

TECHNICAL MEMORANDUM



Date: May 5, 2016
To: Keith Higman, Interim Planning Director
From: Sarah Sandstrom, Clover Muters, Dan Nickel, The Watershed Company
Project Number: 130420
Project Name: Island County Fish and Wildlife Habitat Conservation Areas

Subject: Prairies, Herbaceous Balds, and Oak Woodlands Best Available Science Review

Background

Island County is evaluating an appropriate regulatory approach to address prairies, herbaceous balds, and oak woodlands under the County's Fish and Wildlife Habitat Conservation Area (FWHCA) regulations, a component of its Critical Areas Ordinance (CAO). These habitats include similar herbaceous vegetation, yet they differ in the location, associated soil composition, and/or forest canopy structure.

During the recent (2014) update to the Island County FWHCA regulations, the Technical Advisory Group (TAG), consisting of agency, tribal, and non-profit technical staff, reviewed the best available science related to prairies (including herbaceous balds) in Island County and extensively discussed the potential protection of prairies as Habitat of Local Importance (HOLI) throughout the regulatory update process. The group recognized the vulnerability of prairie species diversity in Island County. However, the majority of the group recommended not to designate prairies as a HOLI at that time based on several considerations:

- Uncertainty related to the definition, identification, and distribution of habitats to be protected,
- Difficulty defining an effective regulatory approach to conserve prairie biodiversity,
- Existing regulatory mechanisms already protect a majority of prairie areas.
- Potential for regulatory protection to be vetted through the public nomination process established for HOLIs during the 2016 Comprehensive Plan update process.

The County is now in the process of reconsidering how to address prairies, herbaceous balds, and oak woodlands. In support of that effort, the following memorandum summarizes the distribution, stressors, and potential management measures for prairies, herbaceous balds, and oak woodlands in Island County.

Definitions

Prairies

In general, the presence of documented prairie plants and soils is required for an area to be considered a prairie. Washington Department of Fish and Wildlife (WDFW) provides criteria for the designation of “westside prairie” as a Priority Habitat under their Priority Habitats and Species (PHS) program. Criteria include the presence of three diagnostic plant species and soils (WDFW 2008, Updated 2014). WDFW-documented prairie plant species and soil types are attached to this memo (Attachment 2).

For the Puget Sound Region, WDFW lists 18 soil series based on 2008 prairie soil analysis conducted by the Olympia, Washington office of the Natural Resource Conservation Service. In his 2007 review, Sheehan (2007) identified eight soil series associated with prairies and oak woodlands in Island County. This list is a subset of the 18 WDFW listed Puget Sound Region prairie soil types, presumably limited to those eight that occur in Island County (see attached list of soils for more detail).

The WDFW westside prairie PHS designation does not include a minimum size threshold. However, a subset of prairie habitats in Island County are designated through the Washington Department of Natural Resources (WDNR) Washington Natural Heritage Program (WNHP) as High-Quality Terrestrial Habitat. To qualify as a WNHP High Quality Terrestrial Habitat, grassland habitat must be at least 10 acres, have little or insignificant disturbance to vegetation, and be dominated by native plants. Three prairie communities in Island County meet the definition of High-Quality Terrestrial Habitat (See “Distribution in Island County” below and Attachments 1 and 3) (WDNR 2013). Smaller remnant and/or disturbed prairies are not recognized under this WNHP classification, but may still be mapped by the WNHP program and meet the WDFW PHS definition.

Herbaceous Balds

WDFW defines herbaceous balds as variable-sized patches of grass and forb vegetation located on shallow soils over bedrock that commonly is fringed by forest or woodland. Typically these consist of low-growing vegetation adapted for survival on shallow soils

amid seasonally dry conditions, and are often on steep slopes. Balds typically are smaller than 5 ha (12 ac), although some can be up to about 100 ha (~250 ac).

Oak Woodlands

WDFW defines Oregon White Oak Woodlands as stands of oak or oak/conifer associations where canopy coverage of the oak component of the stand is at least 25%; or where total canopy coverage of the stand is $\leq 25\%$, but oak accounts for at least 50% of the canopy coverage. The latter is often referred to as oak savanna. In non-urbanized areas west of the Cascades, priority oak habitat consists of stands ≥ 0.4 ha (1 ac) in size. In urban or urbanizing areas, such as Oak Harbor, single oaks or stands < 0.4 ha (1 ac) may also be considered a priority when found to be particularly valuable to fish and wildlife. Oak woodlands in western Washington may contain understory plants indicative of prairie.

Distribution in Island County

Only about 5 percent of the soils in Island County are made up of prairie soils (Ness and Richins 1958). These prairie soils are concentrated in the northern portion of Whidbey Island. Most prairies were lost as land was converted to other uses, including agriculture, military operations, and residential and urban development (Sheehan 2007).

Table 1 and Map 1 (attached) identify 13 areas of remaining prairies, herbaceous balds, and oak woodlands in unincorporated Island County. The table and map include documented by the WNHP (WDNR 2013) and Sheehan (2007). Some sites have been documented by multiple sources, as noted in the source column. Where sites encompass the same area, they have been aggregated into single entries in the table. In addition to these documented areas, other undocumented areas within the county may meet the PHS definitions of prairies, herbaceous balds, or oak woodlands.

Associated Wildlife and Plants

There are a number of vulnerable animal species associated with the prairies, herbaceous balds, and oak woodlands of the Puget Sound Region; however, most of them do not occur on Whidbey Island (Sheehan 2007). The fact that Whidbey Island is surrounded by water may have limited the distribution of these species.

Vulnerable prairie-associated species that may have historically occurred on Whidbey Island, but have not been recently documented there include the western bluebird, Taylor's checkerspot butterfly (Federally threatened), and the island large marble

butterfly (Sheehan 2007). These species are not currently known to be present in Island County, although intensive surveys for the species have either not been conducted or only recently begun. There are areas of existing suitable prairie habitat in Island County, though these extant habitat patches may not be individually large enough or sufficiently connected to support a persistent population.

In addition to prairie-dependent species identified as vulnerable throughout Washington State, a variety of wildlife, including mammals, birds, reptiles, amphibians, and invertebrates use grassland and oak woodland habitats. Dead oaks and dead portions of live oaks support insect populations and provide nesting cavities for birds (Larsen and Morgan 1998). Some birds exhibit unusually high breeding densities in oak woodlands (Larsen and Morgan 1998).

Grassland plant associations on Whidbey Island include several threatened, endangered, or sensitive plant and animal species. The rare species listed below are known to occur in some prairie habitats and in Island County:

Golden paintbrush, a member of the figwort family, is a multi-stemmed perennial herb. It is listed as a protected species in Island County code. Historically, golden paintbrush ranged from the Willamette Valley in Oregon, through the Puget trough, and up to the south end of Vancouver Island in association with prairies (Sheehan 2007). Species collection records indicate that golden paintbrush has a wide habitat preference and was not restricted to well-drained soils historically (Lawrence and Kaye 2006). In addition to its federally threatened and State-endangered status, the WNHP identifies the State conservation status as S1- Critically imperiled.

White-top aster is State sensitive species that forms large colonies connected by rhizomes. It is listed as a protected species in Island County code. There is only one known occurrence of the species on Whidbey Island in an area of Grasser's Hill known locally as Schoolhouse prairie. This occurrence is the only documented population between the prairies of south Puget Sound and the Vancouver Island, British Columbia (Sheehan 2007). The WDNR identifies the species as vulnerable (S3).

White meconella has only been documented at three sites in Washington State, although the species is relatively small, and comprehensive studies have not been completed to document its presence or absence (WDNR 2013). Documented

occurrences on Whidbey Island occurred in 1897 and 1936, and more recently plants have consistently been located in the vicinity of an herbaceous bald at Goose Rock in Deception Pass State Park in 2004, 2007 and 2008, although there is significant variation in the number of plants located from year to year (Joe Arnett personal communication, January 6, 2014, see also Arnett, 2013). The WDNR identifies the species as critically imperiled (S1). The species is listed as protected in Island County code.

Known Stressors

Prairies

In Island County, agricultural development of fertile prairie soils has been a cause of loss and fragmentation of prairie habitats and impacts to prairie species (Sheehan 2007). Early settlers of Island County were drawn to prairie areas because of the relative ease of development and conversion to cropland, compared to forested areas (Sheehan 2007). Development of military facilities and development within urban areas have further impacted historic prairie habitat (Sheehan 2007). Historically, many prairie areas were maintained in early successional communities through Native American activities (i.e. burning).

Additionally, since periodic disturbance, such as fire, helps to maintain prairie habitat and species biodiversity, areas lacking such disturbance have the potential to evolve into shrub-dominated habitats, and invasive species may compete with native grassland species. Non-native species invasions have contributed to the decline of many native species found on Pacific Northwest prairie and oak habitats (Dennehy et al 2011). Under altered disturbance regimes, invasive plants are able to increase their performance over native plant species (Daehler 2003). Noxious plant species can compete with natives for pollinators (Brown and Mitchell 2001, Brown et al. 2002) and alter the fire regime (Brooks et al. 2004). In prairie ecosystems, invasive plants can modify soils to facilitate conditions favorable to themselves and other invasives (Jordan et al. 2007). In addition, fire suppression has led to increased production of shrubs and trees in areas formerly covered by grasslands (Larsen and Morgan 1998).

Today, much of the prairie habitat on Whidbey Island is owned by a public agency or conservancy organization, and managed for habitat conservation (see below). Remnant prairies not under conservation ownership or subject to conservation efforts may be subject to continued development pressures.

Herbaceous Balds

The shallow, rocky soils associated with herbaceous balds may not have been subject to the same agricultural pressures as areas with productive prairie soils. The exclusion of fire from most of this system since settlement has resulted in the most significant stresses to herbaceous bald communities. Douglas fir and other tree and shrub encroachment is a natural process in the absence of fire except on the very driest sites (WDNR 2011a). This encroachment leads to the conversion to shrublands or forests. Additionally, recreational uses, timber harvest, and road-building have the potential to spread non-native species to these communities and to disturb relatively fragile soils (WDNR 2011a).

Oak Woodlands

Oregon white oak habitat in Washington is declining and occurs in a limited distribution (Larsen and Morgan 1998). The remaining Washington stands tend to be small, fragmented, or isolated, and many have been degraded (Larsen and Morgan 1998). Oak woodlands in Island County have been cut, grazed, or incorporated into an urban environment with almost the total loss of these native ecosystems (Sheehan 2007).

Naturally occurring factors that cause mortality in sprouting oaks include browsing, trampling, fire, and competition from other plants (Larsen and Morgan 1998). Although fire can cause mortality of sprouting oaks, it also initiates oak sprouting (Larsen and Morgan 1998).

Oregon white oak are slow growing, and oak seedlings and saplings can be quickly out-competed by faster growing conifers (Larsen and Morgan 1998). The cessation of burning by Native Americans and suppression of wildfires, along with continuing cattle grazing and timber conversion, are thought to contribute to encroachment by Douglas fir in Oregon white oak-dominated sites.

As with prairies, invasive, non-native vegetation may reduce seedling success in unburned areas, as they compete with oak seedlings for light and moisture. Periodic wildfires could thus reduce competing biomass. Overgrazing stimulates alien weed invasion, tramples acorn sprouts, and compacts soils (Hanna and Dunn 1996).

The few remaining oak woodland habitats identified within unincorporated Island County are not actively managed for habitat conservation (Sheehan 2007). Threats to the persistence of these habitats are related to a potential lack of seedbank to replace aging

trees, as well as succession of native understory shrubs, which limit native grassland understory (Sheehan 2007).

Existing Protections

Regulatory

It is important to recognize that the Island County FWHCAs ordinance, adopted pursuant to the Growth Management Act (GMA), applies only within unincorporated Island County, and that areas falling within shoreline jurisdiction are managed under the County's recently adopted shoreline master program (SMP). For that reason, several extant prairie and oak woodland areas fall completely or partially outside of the regulatory prevue of the CAO (Table 1).

Existing Island County Protections

The applicability of various protections under ICC 17.02B to the known extant prairies, herbaceous balds, and oak woodlands in Island County are summarized below and in Table 1.

The existing FWHCA code (ICC 17.02B) protects areas identified as high quality terrestrial communities designated through the WNHP (17.02B.430.B.4). The code specifies that a Biological Site Assessment needs to be completed for proposed development within these sites. Additionally, 17.02B.430 includes protections for the WNHP designated Grasser's Hill area, which contains white-topped aster, as well as the WNHP designated West Beach and Ebey's Landing areas, which are known to have plant communities containing golden paintbrush.

In addition, ICC 17.02B protects the Whidbey Island Game Farm- Pacific Rim Institute/Au Sable Institute, which contains a portion of Smith Prairie, as a designated HOLI.

State Natural Area Preserves (NAPs) are also identified as FWHCAs (17.02B.200.A.3); therefore, prairie habitats in the Naas (Admiralty Inlet) NAP would be covered under the existing regulations. The WDNR notes that the Naas/Admiralty Inlet Natural Area Preserve was designed "to include the remaining prairie soils at this location, which is habitat for golden paintbrush, and the entire forest community occurrence, which secondarily serves as a buffer from edge effects for the two golden paintbrush populations on the preserve" (Gamon 2016).

In addition to those areas specifically identified above, the current code also establishes Species of Local Importance (SOLI), which include the prairie species golden paintbrush, white-top aster, white meconella, and tall agoseris. If the protected SOLIs are present in unmapped areas, they would be subject to the protections under the FWHCAs code.

Existing Protection by other Jurisdictions

The US Fish and Wildlife Service lists endangered and threatened plant species, including the federally threatened golden paintbrush, which occurs in prairies in Island County. Listed plant species are only protected on federal lands or where a federal permit or funding is involved. This would apply to the Naval Air Station Forbes Point golden paintbrush site.

Non-Regulatory

In addition to regulatory mechanisms of protection, several non-regulatory approaches to prairie, herbaceous bald, and oak woodland protection are underway or merit consideration.

Prairie conservation benefits from active management to promote prairie biodiversity, which involves periodic disturbance through fire or mowing, in contrast to the “no-touch” approach for streams and wetlands and their buffers. This presents a challenge to integrate into a regulatory framework, and therefore, the most effective conservation measure are likely to integrate regulatory and non-regulatory mechanisms.

Conservation easements and in-fee holdings of significant lands by public entities or conservation groups may be the most effective approach to conserve prairies in Island County. Many of the remaining prairies and herbaceous balds are under public ownership or are owned by a conservancy group and are managed to protect and conserve grassland biodiversity. Ownership and known management activities to protect prairies, herbaceous balds, and oak woodlands are briefly highlighted in Table 1.

Where lands are not already under active conservation, these areas could potentially benefit from incentive-based programs to manage prairies to promote biodiversity. Incentive programs could include, but are not limited to current use taxation through the Public Benefit Rating System.

While there are no state-level protections for prairies, herbaceous balds, and oak woodlands, there are landowner guides that help residential property owners and farmers re-establish or maintain prairies voluntarily.

Gap Analysis

As noted above, only areas outside of shoreline jurisdiction are under the jurisdiction of the CAO. Of the 13 prairie and oak woodlands identified in Table 1, four are known to be located entirely within CAO jurisdiction; one is entirely within shoreline jurisdiction, eight others are potentially or partially within CAO jurisdiction.

The four areas known to be fully within CAO jurisdiction encompass approximately 64 acres or more. Two of these areas, encompassing approximately 53 acres, include features that are protected under the existing Island County FWHCA 17.02B. The other two areas, totaling approximately 11 acres or more, do not receive any protections under the County's existing FWHCA regulations because they do not include regulated features. Table 1 identifies the existing protections applicable to each area.

Of those eight areas potentially or partially within CAO jurisdiction, which comprise approximately 153 acres, five sites, encompassing approximately 94 acres, include features that are protected under the County's existing FWHCA regulations; the other four sites, totaling approximately 59 areas, do not receive any protections under existing FWHCA regulations.

Management Strategies

Prairies and Herbaceous Balds

Prairie vegetation in the Pacific Northwest was historically maintained by anthropogenic fire. Sensitive prairie species, such as golden paintbrush, appear to respond favorably to fire management (Dunwiddie et al. 2000 in Lawrence and Kaye 2006). Pre-settlement periodic, low-intensity fires prevented the establishment of trees, shrubs, and invasive herbaceous vegetation on grasslands and herbaceous balds (Sheehan 2007, WDNR 2011a, 2011b). Today, some combination of burning, mowing, and herbicide treatment may be employed to promote grassland biodiversity.

Because extinctions and biodiversity often lag behind habitat loss and fragmentation, protection of remaining habitat area may not be sufficient to sustain existing prairie, herbaceous bald, and oak woodland biodiversity (Floberg et al. 2004). However, where habitat conservation is supplemented by directed conservation of vulnerable species, such as golden paintbrush in Island County, those vulnerable species act as umbrella species to help conserve biodiversity (Floberg et al. 2004). On the other hand, protection of remaining prairie habitat may be a more effective approach to biodiversity

conservation than trying to identify and protect small isolated populations of specific rare species individually (Sheehan 2007).

In addition to habitat conservation and management efforts, seed collection from isolated patches of rare plants could help to support reintroductions and limit extirpation of rare species.

Oak Woodlands

Historically, frequent low-intensity fires curbed conifer encroachment, controlled stand density, and initiated oak sprouting in oak woodlands. Today, managed burning can help restore degraded oak habitat (Larsen and Morgan 1998). However, action has to be initiated before Douglas fir and other conifers, already present as seedlings in many oak stands, overtop the oaks (Agee 1993). Low-intensity burns conducted at approximately 5- year intervals are encouraged to exclude Douglas-fir encroachment, stimulate vigorous sprouting, and contribute to multi-aged stands (Larsen and Morgan 1998). Burns at more frequent intervals (3-5 years) may be necessitated in areas with serious Douglas-fir encroachment and high fuel loads. Burns at less frequent intervals (5-10 years) are likely indicated in the remaining oak habitat on Whidbey Island where sapling growth success is critical and where fuel loading is not a problem.

Grazing and activities that may result in trampling are not recommended where oak sprouting and sapling growth are being encouraged, within riparian zones, or where acorn production is desired but scarce (Larsen and Morgan 1998). On the other hand, low-impact recreational activities foster an appreciation for oaks and oak habitat, and they provide an economic incentive to preserve and enhance oak woodlands.

Specific management recommendations for oak woodlands from Larsen and Morgan (1998) that may apply to Island County are summarize below:

- Do not cut Oregon white oak woodlands.
- Allow low-impact recreation (hunting, fishing, hiking, mushroom, and acorn collecting).
- Thin encroaching conifers in oak woodlands.
- Retain large, dominant oaks and standing dead and dying trees.
- Create snags when thinning conifers instead of removing trees.
- Leave fallen trees, limbs, and leaf litter for foraging, nesting, and denning sites.
- Conduct prescribed burns where appropriate.

Other potential voluntary enhancement activities include the following:

- Plant Oregon white oak acorns and seedlings.
- Use alternatives to oak fuelwood.
- Conserve contiguous or notable stands of oaks by government agencies or conservation organizations.
- Encourage aggressive oak enhancement/regeneration measures.

Summary

In sum, Island County previously considered a prairie habitat nomination during the initial GMA adoption process, and its code reflects consideration at that time. Many, but not all known prairie habitats are addressed in the code through the WNHP, NAP, and HOLIs and SOLIs.

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Attachments

1. Table 1. Known Island County Prairie, Herbaceous Bald and Oak Woodland Descriptions
2. WDFW Prairie Plants and Soils List
3. Map 1. Known Prairie, Herbaceous Bald and Oak Woodland Locations

Table 1. Known Island County Prairie, Herbaceous Bald and Oak Woodland Descriptions

Map ID	Location	Type and Description	Source	Approximate Area (Acres)	CAO Jurisdiction?	Protected features under FWHCA?	Public or Conservancy Ownership?	Known Management Practices
<i>Deception Pass</i>								
1	Deception Pass SP- Goose Rock	Herbaceous Bald Roemer's Fescue - Field Chickweed - Prairie Junegrass	WNHP	15	Partial Small portion of the site is in SMP jurisdiction	Yes NHP High Quality Site and SOLI- white meconella	Yes Washington State Parks	
<i>West Beach/Ebey's Bluff</i>								
2	West Beach/Ebey's Landing Golden Paintbrush Site	Prairie/Herbaceous Bald Foothills sedge and red fescue, chocolate lily, Golden paintbrush	Sheehan, WNHP	~1	Unknown Possibly partial SMP jurisdiction	Yes West Beach and Ebey's Landing NHP area per 17.02B.430 and SOLI Golden Paintbrush	Partially, yes Private and Island County Parks	Mowing and golden paintbrush seed collection
3	West Beach Road - Unsurveyed grassland	Prairie/Herbaceous Bald	WNHP	8	Partial Majority is in SMP jurisdiction	No	No Private	
4	West Beach - non-native grassland	Prairie/Herbaceous Bald Less than 10% relative cover of native species	WNHP	50	Partial Part is in SMP jurisdiction	No	Mostly, yes Washington State Parks, Schools, Public Lands, and limited private	
5	Ebey's Bluff	Prairie/Herbaceous Bald Red Fescue - Great Camas - Oregon Gumweed and Red Fescue - Silver Burweed, Golden paintbrush	WNHP, The Nature Conservancy	60	Partial Part is in SMP jurisdiction	Yes NHP High Quality Site and SOLI- Golden Paintbrush	Mostly, Yes Nature Conservancy, Washington State Parks, and limited private	Golden paintbrush and other prairie plant restoration. Removal of non-native species.
<i>Grasser's Hill</i>								
6	Grasser's Hill (including area locally known as Schoolhouse Prairie)	Prairie Non-native grasses, Roemer's fescue, congested snakelily, taper-tip onion, Menzies' larkspur, Henderson's shooting star, blue-eyed grass, fool's onion, scarlet paintbrush, showy fleabane, chocolate lily, and death camas, white-top aster, shrubland potentially restorable to grassland	Sheehan, WNHP	42	Yes	Yes Grasser's Hill NHP area per 17.02B.430 and SOLI- White-top aster	Partially, yes Multiple-ownership, Partially within National Park Service Scenic Easement, Island County Parks, Department of Fish and Wildlife, and private	HMP for Blue Flag Iris

Map ID	Location	Type and Description	Source	Approximate Area (Acres)	CAO Jurisdiction?	Protected features under FWHCA?	Public or Conservancy Ownership?	Known Management Practices
<i>Admiralty Inlet</i>								
7	Naas (Admiralty Inlet) Natural Area Preserve	Prairie/Herbaceous Bald golden paintbrush, foothills sedge, showy fleabane, Canada goldenrod, scarlet paintbrush, common strawberry, Pacific sanicle, common California aster, western buttercup, chocolate lily, American vetch, elegant rein-orchid and yarrow	Sheehan, WNHP	8	Partial Part is in SMP jurisdiction	Yes NAP and SOLI golden paintbrush	Yes WA DNR and Whidbey Camano Land Trust	Management plan, mowing, seed collection, augmentation of golden paintbrush, and plans for controlled burn
8	Fort Casey State Park Golden Paintbrush Site	Prairie/Herbaceous Bald golden paintbrush, Forb-dominated, many non-native species	Sheehan	10	Unknown	Yes SOLI golden paintbrush	Yes Washington State Parks	Mowing, fencing, augmentation plantings of golden paintbrush, potential burn
<i>Monroe's Landing</i>								
9	Bluff to the east of Monroe's Landing on the north side of Penn Cove	Oak woodland Single multi-stemmed oak	Sheehan	<1	No SMP jurisdiction	No	No Private	
10	Penn Cove Road	Oak woodland Roughly a dozen oaks to the west and up the hill from Monroe's Landing	Sheehan	<1	Partial Part is in SMP jurisdiction	No	No Private	
<i>San de Fuca</i>								
11	San de Fuca schoolhouse	Oak woodland Small number of oaks	Sheehan	<1	Yes	No	No Private	
<i>Smith Prairie (Au Sable Institute)</i>								
12	Smith Prairie, including Au Sable Institute	Prairie Roemer's Fescue - Field Chickweed - Prairie Junegrass, includes introduced golden paintbrush and the largest suite of prairie plants on Whidbey Island	WNHP, Sheehan	11	Yes	Yes NHP High Quality Site, HOLI, and SOLI (introduced)	Yes Au Sable Institute	Prairie restoration, burn
13	South Smith Prairie	Prairie Mostly non-native pasture grasses	Sheehan	~10	Yes	No	No Multiple owners	Vegetation kept low-growing due to adjacent airfield

Online information and guidelines for management of **Westside Prairie**:

[Prairie Landowner Guide for Western Washington](#)
[The Nature Conservancy's Conservation Resources for Prairie and Oak Woodland Landowners](#)
[Wildlife Conservation in the Willamette Valley's Remnant Prairie and Oak Habitats](#)

Table 1. Soils that prairie commonly occur upon*.

Soil		Puget Sound Region		Southwest Washington		Coastal Region	
Bozarth	Pilepoint	Bear Prairie	Nisqually	Bear Prairie			
Carstairs	Pondilla	Cove	Powell	Carstairs			
Coupeville	Prather	Doty	Prather	Quillayute			
Coveland	San Juan	Galvin	Sara	Sequim			
Ebys	Snakelum	Gee	Sauvie	Spanaway			
Galvin	Spana	Hillsboro	Sifton	Wellman			
Haro	Spanaway	Hockinson	Spanaway				
Hiddenridge	Townsend	Lauren	Washougal				
Newberg		Mossyrock	Yacolt				
Nisqually		Minniece					

* Working soil list is based on 2008 prairie soil analysis conducted by the Olympia, Washington office of the Natural Resource Conservation Service. Prairie sites with existing native prairie vegetation can also be found on soils that are not listed here.

Table 2. Common and rare diagnostic dry prairie plants.

Common Name (Scientific Name)	Common Name (Scientific Name)	Common Name (Scientific Name)
Spreading Dogbane (<i>Apocynum androsaemifolium</i>)	Chocolate Lily (<i>Fritillaria affinis</i> v. <i>affinis</i>)	Northwestern Saxifrage (<i>Saxifraga integrifolia</i>)
Deltoid Balsamroot (<i>Balsamorhiza deltoidea</i>)	Hound's-tongue Hawkweed (<i>Hieracium cynoglossoides</i>)	Scouler's Catchfly (<i>Silene scouleri</i>)
Harvest Firecracker-flower (<i>Brodiaea coronaria</i> ssp. <i>coronaria</i>)	Prairie Junegrass (<i>Koeleria macrantha</i>)	Idaho Blue-eyed-grass (<i>Sisyrinchium idahoense</i> v. <i>idahoense</i>)
Common Camas (<i>Camassia quamash</i>)	Foothills Desert-parsely (<i>Lomatium utriculatum</i>)	Curtus's Aster (<i>Sericocarpus rigidus</i>)
Long-stolon Sedge (<i>Carex inops</i> ssp. <i>inops</i>)	Bicolored Desert-gold (<i>Linanthus bicolor</i>)	Missouri Goldenrod (<i>Solidago missouriensis</i> v. <i>tolmieana</i>)
Foot-hill Sedge (<i>Carex tumulicola</i>)	Ternate Desert-parsley (<i>Lomatium triternatum</i>)	Sticky Goldenrod (<i>Solidago simplex</i> ssp. <i>simplex</i>)
Golden Paintbrush * (<i>Castilleja levisecta</i>)	Sickle-keel Lupine (<i>Lupinus albicaulis</i>)	Springbank Clover (<i>Trifolium willdenowii</i>)
California Oatgrass (<i>Danthonia californica</i>)	Prairie Lupine (<i>Lupinus lepidus</i>)	Howell's Triteleia (<i>Triteleia grandiflora</i> v. <i>howellii</i>)
Puget Sound Larkspur (<i>Delphinium menziesii</i>)	Cut-leaf Silverpuffs (<i>Microseris laciniata</i>)	White Triteleia (<i>Triteleia hyacinthina</i>)
Upland Larkspur (<i>Delphinium nuttallii</i>)	Douglas Blue-eyed-grass (<i>Olsynium douglasii</i>)	Sand Violet (<i>Viola adunca</i>)
Henderson's Shootingstar (<i>Dodecatheon hendersonii</i>)	Shortspur Seablush (<i>Plectritis congesta</i>)	Upland Yellow Violet (<i>Viola praemorsa</i> v. <i>nuttallii</i>)
Aspen Fleabane (<i>Erigeron speciosus</i>)	Fanleaf Cinquefoil (<i>Potentilla gracillis</i>)	Meadow Deathcamas (<i>Zigadenus venenosus</i> v. <i>venenosus</i>)
Common Woolly-sunflower (<i>Eriophyllum lanatum</i> v. <i>leucophyllum</i>)	Western Buttercup (<i>Ranunculus occidentalis</i> v. <i>occidentalis</i>)	
Roemer's Fescue (<i>Festuca idahoensis</i> v. <i>roemerii</i>)	Sierra Sanicle (<i>Sanicula graveolens</i>)	

* Federally Threatened species

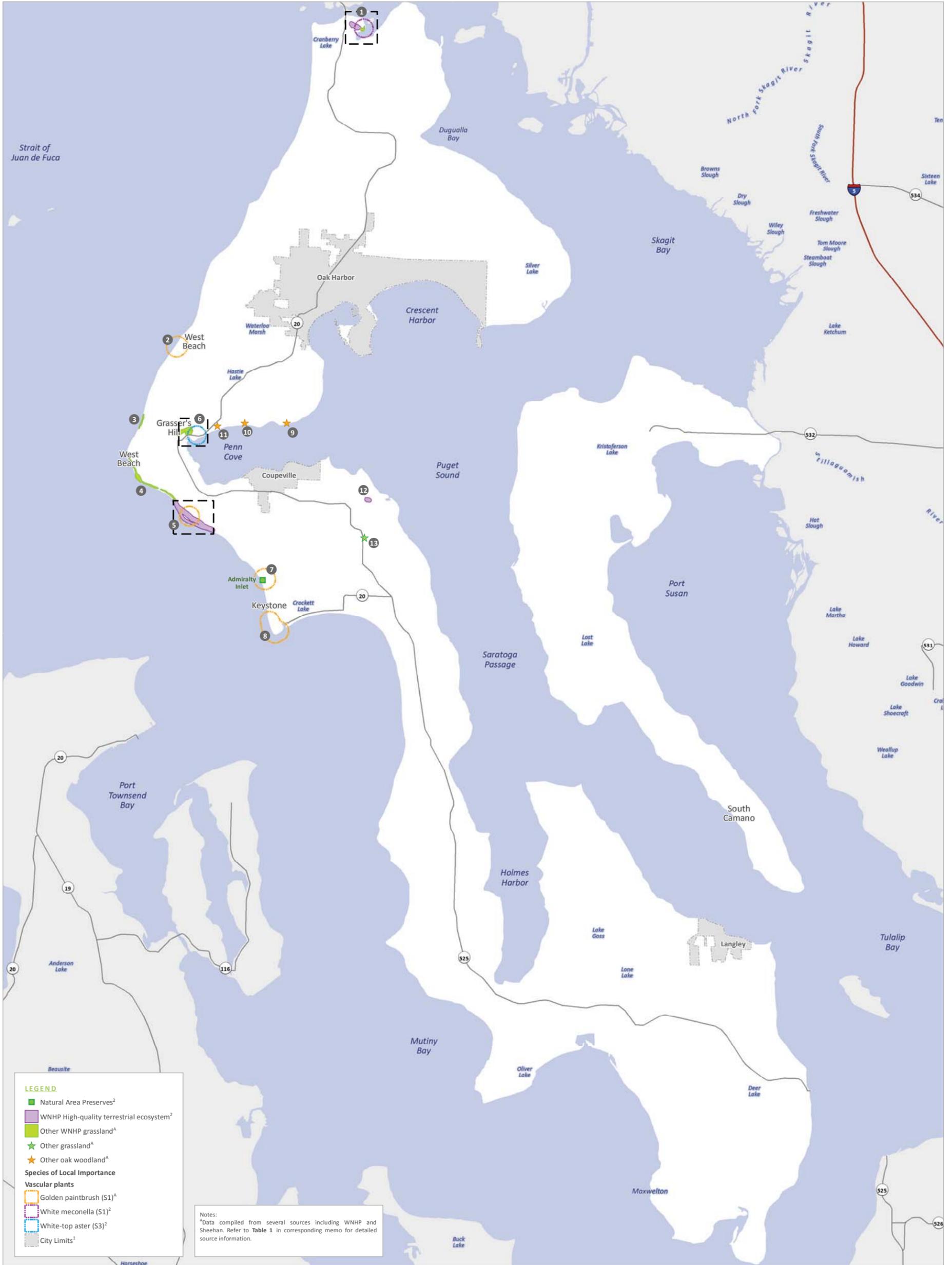
Table 3. Diagnostic wet prairie plants.

Common Name (<i>Scientific Name</i>)	Common Name (<i>Scientific Name</i>)	Common Name (<i>Scientific Name</i>)
Dense Sedge * (<i>Carex densa</i>)	Bradshaw's Lomatium * (<i>Lomatium bradshawii</i>)	Plantain-leaf Buttercup (<i>Ranunculus alismifolius</i>)
Green-sheath Sedge (<i>Carex feta</i>)	Bog Bird's-foot-trefoil (<i>Lotus pinnatus</i>)	Bird's-foot Buttercup (<i>Ranunculus orthorhynchus</i>)
Foot-hill Sedge (<i>Carex tumulicola</i>)	Large-leaf Lupine (<i>Lupinus polyphyllus</i>)	Northwestern Saxifrage (<i>Saxifraga integrifolia</i>)
One-sided Sedge (<i>Carex unilateralis</i>)	Wyeth's Lupine (<i>Lupinus wyethii</i>)	Bog Saxifrage (<i>Saxifraga oregana</i>)
Giant Camas (<i>Camassia leichtlinii</i>)	Gairdner's Yampah (<i>Perideridia gairdneri</i>)	Hairy-stemmed Checkermallow * (<i>Sidalcea hirtipes</i>)
Common Camas (<i>Camassia quamash</i>)	Oregon yampah * (<i>Perideridia oregana</i>)	Rose Checkermallow * (<i>Sidalcea malviflora</i> v. <i>vigata</i>)
Tufted Hairgrass (<i>Deschampsia cespitosa</i>)	Fragrant Popcorn Flower (<i>Plagiobothrys figuratus</i>)	Idaho Blue-eyed-grass (<i>Sisyrinchium idahoense</i> v. <i>idahoense</i>)
Annual Hairgrass (<i>Deschampsia danthonioides</i>)	Great Polemonium * (<i>Polemonium carneum</i>)	California False Hellebore (<i>Veratrum californicum</i>)
Cascade Downingia (<i>Downingia yina</i>)	American Bistort (<i>Polygonum bistortoides</i>)	American False Hellebore (<i>Veratrum viride</i>)
Oregon Coyote Thistle * (<i>Eryngium petiolatum</i>)	Fanleaf Cinquefoil (<i>Potentilla gracilis</i>)	

* Rare wet prairie species



Map 1. Documented Prairie and Oak Woodland Communities



Sources:
¹Island County Planning and Development, ²WA Department of Natural Resources

Disclaimer:
 All features depicted on this map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm/verify information shown on this map.

Date: 4/20/2016
 Name: Map01_DocumentedPrairies

Original Scale = 1:83,000 @ 22" x 34" layout.

