



2016 Report of the Pacific Northwest Invasive Plant Council's (PNW IPC) Early Detection Rapid Response (EDRR) Citizen Science Invasive Plant Program

Annual report summarizing key accomplishments



Program in Action (Left to Right): Don Hardin, Group hike led by Sasha Shaw, Sandra Vahsholtz, EDRR Training Session in Bellingham WA, and Helen Hepp.

Date: November 30, 2016

Written by: Julie Combs, Ph.D.

PNW Invasive Plant Council
EDRR Citizen Science Program Director
University of Washington, Botanic Gardens
Box 354115
Seattle, WA 98195

Question or Comments pertaining to the PNW IPC EDRR Citizen Science annual report can be sent via e-mail to info@pnw-ipc.org and further information about our program, the EDRR list, and general information about our organization can be found on our website: www.pnw-ipc.org



Mission Statement

To protect the Pacific Northwest's land and waters from ecologically-damaging invasive plants through scientific research, education, policy and an on-the-ground citizen science monitoring and eradication program.

Objectives

Facilitate communication and to promote collection and exchange of information regarding all aspects of invasive plant status, control and management;

Educate and outreach to the general public, land managers and legislators regarding the environmental and economic impacts of invasive plants;

Organize and/or support invasive plant management research and eradication efforts;

Serve in an advisory capacity for the continued needs for funding, research, management and control of invasive plants;

Provide forums where managers, researchers and the general public can share information regarding the impact, control and management of invasive plant species.

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Executive Summary

Invasions of natural ecosystems by nonnative species have been identified by the Chief of the U.S. Department of Agriculture Forest Service as one of the four significant threats to our Nation's forest, grassland and rangeland ecosystems. In 2012, The PNW IPC (Pacific Northwest Invasive Plant Council) developed and implemented an **EDRR (Early Detection Rapid Response) Citizen Science Invasive Plant Program** working in partnership with the WA Department of Agriculture and other local, state and federal agencies, with funding from the National Fish and Wildlife Foundation and the WA Department of Agriculture. Since then, we have partnered with over 30 local, state and federal agencies, other non-profits and hundreds of volunteers in an effort to detect and eradicate populations of priority invasive plants from Washington and Oregon State. The PNW IPC EDRR Citizen Science Invasive Plant Program partners with county, state and federal public land managers to educate and train local citizens to identify priority invasive plant species, conduct trail surveys and manually control target species in designated wilderness areas and other public lands in Washington and Oregon.

Programmatic Goals:

- Increase public awareness of invasive plant problems, by involving and training citizens to identify, report and remove invasive plants to support real-time management in WA and OR
- Increase the number of acres surveyed for invasive plants on public lands
- Collect information on changing distributions, abundance, and phenology of invasive plants and distribute information from local (e.g., land managers and county noxious weed controllers) to regional scales (e.g., **EDDMapSWest** an Early Detection & Distribution Mapping system)
- Support county, state and federal agencies efforts to reduce the number of newly emerging plant infestations in WA and OR states, and to reduce the cost and resources spent on invasive plant management
- Decrease threats to biodiversity in the Pacific Northwest

We are very proud of our volunteers and their amazing conservation work! Volunteer participation directly led to the protection of native plant and wildlife habitat and improvement of ecosystem and watershed health. The EDRR program provides meaningful civic engagement and stewardship opportunities for concerned citizens. Programmatic accomplishments have increased dramatically since 2012 as a result of increased outreach efforts, a greater number of training sessions offered and expanding the scope of the geographic survey region. Survey efforts focused on target trails in five national forests (Olympic, Gifford Pinchot, Mt. Hood, Mt. Baker-Snoqualmie, and the Okanogan-Wenatchee National Forests), three national parks (Mt. Rainier, Olympic and North Cascades National Park), WA Department of Natural Resources, State and County Parks and other natural areas and other public lands.

In 2016, PNW IPC led 10 free invasive plant trainings to the public. **Three hundred and twenty-two people attended our training sessions and we recruited 105 new volunteers, bringing the PNW IPC's EDRR volunteer base up to 330 volunteers.** A large number (35-40%) of individuals attending a training session were affiliated with county, state and federal agencies who participated in order to "brush up" on their invasive plant identification skills and to learn about relevant issues related to invasive plant management and control. Therefore, training sessions not only served to educate the general public but also served to educate natural resource managers working in invasive plant management. **Volunteers contributed 1,787 hours of service documenting and eradicating populations of invasive plants from national forests, parks, state land and other natural areas in Washington and Oregon states. Volunteers conducted 204 surveys, hiked 642 miles in search of invasive plants while surveying 3,119 acres of public land. Volunteers who focused on eradicating species treated (manual removal and disposal) 733 acres of public land.** PNW IPC EDRR volunteers and partner organizations, the King County Noxious Weed Program, and the WA Department of Natural Resources, led 7 group hikes that drew 45 participants who documented and removed priority invasive plants in target conservation areas.

Acknowledgments

First and foremost, the PNW IPC would like to thank the **many volunteer citizen scientists** who have made a significant impact in the effort to locate and eradicate newly emerging populations of EDRR invasive plants in Washington and Oregon State. **We are very proud of you!**

We are extremely grateful for important contributions made by funders that supported the further development and implementation of our program in 2016: the NFWF (National Fish and Wildlife Foundation), the WSDA (Washington Department of Agriculture), WA Department of Natural Resources, King County Noxious Weed Program, and Cowlitz County Noxious Weed Program. We especially thank Greg Haubrich (WSDA) who has championed the PNW IPC's EDRR program since 2012—offering technical expertise, encouragement and providing funding support and to Sasha Shaw (King County Noxious Weed Program) for sharing ideas, EDRR materials and inspiration from the King County Weed Watcher's Program and who came up with the brilliant idea of merging PNW IPC's EDRR citizen science and the King County Weed Watcher's volunteer programs in 2015.

We thank our many partners that have helped make our volunteer EDRR program a huge success (See Table 1 for full list). In particular, we thank individuals who hosted a training session and offered their expert knowledge of invasive plant issues: Will Arnesen (Olympic National Forest), Carol Chandler (Gifford Pinchot National Forest), Sasha Shaw and Joe Neumann (King County Noxious Weed Control Program), Katie Woolsey and Paul McFarland (WA DNR), Emily Stevenson (Skamania County Noxious Weed Board), Cathy Lucero (Clallam Co. Noxious Weed Control Program), Marc Eylar (Kittitas Co. Noxious Weed Board), Deborah Ringler and Becky Shoemaker (Pierce County Noxious Weed Board), Bill Wamsley (Lewis County Noxious Weed Control Board), Mary Jo Seery (Thurston County Noxious Weed Board), Marty Hudson (Klickitat County Noxious Weed Board), Bill Brookreson (WNPS & PNW IPC Board), (Helen Lau, Jodi Leingang, and Carla Jaeger (Okanogan-Wenatchee National Forest), Don Hardin (WA Native Plant Society), Laurel Baldwin (Whatcom County Noxious Weed Board), Janet Coles (Olympic National Park), Arnie Peterson (Mt. Rainier National Park), North Cascades National Park (Cheryl Decker and Regina Rochefort), Linda Raubeson (Central Washington University), Jonathane Schmitt (Mt. Baker-Snoqualmie National Forest), David Lebo (Mt. Hood National Forest) and last but not least Sam Leininger (Clackamas Soil & Water Conservation District & PNW IPC Board). We also are grateful to Sarah Reichard (UW Botanic Gardens), David Giblin (WTU Herbarium) and Sasha Shaw (King County Noxious Weed Program) for help with tricky plant identification questions. Thanks to Eve Rickenbaker (Otis Douglas Hyde Herbarium) for lending PNW IPC herbarium sheets to use in our invasive plant training sessions.

Section 1: Narrative Summary

Accomplishments and Outcomes 2016

The PNW IPC's action-oriented EDRR Citizen Science Invasive Plant Program aims to increase public awareness of problematic invasive plants and to educate and train volunteers to prevent, detect and control newly emerging invasive plant populations on public lands in Washington and Oregon.

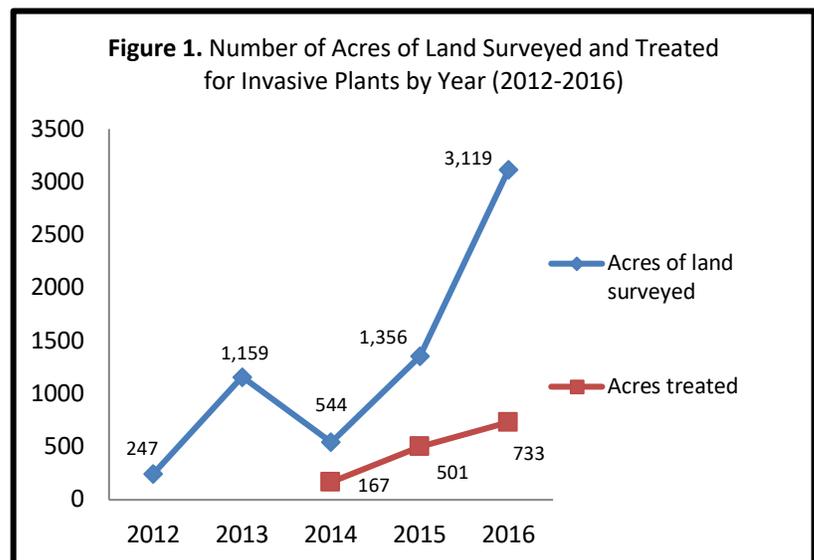
The PNW IPC's EDRR Citizen Science Program has successfully

- 1) Increased public awareness of vital issues related to impacts of invasive species,
- 2) Provided meaningful hands-on experiences for community members to be involved in conservation practices,
- 3) Increased communication and collaboration among private landowners, NGO's, and county, state and federal agencies and
- 4) Trained citizens to survey and monitor thousands of acres (3,119 in 2016) of land, that have led to a measurable decrease (733 acres treated by manual removal in 2016) in the number of newly established populations of invasive plants (Figure 1, Table 3).

Key long-term benefits of the EDRR Citizen Science Program include:

- 1) Cultivation of lasting stewardship values related to local and national conservation issues,
- 2) Improvement of wildlife habitat as a result removing harmful invasive plants on public lands,
- 3) Protection of ecosystem and watershed health within public lands (e.g., National Forests, National Parks, State and County Lands), and
- 4) Provides a cost effective approach (volunteer driven) to maintain biodiversity and promote ecosystem health.

In 2016, PNW IPC partnered with over 30 organizations (Table 1) and led 10 free invasive plant trainings to the public (Table 2). Three-hundred and twenty-two people attended training sessions with 105 attendees signing up as new recruits bringing our volunteer base up to 330 (Table 3). Each year, a large number (35-40%) of individuals attending a training session are affiliated with county, state and federal agencies who participate in order to "brush up" on their invasive plant identification skills and to learn about relevant issues related to invasive plant management and control. Therefore, the PNW IPC EDRR Citizen Science Invasive Plant training sessions designed to educate the general public, also provided a secondary service of educating natural resource managers and others working in the field of invasive plant management.



EDRR Citizen Science volunteers made significant, measurable impacts in detecting and controlling invasive species in WA and OR State over the 2016 field season (Figure 1; Table 3) and our program outcomes have

increased dramatically in key performance categories from year to year (See Figure 1, Table 3). The program has steadily grown as a result of increased outreach efforts and training sessions, the formation of new partnerships (e.g., EDDMapSWest, King County Noxious Weed Program), and expanding the geographic scope of our survey area.

In 2016, EDRR Citizen Scientists focused their survey efforts on target trails identified by land managers in **five National Forests** (Olympic, Gifford Pinchot, Mt. Hood, Mt. Baker-Snoqualmie, and the Okanogan-Wenatchee National Forests), **three National Parks** (Mt. Rainier, Olympic and North Cascades National Park), **WA Department of Natural Resources** Natural and Conservation Areas and other public lands (e.g., **State and County Parks**) in Washington and Oregon State. The majority of volunteers conducted surveys on National Forest (54%) and National Park (19%) land while WA DNR State Lands and State Parks accounted for 23% of acreage surveyed. **Figure 2** illustrates the percent of total acres covered according to land ownership. The pathway for data flows from our volunteers directly to PNW IPC who verifies reports and sends the findings immediately to land managers in need of the data (Figure 3).

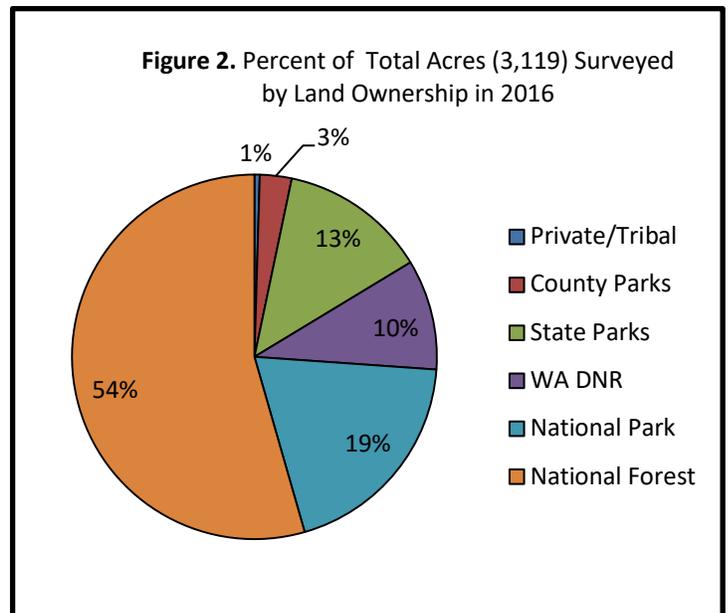
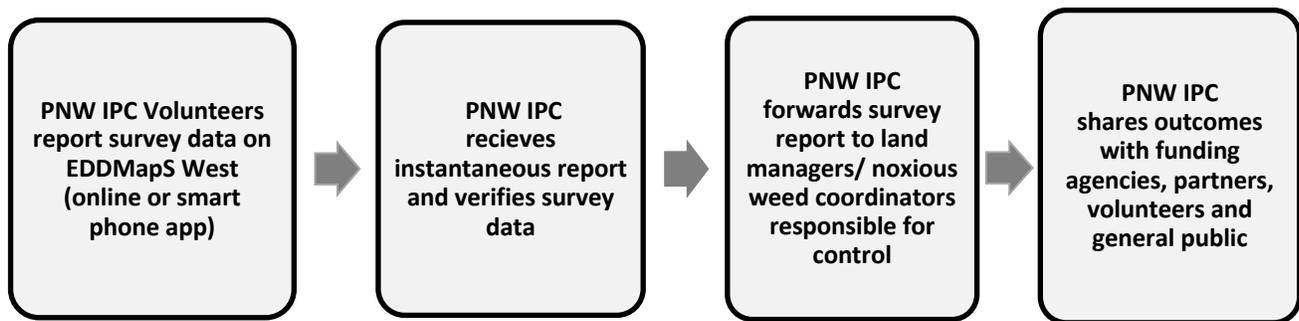


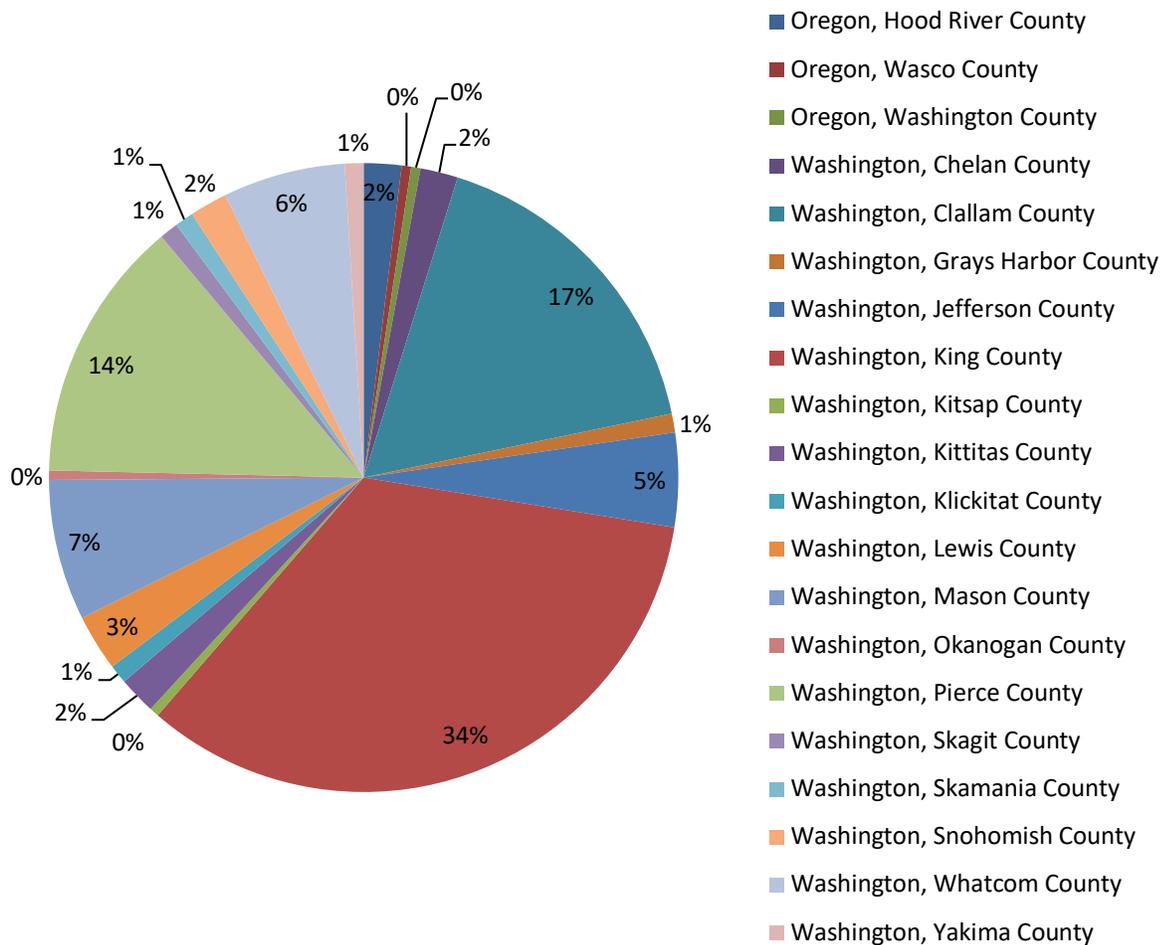
Figure 3. PNW IPC’s pathway for distribution of invasive plant data



PNW IPC Citizen Scientists engaged in significant conservation work contributing 1,787 hours of service in the effort to document and eradicate invasive plant species from national forests and other public lands in Washington and Oregon State in 2016 (Table 3). Volunteers conducted a total of 204 surveys, hiked 642 miles in search of invasive plants while surveying 3,119 acres of public land within 26 counties (Figure 4) located in Washington (20 counties) and Oregon (6 counties). King, Clallam and Pierce counties received the highest number of surveys (34%, 17% and 14%, respectively). Data from both positive survey reports (at least one EDRR invasive plant species documented) and negative survey reports (no EDRR invasive plants found) are submitted to land managers. Negative survey reports are considered just as valuable as positive survey reports because managers need to know where invasive species do not occur as well as where invasive species occur in order to guide volunteer survey efforts and management priorities. In many cases, documented infestations were small

enough that volunteers were able to manually remove them *in situ* before infestations had a chance to establish and spread. Plant material was carefully bagged and deposited off-site in the city landfill so as not to promote spread. If infestations were too large or were not appropriate candidates for immediate removal (e.g., plants that are toxic or grow by extensive rhizomes) volunteers performed the survey step and left removal efforts to land managers.

Figure 4. Percent of Total Invasive Plant Surveys (out of 204) Conducted by County in 2016



In 2015, we received feedback from volunteers asking for additional training opportunities (outside of the initial classroom training sessions) to practice their plant identification skills, fill out survey forms, and hike with others who share a passion for outdoor recreation, botany and conservation. We found that the two most important reasons limiting participation in the EDRR program was 1) time constraints and 2) a lack of confidence in plant ID and reporting methods. In 2016, the PNW IPC initiated the “Invasive Plant Mentor” group hikes led by PNW IPC Citizen Scientists who have an excellent working knowledge of plant identification and reporting skills. PNW IPC

EDRR citizen scientists' Dan Locke and Crow Vecchio and partner organization, the King County Noxious Weed Program, led a total of 7 group hikes that drew 45 participants who participated in documenting and removing priority invasive plants in target conservation areas (Table 4). Participants of group hikes included the general public, PNW IPC volunteers and King County Weed Watchers, county and state management agencies.



Images from Left to Right: Sasha Shaw, King County Noxious Weed Program's Education Specialist, holds up a rosette of orange hawkweed (*Hieracium aurantiacum*; Class B Noxious Weed) to show volunteers diagnostic characters (Photo Joe Neumann); Volunteers kneel down to examine an infestation of orange hawkweed in King County (Photo Sasha Shaw); A volunteer overlooks Pine Lake in the Olympic National Forest in Mason County on a group hike led by PNW IPC volunteer Dan Locke (Photo Dan Locke); and meadow knapweed (*Centaurea x moncktonii*; Class B Noxious Weed) found at the Bud Blancher Trailhead on a group hike led by PNW IPC volunteer Crow Vecchio (Photo Crow Vecchio).

EDRR Trainings: Setting Volunteers up for Success

In 2016, the PNW IPC led 10 free training sessions to the public (Table 2). Partner agencies (e.g., County Noxious Weed Coordinators, National Park and Forest Service) co-hosted and participated in training sessions and provided key information regarding local knowledge of problematic species creating a dynamic and interactive discussion of invasive plant issues with participants.

Training sessions are modified each year based on feedback from attendees, PNW IPC volunteers and partner organizations. In 2016, PNW IPC made further efforts to work with partners to create specialized EDRR invasive plant lists to reflect differences in noxious weed distributions and control priorities at local scales. Each partner was asked to pick their "dirty dozen" which turned out to be a very difficult task because there are so many! Appendix A shows the full list (47 species) of noxious weeds species covered in our 2016 training sessions. In each training session, we focused on how to identify, how to report, how to manually remove and examine the species impacts for 15-18 noxious weeds chosen by partners from the master list of 47 species.

Training sessions consisted of 2.5 hour classroom training session that included a PowerPoint Presentation, live plant material in pots and herbarium specimens for participants to examine in order to increase their plant identification skills. The PNW IPC developed plant identification booklets for volunteers in order to aid in field identification of plants while conducting a survey. Many of our volunteers were new to plant identification and survey protocol. Trainings were designed to educate a learning botanist as well as participants with extensive plant knowledge. Participants not only learned how to identify priority plants and the surveys survey protocol (see Appendix B for survey form) but they also learned how invasive plants negatively impact the environment and economies as well how to safely eradicate infestations. In our training sessions, we also emphasize that when above-ground biomass is removed it is imperative that sites are monitored for years to come to ensure that below-ground biomass and potential seed banks are depleted.

In 2015, we partnered with EDDMapSWest and moved to an on-line reporting system and continued with reporting on EDDMapSWest in 2016. Following training sessions, volunteers had access to the PNW IPC website (<http://www.pnw-ipc.org/edrrlocal.shtml>) which posted resources such as: the priority species list, survey forms, a tutorial of EDDMapSWest reporting, our training PowerPoint, a PDF of the identification booklet, and a list of specific trails in need of a survey in national forests and other public lands. Throughout the season, the PNW IPC assisted volunteers with tricky plant identification and survey protocol questions as well as verified reports in a timely manner in order to send report outcomes to land managers in need of the data.



Images from Left to Right: **Julie Combs**, leads an EDRR training session in Bellingham, WA at the Whatcom County Noxious Weed Program building (photo: Laurel Baldwin); **Training Participants** examine live material and herbarium specimens in Bellingham training session; **Joe Neumann** with the King County Noxious Weed Program and **Jonathan Schmitt**, from the Mt. Baker-Snoqualmie National Forest, co-lead an invasive plant training in Seattle, WA located at the Center for Urban Horticulture (photo: Julie Combs); **Herbarium sheets** used as educational tools were generously loaned from the Otis Douglas Hyde Herbarium (University of Washington Botanic Gardens).

2016 Success Stories

PNW IPC's EDRR Citizen Scientists made significant progress in the effort to detect and eradicate small populations of priority invasive plants in 2016. Citizen Scientists documented Class A, B and C noxious weeds as well as reported and removed common non-native plants that are not listed noxious weeds but are high priority for managers to remove when found growing in wilderness areas (e.g., dandelion, English holly). In addition, citizens documented several surprising new infestations that represent new distributional records for Washington State.



Images from Left to Right: **Yellow archangel** (*Class B*) found in the Olympic National Forest by Kit Ellis (photo: Julie Combs); **Infestation of common hawkweed** (*Hieracium lachenalii*; *Class B*) reported in the Gifford Pinchot National Forest by Don Hardin (photo: Don Hardin); **Spurge laurel** (*Daphne laureola*; *Class B*) documented in the Olympic National Park on the West Elwha Trail by Sandra Vahsholtz (photo: Sandra Vahsholtz); **Tansy ragwort** (*Senecio jacobaea*; *Class B*) reported by Ed Lisowski in the Okanogan-Wenatchee National Forest (photo: Ed Lisowski).

There were several surprising and important invasive plant discoveries in 2016 on land managed by the National Park Service (Mt. Rainier National Park and San Juan Island National Historic Park) and Washington Department of Natural Resources Land. For example, Crow Vecchio and Carol Miltimore reported a roadside population of European coltsfoot (*Tussilago farfara*) in Mt. Rainier National Park (see images on next page).

In less than two weeks, voucher specimens were collected to deposit in the WTU Herbarium and the infestation was removed from the park by volunteers and park staff. European coltsfoot is currently listed as a Class A Noxious Weed (designated for control) in Oregon State and listed as “monitor” species by the Washington State Noxious Weed Control Board. In Washington and Oregon, it was previously documented from only three counties. This new finding from Mt. Rainier resulted in a new county record for Washington, perhaps indicating a range expansion for that species. According to the Oregon Department of Agriculture, this species is mainly found on roadsides but can spread into adjacent agricultural fields (e.g., corn, wheat and other crops). There are few herbicides that will control it adequately without impacting the crop production. Because of its rhizomatous growth it has the ability to be a strong competitor in crop settings and in native plant communities.



Images from Left to Right: Roadside location of the population found at Mt. Rainier National Park (photo: Carol Miltimore); **Growth habit, leaf and flower** of European coltsfoot (*Tussilago farfara*, photos: Crow Vecchio)

Another PNW IPC citizen scientist (Bud Hardwick) worked with other partner groups (e.g., WA DNR) to document and remove an infestation of Maltese star-thistle (*Centaurea melitensis*) growing on balds on Cypress Island in Skagit County on land managed by the Washington State Department of Natural Resources. WA DNR organized a volunteer work party to remove all observable specimens and identify the extent of the infestation. The work party removed 16 large trash bags of material. All collected specimens were removed for off-island solid waste disposal. Specimen and verification samples were collected by Bud Hardwick for preparation and distribution to DNR, WTU & Hyde herbariums. Maltese star-thistle is not currently listed as a noxious weed in OR or WA State as but, in part, as a result of this finding the WA State Noxious Weed Board is considering including this species on the 2017 noxious weed list.



Images from Left to Right: Cypress Island bald where infestation was found (photo: Bud Hardwick); **Close-up** of Maltese star-thistle flower (photo: Bud Hardwick); **WTU distribution map** of Maltese star-thistle in WA State (<http://biology.burke.washington.edu/herbarium/imagecollection.php?ID=325>).

Other exciting finds were invasive plants that are associated with eastern Washington and represent a shift in distribution to western Washington. For example, EDRR Citizen Scientist Crow Vecchio found a small patch of sulfur cinquefoil (*Potentilla recta*; Class B Noxious Weed) in Lewis County, and Ann Stevens, documented sulfur

cinquefoil in King County. This species is extremely dense in several counties in eastern WA and OR but is relatively sparse on the west-side.

Another fascinating find was documented by Julie Combs, who conducted surveys on the San Juan Island National Historic Park on San Juan Island. She found a small but expanding patch of cut-leaf nightshade (*Solanum triflorum*) growing in dune habitat along with other noxious weeds such as Canada thistle, tansey ragwort, and native species such as yellow sand-verbena (*Abronia latifolia*). Cut-leaf nightshade was thought to be limited to eastern Washington, but this report represents the first record of this species growing in western Washington (San Juan County). Cut-leaf nightshade is an annual plant that is toxic to both humans and wildlife. The NPS and the San Juan Noxious Weed Board are currently working to remove this plant from the park.



Images from Left to Right: Sulfur cinquefoil (*Potentilla recta*) a Class B noxious weed found in Lewis County and King County (Photo: Crow Vecchio); Cut-leaf nightshade (*Solanum triflorum*) growing in dune habitat along with Canada thistle (*Cirsium arvense*; Class C noxious weed); Close-up of cut-leaf nightshade fruits; Leaf morphology and flowers of cut-leaf nightshade (photos: Julie Combs)

Many volunteers remove plant material as they conduct surveys. It is important to keep in mind that removing plants from certain areas is not prohibited. For example, removal of invasive plant material from National Parks is prohibited unless you have permission from park managers.

Volunteers in Action (Images Left to Right): Ann Stevens

removes English holly (*Ilex aquifolium*; monitor list species) in King County (photo: Sasha Shaw);



Helen Hepp

pulling herb Robert (*Geranium robertianum*; Class B) at Schafer State Park in WA with Cindy Burton and friends (photo: Cindy Burton); **Barbara Robinson** removes purple loosestrife (*Lythrum salicaria*; Class B) with Don and Trish Hardin from Rooster Rock State Park, OR; **Brian Norton** removed scattered plants of purple loosestrife (Class B) along the Duwamish River, WA (photo: Brian Norton).

And finally, trained volunteers know that even the most ubiquitous non-native plants, such as dandelion, are considered a high priority for removal if found in designated wilderness areas. For example, two volunteers (Carol and Jim Miltimore), removed common dandelion (*Taraxacum officinale*) from the Mt. Rainier Wilderness Area in the Mt. Rainier National Park at Owyhigh Lakes. They surveyed a subalpine section of the trail and found common dandelion growing on both side of the trail where the trail crosses talus slopes.

Image to the Right by Carol Militmore: Common dandelion found on a talus slope in a wilderness area at Mt. Rainier National Park. Common dandelion is listed as a priority 1 invasive species on the Mount Rainier National Park's Invasive Species Treatment Priority Scale for wilderness areas. These are important finds because wilderness areas have very few non-native plant infestations and land managers often target them as a priority for control.



Citizens Who Hiked the Extra Mile

We congratulate each and every volunteer who has hiked a trail and turned in a survey report. **Your efforts have made a difference in the protection and preservation of native ecosystems!** In our trainings we ask that individuals who sign up, to conduct at least 1-2 surveys a season. We have a small cadre of enthusiastic volunteers who have **gone above and beyond** what we have asked, dedicating much of their time to documenting and eradicating populations of invasive plants from natural areas in WA and OR. **We would like to give a very special thanks** (in no particular order) to: Don and Trish Hardin , Ann Stevens, Sandra Vahsholtz, Crow Vecchio, Julia Bent , Carol and Jim Miltimore, Cindy Burton, Helen Hepp, Pam Borso, and Mark Boyer. Our program is a huge success because of your efforts. You have all hiked the extra mile and we thank you!

The “Sarah Reichard Hike the Extra Mile Award”

In August of 2016, PNW IPC’s Vice President, Dr. Sarah Reichard, passed away while leading a UW Botanic Gardens floristic tour in South Africa, she was 58 years old. Dr. Reichard (**Image to the right: photo by Wendy Gibble**) was instrumental in forming the PNW IPC. She was a tenured professor at the University of Washington in the School of Environmental and Forest Sciences (SEFS), the Director of the UW Botanic Gardens, has mentored hundreds of eager students over the years and has served on countless boards, working groups and advisory committees related to important issues in the realm of invasive plant ecology, management, policy, and education. Her research focused on understanding the biology of invasive plants and using that understanding to develop risk assessment methods to prevent their introduction and spread. She was a passionate scientist who paved the way and created opportunities for woman in science and worked diligently to solve complex problems in the important interdisciplinary field of Conservation Biology. **The creation of this memorial fund was suggested by a PNW IPC EDRR citizen scientist** who made the first contribution to kick-start the “Sarah Reichard Hike the Extra Mile the Award”. The PNW IPC Board enthusiastically embraced this idea. In 2016, the PNW IPC honors three outstanding volunteers: Sandra Vahsholtz, Ann Stevens, and Crow Vecchio who will receive gift cards to acknowledge their outstanding work.



Images from Left to Right: Sandra Vahsholtz surveying a trail in the Olympic National Park, **Ann Stevens** removing English holly in King County, and **Crow Vecchio** takes a break from removing invasive plants in Mt.



Rainier National Park. Collectively, these three conservation warriors **conducted 77 surveys, reported 254 new invasive plant records, hiked 264 miles of trail and volunteered 433 hours** of their time searching for, reporting and removing harmful invasive plants from wilderness and other natural areas!

Partnerships Are Key to Programmatic Success

In 2016, PNW IPC partnered with over 30 organizations (Table 1). All partnerships contributed to a successful program but there were two notable partnerships formed in 2015, that continued into 2016 that we highlight here. The Upper Snoqualmie-Alpine Lakes Invasive Plant Project is a partnership between King County's Noxious Weed Program, the U.S. Forest Service, Washington State DNR and the Mountains to Sound Greenway Trust. In 2015, PNW IPC joined this partnership and participated in organizing and conducting trainings, data management and reporting of surveys conducted in King County to land managers and King County Noxious Weed partners. The PNW IPC also supported volunteers throughout the season (e.g., provided target trails to survey, help trouble shoot on-line reporting via EDDMapSWest).

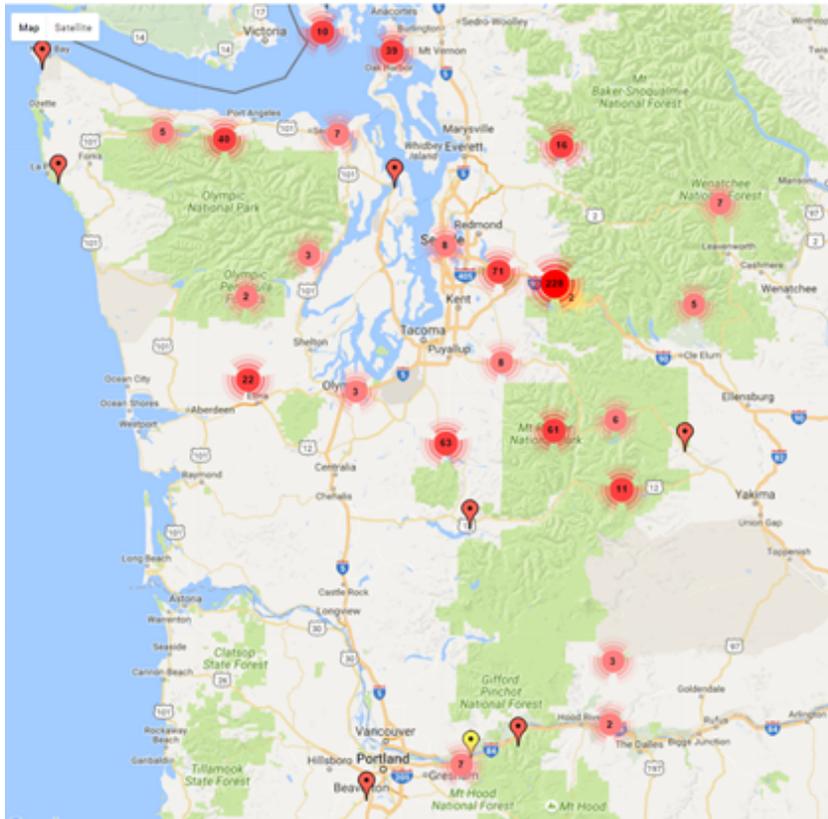


Figure 5. Geographic locations and the number of new invasive plants records volunteers reported in 2015-2016.

EDDMapSWest (our online reporting and mapping platform) developed a survey form specifically for the PNW IPC ED RR program. The partnership between PNW IPC and EDDMapSWest significantly increased the efficiency of reporting and data dissemination to land management partners. **EDDMapSWest** is a national Early Detection & Distribution Mapping System and provided instantaneous reporting to PNW IPC and state and county weed coordinators. Volunteers who used online reporting could report either a positive (priority species found) or a negative (no priority species found) report. Positive reports included a record of species occurrence(s), images and other important key information to aid land managers in finding reported infestations (See Appendix B for reporting form). Once reports were uploaded on EDDMapSWest the PNW IPC would receive an instantaneous message to review incoming reports. The PNW IPC would then review report details and once the plant identification was verified land managers were forwarded the information in a timely manner (Figure 3).

The map in Figure 5 was generated by EDDMapSWest and can be accessed (along with plant location data) at <https://www.eddmaps.org/tools/query/> by selecting “PNW IPC survey” under project information at bottom of page. **NOTE:** Locations of negative survey reports from are not included on the map.

Figure 6 (right) shows a screen shot of the PNW IPC logo (circled in red on the EDDMapSWest reporting portal). Volunteers go the EDDMapSWest site: <https://www.eddmaps.org/west/report/> to report a negative (no invasive plants found) or a positive report (invasive plant(s) found). Volunteers, land managers, researchers and the general public can generate distribution maps using EDDMapSWest and import distribution data for species of interest.

Figure 6. Screen shot of EDDMapSWest showing PNW IPC’s logo showing entry point to specialized survey form



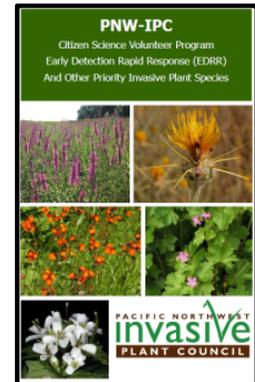
Information Sharing, Outreach and Outlets for Programmatic Findings

Annual Report

- The PNW IPC shares an annual report with partners, funders, volunteers and the general public sent out via e-mail and posted on the PNW IPC’s website: <http://www.pnw-ipc.org/>

Plant Identification Booklet

- The PNW IPC developed and distributed a specialized plant identification booklet with target species to all volunteers who sign up to volunteer (Cover Image of booklet on right). PDF: http://www.pnw-ipc.org/docs/2016_ID_Booklet_PNW_IPC.pdf



Raw data of invasive plants documented

- All data can be downloaded from the EDDMapSWest website at: <https://www.eddmaps.org/tools/query/> by selecting “PNW-IPC survey” under project information at bottom of page. The database shows all information related to the survey records (e.g., plant name, location, county occurrence, reporter, land ownership etc.) and can be downloaded in several formats (CSV, KML, GPX, Shapefile).

PNW IPC’s “Invasive Plant Mentors”

- PNW IPC initiated the “Invasive Plant Mentor” group hikes initiative. These are group hikes led by PNW IPC Citizen Scientists who have an excellent working knowledge of plant identification and reporting skills and organize and lead hikes for fellow volunteers interested in increasing their plant ID and reporting skills.

Webinars, Conferences, Symposium, Blogs

- Julie Combs was an invited webinar presenter for the National Invasive Species Awareness Week (NISAW; February 21-27, 2016) to speak about the PNW IPC’s EDRR Citizen Science Program, **“Volunteers Make a Difference in an Early Detection Rapid Response Citizen Science Program”**, February 23, 2016. <http://www.nisaw.org/meetings/2016/2016-webinar/>

- Julie Combs was invited to write for the Washington Trails Association’s “Signpost” Blog, **“5 Ways Hikers Can Help Stop the Spread of Invasive Plants”**, March 31, 2016.
<http://www.wta.org/signpost/5-ways-you-can-help-stop-the-spread-of-invasive-species-on-trail>
- Julie Combs was an invited writer for the Washington Native Plant Society’s Blog “Botanical Rambles.” She wrote about PNW IPC volunteers’ (Crow Vecchio and Carol Miltimore) report and removal efforts of European coltsfoot (*Tussilago farfara*) in Mt. Rainier National Park, **“Tussling with Tussilago”**, July 30, 2016.
<https://www.wnps.org/blog/tussling-with-tussilago/#comment-16994>
- Julie Combs presented at the Natural Areas Conference in Davis, CA, **“Connecting Citizens with Science: Informal Science Learning Opportunities on Public Lands”**, October 19, 2016.
- Lizbeth Seebacher initiated a **PNW IPC Facebook page** to increase visibility and provide a forum for volunteers to share findings, get help with plant ID and connect for a hike.
<https://www.facebook.com/PNW.IPC/>
- Julie Combs presented at the Oregon Interagency Noxious Weed Symposium, Corvallis, OR Dec 6-8. **“Volunteers Make a Difference in an EDRR Citizen Science Program”**, December 7, 2016.
- Julie Combs was an invited writer for *Wildland Weeds* magazine, **“Citizen Scientists Play Important Role in the Early Detection Rapid Response of Invasive Plant Species”**, upcoming article in 2017.

New Partnership in 2016

- PNW IPC partnered with Professor Linda Raubeson at **Central Washington University** in Ellensburg, WA. PNW IPC incorporated a training session into her plant taxonomy classroom curriculum.
- **The Mountaineers** joined the PNW IPC as a partner this year and several volunteers participated in field surveys. Both our non-profits have a strong conservation and stewardship mission so joining forces an important step to making both organizations stronger.
- In 2016, PNW IPC expanded survey areas to include trails in the **Olympic and the North Cascades National Parks**.

Section 2: Challenges, Lessons Learned and Next Steps

One of our biggest challenges stems from the successes of a growing program and meeting the needs of volunteers who are new to plant identification and reporting. The PNW IPC EDRR Citizen Science Invasive Plant Program has grown considerably by the **number of volunteers participating** in the program, **number of partners** participating in the program and the **increased scope of the geographic survey**. For example, we initiated the program in 2012 with a hand full of trainings and recruited approximately 40 volunteers that surveyed 247 acres of land in 8 WA counties. In 2016, our volunteer base is up to 330 individuals who surveyed over 3,000 acres of land in 2016 alone over 26 counties (20 in WA State and 6 OR State Counties). Even though our volunteer base is quite large (330) only about 20% of those who signed up to volunteer participate each year. **An ongoing challenge is how to inspire volunteers to participate** in the program after they have gone through the initial training and for many we are finding that our 2.5 hour training is not enough to develop the skill set need to participate for beginning botanists. For example one volunteer commented “I took the training, but have not had the confidence to venture out and do one of these surveys yet”.

Survey data from 2015 showed that the **primary factors deterring volunteers** from participating (besides lack of time) are: lack of confidence with plant identification skills, lack of confidence with filling out field survey or on-line reporting forms or they would like to hike with someone but can’t find a hiking partner. **In 2016, PNW IPC made efforts to address some of these issues by:**

- reducing the number of plants covered in the training sessions so participants are not overwhelmed
- reducing the number of fields in the data forms without compromising critical data fields
- dedicating more time in training session on reporting protocol and plant ID

- offering group hikes to help reinforce plant ID skills and reporting protocol
- setting up a PNW IPC Facebook account to help connect volunteers with each other and share findings
- sending out bi-weekly e-mails showcasing hikes in need of a survey

In the future we see other ways to address the needs of volunteers who want to participate but don't feel they have the skills. One approach, in addition to the list above, is to offer “focused group” training sessions designed to increase either plant identification or reporting skills that reinforce skills learned in the first training session. Many people are visual and kinetic learners and would benefit from a training session where they sit down at a computer and enter field survey data into EDDMapSWest with guidance from PNW IPC, a fellow volunteer, or one of our partner groups. Another approach rather than adding an additional “focused group” training would be to create a “Part A and Part B” for the training session itself. For example, “Part A” of the training would introduce the program and focus solely on noxious weed identification and the impacts of target species and “Part B” could focus on reporting protocol. Participants who decide to sign up to volunteer for the program could attend the second session of the training in the same day which would focus on the reporting protocol. We hope that by offering an array of learning opportunities this will help build the confidence of participants and may result in greater participation rates.

The development of a field reporting smartphone app would be an important next step to facilitate field reporting of data and likely increase participation rate. Currently, there are two ways to report survey data using EDDMapSWest. Joe Neumann from King County Noxious Weed Program spearheaded the effort to develop a “how to” guide to help volunteers understand the reporting process: <http://www.pnw-ipc.org/docs/How%20to%20submit%20a%20study%20on%20EDDMaps%20version%203.0.pdf> Briefly, the first approach entails filling out a survey form in the field, taking a photo of the plant(s) and uploading data from a home computer to the EDDMapSWest website. The second approach entails using the EDDMapSWest smartphone APP in the field which easily takes a picture of the plant, records the location while the user is in the field but then volunteers have to return to their home computer to upload the smartphone app information to their PNW IPC EDDMapSWest account. This is a cumbersome process because essentially users are required to complete two steps in the reporting process. PNW IPC is currently sourcing funds to work with EDDMapSWest to develop a specialized portal on the current EDDMapSWest smartphone app so users can report in one step and data would be instantaneously sent to PNW IPC for verification and subsequent dissemination to the appropriate land manager(s).

Section 3: PNW IPC's Board Members and EDRR Program Officer

2016 Board Members and EDRR Citizen Science Program Officer

- **President - Steven Manning** - Invasive Plant Control Inc.
- **Vice President - Sarah Reichard**, - University of Washington
- **Treasurer - Lizbeth Seebacher**, - Washington Department of Ecology
- **Secretary - Mandy Tu**, - Hoyt Arboretum (City of Portland Parks & Recreation)
- **Shawna Bautista** - USDA Forest Service
- **Tim Harrington**, - USDA Forest Service
- **Sam Leininger** - Clackamas Soil and Water Conservation District's WeedWise program
- **Bill Brookreson** - Washington Native Plant Society
- **Special Program Officer - Julie Combs**, EDRR Citizen Science Program Director and EDRR Citizen Science Volunteer

Table 1. 2016 Funding agencies, funding sources and partners organizations.

Funding Agencies and Funding Sources	
National Fish and Wildlife Foundation	Washington State Department of Agriculture
Gifford Pinchot National Forest	King County Noxious Weed Program and King County Weed Watchers Program
Washington State Department of Natural Resources	PNW IPC Members and Individual Donations
PNW IPC Partners	
Federal Partners	
Gifford Pinchot National Forest	Mt. Rainier National Park
Mt. Baker-Snoqualmie National Forest	North Cascades National Park
Mt. Hood National Forest	Olympic National Park
Okanogan-Wenatchee National Forest	National Fish and Wildlife Foundation
Olympic National Forest	National Forest Foundation
State Partners	
Central Washington University	Washington State Department of Agriculture
Oregon State Department of Agriculture	Washington State Department of Natural Resources
Oregon Invasive Species Council	Washington State Noxious Weed Control Board
University of Washington, Botanic Gardens/Otis Hyde Herbarium, Burke Museum and WTU Herbarium	Washington State Parks and Recreation
Washington Invasive Species Council	
County/Municipal Partners	
Clackamas County Soil and Water Conservation District	Klickitat County Noxious Weed Board
Columbia River Gorge Cooperative Weed Management Area	Lewis County Noxious Weed Board
Clallam County Noxious Weed Board	Pierce County Noxious Weed Board
Cowlitz County Noxious Weed Board	Skamania County Noxious Weed Board
Four County Cooperative Weed Management Area	Thurston County Noxious Weed Board
Grays Harbor Noxious Weed Board	Whatcom County Noxious Weed Board
Jefferson County Noxious Weed Board	Yakima County Noxious Weed Board
King County Noxious Weed Control Program	Northwest Trek Wildlife Park Metro Parks Tacoma
Kittitas County Noxious Weed Board	
NGO's and other organizations	
EDDMapSWest	Patagonia
Great Old Broads for Wilderness	PlayCleanGO
Invasive Plant Control	The Mountaineers
Mountain To Sound Greenway	Washington Native Plant Society
Mt. St. Helens Institute	Washington Rare Plant Care and Conservation
Oregon Native Plant Society	

Table 2. Invasive plant training session date, partner who hosted the training, the number of participants and the number of volunteers recruited at trainings in 2016.

Date	Training Co-Sponsor (Program Partner)	Training Location	No. Attendees/ No. volunteer recruits
April 6, 2016	Helen Lau, Okanogan-Wenatchee National Forest; Marc Eylar, Kittitas Co. Noxious Weed Control	Okanogan-Wenatchee National Forest, Cle Elum District, Cle Elum, WA	26/7
April 7, 2016	Janet Coles, Olympic National Park; Cathy Lucero, Clallam Co. Noxious Weed Control	Port Angeles Public Library, Port Angeles, WA	27/19
April 13, 2016	Deborah Ringler, Pierce Co. Noxious Weed Control; Bill Brookreson, Washington Native Plant Society	Tacoma Nature Center, Tacoma WA	19/7
April 14, 2016	Will Arnesen, Olympic National Forest; Bill Wamsley, Lewis Co. Noxious Weed Control; Mary Jo Seery, Thurston Co. Noxious Weed Control	LOTT Clean Water Alliance Center, Olympia WA	45/19
April 21, 2016	Laurel Baldwin, Whatcom Co. Noxious Weed Control Jonathane Schmitt, Mount Baker-Snoqualmie National Forest	Whatcom Co. Noxious Weed Control Board, Bellingham, WA	57/10
April 27, 2016	David Lebo, Mt. Hood National Forest; Sam Leininger, Clackamas County Soil & Water Conservation District and the Columbia River Gorge CWMA	Sandy Community Center, Sandy OR	52/7
April 28, 2016	Carol Chandler, Gifford Pinchot National Forest; Emily Stevenson, Skamania Co. Noxious Weed Control	Gifford Pinchot National Forest Headquarters, Vancouver WA	43/11
May 12, 2016	Jodi Leingang, Okanogan-Wenatchee National Forest; Dick Jacobsen, Yakima Co. Noxious Weed Control	Okanogan-Wenatchee National Forest, Naches Ranger Station, Naches, WA	11/1
May 16, 2016	Sasha Shaw, King County Noxious Weed Program; Jonathane Schmitt, Mt. Baker-Snoqualmie National Forest	University of Washington Botanic Gardens	29/14
May 25, 2016	Professor Linda Raubeson, Central Washington University	Central Washington University, Ellensburg, WA	15/6

Table 3. Project Accomplishments and outcomes by year and combined results (2014-2016). Year 2014-2015 are shown to illustrate increased program growth from year to year.

Unit & Description	Number 2014	Number 2015	Number 2016	Total (2014-2016)
No. of free trainings offered to public*	5	10	10	25
No. of people who attended trainings	72	297	322	691
No. of new volunteers recruited from trainings	33	120	105	258
No. of volunteer hours	678	1,953	1,787	4,418
No. of partnering organizations	18	25	30	73
No. of surveys conducted	52	140	204	396
No. of positive surveys (Invasive plants found)	34	81	137	252
No. of negative surveys (Invasive plants not found)	18	59	67	144
No. of new invasive plant records**	55	252	421	728
No. of organized group hikes	3	18	7	28
No. people involved in organized group hikes	10	74	44	118
Miles of trail surveyed for invasive plants	188	445	642	1,275
Acres of land surveyed for invasive plants	544	1,356	3,119	5,019
Acres treated for invasive plants	167	501	733	1,401
*See Table 2 for locations and training schedule				
**See Figure 5 for map of 2015-2016 <i>positive record</i> locations. Note: Records vs. Survey: <i>Records</i> refer to the total number of individual invasive occurrences across all positive survey reports. In contrast, a positive <i>survey</i> report refers to a survey that documented at least one invasive plant occurrence.				

Table 4. 2016 Group hike locations and outcomes led by King County Noxious Weed Program and PNW IPC EDRR volunteers. A total of 45 volunteers participated in 7 group hikes offered.

Land Ownership and Location	Date	Number Volunteers	Outcomes
Washington Department of Natural Resources (West Tiger Mountain, Cableline)	May 7	2	Joe Neumann with King County Noxious Weed Program worked with volunteers to survey and remove target species.
Mt. Baker-Snoqualmie National Forest (Trails near North Bend)	May 27	11	Sasha Shaw with King County Noxious Weed Program led an “Advanced Noxious Weed ID” hike.
Olympia National Forest (Pine Lake Trail)	May 27	6	PNW IPC volunteer, Dan Locke, led this “standard hike” focused on learning plants and recording survey data.
Mt. Baker-Snoqualmie National Forest (Middle Fork Road Trail)	June 18	12	Joe Neumann with King County Noxious Weed Program and Mark Boyer, long time King County Weed Watcher, led a hike focused on pulling herb Robert.
University of Washington Pack Forest (Bud Blancher Trail)	June 25	2	PNW IPC volunteer, Crow Vecchio, led this “Standard Hike” which focused on enjoying a hike, learning plants and recording data on survey forms.
Washington Department of Natural Resources (West Tiger Mountain, High Point)	July 6	6	Sasha Shaw with King County Noxious Weed Program led this “standard hike” learning plants and recording survey data.
Mt. Baker-Snoqualmie National Forest (Ira Spring Trail)	July 21	6	Sasha Shaw with King County Noxious Weed Program led this hike which focused on enjoying a hike, learning plants and recording data on survey forms and pulling herb Robert along the Ira Spring Trail.

Appendix A. 2016 Comprehensive EDRR species list. A subset (15-18) species were covered at each training session depending on regional and local priorities identified by training session program partners.

Plant Family	Scientific Name	Common Name	WA Noxious Weed Class	OR Noxious Weed Class
Wetland Emergent Plants				
Iridaceae	<i>Iris pseudacorus</i>	yellowflag iris	C	B
Lythraceae	<i>Lythrum salicaria</i>	purple loosestrife	B	B
Poaceae	<i>Phalaris arundinacea</i>	reed canarygrass	C	B
Poaceae	<i>Phragmites australis</i>	phragmites	B	B
Terrestrial Plants				
Apiaceae	<i>Heracleum mantegazzianum</i>	giant hogweed	A	A
Aquifoliaceae	<i>Ilex aquifolium</i>	English holly	Monitor	not listed
Asteraceae	<i>Cirsium vulgare</i>	bull thistle	C	B
Asteraceae	<i>Onopordum acanthium</i>	Scotch thistle	B	B
Asteraceae	<i>Carduus nutans</i>	musk thistle	B	B
Asteraceae	<i>Centaurea diffusa</i>	diffuse knapweed	B	B
Asteraceae	<i>Centaurea jacea</i>	brownray knapweed	B	not listed
Asteraceae	<i>Centaurea x moncktonii</i>	meadow knapweed	B	B
Asteraceae	<i>Centaurea stoebe</i>	spotted knapweed	B	B
Asteraceae	<i>Centaurea solstitialis</i>	yellow starthistle	B	B
Asteraceae	<i>Chondrilla juncea</i>	rush skeletonweed	B	B
Asteraceae	<i>Hieracium aurantiacum</i>	orange hawkweed	B	A
Asteraceae	<i>Hieracium caespitosum</i>	yellow/meadow hawkweed	B	B
Asteraceae	<i>Hieracium pilosella</i>	mouse-ear hawkweed	B	A
Asteraceae	<i>Hieracium lachenalii</i>	common hawkweed	B	not listed
Asteraceae	<i>Hieracium murorum</i>	wall hawkweed	B	not listed
Asteraceae	<i>Hieracium sabaudum</i>	European hawkweed	B	not listed
Asteraceae	<i>Leucanthemum vulgare</i>	oxeye daisy	C	not listed
Asteraceae	<i>Senecio jacobaea</i>	tansy ragwort	B	B
Balsaminaceae	<i>Impatiens capensis</i>	spotted jewelweed	Monitor	not listed
Balsaminaceae	<i>Impatiens glandulifera</i>	Policemen's helmet	B	B
Brassicaceae	<i>Alliaria petiolata</i>	garlic mustard	A	B
Brassicaceae	<i>Isatis tinctoria</i>	dyer's woad	A	B
Boraginaceae	<i>Anchusa arvensis</i>	annual bugloss	B	not listed
Boraginaceae	<i>Cynoglossum officinale</i>	houndstongue	B	B
Dipsacaceae	<i>Dipsacus fullonum</i>	common teasel	C	not listed
Euphorbiaceae	<i>Euphorbia esula</i>	leafy spurge	B	B
Euphorbiaceae	<i>Euphorbia myrsinites</i>	myrtle spurge	B	B
Fabaceae	<i>Cytisus scoparius</i>	Scotch broom	B	B
Fabaceae	<i>Ulex europaeus</i>	gorse	B	B

Appendix A continued. 2016 Comprehensive EDRR species list. A subset (15-18) species were covered at each training session depending on regional and local priorities identified by training session program partners.

Plant Family	Scientific Name	Common Name	WA Noxious Weed Class	OR Noxious Weed Class
Geraniaceae	<i>Geranium lucidum</i>	shiny geranium	B	B
Geraniaceae	<i>Geranium robertianum</i>	herb Robert, stinky Bob	B	B
Lamiaceae	<i>Lamiastrum galeobdolon</i>	yellow archangel	B	B
Nyctaginaceae	<i>Mirabilis nyctaginea</i>	wild four o'clock	A	not listed
Poaceae	<i>Brachypodium sylvaticum</i>	false brome	A	B
Polygonaceae	<i>Fallopia x bohémica</i> (syn. <i>Polygonum x bohemicum</i>)	Bohemian knotweed	B	not listed
Polygonaceae	<i>Fallopia japonica</i> (syn. <i>Polygonum cuspidatum</i>)	Japanese knotweed	B	B
Polygonaceae	<i>Fallopia sachalinensis</i> (syn. <i>Polygonum sachalinensis</i>)	giant knotweed	B	B
Rosaceae	<i>Potentilla recta</i>	sulfer cinquefoil	B	B
Scrophulariaceae	<i>Buddleja davidii</i>	butterfly bush	B	B
Scrophulariaceae	<i>Linaria dalmatica</i>	Dalmation toadflax	B	B
Scrophulariaceae	<i>Linaria vulgaris</i>	yellow toadflax, butter & eggs	C	
Thymelaeaceae	<i>Daphne laureola</i>	spurge laurel	B	B

Appendix B. 2016 EDRR field survey data sheet (Adapted from data sheet created by Sasha Shaw at the King County Weed Watcher's Program).

Pacific Northwest Invasive Plant Council's EDRR (Early Detection Rapid Response) Survey Form							
Please return completed form to PNW IPC, University of Washington, Box 354115, Seattle WA 98195 OR e-mail to pnw.ipc.org@gmail.com <u>OR</u> submit field survey information ONLINE at: http://www.eddmaps.org/west/ (use PNW IPC EDRR Survey Form portal on EDDMapSWest page)							
*Land Ownership (e.g., Olympic National Forest, DNR, USFS)		*County (e.g., Clallam)		* Name of area surveying (e.g., The Brothers Wilderness Area)			
*Name of Surveyor(s): <u>list all participants</u>				*Trail or Site Name:			
*Total Miles of Trail Surveyed:		*Survey Date:		Wilderness Area?: Yes or No (circle one)			
Total Area Surveyed: (acres, if known)		Trail Start Point (Lat/Long) GPS <u>or</u> get coordinates from EDDMapSWest:					
*Volunteer Hours: (survey hours = total travel time to and from site + survey time in field + data entry time multiplied by (x) the number of surveyors)				Travel Miles: (driving distance to/from site)			
Survey Notes:							
* Required fields							
*Plant Name (e.g., shiny geranium or <i>Geranium lucidum</i>) [At least one photo required for verification]	*Plant Location Latitude DATUM NAD83 or WGS84 in decimal degrees (e.g., 47.57982)	*Plant Location Longitude (e.g., -122.32482) No GPS? Use "Map it" function on EDDMapSWest	*Plant Growth Stage(s) (circle all stages that apply) Veg, Bud, Flower, Fruit, Releasing Seed	*Total Area of Infestation (record units e.g., sq. ft., acres)	Method if Controlled (e.g., cut flower/fruits, pulled plt.)	*Habitat (e.g., forest, riverbank, roadside)	Notes (e.g., if controlled how much area and/ or # of plants did you treat, is plant dead?, other observations?)
			Veg Bud Flower Fruit Releasing Seed				