

Pacific Northwest Garlic Mustard Working Group Meeting (Cowlitz County Admin Building)
Thursday, October 29, 2015, 10am-2:30pm

MEETING MINUTES (11/5/2015)

In fall 2014, garlic mustard managers convened from across Oregon, Washington and Alaska to share methodologies, identify common challenges and offer potential ideas for increased efficiency and success. In 2015, we aim to: 1) share important management findings and program updates; 2) refine methodologies to deliver tested and vetted BMPs to new groups taking on garlic mustard management; and, 3) discuss a collaborative process for managing garlic mustard on a regional scale.

Introductions (agency, role in garlic mustard mgmt, etc.) 10 – 10:15 am

Minutes Review (10/24/14 Meeting) 10:15 – 10:20 am

Program Updates (Observations, challenges, management adaptations, etc.) 10:20 – 11:15 am

Portland Parks & Rec (Laura Guderyahn): Laura conducted fall treatments this year due to dry weather allowance. No new significant populations to report, but noted that they are managing blackberry and other weeds that wouldn't be a priority except that they are obscuring seeding garlic mustard plants.

Skamania (Emily Stevenson): Emily treats six sites including in forest and roadside settings. Her protocol is to handpull flowering plants in the spring and then go back and spray rosettes with 2% glyphosate. In the fall she returns and treats rosettes with 2% triclopyr. Some rosettes were very large this year. This fall she also saw some flowering plants (mostly small, but some larger) and fresh seed pods. She wonders if we are treating twice a year and are still getting rosettes what's going on?

Clark Public Utilities (Ellen): Volunteers handpull sites—including on some private sites. This year for the first time they did fall treatments too. They have been seeing some fall flowering. They have also been finding flowering plants at all their sites after spring treatments.

Columbia Land Trust (Mitch Atting): Mitch began working for CLT 6 months ago and is getting brought up to speed on potential garlic mustard locations on easements, etc...especially potentially in SW Portland. He is considering next steps, including treatment.

King County (Maria Winkler, Karen Peterson): King County manages 23.5 infested acres. Perhaps a slight decline this year in the footprint. The overall impact area, or footprint, is much harder to chip away at than density within that area, which generally continues to fall. They have seen a few flowers this fall but not much. They have done some rosette fall treatments this year but usually this is hard to do because of competing weed competition (though less of that this year due to drought). Spring rosette control as well. The organization is working on two videos on ID and control, and are looking at training dogs to help hunt out garlic mustard. Did fall treatments. Seeing large plants but not huge. Some

Oregon Dept of Agriculture (Beth Myers-Shenai): ODA generally not responsible for on-the-ground treatments, but have assisted at Hood River site (they partner with OWEB to deliver funding for control work). Eric Coombs says there are promising biocontrol agents- gall weavils, but the process is stalled. Weedmapper is being used to model weed risk areas.

City of Gresham (Ivy Watson): One big patch was found last year in 2014. They are working on reducing population through combo of volunteer work and spraying. Mountain biking trails may assist with some spread of satellite patches—those these were documented. City of Gresham has 1 significant patch. Saw siliques in autumn.

East Multnomah SWCD (Chris Aldassy, Jon Wagner): Unique in that they don't manage all known populations, but rather have a containment project. They are holding the line, but have been challenged by trying to keep dogs and deer from tracking garlic mustard (new site at Sandy River Delta dog park). Chris found a nematode on some handpulled garlic mustard that is being analyzed and asks folks to keep an eye for nematodes if you handpull garlic mustard.

Clark Environmental Services (Denielle Cowley, Jeff Duval): Herbicide use has dropped drastically and they are “running out of garlic mustard to pull.” They see some garlic mustard in flower in the fall and so did a fall treatment this year. They have used garlon3A in the spring, but glyphosate in the fall. Reseeding with grass is assisting with suppression. They are seeing the seedbank appears to drop if you go after it significantly. They collaborate with a lot of local citizens. While reed canary grass is helping suppress garlic mustard, populations are starting to move into the woods. Jeff D. advises that plants need 100% herbicide coverage or they will rebolt out of ½ dead plants (Jon—why don't we have any zombie garlic mustard illustrations—can this be incorporated in as an amendment?). Regrowth and bolting can occur off the side of the plant that wasn't sprayed. Handpulled sites only have small garlic mustard plants, where there used to be tall ones.

Clackamas County SWCD (Jeff Lesh): Surveying has been a big focus this year, with 125 sites surveyed. He tracks the rate of detection—last year it was 20% of sites surveyed—this year it was 25%. Need to consider scale and process. He is encouraging land managers, cities, park departments, etc to step up and do some of the work. He treated 97 sites, most twice. He starts with garlon3A and does a fair bit of handpulling too (at landowner request, etc). Handpull sites are generally scheduled for later in the season to make sure to get to all spray sites. He has really been stressing this season to contractors to spray siliques from the top, not side.

City of Portland, Environmental Services (Mitch Bixby): Work plan hasn't changed much from previous years. Approximately 75 miles of roadsides and 10-15 miles of creeks are surveyed and controlled. Challenge now are backyards (which WMSWCD helps out on). Densities are down—sites with 1-2% cover from continuous coverage originally, but unpredictability is high. Mitch has seen *very large* rosettes this year—will bolting be way early?

Bill Wamsley (Lewis County): Hasn't seen it in his county yet, but is expecting it given traffic to Mt Rainier.

Cowlitz County Control Board (Angelica Velazquez): Angelica has found garlic mustard only at the one site (Boat ramp at Merwin Lake). This site was discovered in 2010 and she has been tracking it consistently every year but still finds new seedlings pop up. The seed bed is the most challenging aspect. She surveys county for all weeds but hasn't found other sites with garlic mustard. There is a lot of foot traffic, etc at the site she does manage, including maintenance activities at boat ramp which may be moving it around further.

West Multnomah SWCD (Michelle Delepine): Densities generally are continuing to drop, but has seen spikes in coverage area at older sites this year. Because began work a month early this year, glyphosate window was longer than usual, though still switched to garlon3A by end of April. She likes the versatility

of handpulling—every day requires making a push for control, even rainy ones. She also has seen giant “dinner plate” -sized rosettes.

Rogue River/Southern Oregon (Kyle Strauss): Infestation along Rogue River starts around Central Point and scattered downstream 30 river miles to Grants Pass. ½ amount of herbicide (using Aquaneet) used this year of normal.

Hood River SWCD (Jordan Kim , Kris Schadel): They manage two infestations—one is adjacent to Mt Hood Forest Service land at a 60 acre organic orchard. They have worked at this site for five years so far (2011 first year). At their second site they can use herbicide and have utilized both glyphosate and garlon3A. At the organic site they can handpull only—the goal is to keep the infestation in the orchard. They mulch high traffic areas. This is a suppression tactic to help reduce the population for next year. They prioritize roadways and game trails—noting that farm equipment and deers are main vectors (along with visitors). They have expanded their surveys. This past two years they have found some satellite populations at two neighbors—also both organic orchards. Game trails are down to waterways. The infestation started five years ago when it came in on some nursery stock and the landowner liked it, propagated it and shared it (hence the origin of the second site).

Washington State Dept of Ag (Alison Halperin): Alison and Greg Haubrich really wanted to attend—but had major conflicts. Alison attended remotely. Greg has been actively mapping garlic mustard. WSDA has been working on a couple populations in eastern Washington. The Okanagan patch was hit less hard, but the Spokane population doesn’t look good. They are funding garlic mustard efforts. Some folks have reported it on the invasive species council website online reporting form, but it is reassuring to see that folks are looking for it.

British Columbia Ministry of Forests, Lands & Natural Resource Ops (Becky Brown): Becky is the provincial EDRR coordinator. She focuses on new invasive species in the province. In 2009, she was first made aware of garlic mustard in BC—in Victoria. The source is believed to be a culinary herb introduction. She was tasked with conducting treatment trials in order to show effectiveness, potential off-target impacts etc prior to implementing any control. There are three population centers in BC (45 acres total): Victoria (two city parks), Vancouver (Stanley Park), & North Okanagan. The first two are in oak/Doug fir veg associations, the last is in Doug fir/spruce forest. Up to 41% of the province has the potential to be impacted. Becky has completed the risk assessment. She has found that the limiting factor appears to be temperature. Garlic mustard requires greater than freezing temps to germinate, but it makes good use of even limited growing seasons. The province’s approach is currently containment, as wildlife has spread it (also humans and water). Becky feels though that it is still on a small enough scale/area to have a chance at successful control. In the North Okanagan garlic mustard is moving into rangelands and waterways. It is harder to detect in woodland understory. The population seems to be moving northward. Dense shrubbery is a challenge, where she has found dense carpets of seedlings. She is not seeing any other vegetation where garlic mustard forms monocultures.

Becky presented the results of her herbicide trials (she has detailed results, charts, etc). The study compared glyphosate, acetic acid and 2, 4-D. It also looked at mechanical treatment such as handpulling, cutting, tilling burning and mulching. 2, 4-D is working well, but usually treatments require a non-mobile herbicide. Glyphosate results look good, with 85% reduction and no effects to native plant populations at all. Cutting leads to regrowth—which requires revisiting site every week through growing season. Burning promoted growth. Handpull was effective (69% reduction) and 17% increase in natives. Mulching was also fairly effective (done in combo with other control, etc)—except for edges where it thinned out. High value native plants returned after all treatments except burning and mulching.

www.Reportaweedbc.ca; Www.for.gov.bc.ca/bra/plants/applications.htm

CULTURAL METHODS

Mulching—Maria (King): needs to be thicker, coarser heavy mulch. Blown-in mulch only worked briefly. Jordan (Hood River): Mulch trials are ongoing. Denielle (Clark County): Has a BMP page for large properties, and a second one for smaller properties/homeowners. Jordan: Mulch is used mostly around perimeters, on patches, and along deer trails, roadways and waterways. Mulch suppresses native plants. It may be best used for backyard patches. Coarse barkchip-style mulch works best. Need to monitor and maintain thickness. Jeff L. (Clackamas): 27 pre-meeting survey respondents said they have used mulch— noting some respondents are from same org.

Seed Pod Clipping (Deadheading)—Maria: Some in King County clip seedpods beforehand, others don't. Always spray or remove the plant following deadheading (cut plants will reflower and seed). If seedpods are green, Maria will always “masticate the cut seedpods.” She has hung up early life cycle plants in trees, etc to dry out and die. Mitch cautioned that he has seen pulled plants discarded on trails/roads regrow—even once pulled—and complete their life cycle. Maria says the trick is to get it up in the air etc where it will be exposed to air circulation. Clipping seedpods could be especially useful when the plant is found late in the season. Others said that the same time spent clipping could be used to just handpull. Maria cautioned that handpulling can cause soil disturbance which could expose the seedbank and lead to a flush of seedlings. Ivy (Gresham) recommends that we put in a stipulation that cutting is one option that may make sense in certain circumstances, but may not be best option always.

MANUAL METHODS

Handpulling—Focus on adults. Rosettes tend to have thick root which makes extraction difficult without breaking off root except in very duffy, etc soils. Energy production required for bolting/flower thins out the root considerably and facilitates more successful removal. A “hori hori” or dandelion digger can be used to get up root and/or root fragment. Someone may have mentioned using a hoe.

CHEMICAL METHODS

Fall Rosette Control—Maria: Fall rosette control is done in tandem with knotweed work, so either garlon 3A or imazapyr is used.

Bolting plants are most ideal for detecting and getting seedlings – ie if you look during bolting you'll both see plants easier and be able to control newly germinated first year rosettes. Jeff: There are density-dependent factors at play—ie by removing bolting plants rosettes, and seeds have more light to flourish.

East Coast study saw that one needs to control 95% of rosettes to have predictable decline. The study found that 70% of adults controlled were needed for similar predictable decline.

Combo glyphosate/triclopyr*—Chris (East Multnomah) uses a glyphosate & triclopyr mix later in the [spring] season. Mitch A. found that this solution will precipitate out if left to sit over the weekend—which clogs applicator equipment and is difficult to clean/remove. It was warned to be sure to utilize the proper tank mixing order. *The Garlon3A and Accord / Rodeo labels say to add water (“at least 75% of the total spray volume”) then Garlon 3A [2% for ivy, for per local experience], then glyphosate [4% for ivy, per local experience], then surfactant.*

Glyphosate— King and BC use 1-2% glyphosate. Others use up to 3%. East Multnomah recommends revisiting sites sprayed with glyphosate, as they have seen plants sprayed with glyphosate come back.

Milestone – King uses “low low” milestone with triclopyr mix, which works great on early spring or fall rosettes. This solution is mobile, so use on sites that are not wet.

Escort – Emily (Skamania) has used in the past. Thinks it may have led to topkill events.

Imazapyr – In addition to King using it on fall rosette control, Angelica reports that a combo imazapyr and glyphosate have been used with good success on flowering plants.

Pre-emergents – City of Seattle did a trial using Surflan. There were early successes, but haven’t had great success since. May not be great to use when native plant recruitment is a possibility.

Surfactants - Deinielle brought up topic of surfactants. She uses MSO or DyneAmic surfactants in the spring.

Climate/Phenology – Emily treats rosettes twice a year and still has flowering—are there both annuals and biennials? The WSDA written findings for garlic mustard listing references studies that refers to garlic mustard as a winter annual and an obligate biennial. It’s possible garlic mustard is especially happy in the northwest given the long mild wet spring. Conversely in the mid-west and east coast, spring occurs over a very short window, with rapid climate changes. [It’s not uncommon for snow/tree dormancy in mid-April, followed by warm/hot temperatures, rapid snowmelt, green-up and leaf out a week or two later.]

Seedbank – Several in the group believe the seedbank is at least 10 years.

IPM Chem recommendations – Either glyphosate or triclopyr (1-3%) on bolting, flowering plants. Imazapyr (1%) or triclopyr (1-2%) on rosettes. Another option for some fall rosette applications might be .0009% (?) milestone or capstone and 0.75% triclopyr.

*All references to triclopyr are in relation to triclopyr amine (not ester!). The terms Garlon 3A and triclopyr were used interchangeably.

Regional Mapping (Platforms, centralized regional data, tracking—bring maps you would like to share on thumb drive) 12:30 – 1:15 pm

Nearly all present treat all known patches of garlic mustard in their respective management areas.

Jeff L. presented the results of the pre-meeting survey. Among data collection types taken, herbicide specimens and eddmaps data submission were low.

There is a need to open awareness at more/greater scales—do this by mapping so neighbors can see what’s coming and so managers can see where the gaps are. Jeff launched increased surveying to fill in mapping gaps and found some surprising new populations of garlic mustard. Jeff presented a map with all the data across the region he could get his hands on. State/province neighbors that do not list garlic mustard as a regulatory weed: California, Idaho, Alaska and British Columbia. GM working group offers a collaborative venue to share our experiences, observations and assessments with neighbors. We can talk about garlic mustard control on strategic region-level (while also scaling down to whatever level is most appropriate).

He also presented his results of the WHIPPET model, which analyzed weed control priorities for a watershed in his district. WHIPPET is a data-driven model that can be used at different spatial scales (though most relevant at smaller scale applications). The model takes into account many factors, including effort to control, cost parameters, how pervasive established populations are, etc. The value in the model is that it compares several weed species to help prioritize species management. Despite garlic mustard having fairly higher numbers of established populations, it still ranked as highest for control priority. Species with the greatest impacts score highest, not necessarily what is less prevalent. (*Contact WHIPPET author to get access to WHIPPET tool that can be launched in ESRI toolbox in ArcMap*).

Mapping that can document density declines would be helpful for grants, etc to make case for management. Maps can also be used to raise awareness. Good data can drive prevention protocols. Some folks frustrated that getting data depends on social connections, rather than being able to simply click on a website.

There are few mapping platforms that span statelines, and even fewer that span international lines. iNaturalist is international and all-taxa. Focus at the meeting was on North American Eddmaps. There is a chance that data loaded to state platforms (such as Oregon iMap Invasives, ODA weedmapper, WSDA reporting, etc) are all shared with Eddmaps—which would make it an ideal platform to have cross-state data.

Interagency Coordination + Regional Strategy (How can we coordinate effectively to manage garlic mustard on a regional level? Startup resources/knowledge sharing for agencies new to garlic mustard management? Other discussion topics of importance) 1:15 – 2:00 pm

Decontamination – The group lamented challenges with disconnect between utility work activities and invasive plant management activities. There is no process generally for requiring utility work in garlic mustard areas to decontaminate before leaving site, and moving equipment, etc. Most agreed that they have these discussions with utility workers when they notice work in infested areas, but have no system in place for knowing when and where utility work occurs (especially problematic during the off-season when areas aren't being visited as often). WA Dept of Ecology does have a decontamination protocol for fire and flood events. Silos within bureaucracies make it hard to bridge communication gaps, etc. but there are opportunities for improvement. *All agreed that this conversation needs to occur on multiple levels within local governments.*

We can make a difference when it comes to our contractors. We can require contractors utilize good boot brushing hygiene. Michelle likes the potential that Greelyman bootwash systems provide—especially since their use of pressurized water would likely make them more effective at removing seed-containing mud. Wire brushes for scraping paint were also suggested. Muddiest months tend to be dec-feb, so planting and veg management crews likely contribute to spread. *How can we ensure that all contractors abide by good boot hygiene? Important to not only include in contracts, but also enforce. Jeff recommends having signs placed in truckbeds to remind contractors to clean boots.*

King County has placed signs to remind folks to clean pet's paws—another vector. These signs typically get vandalized and taken within 2 weeks.

Beth (ODA) encouraged organizations to sign up to be a partner of "Play Clean Go." Becoming a partner is easy and new partners receive a kit with lots of materials, etc. The campaign was developed by Minnesota DNR, but since expanded nationally. It has a unified message—and even branched out to include "Work Clean Go" as well. The kit includes horse hoof brushes—which sound like a sturdy boot brush design.

There was discussion of installing boot brush stations at trailheads etc...not all folks utilize though. What about having trail grates that force people to walk over to enter/exit trail (dislodging soil/seeds in the process)? Most agreed concern is primarily potential offsite transport of seed material.

Nursery/Farmers Markets – Last year there were reports of contaminated nursery stock potentially spreading garlic mustard. Some organizations do inspections of native plant nurseries prior to receiving stock to ensure no weeds of concern will be introduced to restoration projects. Farmers markets are another potential source.

Disposal – Beth was previously a municipal compost manager and shared her insights on what protocol would be effective. She recommends tying orange noxious weed flagging or tape to bags. Angelica uses clear trash bags that have “Noxious Weed” printed on them...they are from Tacoma and have several thickness etc available. WSDA has a brochure on their website for disposal protocols (per Bill Wamsley). Michelle recommends trying to load weeds directly onto the compactor conveyor belt so that they don’t get sorted out as yard debris. Maria specifies that all A-listed weeds go to the landfill. They distribute tons of vouchers for trips to the landfill but not many are redeemed by the public. Angelica tells folks just don’t compost any noxious weeds. Michelle mentioned that 4-County/Dom Maze have mantra of “Trash your Seeds, Compost your Weeds.” Jeff recently circulated literature that showed garlic mustard, etc not able to survive even short windows of relatively low compost temperatures.

Enforcement- Washington county weed boards have the power to regulate and enforce control of listed noxious weeds via RPW. Deineille has enforced. The protocol entails making sure you have the code correct, etc—there are lots of hoops but it can be done. ODA has authority to enforce control—but only for A listed weeds. They have only had to do that once and requires getting a warrant.