



2020 Pacific Northwest Invasive Plant Council's Early Detection Rapid Response (EDRR) Citizen Science Invasive Plant Program Annual Report



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Questions 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.

Executive Summary

Invasive species negatively affect our regional economy and environment by degrading native wildlife habitat, reducing forest health and productivity, altering ecosystem processes, displacing native species, and degrading recreational opportunities for visitors. In addition, many invasive plants are toxic to humans and livestock. As of 2013, invasions of natural ecosystems by nonnative species rank second to habitat loss as the major threat to biodiversity and have been identified by the Chief of the USFS as one of the four significant threats to our nation's forest and rangeland ecosystems.

To help bridge the gap between funding availability and effective invasive species management, volunteer EDRR programs (Early Detection Rapid Response) can be considered a significant tool in this increasingly urgent battle by mobilizing citizens to monitor the introduction and spread of invasive plants, thus allowing land managers to eradicate new infestations before they become established and spread. This has proven helpful in times like 2020 when land managers had their hands full during the pandemic and did not have the resources or abilities to continue EDRR monitoring.

The PNW IPC's EDRR Program trains community members to survey, detect and report new infestations of invasive plants at high priority sites, and to rapidly eradicate small populations when advised. Our EDRR Program is a win-win endeavor for recipients and participants. Recipients of the data (land managers and agencies) benefit from critical environmental data, reducing the cost spent in surveying and transferring those funds to control work. Our trained Citizen Scientists also assist with control, for those species where it is advised and safe to do so, especially when invasive species are found deep in forests. Volunteers are trained to report invasive sightings or negative surveys to the nationwide EDDMapS database, with the smartphone application and through online portals. Submitted sightings are verified by PNW-IPC staff and forwarded on to program partners. These reports include information such as species, population size, plant physiology, GPS coordinates, photos, and any notes from volunteers to allow land management agencies to make real-time management decisions.

Programmatic Goals:

- 1) Increase public awareness and train citizens to identify and report priority invasive plants in Washington and Oregon to inform real-time management.
- 2) Collect information on changing distributions, abundance, and phenology of invasive plants.
- 3) Support county, state, and federal management agencies in their survey and EDRR efforts to reduce the number of newly emerging infestations in WA and OR.
- 4) Support the maintenance of biodiversity at local and regional scales.

Acknowledgements

The PNW IPC would like to thank our many volunteer Citizen Scientists for all their hard work and hours of surveying our public lands for invasive species, making a significant impact on keeping newly emerging invasive species out of the Pacific Northwest natural areas.

We are very grateful to our funders who supported the PNW IPC for the past several years: the USFS Challenge Cost Share Grant Program, the Washington State Department of Agriculture, King County Noxious Weed Control Program, and Steve Manning of Invasive Plant Control, Inc.

2020 Accomplishments

Each year, the PNW IPC has trained 200-300 members of the public on invasive species identification and invasive plant biology and recruited almost 500 Citizen Scientists over the course of the program. These volunteers have donated over eight thousand hours of their time and have surveyed just over ten thousand acres, most of which was on National Forest Service land. The data collected since the first year of our EDRR Program, 2012, can be accessed and downloaded by land managers, researchers, and the general public from EDDMapS.org, where they are able to use the interactive online map to see individual invasive species locations and population size. Hundreds of EDRR species have been found and eradicated by our volunteers before the infestation was able to establish and spread, saving land managers money and personnel resources, reducing herbicide use, and saving our biodiversity and the natural ecosystems of our public lands.

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 EDDMapS. 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 to help them guide volunteer survey efforts and management priorities. In many cases, documented infestations are small enough that volunteers can manually remove them *in situ* before infestations have a chance to establish and spread. Plant material is carefully bagged and deposited off-site in the city landfill, so as not to promote spread. If infestations are too large, or not appropriate candidates for immediate removal (e.g., plants that are toxic or grow by extensive rhizomes), volunteers perform the survey step and leave removal efforts to land managers.

In 2020, the PNW IPC quickly adjusted to the stay home orders put in place and organized nine webinar trainings for Citizen Scientist in Oregon and Washington. Throughout the year 538 people registered and 304 volunteers attended and were officially trained on plant identification, PNW native ecosystems,

invasive plant biology, and survey and reporting techniques. In addition to our normal curriculum, we introduced an Aquatic Species EDRR webinar in partnership with the EPA, NOAA and Washington State Department of Ecology. After seeing so much interest in this specific webinar, we were able to hold a second training and with the same enthusiasm.

Social media has also shown some promise in increasing our online presence. In addition to gaining 398 new page likes on our Facebook page, Chelsea created an Instagram page at the end of February gaining roughly 200 followers by the end of the year. She has been diligently working on getting *#pnwipc* off the ground and will be using it to keep track of entries for upcoming contests in 2021. Lizbeth and Chelsea have also been sending out emails to the listserv more frequently. These emails include seasonal plant identification tips, plant history, walkthroughs for submitting surveys, updates on future plans for contests or survey submission updates, and more.

While we found growth with established partners, we were also able to create new fruitful partnerships. PNW IPC was able to cultivate a new partnership with the Great Old Broads for Wilderness, a national grassroots organization. Contrary to the name, anyone can join, so this has provided us with more networking capabilities. PNW IPC held a targeted webinar for the “Broadband Leaders” in the Washington and Oregon area and will continue to work with them to organize surveys in 2021 for their members.

Outcomes for 2020

Due to public land closures and overcrowding at most trails in the PNW, our longstanding Citizen Scientists were discouraged from surveying as often as they have historically, and our newly trained volunteers were hesitant to survey. Despite these abnormal obstacles, 11 Citizen Scientists successfully submitted 143 invasive plant records (reports) throughout the year. Also, PNW IPC was able to lead four Group Hikes in 2020, where volunteers participated and accompanied our new Outreach Coordinator, Chelsea Dole, on targeted hikes surveying and documenting invasive plants.

EDRR Training Overview for 2020

Volunteers were taught to identify priority invasive species from the regional Invasive Plant Program priority list, and how to eradicate them if encountered during surveys. The attendees were instructed to use EDDMapS to record and upload required data such as, species identification, photos, location, and the extent of infestation. If infestations are too large or are not appropriate (unsafe) candidates for removal, volunteers were instructed to perform the survey and documentation step and leave the removal effort to forest service managers.

Webinar trainings included: 1) 2.5 to 3-hour PowerPoint presentation with images and key characteristics of EDRR species, 2) detailed training on methods related to filling our survey forms and EDDMapS survey submission, and 3) any information our partners wanted to add on. For some trainings, our partners had live specimens and were presented over the webinar for examination and questions.

The PNW IPC coordinated (with much limitation) survey efforts on forest land, managed the resulting data, and delivered survey information to our partner land managers. The data was uploaded with web-based tool EDDMapS (Early Detection & Distribution Mapping System), a national mapping system. Our results contributed information on local and national scales. Each survey submitted was verified by our new EDRR Lead, Jim Evans, a botanist in the PNW for over 30 years.

Group Hikes for 2020

In addition to our trainings for volunteers, we continued to organize group hikes so that our new citizen scientists could gain more practice and confidence in their plant identification skills. Several years ago, we found that the lack of confidence in plant identification by our training attendees, was one of the reasons they were not taking the next step to survey. This lack of confidence with plant identification, field surveying and/or on-line reporting was holding them back. Many of our citizen scientist have a passion for being outdoors and working to conserve the environment. "Hike with a purpose" is their mantra, so we continue to work diligently to provide the best environment to improve their confidence.

Our group surveys also provide the opportunity to hike with like-minded citizen scientist and gain personal plant ecology training from our EDRR Lead. For 2020, the PNW-IPC provided four group hikes for late-summer through the winter, when the trails started opening again. Due to COVID-19, stay home orders, and trail overcrowding, we were not able to offer more as we had planned originally.

Chelsea led a small group survey at Panther Creek Falls in July, one at Lucia Falls Regional Park in August, another at Leverich Park in October, and a year end hike at Cape Horn on New Year Eve. Eight enthusiastic hikers joined Chelsea on these hikes and those lucky individuals were able to learn one on one about plant ecology and invasive plant biology.

Future goals include organizing group hikes as soon as possible after the workshop, to help boost plant identification confidence, assistance in utilizing EDDMapS survey system, and ultimately converting participants into active Citizen Scientists. We are looking forward to continuing onward with these goals on a larger level for the coming year.

Volunteer Citizen Scientist are the key to success

The PNW IPC would like to congratulate and thank every volunteer who has hiked a trail and turned in a survey report for us over the years. Your efforts have made a difference in the protection and preservation of native ecosystems!

The "Sarah Reichard Hike the Extra Mile Award"

The PNW IPC and the invasive species community lost a great advocate and leader on August 29th of 2016. The 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. Sarah was instrumental in forming the PNW IPC. She was a tenured professor at the University of Washington, the Director of the UW Botanic Gardens, and a mentor to hundreds of eager students over the years and has served on countless boards, working groups and advisory committees. 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 women in science.

Due to challenges faced in 2020 to get out and survey, the PNW IPC will postpone giving this award until 2021. PNW IPC does want to give a very special thanks to those who were able to get out through all of the chaos and survey. Our program is a huge success because of your efforts. You have all hiked the extra mile this year and we thank you!

Information Sharing, Outreach and Programmatic Findings

Annual Report – The PNW IPC shares an annual report with partners, funders, volunteers, and the general public sent out via the PNW IPC’s listserv (over 900 participants) and the PNW IPC’s website.

StoryMaps – Currently adding to and refining our StoryMap through ArcGIS to assist with an interactive experience for our volunteers and potential partners. The link is located at <https://arcg.is/054uSC>, and consists of instructions on how to report an invasive species through the mobile app, interactive map of confirmed invasive points, some plant identification tips, and a survey video.

Plant Identification Booklet – The PNW IPC developed and distributed a specialized plant identification booklet with 2020 target species to all volunteers who sign up to volunteer. Samples from the booklet listed below.

Data of invasive plants from surveys documented on EDDMapSWest – 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 the bottom of the page. The database shows all information related to the survey records and can be downloaded in several formats.

What’s in store for 2021?

In our trainings we ask that individuals who sign up, to conduct at least 1-2 surveys a season. However, moving trained Citizen Scientist to this next step is the most difficult. We will be providing more group hikes in 2021 with our EDRR Lead, Jim Evans, our Outreach Coordinator, Chelsea Dole, and our partners across Washington and Oregon. These group hikes will be planned and organized in advance so that folks can meet Jim, Chelsea, and our partners, and can sign up for the group hikes while attending the training. This will allow attendees to plan ahead for a survey and assist in avoiding potential scheduling conflicts. We have also utilized our social media platforms to compile a list of people who are interested in participating in these surveys, as well as the region they are in. PNW IPC will utilize this list to create more group surveys outside of our scheduled training.

To inspire more people to get out there and survey, we are in the process of organizing a contest for Earth Day. Fortunately, our contest is based on individual citizen surveys for entry into the raffle and will work with any social distancing regulations that may still be in place. Each survey submitted (negative surveys too) will be one entry into the drawing for the raffle prize. Other entry options will include posting pictures

of their survey on Facebook or Instagram and tagging us. We are currently in the process of obtaining donations from local or environmentally based organizations, such as Patagonia, for the winning raffle prize.

One way we will continue to assist our partners in resource cost reduction in 2021, is by utilizing ArcGIS and StoryMaps for interactive outreach and records of where our Citizen Scientists can adopt a trail and become an “Invasive Species Steward,” as well as showing target areas that need attention. Citizen Scientists will be able to contact Chelsea, so she can assign the desired area to them. Chelsea can then check in on the Stewards a couple times a year to see what they were able to survey, document their section on the StoryMap, and give gratitude and recognition for their hard work. This data will then be forwarded to our land management partners so that their EDRR priority species can be controlled. We will be documenting a list of priority trails and roads on our StoryMap to encourage additional surveys in those areas.

The PNW IPC will continue growth with established partnerships, and nurture ones that were newly established in 2020. We are working on solidifying five EDRR trainings for 2021 and will continue to plan for more.

Getting new Citizen Scientists to fill out the added form to directly send to PNW IPC has been a challenge recently, and to combat that, we are working with Chuck Barger, the Technology Director of EDDMapS, to streamline the process of submitting survey data from EDDMapS to PNW IPC.

Additionally, we will be providing more opportunities for university students by reaching out to professors and students in the environmental field. This will allow them to be educated on invasive species issues, become involved in the invasive species community, get extra credit in courses, and/or receive independent credit with professors. We will also be approaching the numerous outdoors oriented clubs starting at the University of Washington and then moving to more universities in WA and OR.

To improve invasive surveys, we are collaborating with Steve Manning to explore the use of drones in EDRR surveying. He will be testing out drone EDRR identification success, exploring what is required for multispectral imaging, and success in identifying the tree of heaven, as well as holly, and other winter invasives. His research will help us determine if we can successfully incorporate this into our program going forward.

PNW IPC’s Board Members and Staff

2020 Board Members

President – Steve Manning – Invasive Plant Control, Inc.

Treasurer – Lizbeth Seebacher – WA Dept. of Ecology

Shawna Bautista – USDA Forest Service

Greg Haubrich – WA Dept. of Agriculture

Dana Pearce – The Uprooter – Oregon

Justin Bush – WA Invasive Species Council

2020 Staff

Executive Director – Lizbeth Seebacher

Outreach Coordinator –Chelsea Dole

EDRR Lead – Jim Evans

EDRR Lead – Lizbeth Seebacher

EDRR Lead, Jim Evans has a MS in Botany and Plant Ecology from the University of Washington (UW), and has 30 years of experience in environmental education, preserve management, biological surveys, ecological research, volunteer recruitment and leadership and invasive species management. Jim will be in charge of teaching the trainings and leading the group hikes.

Our Outreach Coordinator, Chelsea Dole is a student in environmental sciences at the UW and has several years of experience working on invasive species and volunteer outreach with Clark County. Chelsea oversees our Instagram page as well as outreach to our partners and volunteers and organizing trainings and group hikes.

Funding Sources for 2020 and 2021

The USFS Challenge Cost Share Grant Program continues to be our main funder for the past four years as well as for our 2021 season.

The Washington State Dept. of Agriculture has provided funds for 2020 helping us provide trainings and volunteer support to our citizen scientists.

Generous donation from Steve Manning of Invasive Plant Control, INC. for 2021 season

PNW IPC Partners

PNW IPC Partners	
Federal Partners	
Gifford Pinchot National Forest	North Cascades National Park
Mt. Baker-Snoqualmie National Forest	Okanogan-Wenatchee National Forest
Mt. Hood National Forest	Olympic National Forest
Mt. Rainier National Park	Olympic National Park
National Fish and Wildlife Foundation	Willamette National Forest
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	Kittitas County Noxious Weed Board
Clallam County Noxious Weed Board	Klickitat County Noxious Weed Board
Clark Public Utilities	Lewis County Noxious Weed Board
Coast Fork Willamette Watershed Council	Pierce County Noxious Weed Board
Columbia River Gorge Cooperative Weed Management Area	Skamania County Noxious Weed Board
Cowlitz County Noxious Weed Board	Snohomish County
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	
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	Washington Trails Association
Crooked River Weed Management	WSU Extension Grays Harbor

Program Accomplishments Over the Years

Unit & Description	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
No. of free trainings offered to public*	5	7	5	10	10	8	8	7	9	69
No. of people who attended trainings	93	140	72	297	322	162	201	198	304	1,789
No. of volunteer hours	497	1,279	678	1,953	1,787	685	526	726	**	7,954
No. of surveys conducted	59	115	52	140	204	113	111	84	39	917
No. of positive surveys (Invasive plants found)	*	*	34	81	137	84	77	58	34	505
No. of negative surveys (Invasives not found)	*	*	18	59	67	29	34	26	5	238
No. of new invasive plant records	*	*	55	252	421	509	486	271	143	2137
No. of organized group hikes	*	*	3	18	7	3	1	2	4	38
No. people involved in organized group hikes	*	*	10	74	44	18	12	5	6	163
Miles of trail surveyed for invasive plants	*	*	188	445	642	373	308	316	**	1872
Acres of land surveyed for invasive plants	247	1,416	544	1,356	3,119	1,357	1,121	764	**	9,924
Acres treated for invasive plants	*	*	167	501	733	620	514	112	**	2,647

* Figures not collected during those years

** Figures not calculated due to COVID-19

2020 Comprehensive EDRR Species List

A subset of species listed were covered at each training session depending on regional and local priorities identified by training 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>Phragmites australis</i>	phragmites	B	Not listed
Poaceae	<i>Spartina</i> sp.	cordgrass	A	A
Terrestrial Plants				
Anthriscus	<i>Anthriscus sylvestris</i>	wild chervil/cow parsley	B	Not listed
Apiaceae	<i>Conium maculatum</i>	poison hemlock	B	B
Apiaceae	<i>Heracleum mantegazzianum</i>	giant hogweed	A	A
Aquifoliaceae	<i>Ilex aquifolium</i>	English holly	Monitor	Not listed
Araceae	<i>Arum italicum</i>	Italian lords and ladies	C	Not listed
Araliaceae	<i>Hedera helix</i>	English ivy	C	B
Asteraceae	<i>Cardus nutans</i>	Musk thistle	B	B
Asteraceae	<i>Carthamus lanatus</i>	woolly distaff thistle	Not listed	A
Asteraceae	<i>Centaurea diffusa</i>	diffuse knapweed	B	B
Asteraceae	<i>Centaurea jacea</i>	brown knapweed	B	Not listed
Asteraceae	<i>Centaurea x moncktonii</i>	meadow knapweed	B	Quarantine
Asteraceae	<i>Centaurea stoebe</i>	spotted knapweed	B	Quarantine
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 hawkweed	B	A
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>Senecio jacobaea</i>	tansy ragwort	B	B
Balsaminaceae	<i>Impatiens capensis</i>	spotted jewelweed	C	Not listed

Balsaminaceae	<i>Imatiens glandulifera</i>	policemen's helmet	B	B
Boraginaceae	<i>Anchusa arvensis</i>	annual bugloss	B	B
Boraginaceae	<i>Cynoglossum officinale</i>	houndstongue	B	B
Brassicaceae	<i>Alliaria petiolata</i>	garlic mustard	A	B
Ericaceae	<i>Erica lusitanica</i>	Spanish heath	Not listed	Not listed
Euphorbiaceae	<i>Euphorbia esula</i>	leafy spurge	B	B
Euphorbiaceae	<i>Euphorbia oblongata</i>	Eggleaf/oblong spurge	A	Not listed
Fabaceae	<i>Cytisus scoparius</i>	scotch broom	B	B
Fabaceae	<i>Cytisus striatus</i>	Portuguese broom	Not listed	B
Fabaceae	<i>Ulex europaeus</i>	gorse	B	B
Geraniaceae	<i>Geranium lucidum</i>	shiny geranium	B	Not listed
Geraniaceae	<i>Geranium robertianum</i>	herb Robert, stinky Bob	B	Not listed
Lamiaceae	<i>Lamium galeobdolon</i>	yellow archangel	B	Not listed
Malvaceae	<i>Abutilon theophrasti</i>	velvetleaf	A	B
Nyctaginaceae	<i>Mirabilis nyctaginea</i>	wild four o'clock	A	Not listed
Plantaginaceae	<i>Linaria dalmatica</i>	toadflax, dalmation	A	B
Plantaginaceae	<i>Linaria vulgaris</i>	toadflax, yellow	C	B
Poaceae	<i>Brachypodium sylvaticum</i>	false brome	A	B
Polygonaceae	<i>Fallopia x bohemica</i>	Bohemian knotweed	B	Not listed
Polygonaceae	<i>Fallopia japonica</i>	Japanese knotweed	B	B
Polygonaceae	<i>Fallopia sachalinensis</i>	giant knotweed	B	B
Ranunculaceae	<i>Clematis vitalba</i>	old man's beard/traveler's Joy	C	B
Rosaceae	<i>Potentilla recta</i>	sulfer cinquefoil	B	B
Rosaceae	<i>Prunus laurocerasus</i>	English laurel	Monitor	Not listed
Rosaceae	<i>Prunus armeniacus</i>	Himalayan blackberry	C	Quarantine
Rosaceae	<i>Rubus laciniatus</i>	evergreen/cutleaf blackberry	C	Not listed
Scrophulariaceae	<i>Buddleja davidii</i>	butterfly bush	B	B
Scrophulariaceae	<i>Linaria dalmatica</i>	dalmation toadflax	B	B
Simaroubaceae	<i>Ailanthus altissima</i>	tree of heaven	C	Not listed
Solanaceae	<i>Solanum rostratum</i>	buffalobur	C	B
Thymelaeaceae	<i>Daphne laureola</i>	spurge laurel	B	B