



H-Z Thinning is a successful stewardship habitat enhancement project conducted five years ago that continues to accrue environmental value free from noxious weed encroachment, thanks to the dedicated efforts of ONF and the Clallam Weed Board

Olympic Peninsula Cooperative Noxious Weed Control 2021 Project Report

A Title II Participating Agreement between
USFS Olympic National Forest
and
Clallam Noxious Weed Control Board

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**An unabridged copy of this report will be posted to our website at
http://www.clallam.net/weedcontrol/html/forest_service.htmsee
2021 Report**

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EXECUTIVE SUMMARY

Project Goal:

The goal of this project is to protect the natural resources of Clallam and Jefferson Counties from the negative impacts of invasive non-native plants. This goal is implemented by reducing existing weed populations and preventing the establishment of new ones across both counties. Coordinating and standardizing weed control across jurisdictional boundaries maximizes the efficiency of these efforts and minimizes the negative impacts of noxious weeds on natural resource productivity, watershed function, wildlife habitat, human and animal health, and recreational activities.

Project Overview:

This project has been a comprehensive program for noxious weed control on Forest Service (FS) lands across the North Olympic Peninsula. It includes surveying, identifying, and controlling noxious weeds through a work plan coordinated between the Forest Service and local weed control boards. This project compliments the efforts of local weed board programs, which include public education, survey and treatment of noxious weed infestations on county owned lands, and seeking landowner compliance with RCW 17.10 on non-federal lands. Title II of the Secure Rural Schools Act (SRS), which was designed in part to promote cooperation and collaboration between federal and local governments, funds most of the project. Additional dollars from specific FS funds have augmented additional tasks added to a work plan.

2021 Project Goals:

1. Control weeds on areas scheduled for road decommissioning or forest management.
2. Control weeds in quarries and other rock sources.
3. Control weeds in Botanical Areas and other special "critical area" sites-such as elk habitat.
4. Control weeds in campgrounds, trailheads and other heavily-used sites
5. Revisit previously controlled sites and perform necessary follow-up control work.
6. Identify and treat new populations.

2021 Resources:

- Supervisor (up to 30 hours/week, 5 months)
- 1-2 Field crew (up to 40 hours/week, 4 months)

2021 Accomplishments:

- Examined **318** acres for invasive species, treated **262** weed-infested acres.
- Examined 13 county roads adjacent to Forest Service lands encompassing 110 acres within 47 road miles. (funding provided by Clallam County Road Department)
- Inspected and treated high priority weeds in **12** FS rock sources; inspected and identified corrective measures for **12** private, **6** state and **25** county rock sources in regard to their potential to spread invasive weeds.
- Compiled data and completed annual Project Report.

Observations and Recommendations:

Weed infestations negatively impact resources both within the Olympic National Forest and on adjacent lands. Restoring diversity and achieving habitat requirements and goals while improving forest productivity and overall ecosystem functioning is the underlying purpose of this invasive plant control project. Weed species diversity, infestation size and density are much reduced where treatments have occurred. This year recruitment for seasonal crew and field work was complicated by COVID-19 pandemic restrictions and safety protocols. Nevertheless, we were able to complete nearly high priority projects. This year, no new weed species were found on ONF. Because of overall progress, we have been able to shift toward more early intervention and prevention activities; the most efficient and least expensive weed control methods in the long term. Long-range goals, detailed planning, consistency, and skilled staff have been the keys to progress to date. Increased collaboration among organizations has led to greater productivity.

Weed board staff have extensive knowledge ranging from project history and infestation locations to weed identification and best treatment practices. County weed boards provide an efficient, locally based work force with county-wide jurisdiction and long term focus. The expertise and flexibility of locally based weed boards make us best suited to identify and control new or small weed infestations and to act upon rehabilitation projects as they arise. Cooperation is key!

Olympic National Forest (ONF) land is accessed via the county road system. These roads can therefore serve as a significant vector for the spread of invasive non-native plant species that imperil natural resources, habitat, and ecosystem function. Under the Clallam County Road Department's Integrated Weed Management (IWM) plan, the Clallam Noxious Weed Control Board (CNWCB) treated thirteen county roads leading to the Olympic National Forest. This was a coordinated response to our ONF 2021 work plan and is an excellent example of the cross jurisdictional cooperative approach to managing noxious weeds on a landscape scale. More work in this regard needs to happen with neighboring Jefferson County. Unprecedented cooperation for the greater public good between the Forest Service, Clallam County, the CNWCB and other interested entities are at the heart and intent of the Title II of the Secure Rural Schools Act. Large scale coordinated, multi-jurisdictional projects such as ours demonstrates the capacity we have forged through this program to work with a wide array of partners. This is a direct legacy of the working relationships created on the Olympic Peninsula because of Title II of the Secure Rural School Act and the vital funding it provides.

PROJECT SUMMARY

Project Goal:

The goal of this project is to protect the natural resources of Forest Service (FS) lands in Clallam and Jefferson Counties from the negative impacts of invasive, non-native plants. This goal is implemented by reducing existing weed populations and preventing the establishment of new ones across FS land in both counties. Coordinating and standardizing weed control efforts across jurisdictional boundaries maximizes the efficiency of these efforts and minimizes the negative impacts of noxious weeds on watershed function, wildlife habitat, human and animal health, and recreational activities.

Project Overview:

Title II of the Secure Rural Schools Act (SRS), was designed in part to promote cooperation and collaboration between federal and local governments. This project has been a comprehensive program for noxious weed control on the North Olympic Peninsula, including surveying, identifying, and controlling noxious weeds, coordinating action and communication between local, state and federal jurisdictions, and raising public awareness of the impacts of noxious weeds. Additional dollars from specific Forest Service (FS) funds have sometimes augmented additional tasks added to the FS directed work plan for weed board partners.

The project operates on Forest Service lands under a strategy of early detection and rapid response to prevent the establishment of new infestations wherever possible by finding and treating new invaders before they become well established. Initial work focused on surveys to identify weed baselines while performing manual control. After adopting Olympic National Forest's 2008 Environmental Impact Statement, *Beyond Prevention: Site-specific Invasive Plant Treatment*, the focus shifted to treatment using manual and chemical methods, while incorporating prevention and cultural control methods whenever possible. Emphasis has been placed on controlling high priority noxious weeds in areas with high potential to spread, such as rock sources or campgrounds, or in particularly sensitive environments including Biological Areas or special habitat sites. As the awareness of invasive species has increased throughout the agency, additional preventative and cultural practices have been added such as treating weeds prior to road decommissioning and timber management and habitat augmentation activities, conducting private rock source inspections to meet contract standards and seeding previously treated sites with native species.

On lands adjacent to Olympic National Forest, emphasis has been on areas where uncontrolled noxious weed populations on other federal, state, county, and private land are spreading and hindering coordinated control activities. County noxious weed control boards provide the vital link to private and public landowners whose weeds threaten federal lands. Weed board program goals include public education, surveying for new noxious weed infestations, seeking landowner compliance with RCW 17.10 and WAC 16-750, and encouraging and supporting other public agencies in their efforts to control noxious weeds.

Work in the National Forest has typically been accomplished by crews of varying size and expertise, led by different partners to match the need on the ground with available funding. Although the Forest Service has hired contractors for certain, large scale projects, there have been no outside contractor projects for many years. Instead the Forest Service has engaged the limited use of the Washington Conservation Corps for some larger projects. Additionally, ONF employs an invasive plant program coordinator whose responsibilities include crafting the annual work plan, coordinating weed control activities with weed boards and submitting internal reporting. There is also a small field crew directed by the FS coordinator. Occasionally, other crews are made available through outside entities that have a special interest in a particular watershed. This year the 10,000 Years Institute, a local non-governmental organization is one such entity that was able to collaborate on projects with the FS where mutual areas of interest overlap such as the coastal portion of the Olympic Peninsula.

2021 Project Description:

This year's work focused on sites designated as high priority by the Forest Service, including infrequent high priority species, sites planned for decommission, forestry health related activities, and habitat conservation. This year's team consisted of one to two members (plus an experienced weed board staff) who alternated between Forest Service projects and county work including in-stream knotweed and county roadside weed control, over the course of the treatment season. Recruitment for seasonal crew and field work was limited by an extreme worker shortage and sharp increase in worker compensation expectations.

The Forest Activity Tracking Sheet (FACTS) form was used to document treatments. Treatment reporting was based on a unique “Reference Number”, arbitrarily assigned within 6th field watersheds.

In 2021, treatments on Forest Service lands were prioritized as follows:

1. Control weeds on areas scheduled for road decommissioning or harvest management
2. Control weeds in specific quarries and other rock sources.
3. Control infrequent weed species.
4. Control weeds in Botanical Areas and other special “critical area” sites such as elk habitat
5. Control weeds in campgrounds, trailheads and other heavily-used sites
6. Revisit previously controlled sites and perform necessary follow-up control work.
7. Identify and treat new populations, especially when seen enroute to known sites.

2021 Project Resources and Roles:

The number of staff, the amount of time devoted to this project, and tasks were:

- **CNWCB**

Coordinator: up to 30 hours/week, for 5 months, licensed applicator

- Supervised and administered the project
- Provided technical information and support, crew training, and field treatments
- Participated in planning meetings with Forest Service staff
- Reviewed crew FACTS, Monitor, and Inventory forms, submitted to the FS
- Compiled data, prepared end-of-season report and planned for 2022 field season
- Provided non-forest rock source inventory, monitoring and reporting, as requested

Field team: 1-2 (licensed applicators), up to 40 hrs/week over 4 months,

- Field treatments (**38- treatment days 10 hour/day**)
- Data collection, completing treatment forms, rock source inventory and monitoring

2021 Project Accomplishments:

- The Clallam NWCB examined **318** acres, and treated **23** different weed species over **262** of those acres; **110** acres of the 262, were manual or combined manual/chemical treatments. In the course of these treatments we documented at least **23 new** infestations; most were small easily-controlled, early detections.
- Completed and submitted associated FACTS forms for all treated sites
- Inspected, treated, and documented the status of **12** FS, rock sources, inspected and facilitated control plans for **6** state and **12** private rock sources. Treated **25** county rock sources under ancillary Clallam Integrated Weed Management plan which compliments FS prevention protocols.

2021 Treatments:

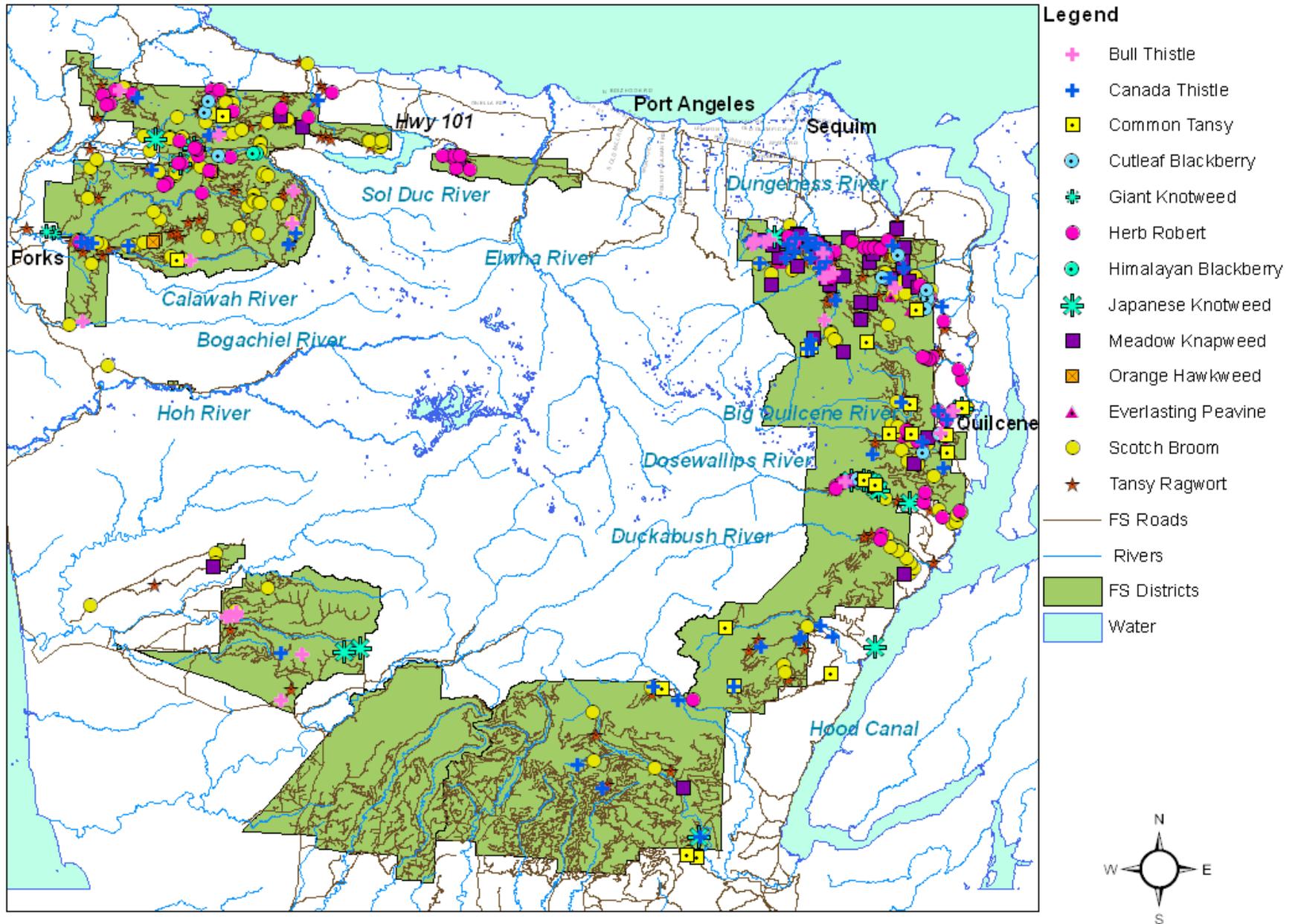
The increased capacity to cover ground by using all available tools has been instrumental in getting ahead of, and reducing the spread and impacts of invasive plant species. The discovery of new sites and/or new species continues to slow. Often these new infestations are small and easily controlled validating the concept of early detection, rapid response. See *Post –Season Observations* for more detail. Appendix A provides detailed information about specific 2021 treatments. Ensuring that rock sources meet the Forest Service’s “weed free” standard is a significant prevention tool that we have worked hard to encourage. See Appendix B for detail on the current “weed free” suitability of rock sources of which we have knowledge. Under the Clallam County Road Department’s Integrated Weed Management (IWM) plan, the Clallam Noxious Weed Control Board (CCNWCB) crew treated county roads connected to ONF lands. This was a coordinated response to our ONF 2021 work plan and is an excellent example of the cross jurisdictional cooperative approach to managing noxious weeds on a landscape scale. As appropriate, these county road treatments are shown on maps in this report. For more background on how this program has adapted over time, please see the end of Appendix D for a brief history of policies and resource levels that have influenced accomplishments in different years.

The 2002-2021 Accomplishment Summary Table in Appendix D provides prospective on 2021 accomplishments by summarizing yearly crew activities since 2002. Yearly comparisons are complex and inconsistent because of changes in focus, crew resources and FS reporting protocols since this program began in 2002. From 2002 to 2006, herbicides use was limited or disallowed. Manual treatments for those 5 years have been consolidated and acres treated estimated. Once herbicide treatments were allowed, we more than tripled our efficiency. A focus on surveys corresponded to number of new discoveries. For more detail see previous reports posted on our website for greater detail of any specific project season.

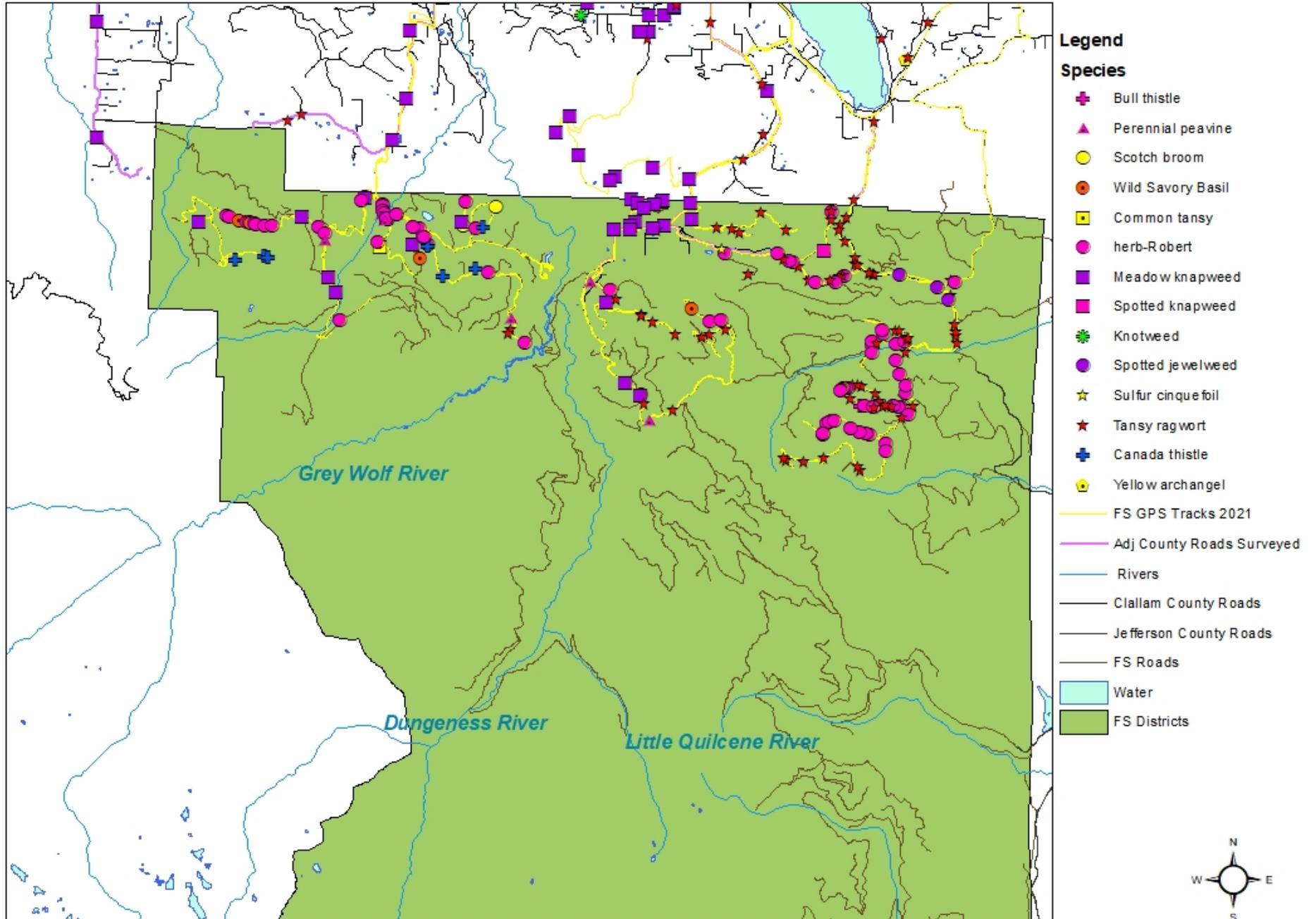
MAPS

- Four maps are shown—an original baseline *Overview of the Olympic National Forest*—two showing current season surveys and weed sites in the Hood Canal District from north to south —one showing current season surveys and weed sites in the Pacific North district.
- The Overview Map shows baseline weed sites, documented from 2002- 2005.
- Forest Service roads where weed board crew worked in 2021 are shown in yellow. The Roads Surveyed 2021 layer was created using a Forest Survey road layer and selecting roads on which treatment occurred. Although more efficient, this method of selecting surveyed roads may have inadvertently omitted roads that were surveyed while traveling to treatment sites. Some adjacent County roads that were surveyed and some of those treated in Clallam County jurisdiction for regulated weeds, are shown in yellow or pink, but are outside the Forest Service land boundary. This addition reflects Clallam County’s commitment to reduce the spread of noxious weeds between jurisdictional boundaries.
- The 2021 activity maps show weed sites either newly documented in 2021 OR sites of weed species that are regulated in Clallam or Jefferson County under state law, whether they were documented in past years or not. Points displayed on the map were collected this year by the field crew, using either a Garmin 78 or a smart phone. Office staff converted the points and track logs collected with a Garmin 78 to shape files, using the Minnesota DNR public domain software DNR GPS version 6.1.0.6, Crew used Collector and WSDA’s IForm to document treatment of regulated weed species when collecting points on a smart phone. Points gathered this year by either method were collated into the weed layer displayed on the map. Note that points are NOT sized to reflect the size of an infestation.

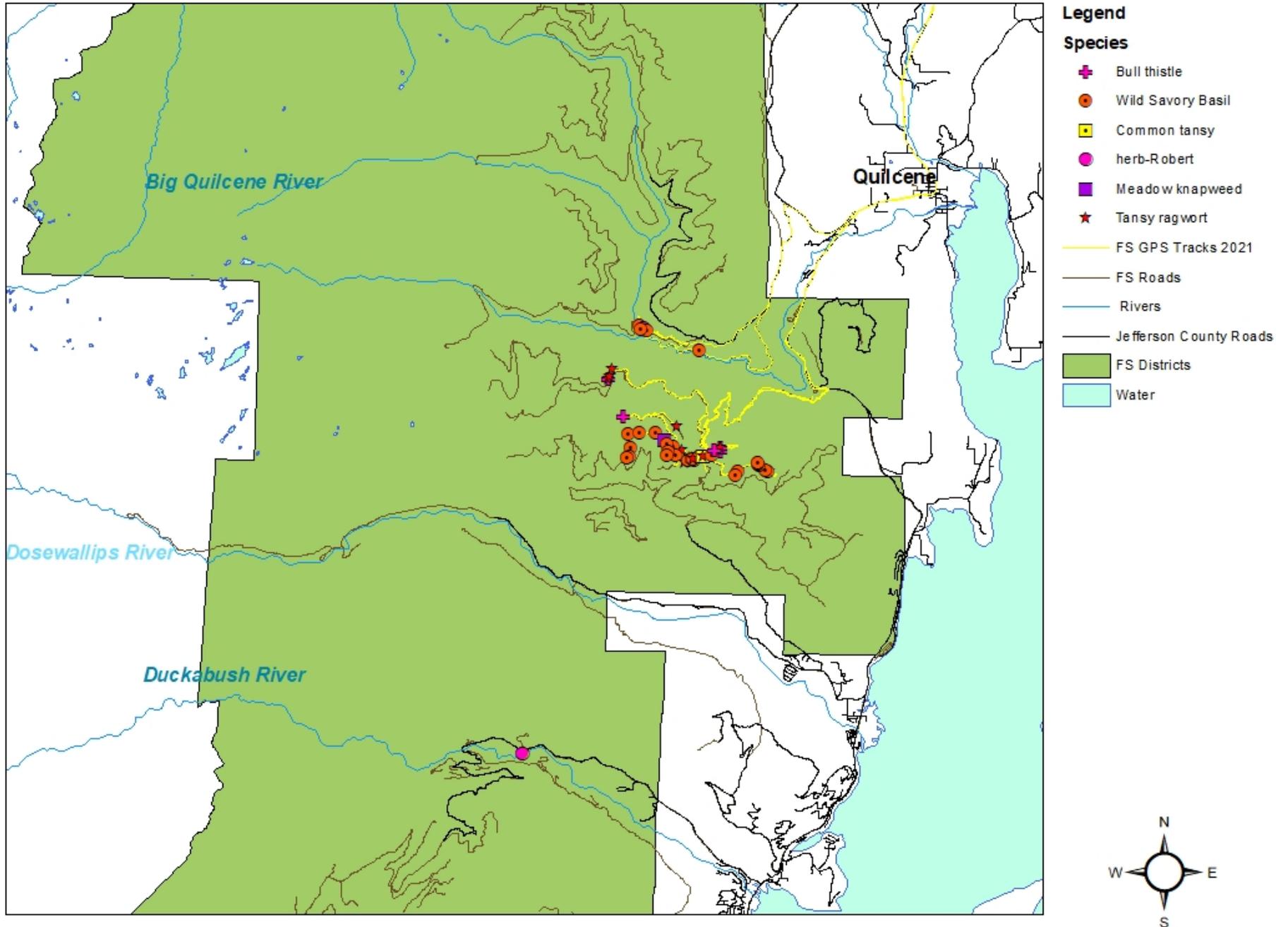
Olympic National Forest Overview, with Baseline Weed Sites



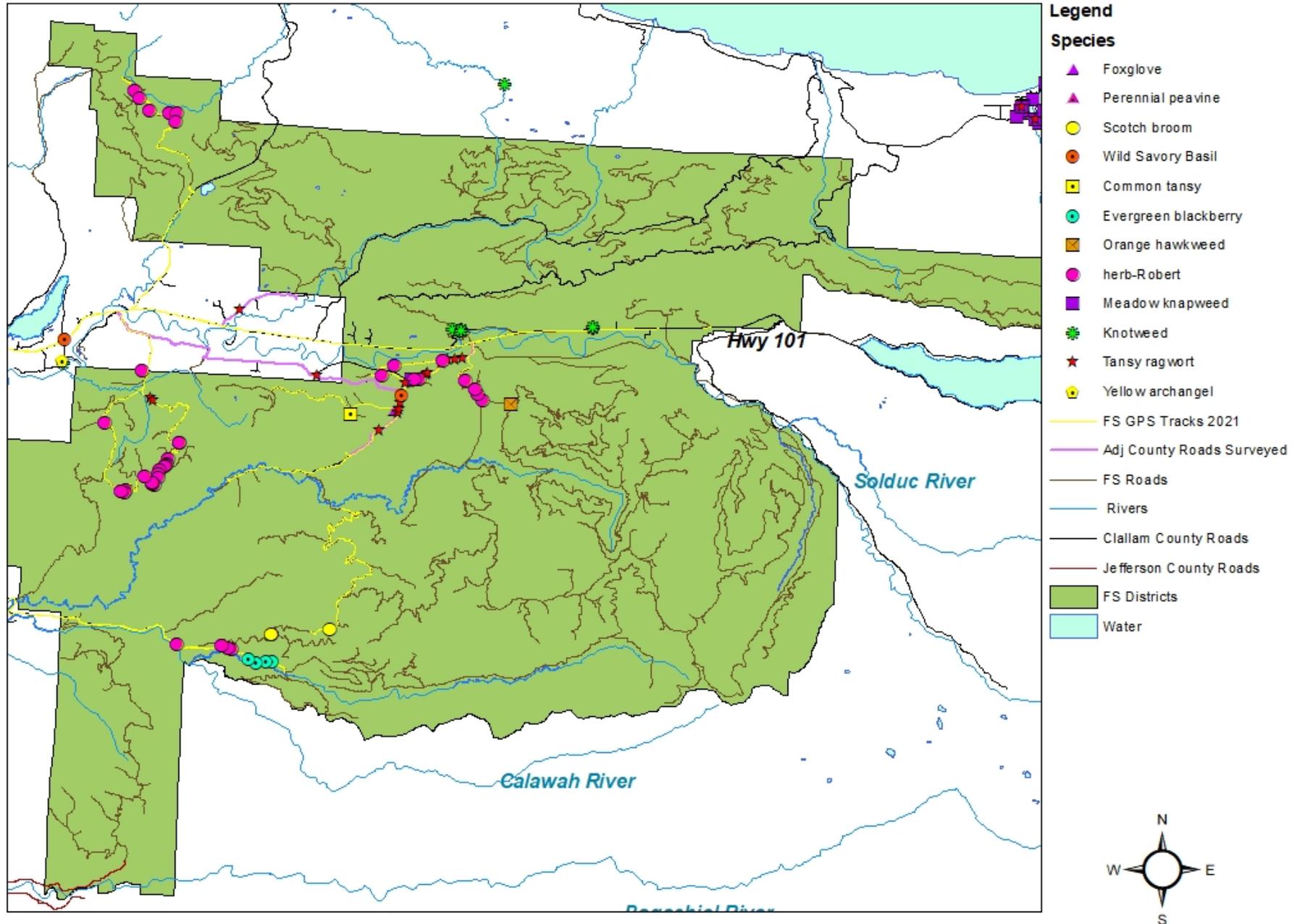
Hood Canal North



Hood Canal South



Pacific North





NWCB at Pat's Prairie



FS and Weed Board at Cranberry Bog



Coastal Restoration Crew directed by 10,000 Year's Institute gridding FS site

PROJECT SPOTLIGHT: COORDINATION-COOPERATION YIELDS BUMPER CROP OF WEED CONTROL

This season a number of high priority projects identified in the 2021 work plan were the subject of tightly coordinated efforts between several crews led by, the Clallam Noxious Weed Control Board (NWCB), Olympic National Forest, and/or the 10,000 Years Institute (10KYI) which secures funding for and directs the Coastal Restoration Crew. This was the first year that the Forest Service deployed our multi-jurisdictional crews in such a variety of combinations so effectively, thereby maximizing our combined potential to achieve mutual goals with fewer resources. Below are just a few examples of ways multiple crews were teamed to better achieve shared goals this year.

Weed Control in Habitat Thinning Forest Maintenance Activities

In a pre-season meeting, the Olympic National Forest Botanist and Invasive Plant Coordinator laid out a well-planned series of treatments in the vicinity of habitat enhancement thinning projects scheduled to start this year.

Under the ONF plan, Coastal Restoration Crew (CRC), amply staffed with a year round crew, was up first. The Coastal Restoration Crew was tasked with a manual sweep of specific roads adjacent to planned harvest areas. This made good sense on several levels. During the uncertain weather of late spring, early summer, The CRC could treat in the rain, and prevent any seed production.

They have a large crew with the resources to tackle large manual projects. The CRC works year round and is already geared up to treat at the right time for early blooming weeds such as herb Robert.

Several weeks later, either a weed board or Forest Service crew would treat newly germinated or non-flowering plants.

Finally, several weeks later, a late season treatment by the crew that had not yet treated would take place. In this way, no crew was over burdened with three treatments in one season, and the areas of high disturbance were well protected against invasive plants that would otherwise take advantage of open ground. The plan worked flawlessly.



Logs from habitat thinning



Haul routes and adjacent roadsides with known infestations of herb Robert were constantly monitored and received multiple treatments as needed.



Left: CRC member proudly displays giant tansy ragwort specimen removed from roadside adjacent to FS land. **Center:** CRC member planting native plants as part of Forest Service re-vegetation strategy. **Right:** 10KYI/CRC Humptulips planting team crew (photos provided by 10KYI)

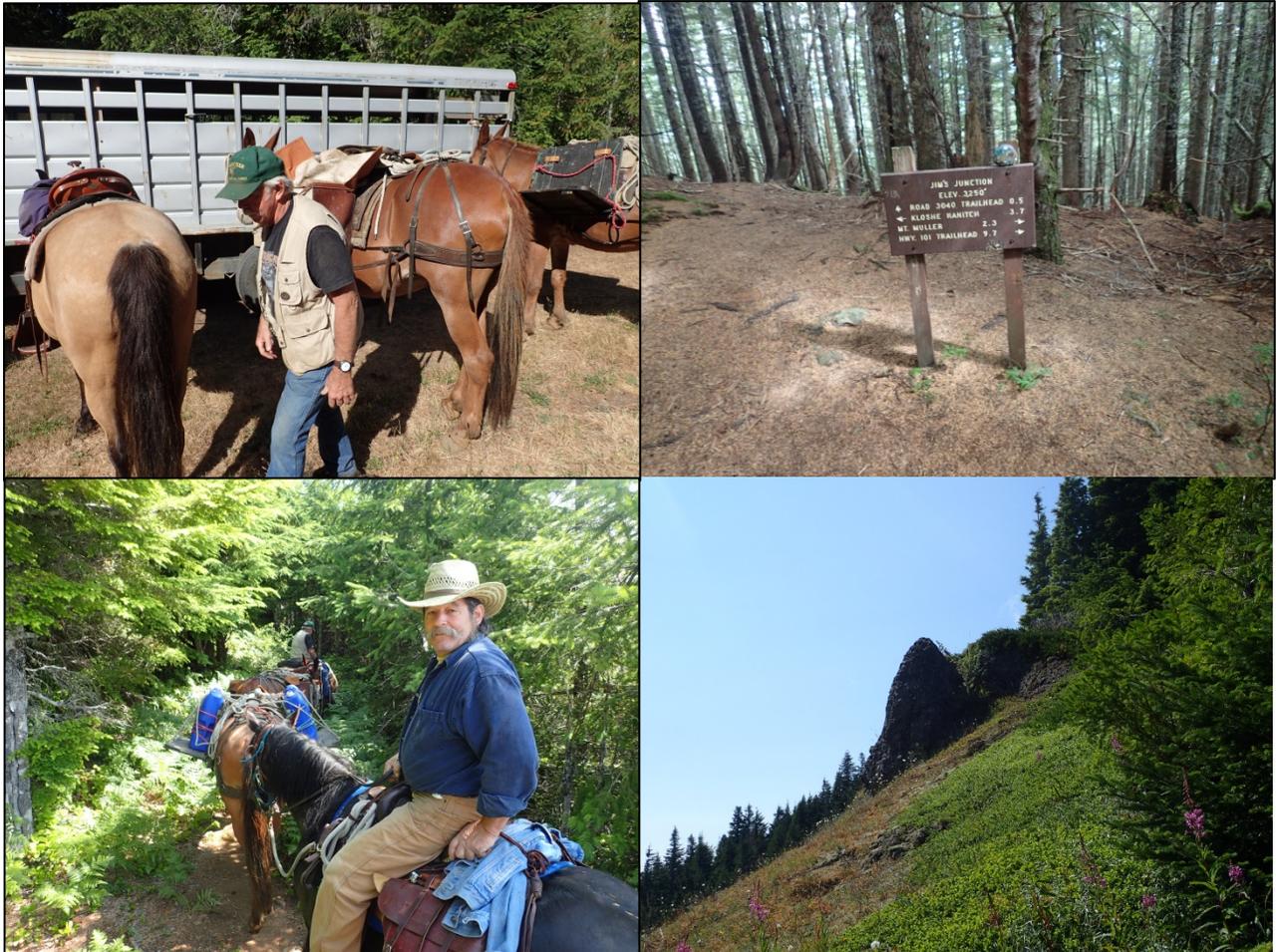
The Coastal Restoration Crew under the direction of the 10KYI worked alongside or otherwise assisted the Forest Service in multiple counties around the Olympic Peninsula. They worked in a variety of capacities from manual weed removal, herbicide treatments under direct FS supervision and revegetating treated areas with natives species This crew assisted with 90 acres of treatments on the Forest!

Botanical Areas-Cranberry Bog:

Long standing, large infestations of reed canarygrass are much reduced and selective treatments of Canada and bull thistle have allowed native thistle, a good forage species to rebound. Herb Robert, although reduced in density, persists in wooded areas as well as portions of the decommissioned road leading to and surrounding this botanical area. A combined FS/Weed Board crew tackled this site together.



Top left: Patches of native sedges recovering after reed canary grass removal are evident as open water recedes in this area of the bog. **Top right:** Short, patchy clumps of reed canary grass have germinated anew after last year's treatment. **Bottom left:** Heavy patches of bull thistle colonizing bare areas were uprooted, stacked, and flower heads sprayed. This technique has worked well with biennials that are blooming. **Bottom right:** Crew packs in all the equipment and supplies needed for the day long project as seen in the background. Crew first removed flowering biennials.



Top left: Pack animals are loaded at Littleton Horsecamp, a popular site maintained by Peninsula Chapter BCHW volunteers such as Larry Baysinger. **Top right:** Jim's Junction, at the top of the ridge, points the way to Jasmine's Meadow. **Bottom left:** While Larry leads, Ray Sutherland another Peninsula Chapter BCHW pauses to let the animals rest on the trail to Jasmine's Meadow. **Bottom right:** The terrain of the orange hawkweed infested area of Jasmine's meadow is extreme.

Jasmine's Meadow-ridgeline Between Kloshe Nanitch and Mt Muller:

A heavy infestation of orange hawkweed limited to Jasmine's Meadow was treated last year for the first time. Orange hawkweed can easily overwhelm most forbs and even grass over time. Extremely bitter and hairy, it is unpalatable, replacing other important forage species for wildlife. Much more expansive than originally reported, it had overtaken much of Jasmine's Meadow, an otherwise rich and diverse meadow; a habitat type that is relatively scarce in the Olympic National Forest. This is the larger of only two known orange hawkweed infestation within this western portion of the Forest.

Accessing Jasmine's meadow requires a steep ascent to the ridgeline of Mt Muller. This project in particular could not have been accomplished readily without the assistance of our local chapters of Back Country Horsemen of Washington (BCHW). Once again, this dedicated and incredibly knowledgeable group of volunteers came to our assistance. The hike in is steep, and there is no water onsite. Each gallon of water weighs approximately eight pounds-a full, four gallon backpack sprayer weighs over thirty-two pounds and can treat less than one/tenth acre when densely infested. We needed help. The Mt. Olympus Chapter of the BCHW, led by Larry Baysinger, agreed to supply us with both riding and pack animals. Another chapter member who maintains this trail on behalf of the Forest Service, assisted as well. The area we were able to treat last year looked considerably improved, and we were able to both expand and refine this year's treatment. This will require a revisit next year.

This is not the only way BCHW assist in the Forest. Individual Back Country Horsemen chapters clock thousands of volunteer hours across the state maintaining trails, re-building failing infrastructure and removing hazard trees at the behest of the Forest Service. The BCHW cheerfully make multiple trips hauling mounds of equipment and supplies in and out for crews sent to accomplish a variety of tasks deep in the backcountry.



Top left: NWCB treats roadside knotweed. **Top right:** NWCB treats roadside Scotch broom. **Bottom left:** NWCB treats roadside meadow knapweed. **Bottom right:** NWCB treats tansy ragwort and other roadside weeds.

Clallam County Roadside Integrated Weed Management Program

In our annual roadside Integrated Weed Management plan, the Clallam County Noxious Weed Control Board prioritizes control of weeds on roads that lead to or are adjacent to Forest Service lands. Additionally, FS staff may directly request priority in our plan to match activities on adjacent Forest Service lands as they are identified. This is another example of unprecedented coordination and cooperation between organizations. This year, we treated 47 miles on thirteen county roads that lead directly to the Forest. This led us to discover the first known patch of wild basil savory in west Clallam County on Cooper Ranch road, adjacent to several large Forest Service habitat thinning projects. Prior to this discovery, virtually all wild basil savory has been found in east Jefferson County. Because of increased concern about this species' rate of spread, the FS requested, and the State Weed Board acceded to adding wild basil savory to the 2022 state weed list.

A number of our success this year can be attributed to the unprecedented collaboration between volunteer groups like the Back Country Horsemen of Washington, non-profits like 10KYI and public entities like Weed Boards and Forest Service who share a common interest in taking care of our precious forestland and wildlands. Harnessing the energy and resources of a wide array of partners assures the best future for these lands. A broad base of support will be critical for the often underfunded Forest Service as it struggles to maintain recreation, habitat and sustainable forest resource use for the benefit of all.

POST-SEASON OBSERVATIONS

Nature of the Problem:

Invasive plant infestations threaten the health and diversity of native plant communities both within Olympic National Forest and on adjacent lands. Aggressive, non-native plants can displace native species, interrupting important but sometimes subtle ecosystem functions. Some weeds are toxic to humans and wildlife, and some can adversely affect soil chemistry and/or cause erosion. Many die back in the winter and offer no food or habitat for native wildlife. Others persist or spread quickly, preventing native plant recruitment or forest growth after disturbance.

The Forest Service, in consultation with the local weed boards, creates an annual work plan identifying high priority sites based on known problems or anticipated needs. This planning includes anticipating the potential for weed invasion during road decommissioning, thinning, or other forest health and maintenance activities. This year, the NWCB crew treated **77** high priority sites, all but four that were assigned. Three of these four were deemed lower priority in season because of low infestation levels; one was missed due to an oversight. We treated **18** additional lower priority and **6** Early Detection or survey projects for a total of **101** projects. We additionally assisted with several high priority FS crew assignments.

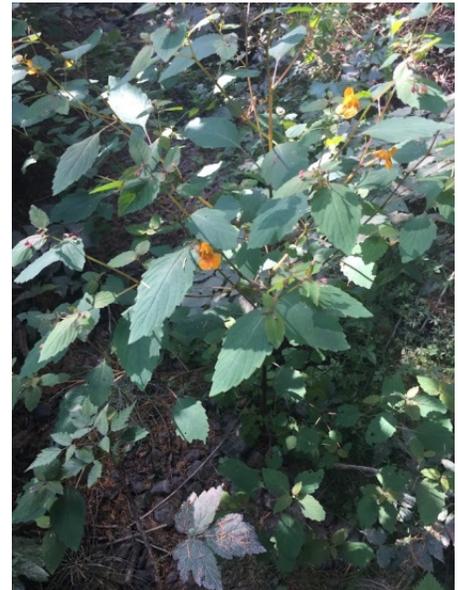
Our early detection, rapid response strategy is effective. Non-native plant diversity in each project area has decreased, suggesting that infrequent species are being gradually eliminated. Of the 15 occasions where we found meadow knapweed this season, all but two had no more than a single plant or two. Because over a dozen species have almost been completely eliminated (found at only one or two sites), we made a point of returning to ensure they couldn't take hold again. For example, we re-treated the knotweed at the Snider Work Camp, which hadn't been detected for several years. Last year we discovered two teasel rosettes at the Caretaker's cabin after a major ground disturbing event that took place there three years ago. It was only the third time we had detected teasel in the Forest. A single rosette was found at Caretaker's this year, (none were found in the other two sites). Nearly all the many invasive ornamentals at this site have been eliminated. Very little everlasting peavine, previously very extensive, was found in our treatment areas this year. Tansy ragwort has responded equally well to treatment; overall density is sharply declining with consistent follow-up. We may have reached a preventative stage for many projects.

There is more work to do. An extensive orange hawkweed site up Mt Muller at Jasmine's Meadow was again treated, and while the density was much reduced, it is not gone. Wild basil savory is found primarily on the east side of the Peninsula in Jefferson County. During some assigned road surveys, we discovered wild basil savory had already begun to spread. We are sure many roads that have not been treated in this eastern portion of the Forest have nascent populations that should be stopped. We discovered and treated the first known (small) patch of wild basil savory on a west Clallam county road, adjacent to a very active Forest Service habitat harvest unit.

Although we are making progress, herb Robert continues to be problematic. The last several work plans have deliberately avoided larger, known infestations. Milestone for early treatment, or Milestone combined with Triclopyr can quickly knock down more mature stands while conferring the residual needed to suppress seed germination. We were not able to arrange experiments with other treatments that have shown promise. As the



Pat's Prairie, a Forest Service botanical area is largely pristine after multiple years of Canada thistle treatment



We meticulously combed the only spotted jewelweed site. This spot is prone to re-infestation by a neighboring Jefferson County road.



We removed minute amounts of herb Robert from an area slated for road development

significance of invasive plant impacts percolate through the Forest Service Agency, more prevention strategies are being built into the wide range of Forest Service projects and activities that have potential to act as vectors for weeds. These include forest management, road-to-trail conversions, and contract and material standards. These new policies are smart, cost-effective steps that are already beginning to bear fruit. More private quarry owners ask for certification inspections. The NWCB treated **12** Forest owned rock sources, and also provided certification services for 12 of the privately owned rock pits that may provide material for Forest projects in the future. **25** county rock sources were treated under the County Integrated Weed Management plan and **6** quarries owned by the Department of Natural Resources were inventoried and certified. These DNR rock sources will be used in upcoming Forest projects. The results of rock source surveys are summarized in Appendix B.

There are many examples of progress. Over the years, weed infestation size, density, and diversity have declined significantly. Intra-agency partnerships and collaboration have increased. Long range goals, detailed planning and consistency, and trained eyes in the field have been the key to our successes.

Invasive Weed Populations:

- We treated 26 different invasive plant species. The most commonly recorded invasive species--found at more than 20 sites or at least one-fifth to one half of all sites treated this year--continue to be herb Robert, tansy ragwort, Canada and bull thistle, foxglove, Scotch broom and now, wild basil savory (listed here from most to least in this category). Note that bull thistle and foxglove are considered widespread by ONF, and are not a high priority. However, these species were treated BECAUSE they were not that frequent, and there were few other higher priority targets at those projects. Wild basil savory has been added to the 2022 State Noxious List and will be mandated for control in Clallam and Jefferson Counties. It was detected for the first time in two places in western Clallam County on non-forest lands; all other known sites are in the Forest, although none has been detected in the western Peninsula portion of Forest lands.
- There are at least twelve infrequently recorded species--with less than four total sites--including bishops weed, non-native blackberry, (both Himalayan and cutleaf), comfrey, English ivy, orange hawkweed, knotweed, spotted jewelweed, spotted knapweed, periwinkle, teasel and yellow archangel. Although previously detected, **no** poison hemlock, spurge laurel, sulfur cinquefoil or yellow hawkweed plants (4 species) were detected this year. **No new species** were detected on the Forest this year.
- Meadow knapweed and everlasting peavine fell between the most/least frequent categories with 15 and 14 sites respectively.
- The crew took **351** waypoints, **32** of which likely document infestations new to the associated project area. Over 182 points represented regulated weed infestations.
- Our treatments of spotted jewelweed have been successful but must continue; over 200 hundred plants were removed before flowering from the ditch adjacent to the 2855. It will be important to ensure new crew is able to ID this plant in its early stages. We believe spotted jewelweed is coming to the Forest via Snow Creek Rd, an adjacent Jefferson County road where it is abundant but the Jefferson County Weed Board has not enforced control. Coordinated efforts with the Jefferson NWCB will be essential to ensure that spotted jewelweed is controlled in the vicinity of Lord's Lake Loop.
- Tansy abundance is down in areas where there has been consistent follow-up, especially in the Dungeness Watershed. There was considerably less tansy ragwort the along the northern portion of FS 2620, Rocky Brook since treatment last year. We need to expand our efforts to more of the road system in this vicinity.
- The number and extent of herb Robert infestations seems to be holding or shrinking. Treatments containing aminopyralid appear to be suppressing herb Robert germination, a key factor in gaining control. Small herb Robert patches treated last year responded well to treatment.
- Treatment of orange hawkweed at Jasmine's Meadow was very successful, but follow-up will be necessary for further reduction. Assistance from the BCH will continue to be essential. No orange hawkweed was found in Bockman pit for the second year in a row. We were not assigned the other known site this year on the 2900, but made sure to go there because it is so much reduced and hard to find. We dug up 8 small, non-flowering plants. We treated multiple orange hawkweed sites on private property in Forks this year, which should also help minimize the potential of spread to FS lands.
- In general, the condition of rock sources on FS land improves every year.
- It is clear that the more often trained crew is out in the field, the more often we find and eliminate small, new infestations before they gain a foothold. Many times, a single treatment of these EDRR sites is sufficient!
- We performed a cursory survey of meadow knapweed on DNR land at Burnt Hill. As you can see from the maps, this is the source of all the meadow knapweed in the Sequim area--FS lands in particular. We will press the DNR for treatment in this area to reduce future contamination to adjacent FS land.
- Rush skeletonweed, previously unknown on the Olympic Peninsula, was discovered last year on Hwy 101, just east of Port Angeles. We found none there this year, after WSDOT was alerted and performed treatment. However, this was an active construction site and will need further monitoring.

- We treated 13 county roads (47 mi.) at major access routes to Forest Service lands. Extensive yellow hawkweed and sulfur cinquefoil sites recently discovered have been successfully treated through the County's roadside Integrated Weed Management program. Italian thistle, another class A weed, but one that is only confirmed here in the entire state, appears to be contained at present. Two small infestations of Scotch thistle, and one of gorse, both relatively unknown in Clallam County were discovered and treated this year. We consider treatment of these species a high priority, especially along corridors that lead to Forest Service lands.
- The implementation of Clallam County's Integrated Weed Management plan with its focus on controlling weeds in county rock sources and building self-sustaining resilient roadside vegetation through mowing modification and native plantings will be significant factors that reduce overall weed pressure on Forest lands, now and into the future. A full report of our complementary activities under the IWM plan can be viewed on our website.

Survey, Treatment, and Monitoring

- Competition for seasonal employees was especially intense this year; we were short staffed.
- NWCB crew treated **77** priority 1A projects listed for Jefferson/Clallam in the 2021 work plan, and a **18** priority 2 projects, **3** non-prioritized projects that were treated and listed as EDRR, as well as two priority 1A and one priority 2 projects listed for FS crews. (in total, about the same number of projects as 2020).
- We did not have information about the FS crew completion rate for projects listed in the workplan.
- Most treatments included the use of aminopyralid. We see that aminopyralid provides longer lasting herbicide control (for young plants) than triclopyr with less impact to native woody species. However, aminopyralid may not be as effective on everlasting peavine as clopyralid. We'd like to hear from others regarding their experience. Wild basil savory is more difficult to kill. We were most successful with a combination of aminopyralid and triclopyr.
- New collaborative weed control projects between Coastal Restoration Team under the leadership of the 10,000Years Institute, the Clallam County Noxious Weed Control Board and the Forest Service were a highlight of work this year. Close communication and coordination were essential to the success of these projects.

Data Collection/Mapping

- The pre-and post-season meetings between the FS and Weed Boards continue to be essential. The pre-season documents and shape files are invaluable. Thank you!
- We collected points for all regulated weeds, even if they had been found in previous years. We hope to develop a **shared** comprehensive digitized map that allows all weed control practitioners to see all sites to better isolate source areas and anticipate possible weed threats nearby regardless of jurisdiction.

RECOMMENDATIONS

Future Direction of the Project

Title II funding under the Secure Rural Schools Act has provided the opportunity and impetus to develop a collaborative relationship between the Forest Service and local weed boards to address invasive plant issues. The cross-prioritization strategy between this program and Clallam County's Integrated Weed Management Plan and the general weed control program county wide amplifies invasive species control efforts and ensures real successes in both jurisdictions.

We hope to focus on preventative surveys, early detection and rapid response, and rehabilitation activities, such as re-seeding with native species where it makes the most sense. A limited supply of non-grass mixes, are now available.

The working relationship between Weed Board and Forest Service has enabled us to refine and improve many elements of this project over the years. The expertise, flexibility, and locality of weed boards make us ideally suited to identify and control new or small infestations and other tasks as needed and directed by the Forest Service Botany program. The planning coordination that occurs because of the Clallam County Weed Board involvement in both FS weed control program and that of the Clallam County Road department is a powerful new tool that not only improves efficiency and efficacy but greatly increases the likelihood of achieving program goals.

We appreciate the opportunity to provide input on weed control strategy and to help coordinate the Forest Service's weed management plan. Intra-agency invasive species control coordination has not only become increasingly important, but also is more likely to occur. This is a direct legacy of the working relationships created on the Olympic Peninsula during the tenure of the Secure Rural School Act.

Specific recommendations for next year are listed below.

Program Development

- Participate in pre- season planning with other land managers to identify needs, pool resources and formulate more cross boundary invasive plant control projects that protect FS resources.
- **Update the comment field in the annual project list**, and incorporate pertinent comments that we have provided in this report.
- Continue to collaborate with ONP and ONF on a native plant material consortium that can provide a reliable, low cost, locally sourced supply of a wide variety of native plant materials.
- Simplify project FACT sheets where possible.
- Continue to develop relationship and work plan that includes Coastal Restoration Crews. Clearly communicate expectations, priority sites and establish periodic reviews during the season to ensure we are all on the same track.
- Identify projects that will benefit from volunteer participation.

Survey and Treatment

- Continue to focus on infrequent, high priority species.
- Prioritize more surveys in the vicinity of known wild basil savory sites, particularly in the Rocky Brook area.
- Prioritize locations where ground disturbance is planned and bare ground is expected as a result; prepare for seeding or planting where bare ground has been created. In particular, areas such as the Sitcum where culvert replacement projects are scheduled to begin in 2022.



Wild basil savory is spreading rapidly



Small but dense patch of wild basil savory discovered on the 2620-060. This species is increasingly found in the early stages of invasion on roads not frequently monitored.



Cell tower on 2620 spur. Remote locations with infrastructure requiring maintenance from other agencies must be monitored to ensure invasives aren't inadvertently introduced.

- Limit FS crew treatments to southern and extreme west Jefferson County and/or heavy density sites that need crew combinations (WCC or NWCB/FS)
- Survey and treat areas as recommended in Appendix C.
- Ensure that crew has access to sites on list.
- Consider adopting a four-year survey cycle where resources allow-use this report's history of treatment to determine where surveys may be needed.
- Seek cooperation from Jefferson County road department to treat spotted jewelweed on Lord's Lake Rd to reduce invasion potential to FS land and request control of hawkweeds on Anderson Lake Cutoff Road.
- Make "agency requests" to the Clallam County Noxious Weed Control Board prior or during its first board meeting of the year to ensure county roads that comprise Forest Service land access are included in the annual roadside Integrated Weed Management Plan. Cooper Ranch and Mary Clark Road(s) were given a higher priority in our plan because of this request.

Documentation

- Collaborate on ways to make FACTS forms more streamlined while collecting needed information.
- Continue to provide the excellent project discs at the beginning of the season.
- Provide a summary of FS crew activities in Clallam and Jefferson Counties to the Weed Board as soon as the data has been compiled. A combined summary of all treatments gives a more complete view of where treatments have been completed over time and would make this summary report more complete and useful.
- Work toward a shared infestation map and point collection protocol.

2021 PROTOCOLS



FS and Weed Board crew team up to treat at Cranberry Bog.

1. Team and Project Dates

Treatments were performed by Clallam County Noxious Weed Control Board staff consisting in various combinations of Cathy Lucero (coordinator), Todd Coward (lead inspector), and Austin Pelayo (seasonal field technician). 2021 fieldwork began in late-June and continued through mid-October. Backcountry Horsemen volunteers (Olympic Chapter) assisted with transport to treat orange hawkweed in Jasmine's meadow. All adhered to Washington State COVID-19 safety protocols to protect both staff and the public and reduce the potential spread of this disease while we conducted our work. For several projects, weed board staff was instructed to treat during a specific timeframe as part of a coordinated, multi-team effort.

2. Invasive Species Recorded

Treatment and surveys focused on Class A and B-designate weeds on the Washington State Noxious Weed List (see Appendix H), and additional species that are of concern to the Forest Service. In most cases, Class B non-designate, Class C, and other low priority non-native weeds were only documented when an infestation was in a site of particular concern (e.g. a Botanical Area), when the infestation was of notable size, or when a new species was found. Exceptions were made for especially invasive species, such as herb Robert or knotweeds, which threaten undisturbed areas. See Appendix G for a complete listing of species recorded from 2002 to 2021. Treatments and surveys were not intended to target every non-native species.

3. Survey and Treatment (see Appendix A):

The project focus was on treatment of known infestations in specific project areas identified by the Forest Service, often including sites that had received treatment in the past. Survey and treatment of new infestations was also a priority, especially if new sites were seen enroute to known sites, or as part of a systematic effort to monitor all Forest Service land through surveys.

- a. Many known sites are along roadsides, and are typically surveyed by vehicle but also on foot. The distance surveyed was measured using a Garmin GPS unit or vehicle odometer, and the area surveyed was calculated using the following formula. Crew made a road specific estimation of how many feet on each side of the road were to be included in the formula. The road width was included in the calculation only when weed growth in the road itself (as opposed to shoulder) required treatment.

$$\frac{\text{miles surveyed} \times 5280 \text{ ft/mi} \times \text{ft/roadside width} \times 2 \text{ roadsides/survey}}{43560 \text{ ft}^2/\text{acre}}$$

- b. Trailheads, campground parking areas, and rock sources were surveyed on foot and area surveyed or treated was estimated by using measurement functions on a Garmin GPS unit or by other predetermined figures.
- c. From 2007 through 2012 miles surveyed were estimated from treatment sites (recorded on FACTS forms) and roads taken to get to those treatment sites. Beginning in 2013, surveyed miles **only includes** a single trip on a road, even though it may have been traveled and surveyed many times during the season. Additionally, **only treated** roads documented on FACTS forms were included, **not** additional roads that were viewed on the way to a project. In 2018, only treated mileage documented on FACT sheets was recorded; surveyed miles were not included.
- d. Small tap rooted weed infestations were often treated manually on rainy days. Seeded plants were dead-headed; heads were bagged and disposed of off-site, (or treated on-site), when encountered.
- e. Herbicide treatments were applied based on guidelines established in the 2008 EIS which allow the use of 10 different herbicides.

- i. A legal notice listing all sites under consideration for herbicide treatment (see Appendix I) was published in the Peninsula Daily News on April 26, 2021. Herbicide applications were carried out between June 27th and October 10th.
- ii. Backpack sprayers were calibrated prior to use on FS lands per federal NPDES standards. A sample calibration sheet and the calibration methodology can be seen in Appendix K.
- iii. Foliar herbicide applications were made using 0.125% Milestone, 2% Element 3A or 1.5% Vastlan (both triclopyr), 0.5% Transline (clopyralid), or 1.0% Polaris (imazapyr) and 0.5-1% Competitor and 0.25% Blazon (marker dye).
- iv. On-site notices were posted prior to treatments and left in place for at least 24 hours afterwards. Treatments in high-use areas such as campgrounds were avoided during busy times (near weekends or holidays), Forest Service recreational personnel were contacted prior to commencing treatment.

4. Data Collection

The Forest Service identified 24 broad “Project Areas” that consolidated individual species sites reported in previous years. Each “Project Area” was subdivided, usually into road segments or spurs. Clearly defined areas such as campgrounds or rock sources became a subunit. Each subunit was given its own unique “Reference Number”. Please see previous reports for each year’s protocol.

Forest Activity Tracking Sheet (FACTS)

FACT sheets are used to record treatments in each Reference # site. This form has been modified several times since its introduction causing some confusion and making yearly comparisons difficult. A current sample of this form is shown in Appendix J.

Invasive Plant Inventory for Rock Sources

Rock Source Survey, introduced in 2009, is used to track the suitability of quarry material from both public and private sources that can meet FS “weed free standards”. FS protocols for filling out this form are included in Appendix J along with a sample form.

Invasive Plant Treatment Monitoring

The Forest Service is required to ensure monitoring of at least 50% of all treated acreage. Information about type, area, and cover class of each species is copied from the original FACTS form relating to treatments at each project. The percent efficacy of treatment is then recorded based on codes that range from 0-100. A sample form is shown in Appendix J.

Olympic NF Invasive Plant Inventory Data Collection Form NRIS

This form is used to record information about new weed sites. Data from this form is entered into **Rangeland PC Data** and submitted to the Forest Service for staff to upload into the **NRIS Terra Database**. For specifics of data collection and entry see previous reports. New sites that were found **and** treated this season were recorded on FACTS forms only.

5. Spatial Data Collection and Mapping:

Weed sites were previously mapped in ArcView GIS by county staff so that a real-time map could be available to the field crew. The shape files produced for that map were retained by the Clallam County Noxious Weed Control Board for use in future fieldwork as necessary. These files are not submitted to the Forest Service because a Forest Service GIS analyst must construct a GIS coverage that coincides with other Forest Service database materials and metadata. Weed Board Protocols for GPS mapping have not been consistent, but are improving. As follows:

- a. NWCB crew carries a Garmin 78 pre-loaded with Topo US 24K or a Montana Hunt chip, which identifies landowners. The automatic track log function is enabled.
- b. Meta data is set to NAD83 Harn, State Plane North 4601, statute feet. Newer Garmin units that don’t allow for this projection are set to UTMs, statute feet.
- c. Crew is instructed to turn and leave on units, just prior to entering project area.
- d. Crew is directed to take waypoints on GPS units for significant events or sites, such as beginning or end of treatments, new weed locations, or to document named locations such as quarries.
- e. Individual weed sites are plotted as points. If there is no existing waypoint, crew marks a location using a pre-designated symbol and then records the four letter plant code and size of infestation in feet in the comment field. Beginning in 2018, priority weed species sites were also recorded in a state-issued phone in the iForm WSDA database app. Beginning in 2018 sites containing weed

- species that were regulated in Clallam or Jefferson under Washington State weed law, were documented in iForm every year instead of just the first time the infestation was found.
- f. New layers are produced post-season showing where treatment occurred. Waypoints and tracklogs were downloaded in the office and converted into shape files through the Minnesota DNR public domain software DNRGarmin version 6.1.0.6 or by using ArcGISOnline.

6. Data Reporting

Office staff reviewed FACTS, Monitor, and Rock Source Survey forms and submitted copies to the Forest Service; generally biweekly, during the field season. The originals were retained in the Clallam County Weed Board office. More detailed data is included in the Appendices to this report, as described below.

- a. **Appendix A** is the Project Area list or “annual work plan” supplied by the Forest Service at the start of the season, with details of 2021 treatments by acreage, date and species. It is a comprehensive account of work accomplished by Clallam Noxious Weed Control Board in 2021.
- b. **Appendix B** is summary of current rock source inspections, treatments and readiness.
- c. **Appendix C** shows weed sites recommended for next season’s project area list.
- d. **Appendix D** is a master list of the roads surveyed and treated since the inception of State Rural School Act, Title II funded projects. This list shows the amount of survey completed on each road, and totals for each year, as well as the number of weeds pulled manually for each year up to 2006. It also lists the area of treatment, by road, completed from 2007 through 2021, and weed species treated. The master list is followed by a table summarizing yearly accomplishments by crew since 2002. These summary tables have been revised in 2021 as described in the narrative. Finally, brief annual narratives provide perspective on how the program has responded to changing conditions and resources.
- e. **Appendix E** is a brief summary of weed status and weed board work in Clallam County that complements the work conducted on Forest Service land.
- f. **Appendix F** is a list of all weed species reported and entered into the NRIS Terra database over the lifetime of this project.
- g. **Appendix G** gives control recommendations for each invasive species identified during the course of this project.
- h. **Appendix H** shows the 2021 Washington State Noxious Weed List-, which is updated annually according to WAC Chapter 16-750. Under RCW Chapter 17.10 all non-federal landowners (and excluding tribes) in the state are responsible for controlling or eradicating listed noxious weeds on their property. The control threshold is defined by RCW 17.10 and is determined by the class into which each weed is placed. This same law provides for the formation of County Noxious Weed Control Boards. Federal agencies are required to work with local agencies to meet or match local weed control standards under the Federal Noxious Weed Act amended in 1994.
- i. **Appendix I** shows examples of a legal notice regarding herbicide use and an on-site posting notice.
- j. **Appendix J** shows a sample of all forms used in the project and Forest Service established protocols for filling out each form.
- k. **Appendix K** shows a sample record of calibrations performed to comply with federal NPDES requirements. The calibration methodology is also provided.

APPENDIX A: 2021 PROJECT LIST ACTIONS

The following table is based on the Project List developed by the Forest Service, which serves as a prioritized work plan for the Clallam Noxious Weed Control Board (CNWCB). The list had three categories, Priority 1A, 2, or no priority-some sites suitable for survey were identified, but not prioritized. This table includes all Priority 1A projects within Clallam and Jefferson counties that were assigned in the work plan and details any treatments. Priority 2 sites are only shown when treated. Sites shown in the table as Early Detection Rapid Response were originally listed in the work plan with no priority, or were not shown and have been added. Clallam County roads that directly lead to Forest Service land are highly ranked and treated for regulated or high priority weeds under our roadside Integrated Weed Management Plan. County roads adjacent to or directly leading to FS lands and associated weed treatment details have been included at the beginning of the table to show the extent of our coordinated effort. We show a FS priority (1A or 2) for a county road when it was so designated in the FS annual work plan in our area.

The table is sorted by FS road number; smallest to largest. It shows the acreage treated, each date the Clallam Noxious Weed Control Board (abbreviated to NWCB in the table) was on site and whether the treatment was manual, chemical or a combination of both. All told, the Clallam Noxious Weed Control Board surveyed **318** and treated **262** acres, manually or chemically. We did few retreatments of our work but were part of a coordinated treatment plan for several projects where one crew successively followed another during the treatment season. Except for these coordinated areas, the FS/WCC crew was assigned different projects which are not shown in the table. The FS treated **243** acres manually or chemically (totals provided by the FS). This year, the 10,000 Years Institute (10KYI) teamed with FS crew to complete a variety of projects; that crew assisted with **90** acres (total provided by the FS). To the best of our knowledge, there were no weed sites treated by a Clallam County Chain Gang this year, nor other crews not directly under the supervision of Forest Service or Weed Board staff.

County road treatments that complimented weed control efforts on Forest Service lands but were conducted through separate funding provided by Clallam's Road Department, are listed using the FS four digit road number (when known). We show Clallam County roadside treatments of **11** weed species within **111 acres** (approximately 47 miles) along **13 county roads** to underscore our cooperative efforts to protect FS lands from noxious weed invasion. An additional **205** acres within **25** county pits were also treated. (Additional details are provided in Appendix B)

In the table below, cells in the project's priority (set by FS) are color coded. Priority 1A sites for CNWCB are **bright yellow**, Priority 2 sites are **light yellow**, non-prioritized or survey, are **green**. Sites assigned to FS but worked on by CCNWCB staff are shaded in **blue**. This year, details of FS crew activities were not available at the time this table was prepared and are not included. The CNWCB treated a total of **101** projects. We treated **77 Priority 1A** projects, all but four on the list. Three of these Priority 1A sites were long walk-ins that, because of the amount of low level infestation remaining, did not warrant treatment this year, and the fourth was an oversight. We treated an additional **18 Priority 2** projects and **6** projects with **no priority** listed. These latter sites were either listed for survey or noted as EDRR, (early detection, rapid response). As noted above, we do not have the information to provide a similar breakdown of other crew work. The table summarizes each visit to a specific project this year. In cases where projects required more than one trip to complete, the work has been summarized. We assisted with three additional FS assignments.

In the *Species Treated* column, we recorded only those species we found and treated on each site. High priority species have been **bolded** in this column. The *Species Treated* column does not necessarily list species noted by the Weed Board crew or FS in prior years. Our *Comments* column notes high priority species not previously mentioned or not found this year, as well as areas that had poor access that limited the crew's ability to treat. Totals have been rounded to the nearest whole number unless the total was less than one.

We continue to focus on sites with infrequent, high priority weeds such as orange hawkweed, yellow archangel, knotweed, and knapweeds in addition to sites that may be soon decommissioned or are in the planning stages for forestry maintenance or habitat restoration activities. The *2022 Priority* column reflects crew suggestions based on field observations and should be considered in preparing next year's project list.

2021 Project Activity Summary

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
660 661 Plus	NWCB	1A	North Fork Calawah River	2036	Mary Clark Road (county)		6/29/2021	11.2	11.2	H		57.4	CYSC DIPU HYPE RUAR SEJA	
120 135 169	NWCB	1A	Middle Sol Duc River North Fork Calawah River Upper Sol Duc River	2065	Cooper Ranch Road (county)		6/29/21 8/24/21	8.8	6.2	H/ M	4.6	32.6	CYSC DIPU GERO SEJA	
	NWCB			2021	Bear Creek Rd (county)		9/1/21	4	4	H		30.6	CYSC, SEJA	
	NWCB			4177	Blue Mountain Rd (count)		8/9/2021, 9/9/2021	10.8	10.8	H/ M		30.6	CEMO, CYSC, DIFU, POBO, RUAR, SEJA	
	NWCB			3050	Little River Rd (county)		7/12/2021, 9/7/2021	8.6	7.3	H		39.6	CEMO, CYSC, GERO, LALA, RUAR, SEJA	
	NWCB			3038	Olympic Hot Springs Rd (county)		7/13/2021, 7/14/2021, 9/7/2021	2.4	2.4	H/ M	0.5	35.2	CEMO, CYSC*, DIPU*, GERO*, LALA*	

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
	NWCB			9221	Joyce Piedmont Rd/East Beach (county)		7/28/2021, 7/14/2021	8.1	8.1	H		58.2	CEMO CIAR CYSC DIPU GERO SEJA	
	NWCB			4360	Lost Mountain Rd (county)		7/21/21	9.9	9.9	H		22.9	CEMO CIIN CYSC GERO HYPE LALA RUAR SEJA	
	NWCB			5006	Jimmy-Come-Lately Rd (county)		9/13/2021, 9/14/2021	0.5	0.5	H		32.9	CEMO CYSC RUAR SEJA	
	NWCB			5331	Palo Alto Rd (county)		7/20/2021, 9/13/2021	15.1	15.1	H/ M		37.4	CEMO CIIN CYSC HYPE LALA RUAR SEJA	
	NWCB			5695	Woods Rd (county)		6/28/2021, 7/01/2021	2.6	2.6	H		53.9	CIVU CYSC DIPU GERO RUAR SEJA	
	NWCB			5714	Chicken Coop Rd (county)		10/5/21	9.8					CIAR, CIVU, CYSC DIPU PHAR RUAR	surveyed only, usual widespread weeds, but no high priority weeds
	NWCB			DNR # PA-2000 and spurs	Burnt Hill (DNR)		10/5/21	30					CIAR CIVU CEMO CEST CYSC DIPU GERO RUAR SEJA	SURVEY ONLY- This area is CEMO source for adj FS land

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
				Total Clallam County Rd adj to FS				110.6	66.9					
			FS Projects											
310	NWCB	1A	Lower Duckabush River	2510070	Collins CG	Y	8/17/21	6	6	H		7.5	CLVU GERO	6 campsites were occupied and could not be treated
295	NWCB	1A	Lower Big Quilcene River	2620000		Y	8/9/21 8/10/21 8/31/21	2.2	2.2	H	2.2	8.6	CIAR CLVU CYSC DIPU GERO HYPE SEJA TAVU	small amount of TAVU remains
295	NWCB	1A	Lower Big Quilcene River	2620000		Y	8/10/2021 8/31/202	3	3	H		76.7	CIAR CLVU CYSC DIPU GERO HYPE SEJA	CLVU very heavy. After it is gone, may be good location for reseeding
306	NWCB	1A	Lower Dosewallips River	2620050		Y	8/9/21	3.6	3.6	H	3.6	23.8	CIAR CLVU CYSC SEJA	Not whole road, just lightly infested with CLVU except beginning an by MP 1.3 can definitely be saved.
307	NWCB	1A	Lower Dosewallips River	2620051		Y	8/2/21	1	0.4	H/ M	1	4.3	CLVU SEJA	Road is blocked at .2 miles. Spray was limited to unblocked portion. Walked and pulled SEJA additional 0.3 miles. Lots of California tea!

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
308	NWCB	1A	Lower Dosewallips River	2620053		Y	8/31/21	6	6	H/M	6	24	CEMO CIAR CLVU CYSC HYPE SEJA	Road is blocked at 1.2 miles. We walked to end but ran out of mix in last 1000 sq ft. CLVU becomes heavy a tenth past blockage.
302	NWCB	1A	Lower Dosewallips River	2620056			8/2/21	1.6	1	H/M	1.6	0.5	SEJA	move to priority 2, but good to see no CLVU here. Lots of CA tea.
617	NWCB	1A	Lower Big Quilcene River	2620060		Y	8/9/21	5	5	H/M	5	15.2	CIAR CLVU HYPE SEJA	Road ends at 2.5 CLVU light for much of road, several large patches in first .3. At MP 1.8. spur that looks like campsite had HEAVY CLVU. Revisit next year!
653	NWCB	EDRR	Lower Big Quilcene River	2650000		Y	8/2/21	10	1.5	H/M	1.5	6.5	CIAR CLVU SEJA	Got on wrong road but good to check. CLVU is just invading. Stopped at 3.5 MP. Treated 0.5 miles
462	NWCB	2	Lower Big Quilcene River	2700040		Y	10/4/21	5	5	H		65	CLVU GERO	First mile from caretakers cabin has little CLVU
590	NWCB	2	Lower Big Quilcene River	2700040	PT Muni WS caretakers cabin	Y	10/4/21	1.5	1.25	H		14.3	AEPO DIFU DIPU GERO HEHE LAGA PHAR SEJA SYOF VIMO	included the road behind caretakers to Tunnel Cr. Road.
767	NWCB	1A	Lower Big Quilcene River	2700080	Lower Big Quilcene Trail #833	Y	8/10/21	4	3.5	H		30.3	CLVU GERO	CLVU almost gone! GERO better-lots of germination.

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
107	FS prj NWC B retreat	1A	Middle Dungeness River	2800000		Y	9/7/21	5.6	5.6	H/M	2	4.3	CEMO CIAR CIVU LALA SEJA	FS crew did nt know CEMO there
669	NWCB	1A	Canyon Creek /Pats Creek	2800320		Y	8/12/21	3.3	3.3	H/M	3.3	6.2	CEMO CLVU HYPE LALA RUAR SEJA	
670	NWCB	1A	Jimmy-come-lately Creek	2800320		Y	8/12/21	1.7	1.7	H/M	1.7	5.2	CLVU SEJA	
667	NWCB	1A	Canyon Creek /Pats Creek	2800321		Y	8/12/21	0.9	0.9	H/M		12.4	CIVU GERO	
668	NWCB	1A	Jimmy-come-lately Creek	2800321		N	8/16/21	1.3						This portion of the road was CLEAN!
671	NWCB	2	Middle Dungeness River	2800325			8/12/21	1.2	1.2	H		4.1		
ED RR	NWCB	EDRR	Middle Dungeness River	2800350		Y	9/28/21	0.6	0.2	M	0.2		CEMO	RD to Luella Guard Station, & Luella Cabin, had no reference #4 CEMO plants dug, sm amount of RUAR noted but nt treated,
75	NWCB	2	Jimmy-come-lately Creek	2800350	Louella Work Center	Y	9/28/21	0.5	0.5		0.5		CEMO CLVU	100sqft CLVU detected for 1st time, just above bunk house where garbage bins used to be - dug 61 CEMO
58	NWCB	2	Jimmy-come-lately Creek	2800351	Louella Rock pit	Y	9/28/21	1	1	M	1		CEMO CIAR CIVU	CEMO at top of pit face

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
65	NWCB	2	Jimmy-come-lately Creek	2800351		Y	9/28/21	1.6	0.1	M	0.1	#REF !	CEMO	Always look at top-15 CEMO, 1 lrg couch
921	NWCB	2	Jimmy-come-lately Creek	2800353		Y	9/28/21	0.6	0.6	M	0.6	#REF !	CEMO CIVU	130 CEMO plants
59	NWCB	2	Jimmy-come-lately Creek	2800360	Luella LuLu quarry	N	8/11/21	0.6				#REF !	NONE FOUND	
67	NWCB	1A	Jimmy-come-lately Creek	2800360		Y	8/5/2021 8/11/2021	9.6	9.6	H/ M		45.7	CIAR CIVU CLVU GERO HYPE SEJA	
77	NWCB	2	Jimmy-come-lately Creek	2800362		Y	8/11/21	0.77	0.77	H/ M	0.77	2.1	CIAR CIVU GERO SEJA	GERO only @ junc. of 2800360/362
78	FS project NWCB retreat	2	Jimmy-come-lately Creek	2840000		Y	9/7/21	2.2	0.5	H/ M	0.1	0.3	CIAR CIVU SEJA	Ref # 76 doesn't include the first 0.6 of 2840 -this first sec. is pretty clean except for patchy CIAR-retreat after FS Crew
79	NWCB	1A	Jimmy-come-lately Creek	2840030		Y	9/7/21	4.2	4	H/ M	1	6	CIAR CIVU SEJA	
80	NWCB	1A	Jimmy-come-lately Creek	2840034		Y	9/27/21	2.6	2.6	H/ M	2	17.5	CIVU CLVU GERO	should retreat next yr for CLVU, only sm. stretch and GERO, only seedlings!
81	NWCB	Survey	Jimmy-come-lately Creek	2840035			9/7/21	0.6	0.6	H/ M	0.001	0.01	CIAR CIVU SEJA	
62	NWCB	1A	Jimmy-come-lately Creek	2840120	Wolf Quarry 2		7/22/21	0.6						CLEAN!

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
83	NWCB	1A	Jimmy-come-lately Creek	2840120		Y	7/22/21	1.4	1.4	H		9.2	CIAR GERO	
843	NWCB	1A	Jimmy-come-lately Creek	2840130			7/22/21	2.2	0.01	M	0.01	12.4	GERO SEJA	
914	NWCB	1A	Snow Creek/Salmon River	2840150			7/22/21	1.2	1.2	H/M	0.01	12.4	CIAR DIPU GERO HYPE SEJA	
845	NWCB	1A	Snow Creek/Salmon River	2845000			7/19/2021 7/21/2021	11.2	11.2	H		8.2	CIAR DIPU HYPE SEJA	
147	NWCB	1A	Snow Creek/Salmon River	2845070			7/19/21	3	3	H/M	3	2	DIPU GERO HYPE SEJA	
61	NWCB	1A	Jimmy-come-lately Creek	2845073	2845073 spur pit	Y	7/19/21	1	1	H/M	0.01	0.3	CYSC GERO SEJA	
148	NWCB	1A	Snow Creek/Salmon River	2845073		Y	7/19/21	1.8	1.8	H/M	1.8	16.1	CIVU DIPU GERO HYPE SEJA	
847	NWCB	1A	Snow Creek/Salmon River	2845120		Y	7/21/21	3.4	3.4	H/M	0.2	8.3	DIPU GERO HYPE	
84	NWCB	1A	Jimmy-come-lately Creek	2850000		Y	6/28/21 7/22/21 7/26/21 8/31/21	6.6	5.7	H/M	1.18	42.5	CIVU CYSC DIPU GERO IMCA RUAR SEJA	returned last time for jewelweed-3 patches, about 200 plants
63	NWCB	1A	Jimmy-come-lately Creek	2855000		Y	7/26/21 7/27/21 7/29/21	6.2	6.2	H		144.6	CIAR CIVU CLVU GERO HYPE LALA	CLVU sm amount only
60	NWCB	1A	Jimmy-come-lately Creek	2855070	Raccoon Pit	Y	8/5/21	1.5	1.5	H		1	CIVU GERO LALA SEJA	corrected record, SEJA NOT CEJA

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
64	NWCB	1A	Jimmy-come-lately Creek	2855070		Y	8/3/21 8/5/21	2.9	2.9	H/ M	2.9	23.9	CEST CIVU CYSC GERO LALA SEJA	58 CEST pulled
66	NWCB	1A	Jimmy-come-lately Creek	2855100		Y	7/29/21 8/3/21	6.7	6.7	H/ M	0.1	31.4	CLVU GERO LALA	
19	NWCB	1A	Canyon Creek /Pats Creek	2870000	Lower Caraco Quarry	Y	7/13/21	0.3	0.3	H		3	CIAR CYSC GERO	
21	NWCB	1A	Canyon Creek /Pats Creek	2870000	Upper Caraco Quarry		9/7/21	2	0.25		H	0.4	GERO LEVU	Very clean, minimal GERO on old access rd
24	NWCB	1A	Canyon Creek /Pats Creek	2870000		Y	7/13/21 7/15/21 9/7/21	11.6	11.6	H/ M	8.4	51	CIAR CIVU CLVU DIPU GERO LALA SEJA	SM amounts of CLVU -100sqft - NEW!
32	NWCB	1A	Canyon Creek /Pats Creek	2870000	unnamed gravel pit	Y	7/13/21	3	3	H/ M	1	14.5	CIAR CIVU CEMO CYSC DIPU GERO LALA	
31	NWCB	1A	Canyon Creek /Pats Creek	2870054			7/15/21	1.4	0.3	H		1	CIVU CEMO CYSC GERO	5 CEMO, 6 GERO
17	NWCB	1A	Canyon Creek /Pats Creek	2870058		Y	7/27/21	0.9	0.01	H		0.01	CLVU GERO	tiny patch of CLVU on walkin -return!
10	NWCB	1A	Canyon Creek /Pats Creek	2870059	Cranberry Bog	Y	7/27/21	6	6	H		43.7	CIAR CIVU GERO PHAR	pretty significant amount of CIVU-nt all treated

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
18	NWCB	2	Canyon Creek /Pats Creek	2870059			7/27/21	1.5	1.5	H/M	0.01	1.3	CIAR CIVU CYSC GERO	worth hitting this rd again, much improved!
5	NWCB	1A	Canyon Creek /Pats Creek	2875000	Canyon Pit	Y	7/12/21	2.5	2.5	H		4.7	CIAR CEMO HYPE	Looks GREAT!
25	NWCB	1A	Canyon Creek /Pats Creek	2875000			7/12/21 9/7/21	7.5	5	H/M		13	CIVU CEMO CYSC GERO LALA	1 CEMO on unnamed spur
98	NWCB	1A	McDonald Creek/Siebert Creek	2877000		Y	8/16/21	6.2	6.2	H/M	0.1	15.1	CIVU CEMO GERO	last 2 miles had nothing, GERO MUCH improved
99	NWCB	1A	McDonald Creek/Siebert Creek	2877000	Pat's Prairie		8/16/21	30	30	H/M	0.1	4	CIAR CIVU DIPU HYRA LEVU	VERY much improved-at mid-meadow, treated HYRA, cause so clean
904	NWCB	survey	McDonald Creek/Siebert Creek	2877090			8/16/21	1.7						doesn't go to 1.4, no priority weeds-LEVU noted
100	NWCB	survey	McDonald Creek/Siebert Creek	2877100		Y	8/10/21	0.6	0.6	h/m	0.01	2.20	CEMO CIVU LEVU SOAR	1 CEMO patch
26	NWCB	1A	Canyon Creek /Pats Creek	2878000		Y	7/12/21	8	8	H/M	8	3.6	AEPO CIAR CIVU CYSC DIPU GERO LALA TAVU	2 stems AEPO, 2 patches GERO, 10sqft TAVU
840	NWCB	1A	Canyon Creek /Pats Creek	2878000	Slab Camp / Deer Ridge TH		7/12/21	2	0.001	H/M	0.001	0.5	CIAR DIPU GERO LALA SEJA	VERY CLEAN!
38	NWCB	1A	Canyon Creek /Pats Creek	2878060			7/12/21	1.75	1.75	H		3.2	CIVU CLVU CEMO LALA	1 CEMO Looks good, grass coming nicely in most places

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
136	FS prj NWCB treat	1A	North Fork Calawah River	2900000		Y	9/14/21	0.1	0.001	M	0.001		HIAU	This was FS crew project, but we went just for HIAU-8 plants-knew it would be hard to find
156	FS prj NWCB retreat	1A	South Fork Calawah	2900000			9/13/21	11.4	11.4	H/ M	11	28	CIAR CIVU CYSC DIPU GERO HYPE LALA RUAR RULA SEJA	Follow up to FS crew as directed
165	NWCB	1A	Upper Sol Duc River	2900000	Bonidu Pit	Y	8/24/2021 9/14/2021	5	3.5	H		29.2	CYSC DIPU GERO HYPE	2 CYSC, looked like FS crew had done some work before us.
174	NWCB	1A	Upper Sol Duc River	2900000			6/29/21	3.2	3.2	H/ M	3.2	16.6	DIPU GERO HYPE	Follow up to 10KI as directed
588	NWCB	1A	Bockman Creek	2902000	Bockman Pit	Y	7/20/21	1.2	0.6	H/ M	0.1	1.4	CIVU CYSC DIPU GERO HYPE LEVU SEJA	includes unknown spur associated w Bockman pit-very clean
645	NWCB	1A	Bockman Creek	2902000			7/20/21	6.8	4	H/ M	4	0.2	CYSC DIPU GERO	This side of rd pretty clean
648	NWCB	1A	Bockman Creek	2903000		Y	7/20/21	13.6	13.6	H/ M	13.6	19.5	CIVU CYSC DIPU GERO SEJA	where treated last year GERO looked GREAT!
ED RR	NWCB	E D R R	Bockman Creek	2903040		Y	7/20/21	0.1	0.1	H		1.1	GERO	There was a sign-but not on list-none at begin, then heavy patch for 100 ft, then nothing-ck next year!

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
140	NWCB	1A	North Fork Calawah River	2923000			8/18/21	9.1	9.1	H/M	9.1	15.6	CYSC DIPU GERO LALA	
141	NWCB	1A	North Fork Calawah River	2923060		Y	8/24/21	3.6	0.1	M	0.1		DIPU	Rd only goes to 1.9- still would be good to ck next yr, has been logged.
133	NWCB	1A	North Fork Calawah River	2923070	Grindstone Pit		8/23/21	6	6	H/M	1	20.6	DIPU HYPE LEVU	DIPU has been horrible here, but better this yr. Lots of phacelia, but may have been destroyed by increased use for constr.
142	NWCB	1A	North Fork Calawah River	2923070		Y	8/23/21	4.6	1	H/M	1	0.1	CIVU CYSC DIPU TAVU	First few tenths brushed, hard to see CYSC seedlings
637	NWCB	1A	Middle Sol Duc River	2923070			8/23/21	2.8	0.3	H/M	0.2		CIVU DIPU LEVU	1.4 of 2.9 rd ends-heavy brush-gen very clean
127	NWCB	1A	Middle Sol Duc River	2923090			8/24/21	1.6	1	M	1		DIPU GERO	indications of future const or logging-went to station 16
121	NWCB	1A	Middle Sol Duc River	2923100			8/24/21	3	2	H/M	0.1	4.6	CIVU CYSC DIPU GERO HYPE LEVU SOAC	Looking great! GERO only begin + 1 sm patch about 1 m in. 4 European mt Ash.
118	NWCB	1A	Middle Sol Duc River	3040800	Snider Work Center	Y	9/22/21	2	2	H/M	0.1	4.5	CYSC GERO ILAQ LALA POBO RUAR	16 stems POBO, nt all other species completely sprayed, what to do about AEPO?

Ref #	Crew	2021 Priority	6th Field Watershed Name	FS Road #	Site Name	2022 Priority	Date Treated	Acres Examined	Acres Treated	Method	Manual	Total (oz)	Species	Comments
123	NWCB	2	Middle Sol Duc River	3100300		Y	9/13/21 9/21/21 9/22/21	3.4	2.8	H/ M	0.002	21.6	CYSC DIPU GERO	
638	NWCB	1A	Pysht River	3100300		Y	8/30/21	8.4	6	H /M		28.2	CYSC DIPU GERO HYPE RULA	Rd only goes to 4.5-decom prj looks great!
988	NWCB	1A	Upper Sol Duc River		Mt. Mueller Trail # 882	Y	7/26/21	8	1	H		6	HIAU	Where treated last year but had run out of water-it still looked much better. Need to come at least 2 wks earlier before plants seeding.
								318 acres	262 acres		111 acres	1,051 oz		

(=10.8 gal.)

APPENDIX B: ROCK SOURCE SURVEYS AND TREATMENT

A *suitable* rock source is an increasingly rare and valuable commodity, especially on the Olympic Peninsula. As the Forest Service prepares for future harvest and road building activities that must comply with FS weed management protocols, surveys to locate rock sources and prepare them for use before needed, is a significant weed prevention method, and therefore a high priority for this program. We continue to build our inventory of rock sources and their current weed status encompassing as many types of ownership as possible. The summary table below has grown to encompass the status of **84** rock sources or storage locations across Clallam and Jefferson Counties.

In 2021, **1** high priority FS rock sources were inspected and treated by **CNWCB**, another **8** were high priority sites for FS crew but we did not have information on treatment or status. In general, sites that have been treated for several years are in very good condition. Dates treated or inspected, treated species, and suitability are shown in the table below, as well as whether the rock source is dormant or how it is currently being used. FS Rock Source Index codes, when available, have been added because they are helpful when locating sites; the type of ownership is shown for non-Forest sources.

To reduce the spread of weeds across jurisdictional boundaries, we have made a concerted effort to ensure that as many non-FS managed quarries in Clallam County as possible, meet FS “weed free” standards--see the Rock Source Inventory form in appendix J for an explanation of each standard. The result of our surveys (or treatments, in the case of county-held rock sources) are summarized in the table below, and are intended to be used as a resource for FS personnel gauging the suitability of a wide variety of rock sources. (The status of non-FS rock sources is listed after FS-managed). In the private sector, we inspected and certified **12** private rock sources; several with mitigation precautions in place.

Certifications are shown as *not current* if they were not updated this year. We treated **25** county managed rock sources totaling **205** acres most would still need to be used with some caution. The DNR has begun the long process of bringing their rock sources up to speed in advance of forestry projects--**6** DNR-held pits were inspected and certified this year. Most of the non-Forest rock sources shown in the table are in Clallam County. “*County*” rock source assessments in the following table include only Clallam County. Status of most Jefferson County rock sources is not available. More assessments of non-Forest rock sources in Jefferson County would be useful.

Some color coding has been added to indicate at a glance Forest Service rock source standard, and thus suitability, that each rock source achieved this year. **Green** shading indicates currently suitable, **yellow** indicates some caution should be used, **red** indicates currently not suitable. **Grey** indicates the rock source was included on the project list but slated for treatment by a non-weed board crew and not rated to our knowledge. **Orange** indicates the current status is unknown **or** was not inspected this year, but the date of the last inspection and information of past status is provided when known. No color in a cell in the **Name** column indicates it was a specialty survey, and was not rated. The single quarry described in **red font** is a site whose existence is not verified.



Bockman Pit is almost weed-free but accumulated other undesirable debris --burned out cars--instead

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
Forest Service Quarries									
Armpit Quarry	0.6	28701500	2870-150	586	1A	CIVU LALA	Treated in 2018	DORMANT: Chemical --LALA much less 2021 FS crew list-treatment status unknown	
Bockman Pit	0.6	29020009	2902-000	588	1A	CIVU CYSC DIPU GERO HYPE RUAR SEJA	7/20/21	DORMANT: Chemical generally very clean-sm amount GERO	1
Bonidu Pit	6.3	290000037	2900-000	165	1A	CYSC DIPU GERO	8/24/2021	Spoils, Storage, Extraction:	5

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
						HYPE SEJA	9/14/2021	Chemical-CAREFUL:GERO still found on perimeter	
Bon Jon Quarry	1.2	260000004	2600-000	194	2	CIVU LALA SEJA	Treated in 2016	DORMANT: Very clean-2021 FS Crew list, status unknown	
Calawah Pit	8.0	290001500	2900-000	152	1A	CYSC GERO RULA	Treated in 2020	Spoils, Storage, Extraction: GERO 2021 FS Crew list, status unknown	
Canyon Pit	3.8	287500001.4	2875-000	5	1A	CEMO CIAR	7/12/21	DORMANT: Chemical -not suitable-almost ready!	2.5
Coho Pit	1.0		2840-080	57	1A	CIAR HYPE LALA SEJA	Treated in 2019	DORMANT: Chemical very sm amount of weeds 2021 FS Crew list, status unknown	
Grindstone Pit	7	292307000.1	2923-070	133	1A	CIVU DIPU HYPE	8/23/21	Spoils? Storage, Extraction Chemical Extraordinary amount of DIPU especially on berms and edges, better this yr.	6
Empire Quarry	0.5	21600005.6	2160000	826	1A	CYSC RULA	Treated in 2019	Chemical 2021 FS crew list, status unknown	
Littleton Horsecamp stockpile	0.8	307100000.0	3017-000.3	173	2	CYSC HYPE LALA	Treated in 2016	DORMANT? Storage: Met standard A in prior yrs; minimal GERO and LALA along road-!	
Loop Quarry aka-spur (unnamed) Pit	1.0	284507300.9	2845-073	61	1A	CYSC GERO SEJA	7/19/21	DORMANT: Chemical, manual	1
Louella Rock Pit	1.0	280036000.4	2800-351	58	2	CEMO CIAR CIVU	9/28/21	DORMANT: CEMO from ORVs at top	1
Luella LuLu	0.6	290000360.9	2900-360		2	No weeds found	7/12/20	DORMANT: CLEAN!	0
Lost Pit (aka Canine Pit)	4.5	280013000.3	2800-130	101	1A	CIAR CIVU CYSC GERO LALA SEJA	8/5/20	Storage, Extraction? Chemical rating N/A-	5.3
Lower Caraco Quarry	0.3	287000001.0	2870-000	19	1A	CEMO CIAR CIVU GERO SEJA	7/20/20 10/20/20	Spoils, Storage Chemical -not suitable largely because of GERO extensively around perimeter-better, but still infested	4
Mt Muller TH Gravel Pile	0.8	307100000.3	3071-000	612	2	CIVU HYPE LALA RUAR	Treated in 2016	DORMANT? Storage met standard A in prior yr; trace	

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
								amounts of weeds only NO ACCESS LOCKED OUT	
Mystery Pit	N/A	2900200.?			2	POBO	Treated in 2014	Did not locate.	
Ned Hill Quarry (aka Sandstone Quarry)	1.0	287812500.5	2878-125	20	2	CIAR CIVU CYSC LALA	Treated in 2020	DORMANT? Spoils, Storage, Extraction? Chemical-continued improvement, sm amount weeds present	
Neptune Quarry	N/A	21900007.7?	2190000	832	1A	RULA, RUAR9, CIVU, LEVU.	Treated in 2015	No Information 021 FS Crew list, status unknown	
Park Pit	3.0	21800110.3	2180-011	611	1A	CYSC RULA SEJA	Treated in 2020	Chemical 2021 FS Crew list, status unknown	
Raccoon Pit	1.5	285507001.3	2855-070	60	1A	CIVU GERO (see note) LALA SEJA	8/5/21	DORMANT: Chemical Pit is very clean, Use caution; GERO is still present in significant quantities on "road" especially entrance, and on road to pit. Some CEST on road	1.5
Tom Creek Pit	11.0	293100000.2	2931-000	168	2	CYSC DIPU PHAR	Treated in 2020	Spoils, Storage: Very clean	
Unmarked Pit N/A	1	280012001.3	2800-120/ 2800-210		1A- within a 1A priority	LALA	Treated in 2017	DORMANT: Chemical-meets Standard B Very sm amounts of LALA	
Unnamed Gravel Pit	2		Junction 2878 X 2870	32	2	CIAR CIVU CEMO CYSC DIPU GERO LALA	7/13/21	Chemical-Met standard B, but some caution because of very limited CEMO.	3
Upper Caraco Pit	1.5		2870-000	21	1A	GERO LEVU	9/7/21	Chemical-trace amounts of weed at dormant road entrance only	1.5
Wolf Quarry 2	0.6	28401200.3	2840-120	62	2	CLEAN	7/22/21	DORMANT: Met requirements-GERO down bank and not in pit-sm patch CLVU starting in 2020	0.6
Private Quarries									
A & A Rock	44.14	Private	Hwy 101 W			CEMO CIAR CYSC GERO LALA	3/24/21	Spoils, Storage, Extraction: Chemical-Meets Standard B-none in active quarry and storage areas. CERTIFICATION B CURRENT	
Beaver Falls	approx. 20	Private	Hwy 113 near Beaver Lake			CYSC HYPE PHAR RUAR SEJA	5/25/21	Storage, Extraction Chemical-Meets Standard B CERTIFICATION CURRENT B	
Black Diamond Quarry (formerly called Holcomb)	19	Private	Black Diamond Rd.			CIVU CYSC DIPU GERO	6/9/21	Storage, Extraction: Chemical-Meets Standard B- in general clean-careful of material stored "outside" of pit-not clean. New	

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
								access rd will help. CERTIFICATION CURRENT	
Blake Sand and Gravel	63	Private	Cays Rd			CIAR CIVU TAVU RUAR	8/3/21	Spoils, Storage, Extraction: Chemical- CERTIFICATION C CURRENT -w mitigation	
Blue Mountain (Scarsella)	41.46	Private	Hwy 101 E, north side			CEST CIAR CIVU COMA CYSC DIFU TAVU PHAR	11/1/21	Partial dormant, Spoils, Storage, Extraction: Multipurpose site, makes isolation of weeds difficult- needs additional treatment CERTIFICATION C CURRENT -w mitigation	
Davis Sand and Gravel	47.7	Private	Evans Rd.			CIAR CIVU DIFU RUAR	10/6/21	Overall in good shape, has some DIFU rosettes CERTIFICATION C-CURRENT-w mitigation-DIFU	
Elwha Rock Products		Private	Place Rd.			CYSC POBO SEJA	Inspected in 2017	Spoils, Storage, Extraction: FAILED -Standard D Soil disturbed, chipped rock placed on POBO infestations	
Green Crow (InterWest)	22.5	Private	Lower Elwha River Rd.			CYSC (removed at time of inspection)	6/14/21	Storage, Extraction: Chemical-Meets Standard A CERTIFICATION CURRENT	
Haller Quarry	94	Private	2 m south on River Rd. gate on left			BUDA CIAR CIVU DIFU GERO LALA RUAR RULA	6/24/21	Spoils, Storage, Extraction: Chemical-Meets Standard B CERTIFICATION CURRENT	
Hecklesville Quarry	5	Private	44 Heckle Rd.			CASE CIVU CYSC DIPU LALA	Inspected in 2018	Storage, Extraction: Chemical-Widespread, low density LALA, scattered CYSC in stored material. visited, but no formal inspection CERTIFICATION NOT CURRENT	
Hillcar-Fletcher Quarry	105	Private	Hwy 110			CIVU CYSC GERO LAGA RUAR SEJA	6/17/21	Spoils, Storage, Extraction Chemical-Meets Standard B Good condition- have checked this quarry for yrs-owner very co-operative. CERTIFICATION CURRENT	
Hoh Pit-Seton	81	Private No commercial rock avail.	Hoh Rd.			CYSC LALA RUAR	6/9/21	Partially dormant, Spoils, Storage, Extraction Chemical-Meets Standard CERTIFICATION CURRENT	
Lakeside Place Rd Quarry		Private	Place Rd. on right			CIVU CYSC DIPU HYPE LALA SEJA	Inspected in 2016	Partial dormant? Storage, Extraction Chemical-might be able to isolate from considerable broom in back of pit NO CERTIFICATION	
Mystery Quillayute Pit		Private, possibly WSDOT	Quillayute Rd.			CYSC PHAR SEJA	Inspected in 2016	Floor of pit is pretty clean. Edges have scattered SEJA; CYSC is widespread around perimeter of pit.	

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
								Isolated patches of PHAR NO CERTIFICATION	
Moriarity Rd Pit		Private; unknown	Moriarity Rd.			CYSC HYPE PHAR RUAR RULA	Inspected in 2016	RUAR, RULA, CYSC are all widespread throughout pit. HYPE is scattered, with a few isolated patches of PHAR NO CERTIFICATION	
Penny Creek Pit	approx. 30	Private	Penny Creek			CYSC GERO IRPS LALA LEDR POBO RUAR PHAR SEJA TAVU	Inspected in 2018	Spoils, Storage, Extraction: Chemical-Meets Standard C- inspected, treated twice. Concern about POBO remains-where did LEDR go? CERTIFICATION NOT CURRENT	
Princess Pit	59.9	Private	Princess Ln off Place Rd.			CIAR CIVU CYSC DACA DIPU GERO LEVU RUAR RULA	6/28/21	Storage, Extraction Chemical-Meets Standard B CERTIFICATION CURRENT	
Rayonier Pit		Private	Bogachiel Way			CYSC RUAR RULA	Inspected in 2016	. CYSC is widespread around rim of pit and scattered on pit floor. RUAR/RULA scattered intermittently around edges. NO CERTIFICATION	
E Snider Quarry	23.5	Private	252 E Snider Rd.			CYSC PHAR	5/25/21	Storage, Extraction: Chemical-Meets Standard B CERTIFICATION CURRENT	
Thorndyke Pit	Approx 40	Private	Hwy 104, Wahl Rd.			CIAR PHAR SEJA	Inspected in 2018	Partially dormant, Spoils, Storage, Extraction: Chemical-Meets Standard B The formal purpose of this inspection was inspect a clay vein for use in ONP. However, much of the pit had been well treated. CERTIFICATION NOT CURRENT	
West Twin-La Farge	N/A	Private	Hwy 112 approx MP 39			CIVU sundry weeds	Inspected in 2018	Rock stockpiles inspection only, for ONP project-situated on property that did not belong to contractor requesting inspection. <u>Material</u> given a Standard B- NO overall CERTIFICATION	
Clallam County Quarries									
Blue Mountain Transfer Station	2.7	Clallam County	Blue Mountain Rd.			COMA CIAR,CIVU,CYSC	4/1/21 4/6/21 8/2/21	Spoils: (At landfill transfer site)	2.7

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
Blyn Pit	14.3	Clallam County	Woods Rd.			BUDA, CYSC*, LALA, RUAR*, SEJA	3/16/21 9/14/21	Partially dormant, Spoils, Storage, some possible Extraction: Clean areas for material storage	14.3
Clallam Bay Storage	3.0	Clallam County	Frontier St.			CIVU DIPU RUAR	8/10/21	Spoils, Storage Chemical, manual	3.0
District 1	2.75	Clallam County	Washington St.			CEST CIVU RUAR	3/9/21 8/31/21	Storage: Chemical, manual	1.0
District 2	4.7	Clallam County	Lauridson Blvd.			CIAR CIVU CYSC GERO RUAR	3/3/21 3/8/21	Storage: Chemical	2.5
Forks Pit	10.0	Clallam County	Pit Ln.			CYSC	Surveyed 2020	Spoils Chemical/Manual	
Herrick Gravel	11.8	Clallam County	Herrick Rd.			CEMO, CIAR*, CIVU*, CYSC*, DIPU*, GERO*, HYPE*	7/6/21	Extraction, Spoils, Storage: Chemical/Manual-Still contains priority 1 weeds.	1
Hogback Pit	1.7	Clallam County	Off Cays Rd. on Hogback Rd.				Surveyed 2021	Dormant-High warning! Adjacent to source of CAPY	.25
Hoko-Ozette Rd MP4.5	1.4	Clallam County	Hoko-Ozette Rd. MP 4.5			GERO, RUAR*, SEJA	8/4/21	Storage: Chemical-clean areas for material storage-no HIAU found this yr	1.4
Hoko Ozette MP10	2.9	Clallam County	Hoko Ozette Rd MP10			CIVU*, DIPU*, RUAR*, SEJA	8/10/21	Spoils, Storage, Chemical-clean areas for storage	1
Hoko-Ozette Pit MP13	1.5	Clallam County	Hoko-Ozette Rd. MP 13			CIVU*, DIPU*, RUAR*, SEJA	8/10/21	Storage Chemical-Clean areas for material storage	1
Hwy 101 Storage Yard	1.2	Clallam County	Intersection Old Olympic Hwy Hwy 101			BRRA*, CEMO, COMA CIVU CYSC*, GERO*, RUAR*	3/22/21 7/19/21	Storage: Chemical-Clean areas for material storage	0.75
Joyce/Piedmont Pit	5.5	Clallam County	Joyce/Piedmont Rd			CEMO, CIAR*, CIVU*, CYSC, DIPU*, GERO*, RUAR*, SEJA	7/7/21	Storage: Chemical-Clean areas for material storage	5.5
Kirner Pit	39.24	Clallam County	Kirner Rd.			CEST, CIIN, CIVU, COMA, CYSC, DALA, FOVU, LUAR, RUAR*, VIMA	3/22/21 5/5/21 6/21/21 8/23/21 9/2/21	Spoils, Storage, Extraction: Chemical/Manual-piles have been cleaned, areas for clean storage-careful here, most areas kept clean in advance of use	39.24

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
La Push Ballard Pit	2.1	Clallam County	Ballard Rd.			CIAR, CIVU, CYSC , DIPU, GERO LAGA , PHAR, RUAR, RULA, SEJA	4/16/20 10/5/20	Spoils, Storage: Chemical/manual-Clean areas for material storage	2.1
Lake Creek Pit (Bedrock Pit)	15.1	Clallam County	Hwy 101 (Co. Forks Shop)			CIVU CYSC , RUAR, SEJA bamboo-none found	4/21/21 5/26/21	Spoils, Storage: Chemical/manual-Piles have been cleaned and a corridor to piles is ready.	15.1
Little River Pit	1.0	Clallam County	Little River Rd.			CEMO , CIAR, CIVU, GERO, RUAR	7/12/21	Spoils: Chemical-Needs more work	1.0
Lower Elwha-Elwha Pit	1.0	Clallam County	Lower Elwha Rd.			ARMI, CIVU*, CYSC* , RUAR*	9/7/21	Spoils-may be full already? Chemical/Manual	1.0
McInnes Pit	5.83	Clallam County	Vistas Dr.			CAPY , CEMO , CIAR CIIN, CIVU, COMA , RUAR	3/18/21 4/2/21 6/21/21 6/22/21 10/2/218/16/ 21	Spoils: Chemical-Class A weed still found along with other high priorities	5.83
Morse Creek Pit	25.3	Clallam County	Mt Pleasant Rd.			CEST , CIAR, CIIN*, CIVU*, COMA CYSC , DIPU*, GERO, RUAR	3/1/21 3/11/21 3/12/21 6/22/21 8/11/21 8/19/21	Spoils, Storage, limited Extraction: Chemical/Manual storage area and piles clean	25.3
Place Pit	4.9	Clallam County	Place Rd.			CIAR*, CIVU, CYSC , DIFU , DIPU, GERO , PHAR*, RUAR*	6/3/21	Spoils: Chemical-Not clean enough for storage	4.9
Quilayute Pit	13.5	Clallam County	Quilayute Rd.			CYSC , DIPU, HYPE , RUAR, SEJA	5/20/21 8/25/21	Spoils, Storage, Extraction: Chemical/Manual-Piles have been cleaned, and there is a clean corridor-	13.5
Ranger Pit	45.8	Clallam County	Place Rd.			CEMO CIAR CIVU* CYSC DALA DIFU GERO PHAR POBO RUAR*	2/9/21 2/24/21 3/19/21 6/9/21 7/7/21	Spoils, Storage, Extraction: Chemical/Manual-piles have been cleaned, there is area for clean storage, clean access	27.8
Sequim Storage Yard	2.1	Clallam County	Washington St.			BARRA CEMO CEST CIAR CIIN CIVU DALA* DIFU PHAR	4/8/21 5/19/20 8/21/21	Spoils, Storage: Chemical-Piles are clean, but area not clean enough for safe storage	2.1
Umbrella Creek Pit	5.5	Clallam County	Hoko-Ozette Rd.			CIAR* CIVU* CYSC GERO PHAR* POBO RUAR* RULA*	8/10/21	Spoils, Storage: Chemical-nearly clean enough for storage of clean materials	5.0

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
						SEJA			
Whitcomb-Diimmel Pit	8.8	Clallam County	Whitcomb-Dimmel Rd			CIAR, CIVU, CYSC , DIPU,, HYPE, RUAR, RULA, SEJA	5/20/21 5/26/21 9/1/21	Spoils, Storage Chemical/Manual-piles have been cleaned, there is area for clean storage, clean access	6
State (DNR) Quarries									
Alpaca Quarry	5	DNR	Follow FS Rd 2850, at fork, take left instead of following to FS 2855			BUDA CIAR CYSC GERO RUAR	Inspected in 2016- reviewed in 2021	Storage, Extraction: Previously met Standard A requirements; Weeds are present on roads leading to this pit CERTIFICATION NOT CURRENT	
Baby Bear	1.5 open face 156.87	DNR	Hwy 101 near MP 208			CYSC-minimal	7/6/21	Storage, Extraction: Chemical-Meets Standard B- CERTIFICATION CURRENT	
Fitzgerald Pit	Not known	DNR	Norris Rd			CIAR CYSC GERO	Inspected in 2016	Storage, Extraction: Quarry looks fine, but the roads leading to it are infested CERTIFICATION NOT CURRENT	
Jimmy-Come-Lately Pit	11.3	DNR	On FS Rd 2850, at fork, take left			CIAR CYSC GERO RUAR SEJA	10/5/21	Storage, Extraction: Late treatment, rd must be brushed- Meets standard B CERTIFICATION_ CURRENT-6 mo	
Littleton Pit	78.43	DNR	Hwy 101 west of Heckle Rd.			CIVU CYSC GERO LEVU PHAR-all outside pit area	7/6/21	Storage, Excavation: Chemical-Meets Standard B Quite clean. CERTIFICATION CURRENT	
Little River	587.71	DNR	Little River Rd			SEJA CEMO on adj rd.	Inspected 2021	Storage, Excavation: Chemical/manual-Meets Standard C- CEST control, but must be monitored and retreated. CEMO found on road. CERTIFICATION NOT CURRENT	
Loop Tavern Pit	24.58	DNR	Hwy 101 between Forks and Beaver MP 209.5			CYSC GERO sprayed, outside pit area	7/6/21	Storage, Excavation: Chemical-Meets Standard A CERTIFICATION CURRENT	
Mary Clark	170.2	DNR	Mary Clark Rd .5 miles			CYSC SEJA PHAR RUAR	7/6/21	Partial Dormant-spoils, Storage, Extraction: Chemical-Meets Standard B CERTIFICATION CURRENT	
Place Pit	Not known	DNR	Place Rd			CYSC	Inspected in 2016	Spoils, Storage, Extraction: Not suitable at this time: CYSC is too difficult to isolate. In process of treating. NO CERTIFICATION	

Name	Size (acres)	FS RSI Code or Ownership	Road	Ref. #	Priority	Weeds	Date	Use: Treatment Type/Suitability	Acres Treated
Pyramid Pit	0.75	DNR	East Beach OL-PA-S-4000			CIVU	Inspected in 2020	Excavation, storage possible FS project material Clean-met standard B CERTIFICATION NOT CURRENT	
Unnamed Pit	1.5 est.	DNR	Hwy 101 E of Wisen Cr Rd			CIAR CIVU CYSC POBO LALA SEJA	Inspected in 2018	Dormant?-Spoils, Storage, possible Extraction: No treatment in 2019 or 2020. 2017 Chemical POBO treated by CNWCB NO CERTIFICATION	
Winfield Pit (north and south)		DNR	Clearwater (Jefferson Co)			CYSC, SEJA	Inspected in 2020	2 separate locations: Extraction, Spoils, Storage inspection only Would have met standard B	

APPENDIX C: POTENTIAL SURVEY AND TREATMENT SITES

Crew was asked to note whether sites they treated this year should be a priority for the following season. This information has been included in the 2021 Project Action table in Appendix A and can inform the project list for next year. While crew felt many sites needed follow up, this characteristic has been further highlighted in yellow for very high priority in 2022.

Future work should continue to focus on priority species with limited distribution in the forest. Herb Robert, which is one of the most problematic species to completely eradicate continues to be a top priority because of its ability to rapidly spread into uninfested areas and degrade wildland habitat. The method of prioritizing projects for the 2021 Project List worked well for herb Robert treatments but should continue to explore methods to control large herb Robert infestations in the long term. New herbicide treatments are promising and may already be slowing spread. Wild basil savory has demonstrated an ability to spread rapidly and the scope of its range has increased at an alarming rate in just the last couple of years. This species should be a priority wherever it is encountered.



Treating meadow knapweed at Canyon Creek pit on the 2875

Coastal Restoration Crew under leadership of the non-profit, 10,000 Years Institute, may be available for sites in the west end of Clallam and Jefferson Counties. We recommend utilization be reserved large manual projects, not surveys.

General Recommendations:

- Species with limited distribution: Continue focus to eradicate the limited species- bishop's weed, comfrey, common tansy, hawkweeds (orange and yellow-flowered hawkweed species), knapweeds, knotweeds, mullein, sulfur cinquefoil, teasel, and yellow archangel. There are no large infestations of these species on any FS lands in Clallam and Jefferson Counties. Spotted jewelweed is an infrequent species in Clallam County and on ONF lands within Clallam and Jefferson Counties. However there has not been treatment on Jefferson County roads such as Snow Creek Rd which appears to be a major source. Anderson Lake Rd in Jefferson County may be the source for **European hawkweed** on Forest Service land within Jefferson County as well. It would be advisable to make a request to Jefferson County Road Department for treatment of these sites. We are working to ensure the DNR treats meadow knapweed at Burnt Mountain as it is the source for the entire area. (see maps)
- Herb Robert: Large infestations of herb Robert may be beyond our resources, but past locations of heavy infestations may be isolated by treating on the perimeter Perhaps the Coastal crew (under 10K Institute) could assist. Continue good follow-up wherever there were small patches. That strategy seems to be working.
- Wild basil savory: We are finding more incidences of this species. Work on Rocky Brook this year cemented our concern that this species would do more than just populate roadsides; we found considerable spread past road edge into shaded forest sites. We should continue to document wild basil savory locations and treat whenever encountered. Surveys of adjacent roads made it clear wild basil savory has just begun to invade adjacent roads.
- Everlasting peavine: Continue to treat everlasting peavine in advance of road closures. Follow-up on 2700 or 2800 treatments would be valuable. Ensure that Milestone is as effective as Transline.
- Botanical Areas/Wetlands/Special sites: Reed-canary grass in Cranberry Bog is much improved following imazapyr treatments- Camp Handy and associated meadows along Heather Creek were much improved and was not treated this year. Consult the BCHW regarding thistle density before proposing another treatment. **DO** treat the **herb Robert** on the trail (about half way up) AND at the trailhead. Pat's Prairie is also much improved and should not be a priority next year. Caraco units 2, 3 and 5 displayed sufficient infestations of Canada thistle to warrant priority next season; unit 6 may still be in good condition.
- Rock Sources: Keep pits as a priority unless crew said it didn't need to be a priority on FACTS sheets. Survey and treat pits not seen in the past two years. Luella Rock pit had more knapweed than expected but was low on the priority list this year. Identify old pit sites that are along the way of other scheduled treatments, encourage concurrent treatment. We will look for 2014 documentation of rock source with POBO at 2900200 (dubbed Mystery Pit).
- Identify high-priority cross-boundary projects with other public land agencies-Lord's Lake Loop/Snow Creek Rd jewelweed is an example. Notify us as soon as possible to request Clallam County connector roads so they may be added to our integrated weed management work plan.
- Surveys: Even though there is never adequate time for needed surveys, the locations provided by FS staff have been excellent-Continue to identify areas that have not been surveyed or treated for four years or more.
- Specific Roads: In addition to those sites that crew recommended as priorities, consider the ones listed in the table on the following page.

Specific Site Recommendations for 2022-also see highlighted 2022 priorities in project activity list

Ref #	6th Field Watershed Name	Road #	Site Name	Species	Comments
453	Lower Duckabush River	2510065		CLVU	do with Collins and other Duckabush treatmentt CLVU is invading this area
310	Lower Duckabush River	2510070	Collins CG	GERO	Follow 2021 treatment-new CLVU infest
768	Lower Dosewallips River	2610000	Lower Dosewallips River	GERO	Above washout.
758	Lower Dosewallips River	2610010		GERO	as above
300	Lower Dosewallips River	2610040		GERO	as above
303	Lower Dosewallips River	2610050	Elkhorn CG	GERO	Not treated since 2017
653	Lower Big Quilcene River	2650000	Rocky Brook Rd	CLVU, SEJA	Continue pushing CLVU toward highway, survey and treat other spurs in vicinity-CLVU is starting to invade other areas-excellent progress on SEJA
590	Lower Big Quilcene River	2700040	PT Muni WS caretakers cabin and road	CLVU, GERO	Follow-up-some of GERO infestation has been displaced by CLVU
767	Lower Big Quilcene River	2700080	Lower Big Quilcene Trail	CLVU, GERO	Follow-up GERO, CLVU MUCH better!
201	Little Quilcene River	2700280 2700281		HISU	hawkweed close to eliminated-don't let it return!
291	Lower Big Quilcene River	2740000	Tunnel Cr	SEJA	Treated in 2018-had good tansy control
454	Upper Big Quilcene River	2740000		SEJA	should be completed with above
162	Upper Dungeness River	2870000	Camp Handy, Heather Cr.	GERO	Consult BCH about whether thistle regrowth is sufficient for retreat. The GERO at the first sm. crossing after the river needs inspect.
10	Canyon Creek /Pats Creek	2870059	Cranberry Bog	GERO, PHAR	Making good progress-coordinate with FS crw
multi	Canyon Creek /Pats Creek	2870-spurs	Caraco Elk Habitat Units	CIAR	As time allows
157	South Fork Calawah	2932000	Elk Quarry		Have never been to this rock source
193?	Upper Sol Duc River	3040000	Mt Muller Trail	HIAU	Coordinate treatment with BCH-improvement, but cannot let lapse.
118	Middle Sol Duc River	3040800	Snider Work Center	POBO AEPO	High priority in previous years. What to do about Bishop's weed, large infestation?
173	Upper Sol Duc River	3071000	Littleton Horse Camp gravel pit	GERO	Small amount GERO discovered in 2016

APPENDIX D: HISTORIC SUMMARIES-SITES, SPECIES AND PROGRAM FOCUS

The following table shows where survey and treatment work occurred (by road) and what species were reported since the initiation of the project in 2002. **This table has been freshly reorganized into 4 year blocks for the years encompassing 2002-2018, noting how many times a road had been surveyed in each time frame.** To make room for new data while preserving this important program history, accomplishments on each road have been grouped and condensed into four year blocks, except the first years of work, when survey and manual control were the primary focus. Infestations on adjacent county roads, where known, have been included. Roads that have been closed are highlighted in yellow. More roads may have been closed since our last update. Species that were noted but not treated on county roads have been italicized. Information in the 2019-2020 columns is a summary of both years, species newly noted in 2021 were italicized; species that were not seen in a following year are in red. Treatments that encompassed less area than in the previous year are noted in red. Survey miles and acres treated have been generally rounded to the nearest tenth, except where the amount was less than a tenth. Individual year activity can be found in prior reports. Unfortunately, treated roads, and other statistics from FS crew treatments have not been included in information contained in the 2020 and 2021 columns.

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
SR101		18	3		<i>GERO HICA</i> <i>SEJA</i>	4	CYSC POBO POSA	4	CEST SEJA	4	HISA HICA SEJA	2			CHJU HICA SEJA	1	80		<i>CLVU</i> CYSC <i>HICA HIAU</i> <i>HICE PHAR</i> <i>RUAR SEJA</i>
CR5695 Woods Rd		17	3		CIAR CYSC SEJA	4	SEJA	4	CEMO CIVU CYSC GERO SEJA	4	CEMO CIVU CYSC GERO LALA RUAR SEJA VIMA	2	0.9	1.8	CIVU CLVU CYSC GERO HYPE LALA SEJA	1	1.4	2.6	CIVU CYSC, DIPU GERO, RUAR SEJA
CR5331 Palo Alto Rd	7.8	18	3		<i>CIAR CIVU</i> CYSC <i>GERO LALA</i> SEJA	4	<i>CIAR CIVU</i> CYSC <i>GERO LALA</i> SEJA	4	CEMO CYSC GERO LALA SEJA	4	CEMO CIAR CYSC GERO HYPE LALA PHAR PORE SEJA	2	7.8	14	BRSY* CEMO CIAR HYPE LALA PHAR SEJA	1	7.8	15.1	CEMO CIIN, CYSC HYPE LALA RUAR SEJA
CR4361 Taylor Cut- off Rd	2.6	18	3		CIAR CYSC	4	CYSC	4	CYSC	4	BUDA COMA CYSC	2	2.6	5.2	BUDA CYSC	1	2.6	5.2	
CR4360 Lost Mountain Rd	5.1	18	3		<i>CIAR CIVU</i> CYSC SEJA	4	<i>CIAR CYSC</i> SEJA	4	CEMO CIAR CYSC SEJA	4	CEMO CIAR CYSC GERO SEJA	2	5.1	10.2	CEMO CIAR CYSC GERO SEJA	1	5.1	10.8	CEMO CIIN CYSC GERO, HYPE LALA, RUAR SEJA
CR4177 Blue Mount Rd	5.4	1	3		CYSC SEJA	4	CYSC SEJA	4	CYSC SEJA	4	CEMO CYSC PORE SEJA	2	5.4	10.8	CEMO CYSC HIAU POBO PORE SEJA	1	5.4	10.8	CEMO, CYSC, DIFU, POBO, RUAR, SEJA
CR3050 Little River Rd	6.8	18	3		CEMO	4	CEMO CYSC GERO	4	CEMO GERO	4	CEMO CIAR CIVU CYSC GERO HYPE LALA RUAR	2	6.8	13.6	CEMO CIAR CIVU CYSC GERO HYPE RUAR	1	4.5	7.3	CEMO CYSC GERO LALA, RUARSEJA
CR3038 Olympic Hot Springs Rd	1.5	18	3		CEMO CYSC GERO PORE	4	CEMO CYSC GERO	4	CEMO CYSC GERO	4	CEMO CYSC GERO RUAR	2	1.5	3	CEMO CYSC GERO RUAR	1	1.5	2.4	CEMO, CYSC DIPU GERO, LALA

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species						
CR9221 Joyce/Piedmont East Beach Rd	4.5	18	3		CEMO CYSC GERO LALA SEJA	4	CEMO CYSC GERO LALA SEJA	4	CEMO CYSC GERO LALA SEJA	4	CEMO CYSC GERO LALA SEJA	2	4.6	9.2	CEMO CIAR CYSC GERO SEJA	1	4.2	8.1	CEMO, CIAR, CYSC, DIPU, GERO, SEJA
CR3057 Big Quilcene River Rd		1	1.9	3	SEJA			2		0		0							
CR3039 Penny Creek Rd		10	2	4,959	GERO	4	SEJA	4		3		1				1			
CR2515 Rocky Brook Rd	0.4	10	0.4			1		3		2		1				1			
CR2500 Dosewallips Rd		4		35,074	CYSC, GERO	4		4		0		0							
CR2274 Duckabush Rd		9	2			2		2		2		1							
CR2071 W Snider Rd	0.2	10	2		SEJA	2	CIAR CYSC GERO LALA POBO	2		2		1			CYSC	1	0.2		CYSC
CR 2021 Bear Cr Rd	3	2				2		0		0		2	2	.1	SEJA	1	2	4	CYSC SEJA
CR2065 Cooper Ranch Rd	5.6	10	2			2		2		2		2	5.6	0.0014	POBO SEJA	1	5.2	11.4	CLVU CYSC, DIPU GERO SEJA
CR2036 Mary Clark Rd	7.6	18	3			4		4	CYSC GERO POBO SEJA	4	CYSC HYPE PHAR SEJA	2	7.6	15.2	CYSC RUAR SEJA	1	5.75	11.2	CYSC, DIPU, HYPE, RUAR, SEJA
CR5006 Jimmy Come Lately Rd	0.25	6	1			1		1		1		2	0.25	0.5	CEMO CIAR CIVU CYSC GERO HYPE LALA POBO PORE RUAR RULA SEJA	1	0.25	0.5	CEMO CYSC GERO HYPE RUAR SEJA
3116200	5.0	0				0		0		0		0				0			
3116000	5.0	5	3			1	CIAR GERO RUDI	1	CIVU CYSC HYPE SEJA TAVU	0		0				0			
3100420		1	1			0		0		0		0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021				
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	
3100400	2.8	1	1			0		0		0		0					0			
3100700	3.3	0	0			0		0		0		0					0			
3100400	2.8	0	0			0		0		0		0					0			
3100300	5.8	5	2			1	GERO	0		0		2	5.8	14.2	CYSC GERO	1	4.2	8.4	CYSC DIPU GERO HYPE RULA	
3071015		1	1			0		0		0		0					0			
3071000	0.5	6	2	60	CYSC	1		2	CYSC GERO HYPE LALA SEJA	1	CYSC GERO LALA RUAR	0					0			
Mt Muller #882	4	1	0			0		0		0		1	4	0.5	HIAU	1	4	1	HIAU	
3068200	2.4	3	3	815	CYSC	0		0		0		0					0			
3068190	5.6	2	2			0		0		0		0					0			
3068000	5.6	9	3	521	CEMO CYSC SEJA	2	CYSC	2	CIVU CYSC HYPE SEJA	2	CEMO CIVU	0					0			
3067000	3.6	3	2	1,402	CYSC SEJA	0		1	CYSC GERO			0					0			
3050150	1.1	1	0			1	GERO CYSC	0		0		0					0			
3050011	1.4	4	1			2	CIVU GERO HYPE	1	CYSC GERO HIAU LEVU	0		0					0			
3050000	0.6	5	1	2	SEJA	2	CIAR CIVU GERO HIAU HYPE LEVU LALA	2	CYSC GERO HIAU ILAQ LEVU PRLA SEJA	0		0					0			
3040900	0.2	2	0			1	CYSC GERO HIAU LEVU	0		0		1	0.2	0.5	CYSC DIPU GERO PHAR RUAR RULA	0				
3040800	0	9	1	54,709	ARMI GERO ILAQ POBO	4	CIAR CIVU CYSC GERO LALA POBO RUDI SEJA	3	CIVU CIAR GERO HIAU HYPE ILAQ LALA POBO PRLA SEJA	0		1	0	1	POBO	1		2	AEPO CYSC GERO ILAQ LALA POBO RUAR	
3040595	1.9	3	2	373	CIVU SEJA	1	GERO SEJA	0		0		0					0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
3040200	0.3	1	1			1	CIVU GERO ILAQ POBO RUDI	0		0		0				0			
3040115	0.7	3	2	95	GERO	0		1		0		0				0			
3040100	0.6	3	1	8	CYSC SEJA	1		1	CIVU DIPU HYPE SEJA	0		0				0			
3040025		3	3	1	RUDI	0		0		0		0				0			
3040012	.31	2	1	2	CYSC	1	CIVU DIPU HYPE SEJA	0		0		0				0			
3040011	0.6	2	2			0		0		0		0				0			
3040000 (portions)	21	14	4	35, 136	CYSC GERO SEJA	4	CEMO CIAR CIVU CYSC GERO HYPE ILAQ LALA PHAR RUAR SEJA	4	CEMO CIAR CIVU CYSC GERO HYPE ILAQ LALA PHAR RUAR SEJA	2	CIAR, CIVU, CYSC, GER O LALA SEJA	0				0			
3006300	4.1	1	1			0		0		0		0				0			
3006011	1.2	2	1			1	CEMO CIAR CIVU GERO HYPE ILAQ LALA PHAR RUDI SEJA	0		0		0				0			
3006000	1.7	3	1			1	CYSC	1	CIVU GERO HYPE RUAR RULA SEJA	0		0				0			
3000800	1.8	1	0			0		1	GERO	0		0				0			
3000591	0.3	2	0			1	CIVU GERO HYPE, RUDI RULA SEJA	1	CIVU GERO DIPU	0		0	0			0			
3000401		1	1			0		0		0		0	0			0			
3000400	2.3	1	1			1	CIVU DIPU GERO	0				0				0			
3000395	.2	1	1			0		0		0		0				0			
3000370	.4	2	0			0		2	CIVU CYSC DIPU GERO LEVU SEJA			0				0			
3000330	1.1	1	0			0		1	CIVU CYSC SEJA	0		0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
3000300	3.5	4	1			0		3	CIVU CYSC GERO SEJA	0		0			0				
3000260	0.7	2	1			1	CIVU CYSC SEJA	0		0		0			0				
3000250	6.9	5	1	10	CYSC	1	CIVU CYSC GERO SEJA	3	CIVU CYSC GERO HYPE LALA			0			0				
3000220	2.8	1	1			0		0		0		0			0				
3000215	0.6	5	2			1	GERO	2	CYSC GERO			0			0				
3000200	8.46	9	2	6	SEJA	3	CIVU CYSC GERO LALA SEJA	4	CIVU CYSC DIPU GERO LALA	0		0			0				
3000011		1	1			1	CYSC GERO	0		0		0			0				
3000000		10	3	883 ,09 8	CYSC CIVU GERO RULA SEJA	2	CEMO CIAR CIVU CYSC GERO LALA SEJA	4	CIAR CIVU CYSC GERO HYPE LALA SEJA RUAR RULA	0		0			0				
2978085	1.1	2	2			0		0		0		0			0				
2978040	.3	3	2			1	CIAR CIVU CYSC GERO HYPE LALA RUDI RULA	0		0		0			0				
2978035	.1	2	2			0		0		0		0			0				
2978030	.7	3	2			0		0		0		1	1	2.4	CYSC SEJA	0			
2978025	.3	3	2			0		0		0		1	0.8	1.9	CYSC				
2978015	1.6	3	2	18	CYSC	0		0		0		1	1.4	3.36	CYSC SEJA	0			
2978011	0.4	3	2			0		0		0		1	0.4			0			
2978000	3	4	2	3,6 04	CYSC SEJA	0		1	CYSC	0		1	3	8.16	CYSC	0			
2952000	2	1	0			0		1	CIVU CYSC	0		0			0				
2932070	0.9	1	1	12	CYSC	0		0		0		0			0				
2932050	0.3	1	1			0			CIVU CYSC	0		0			0				

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated
2932040	0.4	1	1			0		0		0		0			0				
2932035	0.2	1	1			0		0		0		0			0				
2932031	0.5	1	1			0		0		0		0	0		0				
2932030	1.5	3	2			1	CYSC	0		0		0			0				
2932000	11.8	7	3	2,1 53	LEVU CYSC	2	CYSC GERO SEJA	1	CIVU GERO HYPE LAGA RUAR RULA SEJA	0		1	3.7	11.44	CIVU CYSC GERO RUAR RULA	0			
2931200	2.5	1	1			0		0		0		0	0		0				
2931190	1.7	2	1			1	CIVU GERO HYPE LAGA RUDI RULA SEJA	0		0		0			0				
2931000	12	7	1	1	SEJA	1	CIVU CYSC LALA	4	CEMO CIVU CYSC HYPE PHAR	0		1		1	CYSC DIPU PHAR	0			
2929070	3.3	7	2	525	CYSC GERO RULA	2	GERO	2	GERO RULA	0		1	3.3	9.1	CIVU CYSC GERO HYPE RUAR RULA	0			
2929000	3	9	2			2	CIVU CYSC GERO HIAU HYPE LALA	4	CIAR CIVU CYSC GERO HYPE PHAR	1	CYSC GERO LALA	0			0				
2923100	1.5	6	1			1	GERO DIPU HYPE RUDI RULA	0		2	CIVU CYSC DIFU DIPU GERO	2	1.5	1.0	CIVU CYSC DIFU DIPU GERO HYPE	1	1.5	2	CIVU CYSC DIPU GERO HYPE LEVU SOAC
2923095	0.2	1	0			0		1	CIAR CIVU CYSC DIPU GEROHYRA LALA LEVU PHAR	0		0			0				
2923090 opened for logging 2021	1.2	3	0			0		0		1	DIPU GERO	1	1.2	1.0	CYSC DIPU GERO	1	0.8	1	DIPU GERO
2923077	1.4	2	0			1	CYSC SEJA	1	CYSC HYPE TAVU SEJA	0		0			0				
2923074	0.8	1	0			0		1	CYSC HYPE TAVU SEJA	0		0			0				
2923073	0.8	1	0			0		1	CYSC HYPE SEJA	0		0			0				

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2923072	0.8	1	0			0		1	CIVU	0		0			0				
2923070	5.2	9	1	2	SEJA	2	CIAR CIVU CYSC GERO HYPE RUDI SEJA	2	CIVU CYSC HYPE LALA PHAR	2	CIAR CIVU CYSC DIPU HYPE LALA LEVU PHAR RUAR RULA SEJA TAVU	2	5.2	11.4	1	3.7	1.3	CIVU CYSC DIPU HYPE LEVU TAVU	
2923060	1	3	1			1	CIAR CYSC GERO	1	CIAR CYSC HYPE	0		0			1	1.9	0.1	DIPU	
2923020	0.6	1	0			0		1	CIVU CYSC PHAR	0		0			0				
2923015	2.7	1	0			0		1	CIAR CIVU CYSC GERO HYPE RULA SEJA	0		0			0				
2923000	4.7	12	2	1.4 34	CIAR CYSC HIAU SEJA	3	CYSC GERO	1	CYSC SEJA	2	CYSC GERO HYPE LALA PHAR POBO SEJA	1	4.7	11.4	1	4.7	9	ARMY CIVU CYSC GERO LALA SEJA	CYSC DIPU GERO LALA
2922250	2.6	2	0			0		2	CEMO CIVU CYSC GERO SEJA	0		0							
2922240	1.1	2	0			0		2	CIAR CIVU CYSC GERO HYPE RULA SEJA	0		0			0				
2922200	1.43	1	0			0		1	CIVU CYSC LALA	0		0			0				
2922020	0.86	1	0			0		1		0		0			0				
2922000	12.6	4	1			2	GERO	1	CYSC HYPE	0		0			0				
2920210	0.2	2	1			0		1	GERO	0		0			0				
2920020	1.4	2	1			0		1	GERO	0		0			0				
2920000	6	3	1			1	CIAR CIVU CYSC GERO	1	GERO	0		0			0				
2918110	1	4	1			2	CYSC DIPU LEVU LALA	1	CIVU GERO SEJA	0		0			0				

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated
2918100	3	4	1	0		2	CYSC DIFU GERO HYPE LEVU LALA SEJA	1	CIAR CIVU CYSC GERO	0		0			0				
2918000	14.5	7	1	2,3 15	CYSC SEJA	2	CYSC DIFU LEVU LALA	2	CIAR CIVU CYSC GERO HYPE PHAR	1	CIVU CYSC GERO	1	4.1	0.25	GERO	0			
2912060	3.5	5	2	3	SEJA	1		1	CIAR CIVU CYSC GERO HYPE SEJA	1	CIVU CYSC DIPU GERO HYPE SEJA	0				0			
2903040* found in 2021	1		0	0		0		0		0		0				1	0.1	0.1	GERO
2903000	6.8	6	1	78	CYSC SEJA	0		0		2	CIAR CIVU CYSC DIPU GERO HYPE SEJA	2	6.8	12	CIVU CYSC DIPU GERO HYPE SEJA	1	6.8	13.6	CIVU CYSC DIPU GERO SEJA
2902375	0.8	4	1			1		1	CIAR CYSC GEROHYPE	0		1	0.8	0.3	GERO				
2902300	0.6	1	1			0		0		0		0							
2902000 (portions)	3.4	10	3	4,1 75	CYSC SEJA	0		2	CIAR CIVU CYSC SEJA	2	CASE CIAR CIVU CYSC DIPU GERO HIAU HYPE LEVU RULA RUAR SEJA	2	3.4	7.8	CIVU CYSC GERO HYPE RUAR SEJA	1	3.4	4	CYSC DIPU GERO
2900992	0.5	1	0			1	GERO	0		0		0				0			
2900990	2	6	2	5,3 00	CYSC GERO	1	GERO	1	CIVU CYSC GERO ILAQ	1	CIAR CYSC DIPU HYPE LEVU HYPE RULA	1			GERO ILAQ LALA SOAC	0			
2900960	0.2	2	1					0		1	GERO LALA SYOF	0				0			
2900950	.1	1	1			0		0		0		0				0			
2900810	1.3	1	0			0		1	CYSC GERO ILAQ	0		0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2900800	2	1	0			0		0		1	CIVU CYSC HYPE LALA RUAR RULA SEJA	0				0			
2900700	2.8	1	0			0		1	CIVU CYSC	0		0				0			
2900650	1.2	2	1			0		1	CIAR CYSC RULA	0		0				0			
2900540	2	1	1			0		0		0		0				0			
2900200	0.7	1	1	54	CYSC SEJA	0		0		0		0				0			
2900070	2.3	1	1			0		0		0		0				0			
2900030	3.6	1	1			0		0		0		0	0			0			
2900015	0.1	3	1			2	CYSC GERO RUDI SEJA	1	CYSC GERO HYPE LALA PHAR SEJA	0		0				0			
2900000	37.2	11	3	664 225	CIAR CYSC GERO HIAU POSA SEJA	3	CIVU CYSC GERO HIAU HYPE LALA RUDI SEJA	2	CIVU CYSC GERO HIAU HYPE PHAR SEJA TAVU	1	GERO HYPE SEJA	2		9	CIAR CIVU CYSC GERO HIAU SEJA (only Bondiu Pit in 2020)	1	7.2	3.2	CIAR CIVU CYSC DIPU GERO HIAU HYPE LALA RUAR RULA SEJA
2880050	0	10	2	255 ,00 4	GERO	4	GERO	3	CIAR POSA RUDI RULA	1	GERO	0				0			
2880000	1.8	8	4	9,9 23	GERO SEJA	2	CEMO CIAR CYSC GERO SEJA	2	CIAR CIVU CYSC DIPU GERO HIAU HYPE HYRA LALA LEVU PHAR RULA SEJA	0		0				0			
2878123	0.2	4	1			1		2	CIAR CIVU GERO HYPE LALA	0		1	0.2	1.4	CIAR CIVU CYSC LALA	0			
2878120 (portions)	1	9	1	2,1 70	CYSC	1	CIAR CYSC LALA	2	CIAR CIVU GERO HYPE LALA	3	CIVU CYSC GERO LALA	2	1	2.5	CIVU CYSC DIPU GERO LALA SEJA	0			
2878110	0.75	6	1			2	LALA CIVU CEMO CYSC	1	CIAR CIVU CYSC LALA	0		1	0.75	2	CIVU LALA	0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2878109	0.25	4	1			0		1	CIVU CYSC LALA	1	CIVU CYSC LALA	1	0.25	0.25	CIVU LALA	0			
2878108	0.1	4	1					1	CEMO CIVU CYSC LALA	1	LALA	1	0.1	0.2	CIVU LALA	0			
2878104	0.2	3	0			0		1	GERO	0		1	0.2	0.3	GERO LALA	0			
2878102	0.4	4	0.4			0		1	CIVU LALA	1	CIVU LALA	2	0.4	1.0	CIVU LALA	0			
2878101	0.1	3	0			0		1	CIVU LALA	1	CIVU LALA	1	0.1	0.3	LALA	0			
2878100	1.5	9	1			2		2	CIAR CIVU HYPE	2	CIAR CIVU CEMO LALA SEJA	2	1.6	1.2	CIVU GERO LALA SEJA	0			
2878085	0.7	4	1			2	CIAR CIVU GERO SEJA	0		0		1	0.7	1.4	CIAR CIVU CLVU CYSC HYPE SEJA	0			
2878080	0.75	5	1			2	CIAR LALA	1	CIAR CIVU GEROLALA SEJA	1	CIVU CYSC LALA	1	0.8	1.6	CIVU CYSC LALA	0			
2878060	0.75	5	1	127	CYSC	1	CIAR CYSC LALA SEJA	1	CIAR CIVU SEJA	0		2	0.75	2.5	CIAR CIVU CLVU CYSC DIPU LALA	1	0.75	1.75	CIVU CLVU CEMO LALA
2878050	0.6	4	1			0		1	CEMO CIAR CIVU GERO HYPE LALA SEJA	2	CIAR CIVU GERO HYPE LALA SEJA	0							
2878000	4.0	13	2	2,9 71	CYSC	4	CEMO CIAR CYSC GERO LALA SEJA	2	AEPO CIAR CIVU GERO HYPE LALA	3	AEPO CEMO CIAR CIVU GERO LALA SEJA	1	4	7.9	AEPO CEMO CIAR CIVU CYSC GERO LALA SEJA	1	4	8	AEPO CIAR CIVU CYSC DIPU GERO LALA TAVU
2877160	0.1	1	0			0		0		0		1	0.1	0.01	CIVU DIPU	0			
2877150	0.2	1	0			0		0		0		1	0.2	.002	CEMO DIPU	0			
2877100	0.3	3	1			0		0		0		1	0.3	1.2	CIAR CIVU LALA	1	0.3	0.6	CEMO CIVU LEVU SOAR
2877090	1.4	1	0			0		0		1		0							
2877052	0.3	5	1			0		1	CIAR CIVU GERO LALA SEJA	2	CIVU CIAR CYSC DIPU GERO LEVU RULA SEJA	1	0.3	0.001	CYSC GERO SEJA	0			
2877050	2.65	2	1			0		0		1	CIVU, DIPU	0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2877040	2.5	6	1			2	CEMO CIAR CIVU SEJA	2	CIAR CIVU CYSC GERO RUAR	1	CEMO CIAR CIVU CYSC GERO HICA	0					0		
2877000	4.6	12	1			3	CEMO CIAR CIVU CYSC HYPE LALA SEJA	1	CIAR	4	CIAR CIVU CYSC DIPU GERO HYPE LEVU SEJA	2	4.6	25.2	CIAR CIVU CLVU CYSC GERO LALA LEVU	1	3.1	6.2	CIVU CEMO GERO
2875090	0.1	2	1			0		1	CIAR CIVU CYSC GERO SEJA	0		0					0		
2875070 (as of 2020)	1.8	7	1			1	CIAR CYSC	1	CIAR CIVU CYSC HYPE LALA SEJA	2	CEMO CIAR CIVU CYSC GERO HYPE LEVU SEJA	2	1.8	3.6	CEMO CIAR CYSC GERO SEJA	0			
2875020	0.5	9	1	6	CYSC	2	CEMO CIAR CIVU CYSC PHAR POBO SEJA	2	CIAR CIVU POBO	3	CEMO CIAR CIVU GERO LALA PHAR POBO	1	0.6	1.5	CEMO CIAR CIVU CYSC GERO HYPE LESU	0			
2875000	3.6	14	2	268	CEMO	4	CEBI CEMO CIAR CIVU LALA	2	CEMO CIAR GERO SEJA	3	CEMO CIAR CIVU CYSC DIPU GERO HYPE ILAQ LALA SEJA	2	3.6	8	CEMO CIAR CIVU DACA HYPE LALA SEJA	1	3.6	5	CIVU CEMO GERO
2870270	3.5	3	1		CIAR CIVU	1	CEMO CIVU HYPE SEJA	1	CEMO CIAR CIVU CYSC PHAR SEJA	0							0		
2870250	1	2	0			1	CEBI CEMO	1	CEMO CIAR CIVU CYSC GERO HYPE LALA SEJA	0		0					0		
2870230	4	7	4	3	CIAR CIVU HYPE SEJA	1	CIAR CIVU GERO	1	CIAR GERO HYPE	1	CIAR GERO HYPE	0					0		
2870150	0.5	6	1			1	LALA	1	CIVU LALA SEJA	2	CIAR CIVU LALA SEJA	1	1.3	3.12	CIAR CIVU CLVU LALA PHAR SEJA	0			
2870130	1	2	1	1	CYSC	1	CEMO SEJA	0		0		0					0		
2870110	0.5	3	1	729	CYSC	1	CYSC	1	CIAR CIVU LALA	0		0					0		
2870059	0.4	11	4	19, 529	CEMO CIAR CIVU CYSC GERO SEJA	1		1	CEMO SEJA	3	CIAR CIVU CYSC GERO	1	0.4	1.5	CIAR CIVU CYSC GERO	1	0.4	1.5	CIAR CIVU CYSC GERO

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2870058		11	2		CIAR GERO PHAR	3	CIAR CIVU GERO PHAR	1	CYSC	3	CEMO CIAR CIVU GERO	1	0.3	1	CLVU GERO HYPE	1	0.3	0.1	CLVU GERO
2870057	0.2	6	0			3	CIAR CIVU GERO HYPE PHAR	2	CIAR CIVU CYSC DACA GERO HYPE LEVU PHAR SEJA	0		1	0.2	0.4	CIAR CYSC GERO	0			
2870056	0.6	9	3	14	CEMO SEJA	3	CEMO CIAR CIVU CYSC SEJA TAVU	2	CIAR CIVU CYSC DACA GERO HYPE LEVU SEJA	0		1	0.6	1.8	CIAR CIVU CLVU GERO	0			
2870054	0.7	8	0			4	CEMO CIAR CIVU SEJA	2	CIAR CIVU CYSC GERO PHAR SEJA	0		1	0.7	2.1	CEMO CIAR CIVU HYPE SEJA	1	0.7	0.3	CIVU CEMO CYSC GERO
2870053	1.5	6	0			2	CEMO CIAR CIVU SEJA	2	CEMO CIAR CIVU CYSC DACA GERO HYPE LEVU SEJA TAVU	1	CEMO CIAR CIVU CYSC	1	1.5	3	CEMO CIAR CIVU CYSC SEJA	0			
2870052	0.3	4	1			1	CIAR HYPE	1	CEMO CIAR CIVU CYSC HYPE LEVU PHAR SEJA	0		1	0.3	0.8	CEMO CLVU SEJA	0			
2870050	2.8	14	4	110	CEMO CIAR CIVU CYSC GERO HYPE LALA PHAR SEJA	4	CIAR CIVU GERO LEVU PHAR RUDI SEJA	2	CEMO CIAR CIVU GERO HYPE LALA SEJA	2	CEMO CIAR CIVU GERO HYPE LALA	2	2.8	3.5	CEMO CIAR CIVU CLVU GERO HYPE LALA SEJA	0			
2870030	1.5	9	2	78	CEMO CYSC SEJA	4	CEMO CIAR CYSC HYPE SEJA	1	CIAR CIVU HYPE	1	CEMO, CIAR, CIVU, HYPE, SEJA	1	1.5	3	CIAR CIVU HYPE RUAR RULA SEJA SYOF	0			
2870000	21.2	17	4	3,853	CEMO CYSC SEJA	4	CEMO CIAR CIVU CYSC GERO HYPE LALA LEVU SEJA	3	CEMO CIAR CIVU CYSC DACA GERO HYPE LALA LEVU PHAR SEJA	3	CEMO CIAR CIVU CYSC DACA GERO HYPE LALA SEJA	2	4.5	28.5	CEMO CIAR CIVU CYSC GERO HYPE LALA PHAR PORE SEJA	1	21	12.1	CIAR CIVU CLVU DIPU GERO LALA SEJA
2860120	1.6	2	1			0		1	CEMO CIAR CIVU HYPE SEJA	0		0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2860011	0.4	2	1	2,708	GERO SEJA	0		1	CEMO CIAR CIVU CYSC DACA GERO HYPE LALA PHAR RUDI SEJA	0		0					0		
2860000	3	2	1	54,000	CIVU GERO			1	GERO RUAR	0		0					0		
2855100	1.1	6	1			0		0		3	CEMO CIAR CIVU CYSC DACA GERO HYPE LALA SEJA	1	1.1	8.02	CIAR CIVU CLVU GERO SEJA	1	1.1	6.7	CLVU GERO LALA
2855070	1.1	12	3	5497	CEMO CIAR CYSC GERO RULA SEJA	3	CEBI CEMO CYSC SEJA	2	CEBI CIAR CIVA,CIVU CYSC GERO HYPE LALA SEJA	3	CEST CIAR CIVU CYSC GERO HYPE LALA RUAR SEJA	2	1.5	3.5	CEST CIAR CIVU CLVU CYSC DALA GERO LALA ROCA RUAR SEJA	1	1.1	2.9	CEST CIVU CYSC GERO LALA SEJA
2855032	0.8	5	1.6	1	RULA	0		1	CEMO GERO HYPE SEJA	3	CEMO CIVU CLVU GERO SEJA	0				0			
2855030	2.6	5	1	19,200	SEJA	0		1	CEBI CIAR CIVU CYSC GERO HYPE LALA SEJA	3	CEMO CIVU CYSC GERO HYPE RUAR SEJA	0				0			
2855000	2.8	11	3	51,947	CEBI CEMO CIVU CYSC GERO SEJA	2	SEJA	1	CIAR CIVU GERO HYPE SEJA	2	CEMO CIAR CIVU CLVU GERO HYPE PORE SEJA	2	2.8	6.6	CIAR CLVU GERO PORE SEJA	1	11	6.2	CIAR CIVU CLVU GERO HYPE LALA
2852150	1.29	4	1	25	CYSC	0		1	CIAR CIVU CYSC GERO HYPE SEJA	1	CIVU CYSC GERO RUAR SEJA	1	0.8	3.5	CIAR CIVU GERO SEJA	0			
2852090	0.18	3	1	3,362	CIAR CYSC GERO SEJA	0		0		0		2	0.18	1.5	CLVU GERO SEJA	0			
2852000	2.6	3	3	47,605	CEMO CIAR GERO RULA SEJA	0	CEMO	0		0		0				0			
2851090	1	1	1			0		0		0		0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2851080	1.6	2	1	1,660	CYSC SEJA TAVU	0		1	CEMO CIAR CIVU CYSC GERO HYPE SEJA	0		0				0			
2851000	4.1	1	1	10,090	SEJA			0		0		0				0			
2850124	0.2	1	1			0		0		0		0				0			
2850120	2.8	1	1		CYSC	0		0		0		0				0			
2850093	0.1	2	1			0		0		1		0				0			
2850090	1.1	3	1			0		1	CIVU CYSC GERO HYPE SEJA	1	CIAR CIVU GERO	0				0			
2850010	1.5	2	1	5,352	RULA SEJA	0		1	CIVU GERO SEJA	0		0				0			
2850000	7.4	12	4	67,334	CYSC GERO RULA SEJA	1		1	CIAR CIVU CYSC GERO ILAQ HYPE SEJA	3	CIAR CIVU CLVU CYSC GERO HYPE IMCA SEJA	2	7.4	7.8	CIAR CIVU GERO IMCA SEJA VIMI	1	7.4	11.9	CIVU CYSC DIPU GERO IMCA RUAR SEJA
2845200	0.28	4	1			0		0		2	CIAR SEJA	1	0.3	0.3	SEJA	0			
2845150	0.2	4	1			0		1	CIVU SEJA	2	CIAR CYSC GERO LALA SEJA	0				0			
2845120	2	5	1	84	CYSC SEJA	1	CIVU CYSC SEJA	0		2	CIAR CIVU CLVU GERO HYPE SEJA	0				1	2	3.4	DIPU GERO HYPE
2845090	1	2	1	12	CYSC SEJA	0		0		1	CIVU GERO SEJA	0				0			
2845073	0.9	8	1			1	CYSC	1	CIAR CIVU CYSC LALA SEJA	2	CIAR CIVU CLVU CYSC DIPU GERO HYPE LALA SEJA	2	0.9	1.8	CIAR CIVU CLVU CYSC GERO HYPE SEJA	1	0.9	1.8	CIVU DIPU GERO HYPE SEJA
2845070	1.5	8	2	1,860	CYSC	1	CEMO CIAR CIVU CYSC SEJA	0		2	CEMO CIAR CIVU CLVU CYSC GERO HYPE SEJA	2	1.5	3	CIAR CIVU CLVU CYSC DIPU GERO SEJA	1	1.5	3	DIPU GERO HYPE SEJA
2845040	0.3	4	1	160	SEJA	0		1	CEMO CIAR CIVU CYSC DACA DIPU HYPE SEJA	2	CIAR CIVU CLVU GERO HYPE SEJA	0				0			

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			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2845000	5.4	9	2	12,378	SEJA	2		1	CIAR CIVU HYPE SEJA	1	CIAR CIVU CLVU GERO HYPE SEJA	2	5.4	10.8	CIAR CIVU CLVU GERO SEJA	1	5.4	11.2	CIAR DIFU HYPE SEJA
2840150	0.6	6	1	1	SEJA	0		0		2	CEMO CIVU, DIPU GERO HYPE, SEJA	2	0.6	1.8	CIAR CIVU CLVU GERO SEJA	1	0.6	1.2	CIAR DIFU GERO HYPE SEJA
2840130	1.1	4	1			0		0		1	CYSC	1	1.1	2.2	GERO	1	1.1	0.01	GERO SEJA
272840120	0.7	6	1			0		1	CIVU GERO SEJA	2	CEMO CIVU CLVU GERO HYPE SEJA	1	0.7	2.1	CLVU GERO SEJA	1	0.7	1.4	CIAR GERO
2840084	0.25	2	1			0		0		0		1				0			
2840080	1	6	0.9	1	RULA	0		1	CIVU GERO HYPE SEJA	3	CIAR, CIVU CYSC GERO HYPE LALA SEJA	1	0	0.52	CIAR HYPE LALA SEJA	0			
2840071	2.0	3	1	36	SYOF SEJA	0		0		1	CEMO CIAR CIVU CYSC GERO LALA SEJA	1	2	9.6	CIAR CIVU CLVU CYSC GERO LALA PHAR SEJA	0			
2840070	1.7	6	1	5,753	CYSC SEJA	0		1	CIAR CIVU LALA SEJA	3	CIAR CIVU GERO SEJA	1	1.7	4.08	CEMO CIAR CIVU CLVU CYSC GERO LALA PHAR SEJA	0			
2840037		1	0			0		0		1	CEMO CIAR CIVU RUAR SEJA	0				0			
2840036	3.5	3	1			1		1	CIAR CIVU CYSC GERO HYPE LALA PHAR SYOF	0		0				0			
2840035	0.3	2	0			1	CIAR CIVU SEJA	0		0		0				1	0.3	0.6	CIAR CIVU SEJA
2840034	1.4	7	1			1	CEMO CIAR CIVU GERO SEJA	2	CEMO CIAR SEJA	1	CIAR, CIVU, GERO	1	1.4	4.2	CIAR CIVU CLVU GERO SEJA	1	1.4	2.6	CIVU CLVU GERO
2840030	3	5	1			1	CEMO CIAR CIVU HYPE SEJA	1	CIAR, CIVU, HYPE	0		1	3.0	0.8	CIAR CLVU CYSC GERO SEJA	1	3	4	CIAR CIVU SEJA

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			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2840000	1.3	12	4	10,010	CIAR CYSC SEJA	1	SYOF CIAR CIVU GERO HYPE LEVU SEJA	1	CEMO CIAR CIVU GERO SEJA	3	CIVU CYSC LALA GERO SEJA	2	1.3	1.6	CIVU CYSC LALA SEJA	1	1.3	0.5	CIAR CIVU SEJA
2830034	0.2	2	1			0		1	CEMO CIAR CIVU HYPE SEJA	0		0				0			
2830032	1	2	1			0		1	CIAR CYSC GERO HYPE LEVU SEJA SYOF	0		0				0			
2830030	2	1	1			0		0		0		0				0			
2830000	5.3	3	3	1,250	CEBI	2	SEJA	0		0		0				0			
2820000	4	6	1	2,274	SEJA	3	CEMO CIAR SEJA	0		1	CEMO CIAR CIVU GERO HYPE LALA SEJA					0			
2810070	0.61	1	1			0		0		0		0				0			
2810000	8	2	1	10,190	CYSC SEJA	0		1	CEMO CIAR CIVU GERO HYPE LALA SEJA	0		0				0			
2800362	0.4	4	0			0		0		1	CIAR CIVU GERO SEJA	2	0.4	0.8	CIVU GERO SEJA	1	0.4	0.77	CIAR CIVU GERO SEJA
2800360	2.4	4	0			0		0		1	CEMO CIAR CIVU DIPU GERO HI sp HYPE RULA SEJA	2	2.4	6	CIAR CIVU DIPU GERO HICASEJA	1	2.4	9.6	CIAR CIVU CLVU GERO HYPE SEJA
2800353	0.5	5	0			0		0		2	CEMO, CIVU, HYPE	2	0.5	1	CEMO	1	0.5	0.6	CEMO CIVU
2800351	0.8	10	0			3	CEMO CYSC	2	CEMO CIAR CIVU HYPE	3	CEMO CIAR, CIVU, HYPE SEJA	1	0.8			1	0.8	0.1	CEMO
2800350	0.9	6	0			1	CEMO CIAR CIVU	1	CEMO CIAR GERO LALA SEJA	2	CEMO CIVU HYPE	1	0.9	0.9	CEMO CIVU	1	0.9	0.7	CEMO CLVU
2800325	0.6	4	0			0		0		1	CIAR CIVU LALA	2	0.6	1.2	CEMO CIAR CIVU LALA SEJA	1	0.6	1.2	CEMO

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2800321	0.7	5	0	1		0		0		1	CIVU CIAR GERO LALA	2	0.7	0.35	CIVU GERO LALA	1	0.7	0.9	CIVU GERO
2800320	0.9	5	0	1		0		0		1	CEMO CIAR CIVU CLVU HYPE LAGA LALA SEJA	2	0.9	5.4	CEMO CIAR CIVU CLVU HYPE LAGA LALA SEJA	1	0.9	5	CEMO CLVU HYPE LALA RUAR SEJA
2800310	0.25	5	4	4,6 55	CYSC	0		1	CEMO CIAR CIVU GERO HYPE SEJA	0						0			
2800290	0.3	3		2	CYSC SEJA			1	CEMO CIAR CIVU HYPE SEJA	0						0			
2800270		1	1	310	CYSC SEJA	0		0		0						0			
2800262	0.6	2	1			0		0		1	CIAR CIVU GERO SEJA	0							
2800260	1.5	2	1			0		0		1	CEMO CIAR CIVU DIPU GERO HISA HYPE RULA SEJA	0							0
2800250	1.1	5	3	92	SEJA	0		0		1	CIAR CIVU GERO SEJA	1	1.1	0	GERO	0			
2800240	0.8	1	1			0		0		0									0
2800220	1.2	1	1			0		0		0									0
2800210	0.4	1	1			0		0		0									0
2800145	0.3	1	1			0		0		0			0						0
2800132	0.6	6	1	463	CEBI CEMO	1		1	CIAR CIVU SEJA	2	CEMO CIAR CIVU SEJA	1	0.6	1.4	CIAR CIVU CLVU SEJA	0			
2800130	0.6	6	0			1	CEBI SEJA	2	CEMO CEST CIAR CYSC GERO HYPE LALA SEJA	2	CEMO CIAR CIVU CYSC HYPE LALA SEJA	1	0.6	6.4	CIAR CIVU CLVU CYSC LALA SEJA	0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2800120	3	2	0			0		0		1	CIAR CIVU HYPE LALA SEJA	1	3	7.44	CIAR CIVU CLVU LALA SEJA	0			
2800060	1.1	1	1			0		0		0		0				0			
2800010	0.5	8	1	10		3	CIAR CIVU GERO ILAQ LALA	2	CIVU CIAR GERO HYPE SEJA	2	CIAR CIVU GERO ILAQ RUAR RULA SEJA	0				0			
2800000	15.6	15	5	70, 321	CEMO CIAR CIVU CYSC GERO SEJA	4	CEBI CEMO CIAR CIVU CYSC DIPU GERO HYPE ILAQ LALA PHAR SEJA	2	CEDE GERO HYPE LALA SEJA TAVU	2	CEMO	1	2	0.5	CEMO CIAR SEJA	1	2.8	5.6	CEMO CIAR CIVU LALA SEJA
2760000	5	5	0			0		2	CIAR CIVU GERO HYPE PHAR SEJA	1	CIAR PHAR	2	0.9	4	CEMO CIVU CYSC DIPU GERO HYPE LALA SEJA	0			
2750020	1.5	2	1			0		1	CIAR CIVU CYSC DIPU HYPE LALA PHAR SEJA	0		0				0			
2750000	5	3	1			2	CIAR CIVU CYSC LALA SEJA	0		0		0				0			
2740110	1.5	1	0			1	CEMO CIAR CIVU CYSC SEJA	0		0		0				0			
2740075	0.5	3	1			1	CEMO CIAR CIVU CYSC SEJA	1	CIAR CIVU HYPE LALA SEJA	0		0				0			
2740072	0.5	4	3	200	CEBI	1	CEMO CIAR CIVU CYSC SEJA	0		0		0				0			
2740070		3	2			1	CEMO CIAR CIVU CYSC SEJA	0		0		0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2740060		4	2	33	CYSC	2	CEMO CIAR CIVU CYSC SEJA	0		0		0				0			
2740000	12	8	3			2	CEBI CEMO CIAR CIVU CYSC SEJA	0		3	CEMO CIAR CIVU CYSC DACA DIPU GERO HYPE ILAQ LALA RULA SEJA VETH	0				0			
2730300	1	8	2	934	CYSC	3	CIAR CYSC GERO LALA PORE RUDI SEJA	2	CIAR CIVU CYSC GERO PORE RUAR SEJA	1	CIAR CIVU GERO LALA RULA SEJA	0				0			
2730200	1	11	4	19,621	CIVU GERO SEJA	3	GERO	2	CEMO CIAR CIVU DIPU GERO HYPE ILAQ LALA SEJA	2	CIVU CLVU GERO HEHE HYPE ILAQ LEVU RULA SEJA	0				0			
2730100	0.4	2	1	35	SEJA	0		1	CYSC GERO HEHE HYPE LALA PORE RULA SEJA			0				0			
2730020		2	1			0		1	CIVU GERO HYPE			0				0			
2730011	1	3	1	51	GERO	1	GERO SEJA	1	CIVU SEJA			0				0			
2730000		5	4	146,400	CYSC SEJA TAVU	0		0		1	CIAR CIVU CLVU GERO LALA RUAR RULA SEJA	0				0			
2700330	1.4	2	1			0		1	GERO HYPE ILAQ SEJA	0		0				0			
2700281	0.5	2	0			0		0		1	CIAR CIVU CYSC HISU SEJA	1	0.5	2	CIAR CIVU CLVU HISA SEJA	0			
2700280	0.6	2	0			0		0		1	CEMO CIAR CIVU DIPU HISA HYPE LALA SEJA	1	0.6	1.8	CIAR CIVU CLVU CYSC HISA SEJA	0			
2700140	1.2	1	1			0		0		0		0				0			

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020			2021				
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2700100	4.6	2	1			0		1	SEJA			0			0				
2700090	2.0	1	1			0		0		0		0			0				
2700080	3	7	0			1	CIAR CIVU CYSC GERO LALA SEJA	2	CIAR GERO HYPE LALA SEJA	1	CIAR GERO HYPE LALA SEJA	2	1.5	0.5	CLVU GERO	1	1	3.5	CLVU GERO
2700040	3.7	9	0			2	SYOF, CIVU CYSC GERO HEHE HIAU ILAQ LALA LAGA PHAR PRLA SEJA	2	AEPO ARMI CASE CIAR CIVU GERO HEHE HIAU HYPE ILAQ LAGA LALA PHAR PRLA SEJA SYOF VIMI	3	AEPO ARMI CASE CIAR CIVU CYSC DIPU GERO HEHE HIAU HYPE ILAQ LAGA LALA PHAR PRLA SEJA SYOF VIMI VETH	1	1.2	3.8	CIAR CIVU CLVU DIFU DIPU GERO HEHE LAGA LAGA LEVU PHAR SEJA SYOF VIMI	1	3	6.5	AEPO CLVU DIFU DIPU GERO HEHE LAGA PHAR SEJA SYOF VIMO
2700000	17.6 5	10	5	4.2 01	SEJA TAVU	3	CEMO CIAR CIVU CYSC GERO LALA SEJA		CIAR CIVU CYSC GERO HYPE LALA PHAR POBO SEJA VIMI	2	CIAR CIVU CYSC GERO HYPE LAGA RUAR SEJA VIMI	0							
2650090	1.7	2	1			0		1	AEPO CASE CIAR CIVU CYSC DACA GERO HIAU HYPE ILAQ LAGA LALA SEJA SYOF VIMI	0		0				0			
2650050	0.9	2	1					1	CEMO CIAR CIVU CYSC GERO HYPE LALA POSA SEJA	0		0				0			
2650000	7.5	5	2	2	ARMY	0		1	CIAR HYPE SEJA	1	CIAR CIVU GERO HYPE ILAQ PORE RUAR RULA SEJA	0				1	3	1.5	CIAR CLVU SEJA
2620060	2.8	1	0			0		0		0		0	0		1	2.8	5	CIAR CLVU HYPE SEJA	
2620056	0.8	4	2	24	CEMO	0		1	CIAR CIVU HYPE SEJA	0		0			1	0.8	1	SEJA	

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2620053	1.9	4	2			0		1	CIAR CIVU CYSC HYPE SEJA	0		0			1	1.9	6	CEMO CIAR CLVU CYSC HYPE SEJA	
2620051 closed at .2 2021	0.8	3	1			0		1	CIVU HYPE SEJA	0		0			1	0.2	0.4	CLVU SEJA	
2620050	2.7	5	2			0		0		2	CIAR CIVU CYSC DIPU HYPE SEJA	0		1	2.7	3.6	CIAR CLVU CYSC SEJA		
2620043	0.7	1	1			0		1	HYPE SEJA	0		0		0					
2620036	0.6	1	0			0		1	CIAR CIVU HYPE SEJA	0		0		0					
2620035	1.1	1	0			0		0		0		0	0	0					
2620030	9.7	2	1			0		1	CIAR CIVU CYSC HYPE SEJA	0		0	0	0					
2620000	11.6	9	3	39, 464	CIVU CYSC GERO RULA SEJA	1		2	CIAR CIVU CYSC DIPU GERO HYPE RUAR SEJA	2	CIAR CIVU CYSC GERO HYPE ILAQ PHAR PORE RUAR RULA SEJA	1	4.3	9.1	CEMO CIAR CIVU CLVU CYSC DIPU GERO HYPE RULA SEJA TAVU	1	4	5.2	CIAR CLVU CYSC DIPU GERO HYPE SEJA TAVU
2610200	0	10	5	3,6 76	CYSC GERO HEHE RUDI SEJA	3	CYSC SEJA	2	CYSC GERO HEHE HYPE LALA RUAR SEJA	0		0		0					
2610050	0	3	0			1	CIAR CYSC GERO SEJA	2	CIAR CIVU CYSC GERO HYPE SEJA	0		0		0					
2610040	0.6	9	2	3,0 00	SEJA	4	CIAR CYSC GERO SEJA	1	CIVU CYSC GERO HYPE LALA SEJA	2	GERO HYPE SEJA	0			0				
2610012	2.6	1	1	397	GERO			0		0		0			0				
2610010	0.9	3	0			0		2	COAR GERO HYPE ILAQ SEJA	1	COAR GERO SEJA	0			0				

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020				2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species
2610000	5.4	11	5	6,570	CEMO CIAR CIVU CYSC GERO RULA SEJA	2	CIAR CYSC GERO POBO SEJA	2	CIAR CIVU CYSC GERO HYPE POBO SEJA	2	CIAR CIVU GERO HYPE LALA POBO RUAR SEJA	0					0		
2530000	10.1	4	2			0		2	CIVU CYSC GERO HYPE SEJA	0		0					0		
2527000	1.2	2	1			0		1	CIAR CIVU CYSC GERO HYPE LALA POSA SEJA	0		0					0		
2510070	6.6	10	3	1,600	GERO	2	GERO	2	CIAR GERO HYPE RUAR SEJA	1	CIAR GERO SEJA	1		4	GERO	1	0.5	6	CLVU GERO only campgr
2510065	0.2	5	1			1	GERO HYPE SEJA	2	CIAR CIVU GERO	1	CIAR CIVU GERO HYPE	0					0		
2510060	0.2	2	0			0		2	CIVU GERO	0		0	0				0		
2510012	1	2	1			0		1	GERO HYPE, SEJA	0		0					0		
2510000	21	4	1	53	CEMO CYSC SEJA	3	CIAR CIVU GERO HYPE RUDI RULA SEJA	2	CIAR CIVU DACA DIPU GERO HYPE RULA PHAR SEJA	1	CIAR CIVU GERO HYPE SEJA	0					0		
2503000	4.3	1	0			0		0		0		0					0		
2500000	7.85	5	1			2	CIAR CYSC GERO POBO SEJA	2	CIAR CIVU CYSC GERO HYPE LALA POBO SEJA	0		0					0		
2190220	0.3	1	1	251	COTON POCU	0		1	GERO HYPE SEJA	0		0					0		
2190200	0	3	1		POCU	2	CIVU CYSC DIPU POBO SEJA	0		0		0					0		
2190170	1.6	1	1			0		0		0							0		
2190000	12.1	3	1			1		0		0		1	2.1	5.64	LAGA SEJA	0			
2100000	8.24	2	2	50	SEJA	0		0		0							0		

ROAD	Road length	Total # Yrs visited	Survey, almost all manual 2002-2006			2007-2010		2011-2014		2015-2018		2019-2020			2021			
			No Yrs Visited	# of Weeds	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Weed Species	No Yrs Visited	Survey Miles	Acres Treated	Weed Species	No Yrs Visited	Survey Miles	Acres Treated
2071000		1	0			0		1	GERO LALA POCU RUDI	0					0			
TOTALS			—	2,618,720	—	—	—	—	—	—	—	222	506		0			

For common name equivalent of Forest Service weed species plant codes, see Appendix G. This table is based on a table of all roads provided by Olympic National Forest in 2002, but currently contains only Forest Service roads within Clallam and Jefferson Counties. Many roads have since been closed or decommissioned. The lower-numbered roads (<2500), originally included in this table because of surveys conducted in Mason and Gray's Harbor Counties on behalf of Olympic National Forest, have been removed. See reports prior to 2010 for that information. All or a portion of 32 roads have been decommissioned since this list was compiled.

The project focus has shifted each year as the program matures. Scope of accomplishments is directly tied to project funding and Forest Service policies, which have both varied since its inception and affect crew composition and size. Additionally, reporting protocols were modified by the Forest Service, changing how on the ground conditions were reported and how accomplishments were documented. Specific comments are presented after the roads table to add perspective.

*As of 2013 Survey miles recorded for a road only once, retreats or additional visits to complete project, not counted in mileage. Total acres treated may not include areas which were not specifically associated with a road, such as an administrative site. It is not clear whether surveyed miles may have included duplicates in 2014. In 2017, rock sources and additional sites located on a specific road were included in that road's treated acreage and species added to list of those found on a particular road.

Historic Tables: Acres, Treated/New Sites/Total Sites

The amount of work completed in any given year directly correlates to a combination of policy, funding, methods, and crew size. The following tables have been an attempt to document how different elements have impacted work. The tables are followed by a historic perspective to give context to the numbers.

The information in the following tables has been significantly altered from last year’s report. In the *Accomplishment Summary* table, reference to non-weed board crew such as Sheriff’s Chain Gang, Olympic Correctional Crew, Washington Conservation Corps, or even FS-led crew has been removed because those crews have not performed weed control work for many years, or, we no longer receive information about non-weed board crew activities that we can include in this report. Currently these tables only reflect the activities of the Noxious Weed Control Board crew which is not an exhaustive reflection of all work occurring in the project area. For these reasons, these tables may not be relevant in future reports and removed. It is both informative and useful to maintain data of all crew work in any given year that is readily accessible to us. Such collated information collected over successive years lends itself to analysis to inform progress, efficiencies, or policy revision to improve results.

The table *New sites/ Total sites* shows the number of new infestations recorded in any given year. It neatly depicts changes in program focus since its inception. As more emphasis is given to treatments and less to surveys and discoveries, fewer “new” sites are discovered. However, recent changes in point collection protocol has made it a little more difficult to determine what is actually “new”. Further, the total number of sites does not account for some areas where an infestation may have been eradicated since it was first discovered. Since 2018, the number of “new” sites is based on crew’s recollection or notes in the FACT sheets.

The Road Miles and Acres Surveyed table has been removed because of significant protocol changes and focus spanning the program’s lifetime. The table was unwieldy and had become irrelevant at this time. For example only surveys or manual treatment were allowed for the first several years of the program while later metrics included acres examined, and acres treated, regardless of mileage. These differences led to the collection of very different metrics to capture scope of work.

2002-2021 ACCOMPLISHMENT SUMMARY TABLES															
Acres Treated rounded to the nearest whole number															
NWCB	'02-'06 manual/ baseline	2007-2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
manual	8.61	55	27	21	33	33	7	10	30	51	30	42*	40	99	110
chemical		131	195	316	286	338	360	248	259	245	162	204	217	303	262
total	8.61 ¹	246 ²	222 ²	337 ²	319	371	367	258	289	296	192	204	217	303	262

Manual treatments were often combined with chemical, so could not be completely separated out

Number of New/Existing Sites Reported Each Year by NWCB Crews*																				
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Sites/Total	122	497/ 619	147/ 766	74/ 840	147/ 986	12/ 998	1/ 999	3/ 1,002	29/ 1,031	56/ 1,060	22/ 1,082	63/ 1,145	12/ 1,157	25/ 1,182	52/ 1,287	88/ 1,375	15/ 1,392	23/ 1,415	3/ 1,418	18/ 1,436

PROGRAM HISTORY FROM 2002-2020: A PERSPECTIVE

- **Focus:** In 2002 the focus was almost exclusively on surveying, with a small amount of manual weed removal. From 2003 to 2005 surveying was still the primary focus, and the use of herbicide was limited by policy. Different crews manually removed thousands of weeds each year. In 2006 some herbicide treatments were allowed. With completion of a new EIS, herbicide treatments expanded and the focus shifted from survey to control. Productivity between years with manual control only and a mix of control methods including herbicide is striking. In a single year crews were able to cover in one year what previously took nearly five. With more riparian, restoration, or habitat projects, future productivity in future may vary greatly from year to year depending on the annual plan of work and available funding and resources.
- **Crew Resources:** The County has hired a small field crew each year since the inception of the project, but fluctuations in funding have meant that the crew size has ranged from 2 to 5 members. Some years a WCC crew has been made available to the Counties. From 2007 to 2009 an Olympic Corrections Center (OCC) crew was used, mainly to pull Scotch broom from pits, quarries and roadsides. Clallam County Sheriff's Chain Gang has been funded for mixed purposes, sometimes weed control. Their efforts were not always coordinated with the Weed Control program. When provided, their data has been incorporated into our report. Recently, FS has directly managed a small weed crew based in Olympia.
- **Reporting:** Protocols have changed during the life of the project. From 2002 to 2005 we reported miles of roads surveyed and/or treated and number of weeds manually removed. Acres treated and/or surveyed were estimated, based on the road miles.
- In 2006, when herbicide treatments began, reporting was acres treated. However, crews or office staff tracked miles surveyed, for some reporting consistency across project years. Most roads are surveyed multiple times during the year, when different plant species are apparent. Because 2006 was a transition year crews reported manual treatments both as acres treated and number of weeds removed. County crews have not reported number of weeds removed since 2006; the WCC crew made the change in 2005. The Chain Gang reports number of weeds removed but in 2011 they also reported acres treated. Chain Gang reporting in 2012 was chaotic and inconsistent; none has been reported to us since 2014. The Chain Gang's reporting preference was number of weeds pulled, based on an estimated plants pulled/hr.
- Estimating acres treated has always been problematic. In 2007 the OCC crew reported treating 337 acres, which we suspect is an inflated figure, because of confusion about protocol. Still, that figure was retained in the table as reported.
- Most years, some of our documented work is for re-treatments. When compiling acreage figures for each year we record re-treatments and subtract them from the total, however, the work involved should somehow be acknowledged as it shows a new kind of success; time in the season to do needed follow-up work.. Re-treatments are a significant factor in effective control of certain species such as herb Robert.
- Changes in the FACTS sheets over the years have made annual comparisons of acreage treated difficult. From 2007 to 2009 we used the "Infested Area Treated" figure from the FACTS sheets to sum up acres treated. In 2010 the forms were changed and "Infested Area Treated" was no longer on the form, so in that year we used the "Application Area" figure from the back of the form. In 2011 this total reverted back and "Infested Area Treated" was again used. Further, in 2010 "Acres Examined for Weeds" was on the FACTS sheet, so that figure was used for "Acres Surveyed" in the table below, rather than extrapolating it from "Miles Surveyed".
- In 2011 we began to break down acres treated chemically and acres treated manually in the summary table.
- In 2012, there was a notable emphasis on restoration, habitat, or prevention projects that are more logistically complicated, and therefore, more labor intensive and expensive. Weed infestations are significantly reduced, re-introduction of native plants has begun, some treatments are now needed only every other year.
- In 2013 there were many changes; monitoring was added as a weed board task, we reseeded some sites, three PSC enabled additional treatment. Chain Gang focus shifted to other tasks, weed work was unfunded. Forest Service created their own two person invasive crew but there were insufficient resources for some of the larger weed control projects that remain. Coordination which has become increasingly complicated is even more essential than before.
- In 2014 we were short staffed and the Jefferson NWCB's coordinator retired but not replaced. We focused heavily on infrequent high priority species and herb Robert sites. Our totals are less for this year than in years with more staffing.
- In 2015 we hired less staff in response to anticipated funding shortages and focused heavily on infrequent high priority species and herb Robert sites.
- In 2016 we hired a two man team, but had a shorter season due to funding limitations and college start dates.
- In 2017 team size was small, limiting number of treatment days and activities. We expanded the use of Milestone (aminopyralid). High priority was given to anticipated road decommissioning, forestry disturbance activities, and low frequency invasive species. Several new invaders were detected.
- In 2018 aminopyralid was the primary herbicide used with only occasional use of triclopyr. A FS-led team treated a number of high priority projects within the scope of our project area. Expanded, coordinated treatments on county roads under a new integrated weed management policy protect adjacent Forest Service lands from weed invasion
- In 2019 and 2020 remote habitat was a focus. FS-led team treated projects within Clallam and Jefferson County. County roadside treatments and prevention measures are coordinated to maximize protection of Forest Service lands-
- **In 2021, there was increased coordination between FS, Clallam NWCB and 10,000 Years Institute enabling multiple treatments in areas with anticipated disturbance during habitat focused forest activities across multiple jurisdictions.**

APPENDIX E: COUNTY ACCOMPLISHMENTS-A SNAPSHOT

Note: This is not a complete list of county work, but gives some highlights and focuses on work and issues of relevance to the Forest Service

Clallam County covers 1,112,960 acres on the northwest edge of the Olympic Peninsula, bordering the Strait of Juan de Fuca. Almost half the acreage of the county (46%) is in federal ownership (National Park or National Forest). The major highway, US 101, runs from east to west through most of the county. Many of our roads lead directly into the National Forest and many go through the Forest into the popular Olympic National Park. The Clallam Noxious Weed Control Board (CNWCB) has a stable, assessment-funded weed program. The CNWCB implemented its fifth season of an integrated weed management (IWM) plan for Clallam County's road department. CCNWCB treated 173 miles of county roads for a broad array of invasive species (36) which pose a direct threat to adjacent Forest Service land. We also treated 187 acres within 25 county pits as an important weed prevention component of the IWM plan. Similar control plans for other county managed lands such as county parks and restoration projects were created; considerable work was accomplished under these plans as well. This year we discovered and treated two small infestations of Scotch thistle and one of gorse. Additionally, with significant help from volunteers, we supplemented pollinator habitat augmentation projects by planting well over 9000 native plants complimentary to and consistent with native plant restoration goals by the Forest Service.



Clallam NWCB actively controls roadside infestations to protect FS lands.

The CCNWCB accomplishes its mission to protect Washington's natural resources from the degrading impacts of invasive plant species through partnerships with many federal, tribal and state agencies, as well as volunteer groups and non-profits, including the 10,000 Years Institute, Back Country Horseman of Washington, Master Gardeners, Stream Keepers, Audubon Society, North Olympic Land Trust, Jefferson Land Trust, and North Olympic Salmon Coalition.

The CCNWCB is the de facto leader of the Olympic Invasive Plant Working Group, a loose consortium of government entities, tribes, and non-profits that meets to exchange information and strategize effective weed control on the Peninsula. As part of an informal Cooperative Weed Management Area, we have broadened our focus from knotweed to on an "all invasives" approach as well as anticipating how to take the proactive steps toward healthy invasion resilient landscapes.

Clallam County 2021 Snapshot	
Number of Known Noxious Weed Species	64
Number of Regulated Noxious Weed Species	32
Most Common Regulated Noxious Weeds	tansy ragwort, poison hemlock, knapweeds
Least Common Regulated Noxious Weeds (bolded species are new this year)	European coltsfoot, false brome, hoary alyssum, hairy willowherb, hawkweeds, Italian thistle, purple loosestrife, sulfur cinquefoil, giant hogweed, goatsrue , gorse, perennial sowthistle, rush skeletonweed, scotch thistle , shiny geranium
Total Number of Sites (Regulated Species Only)	2,401-979 surveyed, (this does not include rechecks or work on county owned sites)-of sites surveyed, less than 5% were not controlled by year's end, nearly every county-owned or managed site was treated.
Number of Landowner Contacts	645
Educational Events	8
Public Contacts (Phone Calls, Walk-Ins, Emails)	1,359
Web-Site Hits	2,2201
Volunteer Hrs (planting, surveys, research)	7-over 500 hrs
Area of Weeds Controlled by Weed Board Staff	14,900 individual plants removed from multiple private properties and many thousands more from county managed lands.

Jefferson County is larger than Clallam County, covering 1,397,760 acres on the eastern edge of the Olympic Peninsula. However, more than half of Jefferson County is in federal ownership and the county is split into two sections with federal land in the center. The western portion is sparsely populated and is 120 miles from Port Townsend, the county seat. Consequently, Jefferson County weed board operates almost exclusively in the eastern portion of the county, comprising roughly 300,000 acres. 10,000 Years Institute, a non-profit, independently leads most Jefferson County weed control projects in the far west portion of the county

Prior to 2013, a portion of Title II funding was used to supplement the Jefferson County Noxious Weed Control (JCNWCB) program. In 2013 the Jefferson County Commissioners granted the JCNWCB request for assessment based funding. Since that time, the coordinator has focused on administration and in-county projects; to the best of our knowledge, there was no overlap this year between Jefferson County's weed control program and adjoining Forest Service lands. Because of this disconnect, there is no snapshot of Jefferson County weed status and control efforts..

**APPENDIX F: WEED SPECIES REPORTED 2002-2021
ON FOREST SERVICE LAND IN CLALLAM OR JEFFERSON COUNTIES**

(Other counties may have reported other species). List sorted alphabetically by botanical name. No new species on FS land; 3 species added in county table: Bur chervil, Scotch thistle, gorse. Plant Codes come from the USDA Natural Resources Conservation Service PLANTS database when available.



Wild basil savory, largely found on FS lands, has been added to the 2022 State Weed List because of its rapid spread and ability to form monocultures in a variety of forest settings

Common Name	Botanical Name	Plant Code
bishop's weed	<i>Aegopodium podgraria</i>	AEPO
common burdock	<i>Arctium minus</i>	ARMI2
cheatgrass	<i>Bromus tectorum</i>	BRTE
butterfly bush	<i>Buddleja davidii</i>	BUDA
hedge bindweed	<i>Calystegia sepium</i>	CASE13
meadow knapweed	<i>Centaurea moncktonii (x gerstlauri)</i>	CEMO6
diffuse knapweed	<i>Centaurea diffusa</i>	CEDI
spotted knapweed	<i>Centaurea stoebe</i>	CEST
Canada thistle	<i>Cirsium arvense</i>	CIAR4
bull thistle	<i>Cirsium vulgare</i>	CIVU
wild basil savory	<i>Clinopodium vulgare</i>	CLVU
rockspray cotoneaster	<i>Cotoneaster horizontalis</i>	COHO
poison hemlock	<i>Conium maculatum</i>	COMA
Scotch broom	<i>Cytisus scoparius</i>	CYSC4
spurge laurel	<i>Daphne laureola</i>	DALA11
wild carrot	<i>Daucus carota</i>	DACA6
Fuller's teasel	<i>Dipsacus fullonum</i>	DIFU
herb Robert	<i>Geranium robertianum</i>	GERO
English ivy	<i>Hedera helix</i>	HEHE
orange hawkweed	<i>Hieracium aurantiacum</i>	HIAU
yellow hawkweed	<i>Hieracium caespitosum</i>	HICA10
European hawkweed	<i>Hieracium sabaudum</i>	HISA4
St. Johnswort	<i>Hypericum perforatum</i>	HYPE
English holly	<i>Ilex aquifolium</i>	ILAQ80
spotted jewelweed	<i>Impatiens capensis</i>	IMCA
yellow flag Iris	<i>Iris pseudacorus</i>	IRPS
yellow archangel	<i>Lamium galeobdolon</i>	LAGA
everlasting peavine	<i>Lathrus latifolius</i>	LALA4
oxeye daisy	<i>Leucanthemum vulgare</i>	LEVU
common toadflax	<i>Linaria vulgaris</i>	LIVU2
purple loosestrife	<i>Lythrum salicaria</i>	LYSA2
reed canary grass	<i>Phalaris arundinacea</i>	PHAR3
ribbon grass*	<i>Phalaris arundinacea, variegated</i>	PHAR3
Japanese knotweed	<i>Polygonum cuspidatum</i>	POCU6
giant knotweed	<i>Polygonum sachalinense</i>	POSA4
Bohemian knotweed	<i>Polygonum x bohemicum</i>	POBO10
sulfur cinquefoil	<i>Potentilla recta</i>	PORE
English laurel	<i>Prunus laurocerasus</i>	PRLA
dog rose	<i>Rosa canina</i>	ROCA3
Himalayan blackberry	<i>Rubus armeniacus</i>	RUAR9
cutleaf blackberry	<i>Rubus laciniatus</i>	RULA
tansy ragwort	<i>Senecio jacobaea</i>	SEJA
comfrey	<i>Symphytum officinale</i>	SYOF
common tansy	<i>Tanacetum vulgare</i>	TAVU
common mullein	<i>Verbascum thapsus</i>	VETH
periwinkle	<i>Vinca minor</i>	VIMI

High-Risk Species in Clallam and Jefferson Counties, Not Yet Detected within (Clallam/Jefferson) FS Lands

wild chervil	<i>Anthriscus sylvestris</i>	ANSY
bur chervil	<i>anthriscus caucalis</i>	ANCA
giant reed	<i>Arundo donax</i>	ARDO
hoary alyssum	<i>Berteroa incana</i>	BEIN
Italian thistle	<i>Carduus pycnocephalus</i>	CAPY
rush skeletonweed	<i>Chondrilla juncea</i>	CHJU
English hawthorn	<i>Crataegus monogyna</i>	CRMO
hairy willowherb	<i>Epilobium hirsutum</i>	EPHI
goatsrue	<i>Galega officinalis</i>	GAOF
shiny geranium	<i>Geranium lucida</i>	GELU
common hawkweed	<i>Hieracium lachenalii</i>	HILA
hairy whitetop	<i>Lepidium appelianum</i>	LEAP
Scotch thistle	<i>Onopordum acanthium</i>	ONAC
common reed	<i>Phragmites australis</i>	PHAU
gorse	<i>Ulex europaeus</i>	ULEU

APPENDIX G: CONTROL RECOMMENDATIONS BY WEED SPECIES

Specific treatment recommendations for each species encountered are given in the table below. General recommendations based on plant lifecycle are listed below.

- Annuals like herb Robert, especially at campgrounds, should be treated as early in the season as possible. With herb Robert in particular, multiple treatments within the season are preferable. Preliminary studies suggest good herb Robert germination control with Oust (sulfometuron ethyl); subsequently this herbicide may be considered for roadside herb Robert populations in the future. Esplanade may also be an option.
- Early blooming perennials, such as orange and yellow hawkweed should be treated as early as possible.
- Biennials like tansy ragwort are often difficult to treat effectively with either chemical or manual treatment alone; once plants have bolted it may be most effective to pull and deadhead flowering stalks, then spray first year rosettes.
- Scotch broom and other invasive woody shrubs can be effectively pulled early in the season before seed set and while the ground is damp. Manual control is best utilized when labor is not an issue, or for small infestations. Cut stump is best used on plant stems greater than ½ inch, cutting plant as low to the ground as possible; dry, hot weather improves efficacy. Herbicide treatments can be made early, but are still effective later in the summer.
- Later blooming perennials like reed canarygrass, Canada thistle, everlasting peavine, knotweeds, knapweeds, common tansy and common toadflax may be effectively treated from midsummer until fall, depending on the species and the location (altitude, aspect, etc).

Plant Code	Common Name	Botanical Name	Control Recommendation
AEPO	bishop's weed	<i>Aegopodium podgraria</i>	Foliar application of imazapyr, or triclopyr
ANSY	wild chervil	<i>Anthriscus sylvestris</i>	Manual removal; spot herbicide application
ARM12	common burdock	<i>Arctium minus</i>	Where minimal occurrence, manual removal; spot herbicide application to rosettes by early spring; or to second year growth, before budding
BUDA	butterfly bush	<i>Buddleja davidii</i>	Manual removal small plants, or cut-stump/foliar treat with triclopyr, or glyphosate,
CESTM	spotted knapweed	<i>Centaurea stoebe</i>	Manual removal very small sites; spot application with selective herbicide - clopyralid preferred
CASE13	hedge bindweed	<i>Calystigia sepium</i>	Herbicide application combined with manual removal. Very difficult to eradicate.
CEMO6	meadow knapweed	<i>Centaurea moncktonii</i>	Foliar herbicide application with selective herbicide, late season - clopyralid preferred
CEDI3	diffuse knapweed	<i>Centaurea diffusa</i>	Manual removal for very small sites; foliar herbicide application - clopyralid preferred
CIAR4	Canada thistle	<i>Cirsium arvense</i>	Manual removal has limited effectiveness, for only very early infestations; spot herbicide application with glyphosate at bud to full bloom; fall or foliar application of a selective herbicide throughout the summer, fall. Clopyralid has worked well and will be emphasized in future treatments.
CIVU	bull thistle	<i>Cirsium vulgare</i>	Where minimal occurrence, manual removal; spot herbicide application to rosettes by early spring or to second year growth, before budding. Remove seeded heads.
CLVU	wild basil savory	<i>Clinopodium vulgare</i>	Foliar application necessary, it is unclear at this time which product works best. Aminopyralid may be ineffective; triclopyr or imazapyr may be required.
COMA	Poison hemlock	<i>Conium maculatum</i>	Manual removal very small sites; spot application with triclopyr
COTON	rockspray cotoneaster	<i>Cotoneaster horizontalis</i>	Manual removal; herbicide treatment only if size of infestation increases
CYSC4	Scotch broom	<i>Cytisus scoparius</i>	Manual removal for small infestations; cut stump treatments preferred for very large infestations, foliar herbicide applications possible, newer herbicides such as aminopyralid would be useful.
DACA6	wild carrot	<i>Daucus carota</i>	Manual removal; spot herbicide application triclopyr
DALA11	spurge laurel	<i>Daphne laureolus</i>	Foliar application; it is unclear at this time which herbicide is most effective, although it is unlikely that aminopyralid alone will be effective.

Plant Code	Common Name	Botanical Name	Control Recommendation
DIFU2	Fuller's teasel	<i>Dipsacum fullonum</i>	Manual removal before full bloom (after full bloom, flower heads need to be removed and disposed of or sprayed onsite after removal, when large quantities); selective herbicide application in first year or pre-bloom in 2 nd year. May require triclopyr or imazapyr.
GERO	herb Robert	<i>Geranium robertianum</i>	Manual removal for small infestations; spot herbicide application where feasible; multiple treatments per season preferred. Prevention measures a must. Low rates of aminopyralid may be effective and reduce seed germination. Imazapyr or sulfometuron ethyl may be considered-where off-target loss is more tolerated, such as roadside- for fall treatments after rain has induced seed germination. Herbicide effects on late stages of plant lifecycle may be too slow to stop seed production.
HEHE	English ivy	<i>Hedera helix</i>	Manual removal; cut stump or foliar herbicide application. Higher end surfactant rates may be needed.
HIAU HICA HISA	orange hawkweed	<i>Hieracium aurantiacum</i> <i>Hieracium caespitosum</i> <i>Hieracium sabatum</i>	Spot spray with selective herbicide in late spring or summer; - clopyralid preferred - possible manual removal for very small infestation. Aminopyralid is likely effective.
HYPE	St. Johnswort	<i>Hypericum perforatum</i>	Pervasive. Preventative control should be incorporated into restoration and maintenance projects. Possible candidate for biocontrol releases where infestations are heavy. Herbicide control options are available should this species otherwise become a resource management issue.
ILAQ80	English holly	<i>Ilex aquifolium</i>	Manual removal; cut stump or foliar herbicide treatment. May be best treated with imazapyr.
IMCA	spotted jewelweed	<i>Impatiens capensis</i>	Manual removal; early foliar herbicide when there are many plants.
IRPS	yellow flag Iris	<i>Iris pseudacorus</i>	Manual removal for small infestations, foliar herbicide, imazapyr may be preferred
LAGA2	yellow archangel	<i>Lamiastrum galeobdolon</i>	Foliar herbicide application –triclopyr, glyphosate, or a combination
LALA4	everlasting peavine	<i>Lathyrus latifolius</i>	Foliar herbicide application - clopyralid preferred
LEVU	oxeye daisy	<i>Leucanthemum vulgare</i>	Pervasive. Preventative control should be incorporated into restoration and maintenance projects. Herbicide control options are available should this species otherwise become a resource management issue.
LIVU2	common toadflax	<i>Linaria vulgaris</i>	Spot herbicide application, triclopyr or aminopyralid are likely effective.
LYSA2	purple loosestrife	<i>Lythrum salicaria</i>	There is only one known site: manual removal should be possible, however herbicide application is available (potential aquatic application)
PHAR3	reed canary grass, ribbon grass	<i>Phalaris arundinacea</i>	Glyphosate or imazapyr in mid-June and mid-Sept. Imazapyr may provide superior control.
POBO10 POSA or POCU	knotweed species	<i>Polygonum spp.</i>	Injection with glyphosate; and/or foliar application of glyphosate or imazapyr
PORE	sulfur cinquefoil	<i>Potentilla recta</i>	Selective herbicides preferred. Will need several years of re-treatment. Small, but long-time plants may need to be dug; plant surface may be insufficient to fully control large root system by herbicide alone.
RUAR9	Himalayan blackberry	<i>Rubus armeniacus</i>	Cut stump with glyphosate or triclopyr or foliar application as appropriate to site. Triclopyr preferred
RULA	evergreen blackberry	<i>Rubus laciniatus</i>	Cut stump or foliar herbicide application - triclopyr preferred
SEJA	tansy ragwort	<i>Senecio jacobaea</i>	Will require <u>systematic</u> 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 pre-bloom in 2 nd year. When collecting large quantities of seed heads, we have found spraying pile of heads onsite is effective and is less burdensome than clipping and disposing bags of heads.
SYOF	common comfrey	<i>Symphytum officinale</i>	Minimal occurrence, but expanding; spot herbicide application-may require triclopyr/ aminopyralid mix, glyphosate or imazapyr.
TAVU	common tansy	<i>Tanacetum vulgare</i>	Spot herbicide application-may require triclopyr or imazapyr.
VIMA VIMI12	bingleaf periwinkle common periwinkle	<i>Vinca major</i> <i>Vinca minor</i>	Thorough spot herbicide application, triclopyr or imazapyr recommended

APPENDIX H: 2021 STATE WEED LIST

Class A Weeds: Non-native species whose distribution in Washington is still limited. Preventing new infestations and eradicating existing infestations are the highest priority. **Eradication of all Class A plants is required by law.**

Class B Weeds: Non-native species presently limited to portions of the State. Species are **designated** for required 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. Please contact your County Noxious Weed Control Board to learn which species are designated for control in your area.

Class C Weeds: Noxious weeds that are typically widespread in WA or are of special interest to the state's agricultural industry. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation.

Class A Weeds Eradication is required

common crupina	<i>Crupina vulgaris</i>
cordgrass, common	<i>Spartina anglica</i>
cordgrass, dense-flowered	<i>Spartina densiflora</i>
cordgrass, saltmeadow	<i>Spartina patens</i>
cordgrass, smooth	<i>Spartina alterniflora</i>
dyer's woad	<i>Isatis tinctoria</i>
eggleaf spurge	<i>Euphorbia oblongata</i>
false brome	<i>Brachypodium sylvaticum</i>
floating primrose-willow	<i>Ludwigia peploides</i>
flowering rush	<i>Butomus umbellatus</i>
French broom	<i>Genista monspessulana</i>
garlic mustard	<i>Alliaria petiolata</i>
giant hogweed	<i>Heracleum mantegazzianum</i>
goatsrue	<i>Galega officinalis</i>
hydrilla	<i>Hydrilla verticillata</i>
Johnsongrass	<i>Sorghum halepense</i>
knapweed, bighead	<i>Centaurea macrocephala</i>
knapweed, Vochin	<i>Centaurea nigrescens</i>
kudzu	<i>Pueraria montana</i> var. <i>lobata</i>
meadow clary	<i>Salvia pratensis</i>
oriental clematis	<i>Clematis orientalis</i>
purple starthistle	<i>Centaurea calcitrapa</i>
reed sweetgrass	<i>Glyceria maxima</i>

ricefield bulrush	<i>Schoenoplectus mucronatus</i>
sage, clary	<i>Salvia sclarea</i>
sage, Mediterranean	<i>Salvia aethiops</i>
silverleaf nightshade	<i>Solanum elaeagnifolium</i>
small-flowered jewelweed	<i>Impatiens parviflora</i>
South American spongeplant	<i>Limnobiium laevigatum</i>
Spanish broom	<i>Spartium junceum</i>
Syrian beancaper	<i>Zygophyllum fabago</i>
Texas blueweed	<i>Helianthus ciliaris</i>
thistle, Italian	<i>Carduus pycnocephalus</i>
thistle, milk	<i>Silybum marianum</i>
thistle, slenderflower	<i>Carduus tenuiflorus</i>
thistle, Turkish	<i>Carduus cinereus</i>
variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
wild four-o'clock	<i>Mirabilis nyctaginea</i>

Class B Weeds

blueweed	<i>Echium vulgare</i>
Brazilian elodea	<i>Egeria densa</i>
bugloss, annual	<i>Lycopsis arvensis</i>
bugloss, common	<i>Anchusa officinalis</i>
butterfly bush	<i>Buddleja davidii</i>
camelthorn	<i>Alhagi maurorum</i>
common fennel, (except bulbing fennel)	<i>Foeniculum vulgare</i> except <i>F. vulgare</i> var. <i>azoricum</i>)
common reed (nonnative genotypes only)	<i>Phragmites australis</i>
Dalmatian toadflax	<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
European coltsfoot	<i>Tussilago farfara</i>
fanwort	<i>Cabomba caroliniana</i>
gorse	<i>Ulex europaeus</i>
grass-leaved arrowhead	<i>Sagittaria graminea</i>
hairy willowherb	<i>Epilobium hirsutum</i>
hawkweed oxtongue	<i>Picris hieracioides</i>
hawkweed, orange	<i>Hieracium aurantiacum</i>
hawkweeds: All nonnative species and hybrids of the meadow subgenus	<i>Hieracium</i> , subgenus <i>Pilosella</i>
hawkweeds: All nonnative species and hybrids of the wall subgenus	<i>Hieracium</i> , subgenus <i>Hieracium</i>
herb-Robert	<i>Geranium robertianum</i>

hoary alyssum	<i>Berteroa incana</i>
houndstongue	<i>Cynoglossum officinale</i>
indigobush	<i>Amorpha fruticosa</i>
knapweed, black	<i>Centaurea nigra</i>
knapweed, brown	<i>Centaurea jacea</i>
knapweed, diffuse	<i>Centaurea diffusa</i>
knapweed, meadow	<i>Centaurea</i> × <i>gerstlaueri</i>
knapweed, Russian	<i>Rhaponticum repens</i>
knapweed, spotted	<i>Centaurea stoebe</i>
knotweed, Bohemian	<i>Fallopia</i> × <i>bohemica</i>
knotweed, giant	<i>Fallopia sachalinensis</i>
knotweed, Himalayan	<i>Persicaria wallichii</i>
knotweed, Japanese	<i>Fallopia japonica</i>
kochia	<i>Bassia scoparia</i>
lesser celandine	<i>Ficaria verna</i>
loosestrife, garden	<i>Lysimachia vulgaris</i>
loosestrife, purple	<i>Lythrum salicaria</i>
loosestrife, wand	<i>Lythrum virgatum</i>
Malta starthistle	<i>Centaurea melitensis</i>
parrotfeather	<i>Myriophyllum aquaticum</i>
perennial pepperweed	<i>Lepidium latifolium</i>
poison hemlock	<i>Conium maculatum</i>
policeman's helmet	<i>Impatiens glandulifera</i>
puncturevine	<i>Tribulus terrestris</i>
Ravenna grass	<i>Tripidium ravennae</i>
rush skeletonweed	<i>Chondrilla juncea</i>
saltcedar	<i>Tamarix ramosissima</i>
Scotch broom	<i>Cytisus scoparius</i>
shiny geranium	<i>Geranium lucidum</i>
spurge flax	<i>Thymelaea passerina</i>
spurge laurel	<i>Daphne laureola</i>
spurge, leafy	<i>Euphorbia virgata</i>
spurge, myrtle	<i>Euphorbia myrsinites</i>
sulfur cinquefoil	<i>Potentilla recta</i>
tansy ragwort	<i>Jacobaea vulgaris</i>
thistle, musk	<i>Carduus nutans</i>
thistle, plumeless	<i>Carduus acanthoides</i>
thistle, Scotch	<i>Onopordum acanthium</i>
velvetleaf	<i>Abutilon theophrasti</i>
water primrose	<i>Ludwigia hexapetala</i>
white bryony	<i>Bryonia alba</i>
wild chervil	<i>Anthriscus sylvestris</i>
yellow archangel	<i>Lamium galeobdolon</i>
yellow floatingheart	<i>Nymphoides peltata</i>
yellow nutsedge	<i>Cyperus esculentus</i>
yellow starthistle	<i>Centaurea solstitialis</i>

Class C Weeds

absinth wormwood	<i>Artemisia absinthium</i>
Austrian fieldcress	<i>Rorippa austriaca</i>
babysbreath	<i>Gypsophila paniculata</i>
black henbane	<i>Hyoscyamus niger</i>
blackgrass	<i>Alopecurus myosuroides</i>
buffalobur	<i>Solanum rostratum</i>
cereal rye	<i>Secale cereale</i>
common barberry	<i>Berberis vulgaris</i>
common catsear	<i>Hypochaeris radicata</i>
common groundsel	<i>Senecio vulgaris</i>
common St. Johnswort	<i>Hypericum perforatum</i>
common tansy	<i>Tanacetum vulgare</i>
common teasel	<i>Dipsacus fullonum</i>
curlyleaf pondweed	<i>Potamogeton crispus</i>
English hawthorn	<i>Crataegus monogyna</i>
English ivy - four cultivars only	<i>Hedera helix</i> 'Baltica', 'Pittsburgh', and 'Star', and <i>H. hibernica</i> 'Hibernica'
Eurasian watermilfoil hybrid	<i>Myriophyllum spicatum</i> x <i>Myriophyllum sibiricum</i>
evergreen blackberry	<i>Rubus laciniatus</i>
field bindweed	<i>Convolvulus arvensis</i>
fragrant waterlily	<i>Nymphaea odorata</i>
hairy whitetop	<i>Lepidium appelianum</i>
Himalayan blackberry	<i>Rubus bifrons</i> (<i>Rubus armeniacus</i>)
hoary cress	<i>Lepidium draba</i>
Italian arum	<i>Arum italicum</i>
Japanese eelgrass	<i>Nanozostera japonica</i>
jubata grass	<i>Cortaderia jubata</i>
jointed goatgrass	<i>Aegilops cylindrica</i>
lawnweed	<i>Soliva sessilis</i>
longspine sandbur	<i>Cenchrus longispinus</i>
medusahead	<i>Taeniatherum caput-medusae</i>
nonnative cattail species and hybrids (reminder, does not include the native common cattail, <i>Typha latifolia</i>)	<i>Typha</i> species
old man's beard	<i>Clematis vitalba</i>
oxeye daisy	<i>Leucanthemum vulgare</i>
Pampas grass	<i>Cortaderia selloana</i>
perennial sowthistle	<i>Sonchus arvensis</i>
reed canarygrass	<i>Phalaris arundinacea</i>

Class C Weeds continued

Russian olive	<i>Elaeagnus angustifolia</i>
scentless mayweed	<i>Tripleurospermum inodorum</i>
smoothseed alfalfa dodder	<i>Cuscuta approximata</i>
spikeweed	<i>Centromadia pungens</i>
spiny cocklebur	<i>Xanthium spinosum</i>
spotted jewelweed	<i>Impatiens capensis</i>
Swainsonpea	<i>Sphaerophysa salsula</i>
thistle, bull	<i>Cirsium vulgare</i>
thistle, Canada	<i>Cirsium arvense</i>
tree-of-heaven	<i>Ailanthus altissima</i>
ventenata	<i>Ventenata dubia</i>
white cockle	<i>Silene latifolia</i>
wild carrot (except where commercially grown)	<i>Daucus carota</i>
yellow flag iris	<i>Iris pseudacorus</i>
yellow toadflax	<i>Linaria vulgaris</i>

To learn more about noxious weeds and noxious weed control in Washington State, please contact:

WA State Noxious Weed Control Board

P.O. Box 42560
Olympia, WA 98504-2560
(360) 725-5764

Email: noxiousweeds@agr.wa.gov

Website: <http://www.nwcb.wa.gov>

Or

WA State Department of Agriculture

(509) 249-6973

Or

Clallam County Noxious Weed Control Board

223 E 4th St., Suite 15
Port Angeles WA 98362

Website: <http://www.clallam.net/weed>
(360) 417-2442

Please help protect Washington's economy and environment from noxious weeds!

2021

Washington State Noxious Weed List

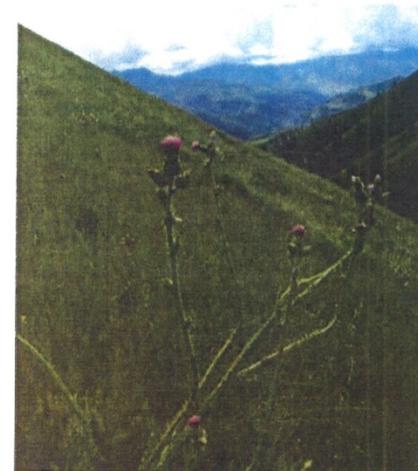


photo by Mark Porter, Oregon Department of Agriculture

Turkish thistle, *Carduus cinereus*, is a new Class A noxious weed for 2021. This annual thistle is found close to Washington in northeastern Oregon and the adjacent area in Idaho. Eradication is required of Turkish thistle when found in Washington.



APPENDIX I: SAMPLES OF HERBICIDE NOTIFICATION—LEGAL AD AND ON-SITE POSTING

A legal notice preceding herbicide application on the Olympic National Forest was published in the Peninsula Daily News (PDN), which is distributed throughout both Clallam and Jefferson Counties. The text of the legal notice in the PDN read as follows:

LEGAL NOTICE

The Pacific and Hood Canal Ranger Districts, Olympic National Forest, may be applying the herbicides glyphosate, clopyralid, triclopyr, aminopyralid, sulfometuron methyl, or imazapyr to noxious weeds or other invasive plant species at the following Forest Service sites in Jefferson and Clallam Counties April 26 – November 18, 2021. Applications will be conducted as planned in the Final EIS-Olympic National Forest Site Specific Invasive Plant Treatment Project, which was finalized in 2008. Notices indicating that formulations containing glyphosate, clopyralid, triclopyr, aminopyralid, sulfometuron methyl, or imazapyr will be applied will be posted at entrances to the target road systems and/or individuals sites. For questions about applications or to receive a complete list of individual sites contact Cathy Lucero, Clallam County Noxious Weed Control Board, at 360-417-2442, or Nick Jarvis, Invasive Plant Program Coordinator for the Olympic National Forest at (360) 956-2319.

Bockman Creek Watershed, 2902, 2903 Rds and spurs; Bockman pit; **Calawah River**, 2932; **Canyon Creek /Pats Creek Watershed**, 28, 2870, 2875, 2877, 2878 Rds and spurs; Cranberry Bog, Juniper Meadow, Slab Camp/Deer Ridge TH, Schmits Knob meadow, and Caraco Cat units; Upper and Lower Caraco, Canyon, and Ned Hill Pits; **Fulton Creek/Waketickreh Ceek Watershed**, 2510 Rd; **Jimmy-come-lately Creek Watershed**, 28, 2840, 2850, 2855 Rds and spurs; Louella Work Center; Louella, Louella LuLu, Louella Rock Pit; Coho, Raccoon, Wolf 2, 2845073 Spur Pits; **Little Quilcene River Watershed**, 27, 28, 2820 Rds and spurs; Bon Jon Quarry; **Lower Big Quilcene River Watershed**, 2620, 27, 2740 Rds and spurs; PT Muni WS caretakers cabin, Lower Big Quilcene Trail, Falls View CG and the Quilcene Ranger Station; **Lower Dosewallips River Watershed**, 2610, 2620 Rds and spurs; Elkhorn CG and Lower Dosewallips Riparian Area; **Lower Duckabush River Watershed**, 2510 Rd; Collins CG; **Lower Gray Wolf River Watershed**, 2870, 2878, Rds and spurs; Armpit Pit; Dungeness Forks CG; **Matheny Creek Watershed**, 21, 2140, 2160, 2170, 2180, 2190 Rds and spurs; Arlo, Calvin, Cloud, Empire, Frog, Hard Turn Hobbs, Jupiter, Loki, Matheny Creek, Mercury, Newt, and Toad Pits; **McDonald Creek/Siebert Creek Watershed**, 2877 Rd and spurs; Pat's Prairie; **Middle Dungeness River Watershed**, 28, 2820, 2870 Rds and spurs; Lost Pit; **Middle Queets River Watershed**, 2170, 2180 Rds and spurs; Park pit; **Middle Quinault River Watershed**, 2140, 2190 Rds and spurs; Neptune pit; **Middle Sol Duc River Watershed**, 2036, 2065, 2923, 3040, 31 Rd and spurs; Snider Work Center; **North Fork Calawah Watershed**, 2036, 2065, 29, 2922, 2923 Rds and spurs; Calawah and Grindstone Pits; **Pysht River Watershed**, 31 Rd and spurs; **Salmon River Watershed**, 2140 Rd and spurs; North Salmon, Salamander Pit; **Sam's River Watershed**, 2170 Rd and spurs; **Snow Creek/Salmon River Watershed**, 2840, 2845, 2850, 2852 Rds and spurs; **South Fork Calawah Watershed**, 29, 2922, 2923, 2932, 2952 Rds and spurs; Elk pit, Klahanie CG; **Upper Big Quilcene River Watershed**, 27, 2760 Rds and spurs; Sink Lake, Upper Big Quilcene trail; **Upper Dungeness River Watershed**, 2870 Rd and spurs; Dungeness and Heather Basin trails, Camp Handy; **Upper Sol Duc River Watershed**, 29, 2929, 2978, Rd and spurs; Mt Muller, Snider Ridge trail; Klahowya CG; Bonidu, Littleton Mt Muller TH pits.

Onsite Posting Sample: Information about date of application, locations, and targeted weed species are generally filled in onsite.

NOTICE

The herbicide(s) aminopyralid, clopyralid, glyphosate, imazapyr, sulfometuron methyl and/or triclopyr may be applied to the following roads and surrounding area any time between

_____, 20__ to
control weeds, which threaten native vegetation and habitat in this area:

Specific areas to be targeted include roadsides, forested areas, vegetated openings and rock pits.

Targeted Weed Species include, but are not limited to:

Avoid contact with treated vegetation until after it has dried; it will take approximately 1 hour to dry after application.

FOR MORE INFORMATION CONTACT:

**Nick Jarvis
Forest Botanist and Invasive Plant Program Coordinator
Olympic National Forest
1835 Black Lake Blvd., SW Suite A
Olympia, WA 98512
Nicholas.jarvis@usda.gov
360-956-2319**

This sign can be removed one month after listed treatment dates.

APPENDIX J: PROJECT FORMS

- FACTS Manual/Herbicide Treatment Data Form-front side

VCP 49

2021 FACTS Invasive Plant Treatment Data Form
General Activity Fields

Ref #: 295 Document only one area represented by one Ref # per FACTS form.

Admin Use Only
Activity Unit FACTS ID#: _____ Name: _____
Activity Subunit #: _____ Name: _____

Region	Forest	District (circle one) *	6 th Field Watershed Name	Owner	Workforce** (and Number of People in Crew)
06	09	PAC-N (05) <u>HC-N (02)</u> PAC-S (03) HC-S (01)	<u>Lower Big Quilcan</u>	FS	<u>CCROWCR</u> (2) # people

Method Code	Equipment Code: (circle one)	Job Code:	Treatment Location and Comments:	Comments
<u>700</u> Herbicide	711 hand sprayer 712 backpack sprayer 713 hack & squirt 716 injector	<u>Tire H</u>	<u>2620</u> <u>MD 4.3-3.6</u> Was entire area represented by the Ref# treated for weeds? Yes / <u>No</u>	<u>treated the "triangle" between 2620 & 050 spur - small amount of TAVU remained</u>
<u>100</u> Manual	721 mobile ground sprayer 000 other			

* District Codes: Pacific North (05) = PAC-N; Pacific South (03) = PAC-S; Hood Canal North (02) = HC-N; Hood Canal South (01) = HC-S

Should this area be a high priority for follow-up treatments next year? Yes () / No (circle one)
Is this area a good candidate for post-treatment seeding? Yes () / No (circle one)

Site/Inventory Fields

Date of Treatment	Acres examined	Application Site (circle one)	Licensed Applicator: Name and License #
<u>8/9/21</u>	<u>2.2</u>	<u>Road edge/ROW</u> Riparian Forest Admin Site Campground Trailhead Rock Source Other:	<u>Cathy Lucas - 56527</u> <i>maple in future</i>
Total Manual Infested Area Treated: Do not lump plants together:			<u>2.2</u> acres

Weeds Treated (Use PLANTS code; include common name too if uncommon weed)	Infested Area Treated (IAT)	% cover in IAT (Use cover classes 1-9 listed below)	Comments
<u>SEJA</u>	<u>2.2</u> acres	<u>4</u>	<u>pulled, deadheaded flowering plants</u>
<u>CLUU</u>	<u>0.5</u> acres	<u>3</u>	
<u>GZRO</u>	<u>0.01</u> acres	<u>4</u>	
<u>CIAR</u>	<u>0.01</u> acres	<u>5</u>	
<u>TAVU</u>	<u>0.001</u> acres	<u>6</u>	
<u>DIPU</u>	<u>1</u> acres	<u>3</u>	<u>as time allowed</u>
<u>HYPE</u>	<u>2.2</u> acres	<u>2</u>	<u>as time allowed</u>
	acres		

Cover Classes: 1 = Trace, 2 = 1-3%, 3 = 3-5%, 4 = 5-10%, 5 = 10-25%, 6 = 25-50%, 7 = 50-75%, 8 = 75-95%, 9 = 95-100%
Note: Cover classes are meant to be *approximations only*. DO NOT spend more than a few moments determining cover class

- FACTS Manual/Herbicide Treatment Data Form-back side

Daily Log

Reminder: Review buffers prior to spraying, they are sometimes different than what's on the label. In particular, DO NOT use any triclopyr formulations (including aquatic) within 15 ft of water.

Tank Mix 1

Application Date	Time Start	Time Stop	Temp (F)	Wind Speed (MPH)	Wind Direction	Cloud Cover	Comments:				
8/9/21	12:15pm	4:20pm	67°	<2mph	W	Sun	Started 2620 - completed 060 spray - then resumed 2620				
Total Volume of Mix Applied	UOM	Mix (ounces herbicide per 1 gallon water)		Dilutant	Applicators Names						
4	Gallons	1. 5ml	oz/gal	Water	Austin Delgado, Cathy Lucero						
		2. 2	oz/gal								
Herbicide Product Name	Amount of this herbicide product that was applied		Percent Solution	Adjuvant Product Name	Amount of this adjuvant that was applied		Percent Solution	Total Application Area (Acres):			
1. Milestone	.6 oz		0.125 %	Competitor	2.6 oz		0.5 %	2.2			
2. Element 3A	8 oz		1.5 %	Blazon	1.3 oz		0.25 %	Area treated in Riparian Reserves: 0.5			
	oz		%		oz		%	Area Treated within 5 feet of Standing Water: <input checked="" type="checkbox"/>			

Tank Mix 2 (For use when more than one tank mix is used to treat the infestation).

Total Volume of Mix Applied	UOM	Mix (ounces herbicide per 1 gallon water)		Dilutant	Applicators Names						
	Gallons	1.	oz/gal	Water							
		2.	oz/gal								
Herbicide Product Name	Amount of this herbicide product that was applied		Percent Solution	Adjuvant Product Name	Amount of this adjuvant that was applied		Percent Solution	Total Application Area (Acres):			
1.	oz		%		oz		%				
2.	oz		%		oz		%	Area treated in Riparian Reserves:			
	oz		%		oz		%	Area Treated within 5 feet of Standing Water:			

(From front page) Ref #: _____

Notes:

EPA #s for commonly used herbicides: Milestone: 62719-519
 Aquaneat: 228-365 Aquamaster: 534-343 Polaris: 228-534
 Vastlan: 62719-687 Singer: 62719-73 Transline: 62719-259

2021 FACTS Invasive Plant Treatment Data Form
 Page 2 of 2 modified 04/20/2021

APPENDIX J: PROJECT FORMS

- Invasive Plant Inventory for Rock Source, Olympic National Forest, short form

Invasive Plant Inventory for Rock Sources, Olympic National Forest

District or Forest Weed Specialist compliance statement and signature:
This designation is valid for two years from the inspection date listed below.

CHECK ONE:

Option A. Rock source exceeds requirements: *I have determined that this rock source to be completely free of weeds.* Weeds, even those listed as tolerated species, are not present in, and are not associated with, this rock source.

Option B. Rock source meets requirements: *I have determined that this rock source to be acceptable for use, with acceptable levels of contamination.* It is very unlikely that distribution of materials from this rock source would contribute to the spread of noxious weeds.

- Any species listed as priority 1 by Olympic NF, OR those listed as Class A, B or selected weeds on State and County noxious weed lists, OR species of particular concern are absent in or around rock source.
- Species listed as priority 2 by Olympic NF (but not on State or County list specified above) may be present in small, isolated patches within or near the rock source. Typically, less than 10% of the pit either has weeds growing on it or potentially could contain weed seed or other propagules, and these areas are easily isolated from rock source materials.
- Species listed as tolerated are present to various degrees within and around rock source.

Option C. Rock source meets minimum requirements: *I have determined that this rock source is acceptable for use, but only if no other source is available.* Distribution of materials from this rock source may contribute to the spread of noxious weeds if precautionary measures are not followed. These measures are described in the comments box below.

- Any species listed as priority 1* by Olympic NF, OR any species listed as Class A, B* or selected weeds* on State and County noxious weed lists, OR species of particular concern are absent in or around rock source.
- Species listed as priority 2 by Olympic NF (but not on State or County list specified above) are present in patches, but some portions of the rock source are relatively free of weeds, are most likely are not contaminated with a significant amount of propagules (seeds, roots, etc.) from these species, and may be an acceptable rock source for FS lands. Typically, between 10 – 50% of the pit will have priority 2 weeds growing on it and/or potentially could contain seed or other propagules from these species, and these areas are easily isolated from rock source materials.

*In limited circumstances, as determined by the inspector, this box may be checked when species listed as priority 1 by Olympic NF, OR class B or selected weeds on State and County noxious weed lists are present in very small, easily isolated patches.

Option D. Rock source fails to meet requirements. *I have determined that this source is unsuitable for use at this time.* Distribution of materials from this rock source would likely contribute to the spread of noxious weeds. Weed species listed as priority 1 by Olympic NF, OR those listed as Class A, B or selected weeds on State and County noxious weed lists, OR species of particular concern are present in or around this rock source, OR weed species listed as priority 2 by Olympic NF are present to the extent that plants and/or propagules (seeds, roots, etc.) are present in significant portions of the rock source and cannot be isolated by precautionary measures.

Cathy Lucero

9/23/2019

Signature

Date

Name of Rock Source: Coho Pit

Narrative of Pit Location (include, at minimum, road number and milepost): 2840-080-0.2 miles. Ref # 57

Coordinates of Location N: _____ E: _____ *UTM NAD 83 is preferred
Projection (circle one): (UTM NAD 83) (UTM NAD 27) (NAD 83 Albers) (Lat/Long) (Decimal Degrees) (Other): _____

Name and Title of Inspector: Cathy Lucero **Date of Inspection:** 9/23/19

Comments: Include mitigation measures that need to be implemented to minimize the chance of spreading weeds. This should include a description of what parts of pit are usable, and what parts must be avoided. This should also be shown in the sketch of the pit on last page.

This pit is pretty clean, and could easily achieve an option B instead of a C, with some follow-up next year. Minor amounts of tansy ragwort are easily isolated.

Let us know plan, if storage or extraction, to help us better prepare this pit for FS use.

Name of Rock Source: Coho Pit **Date inspected:** 9/23/2019

Species present:

Species Code	Common Name	Infested Area (acres)	Cover Class	Comments
SEJA	Tansy ragwort	0.001	8	Tiny patch, treated on lower right side
CIAR	Canada thistle	0.5	2	Scattered around the perimeter
LALA	Everlasting peavine	0.1	2	Scattered throughout back
HYPE	St. Johnswort	0.05	1	Sparsely scattered on lower right side
Do not record tolerate species in this table.				

DON'T FORGET TO FILL OUT THIS SECTION!

Estimated size of pit: 1.9 acres
(1 acre = 43560 ft², or approximately 209 ft x 209 feet. 1/10 acre = 4356 ft², or 66 ft x 66 ft, or approximately 435 ft x 10 ft)

Percent of pit occupied by invasive plants 2 %
 This percent should indicate the percent of the pit that is NOT usable as a rock source as you find it on the day of the inspection. This includes area occupied by weeds AND the area potentially contaminated with seeds or other propagules.

Was this pit treated for invasive plants during this visit? Yes / No
If yes, please fill out a FACTS form documenting treatment

Has this pit been treated for weeds before? Yes / No / Don't know **If yes, what year?** 2018

Cover Class and Infested Area (acres) columns are filled out exactly the same way as on the FACTS form.	Cover Classes: 1 = Trace, 2 = 1 – 3%, 3 = 3 – 5% 4 = 5 – 10%, 5 = 10 – 25%,
	6 = 25 – 50%, 7 = 50 – 75%, 8 = 75 – 95%, 9 = 95 – 100% <small>Note: Cover classes are meant to be approximations only. DO NOT spend more than a few moments determining</small>

Name of Rock Source: Coho Pit

Date inspected 9/23/19

Sketch of pit (or aerial photo .jpgs of pits can be pasted in the space below prior to going into field) :
Include information such as areas of pit that are clean and usable, distribution and location of weed species, a north arrow and scale bar, road numbers or landmarks to assist in finding pit and/or weeds of particular concern, etc. Comments are encouraged!

Rock Pit Inspection: Coho Pit

Clallam County
2840080 road, MP 0.3

Date of Inspection: _____ (include year)

Approx 1.9 acres



Olympic National Forest Invasive Species List

Code	Scientific Name	Common Name	Treatment Priority
AEPO	<i>Aegopodium podagraria</i>	Bishop's weed, goutweed	1
ARM12	<i>Arctium minus</i>	lesser burdock	1
BOOF	<i>Borago officinalis</i>	common borage	1
BRTE	<i>Bromus tectorum</i>	cheatgrass	1
BUDA2	<i>Buddleja davidii</i>	butterfly bush	1
CEDE5	<i>Centaurea debeauxii</i>	meadow knapweed	1
CEDI3	<i>Centaurea diffusa</i>	diffuse knapweed	1
CEJA	<i>Centaurea jacea</i>	brownray knapweed	1
CESTM	<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	spotted knapweed	1
CLVU	<i>Clinopodium vulgare</i>	wild basil	1
DALA11	<i>Daphne laureola</i>	spurge laurel	1
DIFU2	<i>Dipsacus fullonum</i>	Fuller's teasel	1
GELU	<i>Geranium lucidum</i>	shiny geranium	1
GERO	<i>Geranium robertianum</i>	herb Robert, stinky Bob	1
HEMA17	<i>Heracleum mantegazzianum</i>	giant hogweed	1
HIAU	<i>Hieracium aurantiacum</i>	orange hawkweed	1
HICA10	<i>Hieracium caespitosum</i>	meadow (yellow) hawkweed	1
HISA4	<i>Hieracium sabaudum</i>	European hawkweed	1
IMCA	<i>Impatiens capensis</i>	spotted jewelweed	1
LAGA2	<i>Lamiastrum galeobdolon</i>	yellow archangel	1
LIVU2	<i>Linaria vulgaris</i>	yellow toadflax, butter and eggs	1
LYPU2	<i>Lysimachia punctata</i>	large yellow loosestrife	1
LYVU	<i>Lysimachia vulgaris</i>	garden yellow loosestrife	1
MEPI	<i>Mentha x piperita</i>	peppermint	1
ORVU	<i>Origanum vulgare</i>	oregano	1
POCU6	<i>Polygonum cuspidatum</i>	Japanese knotweed	1
POPOS	<i>Polygonum polystachyum</i>	Himalayan knotweed	1
POSA4	<i>Polygonum sachalinense</i>	giant knotweed	1
POBO10	<i>Polygonum x bohemicum</i>	Bohemian knotweed	1
PORE5	<i>Potentilla recta</i>	sulphur cinquefoil	1
SEJA	<i>Senecio jacobaea</i>	tansy ragwort	1
SILAA3	<i>Silene latifolia</i> ssp. <i>alba</i>	bladder campion	1
SYOF	<i>Symphytum officinale</i>	common comfrey	1
TUFA	<i>Tussilago farfara</i>	European coltsfoot	1
VETH	<i>Verbascum thapsus</i>	common mullein	1
VIMA	<i>Vinca major</i>	bigleaf periwinkle	1
VIMI2	<i>Vinca minor</i>	common periwinkle	1
CIAR4	<i>Cirsium arvense</i>	Canada thistle	2
CIVU	<i>Cirsium vulgare</i>	Bull thistle	2
COAR4	<i>Convolvulus arvensis</i>	field bindweed	2
CYSC4	<i>Cytisus scoparius</i>	Scot's broom	2
DACA6	<i>Daucus carota</i>	Queen Anne's lace	2
HEHE	<i>Hedera helix</i>	English ivy	2
HYPE	<i>Hypericum perforatum</i>	common St. Johnswort	2
ILAQ80	<i>Ilex aquifolium</i>	English holly	2
LALA4	<i>Lathyrus latifolius</i>	everlasting peavine	2
PHAR3	<i>Phalaris arundinacea</i>	reed canarygrass (including ribbon grass)	2
PRLA5	<i>Prunus laurocerasus</i>	English laurel	2
RUAR9	<i>Rubus armeniacus</i>	Himalayan blackberry	2
RULA	<i>Rubus laciniatus</i>	cutleaf blackberry	2
TAVU	<i>Tanacetum vulgare</i>	common tansy	2
DIPU	<i>Digitalis purpurea</i>	purple foxglove	Tolerate
HYRA3	<i>Hypochaeris radicata</i>	hairy catsear	Tolerate
LEVU	<i>Leucanthemum vulgare</i>	oxeye daisy	Tolerate

APPENDIX K: CALIBRATION METHODOLOGY

Followed Method 2

Method 1-Hand Sprayer Calibration Method

It is just as important to calibrate manual sprayers as it is to calibrate power sprayers. Generally, these sprayers are calibrated by determining the amount of liquid required to adequately cover the intended target.

Step 1: Area Measurement Measure and mark off an area 20 feet by 50 feet (1,000 square feet). Practice spraying the area with water. Spray the area twice for a uniform application. Walk in one direction, swinging the nozzle back and forth. When you finish, go over the area again, this time walking at a right angle to the direction you walked before. For example, walk from north to south for the first application, and from east to west for the second.

Step 2: Liquid Measurement Using water, fill the sprayer to a known mark and spray the area. Refill the sprayer, measuring the amount of water required to fill to the original level. The amount of water needed to refill the tank is the amount used per 1,000 square feet.

Example: One gallon of water was put in a 1-gallon hand-operated sprayer. After spraying a 100- square-foot test area, it was determined that 8 ounces of water were needed to refill the tank to the 1 gallon mark. At this application rate, how many square feet of carpet could be treated with 1 gallon?

spray used =8 oz. on 100 sq. ft. 1 gal. water = 128 oz. $128 \text{ oz.} \div 8 \text{ oz.} = 16$.
 $16 \times 100 \text{ sq. ft.} = 1,600 \text{ sq. ft.}$

Thus, 1,600 square feet of carpet could be treated with 1 gallon of liquid.

Change Delivery Rate

If your sprayer is delivering less than or more than enough spray, you can change the rate by using one of three methods:

- Change the pump pressure. Lower pressure pushes less spray out of the nozzle; higher pressure pushes more spray out. This is not the best method because a pressure change will change the nozzle pattern.
- Change the speed of the sprayer. Slower speed leaves more spray along the target area; faster speed means less spray is left behind. Doubling the speed you move cuts the application rate in half. Changing the speed is practical for small adjustments of the application rate.
- Adjust each nozzle's hole size by changing the nozzle's disk or change the entire nozzle. This is the preferred method of adjusting the application rate. By increasing the size of the hole in the disk or nozzle, you increase the application rate.

Method 2-Calibration of Small Volume & Hand Held Sprayers

The procedure for calibrating a hand-held or backpack sprayer is simple. Just follow these steps: 1. Measure out an 18- x 18- foot strip in the area similar to the one you will be spraying.

2. Add water to your tank and in a uniform manner, spray this area with water and record the amount of seconds it takes. Do this 2 or 3 times making sure that you keep your pattern and pressure constant. Take the average.

3. Measure the amount of water delivered to this strip by spraying into a bucket for the same amount of time as in step #2. Also keep your pressure the same as when you sprayed the strip.

4. The amount of water collected in fluid ounces equals the output or GPA. (Ounces = GPA)

This method works because of the relationship between a square that is 128th of an acre and the fact that there are 128 ounces in a gallon.