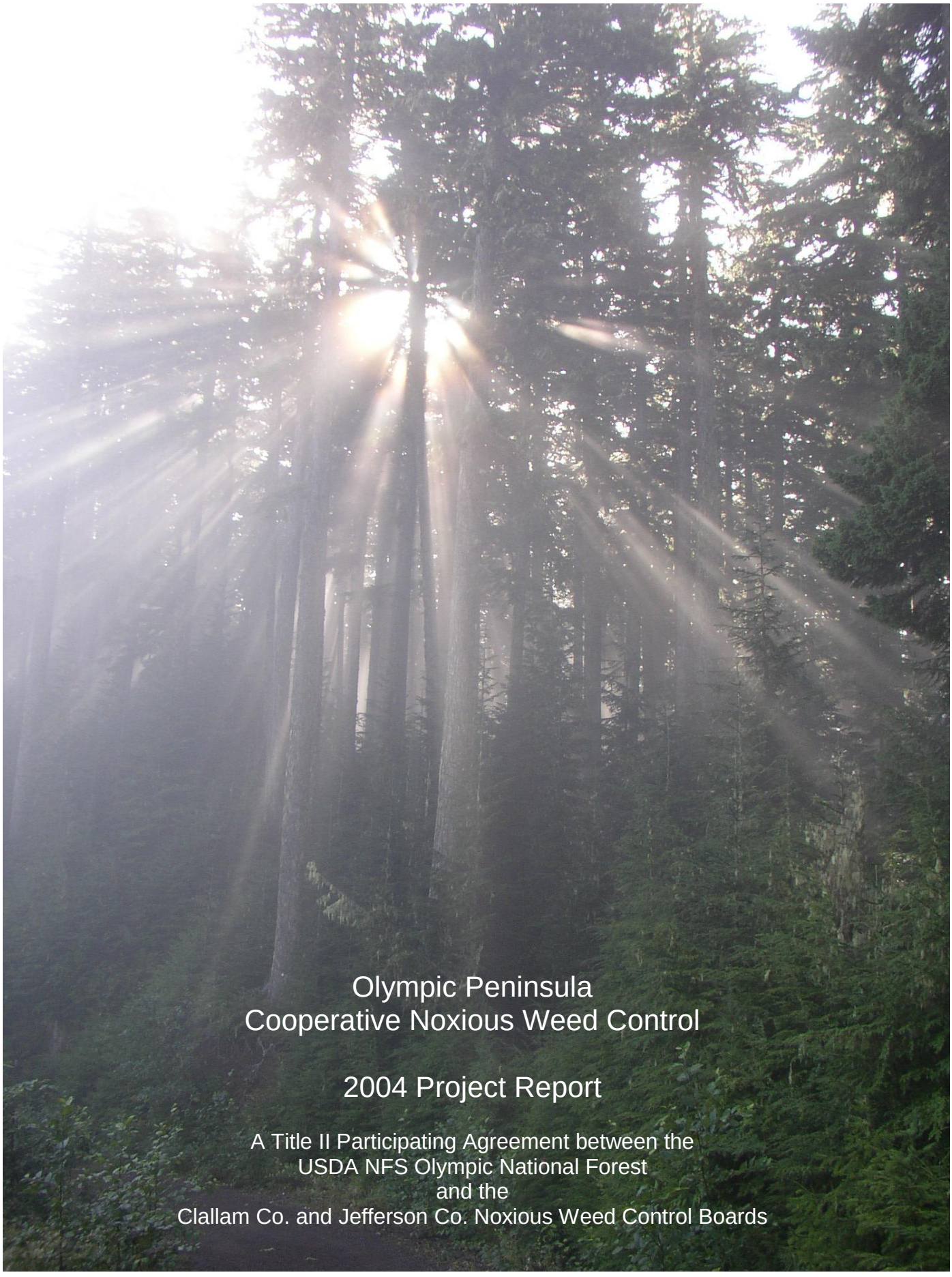

Olympic Peninsula
Cooperative Noxious Weed Control

2004 Project Report

A Title II Participating Agreement between the
USDA NFS Olympic National Forest
and the
Clallam Co. and Jefferson Co. Noxious Weed Control Boards

Report compiled by:

Clallam County Noxious Weed Control Board
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November 2004

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- Representative Norm Dicks
- Senator Patty Murray

Washington Conservation Corps
- Nick Mott
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* Received Executive Summary only

Acknowledgements

We'd like to acknowledge the support and cooperation from the following people and organizations. Thanks for all your hard work!

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Executive Summary

Project Goal:
The goal of this project is to stop the spread of noxious weed species, reduce existing populations, and prevent the introduction of additional invasive plants throughout Clallam and Jefferson Counties. The objective is to coordinate and standardize weed control efforts across many jurisdictional boundaries to more effectively minimize the negative impacts of noxious weeds on watershed functions, wildlife habitat, human and animal health, and recreational activities. Work on this project began in 2002. In 2004, we have defined the scope of the problem and have focused on developing control plans, implementing treatments, and monitoring those areas where treatment has occurred.

Project Description:
This project is a comprehensive program for noxious weed control on the north Olympic Peninsula. Included are activities to survey, identify, and control noxious weeds, to coordinate action and communication between local, state and federal jurisdictions, and to raise public awareness of the impacts imposed by noxious weeds.

On federal lands, the project involves monitoring sites previously identified in the 1998 Olympic National Forest Integrated Weed Management Program Environmental Assessment (EA), surveying and marking additional areas for noxious weed control, and developing a comprehensive control plan while implementing currently approved treatments, as resources allow. All noxious weed sites are mapped into Arcview GIS projects and entered into the Forest Service NRIS TERRA database.

This project implements control measures using the most effective treatments in accordance with the Forest Service EA and state/county guidelines on state land and county rights-of-way. The focus is on areas where uncontrolled noxious weed populations on federal, state, county, and private land are spreading and hindering control activities elsewhere. Clallam and Jefferson County Weed Boards provide the vital link to private landowners whose weeds threaten federal lands. Emphasis on Forest Service land goes to controlling noxious weeds on roads, in campgrounds, at trailheads, and in gravel pits. Due to heavy use or off-site movement of potentially infested materials, these areas serve as the primary source of new weed invasions into wilderness areas and between various land ownerships. In addition to the Weed Board survey team, the Clallam County Sheriff's/Road Department Chain Gang and Washington Conservation Corps (WCC) perform control measures.

In 2004, the project focus was to:
1. INCREASE the amount of control work
2. MONITOR control work done previously to evaluate effectiveness
3. SURVEY any NFS roads not already surveyed

2004 Project Summary:
The number of staff/participants, the amount of time devoted to this project, and tasks completed were:
- 1 Supervisor, 4 hrs./week, 9 months
  - Supervised the project
  - Provided technical information and support
  - Gave 3 noxious weed informational presentations to Forest Service administrators and staff
- 1 Survey/monitor team: 2 people, one 40 hrs./week for 9 months and one 40 hrs./week for 5 months
  - Recorded 147 new noxious weed sites
  - Surveyed 183 miles of roads
  - Removed 11,716 noxious weeds
  - Entered all sites into the Forest Service NRIS TERRA database
  - Mapped all sites into ArcView GIS
  - Trained and managed the WCC crew during 8 weeks of control work
  - Developed noxious weed educational posters and hung them on campground and trailhead kiosks
  - Created an annual season-end report
- WCC crew: 1 supervisor, 4 crew members, 8 weeks/year, 40 hrs./week
  - Removed 1,166,200 weeds
- Clallam Co. Sheriff's/Road Department Chain Gang, 8 weeks, 40 hrs./week
  - Removed 112,858 weeds

Executive Summary, continued

2004 Project Conclusions:

- In 2004 the majority of the new sites documented had Tansy ragwort infestations (44 sites), followed by Scotch broom (36 sites) and Herb Robert (25 sites). We have increasing concern over the amount of Herb Robert we are finding. Increased efforts (researching control methods, performing control measures, monitoring, and surveying) need to be made against this weed in 2005.
- The tools currently available for noxious weed control are inadequate for the scope of the problem in the Olympic National Forest. The sheer magnitude of the noxious weed problem requires that herbicide be utilized to reduce weed infestations to a scale where other control methods would be effective and/or appropriate.
- Additional funding will need to be secured for expanded control activities.
- We need to be involved in the development of a Forest-level Weed Control Management Plan Environmental Impact Statement.
- Participating Agreement partners need access to the NFS NRIS TERRA database – including training on software upgrades and enhancements.
- At the beginning of the 2005 survey & control season, one data collection software tool (or suite) should be selected. This should then be used exclusively throughout the season to ensure data consistency and reduce time wasted.
- Early detection and prevention must be emphasized. This allows for the greatest number of control options to be considered.
- Monitoring control efforts (with proper timing) is important!
- Restoration must be part of a weed control plan.
- Continued systematic surveys are vital for identifying new or early infestations.
- This project focus is roads, campgrounds, trailheads, and gravel pits. Consequently, noxious weed infestations in more remote areas (those not accessible by truck) are not being discovered or addressed.
- To thoroughly address the far west end of Clallam and Jefferson Counties, a spike-out crew is needed. This crew could survey the more remote roads and perform small control projects.
- WCC crews will need to be licensed for herbicide application.
- Japanese, Giant, and Bohemian knotweed should be a high priority for control.
- Informational posters need to be placed in Pacific District campgrounds and trailheads.
- Manual control of Herb Robert is only appropriate for very small infestations. Other control methods for this weed need to be explored including, but not limited to, herbicide use, burning, mulching, and foam/steam applications.

2004 Data Collection Protocols

1. **Team/Project Dates**
   There was one data collection team: Carol Dargatz and David Freed. Fieldwork began on April 8, 2004 and continued through September 28, 2004.

2. **Invasive species for which we surveyed**
   We surveyed for Class A and B-designate weeds listed by the WA State Noxious Weed List (see Appendix I for list). In most cases Class C and non-designate Class B weeds were only documented when an infestation was in a site of particular concern (e.g. a Botanical Area) or when the infestation was of notable size. Other non-native species that were conspicuously out-of-place were noted. Additional species of concern were added by FS staff – for a list of species see Appendix B). Surveys were not intended to document all non-native species.

3. **Data reporting**
   We used the "Olympic NF Invasive Plant Inventory Data Collection Form" (hereafter referred to as "survey form"), that was modified slightly for ease of use and so the form could be used for collecting county noxious weed data as well as for FS data. A copy of the survey form follows this protocol list.
   a. GPS lat/long readings were recorded where accurate readings were available; otherwise the Legal Description of Township, Range, Section, Qtr. Section, and Qtr. Qtr. Section was used.
   b. We used a FS-supplied Suunto compass and clinometer to read aspect and slope. Elevation was reported from a GPS reading, a FS-supplied altimeter, or off the "brown line" NFS maps. Site comments include a milepost number when we were able to determine it, or distance (in miles) from the specified beginning of the road (e.g. "north end") as well as any other notable characteristics (e.g. "at turnout").
   c. Distance to water was estimated visually or by use of NFS map.
   d. Daubenmire Cover Class codes were used to record weed canopy cover – this was a subjective measurement.
      i. T 0 - 1%
      ii. 1 1 - 5.0%
      iii. 2 5.1 – 25.0%
      iv. 3 25.1 – 50.0%
      v. 4 50.1 – 75.0%
      vi. 5 75.1 – 95.0%
      vii. 6 95.1 – 100%
   e. Formula used for determining Gross Area:

$$\frac{5280 \text{ (ft/mile)} \times 10 \text{ feet (width surveyed)} \times \text{infestation length (in miles)}}{43560 \text{ (sq. feet per acre)}}$$

   f. Infested area is determined by multiplying the Gross Area by the Daubenmire Cover Class %:
      11.6 acres (Gross Area) x 25% (Cover class %) = 2.9 acres (Infested Area)

4. **NRIS RangelandPC data entry:**
   a. Site ID field (30 characters) contains:

Year	YYYY
Month	MM
Day	DD
Township	TT
Range	RR
Section	SS
Qtr. Section	QQ
Road ID	XXXXXXX
Weed Code	XXXXXXX

      Site ID Example: 20040917241001SE2170000CIVU
   b. The Road ID for trails surveyed is a "T" and the trail number. Ex: T823.

2004 Data Collection Protocols, continued

c. The Road ID for botanical areas surveyed is the name of the BA abbreviated. Ex: SFCRBA = South Fork Calawah River Botanical Area.
d. Regardless of whether a good GPS reading was available, location was always entered into NRIS using the legal description of township, range, section, Qtr. section, and Qtr. Qtr. section.
e. In most cases, estimating Infested Area did not allow for an accurate representation of the weed site because we were consistently dealing with infested areas less than 1/10th of an acre (the minimum required in the field). Consequently, the Infested Acres amount is often an inflation of the actual weed site.

5. Road surveying/monitoring (see Appendix A):

a. Roads were, for the most part, "windshield" surveyed.
b. Trailheads, campground parking areas, gravel pits were surveyed on foot.
c. In general, 5 feet on both sides of every road was surveyed.
d. On each road surveyed, all gravel pits, emergency road repair areas (ERFOs), and radio tower sites were also surveyed, if found.

6. Arcview plotting:

a. Sites were plotted as points for individual sites. Where practical, multiple sites on a road of the same species were turned into a linear polygon. Each point or polygon was identified with its Site ID.
b. There is a separate layer (shape file) for each weed species.
c. Polygons were drawn on a separate layer – one layer for each species.
d. Point and polygon layers were joined with the database (table) from the NRIS TERRA system.

7. Estimating WCC work for 2005 (see Appendix F):

a. Work crew size assumed to be 5 members, including the crew supervisor.
b. Each "job" is estimated in crew hours.
c. A workday is 10 hours.
d. A workweek is 4 days.
e. Estimated time required for a job does not include travel time.
f. Estimated time required was based on how long it took to finish similar tasks in prior years.
g. Jobs are estimated for manual control only.

Invasive Plant Inventory Data Collection Form

Fill out one form for each weed. Include milepost reference. Site ID must be unique for each form.

Site ID: Region 06, Forest 09, District: (circle) 01 Hoodsport 03 Quinault 02 Quilcene 05 Soleduck

Twnshp (2): _____ Range (2): _____ Section (2): _____ Qtr. Section (2): _____ Qtr Qtr: _____ (NE, NW, SE, SW)

Initials (2): _____ Road ID (6): _____ Ownership: _____

Weed PLANTS Code (6): _____ *Common Name:*_____

Weed Class: A B+ Bs Date (MM/DD/YYYY):_____

Primary Examiner (Last, First, Middle Initial): _____

WA State County (Circle) 009 Clallam 031 Jefferson

Location at site:_____

Site Address: _____

Owner and Owner Address: _____

_____

Parcel #: _____ Site ID: _____ Database rcd#: _____

Previous Contact? _____ Contact? _____ Name:_____

Aspect (deg) _____ OR ALL Average Slope (%) ____

Elevation (ft) _____ min _____ max OR _____ average

Circle *Dominant Life Form

AL Algae, FB Forb, GR Graminoid, LC Lichen, NP Nonvascular plant, SH Woody shrub, SS Subshrub, TR Tree

3 Dominants	PLANTS Code	Scientific Name.
	_____	_____
	_____	_____
	_____	_____

Site Comments (Directions, description, aerial photo # and aerial photo date, etc)_____

_____

_____

_____

_____

Invasive Plant Inventory Data Collection Form, continued

Circle one each for phenology, life form, and distribution of the weed.

Phenology		Grasses		Forbs and Shrubs
	G1	Leaves Partially Developed, no heads	F1	Vegetative, rosette, pre-flowering
	G2	Inflorescence inside the sheath	F2	Flowering
	G3	Inflorescence partially or fully extended	F3	Fruiting
	G4	Seeds maturing or mature	F4	Senescent or dormant
	G5	Senescent or dormant		
	RG	Regrowth		

Life Form							
	AL	Algae	LC	Lichen	SS	Sub-shrub
	FB	Forb	LI	Woody liana	TR	Tree
	FU	Fungus	NP	Nonvascular plant	UN	Unknown
	GR	Graminoid	SH	Woody Shrub	VI	Herbaceous Vine

Distribution				
	CL	Clumpy	SE	Scattered even
	SP	Scattered patchy	LI	Linear

*Infested Area (acres) _____ Gross area (ac) _____

(Infested area is REQUIRED. Minimum size is 0.1 acre. Use Gross Area ONLY when portions of polygon are uninfested. Minimum Gross Area ≥ 1 acre. Gross Area x % of land occupied by weeds = Infested Area.)

*Weed Canopy Cover of Infested Area

Daubenmire Cover Class				OR		Estimated percent cover _____	
T	0 – 1%	2	5.1 – 25%	4	50.1 – 75.0%	6	95.1 – 100%
1	1 – 5.0 %	3	25.1 – 50.0%	5	75.1 – 95.0%		

Horizontal Distance to Water (ft) _____ Vertical Distance to Water (ft) _____

as crow flies, not slope distance

Associated Species	PLANTS Code	Scientific Name
	_____	_____
	_____	_____
	_____	_____

Comments: _____

_____

_____

_____

Map: **North**

2004 Forest Service Priorities

The task priority lists from Pat Grover (PG) from the Hood Canal District, and Debra McConnell (DMc) from the Pacific District became our work focus. The table below shows their priorities and our responses:

From Whom	Road	Weed(s)	Work Performed/Comments	Treatment Dates
PG	2610.000 (Dosewallips) at washout	Herb Robert	The survey crew spent two days manually controlling the Herb Robert, but this is not practical. This site is too large for manual control to be appropriate.	6/4/04 7/30/04 9/23/04 9/28/04
PG	Collins Campground	Herb Robert	Not treated in 2004.	
PG	Dungeness Forks Campground	Herb Robert	The survey crew spent two days at this site and the WCC crew put in 75 hrs. of effort on removing the Herb Robert at this campground. Manual removal of Herb Robert at this site is not practical. Another control method will need to be selected for future efforts. Educational posters were installed.	5/6/04 6/14/04 10/1/04
PG	Elkhorn Campground	Japanese knotweed	This campground is past the washout, and was not reached in 2004.	
PG	Falls View Campground	Herb Robert	The survey crew worked on manually removing the Herb Robert from the campground several times throughout the summer. Some progress was made, but earth-moving construction spread thousands of seeds in one area of the campground. This site will take lots of resources if manual control is the only tool used. Educational posters were installed.	5/13/04 6/24/04 9/2/04
PG	Rainbow Campground	Tansy ragwort	All weeds removed. Monitor in 2005. Educational posters were installed.	6/25/04
PG	Schmith Knob	Scotch broom	The survey crew spent 4 hours removing Scotch broom from this site, and then the WCC crew removed the remainder of the plants in 25 hours. We can anticipate many seedlings coming up in the future, so monitoring of this site is critical.	56/04 6/14/04

2004 Forest Service Priorities, continued

From Whom	Road	Weed(s)	Work Performed/Comments	Treatment Dates
PG	Seal Rock Campground	English Ivy Scotch broom Herb Robert Himalayan blackberry	All weeds removed from campsites. Scotch broom seedlings remain in the parking lot. Educational posters were installed.	6/25/04 9/23/04
DMc	2065.100	Herb Robert	Not reached in 2004, as distance is prohibitive.	
DMc	2100.000		Not reached in 2004, as distance is prohibitive.	
DMc	2170.000		Not reached in 2004, as distance is prohibitive.	
DMc	2900.000	Orange hawkweed Herb Robert Scotch broom	This is the Orange hawkweed control test plot, see Appendix H for details. The Herb Robert was removed by the survey crew, but needs to be monitored in 2005.	3/4/04, 4/4/04 4/8/04, 5/7/04 5/20/04 6/16/04
DMc	3000.000	Herb Robert Scotch broom	Chain gang worked here, and the WCC crew spent two weeks working on the Herb Robert	4/4/04 7/12/04- 7/29/04
DMc	3040.000 and spurs	Tansy ragwort Scotch broom	All weeds removed by the survey crew. Monitor in 2005.	7/28/04 8/26/04 8/27/04
DMc	3068.000	Tansy ragwort Scotch broom	All weeds removed by the survey crew. Monitor in 2005.	7/28/04 8/11/04 9/14/04
DMc	Snider Work Center	Herb Robert Japanese knotweed	Removal of Herb Robert was done by Chain gang although manual control is not practical. Control of Japanese knotweed needs to be re-evaluated. Herbicide use is recommended due to tenacity of this weed and the size of the infestation.	4/4/04 5/4/04
DMc	South Fork Calawah Botanical Area	Scotch broom Herb Robert Tansy ragwort Canada thistle	This Botanical Area was surveyed in 2003. No activity in 2004.	

Educational Component

Laminated “Weed Watch” posters have been created to educate the public regarding noxious weeds. These are being placed in campgrounds, at trailheads, and at ranger stations. Here is a sample of one of the posters created.

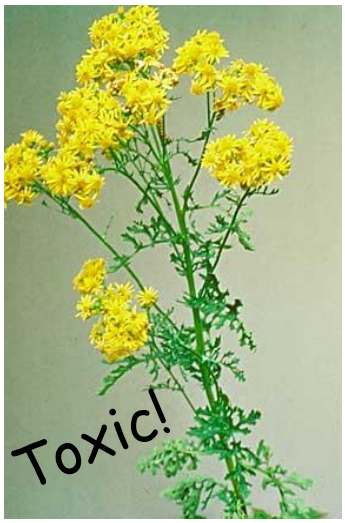
Noxious Weed WATCH!

Help keep our forests clean of invasive, non-native weeds!

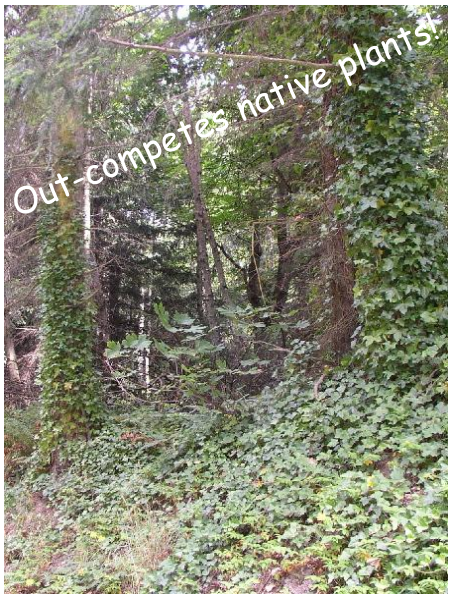
Don’t be fooled! This is our beautiful PNW native, Bleeding Heart.

Herb robert *(Geranium robertianum)*
a.k.a. “STINKY BOB”

Tansy ragwort *(Senecio jacobaea)*



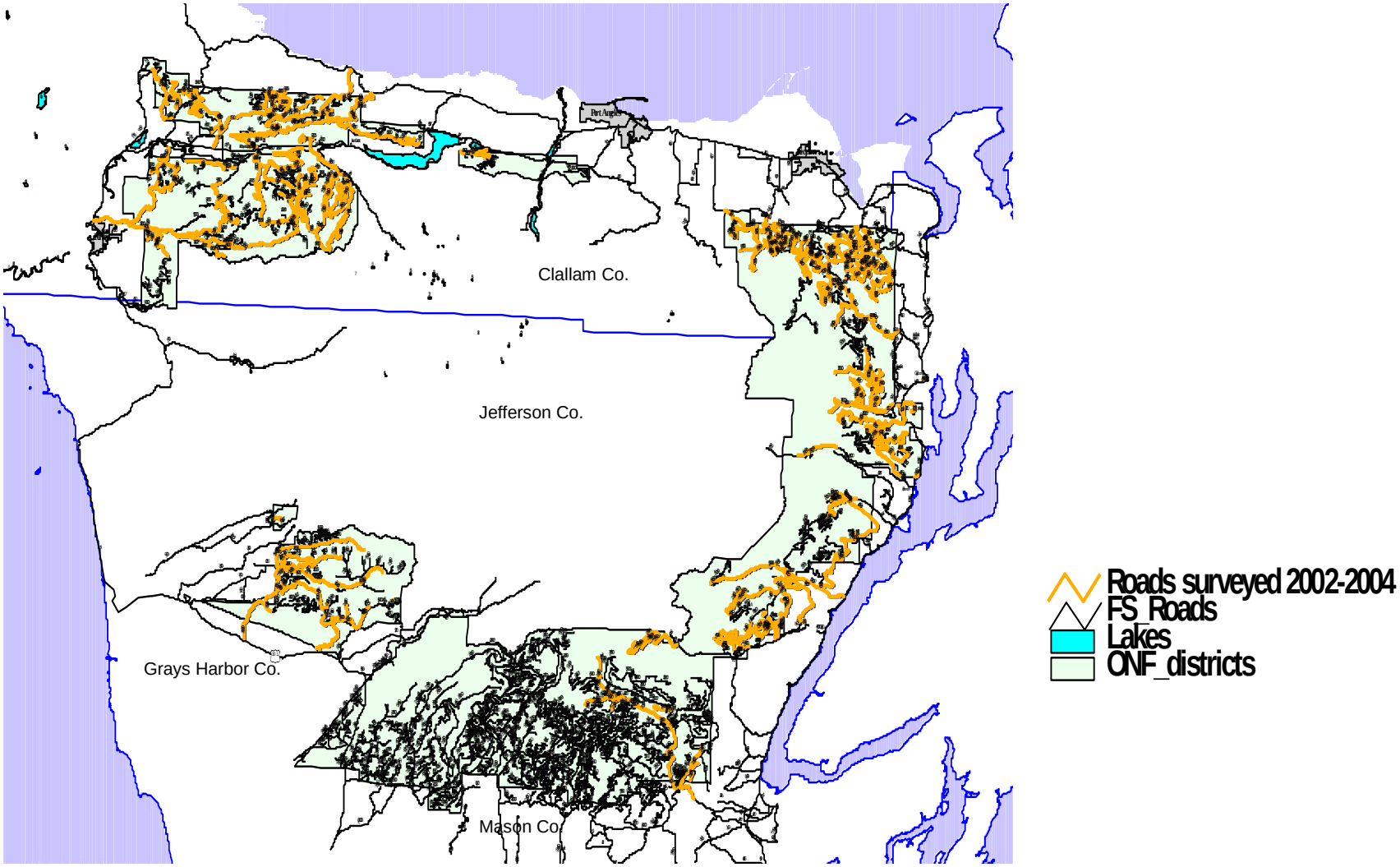
Fire Hazard!



English ivy *(Hedera helix)*

Noxious Weed Control is a Cooperative Project
between the Forest Service and the Clallam County & Jefferson County Noxious Weed Control Boards

Map: Roads Monitored, 2002-2004



Appendix A: Roads Monitored

The table below shows survey, monitor, and control work completed since the inception of this project. Each Forest Service Road is listed, along with the corresponding work performed during 2002, 2003, or 2004. Appendix E has the details of the WCC work and Appendix G lists the details of the Clallam Co. Sheriff's Dept. Chain gang work. The focus for each year of this project was:

- 2002: Familiarize ourselves with the Forest Service road systems, learn which noxious weeds threaten the health of the forest, begin the formal survey of the Pacific and Hood Canal districts, learn documentation and mapping processes, and begin control efforts.
- 2003: Survey as many roads as possible and document. Continue control efforts. Roads in Mason and Grays Harbor Counties (roads numbered 2500000 or lower) were surveyed as part of a Botanical Areas survey.
- 2004: Survey any roads not previously done, monitor control work previously done, and perform as much new control work as possible.

Definitions for the Weed Species Plant Codes can be found in Appendix B

	2002						2003						2004					
ROAD	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
CR5695	1.66	5,532		5532		SEJA CIAR4 CYSC4	1.66	2,967		2967		CYSC4 SEJA	1.66	-				
CR3039		4,800		4800		GERO		-						-				
CR2500	7.85	-					7.85	35,074		35074		GERO CYSC4	7.85	-				
CR2065		5,564		5564		CYSC4		-						-				
3116000	5	-					5	-						-				
3100420		-					0.6	-						-				
3100400		-					2.9	-						-				
3100300		-					5	-						-				
3071015		-					0.6	-						-				
3071000	0.6	60	60			CYSC4	0.6	-						-				
3071000	1.7	-					1.7	-						-				
3068200		-					2.4	-					2.4	80	80			CYSC4
3068190		-					0.4	-						-				
3068000		-					9.7	86	86			SEJA	9.7	250	250			CYSC4 SEJA
3068000		-					0.8	-					0.8	-				
3067000		-					3.53	1,402	2		1400	SEJA CYSC4		-				
3050011		-					1.5	-						-				
3050000		-					3.8	2	2			SEJA		-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
3040900		-					0.5	-						-				
3040800		-					0.1	-						-				
3040595		-					1.5	-					1.5	3	3			SEJA
3040595		-					0.5	370	30		340	CIVU	0.5	-				
3040115		-					0.7	-						-				
3040100		-					0.5	-						-				
3040100		-					1.8	-						-				
3040025		-					0.2	-						-				
3040011		-					0.7	-						-				
3040000	7.2	-					7.2	3,877	27		3850	SEJA CYSC4 GERO	7.2	30,519	11		30,508	CYSC4 SEJA GERO
3040000	8.5	-					8.5	-					8.5	-				
3040000	5.5	-					5.5	-					5.5	-				
3006300		-					4.1	-						-				
3006011		-					1.2	-						-				
3006000		-					7.8	-						-				
3000401		-					1	-						-				
3000400		-					2.3	-						-				
3000400		-					2.2	-						-				
3000395		-					0.2	-						-				
3000300		-					3.5	-						-				
3000260		-					0.7	-						-				
3000250		-					3.9	-						-				
3000220		-					2.8	-						-				
3000215		-					0.6	-						-				
3000200	3	-					3	-						-				
3000200	3.5	-					3.5	-						-				
3000200	1.5	-					1.5	-						-				
3000011		-					0.7	-						-				
3000000	7.5	2,743		2743		CYSC4	7.5	-					7.5	12,000			12,000	GERO RULA CYSC4
3000000	11.3	-					11.3	-					11.3	867,800		867,800		CYSC4 GERO CIVU
3000000	1.43	-					1.43	-						-				
2978085		-						-					1.1	-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2978040		-						-					0.3	-				
2978035		-						-					0.1	-				
2978030		-						-					0.7	-				
2978030		-						-					0.6	-				
2978025		-						-					0.8	-				
2978025		-						-					0.3	-				
2978015		-						-					1.6	18	18			CYSC4
2978011		-						-					0.4	-				
2978000		-						-					4.7	3,604	4		3,600	CYSC4 SEJA
2942000		-						-						-				
2932070		-					0.9	12	12			CYSC4		-				
2932050		-					0.3	-						-				
2932040		-					0.4	-						-				
2932035		-					0.2	-						-				
2932031		-					0.5	-						-				
2932030		-					1.3	-						-				
2932000	3.8	-					3.8	20	20			LEVU CYSC4	3.8	1,950			1,950	CYSC4
2931200		-					2.5	-						-				
2931190		-					1.7	-						-				
2931000		-					11.9	1	1			SEJA		-				
2929070		-						-					2.9	525	525			GERO RULA CYSC4
2929000		-						-					3.1	-				
2929000		-						-					4.4	-				
2929000		-						-					2.2	-				
2923070		-					5.2	2	2			SEJA		-				
2923000		-					13.7	83	83			SEJA CIAR4 HIAU	13.7	23	23			CYSC4
2922000		-					12.6	-						-				
2920210		-					0.2	-						-				
2920020		-					1.4	-						-				
2920000		-					1.8	-						-				
2920000		-					5.7	-						-				
2920000		-					1.4	-						-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2918110		-					0.8	-						-				
2918100		-					3.3	-						-				
2918015		-						-						-				
2918000	5.5	-					5.5	765			765	SEJA CYSC4		-				
2918000		-					9	-						-				
2912060		-						-					2.8	3	3			SEJA
2903000		-					6.8	78	9		69	SEJA CYSC4		-				
2902375		-					0.8	-						-				
2902360		-						-						-				
2902350		-						-						-				
2902300		-					0.6	-						-				
2902270		-						-						-				
2902000		-						-					1.1	2,500		2,500		CYSC4
2902000		-					1.8	48	48			SEJA CYSC4		-				
2902000		-					2.5	-						-				
2900990		-					1.2	5,050		3400	1650	CYSC4	1.2	250	250			GERO
2900950		-					0.1	-						-				
2900650		-					1.2	-						-				
2900540		-					2	-						-				
2900070		-					2.3	-						-				
2900070		-					0.4	-						-				
2900015		-					0.1	-						-				
2900005		-						-						-				
2900000	6	8,286			8286	POSA4 CYSC4 SEJA	6	27,406		5291	22115	SEJA CYSC4 CIAR4	6	14,775			14,775	SEJA CYSC4 GERO
2900000		-					3.4	-						-				
2900000		-					13.9	-						-				
2900000		-					3.7	-						-				
2900000		-					11.3	170			170	HIAU	11.3	11,700	900	10,800		CYSC4 HIAU GERO
2880050	0.1	1,860		1860		GERO		-					0.1	3,900	3,900	460 LBS.		GERO
2880000	1.81	2,100		2100		GERO	1.81	-					1.81	6,600			6,600	SEJA

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2878123		-					0.2	-						-				
2878120		-					1.05	2,170			2170	CYSC4		-				
2878115		-						-						-				
2878110		-					0.9	-						-				
2878109		-					0.27	-						-				
2878108		-					0.13	-						-				
2878104		-						-						-				
2878102		-					0.4	-						-				
2878101		-						-						-				
2878100		-					1.59	-						-				
2878085		-					0.9	-						-				
2878080		-					1.4	-						-				
2878060		-					0.4	127			127	CYSC4		-				
2878050		-					0.6	-						-				
2878000		-					4.06	1,340			1340	CYSC4		-				
2877100		-					0.3	-						-				
2877052		-					0.29	-						-				
2877050		-					1	-						-				
2877050		-					1.65	-						-				
2877040		-					0.78	-						-				
2877040		-					0.51	-						-				
2877000		-					4.6	-						-				
2875090		-					0.1	-						-				
2875070		-					2	-						-				
2875020		-					0.5	6	6			CYSC4		-				
2875000		-					3.6	30	30			CEJA		-				
2875000		-					2.3	-						-				
2870110		-					0.3	729			729	CYSC4		-				
2870059		-					0.48	-					0.48	20	20			CEJA
2870058		-					0.5	-					0.5	-				
2870056		-					0.7	10	10			CEJA SEJA	0.7	4	4			CEJA
2870050		-					2.8	16	16			SEJA HYPE	2.8	-				
2870030		-					1.7	4	4			CEJA CYSC4	1.7	39	39			SEJA CEJA
2870000	9.9	50	50			SEJA		-					9.9	101	101			SEJA CYSC4

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2860120		-					1.6	-						-				
2860000	16.15	-					16.15	-					16.15	50,500		50,500		GERO CIVU
2855100		-					1.2	-					1.2	-				
2855070		-					1.3	1,127	2		1125	SEJA CIAR4		-				
2855070		-					0.3	-					0.3	103	103			CEBI2 RULA
2855032		-					0.8	-					0.8	1	1			RULA
2855030		-					2.7	-					2.7	19,200		19,200		SEJA
2855000		-					2.7	6,156	31		6125	CEJA SEJA	2.7	45,545	20	41,900	3,625	CEBI2 CYSC4 CIVU GERO SEJA
2852150		-						-					1.29	25	25			CYSC4
2852090		-					0.2	1,550			1550	SEJA CIAR4	0.2	-				
2852000		-					2.7	5,550			5550	SEJA CIAR4	2.7	39,781	6	32,000	7,775	SEJA CEJA RULA GERO
2851090		-					0.6	-					0.6	-				
2851080		-					1.6	-					1.6	1,660	60		1,600	TAVU CYSC4 SEJA
2851000		-					4.1	-					4.1	-				
2850124		-					0.2	-						-				
2850120		-					2.8	-						-				
2850093		-					0.1	-						-				
2850090		-					1.02	-						-				
2850010		-					1.6	-					1.6	12	12			RULA
2850000	7.4	-					7.4	35,889		21929	13960	GERO SEJA CYSC4	7.4	10,555	5		10,550	SEJA GERO RULA
2845200		-					0.28	-						-				
2845150		-					0.2	-						-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2845120		-					1.7	84	1		83	SEJA CYSC4		-				
2845090		-					0.5	11	11			SEJA	0.5	1	1			CYSC4
2845073		-					0.9	-						-				
2845070		-					1.6	1,860			1860	CYSC4		-				
2845040		-					0.3	160	160			SEJA		-				
2845000		-					4.6	5,204	4		5200	SEJA		-				
2840150		-					0.64	1	1			SEJA		-				
2840130		-					1.1	-						-				
2840120		-					0.73	-						-				
2840120		-					1.27	-						-				
2840084		-					0.25	-						-				
2840080		-					0.73	-						-				
2840080		-					0.89	1	1			RULA		-				
2840071		-					1	1	1			SEJA	1	35	35			BORAG
2840070		-					1.77	3	3			SEJA	1.77	5,750			5,750	SEJA CYSC4
2840036		-						-						-				
2840035		-						-						-				
2840034		-					1.44	-						-				
2840030		-					3.04	-						-				
2840000		-					5.4	9,085			9085	CIAR4 SEJA CYSC4	5.4	925			925	SEJA
2830034		-					0.33	-						-				
2830032		-					1	-						-				
2830030		-					1.8	-						-				
2830000		-					4.95	-					4.95	1,250			1,250	CEBI2
2820000		-					4	-						-				
2810070		-					0.61	-						-				
2810000	4.01	-					4.01	10,190			10190	SEJA CYSC4		-				
2800310		-						-					0.25	1,550	50	1,500		CYSC4
2800262		-					0.6	-						-				
2800260		-					1.2	-						-				
2800250		-					1.1	-						-				
2800240		-					0.8	-						-				
2800220		-					1.2	-						-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2800210		-					0.4	-						-				
2800145		-					0.3	-						-				
2800060		-					1.1	-						-				
2800010							1.1	-						-				
2800000	14.5	4,007	100	3907		SEJA CIAR4 CYSC4 GERO	14.5	13,295			13295	SEJA CYSC4 CIAR4	14.5	7,750			7,750	CIAR4 CIVU SEJA
2750020		-					1.5	-						-				
2750000		-					4.9	-						-				
2740075		-					0.47	-						-				
2740072		-					0.4	-						-				
2740070		-					3.05	-						-				
2740060		-					5.8	-						-				
2740000	6.85	-					6.85	-						-				
2730300	1.1	834		834		CYSC4		-						-				
2730200	1.7	470	470			GERO SEJA		-					1.7	2,502	2,502			GERO SEJA
2730100	0.2	5	5			SEJA		-					0.2	30	30			SEJA
2730020	0.6	-						-					0.6	-				
2730011		-					0.9	51	51			GERO		-				
2730000	3.8	1,465		1465		SEJA CYSC4	3.8	3,675		3675		SEJA	3.8	140,020	20	140,000		SEJA TAVU
2700140		-					1.2	-						-				
2700100		-					4.6	-						-				
2700090		-					1.99	-						-				
2700000	11.6	1	1			TAVU	11.6	-					11.6	4,200			4,200	SEJA
2650090		-					1.68	-						-				
2650050		-						-					0.9	-				
2650000		-					7.5	2	2			ARMI2	7.5	-				
2620056		-						-					0.76	24	24			CEJA
2620053		-						-					1.3	-				
2620051		-						-					0.89	-				
2620050		-						-					2.8	-				
2620043		-					0.7	-						-				
2620030		-					9.7	-						-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2620000		-					11.62	15,287		15287		SEJA CIVU CYSC4 GERO	11.62	10	10			RULA
2610200	1.6	680		680		CYSC4	1.6	124	124			CYSC4 SEJA HEHE	1.6	150	150			HEHE RUDI GERO
2610000	4.1	-					4.1	61	61			SEJA	4.1	2,531	2,531			GERO SEJA CYSC4 RULA
2530000	5.7	-						-						-				
2527000		-					1.2	-						-				
2510070	0.1	1,600		1600		GERO		-						-				
2510000		-					4.6	45	45			SEJA		-				
2510000		-					1.8	-						-				
2510000		-					0.2	-						-				
2500000		-					0.98	-						-				
2500000		-					4.16	-						-				
2500000		-					1.46	-						-				
2500000		-					1.2	-						-				
2500000		-					0.2	-						-				
2500000		-					4.54	-						-				
2500000		-					1.32	-						-				
2480000		-					5.27	-						-				
2480000		-					0.91	-						-				
2480000		-					1.54	-						-				
2471022		-					0.42	-						-				
2471020		-					0.88	-						-				
2471013		-					2.6	-						-				
2471000		-					0.15	-						-				
2471000		-					0.23	-						-				
2471000		-					1.97	-						-				
2471000		-					0.76	-						-				
2471000		-					0.7	-						-				
2469022		-					0.59	-						-				
2469022		-					0.63	-						-				
2469000		-					1.96	-						-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2469000		-					1.46	-						-				
2469000		-					0.54	-						-				
2469000		-					0.8	-						-				
2469000		-					0.63	-						-				
2469000		-					0.67	-						-				
2469000		-					0.1	-						-				
2464000		-					5	-						-				
2464000		-					0.65	-						-				
2464000		-					0.9	-						-				
2464000		-					0.15	-						-				
2451115		-					0.32	-						-				
2451100		-					1.5	-						-				
2451100		-					4.7	-						-				
2451020		-					0.4	-						-				
2451017		-					0.3	-						-				
2451000		-					0.9	-						-				
2451000		-					1.2	-						-				
2451000		-					1.59	-						-				
2451000		-					0.67	-						-				
2451000		-					1.42	-						-				
2451000		-					0.03	-						-				
2451000		-					0.84	-						-				
2441200		-					3.47	-						-				
2421000		-					0.19	-						-				
2421000		-					0.13	-						-				
2421000		-					0.19	-						-				
2421000		-					2.08	-						-				
2421000		-					1.95	-						-				
2419014		-					1	-						-				
2419000		-					0.31	-						-				
2419000		-					2.66	-						-				
2419000		-					3.44	-						-				
2419000		-					2.53	-						-				
2419000		-					1.24	-						-				
2401100		-					0.12	-						-				
2401033		-					1.08	-						-				
2401012		-					0.15	-						-				

Appendix A: Roads Monitored, continued

ROAD	2002						2003						2004					
	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2401000		-					1.81	-						-				
2401000		-					1.21	-						-				
2401000		-					3.19	-						-				
2401000		-					2.38	-						-				
2401000		-					1.85	-						-				
2401000		-					1.07	-						-				
2401000		-					0.59	-						-				
2361700		-					0.69	-						-				
2361210		-					2.76	-						-				
2361200		-					0.67	-						-				
2361000		-					3.5	-						-				
2361000		-					1	-						-				
2361000		-					0.9	-						-				
2361000		-					0.5	-						-				
2353140		-					0.6	-						-				
2353140		-					0.1	-						-				
2353140		-					0.3	-						-				
2353140		-					0.5	-						-				
2353100		-					0.6	-						-				
2340088		-					0.96	-						-				
2340080		-					0.7	-						-				
2340000		-					0.46	-						-				
2340000		-					1.11	-						-				
2340000		-					0.73	-						-				
2300000		-					4.88	-						-				
2300000		-					0.12	-						-				
2300000		-					0.26	-						-				
2300000		-					7.47	-						-				
2190240							0.3	-						-				
2190170		-					1.59	-						-				
2190000	4.22	-					4.22	-						-				
2190000		-					1.7	-						-				
2190000		-					2.41	-						-				
2190000		-					1.49	-						-				
2180000	1.26	-					1.26	-						-				
2180000		-					4.24	-						-				
2180000		-					4.6	-						-				

Appendix A: Roads Monitored, continued

	2002						2003						2004					
ROAD	Miles Surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed	Miles surveyed	Total # of Weeds Removed	Weeds Removed by Survey Team	Weeds Removed by WCC	Weeds Removed by Chaingang	Weed Species Removed
2170020		-					4.28	-						-				
2170000		-					8.24	-						-				
2160000	5.8	-					5.8	-						-				
2160000	4.7	-						-						-				
2140000		-					1.7	-						-				
2140000		-					3.1	-						-				
2140000		-					7.2	-						-				
2120000		-					1.2	-						-				
2100000	3.7	50	50			SEJA	3.7	-						-				
2100000	1.7	-					1.7	-						-				
2100000		-					2.84	-						-				
	194	40,107	736	31,085	8,286		703	191,257	886	87,623	102,748		267	1,290,774	11,716	1,166,200	112,858	

Note: Roads may be listed more than once as they may be broken up into specific lengths. Ex: From Hwy to Forest boundary, or from Forest boundary to Campground, etc.

Roads Surveyed/Controlled, 2002-2004, Summary

	2002	2003	2004	**TOTAL**
Miles of Roads Surveyed	194	703	267	**1,164**
Weeds Removed by Survey Team	736	886	11,716	**13,338**
Weeds Removed by WCC crew	31,085	87,623	1,166,200	**1,284,908**
Weeds Removed by Chain gang	8,286	102,748	112,858	**223,892**
TOTAL weeds removed	**40,107**	**191,257**	**1,290,774**	**1,522,138**
TOTAL Weeds Removed 2002-2004	**1,522,138**			

Appendix B: Weed Species Reported, 2002-2004

Tansy ragwort *(Senecio jacobaea)*

Common Name	***Botanical Name***	**Plant Code**
Borage	*Borago officinalis*	BORAG
Bull thistle	*Cirsium vulgare*	CIVU
Canada thistle	*Cirsium arvense*	CIAR4
Common burdock	*Arctium minus*	ARMI2
Common tansy	*Tanacetum vulgare*	TAVU
Common toadflax	*Linaria vulgaris*	LIVU2
English holly	*Ilex aquifolium*	ILAQ80
English ivy	*Hedera helix*	HEHE
Evergreen blackberry	*Rubus laciniatus*	RULA
Everlasting peavine	*Lathrus latifolius*	LALA4
Giant knotweed	*Polygonum sachalinense*	POSA4
Herb Robert	*Geranium Robertianum*	GERO
Himalayan blackberry	*Rubus discolor*	RUDI
Japanese knotweed	*Polygonum cuspidatum*	POCU6
Meadow knapweed	*Centaurea jacea x nigra*	CEJA
Orange hawkweed	*Hieracium aurantiacum*	HIAU
Oxeye daisy	*Leucanthemum vulgare*	LEVU
Purple loosestrife	*Lythrum salicaria*	LYSA2
Reed canary grass	*Phalaris arundinacea*	PHAR3
Rockspray cotoneaster	*Cotoneaster*	COTON
Scotch broom	*Cytisus scoparius*	CYSC4
Spotted knapweed	*Centaurea biebersteinii*	CEBI2
St. Johnswort	*Hypericum perforatum*	HYPE
Tansy ragwort	*Senecio jacobaea*	SEJA
Wild Carrot	*Daucus carota*	DACA6
Wild Chervil	*Anthriscus sylvestris*	ANSY

Appendix C: Control Recommendations

By Weed Species*

Control Recommendations Protocol:

1. The overall system burden of invasive plant species needs to be reduced before manual and mechanical methods become feasible in many cases.
2. Greater emphasis needs to be placed on prevention and early detection, continued surveys, early intervention, and incorporation of weed control into Forest Service projects such as road decommissioning, restoration, and routine road maintenance.
3. Effective noxious weed control depends on a combination of factors: plant biology, level of infestation, and location. These control recommendations reflect a consideration of Olympic National Forest conditions with currently available data.
4. For additional control recommendations, see Common Control Measures for Invasive Plants of the Pacific Northwest Region. (A NFS publication.)

* For control recommendations by site, see Appendix D.

Plant Code	Common Name	*Botanical Name*	Control Recommendation
BORAG	Borage	*Borago officinalis*	Minimal occurrence; spot herbicide application with glyphosate or a selective herbicide
CIVU	Bull thistle	*Cirsium vulgare*	Where minimal occurrence, manual removal; spot herbicide application to rosettes by early spring or contact herbicide may be used before seeds are formed
CIAR4	Canada thistle	*Cirsium arvense*	Manual removal has limited effectiveness and is best applied to very early infestations; spot herbicide application with glyphosate at bud to full bloom; foliar application of a selective herbicide throughout the summer
ARMI2	Common burdock	*Arctium minus*	Where minimal occurrence, manual removal; spot herbicide application to rosettes by early spring; contact herbicide may be used before seeds are formed
TAVU	Common tansy	*Tanacetum vulgare*	Spot herbicide application
LIVU2	Common toadflax	*Linaria vulgaris*	Manual removal; spot herbicide application
ILAQ80	English holly	*Ilex aquifolium*	Manual removal; cut stump herbicide treatment
HEHE	English ivy	*Hedera helix*	Manual removal; cut stump herbicide treatment; foliar application with 2% glyphosate (and a surfactant)
RULA	Evergreen blackberry	*Rubus laciniatus*	Treat cut stump with glyphosate
LALA4	Everlasting peavine	*Lathrus latifolius*	Foliar application with clopyralid
POSA4	Giant knotweed	*Polygonum sachalinense*	Injection with glyphosate; and/or foliar application of glyphosate 4% with surfactant
GERO	Herb Robert	*Geranium robertianum*	Manual removal for small infestations; spot selective herbicide; foam/steam application as new control information becomes available

Appendix C: Control Recommendations, continued

Plant Code	Common Name	*Botanical Name*	Control Recommendation
RUDI	Himalayan blackberry	*Rubus discolor*	Treat cut stump with glyphosate or foliar application as appropriate to site
POCU6	Japanese knotweed	*Polygonum cuspidatum*	Injection with glyphosate; and/or foliar application of glyphosate 4%
CEJA	Meadow knapweed	*Centaurea jacea x nigra*	Foliar herbicide application - clopyralid preferred
HIAU	Orange hawkweed	*Hieracium aurantiacum*	Spot spray with clopyralid in late spring or summer
LEVU	Oxeye daisy	*Leucanthemum vulgare*	Pervasive. Preventative control should be incorporated into restoration and maintenance projects. Control options are available should this species otherwise become a resource management issue.
LYSA2	Purple loosestrife	*Lythrum salicaria*	There is only one known site: manual removal should be possible, however herbicide application is available (potential aquatic application)
PHAR3	Reed canary grass	*Phalaris arundinacea*	Glyphosate at 2% with surfactant in mid-June and mid-Sept.
COTON	Rockspray cotoneaster	*Cotoneaster horizontalis*	Manual removal
CYSC4	Scotch broom	*Cytisus scoparius*	Manual removal; cut stump treatment with glyphosate; or foliar herbicide application for very large infestations
CEBI	Spotted knapweed	*Centaurea biebersteinii*	Manual removal before plants go to seed; spot herbicide application
HYPE	St. Johnswort	*Hypericum perforatum*	Pervasive. Preventative control should be incorporated into restoration and maintenance projects. Control options are available should this species otherwise become a resource management issue.
SEJA	Tansy ragwort	*Senecio jacobaea*	Will require systematic removal from roadsides and follow-up; manual removal before full bloom (after full bloom, flower heads need to be removed and disposed of); selective herbicide application in first year or by April/May of 2nd year.
DACA6	Wild Carrot	*Daucus carota*	Manual removal; spot herbicide application
ANSY	Wild Chervil	*Anthriscus sylvestris*	Manual removal; spot herbicide application

Appendix D: Control Recommendations by Site

When determining control methods, the following protocol was used:

1. Herbicide treatments can reduce a large noxious weed infestation to a more manageable size.
2. For certain sites, herbicide application is the most efficient and effective method.
3. Where manual removal of Scotch broom will destabilized a slope, herbicide applied to a cut stump is preferred.
4. This list reflects the best science available.
5. These sites were chosen for chemical control because manual control was not practical due to infestation size, or plants could not be safely reached for manual removal.

Weed Plant Codes are defined in Appendix B.

Road	Weed Plant Code	Treatment Recommendation	Rationale	Site Comments
2190240	POCU6	Injection with glyphosate; and/or foliar application of glyphosate 4% and surfactant	Most effective treatment method for this plant	Last left-hand spur before end of road (about mi. 15) Several clumps in a gravel source.
2340080	POCU6	Injection with glyphosate; and/or foliar application of glyphosate 4% and surfactant	Most effective treatment method for this plant	LAKE WEST. SEE MAP FOR SITE DETAILS.
2401013	PHAR3	Glyphosate at 2% in mid-June and mid-Sept.	Most effective treatment method for this plant	At Goober Pond.
2480000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	SCOTCH BROOM CONTINUOUS ALONG ROAD, BUT NOT BAD EXCEPT WHERE ROAD CROSSES POWER LINES AND AT THE INTERSECTION OF 2480 AND 2401 WHERE THERE IS A LARGE PATCH.
2500000	POCU6	Injection with glyphosate; and/or foliar application of glyphosate 4% and surfactant	Most effective treatment method for this plant	Mi. 0.05 just after beginning of road on R side, one patch.
2610000	POCU6	Injection with glyphosate; and/or foliar application of glyphosate 4% and surfactant	Most effective treatment method for this plant	
2610000	POCU6	Injection with glyphosate; and/or foliar application of glyphosate 4% and surfactant	Most effective treatment method for this plant	Mi. 8.7 on Dosewallips Rd, at turnout. Also much herb Robert and some tansy ragwort.
2700000	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	VAST QUANTITIES AT .9 MILE, AND AGAIN AT 1.5 (WITH TANSY AND CANADA THISTLE)

Appendix D: Control Recommendations by Site, continued

Road	Weed Plant Code	Treatment Recommendation	Rationale	Site Comments
2800010	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	Very bad first 2/10 of a mi., then a patch after 1st clearcut, and again at end of rd.
2820000	CEJA	Foliar herbicide application – clopyralid preferred	Most effective treatment method for this plant	ALONG ROAD AT MILE .5 AND .8 (APPROX. 30 PLANTS ALONG ROAD)
2830000	CEBI2	Foliar herbicide application – clopyralid preferred	Large infestation, too large to be dealt with manually	SPOTTED KNAPWEED ALONG ROAD AT MILE 0.3 (APPX. 1000 PLANTS). ALSO AT MILE 1.9 (APPX 10 PLANTS)
2830000	CEJA	Foliar herbicide application – clopyralid preferred	Convenient to treat along with spotted knapweed nearby	A FEW PLANTS ALONG ROAD AT MILE 0.6 (.2 M PAST BIG SPOTTED KNAPWEED SITE ALONG ROAD)
2840071	BORAG	Spot herbicide application with glyphosate or other selective herbicide	Minimal occurrence	AT .5 MILES
2840071	SEJA	Herbicide foliar (Clopyralid); safety gear recommended	Due to steep terrain	AT .2 MILES - QUITE BAD IN SPOTS PARTICULARLY AT THE END. SOME TANSY DOWN SIDE OF SLOPE AND AWAY FROM THE ROAD. TANSY CONTINUES PAST PARKING AREA AND DOWN PATH.
2845150	LALA4	Foliar application with clopyralid	Most effective treatment method for this plant	AT END OF THE ROAD. YIKES!
2870059	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	
2875000	CEJA	Foliar herbicide application - clopyralid preferred (watch for aquatic application situation)	Large infestation in an area used by dirt bikes, too large to be dealt with manually; small pond at bottom; very little other vegetation	1.1 mi from 2875.020 just before 2875 .070 very ugly pit/ATV track, huge.
2877000	CEJA	Foliar herbicide application - clopyralid preferred		@ mile 0.8.
2900000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	Very steep and hazardous

Appendix D: Control Recommendations by Site, continued

Road	Weed Plant Code	Treatment Recommendation	Rationale	Site Comments
2900000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	Mi. 7.6
2900000	POSA4	Injection with glyphosate; and/or foliar application of glyphosate 4% and surfactant	Most effective treatment method for this plant	S side of road at mi. 2.8
2902000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	Mi. 3.9 at 2902.270 and 4.0 and 4.1
2903000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	0.5 mi from S end
2922000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	From E end of rd, rocky slope at mi. 0.5, cut-stump needed, but patch at mi 0.9 could be pulled.
2922000	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	8.1 mi from E end of rd. Stretches for about 140 yards.
2923000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	Mi. 1.9 from S end.
2932000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	Scotch broom mi. 0.75, up slope at mi. 1.6, then 1.9-3.7
3000000	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	SCOTCH BROOM CONTINUOUS AND THICK ALONG ROAD. LOOKS LIKE IT HAS BEEN SPRAYED IN PLACES (DYING).
3000000	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	mi. 7.4 and 7.7
3000000	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	Polygon: mile 2.2 to 5.6.
3000200	CYSC4	Glyphosate applied to cut stump; climbing gear recommended	Most effective treatment method due to terrain	AT MILE ONE FOR 2/10 MILE, VERY THICK, AND AGAIN AT MILE 1.8 TO MILE 2.7 (INTERSECTION WITH SPUR 215).
3000200	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	AT MILE 3.3, 5.4, AND 8.0 (VERY BAD)

Appendix D: Control Recommendations by Site, continued

Road	Weed Plant Code	Treatment Recommendation	Rationale	Site Comments
3000250	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	AT MILE 0.2
3100300	GERO	Glyphosate, foliar; selective herbicide; foam/steam?	May be most effective for size of infestation	Polygon: mile 0.0 to 2.9.

Appendix E: WCC Work Summary

We provided training of the WCC crew including plant identification and removal techniques. Tools were loaned to the crew and reporting forms were provided. Weeds removed were counted for a period of time (for ½ an hour, for example) and then totals were extrapolated from those counts.

Work locations were chosen based on:

- Forest Service Priorities
- Ease of site access
- The task was too big for the survey team to handle
- "Do-ability" of the task

It is vital that all control work sites be monitored! Repeated control work is usually required.

Location	Weed Species	Date Work Performed	# of Hours*	# of Crew	Total Hours	# of Plants Removed
BY DATE						
Dungeness-Forks Campground	Herb Robert	6/14/04	15	5	75	460 lbs.
Schmith Knob (2800.310)	Scotch broom	6/14/04	5	5	25	1,500
2900.000	Scotch broom	6/16/04	20	5	100	10,800
2855.000	Spotted knapweed	7/5/04	40	5	200	1,200
2855.000	Scotch broom	7/5/04				3,500
2855.000	Bull thistle	7/5/04				2,200
2855.000	Herb Robert	7/5/04				31,000
2855.000	Tansy ragwort	7/12/04	110	5	550	4,000
3000.000	Scotch broom	7/12/04				60,000
3000.000	Herb Robert	7/12/04				800,000
3000.000	Bull thistle	7/12/04				7,800
2855.030	Tansy ragwort	7/20/04	10	5	50	19,200
Mt. Walker Rd. (2730.000)	Tansy ragwort	8/9/04	40	5	200	140,000
2860.000	Bull thistle	8/16/04	40	5	200	500
2860.000	Herb Robert	8/16/04				50,000
2902.000	Scotch broom	8/19/04				2,500
2850.000, 2852.000	Tansy ragwort	8/21/04	40	5	200	32,000
TOTALS - 8 wks			**320**		**1,600**	**1,166,200**
* includes travel time						

Appendix E: WCC Work Summary, continued

Location	Weed Species	Date Work Performed	# of Hours*	# of Crew	Total Hours	# of Plants Removed
BY WEED						
2855.000	Bull thistle	7/5/04				2,200
2860.000	Bull thistle	8/16/04				500
3000.000	Bull thistle	7/12/04				7,800
TOTAL Bull thistle						**10,500**
2855.000	Herb Robert	7/5/04				31,000
2860.000	Herb Robert	8/16/04				50,000
3000.000	Herb Robert	7/12/04				800,000
Dungeness-Forks Campground	Herb Robert	6/14/04				460 lbs.
TOTAL Herb Robert						**881,000**
2855.000	Scotch broom	7/5/04				3,500
2900.000	Scotch broom	6/16/04				10,800
2902.000	Scotch broom	8/19/06				2,500
3000.000	Scotch broom	7/12/04				60,000
Schmith Knob (2800.310)	Scotch broom	6/14/04				1,500
TOTAL Scotch broom						**78,300**
2855.000	Spotted knapweed	7/5/04				1,200
TOTAL Spotted knapweed						**1,200**
2850.000, 2852.000	Tansy ragwort	8/21/04				32,000
2855.000	Tansy ragwort	7/12/04				4,000
3000.000	Tansy ragwort	7/12/04				19,200
Mt. Walker Rd. (2730.000)	Tansy ragwort	8/9/04				140,000
TOTAL Tansy ragwort						**195,200**
TOTALS						**1,166,200**

Appendix F: WCC Potential Projects for 2005

Estimating the amount of time a noxious weed control site will require is very difficult. Our protocol for developing this list was:

1. We used the time required for the WCC to complete 2004 tasks as a basis for estimating future tasks.
2. We developed a "crew hours needed per mile" rate for each weed species. The rate for Herb Robert is 15 crew hours per mile; all other weeds are given a rate of 10 crew hours per mile. This rate may be further adjusted for density of infestation and specific situation.
3. The only control method being used is manual control.
4. Unless otherwise noted, we assumed that the weeds are evenly distributed throughout the infestation.
5. All weeds can be manually removed at the same rate.
6. The site infestation is too big for the 2-person survey team to handle.
7. The site is accessible.
8. The task is "do-able".
9. The priority of these sites will be determined by the 2005 Forest Service Priorities list.

Note: The use of herbicides will greatly reduce the crew-hours needed to perform these control tasks. Some infestations are too big for even a 5-person crew to tackle manually. Also, as this project evolves and progresses, and as our knowledge and experience increases, we will get better and better at estimating the time needed to perform various control projects.

Table below is sorted by County, then by Road Number.

FS Road	Weed(s)	Estimated Number of MILES of Infestation	Estimated Number of Crew HOURS Needed	Estimated Number of Crew DAYS Needed	County	Comments
2810000	Tansy ragwort, Meadow knapweed, Spotted knapweed	4	40	4	Clallam	Entire road
2840000	Tansy ragwort, Scotch broom, Borage, Meadow knapweed(?)	21.5	215	22	Clallam	Entire road and spurs
2845000	Tansy ragwort, Scotch broom, Bull thistle,	11	110	11	Clallam	Entire road and spurs
2850000	Scotch broom, Tansy ragwort, Herb Robert, Meadow knapweed(?)	14.3	143	14	Clallam	Entire road and spurs
2855000	Tansy ragwort, Meadow knapweed(?), Spotted knapweed	9	90	9	Clallam	Entire road and spurs (watch for Herb Robert at .1 mile on spur 070)
2860000	Canada thistle, Common tansy, Meadow knapweed, Tansy ragwort, Scotch broom	17.75	178	18	Clallam	Road and spur 120
2870059	Scotch broom, Tansy ragwort	0.5	5	1	Clallam	at the end of the spur
2870059	Herb Robert		15	2	Clallam	Southern edge of Cranberry Bog - reachable by WCC?
2875000	Meadow knapweed	0.1	1	0	Clallam	At 1.1 miles from 2875.020, just before 070
2875020	Scotch broom	0.5	5	1	Clallam	Entire spur - 1/2 mile

Appendix F: WCC Potential Projects for 2005, continued

FS Road	Weed(s)	Estimated Number of MILES of Infestation	Estimated Number of Crew HOURS Needed	Estimated Number of Crew DAYS Needed	County	Comments
2878000	Scotch broom, Meadow knapweed, Tansy ragwort	12.5	125	13	Clallam	Entire road and spurs
2900000	Scotch broom	11.5	115	12	Clallam	From mile post 27 to end of road at M.P. 38.5
3000000	Scotch broom	0.25	3	0	Clallam	At beginning of road and along Hwy 101
3000000	Herb Robert	0.5	8	1	Clallam	2.2 miles from Hwy 101 and again at 2.3 miles (other side of bridge) and at 2.7 and 5.6 miles
3000200	Scotch broom and Herb Robert	1.5	40	4	Clallam	4 days for this spur. Cut/stump Scotch broom where on steep slope. Look for young Herb Robert plants growing up slopes.
3000300	Scotch broom	3.5	35	4	Clallam	3 days for entire length of this spur
3006000	Scotch broom	7	70	7	Clallam	Beginning at .7 mile and scattered to 7.7
3006000	Herb Robert and Evergreen blackberry	0.2	3	0	Clallam	From Hwy 113 at .1 mile and again at .6 mile/Evergreen blackberry at .6
3050000	Herb Robert	2	30	3	Clallam	At beginning of road for 1/2 mile, thick in many spots, then scattered up the road (bad at .9 mile)
3050011	Herb Robert, some Evergreen blackberry	0.1	5	1	Clallam	At beginning of spur, and extends about 150' - 200'
3068000	Tansy	0.25	3	0	Clallam	At 9.5 miles on north side of road and at turnout
3100300	Herb Robert, Tansy ragwort, Scotch broom, Bull thistle	4.2	42	4	Clallam	Entire spur
3116000	Tansy ragwort, Scotch broom, Bull thistle, Herb Robert, Common tansy	5	50	5	Clallam	Entire road
3040800 (Snider Work Center)	Scotch broom		10	1	Clallam	

Appendix F: WCC Potential Projects for 2005, continued

FS Road	Weed(s)	Estimated Number of MILES of Infestation	Estimated Number of Crew HOURS Needed	Estimated Number of Crew DAYS Needed	County	Comments
SFCRBA (South Fork Calawah River Botanical Area)	Canada thistle, Scotch broom, Herb Robert		40	4	Clallam	
T882 (Mt. Muller Trail)	Scotch broom, Herb Robert, Everlasting peavine, Evergreen blackberry		15	2	Clallam	
2170000	Tansy ragwort, Evergreen blackberry, Bull thistle, Scotch broom, Himalayan blackberry	36.4	364	36	Jeff/Grays	Entire road and spurs
2190000	Tansy ragwort, Evergreen blackberry, Bull thistle, Scotch broom, Himalayan blackberry, Japanese knotweed	26.1	261	26	Jeff/Grays	Entire road and spurs
2160000	Tansy ragwort	5.8	58	6	Jefferson	Scattered along entire road
2160000	Bull thistle, Scotch broom, Tansy ragwort	5.8	58	6	Jefferson	Entire road
2610200	Scotch broom, English Ivy		10	1	Jefferson	Seal Rock campground
2620000	Tansy ragwort, Scotch broom,	33.8	338	34	Jefferson	Entire road and spurs
2700000	Tansy ragwort, Common tansy, Scotch broom, and Bull thistle	23.4	234	23	Jefferson	Scattered along entire road, and spurs 090, 100, and 140
2740000	Scotch broom, Meadow knapweed, Tansy ragwort, Common tansy, Spotted knapweed	16.6	166	17	Jefferson	Entire road and spurs
2800000	Tansy ragwort and Herb Robert	43.5	653	65	Jefferson	Entire road and spurs
2851000	Tansy ragwort	6.3	63	6	Jefferson	Entire road and spurs
3390000	Scotch broom, Evergreen blackberry		20	2	Jefferson	Near Queets Campground, Pacific South District
		MILES	**HOURS**	**DAYS**	**WEEKS**	
	TOTALS	**324.85**	**3,619**	**365**	**90**	

Appendix G: Clallam Co. Sheriff's/Road Dept. Chain Gang Work Summary

The work produced by the Chain gang has increased during each year of this project. We anticipate that their numbers will continue to increase as our communication and coordination of efforts improve.

Road	Date Work Done, Week Ending	Weed	# of Plants Removed
BY ROAD			
2700	6/8/04	Tansy ragwort	4,200
2800	6/4/04	Canada thistle	1,300
2800	6/4/04	Bull thistle	1,300
2800	6/5/04	Tansy ragwort	3,200
2800	8/4/04	Tansy ragwort	1,950
2830	8/4/04	Spotted knapweed	1,250
2840	9/4/04	Tansy ragwort	925
2850	3/4/04	Tansy ragwort	2,450
2850	5/5/04	Herb Robert	3,500
2850	5/8/04	Tansy ragwort	4,600
2852	4/4/04	Tansy ragwort	4,600
2852	7/4/04	Herb Robert	2,200
2852	7/4/04	Tansy ragwort	975
2855	5/6/04	Herb Robert	2,800
2855	5/9/04	Tansy ragwort	825
2900	3/4/04	Scotch broom	850
2800	3/4/04	Tansy ragwort	4,200
2800 & 2820	7/4/04	Tansy ragwort	2,400
2840 & 2845	4/4/04	Tansy ragwort	4,550
2840-071	10/4/04	Tansy ragwort	825
2840-071	10/5/04	Scotch broom	375
2851.080 & 2851.090	5/10/04	Tansy ragwort	1,600
2900	3/4/04	Tansy ragwort	600
2900	4/4/04	Scotch broom	4,125
2900	5/4/04	Scotch broom	1,600
2900	5/7/04	Herb Robert	800
2900	6/4/04	Scotch broom	250
2900	6/4/04	Herb Robert	1,200
2900	6/7/04	Tansy ragwort	3,200
2900	8/4/04	Tansy ragwort	225
2900	9/4/04	Tansy ragwort	750
2900	10/4/04	Tansy ragwort	725
2900	10/6/04	Scotch broom	450
2932	2/4/04	Scotch broom	1,950
2978	8/4/04	Scotch broom	1,300
2978	10/7/04	Scotch broom	2,300
3000	4/4/04	Herb Robert	12,000
3040	6/6/04	Tansy ragwort	3,800
3040 and Snider Work Camp	4/4/04	Herb Robert	16,008

Appendix G: Chain gang work, continued

Road	Date Work Done, Week Ending	Weed	# of Plants Removed
Snider Work Camp	5/4/04	Herb Robert	10,700
TOTAL Chain Gang 2004			**112,858**
BY WEED			
2800	6/4/04	Bull thistle	1,300
Total Bull thistle			**1,300**
2800	6/4/04	Canada thistle	1,300
Total Canada thistle			**1,300**
2850	5/5/04	Herb Robert	3,500
2852	7/4/04	Herb Robert	2,200
2855	5/6/04	Herb Robert	2,800
2900	5/7/04	Herb Robert	800
2900	6/4/04	Herb Robert	1,200
3000	4/4/04	Herb Robert	12,000
3040 and Snider Work Camp	4/4/04	Herb Robert	16,008
Snider Work Camp	5/4/04	Herb Robert	10,700
Total Herb Robert			**49,208**
2900	3/4/04	Scotch broom	850
2840-071	10/5/04	Scotch broom	375
2900	4/4/04	Scotch broom	4,125
2900	5/4/04	Scotch broom	1,600
2900	6/4/04	Scotch broom	250
2900	10/6/04	Scotch broom	450
2932	2/4/04	Scotch broom	1,950
2978	8/4/04	Scotch broom	1,300
2978	10/7/04	Scotch broom	2,300
Total Scotch broom			**13,200**
2830	8/4/04	Spotted knapweed	1,250
Total Spotted knapweed			**1,250**
2700	6/8/04	Tansy ragwort	4,200
2800	6/5/04	Tansy ragwort	3,200
2800	8/4/04	Tansy ragwort	1,950
2840	9/4/04	Tansy ragwort	925
2850	3/4/04	Tansy ragwort	2,450
2850	5/8/04	Tansy ragwort	4,600
2852	4/4/04	Tansy ragwort	4,600
2852	7/4/04	Tansy ragwort	975
2855	5/9/04	Tansy ragwort	825
2800	3/4/04	Tansy ragwort	4,200
2800 & 2820	7/4/04	Tansy ragwort	2,400
2840 & 2845	4/4/04	Tansy ragwort	4,550

Appendix G: Chain gang work, continued

Road	Date Work Done, Week Ending	Weed	# of Plants Removed
2840-071	10/4/04	Tansy ragwort	825
2851.080 & 2851.090	5/10/04	Tansy ragwort	1,600
2900	3/4/04	Tansy ragwort	600
2900	6/7/04	Tansy ragwort	3,200
2900	8/4/04	Tansy ragwort	225
2900	9/4/04	Tansy ragwort	750
2900	10/4/04	Tansy ragwort	725
3040	6/6/04	Tansy ragwort	3,800
Total Tansy ragwort			**46,600**
TOTAL Chain Gang 2004			**112,858**

Appendix H: Orange Hawkweed Control Test Plot

Date: September 25th, 2003
Location: F.S. 2900 at milepost 36, east side of the road beneath the milepost marker.
Conditions: Clear skies, sunny, 60-65 degrees Fahrenheit.

Objective: To see if non-chemical control techniques could effectively control Orange hawkweed in a roadside setting.

Procedure: Experimental area was divided into 6 plots of roughly equal size using wooden pegs and surveyor's tape. These plots were numbered 1-6 (see figure 1). Plots 1 & 4 were left as controls, with no treatment. Plots 2 & 5 were raked aggressively to remove about 50 percent of the Orange hawkweed and other plants from the plots and expose bare soil. Plot 2 was raked with a 3 tined cultivator, which dug more deeply than the garden rake used for plot 5. Plots 5 & 6 were fertilized by hand-broadcasting a granular plant food fertilizer. The fertilizer was Cenex Plant Food 21-7-14-9 (N, P, K, and S, respectively). Plots 2, 3, 5, & 6 were then top-seeded with a mixture of certified weed-free annual rye seed and locally gathered pearly everlasting and fireweed seeds/flowers, (95 % annual rye, approximately 5% pearly everlasting and fireweed).

FIG. 1

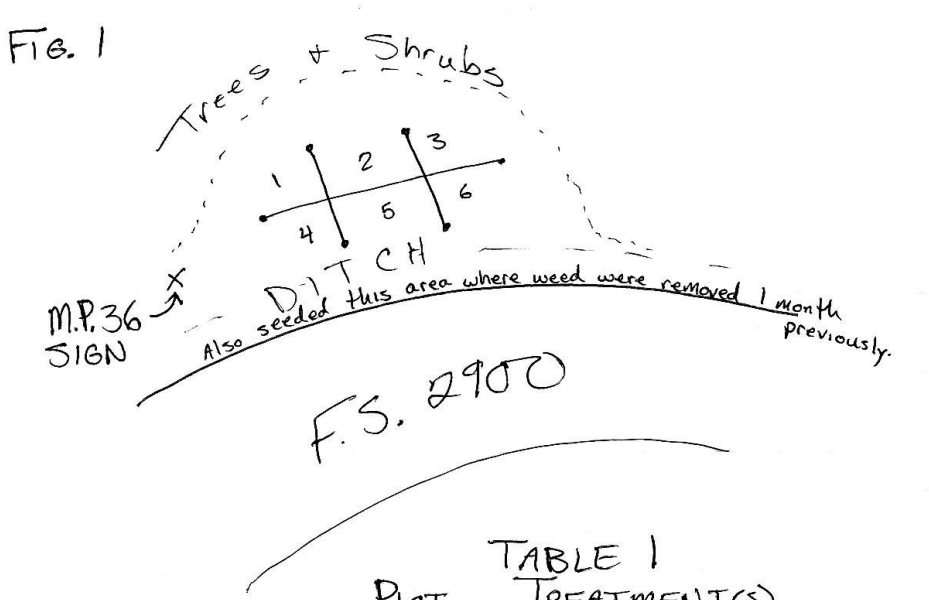


TABLE 1

PLOT	TREATMENT(S)
1	None (Control)
2	Seed, Rake
3	Seed
4	None (Control)
5	Seed, Rake, Fertilize
6	Seed, Fertilize

Appendix H: Orange Hawkweed Control Test Plot, continued

2004 follow-up:

April 8th, 2004: The first visit of the season found that none of the plants were flowering. The plot boundaries were relocated, and the experimental plots were visually inspected to compare Orange hawkweed densities. For some reason, the control plots were not included in this comparison. I believe this was an error. The experimental plots were ranked according to the density of the hawkweed regrowth. A rank of 1 indicates the least amount of hawkweed, and 4 indicates the most hawkweed. The results are summarized below.

Plot 1- control, not evaluated
Plot 2- seeded, raked in 2003, ranked 3
Plot 3- seeded in 2003, ranked 4 (most hawkweed)
Plot 4- control, not evaluated
Plot 5- seeded, raked, fertilized in 2003, ranked 1 (least hawkweed)
Plot 6- seeded, fertilized in 2003, ranked 2 but almost a 1

Conclusions: Plot 6 showed almost the same degree of hawkweed suppression as in Plot 5, without the extensive ground disturbance and investment of labor. For this reason, we felt that the practice of raking before seeding and fertilizing was unnecessary. The fertilized plots showed thicker rye growth than the unfertilized plots, and greater control of the hawkweed. The significant suppression of the hawkweed by the rye in plots 5 & 6 indicated to us that revegetation is a crucial component of weed control. Desirable non-invasive vegetation limits the spread of noxious weeds by competing for resources like light, water, and nutrients, while simultaneously occupying potential weed establishment sites.

May & June, 2004: We revisited the site 3-4 times to check on the progress of the hawkweed. In late May, we began to see blossoms forming. By early June we began to remove any flower heads to prevent seed spread. We decided that the experiment had run its course, and it was time to apply what we had learned to the whole area, if possible.

Appendix H: Orange Hawkweed Control Test Plot, continued

On June 16th: We pulled as many outlying plants as we could from the margins of the infested area. We then reseeded the entire area with noxious weed-free annual rye seed from Royal Brand premium seed. This was the last visit to this site in 2004.

Around this time, concerned that our attempts would suppress but not control the hawkweed, we began to research the idea of smothering the hawkweed under a thick layer of woodchips or mulch. We recommend more research to develop a truly integrated vegetation management plan to eradicate this weed site, and prevent any further spread of orange hawkweed within this area. Additional funding may be required.

Appendix I: WA State Noxious Weed List

Noxious weeds are non-native plants introduced to Washington through human actions. Because of their aggressive growth and lack of natural enemies in the state, these species can be highly destructive, competitive or difficult to control. These exotic species can reduce crop yields, destroy native plant and animal habitat, damage recreational opportunities, clog waterways, lower land values and poison people and livestock.

To help protect the state's resources, the Washington State Noxious Weed Control Board adopts a State Noxious Weed List each year. This list categorizes weeds into three major classes - A, B & C -according to the seriousness of the threat they pose to the state or a region of the state.

Class A Weeds: Non-native species with a limited distribution in Washington. Preventing new infestations and eradicating existing infestations is the highest priority. **Eradication is required by law.**

Common name	Scientific name
Bean-caper, Syrian	*Zygophyllum fabago*
Blueweed, Texas	*Helianthus ciliaris*
Broom, Spanish	*Spartium junceum*
Buffalobur	*Solanum rostratum*
Clary, Meadow	*Salvia pratensis*
Cordgrass, Denseflower	*Spartina densiflora*
Cordgrass, Salt meadow	*Spartina patens*
Crupina, Common	*Crupina vulgaris*
Flax, Spurge	*Thymelaea passerina*
Four o'clock, Wild	*Mirabilis nyctaginea*
Goatsrue	*Galega officinalis*
Hawkweed, Yellow devil	*Hieracium floribundum*
Hogweed, Giant	*Heracleum mantegazzianum*
Hydrilla	*Hydrilla verticillata*
Johnsongrass	*Sorghum halepense*
Knapweed, Bighead	*Centaurea macrocephala*
Knapweed, Vochin	*Centaurea nigrescens*
Kudzu	*Pueraria montana* var. *lobata*
Lawnweed	*Soliva sessilis*
Mustard, Garlic	*Alliaria petiolata*
Nightshade, Silverleaf	*Solanum elaeagnifolium*
Sage, Clary	*Salvia sclarea*
Sage, Mediterranean	*Salvia aethiopis*
Spurge, Eggleaf	*Euphorbia oblongata*
Starthistle, Purple	*Centaurea calcitrapa*
Thistle, Italian	*Carduus pycnocephalus*
Thistle, Milk	*Silybum marianum*
Thistle, Slenderflower	*Carduus tenuiflorus*
Velvetleaf	*Abutilon theophrasti*
Woad, Dyers	*Isatis tinctoria*

Appendix I: WA State Noxious Weed List, continued

Class B Weeds: Non-native species presently limited to portions of the state. Species are designated for control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.

Common name	Scientific name
Alyssum, Hoary	*Berteroa incana*
Blackgrass	*Alopecurus myosuroides*
Blueweed	*Echium vulgare*
Broom, Scotch	*Cytisus scoparius*
Bryony, White	*Bryonia alba*
Bugloss, Annual	*Anchusa arvensis*
Bugloss, Common	*Anchusa officinalis*
Camelthorn	*Alhagi maurorum*
Carrot, Wild	*Daucus carota*
Catsear, Common	*Hypochaeris radicata*
Chervil, Wild	*Anthriscus sylvestris*
Cinquefoil, Sulfur	*Potentilla recta*
Cordgrass, Common	*Spartina anglica*
Cordgrass, Smooth	*Spartina alterniflora*
Daisy, Oxeye	*Leucanthemum vulgare*
Elodea, Brazilian	*Egeria densa*
Fanwort	*Cabomba caroliniana*
Fieldcress, Austrian	*Rorippa austriaca*
Floating heart, Yellow	*Nymphoides peltata*
Gorse	*Ulex europaeus*
Hawkweed, Mouseear	*Hieracium pilosella*
Hawkweed, Orange	*Hieracium aurantiacum*
Hawkweed, Polar	*Hieracium atratum*
Hawkweed, Queen-devil	*Hieracium glomeratum*
Hawkweed, Smooth	*Hieracium laevigatum*
Hawkweed, Yellow	*Hieracium caespitosum*
Hedgeparsley	*Torilis arvensis*
Helmet, Policeman's	*Impatiens glandulifera*
Herb Robert	*Geranium Robertianum*
Houndstongue	*Cynoglossum officinale*
Indigobush	*Amorpha fruticosa*
Knapweed, Black	*Centaurea nigra*
Knapweeed, Brown	*Centaurea jacea*
Knapweed, Diffuse	*Centaurea diffusa*
Knapweed, Meadow	*Centaurea jacea x nigra*
Knapweed, Russian	*Acroptilon repens*
Knapweed, Spotted	*Centaurea biebersteinii*
Knotweed, Giant	*Polygonum sachalinense*
Knotweed, Himalayan	*Polygonum polystachyum*
Knotweed, Japanese	*Polygonum cuspidatum*
Kochia	*Kochia scoparia*
Lepyrodiclis	*Lepyrodiclis holosteoides*
Loosestrife, Garden	*Lysimachia vulgaris*
Loosestrife, Purple	*Lythrum salicaria*
Loosestrife, Wand	*Lythrum virgatum*
Nutsedge, Yellow	*Cyperus esculentus*
Oxtongue, Hawkweed	*Picris hieracioides*
Parrotfeather	*Myriophyllum aquaticum*
Pepperweed, Perennial	*Lepidium latifolium*
Primrose, Water	*Ludwigia hexapetala*
Puncturevine	*Tribulus terrestris*
Ragwort, Tansy	*Senecio jacobaea*
Saltcedar	*Tamarix ramosissima*
Sandbur, Longspine	*Cenchrus longispinus*
Skeletonweed, Rush	*Chondrilla juncea*
Sowthistle, Perennial	*Sonchus arvensis* ssp. *arvensis*
Spurge, Leafy	*Euphorbia esula*
Spurge, Myrtle	*Euphorbia myrsinites*
Starthistle, Yellow	*Centaurea solstitialis*
Swainsonpea	*Sphaerophysa salsula*
Thistle, Musk	*Carduus nutans*
Thistle, Plumeless	*Carduus acanthoides*
Thistle, Scotch	*Onopordum acanthium*
Toadflax, Dalmatian	*Linaria dalmatica* ssp. *dalmatica*
Watermilfoil, Eurasian	*Myriophyllum spicatum*

Appendix I: WA State Noxious Weed List, continued

Class C Weeds: Non-native weeds found in Washington. Many of these species are widespread in the state. Long-term programs of suppression and control are a county option, depending upon local threats and the feasibility of control in local areas.

Common name	Scientific name
Babysbreath	*Gypsophila paniculata*
Bindweed, Field	*Convolvulus arvensis*
Canarygrass, Reed	*Phalaris arundinacea*
Cockle, White	*Silene latifolia* ssp. *alba*
Cocklebur, Spiny	*Xanthium spinosum*
Cress, Hoary	*Cardaria draba*
Dodder, Smoothseed alfalfa	*Cuscuta approximata*
Goatgrass, Jointed	*Aegilops cylindrica*
Groundsel, Common	*Senecio vulgaris*
Hawkweed spp.	Non-native *Hieracium* species except those listed as Class A or Class B
Henbane, Black	*Hyoscyamus niger*
Iris, Yellow flag	*Iris pseudocorus*
Ivy, English	4 cultivars only *Hedera hibernica* 'Hibernica' *Hedera helix* 'Baltica' *Hedera helix* 'Pittsburgh' *Hedera helix* 'Star'
Knotweed, Bohemian	*Polygonum Bohemicum*
Mayweed, Scentless	*Matricaria perforata*
Old man's beard	*Clematis vitalba*
Poison-hemlock	*Conium maculatum*
Reed, Common	*Phragmites australis* (Non-native genotypes)
Rye, Cereal	*Secale cereale*
Spikeweed	*Hemizonia pungens*
St. Johnswort, Common	*Hypericum perforatum*
Tansy, Common	*Tanacetum vulgare*
Thistle, Bull	*Cirsium vulgare*
Thistle, Canada	*Cirsium arvense*
Toadflax, Yellow	*Linaria vulgaris*
Water lily, Fragrant	*Nymphaea odorata*
Whitetop, Hairy	*Cardaria pubescens*
Willowherb, Hairy	*Epilobium hirsutum*
Wormwood, Absinth	*Artemisia absinthium*

A cooperative project between:

Clallam County
Noxious Weed Control Board

Jefferson County
Noxious Weed Control Board

Olympic National Forest