Pacific Northwest Garlic Mustard Working Group

Monday, November 13th, 2023

10 am – 2:30 pm

Oregon Conservation Office, 821 SE 14th Ave, Portland, OR 97214

Participants:

In-Person: Michelle Delepine (WMSWCD), Maria Winkler (King County Noxious Weeds), Grant Jackson (ODA), Mitch Bixby (City of Portland), Charlie Nappi (Portland Parks), David Dalby (Portland Parks), Chris Oldashi (EMSWCD), Tyler Pederson (Tualatin SWCD), Eli Staggs (TSWCD), Allison Buckner (King County Noxious Weeds), Brittany Walsh (Hood River SWCD), Shahbaz Khan (WMSWCD), Keith Nasman (Yamhill SWCD), Justin Cooley (Clackamas SWCD), Amber Kester (Columbia SWCD), Nichole Linehan (Portland Parks)

Online: Olivia Hurd (Tualatin SWCD), Tom Erler (King County Noxious Weed), Jon Wagner (EMSWCD), Erin Haley (King County, Harvey Martin (King County), Joyce Anderson (Clark County Noxious Weed - Sandy Creek Watershed), Emily Reed (SE Alaska Watershed Coalition, SAWC), Avery Bowron (King County), Justin Collell (Clark County Noxious Weed), Jeffrey Lee (Metro), Laura Guderyahn (Portland Parks & Rec – East), Carri Pirosko (Oregon Dept of Ag), John Hudson (SAWC), Sarah Hamilton (Marion SWCD), Kyle Strauss (Contractor for Rogue River), Emily Stevenson (Skamania County), Jesse Seals (City of Gresham), Sam Leininger (Clackamas SWCD)

Roundtable Updates: Areas managed, challenges faced, questions … etc.

- **Highlights Pulled from White Board:**
    - How to get “last” of GM
    - What does restoration look like – what to plant?
    - Does cotyledon control work? Torch treatment/other options used for seedling suppression?
    - What natives are coming back post-GM treatments? Bleeding fern, swordfern
    - Focusing on edges & maintaining inner patches

- Staffing challenges (open positions, turnover) – Makes consistency difficult.
- How to control remote steep cliffs?
- How to manage last 10% of GM
- How to get no replies on board – cold calls
- Pilot planting project – TSWCD
- Phenology timing – late bloomers
- Herbicide limitations – approved products
- Area same, but density shrinks
- Control – what does it look like after 20 years
- Landowner buy-in + help in control
- Are there management gaps? Private LOs
- What is role of landscapers?
- Contractor availability + service areas
- Methods for outreach (1% replies for mailing) …
    - § Social media, personal contact-door knocking
- Urban areas – time consuming/herbicide concerns
- Treatment skips on edges – too careful in spot spray
- How to manage that last 10%?
    - § Broadcast emergent? Deep mulching/arborist chips?
- Cotyledon Control trials
    - § Before any true leaves, using a torch?
- GM control good, other invasives moving in i.e. shiny geranium
- Seeds lasting 10+ years,
- Climate – when and how control changing season to season

- Tracking- where are sites coming from (dumpsites, streams, floodplains)
- Contractor/partner ability to find small/hidden plants
- Property lines – control vs. not in project area
- What cultural control works in combo? Burning
- Plants that never bolted – wilted by heat of summer

- **Per agency:**

- WMSWCD
  - Michelle: WMSWCD works on private properties in Multnomah County west of the Willamette river, many times in partnership with other agencies. Generally face a mix of small plants on small properties to huge patches on private forests,. Some work along streams but most is in upland areas. Treatment schedule is once in the Spring, and not always in Fall. Challenges are usually getting the last of it in spaces we've managed for several years, though they've had sites that have been significantly reduce and results are promising.
  - Shahbaz: One challenge is maintaining suburban/urban properties with denser and smaller taxlots, since access is not guaranteed, contiguous treatment is difficult with many gaps in POE, and continuously requiring repetitive outreach for new/rotating owners each season thus having inconsistent treatment. Also wondered what role of landscapers might be, and if there may be opportunities for education/outreach to those who manage those properties instead.
- King County Noxious Weeds
  - Maria: Area managed is designated using parcel/postal boundaries, with roughly 27 acres of management this year (particularly in urban parks/river systems of higher value habitat) … Large challenge is restrictions on use of herbicides due to city regulations …. Treatment methods focus on trying to control/prevent seed production each season. Larger question is how future management can/should change, especially after many years of treatment i.e. restoration for areas that are now devoid of vegetation. Right now, they primarily treat weeds, but a consistent question is what natives should they plant? They have also been experimenting with different techniques i.e. torching cotyledons (no true leaves) and how effective that might be. Steep bear slopes in wooded areas are toughest spots to work in (beavers spreading seed and messing with terrain). Garlic mustard seems to be the most prolific on edges, and one

technique mentioned is only hitting the fringes of sites to prevent spread and not always the middle.

- Alison: On public Seattle (forested, historic) park lands for past 10 years. Challenges with city employees and what spaces they can work in, both fall and spring treatments. However, parks maybe represent only ¾ garlic mustard in the area and would like to expand, especially to private lands. Also treatment tends to be expensive since there are fewer plants across large areas. Trying to figure out goals in the long-term (10-15 years); hoping to protect more intact forested areas in the future, as well as urban spaces.

- ODA

  - Grant: Most of the detection/survey locations are in NW Oregon, trying to keep it out of midvalley. Mentioned a weevil that's under review as a potential biocontrol for GM (no timeframe), which has been approved in Canada and Europe, but is currently being explored by APHIS here.

  - Carri / Kyle: General treatment is across Southern Oregon; they regularly treat 10 net acres (spread across 600) a year, a little over 30 river miles, need to revisit sites repeatedly. Have seen huge reductions/some eliminations over time… expressed the same challenge of every season being very different in its timing. Early treatment is Feb-June, then a contractor treats in fall (up to Nov. this year). In the early days of the season, their chief method is using triclopyr (Vastlan)/glyphosate… now contractors are also shifting to residual/preemergent herbicide such as Panoramic (Imazapic), Opensight (Aminopyralid+Metsulfuron-Methly), and variations (Escort + Milestone) etc., which has greatly improved eradication of GM's seed bank. They've also had follow-up seeding with native plants on their sites on their minds, especially with local partners, but some of the sites have been challenging to establish, or not ready for seeding. BLM is donating blue wild rye, also a 10-15 species local mix from the year before which likely have not succeeded. Local BLM did 8 river floats and are planning to fund crew all season, specifically along river.

- City of Portland

  - Mitch: Management tends to be on the west side of Portland (where the prevalence is higher), generally hitting 80 miles of roadside/ROW, has also helped with creeks on private properties that were feeding towards Washington County. Roadside tends to be the most important since it has highest likelihood of spread… Areas that have garlic mustard are also a place where there is unofficial camping, which is concerning for access to certain patches.

  - Charlie: Manages across Forest Park. Challenges are staffing (seasonal maintenance worker turnover) which complicates consistent efforts … Also, while

supervisors might recommend simply procuring contracts for management, it's not always feasible. One update is that Bee Sinichko (former CWMA coordinator/WeedWise Specialist) is now taking over as a Charlie's replacement in the future, though Charlie will still be around.

- David: David is new to the role (about 2 months in), so mostly in support right now. Spoke more to experience in previous/similar role at Audobon's efforts, where they mostly hand pull and don't have a ton of infrastructure to get treatment options like herbicide application. They mostly rely on volunteers and support from partners.

- Laura (PPR East): Ross Island is one of the main sites; challenges are access (they use pontoon boats) due to spring freshlets, irregular weather and tides. Northern half of Ross Island treated for about 10 years, can mostly be managed by handpulling now. Southern side has more sporadic treatment and requires more efforts with full carpets of GM. Usually spring treatment, next year is the first time they'll try a fall spray. Northern half Oaks Bottom Wildlife Refuge is a second site and is dangerous due to steep slopes, so hoses makes treatment (with Spotlight) less cumbersome than backpacks. Laura also notes how the treatment window is getting shortrt each year. Most of the sprays are done in-house, but internal work planning means that GM treatment isn't always a priority (1% of workplan). One interesting thing found this year were rosettes that never bolted, and simply started to wilt over the course of the summer (had question of if this has been observed by others, or if it may be a form of dormancy).

- East Multnomah SWCD

    - Chris: From Sandy River to Western Columbia Gorge. Working in City of Troutdale, Gresham; some work in nebulous zone between City of Portland and jurisdiction in unincorporated eastern Multnomah County. Managing mostly on roads, trails, a particular church site (which gets lots of foot traffic and is suspected to be the epicenter of GM in the region). They're doing a proof of concept and questioning how much money it might cost to employ a new management alternative emphasizing containment zones… this about 6square miles in Corbett right now. This entails allowing GM to do its own thing within these zones, though doing their best to still manage as possible and control its spread (since many of these have been identified as extremely difficult to access). Outside the containment zone, their goal has been to not let a single garlic mustard plant go to seed. They've been extremely successful (10+ years of work), but the most challenging spaces to hit are generally elk/animal trails which are not easy to find access, or survey, (i.e. cliffbases) and also happen to be where many plants occur and spread. They've had internal conversations to create micro-containment zones around those populations. Also offered blue wild rye as one native grass that is helpful for seeding post-treatments, as it

proliferates well and is shade-tolerant. Helpful for providing more time in spring and preventing a monoculture.

- Tualatin SWCD

    - Tyler: Started in 2018, but Clean Water Services was primarily doing the control. One of their main challenges is also filling in gaps across their district with private landowner outreach/permits of entry. They manage about 624 sites, surveyed about 1200 acres and treated about 10 net acres this past season. 2 treatments, Fall is primarily when they do the denser sites. Right now, they are especially focusing on growing their contractor base for data collection/treatment. Recently started a pilot planting project (more than just seeding) on a creek at a Montessori school bordering Multnomah county, a long-term site with more than just seeding. When treatment began (which was initially managed by CWS), the coverage was 75 acres and has since been reduced about 10 acres now.

    - Eli: More recently and due to variable climate conditions, the timing of treatments and predicting the phenology is challenging.

- Hood River SWCD:

    - Brittany: They have one particular sites (only known location) that's been consistently managed-- theirs is on private land and has been managed for about 13 years. Landowner buy-in is difficult. Previous challenges were capacity/organic treatment constraints only allowed hand-pulling the perimeter, but more recently were able to hand pull entire patches.

- Yamhill SWCD:

    - Keith: Only 3 populations in the county they're working on. Major site they manage is in east site in Clackamas (upland), which is now mostly contained. 98 sites have access. 2 other sites are streamside … Also mentioned physical access is an issue, though especially around rougher terrain (i.e. riparian areas are made up of dense thickets, and has been continuously difficult to navigate). Baker creek is the biggest concern, NW of McMinnville, 12 miles of stream with taxlots that require much more outreach and have inconsistent access due to requiring permissions. Also hoping to do surveying and treatment at the same time next year. Predecessor created a FB group as an outreach strategy and received great response.

- Clackamas SWCD:

    - Justin: More recent observations in Upper Sandy (with staffing vacancy in that geography); funding thanks to Clackamas River Invasive Species Partner in Upper Sandy and PGE funding for Clackamas Basin. They've been able to

manage lots of work in Clackamas Basin (Monte Mattsson is specialist that manages that work). 2 treatments per season due to resources, but not always able to hit all each year. Justin primarly focuses in on lower Wilamette + Mollala basin region in the county. Once again noted that a large challenge is dense urban/suburban areas are harder to get work done because there's so much turnover and require persistent outreach (though Lake Oswego, tryon creek, Yamhill are still covered well). However, they do get to many of those vector populations along roadsides, in parks, etc. Overall a triage in the urban matrix. Another challenge is deprogramming contract crews that tend to "be too careful." Particularly selective spraying/worrying about killing native plants (i.e. avoiding underneath ferns) leads to skips, despite the fact they might be hit in the long-term anyways/recover with time. Justin also mentioned that new populations were found within the Molalla basin/near a tributary. These weren't found along the water's edge, however it is an active floodplain and do establish downstream, which is a new and recent concern.

- Columbia SWCD:
    - Amber: Area managed mostly includes Scappoose Bay, though there are satellite populations around Fishhawk Lake. Mentioned that the agency plants where they can. A major concern is shiny geranium tending to encroach wherever they have seen successful treatment of GM. A new and positive development is training various partners, leading to more capacity and more people helping.
- SE Alaska Watershed Coalition
    - Emily and John: 2 infestations primarily in Juneau, one small doing well, the other a bit larger relative to the region. They have historically treated the 2 particular populations (that are ~15 miles apart), however more recently they have found more satellite outside those sites and started to see it escape a bit... hoping to do more intensive searches. There are general challenges with accessing areas with steep slopes/out of the way backyards, which leads to missed weeds.
- Skamania County:
    - Emily: 10-11 sites have had introduction of GM due to dumping found this summer. Mostly going very well. Haven't let things go to seed for 8-10 years but still finding small plants. Also mentioned how useful iNaturalist is, and also literally found a new pin while demonstrating its use.
- Metro

- Jeffrey: Usually site-scale work done by contractors in spring (2-2.5% Vastlan) and in fall (2% Rodeo). Work is going pretty well on sites they know of, but also trying to get contractors to get edges and under ferns. Work at Jenne Butte with Jesse. Rock Islands in West Linn managed by west side team, with a new report of a few small plants at Cazadero North (North Fork Deep Creek property).

· City of Gresham:

  - Jesse: Jenne Butte Park is biggest site, 20-30 acre infestation, pretty significant. Mostly herbicide treatment in Spring. Outside of that, has been found along Johnson Creek. Limited access in the city.

· Clark County Noxious Weeds

  - Joyce and Justin: Seeing GM steadily across district, been able to reduce a good amont. Significant new patches in river systems. Hotspots are on Salmon Creek and Washougal river, but also have found many satellite patches and face concerns of not being able to control those that aren't connected to the main infestations.

· Marion SWCD

  - Sarah: No GM found, haven't really been surveying for GM recently due to turnover in staffing (Sarah is sort of new) – Right now their focus is discovering how to get back into treatment of (likely) infestations

· BC Ministry of Forests (more detailed information shared in pdf)

  - Crystal Chadburn: GM is #10 on Provicial Government's 2023 "Top 25" invasive species prioritization list. Relatively low extent in BC compared to its potential range (southern portion of their province and on Vancouver Island), but not all sites are receiving complete treatment due to capacity/limited resources. 10 new sites discovered this year, bringing total up 266 active GM sites (totaling ~32.73Ha of area). Of this, over 20Ha are sites with active treatments occurring (108 sites total; 4.5Ha treated chemically; 15.8Ha treated mechanically). The GM Root crown mining weevil (*Ceutorhynchus scorbicollis*) was approved as biocontrol in 2018, and initially released (and established) in Ontario. 5 yr plan is outlined in pdf, most likely to remain the same but adjusting as new information is found annually.

Network Update:

· Courtney is hoping to boost collaboration between CWMA in Western Invasives Network (WIN). Hoping to set up listservs for broader collaboration and networking. Google Groups helps to post without any coordinator, all CWMA operate through Google groups. This would be invite-only, and must contact/request to be added through Michelle or Courtney. Also will be adding a directory of who's on the listserv, by choice

Best Management Practices & IPM Matrix Update:

(Note: Refer to recording for most exact rates/information)

- New treatment options?

    - Justin (CSWCD) noted that triclopyr/glyphosate has been used with relative effectiveness, but he believes that other products will be more effective. Since GM has persisted within some treated areas for over a decade, products with residual activity may reduce long term chemical inputs and be more effective.

        Justin's Favorite is a tank mix containing triclopyr amine, aminopyralid and metsulfuron methyl(a sufonylurea that adds a new mode of action). They use a tank mix of Garlon 3A and Opensight or Garlon 3A, Milestone and Escort XP. Refer to recording or labels for recommended rates…

            · You can use Milestone (aminopyralid) and Escort XP (metsulfuron methyl) instead of Opensight in case you don't have it in stock or on your approved chemical list. Escort and Milestone's signal word is "caution". Opensight that has "Warning" as its signal word. Milestone and Escort can qualify for use on school properties in Oregon due to the signal word and may be easier to get approved if you have a risk averse IPM program. You can drop the Garlon 3A from the tank mix if you don't need rapid burndown but this will make 2nd entries less cost effective and a lot more product will be applied than needed.

            Adding Opensight (or Milestone and Escort XP) provides some residual control (higher rates will provide more). You can use Opensight at 6.6oz/ac rate if you are applying it to less than half of the treatment area (same limitation as Milestone when you use it at a rate over 7 oz/acre to 14 oz/acre) . Opensight can be broadcast at 3.3oz/acre. Escort XP's label recommends using 0.5 to 1 oz/acre to control Garlic mustard. This low rate should work but it is a very slow acting product and it will be hard to tell which plants you or your contractors skipped for several months. Escort can be used by itself in the fall and you don't have to worry about the GM setting seed before it kills the plant.

Tank mixes containing triclopyr amine, aminopyralid and metsulfuron methyl provide excellent burn down. This makes it CSWCD's go-to for GM. This tank mix provides far better spring control of BB than glyphosate or triclopyr. This allows crews to maintain access to GM patches and prevents BB from engulfing or blocking access in one entry.

CSWCD will also add indaziflam to the tank mix to provide longer lasting pre-emergent control. No silver bullets but great for residual control in areas with significant seedbanks. An additional benefit is that it adds a novel mode of action (cellulose biosynthesis inhibitor).

· Can even use Opensight in flexible settings according to labels (i.e. forestry sites that might be special use). Can use in virtually all non-crop areas, up to water's edge (except for inter-tidal areas up to water mark). The same is true for Escort XP. Milestone's label is almost as good but it doesn't have forestry/conifer plantation on the label. Quercus species can be sensitive to metsulfuron methyl, but Justin hasn't seen issues when using Escort XP. Carri (ODA) seconds use of Opensight. Has great late season control and stops silique development. Used it in May with good success. Also Emily notes by itself Opensight could be useful for early season control/rosettes.

· Some contractors don't use Garlon3A for safety purposes (Vastlan as alternative, but has so-so effect, so glyphosate is mixed).

- Triclopyr rate discussion – currently 1.5% on matrix

§ 2% amine, choline maybe higher (requires more active, 2-"3"%)… You need to bump it up to get more active, like Jeffrey (Metro) mentioned 2-2.5%

§ Maria (King County) accidentally used 3% for a site that was hit a bit later than wanted, but it was scorched and did keep siliques from forming. Can't use glyphosate on of city-owned property and ROWs. No triclopyr 3A allowed either, only Garlon 4, though 3A would likely produce similar results. Manually controls near water due to Garlon4 restrictions. Experimenting with 1.5% Agridex + .5% Polaris + 1.5% Garlon 4 for late season, and when with other weeds. Not seeing chemical resistance anywhere

- Residual herbicide discussion

  § Justin notes you could probably get more than one year of residual activity with Indaziflam at 7oz/ac (7oz limit for one application) or two 5oz/ac applications (10oz limit per year). Activity may be inhibited by debris/vegetation due to lack of coverage, bare ground is best. Indaziflam doesn't affect anything already germinating. For fall applications it needs to be applied before significant rainfall in September/October. It is super sticky and binds tightly with organic matter in the upper soil horizon. It doesn't leech like most other pre emergent products. East side trials show it's great for annual grasses with up to 5 years of control (though there's less precipitation, soils are generally lower in organic material). Chris says this could be a good option for those truly satellite patches.

  § Grant used Milestone at hard to reach/overgrown site for spotted knapweed near Wilamette national park, hoping that seeds will drink up aminopyralid next year.

    · Justin says the nice thing about aminopyralid is if you're doing less than half of the treatment area at 14oz rate range, you can start to get a complete control of vegetation (180/day half life). 7oz rate might not give the same level of control, based on label and Justin's observations. This is only desirable if you are trying to create/maintain bare ground. Roadsides, parking lots and trail tread are locations where this would be beneficial. There are better bare ground products but if you want complete veg control in a location you can do it with tank mix you are already using. Also note that the 14 oz/acre rate will at least top kill a lot of grasses.

    · Milestone by itself was tested up on WA side of gorge and didn't have luck-- Justin says it wouldn't be used by itself on GM. however it is an excellent addition to a tank mix containing triclopyr and/or metsulfuron methyl. It significantly improves blackberry and other woody brush control for maintaining access. This is most important when you don't have the capacity to do a separate fall entry for woody weed/brush control.

  § Skamania used aminopyralid, Milestone with 3A. Question of 2% triclopyr with Opensight? Justin uses Garlon/Element 3A at 2% -- only using Opensight will work but with slower burndown (okay with rosettes but potentially questionable for plants with seliques). A trifecta with aminopyralid/metsulfuron/triclopyr is great for quicker burndown, which

could help to open up hidden plants. Concern about Quercus species can be affected by metsulfuron.

§ Carrie is using either Escort or Imazapic in southern OR with good success

§ Question from Avery is concern about use of residuals in high value/critical areas, or steep erosive slopes. When there are concerns about restoration/native cover, it's not feasible since it will kill them off (though you may end up killing them with yearly repeated applications anyways). Opensight in general might not be great for the approach to (large) restoration sites, but it was noted as a great option for satellite populations (with the continuing argument that some native casualties are better in more effective/controlling mixes).

§ Joyce says "we've used Bronc Max (fertilizer/PH neutralizer) mixed with triclopyr (1-1.2%) to increase efficacy of the plants in the spring (before flowers/siliques form) & also fall

- TSWCD also uses ClassAct (with AquaNeet/Rodeo or Triclopyr), but warns not to mix all 3 due to issues with crystal/precipitate forming. Switched to 1% Competitor, but could also be mixing order/not adding triclopyr first or using cross-contaminated mixing cups. [SK1]
    - One possible fix is Tip and Pours (but must carry label with you, or have it on your phone/readily available in general). Also tagging bottle (name, EPA reg#, signal word on container).
- Bronc Max is a water conditioning agent… you need to test your water to see if you need it. If you have hard water/well water source you need to add water to the tank first. But generally when combined with ammonium sulfate/it being a fertilizer really helps with uptake in plants.

- Fall treatment

§ Standard has been 1% glyphosate or 1% triclopyr amine – Up the % rate to 2% for triclopyr or glyphosate.

- Add in aminopyralid into IPM/ capture discussion of Opensight

- Residual for aminopyralid for up to seasonally dry wetland or up to water's edge… for wet/riparian areas, Polaris would be the best in closer to water

(especially if doing knotweed treatment). Generally noting that differentiation in using 1% or .5% depends on if 2lb or 4lb formulations.

Garlic Mustard Risk Assessments, Strategy & Long-Term Goals Check-in:

- Perhaps looking at habitat suitability analyses, doing risk assessments, considering long-term outlook… When looking at long-term goals, it's important knowing that eradication is really tough

- Maria has sites that have been treated for a very long time, though also mentions that they had to do manual labor because no herbicide use was allowed in the beginning. Wasn't able to use chemical from 2002-2008. Tree folks hard to buy in —how is this teeny plant going to affect trees? Again, the main thing is now figuring out what does it mean to keep doing this work, is there a need for emphasis on revegetation/increasing biodiversity now? They had capacity to visit some sites 2-3 times in a year, but it's been hard to say if that is sustainable going forward as they try to do other work. Hitting the edges was noted as effective again

- Michelle would like to put together an "outlook guide" that goes into the approach and long-term vision in garlic mustard control. BColumbia has put together a 5-year plan too, so it could be helpful to figure out a way to show what the work strategy is, and also provide a guideline for planning

    - However, EAB is now going to throw a wrench in what capacity/strategizing there is going forward, and other potential players are hard to expect in the future.

    - Tyler mentions that GM is going to maybe turn into this plant which becomes emphasized in high-value areas, with those "containment areas" which the management of is probably going to be more feasible in the long term. Needing to reprioritize list as EDRR species pop up. How do we use money effectively (prioritizing sensitive habitat areas?)

    - Allison says to recognize that eradication may not always be possible, and there is a need to communicate that. Beyond eradication what can we do? What is preventing spread? Improving health? In 20 years? Can we do herbicide 5 years, manually control for 2, and then put out competitive seeding. What does it look like if we do nothing? Is it success to still have 2% on landscape? We believe in controlling it, but we need to communicate that to public.

        § Amber says every site is different. At Fish Hawk Lake there were large amounts but is now almost eradicated…now only requires just small handpull effort rather than large scale chemical effort. I think we can get this area. It could have been a huge issue if we hadn't done anything. Which makes it money well spent. We can't let it get it to confluence, Columbia River.

- Improving health in systems after spraying, general seeding and followup, increasing competition to GM, mitigating allelopathic effect (though there's no local research available on this, we have to rely on studies on the East coast which may not be as representative of our environment). Basically, just trying to figure out the next steps/long-term impact of health of these spaces as we continue
    - § If you're not limiting the propagule production then it will spread. Strong point of how if we stopped intensive management and sort of let it naturalize, the main point of concern is that it's going to complicate management for our regional partners and the larger-scale effort …
- Thinking of how to improve messaging back to landowners, where they can tell them how to be involved and how to keep them engaged. And in general understanding that treatment is bit by bit/progressive, even though it's difficult to gauge the effectiveness
- Crucial pieces in long term that sometimes gets skipped is especially prevention … Any new strategies? It's been difficult to address this since it's not tangible, or something that's easy to see results in like regular treatment/management
    - § Maria mentioned that Cyclone fences are great as a means to dissuade people from entering certain spaces
    - § Note to focus treatments on vectors, making sure things aren't growing on trails/roads, etc. which are more difficult to contain than something like a satellite population
    - § Reinforcing sanitation aka dirty equipment/boots. Need to utilize water as a means to clean i.e. pressure washing? Should also work sanitation into contracts.
        - Spotlight spray (holds 20 gallons) and same price
        - 250 gallon attachment to contractor trucks/use of their water tanks
        - Rinsekit Pro (only 3.5 gallons) discussed as a potential for more effective cleaning
- Maria takes notice of what natives survive GM efforts such as sword fern (very resilient), bleeding heart doesn't care about imazaypr, fringecup and piggyback plant seem to do okay. Shrubs don't survive as well they get hammered, snowberry etc. Replanted trees seem to be fine. Wild ginger in WI, Goldenrod in sunny spots, CA brome is great (but not as aggresive as BWR) *No research of

allelopathy in our region. Can't imagine that GM isn't affecting micrhoizyae. Need to know allelopathy in West coast especially

§ Justin says we could do more competitive work with shade tolerant/perennial grasses. Can reseed a lot of species even with Open Sight. Once established can still spray over them. Erosion prevention too especially on those "dead" slopes. Usually don't see GM come up in dense turf/thatch.

- When considering very steep sites, there's the potential for using drones (though many is in forested areas). Microcontainment zones might make the most sense in terms of how available it is, as opposed to rapelling

- Any areas that aren't being managed?

  - MHCC, Beaver Creek, Troutdale (community college), John Cantina — Beaver Creek Canyon (Metro) before it empties into Sandry Rive. Garlic mustard has spread a bit as a result of recent site prep work, but it is being treated multiple times a year.

Next Steps & Closing:

- Up the rate of triclopyr/glyphosate in Fall to 2%? In IPM, add in aminopyralid (and maybe Opensight)

- Procurement and use of rinse kits

- Coming up with a long-term management plan (5 year)

[SK1]Remind me is this the correct mix order?