



2015 Report of the Pacific Northwest Invasive Plant Council's (PNW IPC) EDRR (Early Detection Rapid Response) Citizen Science Invasive Plant Program

A biennial report summarizing key accomplishments from
2014 to 2015



PNW IPC EDRR Volunteers in the field (left to right): Ann Stevens, Bud Hardwick, Theresa Schuller, Nikki Eller, and Jim Miltimore.

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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.

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 2012, PNW IPC has partnered with over 25 local, state and federal agencies, other non-profits and hundreds of volunteers in an effort to detect and eradicate priority invasive plants species from Washington and Oregon State.

The PNW IPC Citizen Science Invasive Plant Program objectives are to partner 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 eradicate target species in designated wilderness areas and other public lands in Washington and Oregon. **Programmatic objectives of the PNW IPC's EDRR volunteer program aim to:**

- Support county, state and federal agencies efforts aimed at locating and eradicating invasive plant species
- Decrease newly established invaders in the Pacific Northwest
- Reduce 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 increased three fold from 2014 to 2015 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), **two national parks** (Mt. Rainier and Olympic National Park), **WA Department of Natural Resources** natural areas and other public lands (e.g., State Parks).

In 2014-2015 PNW IPC partnered with over 25 organizations and led 15 free invasive plant trainings to the public. Three hundred and sixty-nine people attended an EDRR training session and 153 new volunteers were recruited in 2014-2015, bringing the PNW IPC's EDRR volunteer base up to 261 total volunteers. Volunteers contributed 2,631 hours of service documenting and eradicating invasive plant species from national forests and other public lands in Washington and Oregon State. **Volunteers conducted 192 surveys, hiked 633 miles in search of invasive plants while surveying 1,900 acres of public land.** Volunteers who focused on eradicating species as they found them **treated 668 acres** of public land. PNW IPC EDRR volunteer Bud Hardwick and two of our partner organizations, the King County Noxious Weed Program, and the WA Department of Natural Resources, **led 21 group hikes that drew 84 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 volunteers 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 development and implementation of our program in 2014-2015: the **NFWF** (National Fish and Wildlife Foundation), the **NFF** (National Forest Foundation), and the **WSDA** (Washington Department of Agriculture), **WA Department of Natural Resources, King County Weed Control Program, Cowlitz County Noxious Weed Program, Patagonia and the UW Botanic Gardens.** We especially thank Greg Haubrich (WSDA) who has championed the PNW IPC's EDRR program in many ways—offering his technical expertise, encouragement and spearheading WSDA financial support since 2012.

We thank our many partners that have helped make our volunteer EDRR program a huge success (see Table 3 for full list). In particular, we thank individuals who hosted a training and offered their expert knowledge of invasive plant issues during training sessions: Will Arnesen (Olympic National Forest), Carol Chandler (Gifford Pinchot National Forest), Sasha Shaw and Joe Neumann (King County Noxious Weed Control Program), Katie Woolsey (WA DNR), Emily Stevenson (Skamania County Noxious Weed Board), Marty Hudson (Klickitat County Noxious Weed Board), Angelica Velasquez (Cowlitz County Noxious Weed Board), Jodi Leingang and Carla Jaeger (Okanogan-Wenatchee National Forest), Don Hardin (WA Native Plant Society), Jessica Moore (Northwest Trek), Laurel Baldwin (Whatcom County Noxious Weed Board), Shauna Hee and Carrie Schreiber (Mt. Baker-Snoqualmie National Forest), David Lebo (Mt. Hood National Forest) and last but not least Sam Leininger (Clackamas Soil & Water Conservation District). We also are grateful to 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. Finally, a special thanks 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.

Section 1: Narrative Summary

Accomplishments and Outcomes 2014-2015

The PNW IPC's action-oriented Citizen Science volunteer program aims to educate and train volunteers to **prevent, detect and eradicate** newly emerging invasive plant populations on public lands throughout Washington and Oregon. The **PNW IPC's Citizen Science EDRR Program** has 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 practice, 3) **increased communication** and collaboration among private landowners, NGO's, and county, state and federal agencies and 4) **monitored thousands of acres** of public land leading to a measureable decrease (**668 acres treated**) in the number of newly establishing invaders. **Key long-term benefits of our program include:** 1) cultivating lasting **stewardship values** related to local and national conservation issues, 2) **improvement of wildlife habitat** and 3) **protection of ecosystem and watershed health** within national forest and parks and other public lands. In addition, because our program is volunteer based it is a cost effective means to maintain biodiversity and promote ecosystem health.

Our volunteers made significant, measurable impacts in detecting and eradicating invasive species in WA and OR State over the 2014-2015 field seasons (see Table 1 for summary). **Volunteer performance increased three fold from 2014 to 2015 (see Table 1)** as a result of: increasing outreach efforts to form new partnerships (e.g., EDDMapSWest, King County Noxious Weed Program), offering a greater number of training sessions and expanding the geographic scope of our survey area. **In 2014-2015 PNW IPC partnered with over 25 organizations and led 15 free invasive plant trainings to the public. Three-hundred and sixty-nine people** attended training sessions **with 153 attendees signing up as new recruits** bringing our volunteer base up to **261 volunteers. Volunteers 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) and **two national parks** (Mt. Rainier and Olympic National Park), **WA Department of Natural Resources** areas and other public lands (e.g., State Parks).

Volunteers engaged in significant conservation work contributing 2,631 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. **Volunteers conducted 192 surveys, hiked 633 miles in search of invasive plants while surveying 1,900 acres of public land within 19 counties located in Washington and Oregon.** Both positive (EDRR currently listed species found) and negative (no EDRR listed species found) surveys were reported to land managers. Negative reports were considered just as valuable as positive 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 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 and documentation step and left removal efforts to land managers. Volunteers who focused on eradicating species as they found them **treated 668 acres.** PNW IPC EDRR volunteer Bud Hardwick and two of our partner organizations, the King County Noxious Weed Program, and the WA Department of Natural Resources, **led 21 group hikes that drew 84 participants** who participated in documenting and removing priority invasive plants in target conservation areas.

EDRR Trainings: Setting Volunteers up for Success

PNW IPC presented 15 free trainings (See Table 2) to the public over the 2014 and 2015 survey season. Because control priorities differ depending on location, forest service and county noxious weed partners provided key information regarding local knowledge of problematic species adding a dynamic, interactive discussion with participants. **Three-hundred and sixty-nine people** attended training sessions **and 153 of those participants**

signed up to volunteer in the program. We led classroom and optional field trainings that included a PowerPoint Presentation, live plant material for participants to study and a hike on a trail to reinforce survey protocol and identification skills. **PNW IPC developed and distributed identification booklets to volunteers** to help them identify plants while conducting a survey. The booklet and the training covered **27 priority species (Appendix A)**. Many of our volunteers were new to plant identification and survey protocol. Trainings were designed to educate a learning botanist as well participants with extensive plant knowledge. **Participants not only learned how to identify plants and conduct surveys (see Appendix B for survey form) but also learned about the negative impacts of invasive plants and how to properly and safely eradicate infestations if they encountered them during a survey.** In our trainings we also emphasize that when 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.** 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. The PNW IPC coordinator was available throughout the season to trouble shoot and help volunteers with survey protocol questions.



Images from Left to Right: **EDRR director and coordinator, Dr. Julie Combs**, leads an EDRR training in White Salmon, WA. This training was covered by local journalist, Michelle Scott, who published an article in the White Salmon Enterprise on April 3, 2015 (<http://www.whitesalmonenterprise.com/news/2015/apr/02/dig-pull-bag-nw-invasive-plant-control/>); **Sasha Shaw, Education Specialist** with the King County Noxious Weed Program co-leads an invasive plant training at Mt. Baker-Snoqualmie Ranger Station in North Bend, WA with live plant material to help volunteers increase plant identification skills (photo: Julie Combs); **Herbarium sheets** on loan from the Otis Douglas Hyde Herbarium (University of Washington Botanic Gardens); **Cover image** of PNW IPC EDRR Citizen Science Invasive Plant Identification Booklet given to volunteers to use in the field.

Partnerships Are Key to Programmatic Success

PNW IPC partnered with over 25 organizations (See Table 3 for list of partners) in 2014 and 2015. All partnerships contributed to a successful program but there were two notable partnerships formed in 2015 between PNW IPC and the King County's Weed Watchers Program and EDDMapSWest that we will highlight here. **First,** 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 helped support volunteers throughout the season (e.g., provided target trails to survey, help trouble shoot on-line reporting via EDDMapSWest). **Second, EDDMapSWest developed a survey form specifically for the PNW IPC EDRR program.** The partnership between PNW IPC and EDDMapSWest significantly increased the efficiency of reporting and data dissemination to land management partners. EDDMapSWest is an **Early Detection & Distribution Mapping System** and provided instantaneous reporting to PNW IPC and state and county weed coordinators. Volunteers could easily access report forms, upload images and record species occurrence(s), location and treatment data. Once reports were uploaded the PNW IPC EDRR

Coordinator verified report details including correct plant identification and then forwarded reports to land managers within a day or two.

Figure 1 below shows the geographic locations and the number of new invasive plants records volunteers reported in 2015. The map was generated by EDDMapSWest and can be accessed at <https://www.eddmaps.org/tools/query/> by selecting “PNW IPC survey” under project information at bottom of page. **NOTE:** Locations of 59 negative survey reports from 2015 are not included on the map.

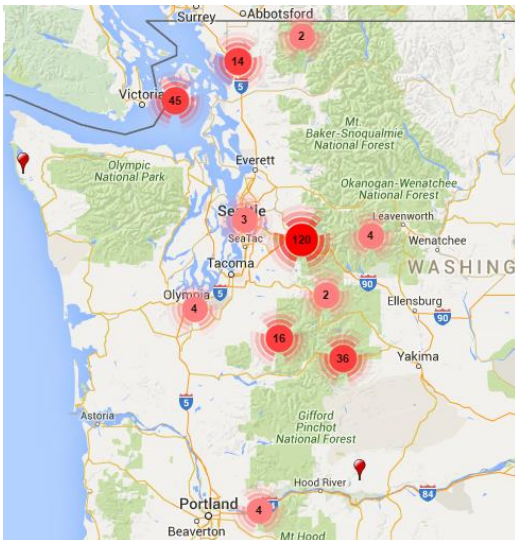


Figure 1 Location and number of invasive plant records from 2015.

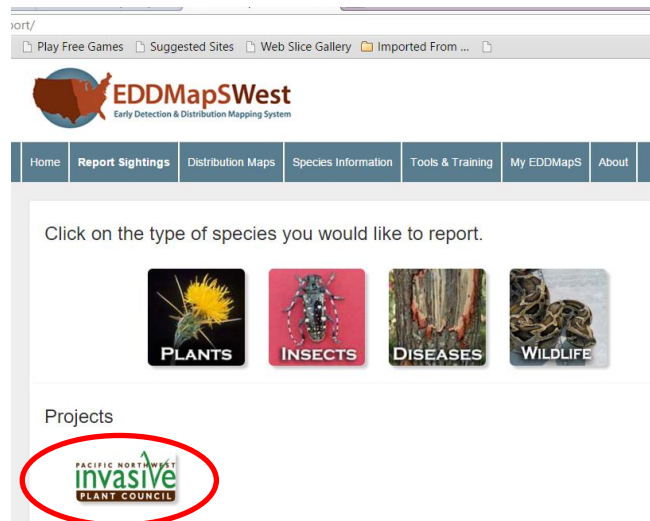


Figure 2 Screen shot of EDDMapSWest showing PNW IPC's logo that leads volunteers to survey report form.

Figure 2 above (right) shows a screen shot of the PNW IPC logo (circled in red) on the EDDMapSWest reporting portal. Volunteers go the website: <https://www.eddmaps.org/west/report/index.cfm?> to report a negative (no invasive plants found) or a positive (invasive plant(s) found) survey. Volunteers, land managers, researchers and others can generate distribution maps using EDDMapSWest and import distribution data for species of interest. **One of our partner land managers imported GPS data from EDDMapSWest** and combined known occurrences of invasive plants with data from other volunteer programs in the Snoqualmie Corridor (Mountain to Sound Greenway, King County Noxious Weeds Weed Watchers). Katie Woolsey, who is a WA DNR Natural Areas and State Lands Steward, commented that the data was “really helpful” to see full extent of plant distribution on DNR land.

Examples of How Volunteers Made a Difference

Our volunteers made important progress in the effort to detect and eradicate priority invasive plants in 2014 and 2015. Volunteers documented Class A, B and C noxious weeds as well as documented and removed common non-native plants (e.g., dandelion) from wilderness areas. Volunteers understand that even the most ubiquitous non-native plants are considered a high priority for removal if found in designated wilderness areas. For example, two volunteers (Carol and Jim Miltimore), **removed 1,699 individual *Taraxicum officinale* (common dandelion) plants from wilderness areas in Gifford Pinchot National Forest and Mt. Rainier National Park.** These are important finds because wilderness areas have very few non-native plant infestations. **Volunteers like Carol and Jim are successfully working towards keeping wilderness areas free from non-native plant infestations.**

Right Image: Jim Miltimore removes small patches of individual *Taraxicum officinale* plants along wilderness area trail in Mt. Rainier National Park.
Far Right Image: *T. officinale* peeking out from an otherwise diverse, native plant community. **Photos by:** PNW IPC volunteer Carol Miltimore.



Another volunteer (Bud Hardwick) discovered a small put growing patch of *Spartina anglica*, a **Class A noxious weed**, on land jointly managed by the Swinomish Indian Tribal Community and WA State Parks in Skagit County. After the early detection of this species, land managers where able treat this infestation that was previously unknown to them in a short period of time



Right Image (Above): Tombolo beach shoreline habitat on Kukutali Preserve, Skagit Co. **Far Right Image (Above):** A small patch of *Spartina anglica* (Common-cord grass; Class A noxious weed) growing amongst native patches of pickleweed documented by PNW IPC volunteer (Bud Hardwick).

In another survey, Crow Vecchio discovered **four Class B noxious weeds** (butterfly bush, tansy ragwort, Japanese knotweed and spotted knapweed) growing along the Tilton River in the Ike Kinswa State Park during a kayak survey.

Images Left to Right: *Buddleja davidii* (butterfly bush; Class B Noxious Weed) growing on gravel bar along the Tilton River; *Centaurea stoebe* (spotted knapweed; Class B Noxious Weed) and; *Senecio jacobaea* (tansy ragwort; Class B Noxious Weed) with bio-control moth (cinnabar moth) defoliating leaves, flowers and buds. All images by PNW IPC volunteer Crow Vecchio.



Another exciting outcome was collaborating with one of our volunteers to incorporate our trainings into her classroom curriculum. For example, PNW IPC volunteer Quasar Surprise is a science and CTE (Career and Technical Education) teacher at Avanti High School in Olympia and she adapted our trainings into her Sustainable Agriculture course. She took a group of 10-12th graders to survey and document *Geranium robertianum* (herb Robert; Class B Noxious Weed) in the Staircase Campground within the Olympic National Park.

Left Image: Quasar Surprise (in background) works with students at Avanti High School to identify and document *Geranium robertianum* (herb Robert; Class B Noxious Weed (**Right Image**) in the Olympic National Park. Images by PNW IPC volunteer Quasar Surprise.



In 2015 there was a dramatic increase in the number of group hikes that volunteers organized and led. For example, **Bud Hardwick**, a PNW IPC volunteer since 2012, led **11 group hikes with 37 participants** (Table 4). Participants included the general public, PNW IPC volunteers and 5 county and state management agencies.



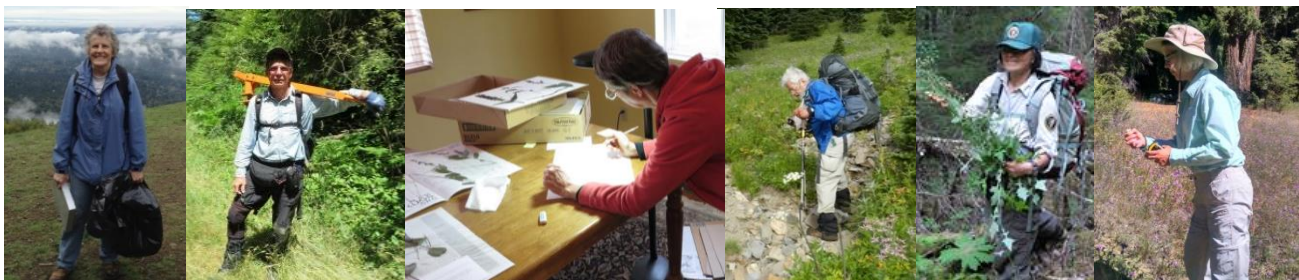
Images from Left to Right: Bud Hardwick, PNW IPC volunteer, wields a weed wench to remove *Daphne laureola* at Deception Pass State Park; Volunteers remove *Epipactis helleborine* and *Daphne laureola* from South Bay Trail in Bellingham, WA; Volunteers, DNR and WDFW staff use a canoe to transport removed *Daphne laureola* plants for disposal at Campbell Lake in Skagit County; Laurel Baldwin with the Whatcom Co. Noxious Weed Board removes *Prunus laurocerasus* at Stimpson Reserve along with volunteers. All images by PNW IPC volunteer Bud Hardwick.

Joe Neumann, Noxious Weeds Control Specialist led **7 group hikes in King County** that drew **37 volunteers** to participate in surveys and eradication efforts on national forest and WA DNR land (Table 4). **Right Image:** Katie Woolsey, Natural Areas Manager and State Lands Steward, co-leads a group eradication effort on WA DNR Land to remove Himalayan blackberry, English ivy, herb Robert and other priority noxious weeds from WA DNR land on Mt. Si NRCA (photo: Joe Neumann).



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 be a volunteer conduct 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 invasive plants from natural areas in WA and OR. **We would like to give a very special thanks** (in no particular order) to: Ann Stevens, Bud Hardwick, Theresa Schuller, Carol and Jim Miltimore, Elaine Rybak, Edward Lisowski, Mark Boyer, Michael Lazarus, Shirley Stageberg, and Sarah Madsen. Our program is a success because of your efforts. You have all hiked the extra mile and we thank you! We do not have images of each individual but we would like to highlight a few individuals below.



Volunteers in action (Left to Right): Ann Stevens dedicated 154 hours, conducting 15 surveys, covering 166 acres and treating (removing invasives) 123 acres of land; Bud Hardwick dedicated 634 hours, leading 11 group hikes and completed 31 surveys covering 92 miles of trail and treating 95 acres; Kathi Marlowe teamed up with Bud Hardwick in preparing specimens to deposit in the WTU and the Otis Douglas Hyde Herbaria at the University of Washington; Jim and Carol Miltimore conducted 15 surveys and dedicated 188 hours of service treating nearly 60 acres of land; and Theresa Schuller dedicated 73 hours of service conducting 15 surveys hiking over 30 miles searching and documenting priority invasive plant species on 27 acres of land. All Data is from 2015.

Information Sharing and Outlets for Programmatic Findings

Project results of the PNW IPC Citizen Science Invasive Plant Program are shared in many ways. Survey results are immediately sent to land managers on federal, state and county land where invasive plants were documented. The PNW IPC shares all programmatic results with partners, funders, volunteers and the general public. Reports are sent out via e-mail and posted on our website. And now, as a result of our partnership with EDDMapSWest, occurrences of invasive plants that our volunteers have documented are available to anyone interested in distribution data (e.g., general public, researchers, and land managers). In this way, our volunteers are generating data that is relevant on local, regional and a national scale. **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, reporter, land ownership etc.). **NOTE:** Data from negative survey reports from 2015 are not included. Please contact Julie Combs at PNW IPC for complete dataset (pnw.ipr.org@gmail.com). Other outlets include conferences and webinars. For example, PNW IPC’s EDRR Citizen Science Program Director and Coordinator, Dr. Julie Combs, will be presenting results of the EDRR program in an upcoming webinar to honor National Invasive Species Awareness Week in February 2016 (NISAW; February 21-27, 2016).

Section 2: Challenges, Lessons Learned and Next Steps

One of the biggest challenges which also represented one of the most significant steps forward was PNW IPC’s move to an on-line reporting system developed by EDDMapSWest. Early in the season there was some confusion on how to use the system and slight technical glitches with the program itself. Both of these issues were resolved by timely technical help from the EDDMapSWest technicians and the PNW IPC coordinator working directly with volunteers to better understand how to use the system. **The second and ongoing challenge for any volunteer program is how to recruit, maintain, and inspire volunteers to participate in the program after they have gone through the initial training.** After the trainings participants are very excited to survey trails for invasive plants but the reality is a small group of very dedicated, very active volunteers conduct multiple surveys which leads to the enormous success of our program. PNW IPC would like to see participation rates increase. For example, to date, our EDRR Citizen Science Invasive Plant Program has 261 volunteers and approximately 40 of those 261 conducted a survey in 2015. Therefore, approximate 15% of our volunteer base participated in the program in 2015 (Note: This number does not include the group hikes which drew 87 participants). Based on feedback from volunteers and also through brainstorming with our partner organizations we know that some **factors that deter volunteers from participating are:** lack of confidence with plant ID, lack of time, not confident with field survey or on-line reporting or they would like to hike with someone but can’t find a hiking partner. The qualities of our highly dedicated volunteers are that they have a strong plant ID background, they are less time limited, and they have a passion for being outdoors and working to conserve the environment. **“Hike with a purpose” is their mantra.**

There are many ways in which we think we can increase participation. For example, we are in the process of creating a Facebook page that will function as a way to connect volunteers who are confident with plant identification with those who need further guidance. Seasoned volunteers can connect with learning botanists and act as **an invasive plant mentor on hikes**. Also, a FB page could be a place to connect single hikers with others as well as serve as a place to engage in a conversation about exciting results. **One tactic we used in 2015 that helped to increase participation was to send out bi-weekly “Featured Hikes” e-mails.** Featured hike e-mails informed volunteers of target trails in need of a survey, provided trail details and photos of visually stunning hikes. We noticed a slight increase in the number of surveys after we sent out the Featured Hikes e-mails. It gave volunteers ideas about where to hike as well as reminded others that there was still time to conduct a survey before the season was over. **Also, in 2015 we learned that if given the opportunity,** volunteers like to participate in organized group activities. Group hikes attracted volunteers who enjoy the social aspect of surveying and it offers a chance for learning botanists to gain knowledge from others in the group. We are

currently designing a Survey Monkey form to ask volunteers why they do or don't participate to better help understand what motivates and/or deters participation.

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

2014-2015 Steering Committee and Board Members

- **President - Steven Manning** - Invasive Plant Control Inc.
- **Vice President - Sarah Reichard** - University of Washington
- **Treasurer - Lizbeth Seebacher** - Washington Department of Ecology
- **Secretary - Mandy Tu** - Independent Consultant
- **Shawna Bautista** - USDA Forest Service
- **Tim Harrington** - USDA Forest Service
- **Bill Brookreson** - Washington Native Plant Society
- **Wendy DesCamp** - Independent Consultant, previously Education Specialist at the WA State Noxious Weed Board

Special Program Officer - Julie K. Combs, EDRR Citizen Science Program Director and Coordinator

"Our goal is to train volunteers to identify, document and in some cases remove invasive plants from native landscapes in natural areas and to build partnerships with individuals, agencies and organizations to keep the growing list of invasive species at bay in the Pacific Northwest."

***Below left:** Since 2012, Dr. Julie Combs has served as Program Director and Coordinator for the EDRR Citizen Science Invasive Plant Program at PNW IPC; **Below right (in center):** Dr. Lizbeth Seebacher, PNW IPC board member and Department of Ecology Wetland Specialist, plays a key role in grant writing for the EDRR Citizen Science Invasive Plant Program and other programs at PNW IPC.*



Question or Comments pertaining to the PNW IPC EDRR Citizen Science biennial report can be sent via e-mail to pnw.ipc.org@gmail.com 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

Table 1. Project Accomplishments and outcomes by year and combined results (2014-2015).

Unit & Description	Number 2014	Number 2015	Total (2014 & 2015)
No. of free trainings offered to public*	5	10	15
No. of people who attended trainings	72	297	369
No. of new volunteers recruited from trainings	33	120	153
No. of volunteer hours	678	1,953	2,631
No. of partnering organizations	18	25	25
No. of surveys conducted	52	140	192
No. of positive surveys (Invasive plants found)	34	81	115
No. of negative surveys (Invasive plants not found)	18	59	77
No. of new invasive plant records**	55	252	307
No. of organized group hikes	3	18	21
No. people involved in organized group hikes	10	74	84
Miles of trail surveyed for invasive plants	188	445	633
Acres of land surveyed for invasive plants	544	1,356	1,900
Acres treated for invasive plants	167	501	668
*See Table 2 for locations and training schedule			
**See Figure 1 for map of 2015 positive <i>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 2. Invasive Plant Training Location and Schedule, Number of Participants and Volunteer Recruitment Outcomes for 2014-2015.

Training Date	Training Location	Training Time	Training Co-Host (Program Partner)	No. Attendees/ No. volunteer recruits
May 8, 2014	Olympic National Forest Headquarters, Olympia WA	1pm – 3:30pm	Will Arnesen, Olympic National Forest	17/8
May 8, 2014	Olympic National Forest Headquarters, Olympia WA	5:30pm–8pm	Will Arnesen, Olympic National Forest	5/2
June 20, 2014	Gifford Pinchot National Forest Headquarters, Vancouver WA	1pm – 3:30pm	Carol Chandler, Gifford Pinchot National Forest; Emily Stevenson, Skamania Co. Noxious Weed Program	25/12
June 21, 2014	Cowlitz County Noxious Weed Board, Kelso WA	9:30am-12:00pm	Carol Chandler, Gifford Pinchot National Forest; Angelica Velasquez, Cowlitz Co. Noxious Weed Board	11/4
June 28, 2014	Okanogan-Wenatchee National Forest, Naches Ranger Station, Naches WA	9:30am-12:00pm	Jodi Leingang, Okanogan-Wenatchee National Forest	14/7
March 27, 2015	Okanogan-Wenatchee National Forest, Naches Ranger Station, Naches WA	1pm – 3:30pm	Jodi Leingang, Okanogan-Wenatchee National Forest	32/13

Table 2 continued. Invasive Plant Training Location and Schedule, Number of Participants and Volunteer Recruitment Outcomes for 2014-2015.

Training Date	Training Location	Training Time	Training Co-Host (Program Partner)	No. Attendees/ No. volunteer recruits
March 28, 2015	White Salmon Public Library, White Salmon WA	10am-12:30pm	Don Hardin, WA Native Plant Society; Emily Stevenson, Skamania Co. Noxious Weed Board; Marty Hudson Klickitat Co. Noxious Weed Board	19/10
April 8, 2015	NorthwestTrek Wildlife Park, Eatonville WA	1pm-3:30pm	Jessica Moore, NW Trek Conservation Manager	15/2
April 15, 2015	Whatcom Co. Noxious Weed Control Program Building, Bellingham WA	1pm-3:30pm	Laurel Baldwin, Whatcom Co. Noxious Weed Board; Shauna Hee Mt. Baker-Snoqualmie National Forest	46/21
April 22, 2015	Olympic National Forest Headquarters, Olympia WA	1pm – 3:30pm	Will Arnesen, Olympic National Forest	35/14
April 23, 2015	Cowlitz County Noxious Weed Board, Kelso WA	2pm-4:30pm	Carol Chandler, Gifford Pinchot National Forest; Angelica Velasquez, Cowlitz Co. Noxious Weed Board	16/5
April 29, 2015	Gifford Pinchot National Forest Headquarters, Vancouver WA	1pm – 3:30pm	Carol Chandler, Gifford Pinchot National Forest; Emily Stevenson, Skamania Co. Noxious Weed Program	32/16
April 30, 2015	Mt. Hood National Forest Headquarters, Sandy OR	10am-12:30pm	David Lebo, Mt. Hood National Forest, Sam Leininger, Clackamas Soil & Water Conservation District, Columbia River Gorge CWMA	47/7
May 3, 2015	Mt. Baker-Snoqualmie National Forest Ranger Station, North Bend WA	9:00am-4:00pm w/ Field Excursion	Sasha Shaw, King County Noxious Weed Program and Carrie Schreiber, Mt. Baker-Snoqualmie National Forest	26/16
June 24, 2015	University of Washington Botanic Gardens	9am-3pm	Sasha Shaw, King County Noxious Weed Program	29/16

Table 3. 2014 & 2015 partners and the nature of their involvement in the PNW IPC's EDRR Citizen Science Invasive Plant Program. *Partners that provided funding AND either co-hosted a training, provided expertise and/or guidance regarding target species and target lands to monitor. **Partners that provided funding.

Partner Involved	Nature of Involvement	Partner Involved	Nature of Involvement
Olympic National Forest (NF)	Hosted and participated in training, provided guidance on priority invasive plants and trails to conduct surveys.	*King County Noxious Weed Program and King County Weed Watchers Program	Hosted and participated in training, provided guidance on priority invasive plants and trails to conduct surveys. Merged volunteer programs to collaborate on monitoring effort in King County and provided funding in 2015.
Gifford Pinchot NF	Hosted and participated in training, provided guidance on priority invasive plants and trails to conduct surveys.	Klickitat County Noxious Weed Board	Hosted and participated in training, provided guidance priority invasive plants.
Okanogan-Wenatchee NF	Hosted and participated in training, provided guidance on priority invasive plants and trails to conduct surveys.	Skamania County Noxious Weed Board	Hosted and participated in training, provided guidance priority invasive.
Mt. Baker Snoqualmie NF (North Zone)	Hosted and participated in training, provided guidance on priority invasive plants and trails to conduct surveys.	*Cowlitz County Noxious Weed Board	Hosted and participated in training, provided guidance priority invasive plants and provided funding in 2015.
Mt. Baker Snoqualmie NF (South Zone)	Hosted and participated in training, provided guidance on priority invasive plants and trails to conduct surveys.	Whatcom County Noxious Weed Board	Hosted and participated in training, provided guidance priority invasive.
Mt. Hood NF	Hosted and participated in training, provided guidance on priority invasive plants and trails to conduct surveys.	WA Native Plant Society	Hosted training and help recruit volunteers.
Olympic National Park	Managers enthusiastic about program and encouraged reports from wilderness areas.	WA State Noxious Weed Board	Help with outreach effort and answered technical questions about species and linked survey reports to managers responsible for control.
Mt. Rainier National Park	Managers enthusiastic about program and encouraged reports from wilderness areas.	Clackamas County Soil and Water Conservation District	Hosted and participated in training, provided guidance priority invasive.
*WA State Department of Agriculture	Guided species selection and provided funding.	PlayCleanGO	Provided ideas and material for educating volunteers concerning prevention.
*University of WA Botanic Gardens/Otis Hyde Herbarium	Provide office space, herbarium specimen materials for trainings, helped to verify unknown plant records and provided funding.	Oregon Invasive Species Council	Attended training and is interested in working on future trainings.

Table 3 continued. 2014 & 2015 partners and the nature of their involvement in the PNW IPC's EDRR Citizen Science Invasive Plant Program. *Partners that provided funding AND either co-hosted a training, provided expertise and/or guidance regarding target species and target lands to monitor. **Partners that provided funding.

Partner Involved	Nature of Involvement	Partner Involved	Nature of Involvement
Burke Museum WTU Herbarium	Provide expert help with plant identification and provided many images for identification booklet.	Oregon Department of Agriculture.	Attended training and is interested in working on bring future trainings to more locations in Oregon. Provided technical help with surveys conducted in Oregon.
Columbia Gorge Cooperative Weed management Area	Hosted and participated in training, provided guidance priority invasive.	Northwest Trek Wildlife Park Metro Parks Tacoma	Hosted training and help recruit volunteers.
**National Forest Foundation	Provided funding for program in 2014 and 2015.	*WA Department of Natural Resources	Provide funding, guidance on priority invasive plants and target lands (Natural Areas and Natural Resources Conservation Areas) to conduct surveys.
**National Fish and Wildlife Foundation	Provided funding for program in 2015.	EDDMapSWest	Developed and implemented an on-line reporting survey form on EDDMapSWest.
Great Old Broads for Wilderness	Oregon hiking group whose members attended EDRR trainings and conducted surveys in 2015.	WISC (Washington Invasive Species Council)	Provided information on new invasive plant issues in WA State.

Table 4. Group hike locations and outcomes led by King County Noxious Weed Program and PNW IPC EDRR volunteer, Bud Hardwick, in 2015.

Location and Land Ownership	Number Days	Number Volunteers	Outcomes
Mt Si (Mt. Si NRCA; WA DNR)	1	6	Joe Neumann with King County Noxious Weed Program teamed up with Katie Woolsey, DNR Natural Areas Manager and State Lands Steward, to work with volunteers to survey and eradicate target species.
Mt. Teneriffe (Mt. Si NRCA; WA DNR)	1	7	Joe Neumann with King County Noxious Weed Program teamed up with Katie Woolsey, DNR Natural Areas Manager and State Lands Steward, to work with volunteers to survey and eradicate target species.
Middle Fork Snoqualmie Road Trail (Mt. Baker-Snoqualmie National Forest)	1	1	Joe Neumann with King County Noxious Weed Program worked with a volunteer to survey and remove invasive plants from trails.
Ira Spring Trail (Mt. Baker-Snoqualmie National Forest)	1	9	Joe Neumann with King County Noxious Weed Program worked with volunteers to survey and remove invasive plants from trails.

Table 4 continued. Group hike locations and outcomes led by King County Noxious Weed Program and PNW IPC EDRR volunteer, Bud Hardwick, in 2015.

Location and Land Ownership	Number Days	Number Volunteers	Outcomes
Mail Box Peak and Middle Fork Snoqualmie NRCA (WA DNR)	1	10	Joe Neumann with King County Noxious Weed Program teamed up with Katie Woolsey, DNR Natural Areas Manager and State Lands Steward, to work with volunteers to survey and eradicate target species.
Talapus Lake (Mt. Baker-Snoqualmie National Forest)	1	2	Joe Neumann with King County Noxious Weed Program worked with volunteers to survey and remove invasive plants from trails.
Cougar-Squak Corridor (King County Parks)	1	7	Joe Neumann with King County Noxious Weed Program worked with volunteers to survey and remove invasive plants from trails.
Stimpson Family Nature Reserve (WA DNR, Whatcom County Parks Whatcom Land Trust, City of Bellingham)	3	9	Bud Hardwick led a group of volunteers to identify and remove the non-native orchid, <i>Epipactis helleborine</i> and other EDRR species. Four agencies were involved in the Reserve were notified of the survey results and control recommendations were provided.
Deception Pass State Park (WA State Parks)	4	9	Bud Hardwick led both land and water (kayak & canoe) surveys focusing on determining the extent of <i>Daphne laureola</i> infestation and to perform limited control activities. Additionally yellow-flag iris and tansy ragwort were found with the removal of flowers, seed heads, and some plant parts for off-site disposal.
Cypress Island (WA DNR)	2	5	Bud Hardwick and group surveyed and controlled specific invasive plants in public and restricted areas. Only a small number of young Scotch broom plants were found and removed at one site resulting in the first documented year that seed production at this site was prevented. Infestations of <i>Daphne laureola</i> were found and pulled. <i>Epipactis helleborine</i> was found, removed and a follow-up plan was created.
South Bay Trail (City of Bellingham)	2	14	Bud Hardwick led a group along the South Bay Trail in Bellingham to train volunteers to identify and control two specific invasive plants <i>Epipactis helleborine</i> and <i>Daphne laureola</i> . All specimens of <i>E. helleborine</i> were removed and a large number of <i>D. laureola</i> were root pulled and taken off site for disposal.

Appendix A. 2015 EDRR Species List

Plant Family	Scientific Name	Common Name	WA Noxious Weed Class
Wetland Emergent Plants			
Iridaceae	<i>Iris pseudacorus</i>	yellowflag iris	C
Lythraceae	<i>Lythrum salicaria</i>	purple loosestrife	B
Terrestrial Plants			
Apiaceae	<i>Heracleum mantegazzianum</i>	giant hogweed	A
Aquifoliaceae	<i>Ilex aquifolium</i>	English holly	Monitor
Asteraceae	<i>Centaurea diffusa</i>	diffuse knapweed	B
Asteraceae	<i>Centaurea jacea</i>	brownray knapweed	B
Asteraceae	<i>Centaurea x moncktonii</i>	meadow knapweed	B
Asteraceae	<i>Centaurea stoebe</i>	spotted knapweed	B
Asteraceae	<i>Centaurea solstitialis</i>	yellow starthistle	B
Asteraceae	<i>Hieracium aurantiacum</i>	orange hawkweed	B
Asteraceae	<i>Hieracium caespitosum</i>	meadow hawkweed	B
Asteraceae	<i>Hieracium pilosella</i>	mouse-ear hawkweed	B
Asteraceae	<i>Hieracium lachenalii</i>	common hawkweed	B
Asteraceae	<i>Hieracium murorum</i>	wall hawkweed	B
Asteraceae	<i>Hieracium sabaudum</i>	European hawkweed	B
Asteraceae	<i>Senecio jacobaea</i>	tansy ragwort	B
Boraginaceae	<i>Cynoglossum officinale</i>	houndstongue	B
Brassicaceae	<i>Alliaria petiolata</i>	garlic mustard	A
Fabaceae	<i>Ulex europaeus</i>	gorse	B
Geraniaceae	<i>Geranium lucidum</i>	shiny geranium	B
Geraniaceae	<i>Geranium robertianum</i>	herb Robert, stinky Bob	B
Lamiaceae	<i>Lamium galeobdolon</i>	yellow archangel	B
Polygonaceae	<i>Polygonum x bohemicum</i>	Bohemian knotweed	B
Polygonaceae	<i>Polygonum cuspidatum</i>	Japanese knotweed	B
Polygonaceae	<i>Polygonum sachalinense</i>	giant knotweed	B
Scrophulariaceae	<i>Buddleja davidii</i>	butterfly bush	B
Thymelaeaceae	<i>Daphne laureola</i>	spurge laurel	B
Bonus EDRR Plants			
Balsaminaceae	<i>Impatiens capensis</i>	spotted jewelweed	Monitor
Balsaminaceae	<i>Impatiens glandulifera</i>	Policemen's helmet	B
Rosaceae	<i>Potentilla recta</i>	sulfer cinquefoil	B
Scrophulariaceae	<i>Linaria dalmatica</i>	Dalmation toadflax	B
Euphorbiaceae	<i>Euphorbia oblongata</i>	oblong spurge	A
Ranunculaceae	<i>Ficaria verna</i>	lesser celandine	B

Appendix B. 2015 EDRR Field Survey Data Sheet (Adapted from form created by Sasha Shaw at the King County Weed Watcher's Program)

PNW Invasive Species Council 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 on EDDMapSWest page)										
*Land Ownership and County (e.g., Olympic National Forest, Jefferson County)				* Name of area surveying (e.g., The Brothers Wilderness Area)						
*Surveyed by (all participants):							*Trail or Site Name:			
*Survey Date:							Wilderness Area?: Yes or No (circle one or bold if on-line)			
Start Point (Lat/Long):							Stop Pt (Lat/Long):			
*Describe Area Surveyed (e.g., 2 miles of trail <u>and</u> 10 feet into forest on both sides of trail <u>or</u> 1 mile of river bank, bank approx. 20 feet wide)										
Total Area Surveyed (acres)			*Miles Surveyed		*Expenses (non-gas):					
*Travel Miles:					(amount paid for any trail passes, maps, other survey supplies)					
(total driving distance to and from survey site)			*Expense Description:							
*Volunteer Hours:										
(survey time - total travel time to and from site, survey time, data entry time multiplied by the number of surveyors)										
Survey Notes:										
(anything else of note)										
* Required fields Distribution pattern key; <u>Circle ONE</u>: E = Evenly distributed; C = Clumped or Grouped; L = Linearly distributed; P= Variably Patchy										
*Plant Name	*Plant Location Latitude	*Plant Location Longitude	*Plant Location Description	*Total Infestation Size (area)	*Percent Cover	*Growth Stage(S)	*Habitat	Method If Controlled	Area If Controlled	* Notes
From ID Booklet /EDRR Checklist (e.g., <i>Geranium lucidum</i>)	DATUM NAD83/WGS84 in dec. deg. (e.g. 47.579827)	DATUM NAD83/WGS84 in dec. deg. (e.g. -121.502207)	e.g., distance from water, from trailhead and/or other landmarks	Total area of infestation (sq. ft.)	% cover of species over the area infested	V (veg), B (bud), F (flower), S (seed), D (dormant)	e.g. forest, meadow, riverbank, wetland, roadside	e.g., Cut flower/ Fruits, pulled entire plant	SQ. FT. AND # of plants treated (count)	photo(s) taken, sample taken, voucher specimen for herbaria