East Cascades Oak Partnership

Native Plant Materials Availability Assessment 2026

Native Plant Materials Assessment in the East Cascades

Introduction

Limitations to accessing local, genetically appropriate, diverse species of native plant materials has been a challenge for the majority of land managers and private landowners alike working on restoration in the East Cascades. With increased threat from invasive annual grasses and wildfire activity across our region, having native plant material resources readily available for restoration activities is increasingly important.

Problem Statement

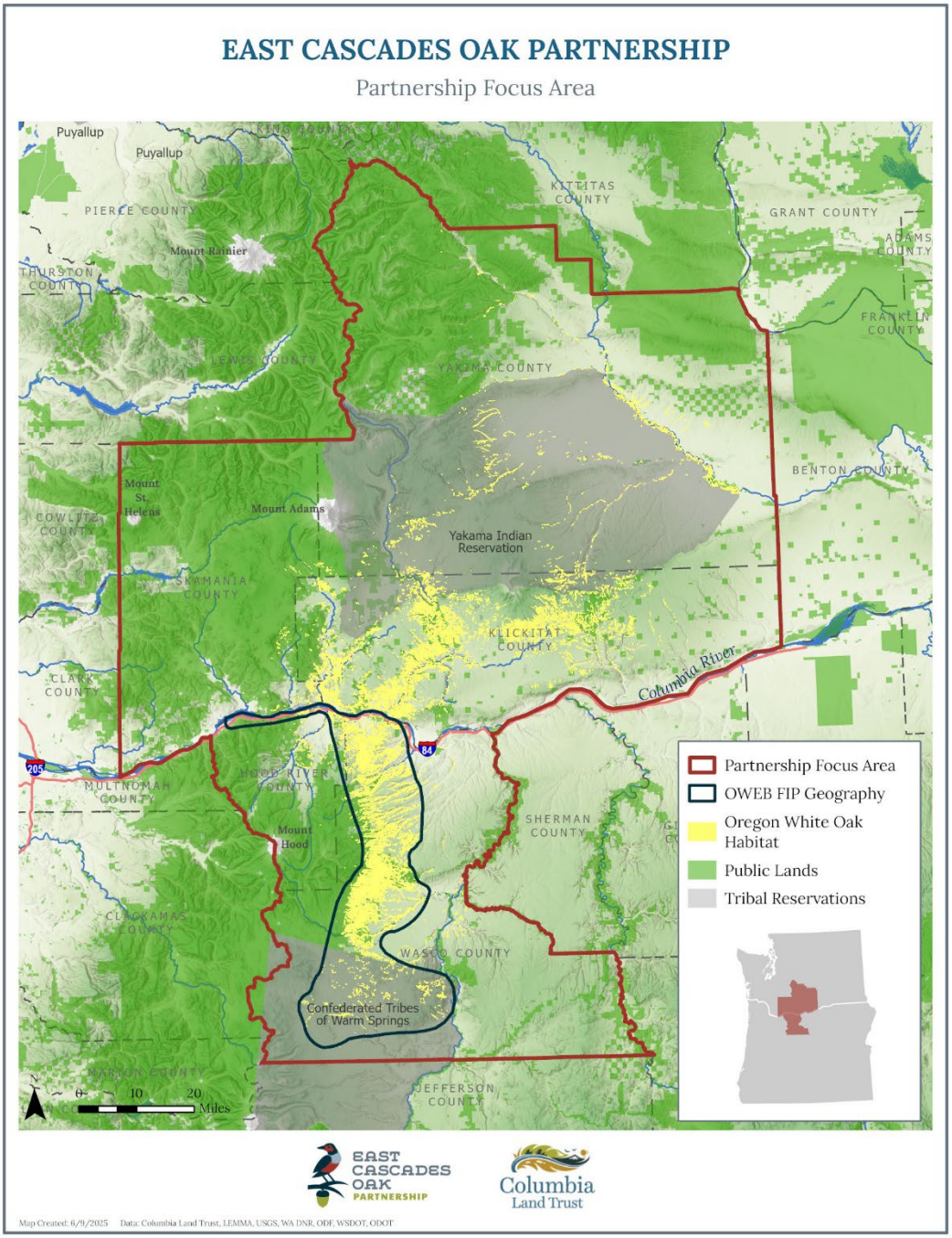
There is a lack of access to locally adapted native plant materials at the scale needed.

Access to a diversity of forb species is even more limited than grass species and finding genetically or ecologically appropriate plant materials from seed sources adapted to the particular conditions of the Columbia River Gorge and East Cascades is especially limited.

Wildfire and even some restoration actions can cause soil disturbances that promote the spread of non-native plants. These disturbances require rapid assessment and response to prevent affected areas from crossing ecological thresholds that diminish understory biodiversity and permanently alter plant communities. Changes to understory plant communities cascade through food webs and often contribute to overall declines in biodiversity. Best management practices suggest minimizing footprints of disturbances as much as possible and then implementing a treatment sequence of spraying and seeding. But this requires access to affordable, locally-sourced native plant seed in quantities sufficient to respond at multiple scales to disturbances. Demand can fluctuate significantly due to wildfire events or large-scale restoration investments while complexities of seed increase and storage limit how quickly operations can be scaled up.

Region and scope

The East Cascades Oak Partnership's (ECOP) work encapsulates the ecoregion of the East Cascades including the east slopes of the Cascade Range in both Oregon and Washington. We focus on the Columbia River Gorge, the east slopes of the Mt. Hood National Forest, the Confederated Tribes of the Warm Springs Reservation, and parts of the Columbia Plateau (but do not work south of the CTWS reservation). The scope of this assessment was tailored to a combination of where oak occurs on partner lands and spatially restrictive funding sources.



Participating Partners

ECOP assembled a Native Plant Materials Assessment Working Group in 2023 to explore the specific needs and limiting factors restoration professionals and private landowners are experiencing when trying to access native plant materials. Partners with the U.S. Forest Service (USFS) and Oregon Department of Fish and Wildlife (ODFW) had already been in conversation about difficult-to-purchase plant materials that would improve wildlife or pollinator forage on the Mt. Hood National Forest. The working group expanded those

conversations to include other partners implementing FIP-funded restoration work and collated results. The following is a list of working group members and the organizations they represent:

- Humble Roots Nursery- Drew Merritt, Kristin Currin
- Columbia Land Trust– Kate Conley, Brad Mead
- Columbia Land Trust East Cascades Oak Partnership staff - Kat Shepard, Stacy Simanonok
- ODFW- Hilary Duolos
- Yakama Nation – Jeanette Burkhardt and previously Adrianne Grimm
- Underwood Conservation District – Dan Richardson, Mia Farmer
- Wind River Trust – Jeff DeBell
- USFS Columbia River Gorge National Scenic Area – Brance Morefield
- USFS Mt. Hood National Forest – Christina Mead, Claire Addis, Julianne Baranowski
- Friends of the Columbia River Gorge Land Trust – Sara Woods, Frances Fischer
- Rae Selling Berry Seed Bank and Plant Conservation Program – Roxy Olson, Riley Forreider
- Retired NRCS botanist and Willamette Valley Seed Partnership participant– Kathy Pendergrass
- Private landowner, retired botanist, ECOP staff and current ECOP Steering Committee member – Mary Bushman
- Private landowner and business owner - Adria Sparhawk – Sparhawk Garden Design
- Special Guests include:
  Glacier Peak Institute – Marlena White
  Swamp Rose Ecology and Portland State University – Dan Krumm

Working Group Goals

The purpose of our working group is to:
1) Identify the limiting factors currently preventing access to native plant materials
2) Envision and develop new pathways that will expand access to ecologically appropriate native plant materials in the East Cascades for restoration and rehabilitation on public and private lands

SUPPORTING GOALS:

1) Identify the priority species needed for restoration in the East Cascades based on partner demand, ecological function/values, availability, ease of production and establishment
2) Identify the limiting factors that prevent these species from being accessible
3) Evaluate the feasibility of using trained volunteers and/or local contractors to collect native seeds and the capacity of commercial producers to grow-out collected materials
4) Identify strategies to increase priority species' availability

Assessment Approach

1) **Assess regional and national models for native seed programs to inform our approach**
    a. Interview native plant producers and seed partnership practitioners to learn about existing strategies and resources for increasing seed availability
2) **Determine partner need, priority species, and factors limiting availability of seed**
    a. Interview restoration professionals to determine partner need, including preferred species and current demand
    b. From these interviews, distil a list of priority grass and forb species for the East Cascades Oak Partnership. Lists will include key species (determined via partner interview, mapping exercise outcomes, and assessment of ecological values, grow-out feasibility, and current commercial availability) our partners want to have ready to deploy for current and future restoration needs. We will also identify the various ecological roles of those species.
    c. Assess current commercial availability and ecological suitability of priority species, and prioritize species for initial increase efforts
    d. Consult nurseries and seed distributors to examine reasons for shortages of any priority species
3) **Conduct a seed zone mapping exercise for priority species**
    a. Identify ecologically appropriate zones for our seed collection efforts based on the needs of restoration practitioners working under the ECOP OWEB FIP and the needs of local restoration practitioners we surveyed
4) **Identify seed collection strategies and possible grow-out sites and seed storage facilities in the East Cascades**
    a. Gather information from established protocols and regional experts on seed collection strategies
    b. Identify possible grow-out sites and seed storage facilities in our region
5) **Conduct a volunteer seed collection feasibility pilot project with the USFS**
    a. Facilitate a pilot project with USFS where native seed will be collected on Mt. Hood National Forest through contractors and volunteers and then sent to Benson Farms Inc. (BFI) for grow-out
    b. Assess the feasibility of a model where ECOP partners could purchase excess plant materials that are being grown out with BFI for the USFS

Outcomes

1. Regional and national models for native seed programs

The National Seed Strategy was published in 2015 and several states have developed their own state-specific seed strategies since then. Dani Marshall from Oregon Department of Agriculture Native Plant Conservation Program attended one of our working group meetings in January 2025 and presented about the Oregon Native Seed Collective. The Oregon Native Seed Strategy was published in 2025 and is a guidance document that supports ecological restoration and conservation through the procurement, preservation, and production of native seed in Oregon. The Washington Native Seed Strategy is still in the process of being drafted.

We also invited Alexis Larsen from the Institute for Applied Ecology to our June 2023 ECOP quarterly meeting where she shared about the Willamette Valley Native Plant Partnership and Coastal Native Seed Partnership. Following her presentation, we hosted a seed partnership panel discussion with Alexis Larsen, Drew Merritt and Kristin Currin from Humble Roots Nursery, Adrianne Grimm from Yakama Nation Climate Action Project, and Christina Mead from the Mt. Hood National Forest. We discussed how each is involved with native plant restoration, how they make decisions on what to collect or grow or plant, the biggest barriers to native plant production, and assisted migration.

We held a discussion with Kathryn Prive of The Understory Initiative, after which the working group became interested in adapting the model of working with local farmers and producers to take on native seed production at smaller, localized scales. To pilot this concept, partners with Wasco SWCD, Columbia Land Trust, and working group member Adria Sparhawk are talking about potential production pathways for the OWEB-funded Mill Creek Ridge project.

Interviews with local producers and other plant partnerships included discussions with:

- Staff from BFI, the largest local native seed producer
- Mathew Shinderman with the Northwest Native Plant Hub
- Jasmine Cutter, native seed program coordinator and manager of revegetation and restoration projects at Grand Teton NPS
- Berta Youtie with Deschutes Basin Native Plant Seedbank
- Kathryn Prive with The Understory Initiative

2. Partner need, priority species, and challenges

We described the gap in available plant materials by collating materials about current challenges to native seed production and collection. We then examined existing resources against the needs of restoration practitioners. We located over 25 native plant material producers/growers in the Pacific Northwest and six that offered seed cleaning services. View the ECOP Native Plant Materials List here or by visiting the EastCascadesOakPartnership.org website.

A foundational step for our working group was to survey local restoration practitioners to understand current and past demand, gaps in availability, and established sources of materials. Ten local practitioners from state and federal agencies, tribal departments, soil and water conservation districts, and nonprofits responded to surveys.

- Several restoration practitioners are unsure what plant species to use in their restoration project (especially forbs). They also sometimes lack plant identification skills.
- Grass seed is more readily available than forb seed. ECOP partners expressed a desire for forb seed but are unsure where to purchase it; when it is available, the high cost of forb seed is a deterrent.
- Plant species endemic to the Columbia River Gorge are limited and expensive to obtain.
- BFI Native Seeds is the most commonly used native plant material producer. They don't collect many species from the Gorge.
- Most practitioners use seed since it is easier to acquire and cost-effective over larger areas, but some use plugs depending on the plant and site specifics.

We found that it was challenging to characterize demand for native plant seed. There are varying levels of demand from year to year, due to the sporadic nature of restoration and the unpredictable nature of wildfire. We were also cautioned by peers to be skeptical of demand characterization exercises, especially during times of funding uncertainty. Partners may express interest in specific species but then may not have adequate funds to purchase the materials. However, getting a baseline on regional demand for native plant materials is an important step in our assessment to help us understand what species to prioritize and why. It can help understand an average beyond which we can store excess in a seed freezer.

From these surveys and conversations, the working group identified over 80 native species partners expressed interest in. A table of these species and their respective restoration values and characteristics was adapted into ECOP's management guidance webpages. To prioritize the species list, we assessed how efficiently they could be established (workhorse species), ease of collection and grow-out, current availability, ecological role, and potential for use across multiple Ecological Site Descriptions (see definition under "Species by Ecological Site Description" section) and seed zones in the East Cascades. Following this exercise, the group voted on top 10 species from the lists for both grasses and herbaceous species. These species are included in ECOP's management guidance webpages.

The following species were identified as important and preferred for use in restoration projects across our region. These species are not all available commercially, but those that are, are not available at scale, may not be collected from an ecologically appropriate site, or may be prohibitively expensive. Overall, grasses were found to be more available than forbs, so our work has prioritized addressing forb availability first. Many of the following priority grass species are available from a commercial source (e.g., BFI) or other smaller scale producers (collection sites vary in ecological appropriateness and cost varies, as well).

Woody shrubs and riparian plants were not considered in this assessment. Riparian species make up a small percentage of the oak landscape where ECOP FIP restoration projects take place. Since the working group prioritized seed over plugs or cuttings, woody species seemed less appropriate. Furthermore, Underwood Conservation District is working on growing woody and riparian species at the Wind River Nursery site which means there is already a new pathway for these materials in the hopper.

Priority forb species

- *Achillea millefolium* (common yarrow)
- *Asclepias fascicularis* (narrowleaf milkweed)
- *Balsamorhiza* spp. (balsamroot species)
- *Camassia quamash* (small camas)
- *Clarkia* spp. (clarkia species)
- *Collomia grandiflora* (large-flowered collomia)
- *Eriogonum compositum* (arrowleaf buckwheat) or E. *elatum* (tall woolly buckwheat) or E. *niveum* (snow buckwheat)
- *Eriophyllum lanatum* (Oregon sunshine)
- *Heterotheca villosa* (hairy false goldenaster)
- *Lomatium* spp.- especially *Lomatium nudicaule* (barestem desert parsley) and *Lomatium brevifolium* (nineleaf biscuitroot)
- *Lupine* spp. - especially *Lupinus arbustus* (longspur lupine), *Lupinus latifolius* (broadleaf lupine), *Lupinus lepidus* (Pacific lupine), or *Lupinus bicolor* (miniature lupine)
- *Madia* spp. (tarweed species)
- *Phacelia hastata* (silverleaf phacelia)

Priority grass species

- *Bromus sitchensis* (Alaska brome)
- *Calamagrostis rubescens* (pinegrass)
- *Elymus glaucus* (blue wildrye)
- *Pseuodoroegneria spicata* (bluebunch wheatgrass)
- *Festuca idahoensis* (Idaho fescue)
- *Koeleria macrantha* (prairie junegrass)
- *Poa secunda* (Sandberg's bluegrass)
- *Achnatherum lemmonii* (Lemmon's needlegrass)
- *Elymus elymoides* (bottlebrush squirreltail)

Priority sedge species

- *Carex geyeri* (Geyer's sedge)

Species by Ecological Site Description

During our assessment, we attributed species by Ecological Site Description (ESD). The ESDs are a component of ECOP's Current Condition Assessment Tool which has been deployed on ~10,000 acres of priority oak habitat to inform restoration opportunities and will be used by partners and private landowners to classify oak sites and discern appropriate management guidance. By including the ESDs in our species assessment outputs, we have created recommended species lists for nine unique habitats in our very ecotonal priority geography. This elevates our partnership's management guidance and provides crucial data to restoration practitioners around the specific species they might include to protect biodiversity in specific oak systems. As the tool continues to be deployed, we can calculate acres of certain ESDs assessed and use this to characterize need for the species attributed to those sites.

3. Seed zone mapping exercise

The extremely ecotonal landscape of the Columbia River Gorge and East Cascades, rapidly changing conditions in the trailing edge, and new thinking about novel plant observations have generated challenges around defining what is genetically appropriate. As a result of this exploration of seed zones in our project areas, we reframed our efforts around what partners agree is *not* tolerable.

From our ECOP member surveys, we determined that BFI Native Seeds (based out of Moses Lake, WA) is used most frequently by restoration practitioners and is the largest regional producer of native plant materials. We interviewed BFI to determine where they collect the materials most widely used by our partners. We then reviewed the seed zones and elevations where seed is being applied in the ECOP geography. While this process revealed many limitations in access to highly localized priority species, it also revealed that our priority grass species are more available and genetically acceptable to partners. Some forb species are available and tolerable.

Summary of assessment methodology

USFS staff compiled a map of the East Cascades region displaying seed zone map layers (Appendix A). Seed zones account for minimum winter temperature and aridity (factors that most commonly affect plant viability). Our native plant working group examined the seed zones within the ECOP geography and looked at current partner project areas. We were able to identify three common seed zones within our FIP geography:

- 25-30 Deg. F / 3-6 aridity
- 20-25 Deg. F/ 3-6 aridity
- 30-35 Deg. F / 6-12 aridity (only in Columbia River Gorge corridor)

From that map, we added BFI's collection sites for grass and forb species from our prioritized species lists (Appendix B and C, respectively) to determine what seed zone the species were being collected from. Four grass species were assessed: prairie junegrass

(*Koeleria macrantha*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Idaho fescue (*Festuca idahoensis*), and bottlebrush squirreltail (*Elymus elymoides*).

- For prairie junegrass, one collection site was in a neighboring seed zone to one of the three listed above and one was not in a relevant seed zone
- For bluebunch wheatgrass, two of the collection sites were in a matching seed zone to those listed above and one was not in a relevant zone
- For Idaho fescue, one collection site was in a matching seed zone and one was not in a relevant zone
- For bottlebrush squirreltail, both collection sites were in a neighboring seed zone

Four forb species were assessed: common yarrow (*Achillea millefolium*), silverleaf phacelia (*Phacelia hastata*), broadleaf lupine (*Lupinus latifolius*), and snow buckwheat (*Eriogonum niveum*).

- Common yarrow had one collection site that was in a neighboring seed zone
- Silverleaf phacelia, broadleaf lupine, and snow buckwheat's collection sites were not in relevant zones

Rethinking seed zones

Danielle Marshall with the Oregon Native Seed Strategy and Oregon Native Seed Collective challenged our thinking around the utility of seed zones and the use of terms like "genetically appropriate." Following their own assessment, they concluded there was not enough data on different native species used to characterize seed zones for it be the sole tool for decision making around a plant's ecological appropriateness for a project. Danielle suggested using seed zones only as a jumping off point and to also rely on local expert knowledge and gut checks for the ecological appropriateness of collection sites.

In February 2025, ECOP-dedicated staff Stacy Simanonok and Kat Shepard interviewed PhD student and Portland-based business owner Daniel Krumm. Dan's work focuses on breeding plants from diverse genetic populations with the intention of stewarding the species' natural genetic variations toward a desired trait, especially drought tolerance. His PhD work focuses on one of our team's priority grass species, Bottlebrush squirreltail (*Elymus elymoides*), and two other perennial grass species. Dan suggested that focusing on preferred seed zones is a fine place to start to capture local adaptations, but that diversity of genetics is ultimately more resilient in the face of rapid ecological change. We discussed the idea of incorporating seed collected from further east and from drier environments, which would exclude Willamette Valley collections, and conducting grow-out further west where the greater precipitation rates and milder winter temperatures could make plant materials less suitable.

Initially, our goal was to identify a few seed zones that would work for all ECOP partners. Because of this learning, we altered our strategy to focus on diverse genetics from strategic places rather than fixed seed zones.

4. Seed collection strategies, grow-out sites, and seed storage facilities

Collection

We hosted two native seed collection workshops with local experts Drew Merritt and Kristin Currin from Humble Roots Nursery in summer 2023 and 2024 and one more seed collection event in summer 2025. Learning focused on specific phenological nuances for priority species in our region as well as seed cleaning considerations. Events like these help ECOP partners learn methodologies for collecting priority forb seeds which they can then collect themselves or with volunteers while waiting for commercial resources to catch up. This work empowers land managers to include small collections of priority species to protect biodiversity while larger-scale solutions are developed.

New partners at Glacier Peak Institute connected with Friends of the Columbia River Gorge through ECOP's working group and have begun the process of growing out species for restoration in the Burdoin Fire footprint utilizing Department of Natural Resources post-fire restoration funding resources. Glacier Peak Institute is developing a native seed nursery and requested information from the working group to inform their species selection.

Also a result of networking through the ECOP working group, the federal program "Seeds of Success" (SOS) has been permitted to begin seed collection on Columbia Land Trust properties beginning summer of 2026. Part of the collection agreement includes a requirement that they submit maps of collection sites for all species they collect (some of which are on our priority list). We can use this information to deploy volunteers and contractors to collect from these sites in the future. SOS is using these collections for grow-out supporting federal projects, but 1 lb. of each species of their seed must be returned to the Land Trust and to be used for restoration.

We also interviewed the Native Seed lead with Grand Teton National Park to learn about their strategies for coordinating volunteers to collect seeds, including how to navigate variable and unpredictable plant phenology. Her recommendations around volunteer event timing is informing our coordination and deployment of volunteers and working group partners to collect priority forb species for use on restoration projects. She recommended prioritizing collection events for later in the season, setting a regular date for collection, but keeping multiple target species in mind for collection dates so you can pivot the species to collect rather than rescheduling the event. She also recommended a group size of 10 – 15 people to be manageable and avoid overcollection. If a larger number of volunteers is available, make sure to split into multiple groups and spread them out.

Grow-out

Because some of our priority species were identified as problematic for commercial producers, they would need to be grown out by our partnership. If we pursue seed grow-out at smaller "boutique" scales, we need to identify viable grow-out locations for future collections. The following have been identified:

- **White River Wildlife Area (WRWA): WRWA is mandated to relieve elk browse on neighboring agricultural fields by providing high-quality forage.** Current non-native forage fields could be converted to native plant fields with the intent of meeting the mandate while also increasing supply of seed for those plant species. ODFW's staff is pursuing converting a small area (1.4 acres) into a pilot native plant grow-out for ODFW's restoration projects and sharing materials with partners.
- **Wind River Nursery**: There is a large, primarily grass-dominated area at the Wind River Nursery north of Carson, WA that has potential for growing out plant materials, as well as facilities for seed cleaning and storage. The working group attended a site tour in spring 2025 to scope the space. The surrounding plant community indicates the site experiences more moisture than many of the restoration sites in our ECOP geography. With ongoing climate change, a drier versus wetter site may be preferable, but the site could support grow-out of many of our priority species. Underwood Conservation District (UCD), an ECOP partner, has acquired funding to begin growing woody-stemmed riparian species at the nursery and is increasing their operational capacity there. They are interested in partnering with ECOP's working group to expand their focus, potentially including grow-out for seed increase and utilizing facilities for seed cleaning and storage. Funding must be secured by either the working group or UCD to elevate this collaboration.
- **Mill Creek Ridge Natural Area**: This Columbia Land Trust property south of The Dalles, OR has a 1-acre field that could be used for grow-out of certain "boutique" species, like balsamroot and lupine, that aren't commercially viable due to challenging cultivation factors (ex. balsamroot can take many years to flower and produce seed, making it cost-prohibitive for many commercial operations). This could also be used as a pollinator planting, which opens the door to new funding and education opportunities.
- **Friends of the Columbia Gorge Land Trust Pollinator Garden in Mosier**: This site has been established and could serve as a good collection site for boutique species that are not commercially available.
- **Glacier Peak Institute native plant nursery:** This Darrington, WA-based nonprofit is starting a native plant nursery that will support STEM education development for youth. They requested oak understory native plant species recommendations from our group. They are working on partnering with Friends of the Columbia River Gorge to grow out species for use on a Washington site that was impacted by the Burdoin Fire in summer 2025.
- **Local School collaborations were explored:** An elementary school in The Dalles, OR was assessed for a small grow-out which could serve as a collection site for the most boutique species we've prioritized, knowing they will not be commercially viable to large scale producers. Additional local schools have some nursery infrastructure but funding will need to be identified along with a project manager. Not currently included in our funding plan. School staff capacity is the limiting factor for this project to move forward.

- **BZ Corner Field:** A working group member's 2–3-acre property is being assessed as a potential grow-out site by Humble Roots Nursery Staff.
- **Wasco SWCD property** in Wasco County is being scoped as a potential grow-out site. It is 7 acres, in our priority geography, and has irrigation. Wasco SWCD staff is working with Columbia Land Trust staff to move this project forward.

Storage

Seed storage is a crucial element of increasing supply of seed. Because small collections of highly localized species were determined to not be commercially viable during our assessment, they will need to be collected by local land managers or volunteers and stored. New paid storage opportunities were evaluated, potential for development of a partnership seed storage facility was assessed, and low-cost opportunities for small collection storage identified.

Current seed storage facilities include a seed freezer at the Institute of Ecology in Corvallis, OR where they charge a $100 one-time initiation fee and then $3/sq ft per month. Another option is The Rae Selling Berry Seed Bank in Portland, OR at a rate of $4/sq ft per month. Some seed storage options are dependent on the participating organization – e.g., the Mt. Hood National Forest stores their seed at the Bend Seed Extractory, but that facility is limited to federal agencies. It is possible these fees can be included in restoration grants that fund the work when applicable. Columbia Land Trust has begun storing small amounts of seed here.

The Native Plant Materials Working Group toured multiple seed storage buildings at Wind River Nursery in March 2025. Seed storage seems promising here, but funding needs to be secured to rent the space and bring it back online. Improvements to the buildings include finishing the ceilings and fabricating coolers, while other costs include furnishing a cleaning and storage room. Rent can be subsidized by working on improvements to the space, which could potentially be supported with volunteers but would also require contractors and significant equipment purchases. No partners currently have funding available to support monthly rent payments.

A Community Green Infrastructure grant from Oregon Department of Land Conservation and Development was identified as a potential method to fund development of seed storage at the Wasco SWCD office or another partner office. New restrictions on the project locations in the 2025 funding cycle prevented the group from moving forward with the application. The next cycle is in 2027.

A final option we are exploring is converting basic refrigerators and desiccants to fulfill this need on a small scale. We identified the ideal storage conditions using guidance from the Rae Selling Berry Native Seed Bank at Portland State University and are piloting small scale storage using a refrigerator at the Columbia Land Trust office.

5. Collection and grow-out feasibility pilot project with the USFS

Joining USFS seed increase pathways

USFS Mt. Hood National Forest staff mapped potential seed collection zones for larger-scale volunteer seed collection events. As of fall 2025, their efforts had not resulted in identification of a viable collection location due to small populations of desired native species and/or the presence of invasive species nearby that could contaminate collections. USFS was hoping to work with regional producer BFI to grow out prairie junegrass, which is an ECOP priority grass species, but changes in federal administration priorities followed by a government shutdown prevented this contract from being executed. Seed collected for this effort remains in storage.

Our working group discussed the possibility of other ECOP partners being able to purchase the second cut of seed produced from this BFI grow-out, utilizing the excess materials not needed by the USFS. This second cut strategy would test whether demand from other partners is sufficient to support the continued grow-out of the prioritized species in current commercial pathways. BFI said that a group can request the second cut of seed at the outset, or we can wait to see what is produced. Since we do not currently have suitable seed storage locations, planning a large purchase upfront is not feasible. If the goal is to have an East Cascades/Columbia Gorge seed base available annually for purchase in small lots, BFI will need to know what an approximate need per year might be from ECOP members and other interested entities to maintain seed beds beyond year 1 and 2. If BFI has suitable demand for a good amount of seed annually, they could keep fields in production, but if they do not have the demand, they will retire fields.

Due to increasing constraints and changing priorities in the federal landscape, depending on federal partners to increase seed availability for private and nonprofit land managers in a long-term way cannot be relied on.

Volunteer seed collection efforts

Despite limitations of the USFS collection and grow-out feasibility project, the working group successfully coordinated with partners and volunteers for seed collection events focusing on several priority species. We now have a collated a list of volunteers interested in this work and additional partners have joined the working group as a result of these volunteer collections.

Volunteer resources identified by the group include:

- The Rae Selling Berry seed bank and Portland State University have access to mailing lists for students who could support volunteer collection and seeding events. Students have better weekday scheduling availability.
- Mosier White Oak Group has the potential to offer volunteers with varying levels of skills.
- Oregon State University's Gorge Naturalist program
- Columbia Land Trust volunteers
- Cascadia Wild, a nonprofit from Portland
- Individuals cultivated through the ECOP community
- Native plant society local chapters

- Friends of the Columbia River Gorge and their volunteer lists

ECOP working group members and volunteers were utilized at the following seed collection or distribution events:

- Balsamroot seed collection at Columbia Land Trust's Mill Creek Ridge Natural Area near The Dalles, Oregon in June 2024. Collected seed is being stored at Columbia Land Trust's office. Arrowleaf balsamroot is an ECOP priority species, and the seed will be deployed directly onto an OWEB-funded restoration site that can be used for future collection if desired.
- Tall woolly buckwheat seed collection from Mill Creek Ridge in fall 2025. Seed is being stored at a facility in Corvallis, OR and will be deployed onto the ECOP FIP restoration footprint in the future.
- Assisted the USFS Mt. Hood National Forest staff with reseeding efforts in the South Pen project area in December 2024. Volunteers distributed seed across 31 acres into burn scars and around the site in spots where bare ground was visible with the goal of preventing establishment of invasive annual grasses. The seed mix deployed included: blue wildrye, Idaho fescue, slender hairgrass, California brome, yarrow, and broadleaf lupine.
- In January 2026, volunteers and partners revisited a different section of the Mt. Hood National Forest South Pen restoration site and seeded across 37 acres.

The strategy of using volunteers to put seed down vs. collect seed is much simpler from a timing perspective because it does not rely on phenological events like seed ripening that only have a short window of time for collection. A single date and time could be reserved weeks in advance of a seeding event. However, it can be challenging to recruit volunteers given the often below-freezing weather in winter months. Another challenging factor is the remoteness of the area. Our volunteers mostly came from Mosier and The Dalles. With sites this far into the East Cascades, volunteers from the metro areas of Portland or Vancouver become unlikely to attend, whereas locations near Hood River can recruit from the more populous western Gorge and metro area.

Now that a roster has been assembled, this volunteer group can be deployed by different partners in the region to elevate collection and seeding efforts described in their project proposals.

Assessment Takeaways

Limiting factor summary

- Many desirable native forb species are not available commercially.
- Some native forb species are available from commercial growers but not at scale and/or collected from disparate seed zones. Availability did not equate to ecologically appropriate for many species assessed.

- Many commercially available native forbs are extremely expensive, making larger-scale restoration projects with these species cost-prohibitive. Contracting large producers like BFI to initiate new beds and grow certain forbs creates a very expensive restoration project budget, including contractor costs for collection. Unfortunately, without a coordinated schedule of demand, contracting for a single restoration project also does not equate to continued, maintained grow-out of the species by the producer, which could eventually drive down the cost.
- Some native forbs are challenging to collect and/or difficult to cultivate.
    - Some species have time-intensive requirements to facilitate germination.
    - Timelines from collection to grow-out can be too lengthy from a commercial profitability standpoint. For example, it can take up to 10 years for balsamroot to start producing enough seed to be profitable.
    - Commercial producers may not have the knowledge to efficiently or successfully grow each priority species.
    - Demonstrating a consistent, sustained demand for ecologically appropriate forb species is challenging, which means these species are likely to remain in contract grow-out only, being too financially risky for large scale producers to maintain a population without demonstrated marketability.
- There is a lack of nursery space and capacity in our ecoregion- there are more options in the Willamette Valley, the western side of the Gorge, or further east than in our area.
- Most land managers working in relevant fields in our area do not have additional capacity to dedicate to expanding native seed access.
- Certain species are hard to identify, even for commercial nursery professionals.
    - Our region has very localized species variants, which introduces further difficulties to commercial viability. Examples include *Lomatium columbianum* and Gorge-specific balsamroot and lupine species. Preserving these species is a crucial part of maintaining biodiversity of our local ecosystems.
    - Demonstrating sufficient sustained demand for a large-scale producer to invest in these species isn't feasible. There are multiple lupine species, for example, and different ones might be needed at different sites, creating tension about which ones to grow out how to prevent contamination. We want to create a useful product stream for as many land managers as possible but also address the specific roles and functions that unique and endemic species can provide, and consider the survivability of certain species in each ecological site.
- The ecotonality of our region made selecting seed zones and creating generalized seed mixes especially challenging, further complicating our ability to characterize demand for commercial producers.
- Wildfire response may create outsized demand in one year that is different than the demand the following year, adding additional challenges to providing commercial producers with sustainable marketability of each species we'd like to see remain in production.

- Currently, we do not have dedicated seed storage facilities directly in the East Cascades for volunteers and most partners to utilize. Paid seed storage and cleaning have been found in Portland and Corvallis, OR.
- USFS capacity is limited and shifting federal priorities alongside government shutdowns have prevented progress. This makes piggybacking on federal seed-increase contracts more difficult and unpredictable. Federal partners also struggle to share materials across departments (Agriculture v. Interior) and with NGOs.

Key takeaways summary

- Additional funding is needed to address the gaps identified in this assessment. Funding is needed for:
    - Dedicated staff. Partner-generated grow-out operations modeled by other partnerships have funded staff to work on site-specific projects (e.g., East Cascades Native Plant Hub with Oregon State University and Friends of Columbia Gorge Land Trust Mosier planting).
    - Seed collection, bed initiation and maintenance.
    - Seed storage. A storage strategy is needed for seed collected by volunteers and restoration professionals to allow for larger collections.
- Native grasses are currently more available than native forbs.
- Sufficient demand must be demonstrated for commercial nurseries to undertake grow-out of species. This is uniquely challenging to characterize in our region.
- Some species will likely never be commercially viable for continued production due to their phenology and life history.
- Determining ecologically appropriate seed zones for collection within the East Cascades is nuanced. Data from existing seed zones may not have included enough diverse native species to be an accurate representation for all plants. Instead, other seed partnership professionals suggested relying on the assessments of local experts to determine if a collection site is appropriate.
- Partner groups have been making headway on small pollinator planting-style projects that could offer “boutique” seed collection sites for species that are not going to be economically viable for our local nurseries.
- Local knowledge regarding seed collection is available through experts who are willing to teach and willing to collect on contract.
- The working group provided regularly structured networking opportunities. Group members invited new partners, created new partnership opportunities with one another, and shared materials as opportunities and excesses emerged. While capacity remains a limitation for most participants, this regularly scheduled opportunity to network, support one another, and stay apprised and on track with our collective work to conserve and increase native plants on the landscape is creating a snowball effect, building momentum toward our shared goals and revealing new opportunities.

Takeaways from this assessment and from restoration, monitoring, and partner observations of restoration projects in our region have been translated into an ECOP

brochure titled “Oak Understory in the East Cascades”. The brochure covers the importance of Oregon white oak understory, threats and strategies to protect and restore the understory, species recommendations and plant ID resources.

What Now? The Path Forward

Strategy 1: Continue volunteer collection of priority species

We need to establish ecologically appropriate seed collections of various sizes via volunteers or contracted professionals from diverse locations within our priority geography, including eastern locations. Collections can be used for direct-seeding in small-scale efforts, including the projects listed in section 4 and emergency application in sensitive areas following wildfire. Collections may also be shared with commercial producers to initiate larger grow-outs.

Task A: Mapping of potential collection sites is informed by the seed zone mapping exercises we conducted, and will be updated by the Seeds of Success program input, ECOP Condition Assessment Tool results, and by working group members’ knowledge.

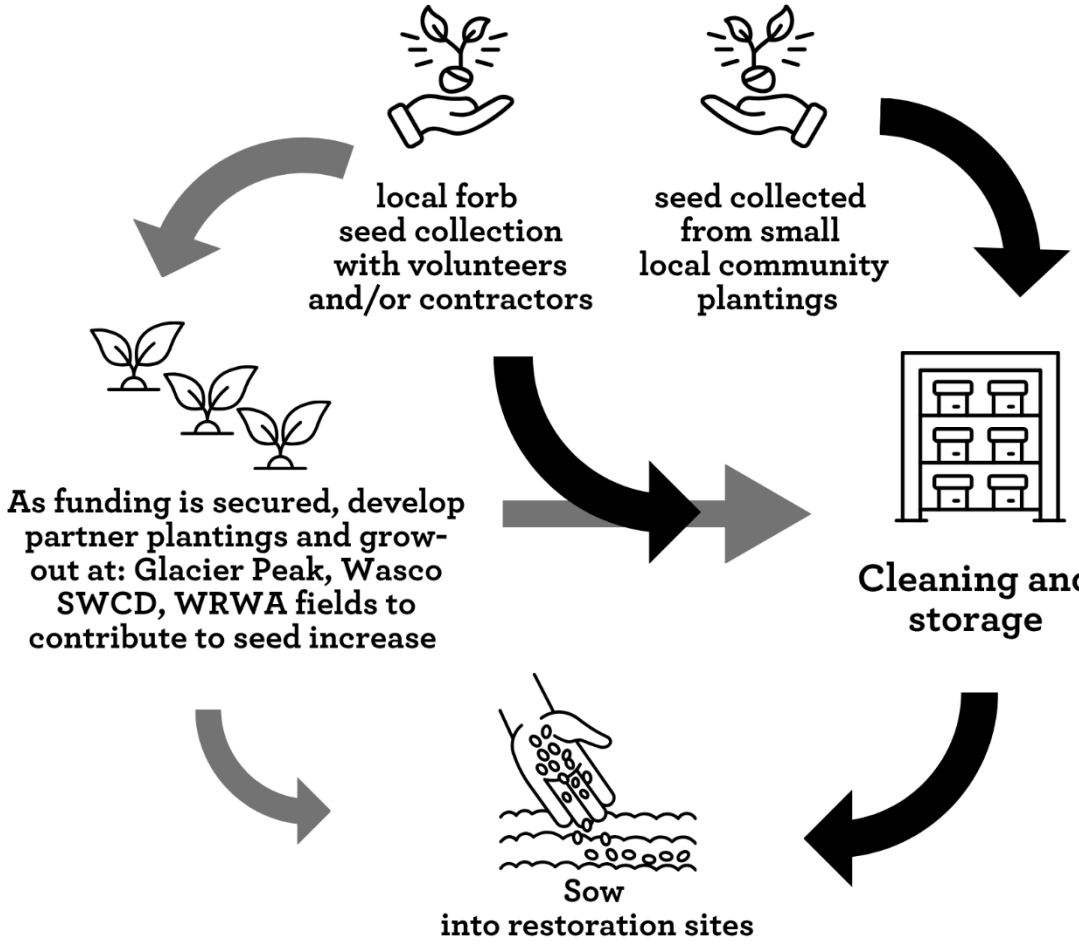
Task B: Maintain a task force of responsive volunteers trained to collect priority species. A diverse group of people with different availabilities will be needed to collect seed as soon as phenological conditions are appropriate. ECOP staff has committed to coordinating at least 2 volunteer seed collection or distribution opportunities per year in 2025, 2026, and 2027.

This group will either need a place to store the seeds they collect for future direct sowing or establish a pathway for seed grow-out before seed is collected. We’ve identified two viable seed storage locations available now (Institute for Applied Ecology and The Rae Selling Berry Bank). We are also committed to storing small amounts of seed at Columbia Land Trust’s office, and are working with Underwood Conservation District to explore seed storage and banking opportunities through their Tool Library and Wind River Nursery programs.

Since many of our priority forb species were determined to be commercially challenging to grow and demand was difficult to characterize in a way that would produce adequate profit for large-scale commercial growers, we will focus on small, localized collections of priority “boutique” forbs that could be deployed to supplement the commercial seed available for our region. This method will help protect biodiversity and increase the numbers of these important native species across the landscape, establish more naturally occurring seed sources, and help our group document and map additional collection sites. With a growing volunteer corps, capacity will increase to collect and deploy seeds from these new populations.

Potential grow-out opportunities have been identified on private lands (nonprofit land trusts and residential private lands), state agency managed lands, and at local schools. Volunteer-collected seed can contribute to starting these grow-outs.

The graphic below demonstrates the envisioned pathway:



Potential seed mix

There are a few producers who have native seed appropriate for our region especially grasses, but they do not have East Cascade seed mixes available that represent priority forb species collected from appropriate locations. A localized seed mix would be very useful for practitioners who lack the time or experience to learn what species to plant in East Cascades oak understory sites.

We can provide technical assistance to producers by assembling appropriate seed mix lists informed by our assessment of their collection sites to ensure appropriate genetics of the seeds in the mix. Offering a region-specific, pre-packaged restoration mix for purchase through established growers would increase the amount of appropriate seed species composition/biodiversity being deployed by restoration practitioners. We hope to continue assessing feasibility of this strategy with growers. It may be possible to pair this effort with the Decade of the Oak campaign to elevate marketing of any mixes produced, which could increase appeal for participating producers.

To successfully implement this strategy, we'll need to create a mix with genetics appropriate to the greatest number of sites in our ecotonal region, testing the viability of the mix in different conditions and sites throughout our region, and determining the best collection sites for the seed that will be used for grow-out.

Potential opportunities for increased networking opportunities

To ensure any excess plant materials find their way to a restoration site, we could start an East Cascades Plant Materials listserv, social media account, or virtual network, building upon the seed-sharing opportunities that naturally evolved from the networking the working group platform provides. This would allow organizations who have excess materials to share, or who know of potential seed collection sites for priority species, to disseminate information to other restoration practitioners in the area. Practitioners could also use this forum to make requests of producers, to advertise collection sites, or to find a home for excess plant materials. This could be hosted on the ECOP website or coordinated via social media.

Articulate a funding plan

Through this assessment work, it has become evident that significant funding will be needed to build capacity and secure resources necessary to address the limitations and opportunities we've identified through our assessment. A funding plan will be used to focus funding on strategy implementation including what is necessary to purchase equipment and secure facilities. A multi-year funding strategy should be developed, reviewed, and initiated by partners.

The funding plan will:

- Develop budget mockups and project summaries for each potential project
- Identify priority categories of need (cleaning equipment, staff time, admin time, facilities rental, etc.)
- Develop multiple funding pathways at different scales and scope to adapt to available funding
- Identify applicable grant programs

Priority funding needs will likely include: equipment for seed cleaning; facilities for storage; infrastructure for grow-out operations; contract labor and/or partner staff time to execute collection, cleaning, storage, grow-out, coordination, and admin.

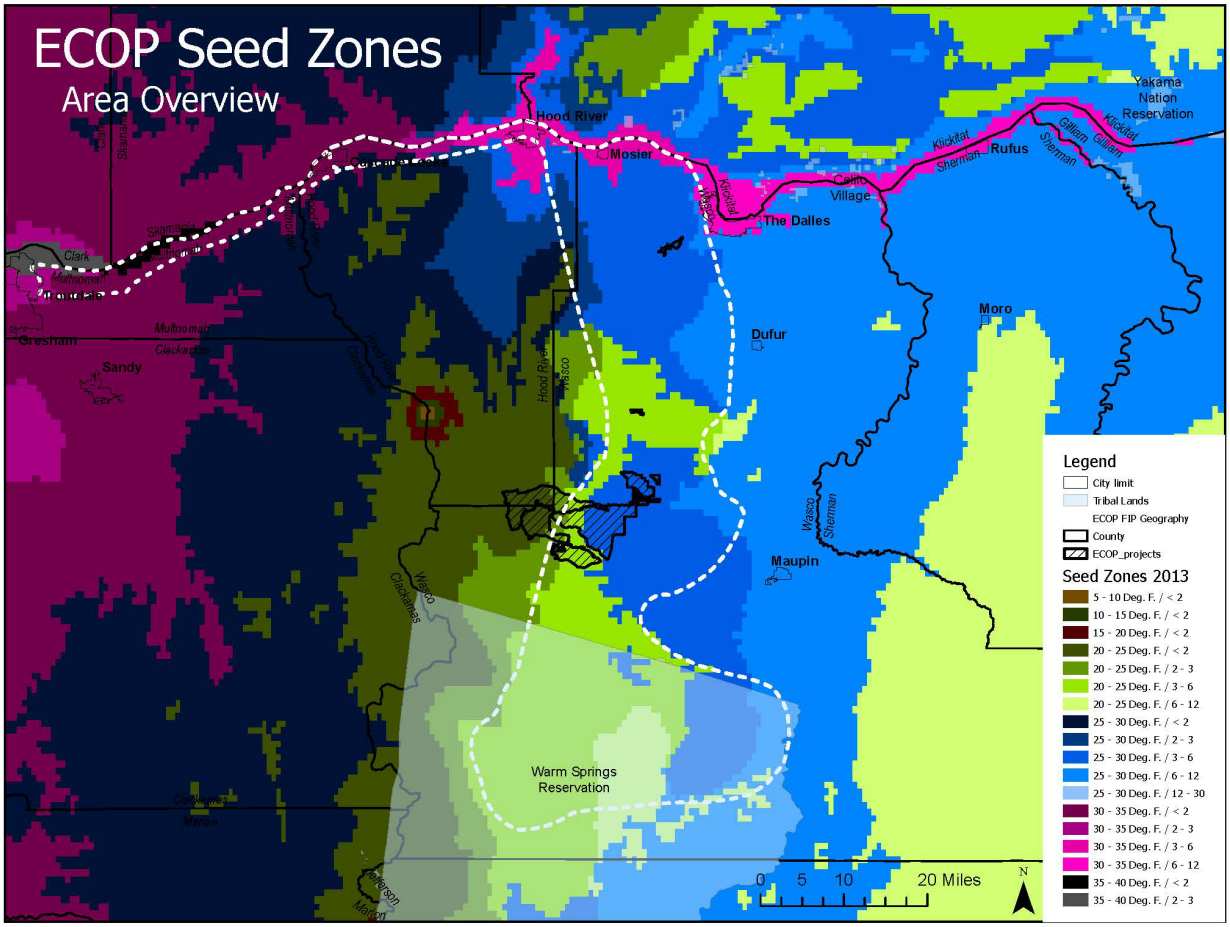
Appendix

A. ECOP Seed Zones within FIP Geography

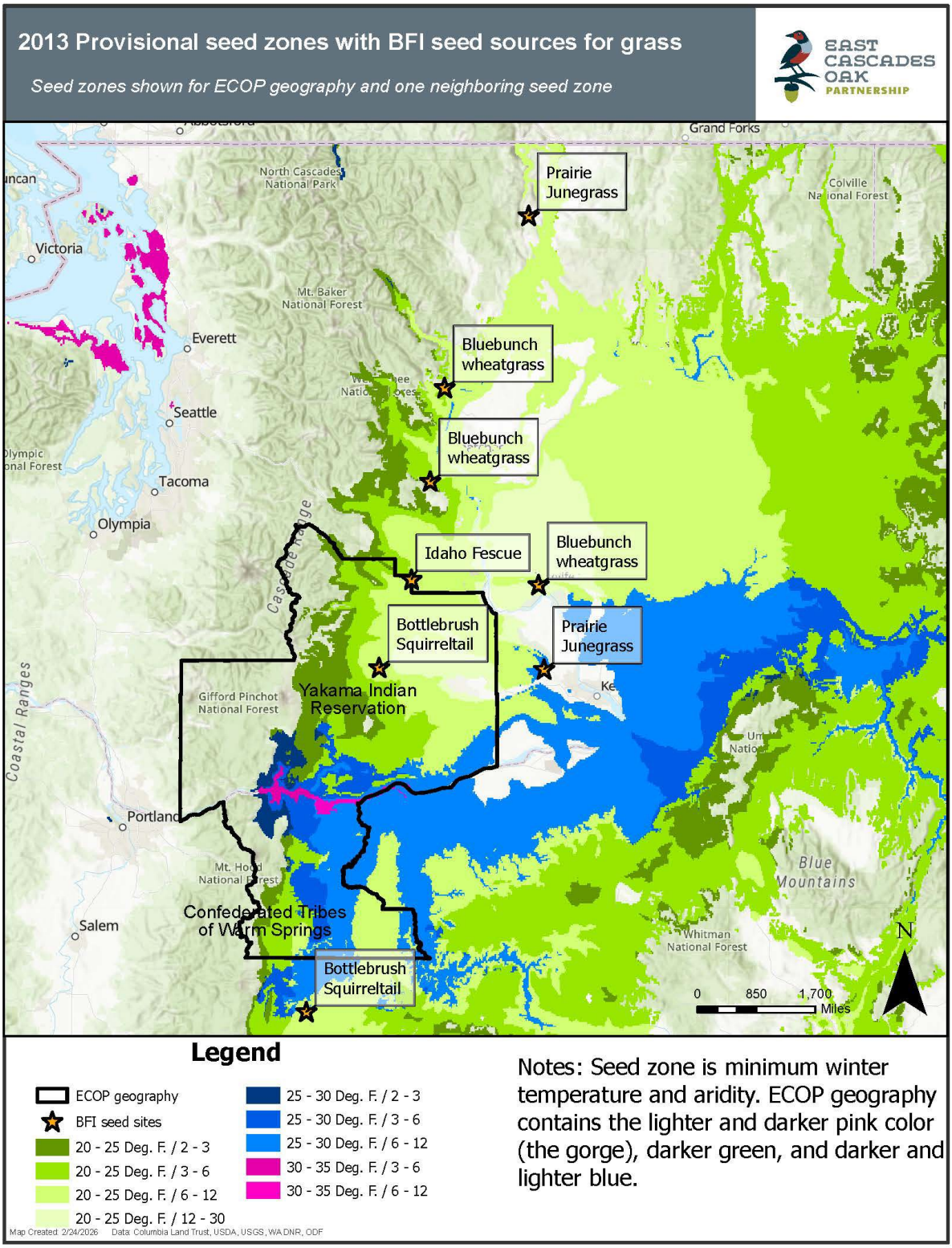
B. 2013 Provisional Seed Zones and BFI Seed Sources for Grasses

C. 2013 Provisional Seed Zones and BFI Seed Sources for Forbs

Appendix A: ECOP Seed Zones within FIP Geography



Appendix B. 2013 Provisional Seed Zones and BFI Seed Sources for Grasses



Appendix C. 2013 Provisional Seed Zones and BFI Seed Sources for Forbs