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Community Planning and Economic Development

Creating Solutions for Our Future

Joshua Cummings, Director

2022 Thurston County Community Planning Field Screening Guidelines for Prairie Habitat

Section 1 -

1.1 Purpose

Under the development of the Habitat Conservation Plan (HCP), it is the long-term goal of Thurston County to conserve and restore large, intact areas of prairie habitat in addition to smaller tracts of land within 1/2 mi of larger prairies (**Chapter 24.25.065 Thurston County Code (TCC)**). While the screening process described in this protocol focuses on the detection of diagnostic prairie flora listed in the CAO, the overall intention for prairie conservation under the CAO and pending the HCP is to protect a much broader range of prairie butterflies, birds and mammals, and habitat.

South Puget Sound Prairie ecosystems support a wide range of rare flora and fauna, some of which are listed under federal or state protection, including butterflies which are considered Species of Conservation Concern (SCC) or Greatest Conservation Need (SGCN). Particular attention is given to the protection of federally listed and imperiled butterfly species in Thurston County, such as the Taylor's checkerspot (TCB, *Euphydryas editha taylori*), Puget blue (*Icaria icarioides blackmorei*), hoary elfin (*Callophrys polios*), Oregon branded skipper (*Hesperia Colorado oregonia*), Mardon skipper (*Polites mardon*), and valley silverspot (*Speyeria zerene*) butterflies, and the plant species known to serve as host and nectar plants for these butterflies. Other federally listed and candidate prairie species include the streaked horned lark (*Eromophila alpestris strigata*), Mazama pocket gopher (*Thomomys mazama*), and the Oregon vesper sparrow (*Pooecetes gramineus*).

A delineated Critical Areas screening process provides assurance that land use projects proposed in potential prairie habitat are evaluated in a thorough, consistent, and repeatable manner. While this process may lengthen the time between permit application and approval where a habitat management plan (HMP) is required, it may also conserve financial resources and time in cases where an HMP is not required. The guidelines in the following sections are to be applied in a preliminary site visit. These guidelines are based on the constraints of the CAO policy, the CAO Prairie Definition, and certain techniques included in the draft Prairie Habitat Assessment Methodology (PHAM) protocol (Thurston County, Institute for Applied Ecology (IAE), US Fish and Wildlife Service (USFWS), Washington Department of Fish and Wildlife (WDFW), and Center for Natural Lands Management (CNLM)), and WDFW's draft "Protocol for Mapping PHS Westside Prairie."

1.2 Introduction

When a development application is received for a property mapped with glacial outwash soils known to support prairie habitat, as indicated in Thurston County Geodata (**Appendix A. Figure 2**, p. 15), a site visit must be conducted to screen for prairie critical areas (**Chapter 17.15.730, 24.40.010, 24.35.266 and 280 TCC**). These site visits entail a thorough screening process to determine whether prairie habitat, based on floristic composition, may be present and/or potentially impacted by proposed land use activities (**Chapter 24.05.027 Thurston County Code (TCC)**). Current CAO policy does not give Thurston County the authority to restrict development solely based on the presence of certain soils (**24.03.010 TCC**), although soil types trigger a need for prairie review and may result in the requirement of a Critical Areas report in some instances (**Chapter 25.35.260 (C) TCC**).

Mima-type mounds, described as “unique geologic features” in the CAO prairie definition (**Chapter 24.03.010 TCC**), are considered important prairie features due not only to their unique formation, but also to the heterogenous topography and microclimates these formations provide, which support mating and nectaring behaviors of imperiled butterflies such as the Oregon branded skipper and the valley silverspot (Ann Potter, pers. Comm.). Additionally, deeper soils on Mima mound tops and swales between the mounds sustain rare prairie flora during periods of drought (DelMoral, 1976; Sprenger, 2008). Therefore, Mima mounds shall be preserved to the greatest practicable extent even in the absence of native prairie flora (**24.03, Table 24.5-4 TCC**).

In the event that the appropriate number or presence of at least three plant species from Thurston County’s CAO target prairie plant list (**Tables 24.25-7 and 24.25-8, Appendix 24.25-1 in Chapter 24.25 TCC**) or Mima mounds or are detected within an area of proposed development, mitigation sequencing or an HMP may be required (**Chapter 24.35.260 TCC**). Alternative options to an HMP, as well as diagnostic prairie plant lists, are described later in this document (**Section 3, “When an HMP is Not Required,”** and in **Figure 3., Tables 1 and 2** (p. 8-10).

1.3 Preparation

While the County obtains permission to visit a site in question once a permit application is processed, it is a good practice to contact landowners ahead of time to let them know the date in which you plan to visit a site (**Chapter 24.01.035(D)TCC**). An appointment is not necessary unless a landowner specifically requests their presence during your site survey. **Site visits for prairie habitat should, if feasible, only take place between the period of April 1st through September, subject to varying seasonal conditions, when plant leaf morphology, flowering or fruiting will indicate the presence or absence of diagnostic prairie plant species.** While botanists experienced in prairie plant identification may recognize senesced vegetation, site visits outside this seasonal period may not capture the full range of plant species present. Bear in mind that screening conducted only during the later end of this time window may miss earlier-season plant species which have senesced, particularly during seasons with extreme drought. Ideally, two site visits would take place, one in spring and the other during the summer season, if time allows. This is often feasible for properties which also receive Mazama pocket gopher review.

Prior to visiting a site, view the parcel on Geodata including the LIDAR feature, which makes Mima mounds more visible in cases where shrub layer is thick or mounds are small. Print an aerial photo map of the subject parcel which depicts the boundary of the parcel, the area of alteration, staging areas, roads or access points, and areas of proposed landscaping (plantings, rock gardens, other areas of use or distribution). Each map should include a north arrow, the parcel number and address.

Section 2

2.1 In the field

Equipment Needed

| | |
|------------------------------------|--|
| 50 meter metric transect tape | Plant identification field guide |
| Compass | Hand lens |
| Pin flags/flagging tape | Ziplock baggies/labels for plant specimens |
| Hand held tally counter (optional) | GPS equipment for mapping |
| Camera | |

General Guidelines

Locate the development footprint and, if needed, use pin flags to mark the entire boundary; using metric tape, measure out 50 feet (15 meters) from the edge of the footprint on all sides to create a buffer, then mark its edge with pin flags. This combined area of the footprint and buffer are your **area of alteration** (PHAM Technical Working Group, 2013). The project proposal, including any driveways, septic or well sites, staging areas, roads, access points, or proposed landscaping, should dictate the level of review. Whenever possible, view the entire parcel; if the proposed land use project is for a subdivision or large-scale area of soil disturbance, or a general Critical Area Review Permit (CARP) review with no proposed building area, the entire parcel must be reviewed. Walk through the property, or at bare minimum the area of alteration, in a north to south or similar linear grid fashion (**Figure 1**, p. 6), with lines 5 meters apart. If visibility is poor, transects should be closer together. Use of a compass is recommended for maintaining straight, consistent transects. Scan for target prairie plants (**Figure 3, Tables 1 and 2**, p. 8-10). The following sections will determine whether the footprint needs to be moved, or whether further assessment in the form an HMP will be required. See also **Figure 4**, p. 11.

2.2 Within Building Footprint and Buffer: Prairie Habitat Screening

If target plant species are encountered walking your grid, mark the area of first sighting with a pin flag and record the following data:

- Check the appropriate plant species in the boxe(s) on the left margin of the datasheet (**Appendix A**).
- For each species classified as a Washington Natural Heritage Program (WNHP) rare plant or which serves as both a TCB and SCC or SGCN butterfly host or nectar plant, (indicated by bold font on attached target species lists (**Figure 3, Tables 1 and 2**, p. 8-10) and in the prairie screening datasheet (**Appendix A**, p. 13), circle “present” in the section to the right of the species name.
- For plants which are not known to have WNHP rare plant status or serve as both a TCB and SCC or SGCN butterfly host or nectar plant, count the number of individual plants of each target species in each cluster you encounter on your transects; circle a size class in the categories to the right of the species name:

- 1 = <25
- 2 = 25-49
- 3 = 50-74
- 4 = 75-100
- 5 = >100

- Continue your grid, repeating the procedure described above if other target species are encountered.
- If at any point at least three different target plant species, totaling in *at least 25 plants each* or meeting the presence/absence criteria based on imperiled butterfly use, are encountered within 5 meters of each other, the area in question meets the criteria to be established as occurrence of prairie. See **Figure 2**, p. 7 for examples of instances where prairie criteria is met (**Diagram 1**) or not met (**Diagram 2**).
- When prairie habitat is detected within the proposed building footprint or buffer, the landowner may be given the option to avoid impact by moving the footprint to a different location (mitigation sequencing), depending upon the size and floristic composition of the property beyond the area of alteration (**Chapter 24.01.010, 24.01.037(A) TCC**).
- If prairie habitat is detected elsewhere on the property, the landowner must be informed in order to avoid future disturbance of this habitat. Target plant species may be hand-drawn on the aerial map or logged using GPS equipment, depending on availability. Existing and ongoing agricultural activities may continue.

2.3 Collecting Plant Specimens

If during any stage of the survey you come across a plant you are unable to identify, collect a specimen. Each specimen should be collected so as to include as much of the entire plant as possible, including roots, leaves, and flower or fruit structures when available. Each specimen should be stored in individual Ziplock baggies, and include a label depicting the parcel number, date, transect or plot number, and suspected genus, species or family, as applicable. Specimens should be stored in a refrigerator if they cannot be immediately identified back at the office. Also take photos (approximately 1 meter away from the plant, using “macro” setting) and a GPS reading. If you suspect the plant in question to be a rare species and it is in low abundance onsite, take only photos.

2.4 How much of a parcel should be surveyed?

Although the most critical screening process is to take place within the area of alteration, assessing an entire parcel is ideal. This process informs the landowner of potential habitat impacts if future developments are proposed elsewhere on the property, may locate alternative locations for the building footprint and buffer if development activities require relocation, and informs landowners of their future land use and management options. If impact avoidance measures must be taken when prairie habitat is detected (see **Section 3**), you will need to assess more or all of the property.

Section 3

3.1 When an HMP or Further Assessment Is Required

If prairie criteria is met and avoidance appears unfeasible (**Chapter 24.01.037, “Mitigation Sequencing”**) based on findings from the initial survey, a prairie delineation and an HMP will be required. This will entail a revisit of the property by a qualified environmental consultant skilled in the identification of south Puget Sound prairie plants, who will develop mitigation options. This may also require a Reasonable Use Exception (**Chapter 24.45.010 TCC**). Mitigation strategies would generally include planting or seeding of native CAO-listed prairie plants, including those detected in the prairie survey, and may also include invasive plant management strategies.

Additional Factors for HMP and Mitigation Plan Development

Puget balsamroot (*Balsamorhiza deltoidea*), a WHNP rare plant species, serves not only as a nectar source for the TCB, but also provides shelter from the elements for TCB and other prairie butterflies (Dave Hays, pers. comm.). If this species is encountered in the review process, the utmost effort should be made to avoid or preserve it, even where an RUE is sought. As indicated in **Figure 2., Table 3.**, you may encounter native and nonnative plant species in a prairie environment which are not included in the current target plant species list but which provide prairie butterflies with nectar and post-diapausal host sources, and in some cases serve as a food source for gophers. Also see **Appendix B.** for further details of which plant species are utilized by SCC and SGCN butterflies (compiled from HCP, Appendix 3.). The Hoary Elfin (*Callophrys Polios*) for example, an SGCN butterfly and also an endemic species, relies almost solely on kinnikinnik (*Arctostaphylos uva-ursi*) as a host and nectar source (Thurston County Habitat Conservation Plan, Appendix C.; listed in **Figure 3, Table 3.**, p. 10, **Appendix B.**, p. 16). Pearly everlasting (*Anaphalis margaritacea*) and yarrow (*Achillea millefolium*) are known to support the Oregon branded skipper and TCB butterflies. Manroot (*Marah oregonus*) supports the Puget blue butterfly. English plantain (*Plantago lanceolata*), while non-native, is known to serve as an ovipositional host plant for the TCB in the absence of harsh paintbrush (*Castilleja hispida*).

Landscape structure is an additional factor to consider as it affects prairie-dwelling fauna (Dave Hays, pers. comm.). Small, suitable patches of habitat can be utilized by prairie-dwelling birds and butterflies even when surrounded by a matrix of low-quality habitat. For example, large, contiguous tracts of grassland with variable vegetation height and a margin of approximately 200 meters from tall buildings or trees can support prairie birds including the SHL even where native plant populations are low, so long as patches of the landscape are open and structurally suitable (Altman, 2000). Grasslands containing several patches as small as 0.2 hectares (0.5 acres) containing short vegetation, bare ground or bryophytes and appropriate host and nectar plants can support the TCB (PHAM Technical Working Group, 2013).

3.2 When No HMP or Further Assessment is Required

- No or fewer than three target prairie plant species are detected within the footprint or within the 50 foot buffer, or the three species are not numerous enough or close enough in proximity (species within 5 meters of each other) to establish an occurrence of prairie habitat.
- No Mima mounds are present within the assessment area
- If prairie habitat is detected, but the size or landscape of the parcel allows avoidance of impact by adjusting or relocating the footprint

Figure 1. Grid Pattern for Transects

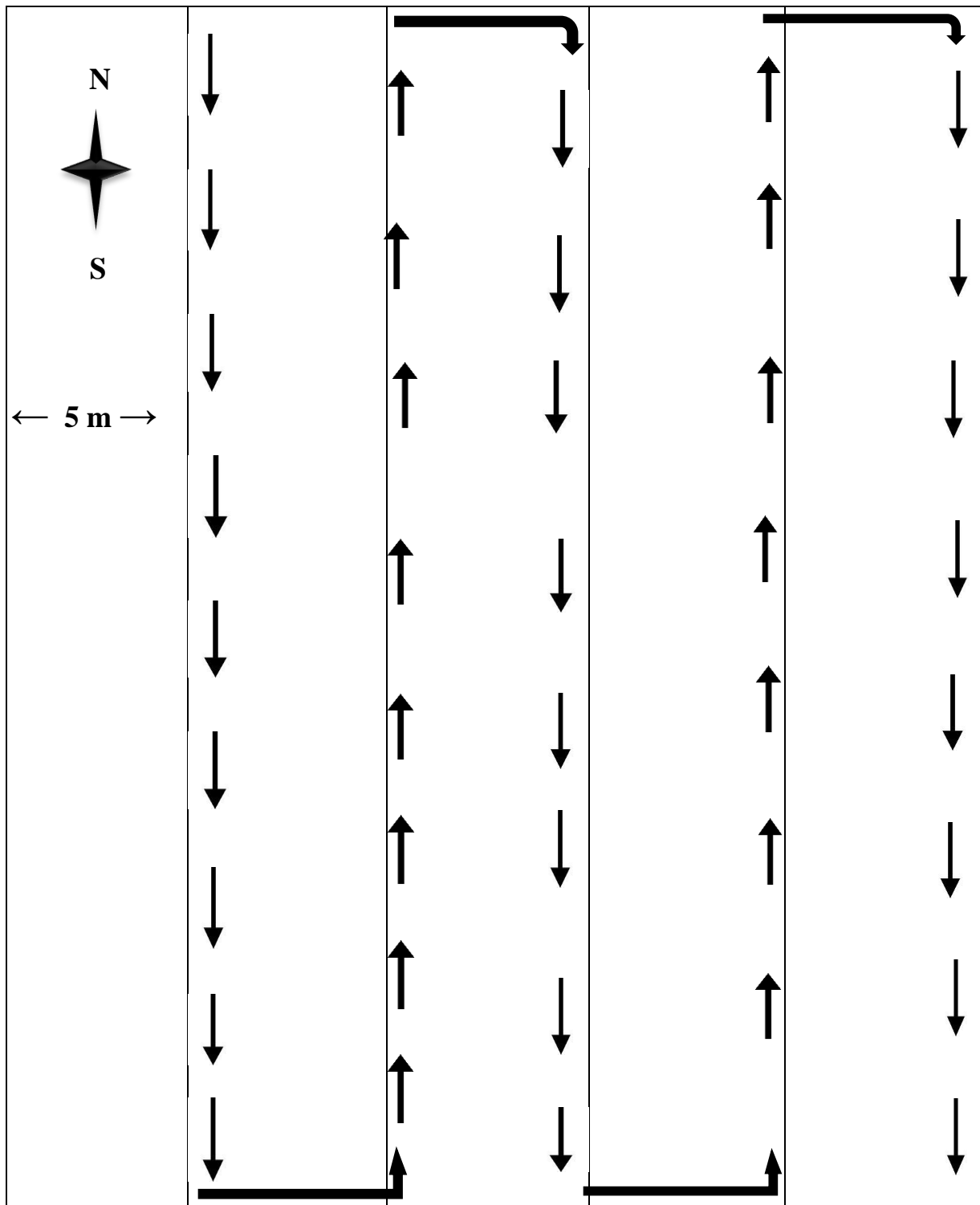


Figure 2. Prairie Criteria Determination

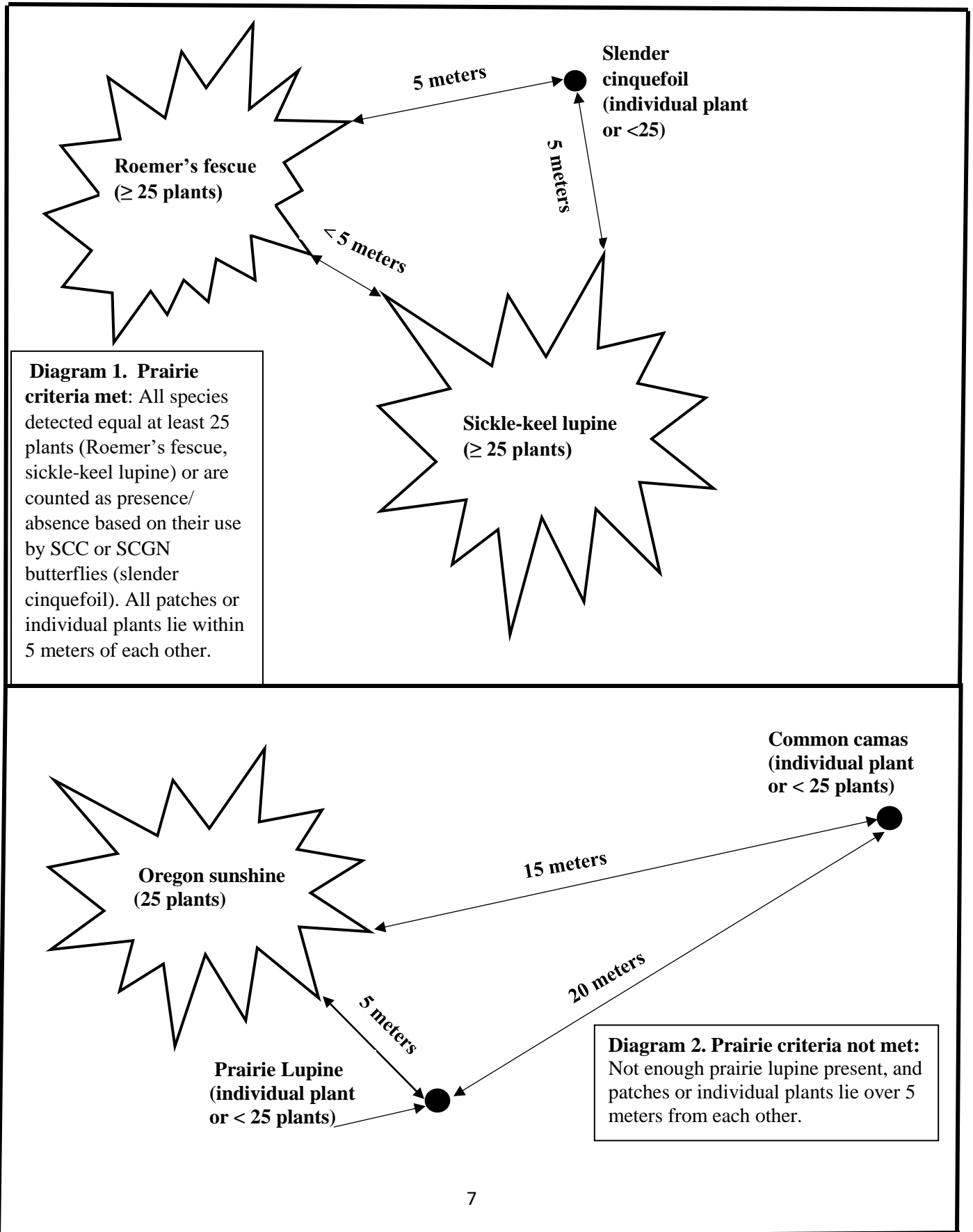


Figure 3: Diagnostic CAO Prairie Plants and Flowering Periods

Table 1. Wet prairie target species; bold print indicates a WHNP rare species

| Scientific Name Bold font = rare plant | Common Name | Most Identifiable (lf. morphology, flowering, fruiting) | Flowering Period | TCB Nectar Species | SCC/ SGCN** Nectar/ Host |
|--|--|---|------------------|--------------------------|-----------------------------------|
| <i>Bistorta bistortoides</i> | American bistort* | Mid-May to mid-Aug | May - August | | |
| <i>Camassia leichtlinii</i> | giant camas | | April – May | | |
| <i>Camassia quamash</i> | common camas | Mid-Mar to mid-Jul | April - June | N | N |
| <i>Carex densa</i> | dense sedge* | Mid-May to mid-Aug | April - June | | |
| <i>Carex feta</i> | green-sheath sedge | Mid-Apr to mid-Jul | May - July | | |
| <i>Carex tumulicola</i> | foot-hill sedge | Mid-Apr to mid-Jul | April - May | | |
| <i>Carex unilateralis</i> | one-sided sedge | Mid-Apr to mid-Jul | May - July | | |
| <i>Deschampsia cespitosa</i> | tufted hairgrass | Mid-May to mid-sept | June - September | | |
| <i>Deschampsia danthonioides</i> | annual hairgrass | Mid-Apr to mid-Jul | April - May | | |
| <i>Downingia yina</i> | Cascade downingia | Mid-May to mid-Jul | April - August | | |
| <i>Eryngium petiolatum</i> | Oregon coyote thistle* | Mid-May to mid-Aug | June - August | | |
| <i>Lomatium bradshawii</i> Seldom in Thurston County | Bradshaw's lomatium* Federally Endangered Species | Mid-Mar to mid-May | May | | |
| <i>Hosackia pinnata</i> | bog bird's-foot-trefoil* | Mid-May to mid-Jul | May - July | | |
| <i>Lupinus polyphyllus</i> | large-leaf lupine | Mid-May to mid-Jul | June - September | | |
| <i>Micranthes integrifolia</i> | northwestern saxifrage | Mid-Mar to mid-Jul | March - July | N | N |
| <i>Micranthes oregana</i> | bog saxifrage | Mid-Mar to mid-Jul | April - July | | |
| <i>Perideridia gairdneri</i> | Gardner's yampah | Mid-May to late Sept | July - August | | |
| <i>Plagiobothrys figuratus</i> | fragrant popcorn flower | Mid-Apr to mid-Jul | May - July | | N |
| <i>Polemonium carneum</i> | great polemonium* | Mid-May to mid-Aug | May - July | | |
| <i>Potentilla gracilis</i> | graceful (fanleaf) cinquefoil | Mid-May to mid-Aug | July - August | N | N |
| <i>Ranunculus alismifolius</i> | plantain-leaf buttercup | Mid-May to mid-Jul | May - July | | |
| <i>Ranunculus orthorhynchus</i> | bird's-food buttercup | Mid-Apr to mid-Jul | April - August | | |
| <i>Sidalcea malviflora var. virgata</i> | rose checkermallow* | Mid-Apr to mid-Jul | May - June | | |
| <i>Sisyrinchium idahoense</i> | Idaho blue-eyed-grass | Mid-May to mid-Jul | April - June | | N |
| <i>Veratrum californicum</i> | California false hellebore | Mid-May to mid-Aug | June - August | | |
| <i>Veratrum viride</i> | American false hellebore* | Mid-May to mid-Sept | June - September | | |
| * Rare Wet Prairie Species | | | | | |

Table 2. Dry prairie target plants; bold print indicates a WHNP rare species.

| Scientific Name Bold font = rare plant | Common Name | Most identifiable (lf. morphology, flowering, fruiting) | Flowering Period | TCB Nectar/ Host | SCC/ SGCN** Nectar/ Host |
|---|--|--|--|------------------------|-----------------------------------|
| <i>Apocynum androsaemifolium</i> | spreading dogbane | | June – Sept. (mid June - Jul)* | | |
| <i>Balsamorhiza deltoidea</i> | deltoid balsamroot | Mid-Apr to mid-Jul | March - July | N | |
| <i>Brodiaea coronaria ssp. coronaria</i> | harvest firecracker-flower | | May - June | | |
| <i>Camassia quamash</i> | common camas | Mid-Mar to mid-Jul | April - June | N | N |
| <i>Carex inops ssp. inops</i> | long-stolon sedge | | April – July | | H |
| <i>Castilleja levisecta</i> | golden Indian paintbrush Federal Threatened Species | Mid-Apr to mid-Jul | April – Sept. (usually only through June); | H | |
| <i>Castilleja hispida</i> | harsh Indian paintbrush | | April – August | H | |
| <i>Danthonia californica</i> | California oatgrass | Mid-May to mid-Jul | Late May – early July | | H |
| <i>Delphinium menziesii</i> | Puget Sound larkspur | Mid-Apr to mid-Jul | April - July | | |
| <i>Delphinium nuttallii</i> | upland larkspur | Mid-May to mid-Jul | May - June | | |
| <i>Dodecatheon hendersonii</i> | Henderson's shootingstar | Mid-Mar to mid-Jul | March - June | | |
| <i>Erigeron speciosus</i> | showy fleabane (aspen fleabane) | Mid-May to mid-Jul | June - August | | N |
| <i>Eriophyllum lanatum var. lanatum</i> | common woolly sunflower | Mid-Apr to mid-Aug | May - August | N | |
| <i>Festuca idahoensis v. roemerii</i> | Roemer's fescue | Mid-May to mid-Jul | May - July | | H |
| <i>Fragaria virginiana</i> | Virginia strawberry | | May - August | N | |
| <i>Fritillaria affinis</i> | chocolate lily | Mid-Apr to mid-Jul | April - June | | |
| <i>Hieracium scouleri</i> | hound's-tongue hawkweed | Mid-May to mid-Jul | June - August | | |
| <i>Koeleria macrantha (crinata)</i> | prairie Junegrass | Mid-May to mid-Jul | May - July (primarily June)* | | |
| <i>Leptosiphon bicolor</i> | bicolored desert-gold | Mid-Apr to mid-Jul | April - June | | |
| <i>Lomatium triternatum</i> | nineleaf biscuitroot | Mid-Apr to mid-Jul | April - July (late May - mid June)* | N | |
| <i>Lomatium utriculatum</i> | spring gold | Mar to mid-Jul | April - June | N | N |
| <i>Lomatium nudicaule</i> | barestem biscuitroot | | April - June | | |
| <i>Lupinus albicaulis</i> | sickle-keel lupine | Mid-May to mid-Jul | May – July (primarily June)* | | N/H |
| <i>Lupinus lepidus var. lepidus</i> | prairie lupine | Mid-May to mid-Jul | June - August | | N |
| <i>Microseris laciniata</i> | cut-leaf silverpuffs | Mid-May to mid-Jul | May – July (primarily June)* | | |

| | | | | | |
|--|---------------------------------------|----------------------|---------------------|-----|-----|
| <i>Plectritis congesta</i> | seablush | Mid-Apr to mid-Jul | April – June | N/H | N |
| <i>Potentilla gracilis</i> | fanleaf cinquefoil | Mid-May to mid-Aug | Late May – July | N | N |
| <i>Ranunculus occidentalis</i> var. <i>occidentalis</i> | western buttercup | Mid-Mar to mid-Jul | April - June | N | N |
| <i>Saxifraga integrifolia</i> | northwestern saxifrage | Mid-Mar to mid-Jul | March - July | N | N |
| <i>Sericocarpus rigidus</i> | aster Curtus (white top aster) | Mid-May to mid-Aug | July - August | | N |
| <i>Silene scouleri</i> | Scouler's catchfly | | June - August | | |
| <i>Sisyrinchium idahoense</i> | Idaho blue-eyed-grass | Mid-May to mid-Jul | April - July | | N |
| <i>Solidago missouriensis</i> | Missouri goldenrod | Mid-May through Sept | Late June - October | | |
| <i>Solidago simplex</i> var. <i>simplex</i> (<i>S. Spathulata</i>) | sticky goldenrod | Mid-Apr to mid-Jul | June – Sept. | | |
| <i>Solidago spathulata</i> | spikelike goldenrod | Mid-Apr to mid-Jul | June – Sept. | | |
| <i>Trifolium willdenowii</i> (<i>T. tridentatum</i>) | springbank clover | Mid-Mar to mid-Aug | April - July | | |
| <i>Triteleia grandiflora</i> | Howell's triteleia | Mid-Apr to mid-Jul | May - June | | |
| <i>Triteleia hyacinthina</i> | white triteleia | Mid-Apr to mid-Jul | May - August | | |
| <i>Toxicoscordion venenosus</i> var. <i>venenosus</i> | meadow death-camas | Mid-Apr to mid-Jul | May - July | N | |
| <i>Viola adunca</i> | early blue violet (sand violet) | Mid-Apr to mid-Jul | April - August | | N/H |
| <i>Viola praemorsa</i> var. <i>nuttallii</i> | upland yellow violet | Mid-Mar to mid-Jul | April - July | | |

Table 3: Taylor's Checkerspot and Butterflies of Conservation Concern (CC) Species of Greatest Conservation Need (SGCN) Host and Nectar Plants Not Included in CAO Target List

| Scientific Name | Common Name | Flowering Period | TCB Host/ Nectar | SCC/ SGCN Host/ Nectar |
|--------------------------------|------------------------------|---|------------------|------------------------|
| <i>Achillea millefolium</i> | Yarrow | April - October | N | |
| <i>Anaphalis margaritacea</i> | Pearly everlasting | July - September | | N |
| <i>Arctostaphylos uva-ursi</i> | Kinnikinnick | April - June | | H |
| <i>Armeria maritima</i> | Sea thrift | March - July | N | |
| <i>Castilleja attenuata</i> | Attenuate paintbrush | April - June | H | |
| <i>Cerastium arvense</i> | Field chickweed | April - August | N | |
| <i>Collinsia grandiflora</i> | Giant blue-eyed Mary | April - June | H | |
| <i>Collinsia parviflora</i> | Maiden blue-eyed Mary | March - July | H | |
| <i>Marah oregonus</i> | Coastal manroot | April - June | | N |
| <i>Plantago lanceolata</i> | English plantain (nonnative) | April – Aug (Lvs recognizable off-season) | H | |
| <i>Tryphysaria pusilla</i> | Dwarf owl clover | April - June | H | |
| <i>Vicia sativa</i> | Common vetch (nonnative) | April - July | | N |

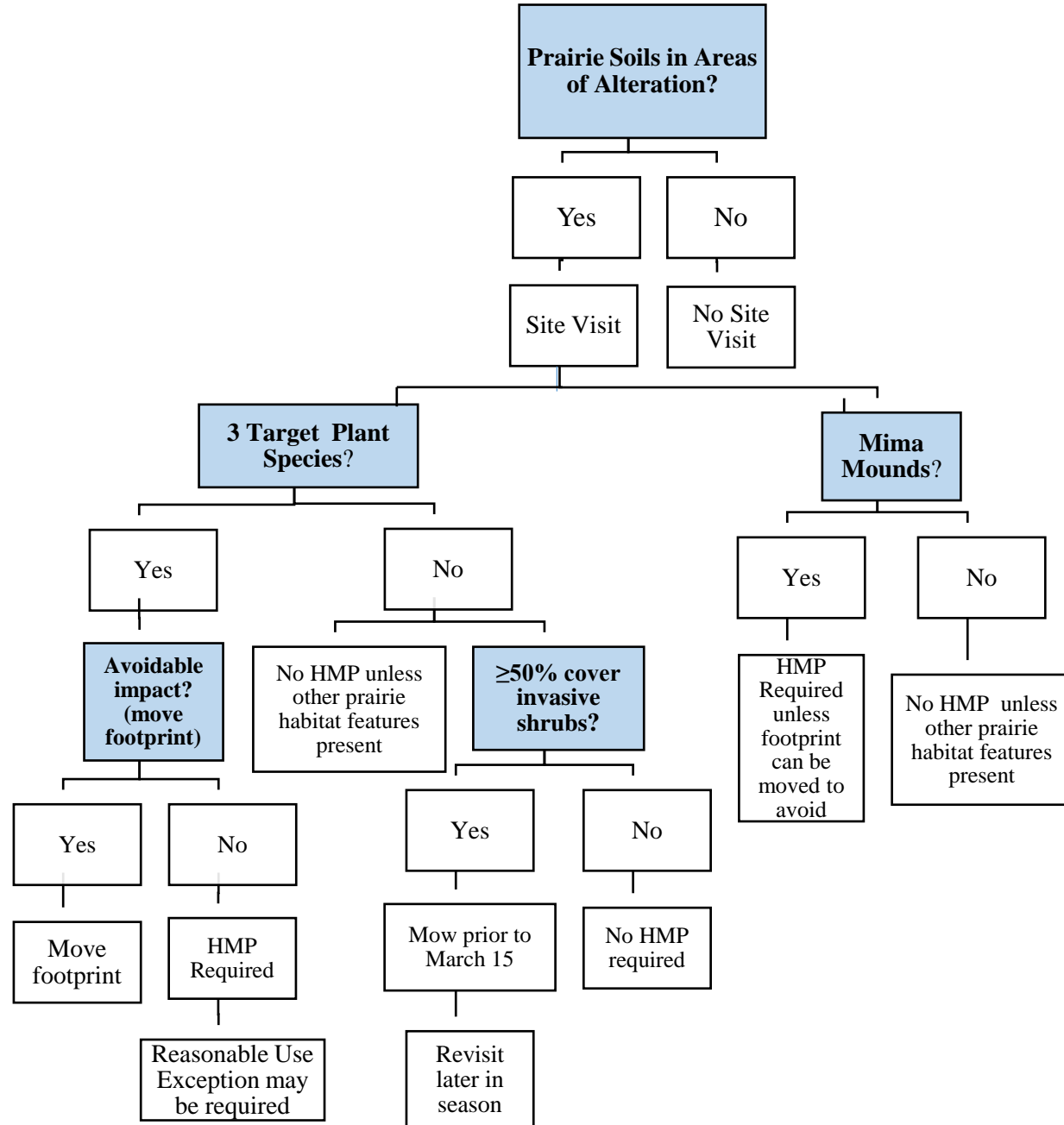


Figure 4: Overview of decision-making process in determining whether an HMP will be required, based on assessment area

Citations

- Altman, B. (2000). Conservation Strategy for Land Birds in Lowlands and Valleys of Western Oregon and Washington. A report prepared by American bird conservancy for Oregon-Washington Partners in Flight.
- DelMoral, R., Deardorff, D.C. 1976. Vegetation of the Mima Mounds, Washington State. *Ecology*, 57(3):520-530.
- Davis, J., Deffobis, A., Trygg, J. (2013). Thurston County Draft Prairie Habitat Assessment Methodology: Species and Habitat Risk and Asset Prioritization (SHARP) Procedure Manual. Version 0.99. Thurston County Resource Stewardship Department, Olympia, WA.
- Hays, David (2015). Conservation Biologist – Insect Specialist, Washington Department of Fish and Wildlife.
- Potter, Ann (2015). Conservation Biologist – Insect Specialist, Washington Department of Fish and Wildlife, Olympia, WA.
- Sprenger, S.M. (2008). *Soil Microsite conditions of Festuca roemerii and Castilleja levisecta in Native Prairies of Western Washington*. A Master's thesis submitted to the University of Washington, Seattle, WA.
- Stinson, D.W. (2005). Draft Washington State Status Report for the Mazama Pocket Gopher, Streaked Horned Lark, and Taylor's Checkerspot. A report for Washington department of Fish and wildlife, Wildlife Program, Olympia, WA.
- Washington Department of Fish and Wildlife (2015). Draft Protocol for Mapping PHS Westside Prairie. Washington Department of Fish and Wildlife, Olympia, WA.

Appendix A - 2022 Thurston County Critical Areas Ordinance (CAO) Prairie Screening Data Sheet

| | |
|----------------------------------|---|
| Parcel Number: _____ | CAO prairie criteria met? Yes or No |
| Property Owner: _____ | Mima mounds present? Yes or No |
| Surveyor(s): _____ | Oaks (<i>Quercus garryana</i>) present? Yes or No |
| Date: _____ | Mature: _____ |
| Composition of Vegetation: _____ | Sapling: _____ |
| | Seedling: _____ |

| X Target species | Class* (circle) |
|--|--------------------------------|
| <i>Apocynum androsaemifolium</i> | 1 2 3 4 5 N/A |
| <i>Balsamorhiza deltoidea</i> | Present / Absent |
| <i>Bistorta bistortoides</i> | Present / Absent |
| <i>Brodiaea coronaria</i> | 1 2 3 4 5 N/A |
| <i>Camassia leichtlinii</i> | 1 2 3 4 5 N/A |
| <i>Camassia quamash</i> | Present / Absent |
| <i>Carex densa</i> | Present / Absent |
| <i>Carex feta</i> | 1 2 3 4 5 N/A |
| <i>Carex inops</i> ssp. <i>inops</i> | 1 2 3 4 5 N/A |
| <i>Carex tumulicola</i> | 1 2 3 4 5 N/A |
| <i>Carex unilateralis</i> | 1 2 3 4 5 N/A |
| <i>Castilleja hispida</i> | 1 2 3 4 5 N/A |
| <i>Castilleja levisecta</i> | Present / Absent |
| <i>Danthonia californica</i> | 1 2 3 4 5 N/A |
| <i>Delphinium menziesii</i> | 1 2 3 4 5 N/A |
| <i>Delphinium nuttallii</i> | 1 2 3 4 5 N/A |
| <i>Deschampsia cespitosa</i> | 1 2 3 4 5 N/A |
| <i>Deschampsia danthonioides</i> | 1 2 3 4 5 N/A |
| <i>Dodecatheon hendersonii</i> | 1 2 3 4 5 N/A |
| <i>Downingia yina</i> | 1 2 3 4 5 N/A |
| <i>Erigeron speciosus</i> | 1 2 3 4 5 N/A |
| <i>Eriophyllum lanatum</i> | Cover: ____ m ² N/A |
| <i>Eryngium petiolatum</i> | Present / Absent |
| <i>Festuca roemerii</i> (F. <i>idahoensis</i>) | 1 2 3 4 5 N/A |
| <i>Fragaria virginiana</i> | Cover: ____ m ² N/A |
| <i>Fritillaria affinis</i> | 1 2 3 4 5 N/A |
| <i>Hieracium scouleri</i> | 1 2 3 4 5 N/A |
| <i>Hosackia pinnata</i> (<i>Lotus pinnatus</i>) | Present / Absent |
| <i>Koeleria macrantha</i> (K. <i>cristata</i>) | 1 2 3 4 5 N/A |
| <i>Leptosiphon bicolor</i> (<i>Linanthus b.</i>) | 1 2 3 4 5 N/A |
| <i>Lomatium bradshawii</i> | Present / Absent |
| <i>Lomatium nudicaule</i> | 1 2 3 4 5 N/A |
| <i>Lomatium triternatum</i> | 1 2 3 4 5 N/A |
| <i>Lomatium utriculatum</i> | Present / Absent |

| | |
|--|------------------|
| <i>Lupinus albicaulis</i> | 1 2 3 4 5 N/A |
| <i>Lupinus lepidus</i> var. <i>lepidus</i> | 1 2 3 4 5 N/A |
| <i>Lupinus polyphyllus</i> | 1 2 3 4 5 N/A |
| <i>Micranthes integrifolia</i> (<i>Saxifraga i.</i>) | Present / Absent |
| <i>Micranthes oregana</i> (<i>Saxifraga o.</i>) | 1 2 3 4 5 N/A |
| <i>Microseris laciniata</i> | Present / Absent |
| <i>Perideridia gairdneri</i> | 1 2 3 4 5 N/A |
| <i>Plagiobothrys figuratus</i> | 1 2 3 4 5 N/A |
| <i>Plectritis congesta</i> | Present / Absent |
| <i>Polemonium carneum</i> | Present / Absent |
| <i>Potentilla gracillis</i> | Present / Absent |
| <i>Ranunculus alismifolius</i> | 1 2 3 4 5 N/A |
| <i>Ranunculus occidentalis</i> | Present / Absent |
| <i>Ranunculus orthorhynchus</i> | 1 2 3 4 5 N/A |
| <i>Sericocarpus rigidus</i> | Present / Absent |
| <i>Sidalcea malviflora</i> var. <i>virgata</i> | Present / Absent |
| <i>Silene scouleri</i> | Present / Absent |
| <i>Sisyrinchium idahoense</i> | 1 2 3 4 5 N/A |
| <i>Solidago missouriensis</i> | 1 2 3 4 5 N/A |
| <i>Solidago simplex</i> (S. <i>spathulata</i>) | 1 2 3 4 5 N/A |
| <i>Toxicoscordion venenosum</i> var. <i>venenosum</i> (<i>Zigadenus venenosus</i>) | 1 2 3 4 5 N/A |
| <i>Trifolium willdenowii</i> (T. <i>tridentatum</i>) | 1 2 3 4 5 N/A |
| <i>Triteleia grandiflora</i> | 1 2 3 4 5 N/A |
| <i>Triteleia hyacinthina</i> | 1 2 3 4 5 N/A |
| <i>Veratrum californicum</i> | 1 2 3 4 5 N/A |
| <i>Veratrum viride</i> | 1 2 3 4 5 N/A |
| <i>Viola adunca</i> | 1 2 3 4 5 N/A |
| <i>Viola praemorsa</i> var. <i>nuttallii</i> | 1 2 3 4 5 N/A |

*Species Count Class:

- 1 = < 25
- 2 = 25 - 49
- 3 = 50 - 74
- 4 = 75 - 100
- 5 = >100

Prairie Plant Manual:

<https://www.thurstoncountywa.gov/planning/planningdocuments/cao-prairie-plant-manual-4.23.2018.pdf>

Non-CAO vegetation notes:

| Species | Notes |
|---------|-------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |
| 17 | |

Prairie Habitat Criteria: If at any point at least three target species, totaling in general at least 25 plants each are encountered within 5 meters of each other (WDFW 2015), the area in question meets the criteria to be established as occurrence of prairie. For certain plants such as WNHP rare plants (indicated here in bold), or species which serves as nectar or host plants for both TCB and either SCC or SGCN butterflies, presence is enough to meet prairie habitat criteria for such species, even if their count is less than 25 individual plants.

Appendix A. Figure 2: List of Soil Conservation Service (SCS) Prairie Soils

SCS_CODE SCS_NAME

| | |
|-----|---|
| 005 | Baldhill very stony sandy loam, 0 to 3% slopes |
| 007 | Baldhill very stony sandy loam, 15 to 30% slopes |
| 006 | Baldhill very stony sandy loam, 3 to 15% slopes |
| 008 | Baldhill very stony sandy loam, 30 to 50% slopes |
| 020 | Cagey loamy sand |
| 032 | Everett very gravelly sandy loam, 0 to 3% slopes |
| 033 | Everett very gravelly sandy loam, 3 to 15% slopes |
| 042 | Grove very gravelly sandy loam, 3 to 15% slopes |
| 046 | Indianola loamy sand, 0 to 3% slopes |
| 047 | Indianola loamy sand, 3 to 15% slopes |
| 073 | Nisqually loamy fine sand, 0 to 3 % slopes |
| 074 | Nisqually loamy fine sand, 3 to 15 % slopes |
| 109 | Spana gravelly loam |
| 114 | Spanaway-Nisqually complex, 2 to 10% slopes |
| 110 | Spanaway gravelly sandy loam, 0 to 3% slopes |
| 111 | Spanaway gravelly sandy loam, 3 to 15% slopes |
| 112 | Spanaway stony sandy loam, 0 to 3% slopes |
| 113 | Spanaway stony sandy loam, 3 to 15% slopes |
| 117 | Tenino gravelly loam, 3 to 15% slopes |

Appendix B. Nectar/Host Plants for Butterfly Species of Conservation Concern (SCC), Species of Greatest Conservation Need (SGCN)

| Species/Status | Host Plant(s) | Nectar plant(s) | Habitat type |
|------------------------------|---|--|---|
| Hoary elfin (SGCN) | <i>Arctostaphylos uva-ursi</i> | <i>Arctostaphylos uva-ursi</i> <i>Lomatium utriculatum</i> <i>Ranunculus occidentalis</i> | Grasslands/open heath woodlands |
| Mardon skipper (SCC) | <i>Danthonia californica</i> <i>Festuca roemerii</i> | <i>Camassia quamash</i> <i>Lomatium utriculatum</i> <i>Lupinus lepidus</i> <i>Plagiobothrys figuratus</i> <i>Plectritis congesta</i> <i>Ranunculus occidentalis</i> <i>Saxifraga integrifolia</i> <i>Sisyrinchium idahoense</i> <i>Viola adunca</i> <i>Vicia sativa</i> | Open grasslands with FESROE, VIOADU |
| Oregon branded skipper (SCC) | <i>Festuca roemerii</i> <i>Carex inops</i> | <i>Anaphalis margaritacea</i> <i>Cirsium</i> spp <i>Hypochaeris radicata</i> <i>Jacobaea vulgaris</i> <i>Serricarpus rigidus</i> | Open grasslands; use Mima mounds for hilltopping during mating season |
| Puget blue (SGCN) | <i>Lupinus albicaulis</i> | <i>Lomatium utriculatum</i> <i>Lupinus albicaulis</i> <i>Marah oregonus</i> <i>Potentilla gracilis</i> <i>Ranunculus occidentalis</i> | Low elevation grasslands to subalpine meadows |
| Valley silverspot (SCC) | <i>Viola adunca</i> | <i>Cirsium</i> spp. <i>Erigeron speciosus</i> <i>Jacobaea vulgaris</i> <i>Sericocarpus rigidus</i> | Low elevation grasslands, forest openings |