympic Salmon Coalition, Jefferson Conservation District, Hood Canal Coordinating Council and the Hood Canal Salmon Enhancement Group jointly hired a WCC crew for riparian work. The crew spent one day in early October spraying and injecting small knotweed sites on the Big Quilcene, including a County Park.

Some sites on the Big Quilcene are still untreated and almost all of those treated will need at least one re-treatment, especially because the larger ones were not fully treated but “ringed”. However, progress is being made.

In 2010 the East Jefferson WCC crew spent 19 days treating knotweed on the Big Quilcene and thoroughly treated every site. Some knotweed stands were still huge, having only been “ringed” in 2009, and some sites were treated for the first time in 2010. We believe that this year saw great progress in controlling knotweed on the Big Quilcene River and feel extremely fortunate that even if WSDA funding is not available in 2011, other funding will allow treatment to continue.

Herbicide Use, Big Quilcene River (gallons)			
	2008	**2009**	**2010**
Acres Treated	13	55.75	42.75
AquaNeat injected :	2.06	0	0
AquaNeat sprayed	3.6	18.291	31.43
Polaris sprayed	0	0	0.94
Total Herbicide	**5.66**	**18.291**	**24.1**

"Acres Treated" 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. The discrepancy between acres treated in different years may be due to different counting methods being used. It is likely that more acres were treated in 2010 than in 2009, even though the spray records do not reflect this.



Herbicide use increased as more sites were treated

LITTLE QUILCENE RIVER

Crews

Treatment—East Jefferson WCC crew, led by Owen French

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 and agricultural use and timber harvest. The lower 0.8 miles have been diked and the banks armored to protect property 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 the salt marsh—important to young salmon because it offers food and protection from predators.

The Hood Canal Salmon Enhancement Group (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.

In 2009 HCSEG noticed knotweed growing near the mouth and asked JCNWCB for help in removing it. (Although they are well equipped and have their own licensed applicators, HCSEG's NPDES permit did not cover work on the Little Quilcene.) Permission had to be obtained from another landowner near the mouth, and two other sites close to irrigation ditches that flow into the Little Quilcene were all treated on the same day.

In 2010 the East Jefferson WCC crew sprayed the remaining knotweed near the mouth of the Little Quilcene River. Only a small amount remained.

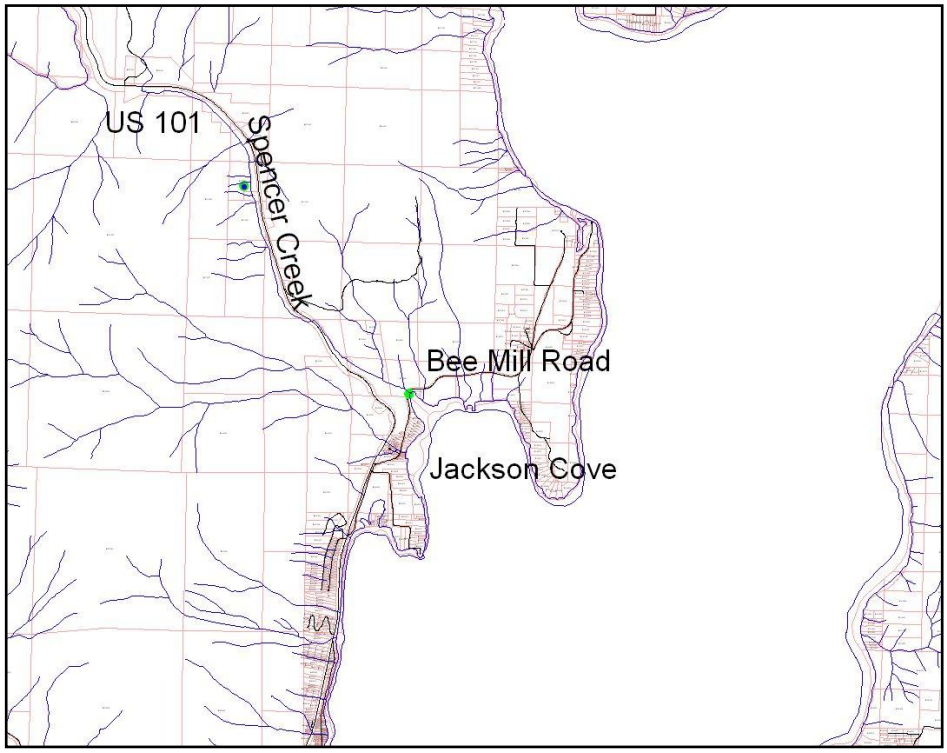
Herbicide use, Little Quilcene River (gallons)		
	2009	**2010**
Acres Treated	5.25	0.5
AquaNeat sprayed	0.6	0.1
Total Herbicide	**0.6**	**0.1**

SPENCER CREEK

Crew

Treatment—Ben Eyestone, Angela Fletcher and Eve Dixon (CCNWCB)

Spencer Creek is a comparatively short waterway that flows into Jackson Cove in the northwest section of the Hood Canal. One residence on Spencer Creek (visible from Highway 101) had been known for several years to have a large knotweed infestation. The owner signed a Landowner Agreement at the end of 2007.



Bright green indicates known knotweed sites. Blue indicates treatment in 2010.

In 2008 the CCNWCB/JCNWCB crew spent approximately two full days on the Spencer Creek site.

In 2009 the CCNWCB crew spent another half day spraying knotweed on the Spencer Creek site. The site is so overgrown that access to plants is difficult and time-consuming. Plants there have not been fully treated and return visits will be necessary.

In 2010 the CCNWCB crew spent two full days treating the Spencer Creek site. In many areas only small, scattered plants were left, but additional patches were found hidden in the woods (and treated). Good progress has been made on this site but follow-up monitoring and treatment will be necessary. Many plants are in the creek, where the landowner cannot treat them.

In September an infestation was found at the mouth of Spencer Creek. Landowners were identified and written to, asking for permission to treat. This has not yet been received, but will be followed up on in 2011.

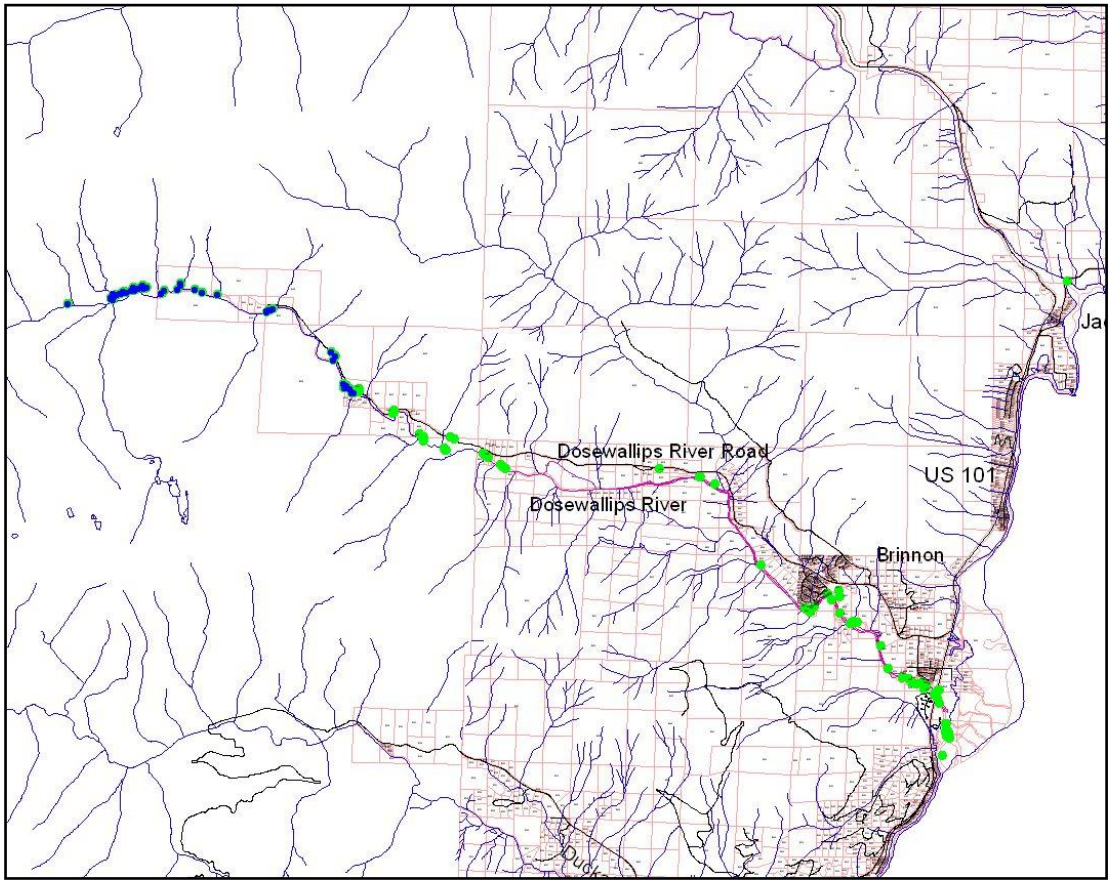
Herbicide Use, Spencer Creek (gallons)			
	2008	**2009**	**2010**
Acres Treated	5.75	4	6.5
AquaNeat injected :	0.5	0	1.8
AquaNeat sprayed	1.07	0.7	1.5
Polaris sprayed	0	0	0.25
Total Herbicide	**1.57**	**0.7**	**3.55**

DOSEWALLIPS RIVER

Crew

Treatment—CCNWCB, JCNWCB and the East Jefferson WCC crew, led by Owen French (funded by NOSC, with a SRFB grant).

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. Land use of the remaining 7% is rural residential, commercial, and private forested land. The Dosewallips River supports Chinook, steelhead and Hood Canal Summer Chum, the last of which are listed as Threatened under the ESA.



Bright green indicates knotweed sites surveyed and recorded in 2010. Blue indicates treatment in 2010.

In 2006 Jefferson County Noxious Weed Control Board (JCNWCB) surveyed the Dosewallips. CCNWCB provided training, herbicide and equipment. They recorded eight knotweed sites and acquired seven Landowner Agreements. Many properties on the Dosewallips are vacation rentals or second homes, making landowner contact difficult. It was especially difficult to contact the owner of a knotweed site covering several acres, very close to the National Forest boundary. All sites with Landowner Agreements in place were treated, including a site at the Dosewallips State Park.

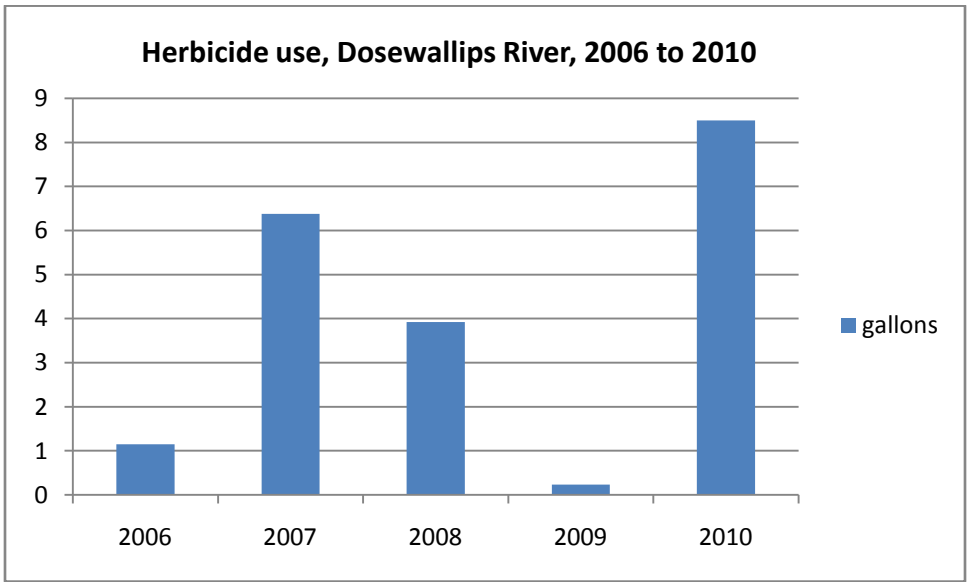
In 2007 contact was made with the owner of the large knotweed site and she was extremely willing to have her knotweed treated. This site was treated twice by a combined JCNWCB/CCNWCB crew. All other sites were monitored and treated as necessary, except for the Dosewallips State Park, because it was believed that park staff were treating it. Knotweed was seen on Forest Service land but could not be treated at that time because the agreement with the Forest Service did not allow herbicide use in the area.

In 2008 all previously-treated sites were re-visited and treated where necessary. Knotweed populations on the site near the Forest Service boundary were much reduced but will still take several years to eliminate. Another landowner will dig her few remaining plants. The Dosewallips State Park site was re-visited. It had not been controlled by park staff so after getting permission, the CCNWCB crew treated. The Forest Service allowed us to use herbicides on the Dosewallips for the first time and our crews treated two knotweed sites on FS land.

In 2009 we re-treated several sites, including the US Forest Service and Dosewallips State Park. All sites on the Dosewallips have now been treated for several years and knotweed plants are much reduced in size and number.

In 2010 the WCC crew did a thorough survey of the Dosewallips, finding more sites than previously thought existed. The furthest upstream site was higher than any found before, on Forest Service land. The Forest Service gave permission to treat and the WCC crew treated it. The county weed board crews treated some small sites on the Dosewallips River Road, both on and off National Forest land. The WCC crew has funding for at least one more year, so treatments on the Dosewallips can continue whether or not more funding from WSDA is available. WSDA funding has been very valuable in leveraging other funding.

Herbicide Use, Dosewallips River (gallons)					
	2006	**2007**	**2008**	**2009**	**2010**
Acres Treated	2	5	7.75	5.5	14.05
AquaNeat injected	0.77	3.175	0.8	0	0
AquaNeat sprayed	0.375	3.2	3.12	0.234	8.48
Polaris sprayed	0	0	0	0	0.02
Total Herbicide	**1.145**	**6.375**	**3.92**	**0.234**	**8.5**

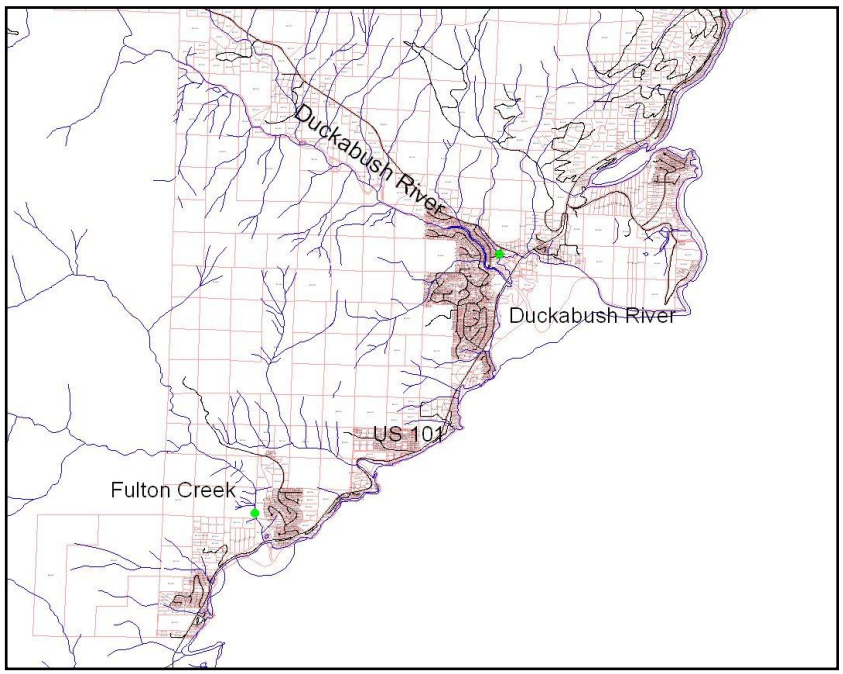


Much more treatment was done on the Dosewallips in 2010 and the herbicide records reflect this.

DUCKABUSH RIVER

Crew

Treatment— Eve Dixon, Ben Eyestone and Angela Fletcher (CCNWCB)



Bright green dots indicate sites treated on the Duckabush River and Fulton Creek in 2010

The Duckabush is one of the major waterways in Jefferson County, flowing into the Hood Canal a little south of the town of Brinnon.

In 2006 windshield and foot survey was conducted on the Duckabush River, starting within the U.S. Forest Service boundary where a vehicle had access on Duckabush River Road. Further downstream, a foot survey was conducted at the mouth. No knotweed plants were found.

In 2007 a landowner near the mouth of the Duckabush called to say he had knotweed. He signed a Landowner Agreement and JCNWCB treated the knotweed.

In 2008 JCNWCB re-treated the site. At least 20 plants remained but they were less than 3 feet tall and all were treated by the wipe method, using 0.015 gallons of Aqua Neat

In 2009 no work was done on or near the Duckabush.

In 2010 the one known site near the mouth was re-treated. Only 0.003 gallons of herbicide were used, but the plants were surprisingly large and should be checked for several years. This is one site that the landowner cannot treat, because the plants are growing in water so it will have to be done by a licensed aquatic applicator.

FULTON CREEK

Crew

Treatment— Eve Dixon, Ben Eyestone and Angela Fletcher(CCNWCB)

In 2009 a landowner on Fulton Creek who had heard about our program called to ask if we could treat their knotweed. The landowner was, of course, happy to sign an agreement and the crew spent half a day treating it.

In 2010 the patch was much reduced and we re-treated. This is one infestation that can safely be turned over to the landowner for control because remaining plants can be sprayed without herbicide getting into water.

HOH RIVER

The Hoh watershed consists of 300 square miles and is famous for wild stocks of winter steelhead, fall coho, and spring/summer and fall run Chinook salmon. Loss of large woody debris in the mainstem river channel and tributaries has contributed to numerous riverine habitat impacts including sedimentation from riverbank erosion, as well as reduction of large pools. 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.

The Hoh River knotweed infestation initiated from a single source in 1999. By the end of 2003, 18,585 canes in 1,247 sites widely dispersed over 20 river miles had been documented and treated, and more canes documented in the 10 river miles to the mouth. Subsequent follow-up surveys and re-treatments of the entire 30 mile river corridor in 2004 were conducted by the 10,000 Years Institute in partnership with the Hoh Tribe, and the Olympic National Park (ONP), with access provided by private landowners, the USFS and Department of Natural Resources.

In 2005 and 2006, the 10,000 Years Institute and the Hoh Tribe treated 29.8 miles of the river, down to the river mouth, where a small patch was treated by Olympic National Park staff. A crew from the State's Department of Corrections (DOC) conducted intensive grid-surveys under the supervision of 10,000 Years Institute in 2005. Additional equipment, supplies and a crew were provided by CCNWCB in 2006. Most of the plants found and treated were only 1-3 feet tall due to previous treatments. Five new sites with fairly large knotweed patches (100-200 ft^2) were treated.

In 2007, river miles 27 to 17 (913 acres) were surveyed and treated by 10,000 Years Institute with a DOC crew. ONP re-treated the 1/3 acre patch at the river's mouth. A total of 1.23 gallons of Aquamaster was used on 2,468 canes. Data collected in 2007 supported the observation that the downward trend in size and distribution of the knotweed infestation continued from 2006.

In 2008, 10,000 Years Institute continued to work with a DOC crew, in partnership with the Hoh Tribe, landowners, the county NWBs, and ONP. Unfortunately the available crew was smaller than in previous years (4-7 people), making it difficult to cover enough ground. Two large bars in the lower river (Nolan and Cottonwood) were also surveyed and treated where only 1 tiny plant was found at Nolan and 4 small plants at Cottonwood. Most plants found in 2008 had only one or two stems and were under three feet and total canes decreased to 2068. Most plants were Bohemian knotweed, but a few plants with very large leaves assumed to be giant knotweed were observed for the first time in the upper watershed. The 1/3 acre patch at the river's mouth on the north side of the river is giant knotweed. Most previously-treated sites did not have re-sprouting material.

I**n 2009** work continued, with a 5-person crew of field professionals and interns who searched intensively for knotweed plants on the river terraces, bars and log jams to RM 17. More large-leaved plants were observed. Herbicide use decreased along with a decrease in total plant mass. However, recently-sprouted plants were observed as late as mid-October—coming up through river-deposited substrates.

In 2010 work on the Hoh continued. 10,000 Years Institute hired a trained crew from the Pacific Salmon Coalition. The table below shows that herbicide use increased considerably but at the point of writing this report no explanation was available. North Cascades Exotic Plant Management Team with the National Park Service treated within their jurisdiction, treating 0.02 acres, using 0.012 gallons of herbicide.

Herbicide Use, Hoh River, (gallons)			
	2008	2009	2010
Acres Treated in 15 River Miles	1093	1000	Data not available
AquaMaster or AquaNeat Injected	0.0151	0.188	0.25
AquaMaster or AquaNeat Sprayed	0.5645	0.13	0.78
Polaris Sprayed	0.06382	0.043	0.206
Total Herbicide	**0.64342**	**0.361**	**1.247**

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

Appendix I—Herbicide Use

Organization	River or Location	Gallons Used 2006	Gallons Used 2007	Gallons Used 2008	Gallons Used 2009	Gallons Used 2010
Quinault Indian Nation crew and NCEPMT with NPS	Neilton Creek, Prairie Creek and the Lower Quinault watershed	N/A	N/A	N/A	N/A	**12.652**
Quileute Nation & NCEPMT with NPS	Quillayute, Dickey, Calawah & Bogachiel Rivers	101.5	43.97	43.125	98.63	**69.55**
CCNWCB & NCEPMT with NPS	Big River and Hoko-Ozette Road	65.39	5.14	2.181	5.12	**3.174**
CCNWCB	Sekiu River	10.98	0.3	1.767	0.609	**2.35**
CCNWCB	Hoko River	2.6	4.23	2.516	1.541	**0.56**
CCNWCB	Sekiu, Clallam Bay and Hwy 112	17.9	9.79	3.28	0.605	**0.5**
CCNWCB	Clallam River	0	35.09	3.28	2.58	**0.93**
CCNWCB and Merrill and Ring	Pysht River	1.2	0.72	0.005	0.005	**0.01**
CCNWCB & NCEPMT with NPS	Sol Duc River (mid)	14.05	12.725	7.636	1.627	**0**
CCNWCB	Lake Creek, Lake Pleasant and Beaver	0 (not separated from Sol Duc)	27.09	0.82	1.062	**0**
Quileute Nation	Sol Duc River (lower)	0	9.656	6.67	0.945	**1.26**
CCNWCB	Forks	2.5	4.25	1.662	0.468	**0**
CCNWCB	Valley Creek	2.3	1.52	0.063	0.023	**0.01**
CCNWCB	Peabody Creek	0	0	0	1.98	**0.14**
CCNWCB & NCEPMT with NPS	Ennis Creek	0	0.68	1.34	1.91	**3.641**
Jamestown S'Klallam Tribe	Dungeness River	30	<2	1.5	0	**0**
JCNWCB & CCNWCB	Snow Creek and Salmon Creek	0.745	0.408	1.33	1.714	**0.43**
JCNWCB	Port Townsend and other Jefferson County sites	0	0	2.212	0.49	**1.047**
JCNWCB, CCNWCB, HCSEG & East Jefferson WCC Crew	Big Quilcene River	0	0	5.66	18.291	**32.37**
East Jefferson WCC Crew	Little Quilcene River	0	0	0	0.6	**0.1**
JCNWCB & CCNWCB	Spencer Creek	0	0	1.57	0.7	**3.55**
JCNWCB, CCNWCB & East Jefferson WCC Crew	Dosewallips and Duckabush Rivers,	1.145	6.375	3.92	0.234	**8.503**
JCNWCB & CCNWCB	Fulton Creek	0	0	0	0.5	**0.11**
10,000 Year Institute & NCEPMT with NPS	Hoh River	2.36	1.23	0.643	0.361	**1.247**
Mason County Noxious Weed Control Board*	Skokomish River and others	N/A	N/A	N/A		**17.57**
Hood Canal Salmon Enhancement Group	Union, Dewatto and Tahuya	N/A	N/A	N/A	25.56	**27.16**
TOTAL		**260.49**	**169.66**	**92.331**	**165.6**	**186.864**

NCEPMT with NPS = North Cascades Exotic Plant Management Team with the National Park Service

*Other groups including Mason County Conservation District, Cascade Land Conservancy, WCC and the City of Shelton controlled knotweed in Mason County but their herbicide figures were not available in time to be included in this report.

Appendix II—Table of all Landowner Agreements

Watershed	Existing Agreements	New Agreements, 2010	Number of Parcels	Note
Big River and Hoko-Ozette Road	20	0	43	
Sekiu River	8	1	12	A landowner who had refused permission for years finally gave permission to treat
Hoko River	7	1	34	The large number of parcels is because two timber companies and Washington State Parks all hold multiple parcels
Sekiu, Clallam Bay and Highway 112	49	0	68	
Clallam River	13	1	21	A landowner who had refused permission for years finally gave permission to treat
Pysht River	1	0	2	
Sol Duc River	39	0	93	
Lake Creek, Lake Pleasant and Beaver	10	0	25	
Forks	22	0	30	
Valley Creek	1	0	1	
Peabody Creek	4	6	18	
Ennis Creek	14	14	49	
Snow Creek	9	0	10	
Port Townsend	1	0	7	
Big Quilcene River	20	0	29	
Little Quilcene River	4	0	4	
Spencer Creek	1	0	1	
Dosewallips River	8	11	33	
Fulton Creek	1	0	1	
Total	**232**	**34**	**481**	

Note that because some of our agreements cover multiple watersheds we have tried not to falsify the record by counting agreements twice. For example, if Rayonier has parcels in both the Big River and the Hoko River, that agreement has been counted only once.

Appendix III—Workshop Poster

GOT KNOTWEED? WANT TO GET RID OF IT?

Clallam County is offering FREE workshops to help you

Knotweed is one of the toughest, nastiest weeds around and it is VERY hard to get rid of. It crowds out native plants, destroys fish and wildlife habitat, interferes with recreation and can ruin your septic or other structures. Fighting it without the right equipment can be frustrating. This workshop will give you the knowledge and tools you need.

Dates and Locations:

August 4, 5:00 to 7:30 pm
Sekiu Community Hall
42 Rice Street
Sekiu WA 98381

August 19, 5:30 to 7:30
Sportsman's Club
Sportsman's Club Road
Forks WA 98331

Find out:

- **How knotweed grows and spreads**
- **What methods you can use to control knotweed**
- **How to borrow tools (sprayers or injection guns) and get herbicide to use to control knotweed on your own land**

This is a hands-on workshop with practical knotweed control tips. Participants will be able to borrow stem injectors or backpack sprayers, and to receive herbicide for knotweed control on their property. Pesticide licensing credits have been applied for.

Please contact us if you are interested in attending, or if you would like more information:

360-417-2442
edixon@co.clallam.wa.us

Appendix IV—Handout for Landowners

NOTES FOR KNOTWEED LANDOWNERS

- Knotweed is very fast growing and invasive.
- A small fragment of root or stem can give rise to a whole new plant; therefore knotweed fragments should NEVER be thrown into waterways or put into compost piles.
- Knotweed can grow though concrete; it can damage septic fields and structures.
- As long as plants are not in water landowners can control knotweed themselves. (See the handout, Control Instructions for Invasive Knotweeds).
- Equipment (hand and backpack sprayers and injection guns), and herbicide, will be available to people who take our training. The herbicide will be pre-mixed, to a concentration suitable for knotweed. This should NOT be used for any other purpose. It is too strong for any other kind of weed control.
- Landowners can use their own herbicide if they wish—RoundUp, Garlon and Crossbow are all suitable, but make sure it is strong enough. Pre-mixed RoundUp (the one that comes with the sprayer already on the bottle) is not concentrated enough. Read and follow all label directions.
- If you find plants in or very close to water, they may have to be sprayed by a licensed applicator, possibly with a special permit. Call or email us and we may be able to schedule a crew to come out and treat it for you.
- If you know someone with knotweed, encourage them to contact us!
- We can arrange more training sessions like this one if at least five people sign up. Contact us to schedule a date.

Equipment and herbicide will be available at four different locations:

- **The Cowan Ranch, 515 Hoko Ozette Road, Clallam Bay, WA 98326**
  Email or call Bill Drath (drathwa@aol.com or 360-963-2913) to arrange a time to pick up
- **Pacific Salmon Coalition in Forks**
  Email or call Carl Chastain (pacsac@olypen.com or 360-640-2195) to arrange a time to pick up.
- **Clallam County Courthouse, 223 East 4th Street**
  Email or call Eve Dixon (edixon@co.clallam.wa.us or 360-417-2442) to arrange a time to pick up.
- **Jefferson County Conservation District, 205 West Patison, Port Hadlock WA 98339**
  Email or call Jerry Clark (JClarke@jeffersoncd.org or 360-385-4105) to arrange a time to pick up.

Contact Information

Clallam County Noxious Weed Control Program
223 East 4th Street Suite 15
Port Angeles WA 98362
360-417-2442
edixon@co.clallam.wa.us

Jefferson County Noxious Weed Control Program
201 West Patison
Port Hadlock WA 98339
360-379-5610 ext 205
edixon@co.jefferson.wa.us