

**NATIONAL NATURAL LANDMARK
CENTRAL PALOUSE GRASSLAND RECOMMENDATION**

KAHLOTUS RIDGETOP



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Executive Summary

This report summarizes the results of a 2008 re-evaluation of a 2002 Kahlotus Ridgetop recommendation as a National Natural Landmark. In 1987, a phase III National Natural Landmark (NNL) report concluded that, out of ten potential sites, Kahlotus Ridgetop was the best remaining example of the Central Palouse Prairie grassland subtheme and consequently recommended the Kahlotus Ridgetop for landmark status (Crawford 1987). Site visits by Joe Rocchio on May, 06 and July 21, 2008 provided the most recent assessment of the Kahlotus Ridgetop site. Four comparative site re-visits in Washington were conducted by Rex Crawford in 2002-04 and in Oregon by Jimmy Kagan, Oregon Natural Heritage Program in 2006-08. All occurrences of Central Palouse grassland steppe are small, isolated in landscapes fragmented by agriculture and have been subject to some degree of on-site disturbance. Almost all Central Palouse remnants are on private land. Our comparison selected the site that best illustrates the subtheme in the best condition. Kahlotus Ridgetop meets all these criteria. Although Darr Flat is larger and more diverse, its recent land use history reduces its overall condition. The other sites are similar or smaller size, generally less diverse and in poorer ecological condition.

Kahlotus Ridgetop is located approximately 3.5 miles north of the town of Kahlotus, Washington in Franklin County. Most of Kahlotus Ridgetop supports the bluebunch wheatgrass – Idaho fescue (*Pseudoroegneria spicata* – *Festuca idahoensis*) Palouse grassland association (Daubenmire 1970, NatureServe 2009). It is more abundant on northerly aspects. Scattered rabbitbrush (*Euthamia nauseous* = *Chrysothamnus nauseous*) and big sagebrush (*Artemisia tridentata* ssp. *tridentata*) shrubs are seen across the site reflecting past land use of seasonal cattle grazing up until 1978. Grazing has been eliminated since 1978. Threetip sagebrush (*Artemisia tripartita*), found sparsely at the heads of minor drainages in 1987, has increased in cover in those areas. Southerly aspects support a mixed community of bluebunch wheatgrass – Idaho fescue, bluebunch wheatgrass – Sandberg’s bluegrass (*Poa secunda*) and needle-threadgrass (*Hesperostipa comata*=*Stipa comata*). Currently, southerly aspect condition typically displays a high cover of the exotic annual cheatgrass (*Bromus tectorum*). Overall condition of southerly aspects has been poorer than northerly aspects and currently that difference is more obvious than in 1987.

Kahlotus Ridgetop has been managed since 1981 by the Washington Department of Natural Resources (WADNR) as a Natural Area Preserve. The area is “...established to preserve a remnant example of grass-dominated steppe in the Columbia Basin of Washington” (DNR 1988). The management goal of the site is “...to allow ecological and geological processes to predominate” (DNR 1988). Active management by WADNR has focused on noxious weed invasion and exclusion of inappropriate uses of the site. The management plan is compatible with long-term persistence of the area as a National Natural Landmark illustrating the Central Palouse Grassland.

Introduction

Source of Site Proposal

This report summarizes the results of a 2008 re-evaluation of the 2002 Kahlotus Ridgetop recommendation as a National Natural Landmark. In 1975, Rexford F. Daubenmire recommended Kahlotus Ridgetop for National Natural Landmark status. In 1987, a phase III National Natural Landmark report concluded that, out of ten potential sites, Kahlotus Ridgetop was the best remaining example of the Central Palouse Prairie grassland subtheme and consequently recommended the Kahlotus Ridgetop for landmark status (Crawford 1987). In 2002, Kahlotus Ridgetop remained the best example of the Central Palouse Prairie grassland subtheme of a total of five sites that were evaluated (Crawford 2002). In May and July of 2008, Joe Rocchio of the Washington Natural Heritage Program revisited the Kahlotus Ridgetop site. The results of that visit are added to previous observations in this report.

Evaluators

Rex Crawford, PhD.

As Washington natural heritage ecologist, Dr. Crawford has conducted vegetation surveys across Washington State since 1987. He has coordinated classification of vegetation statewide and development and application of conservation rating (ranking) of vegetation types. With over 10 years of focus in eastern Washington vegetation, he gained particularly relevant experience in project management and knowledge of flora in the Columbia Basin. Recent and pertinent publications are listed below.

Crawford, R. C., C. B. Chappell, C. C. Thompson, and F. J. Rocchio. 2009. Vegetation Classification of Mount Rainier, North Cascades, and Olympic National Parks. Natural Resource Technical Report NPS/NCCN/NRTR—2009/D-586. National Park Service, Fort Collins, Colorado.

Crawford, R.C. and J. Kagan. 2001. Eastside Grasslands. In: Chapter 2. Wildlife habitats: Descriptions, Status, Trends, and System Dynamics. Christopher B. Chappell, Rex C. Crawford, Charley Barrett, Jimmy Kagan, David H. Johnson, Mikell O’Mealy, Greg A. Green, Howard L. Ferguson, W. Daniel Edge, Eva L. Greda, and Thomas A. O’Neil. IN: Wildlife-Habitat Relationships in Oregon and Washington. Johnson and O’Neil, Oregon State Press. Corvallis, OR. 22-115 p.

Crawford, R. C., J. S. Kagan, and R. K. Moseley. 1989. Final Report, Phase II, 1989 National Natural Landmark Project, Columbia Plateau Natural Region Ecological Themes; Including the following ecological theme site evaluations: Ponderosa Pine, Grand Fir, Low Sagebrush, Stiff Sagebrush, Salt Desert Shrub, and Montane, Subalpine, and Alpine parklands and Wetlands. Unpublished report prepared for the U.S. Department of the Interior, National Park Service, Pacific Northwest Region, Seattle, WA. 91 p.

Joe Rocchio

As Colorado natural heritage ecologist between 1999-2007 and Washington natural heritage ecologist since 2007, Mr. Rocchio has over 10 years of experience classifying vegetation and wetland ecosystems, conducting botanical and ecological inventories,

developing indicators to assess ecological condition, performing wetland delineations, and identifying and prioritizing conservation targets. Recent and pertinent publications are listed below.

Rocchio, J. and R. Crawford. 2008. Field Guide to Washington' Ecological Systems (DRAFT) Washington Natural Heritage Program, Olympia, WA. 240 p.

Rocchio, J. 2007. Assessing Ecological Condition of Headwater Wetlands in the Southern Rocky Mountains Using a Vegetation Index of Biotic Integrity. Report prepared for U.S. Environmental Protection Agency, Region 8 and Colorado Department of Natural Resources, Denver, CO. Colorado Natural Heritage Program, Colorado State University, Fort Collins, CO. <http://www.cnhp.colostate.edu/reports.html>

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Scope of Evaluation

Previous evaluation reports for the Central Palouse Prairie Grassland subtheme (Daubemire 1975; Crawford 1987; 2002) and the Kahlotus site (Schuller 1983) were used for much of this analysis. Other literature listed in the reference section was used as supplementary data. In addition, site visits by Joe Rocchio on May 06 and July 21, 2008 provided the most recent assessment of the Kahlotus Ridgetop site. Comparative site re-visits in Washington were conducted by Crawford in 2002-04 and in Oregon by Jimmy Kagan, Oregon Natural Heritage Program in 2006-08.

Site Characteristics

Overview

Kahlotus Ridgetop is located approximately 3.5 miles north of the town of Kahlotus, Washington in Franklin County (Figure 1). The legal description of the site is Township 14 North, Range 34 East, parts of Section 16 Willamette Meridian (Figures 2 and 3). The site is managed as a Natural Area Preserve for its natural grassland qualities by the Washington Department of Natural Resources. The site boundary is fenced and is legally described as a Washington Department of Natural Resources (DNR) Natural Area Preserve. The size of the Natural Area Preserve is 239.59 acres. DNR requires notification prior to site visitation (509-925-8510).

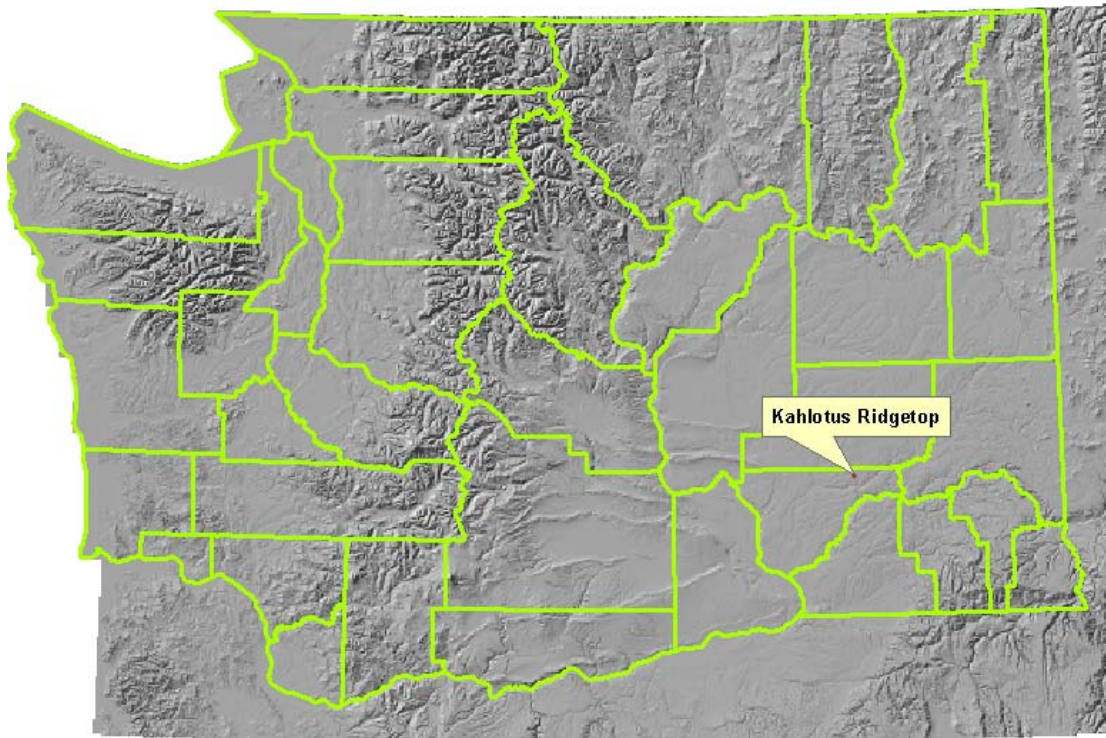


Figure 1. Location of Kahlotus Ridgetop in Washington



Figure 2. Aerial Image of Kahlotus Ridgetop Site Boundary 2006

Natural History Themes Represented

The Kahlotus Ridgetop site represents a natural feature in the Columbia Plateau Biophysiological Province. It more specifically represents a Grassland Land Ecosystem (Theme 25) Steppe (Sub-theme b) according to NPS 1990. A more detailed characterization of NPS Theme and Sub-themes in 1986 recognized Kahlotus Ridgetop to represent the Palouse and Plateau Grassland Theme, Central Palouse Grassland Subtheme. The 1986 classification recognized the nearly shrub-less Palouse prairie and Plateau grasslands as steppe distinct from the shrub steppe that covers most of the Columbia Plateau Biophysiological Province at the Theme level and the driest climatic variation of the Palouse Prairie at the Sub-theme level.

Primary Natural Features

Site Specific Discussion. Kahlotus Ridgetop is a naturally vegetated section of the Palouse hills of the Columbia Plateau Biophysiological Province.

Most of Kahlotus Ridgetop supports the bluebunch wheatgrass – Idaho fescue (*Pseudoroegneria spicata* – *Festuca idahoensis*) Palouse grassland association (G1S1 see <http://www.natureserve.org/explorer/ranking.htm>) (Daubenmire 1970, NatureServe 2001). It is most abundant on northerly aspects where it appears with an excellent cover of ground mosses and lichens, indicators of excellent condition sites. Forb and other native grasses are within the natural range of diversity of high-quality examples of this grassland type.

Scattered rabbitbrush (*Euthamia nauseous* = *Chrysothamnus nauseous*) and big sagebrush (*Artemisia tridentata* ssp. *tridentata*) shrubs are seen across the site reflecting past land use of seasonal cattle grazing up until 1978. Grazing has been eliminated since 1978 and there has been an apparent decline in rabbitbrush and big sagebrush. Threetip sagebrush (*Artemisia tripartita*), found sparsely at the heads of minor drainages in 1987, has increased in cover in those areas.

Southerly aspects support a mixed community of bluebunch wheatgrass – Idaho fescue, bluebunch wheatgrass – Sandberg's bluegrass (*Poa secunda*) (G4?S2) and needle and thread (*Hesperostipa comata*=*Stipa comata*). Currently, southerly aspect condition typically displays a high cover of the exotic annual cheatgrass (*Bromus tectorum*). Overall condition of southerly aspects has been poorer than northerly aspects and currently that difference is more obvious than in 1987. The northwestern half of the recommended landmark is in very good condition. The southeastern half is in fair condition with a mix of native bunchgrass and exotic annuals.

General Discussion. The Grassland Theme 25 is the most extensive formation in North America and is characterized by grass and other herbaceous plant dominance (NPS 1990). Climate, fire, and grazing are three primary factors that are responsible for most extensive natural grasslands. They occur in areas with generally low annual precipitation but greater than deserts. In contrast to the Great Plains' short and tall grasslands with

summer rains, steppe grasslands in the Columbia Plateau Biophysiological Province are characterized by winter to spring precipitation and a dominance of bunchgrasses often with a scattered shrub layer referred to as shrub steppe. The shrub steppe portion of the Grassland, Steppe Sub-theme is similar to the northern Great Basin Desert (Theme 27a) differing by a greater abundance of bunchgrasses than in deserts. Steppe without shrubs in the Columbia Plateau Biophysiological Province is informally referred to as Palouse Prairie or grassland.

Lichthardt and Moseley (1997) summarized the use and application of the term Palouse Prairie in formal and informal literature and organized grasslands in the inland Pacific Northwest into categories generally following Tisdale (1983). The Lichthardt and Moseley (1997) treatment of Pacific Northwest grassland is accepted for this report within the organization used in earlier theme studies (Idaho Natural Heritage 1986, The Nature Conservancy 1987). R. F. Daubenmire (1975) originally defined part of the Columbia Plateau natural landscape as part of the Grassland and Desert: Steppe Zone subdivided into the Shrub steppe and the Grass steppe. The 1986 Phase I Classification of Landmark themes for the Columbia Plateau Natural Region proposed four grassland themes detailing Daubenmire's (1975) Grass steppe (Idaho Conservation Data Center 1986). Those Columbia Plateau grassland themes are:

- 1) Lowland and Valley Grassland
- 2) Palouse and Plateau Grassland
- 3) Canyon Grassland
- 4) Montane Grassland

NatureServe (<http://www.natureserve.org/explorer/index.htm>) classifies and further details these grasslands as the following Ecological System types:

- 1) Lowland and Valley Grassland as CES304.787 Inter-Mountain Basins Semi-Desert Grassland
- 2) Palouse and Plateau Grassland as CES304.792 Columbia Basin Palouse Prairie
- 3) Canyon Grassland as CES304.993 Columbia Basin Foothill and Canyon Dry Grassland
- 4) Montane Grassland as CES306.040 Northern Rocky Mountain Low Montane, Foothill and Valley Grassland

Phase I and II theme studies in 1986-1989 recognized and detailed subthemes for Columbia Plateau grassland. Grassland Theme and Subtheme descriptions are summarized in Table 1.

GRASSLAND THEME	SUBTHEME	Landscape	Slope length (feet)	Elevation (feet)	PPT (inches)	Primary associations
Lowland and Valley						
	Lowland	wide river basins, sand dunes	0 - 100	300 - 2000	6 -15	Thickspike Wheatgrass - Needle-and-Thread grassland Needle-and-Thread - Curly Bluegrass grassland
	Valley	wide river basins, alkali basins	0 - 10	2000 - 4000	6 -15	Inland saltgrass, Basin wildrye – saltgrass Nebraska sedge
Palouse and Plateau						
	Northern Palouse	rolling deep loess hills in Steppe zone	10-100s	1500 - 3000	20 - 30	Idaho fescue - Common Snowberry Idaho Fescue - wild rose Rough fescue – Idaho fescue
	Central Palouse	rolling deep loess hills in Steppe zone	10-100s	1100 - 3000	10 - 20	Bluebunch Wheatgrass - Idaho fescue Palouse, Bluebunch Wheatgrass - Arrowleaf Balsamroot - Curly Bluegrass
	Plateau	undulating basalt residium with loess plain within lower forest zone	1-10s	4000 - 6000	20 - 25 (Snow)	Hood's Sedge - Idaho fescue Idaho Fescue - Prairie Junegrass Idaho Fescue - Parsnip-flower Wild Buckwheat
Canyon		steep open slopes residium/ alluvium	100 - 1000s	300 - 5000	10-40 (Snow)	Bluebunch Wheatgrass - Idaho fescue Canyon Bluebunch Wheatgrass - Hair-spine Prickly-pear - (Curly Bluegrass)
Montane		Mountainous	0 - 1000s	6300 - 8400	Snow	Green fescue grassland

Table 1. Characteristics of Columbia Plateau Biophysigraphic Province Grassland Steppe

Secondary Natural Features

The site supports a population of Piper’s daisy (*Erigeron piperianus*), state sensitive species (G3S3). Kahlotus Ridgetop remains the best condition representative of Central Palouse grassland. The site also illustrates an undisturbed soil profile in the Palouse Hills landform. The giant Palouse earthworm (*Driloleirus americanus*) could occur at Kahlotus Ridgetop NAP based on its March 2010 discovery in another Palouse grassland remnant. It is currently under review by the U.S. Fish and Wildlife Service for listing under the

Physical setting

General. The Palouse region is characterized by rolling hills and deep, fertile, loess-derived soils. The general appearance is rolling dune-like hills. Slope gradients range from 5 to 30 percent. Soils are deep to very deep, highly developed, and consist of silt loam surface textures and silt loam and silty clay loam subsurface textures. Rock outcrops are uncommon but more frequent in the Central Palouse than in the Northern Palouse Sub-theme. Climate of the Central Palouse steppe is typical of the south central Columbia Basin in Washington with cold, wet winters and hot, dry summers (Table 1). By 1900, 90% had already been converted to agriculture. Less than one percent of the Palouse Prairie remains today (Noss et al. 1995).

Site Specific. Annual precipitation at Kahlotus Ridgetop is approximately 10 inches occurring mostly as rain with snow accumulation typically restricted to December and January. Typically, less than 15% of total precipitation falls in summer and it is not unusual for July and August to receive no measureable rain.

Topography is gentle to moderate with the steepest slopes near 20 degrees on a northeast to southwest ridge. Ephemeral creeks that are controlled by the parallel ridge orientation drain northeasterly. Elevation ranges from 1360-1558 feet. Wisconsin-age loess provides the major parent material for soil development. Soils on Kahlotus Ridgetop are undisturbed examples of the deep loess soils that typify the Palouse prairie: Ritzville and Wacota soil series (Schuller 1993).

The surrounding landscape at Kahlotus Ridgetop is almost completely in agricultural production. The land immediately adjacent on three sides of the site is in Conservation Reserve Program status, that is, the land is placed in perennial grass cover to prevent soil erosion and provide wildlife cover over a limited number of years. This perennial grass cover adds to the natural landscape appearance of the Kahlotus Ridgetop site.

Land use and Condition

Kahlotus Ridgetop has been managed since 1981 by the Washington Department of Natural Resources (WADNR) as a Natural Area Preserve. The area is “established to preserve a remnant example of grass-dominated steppe in the Columbia Basin of Washington” (WADNR 1988). The management goal of the site is “to allow ecological and geological processes to predominate” (WADNR 1988). Active management by WADNR has focused on noxious weed invasion and exclusion of inappropriate uses of the site. The management plan is compatible with long-term persistence of the area as a National Natural Landmark illustrating the Central Palouse Grassland.

Threats

Currently, southerly aspect condition displays a high cover of the exotic annual cheatgrass (*Bromus tectorum*). Continued invasion by cheatgrass poses the biggest threat to the long-term character of Kahlotus Ridgetop.

Sensitive or Hazardous Resources

None.

Comparative Assessment

Regional Site Inventory

Central Palouse Grassland sites were evaluated in 1986-1989 as part of a Phase II NNL theme studies for NPS (Idaho Natural Heritage 1986, The Nature Conservancy 1987), a second time in 2001 and 2002, and recently in 2008-2009. One newly located site in 2007 was included in the evaluation. Sites are evaluated based on subjective assessment of five criteria:

1. Illustrative Character-How does the site compare to the range of values in Table 1 for Central Palouse sub-theme?
2. Present Condition – How similar is the grassland association to those described in Daubenmire 1970? Is the native vegetation likely to persist?
3. Diversity – How many Columbia Plateau Biophysiological Province grassland steppe and related plant communities are present?
4. Rarity – How abundant are the set of grassland associations on site and their condition compared to other similar sites?
5. Value to Education and Science – How accessible is the site for education and scientific study? Is there a history of education and scientific study?

Each criterion is assigned a rating of Excellent, Good, Fair or Poor based on NatureServe ranking criteria (<http://www.natureserve.org/explorer/ranking.htm>) and the professional judgment of the authors. The ranked results of those evaluations are:

1. Kahlotus Ridgetop Natural Area Preserve - Washington
2. Darr Flat - Oregon
3. MacGregor Hills - Washington
4. Sand Hollow - Oregon
5. Washtucna - Washington

Other sites considered but rejected:

Dodge Junction - Washington. Ecological condition has deteriorated over the past 20 years due to fragmentation and direct degrading effects from adjacent land use.

Pleasant View - Washington. Ecological condition has deteriorated over the past 20 years due to fragmentation, weed invasion and isolation effects.

New York Gulch - Washington. Ecological condition and size has deteriorated over the past 20 years due to fragmentation and isolation effects.

Site Descriptions

1. Kahlotus Ridgetop Natural Area Preserve

Location: Section 16 Township 14 Range 34 East Willamette Meridian, Franklin County, Washington

Size: 240 acres

Ownership: Washington State Department of Natural Resources

Illustrative Character: Good. Kahlotus Ridgetop is located in the northwestern part of the sub-theme range on typical rolling loess soils of the Palouse prairie. This site supports a good example of the bluebunch wheatgrass- Idaho fescue (*Pseudoroegneria spicata* – *Festuca idahoensis*) association on both northerly and southerly aspects.

Present Condition: Good. Approximately 100 acres supports good to excellent condition grassland. The remaining acreage is covered with native grassland species and the invasive, exotic annual species, cheatgrass (*Bromus tectorum*). Prior to Natural Area Program (NAP) designation occasional grazing lowered ecological condition on portions of the site. In 2008, approximately one-half of the Natural Area burned. Over the past 20 years, edge effects from surrounding agricultural land in the Conservation Reserve Program have resulted in the remaining portion of the site being in fair to good condition. Noxious weed invasion and direct site manipulation are minimized due to Natural Area Preserve management.

Diversity: Fair. The NAP contains a relatively undisturbed example of the bluebunch wheatgrass - Idaho fescue association on a modal site. Three-tip sagebrush (*Artemisia tripartita*) is found at the heads of some draws. Forb diversity is representative of this association.

Rarity: Good. Sites with the bluebunch wheatgrass - Idaho fescue association in good condition and with ample size are very rare in Washington and Oregon. The site contains a population of the state rare plant, Piper's daisy (*Erigeron piperi*).

Value for Science and Education: Excellent. The site has been recognized as an important site since 1975 when R. F. Daubenmire recommended it for NNL status. Since 1981, when Kahlotus Ridgetop was designated a NAP by the Washington State Department of Natural Resources, it has served as a site for research projects associated with vegetation, breeding bird, rare plant, and suspended dust monitoring. The site is within a 2-hour drive of Washington State University and the University of Idaho.

2. Darr Flat

Location: Umatilla County, Oregon

Size: 2000 acres

Ownership: Private

Illustrative Character: Good. Darr Flat supports an example of the Central Palouse grassland as it occurs in Oregon. Bluebunch wheatgrass - Idaho fescue occurs primarily on deep loess soils on a low, rolling topography. The Idaho fescue-junegrass (*Koeleria macrantha*) association, more indicative of Plateau grassland, occurs on north aspects.

Present Condition: Fair. Oregon Natural Heritage Program evaluated Darr Flat in 2008. The private landowner earlier put in water developments and grazed cattle and sheep until about 1998 when cattle were removed along with fences and old buildings. The riparian area and upland bunchgrasses have recovered. Sheep grazing continues, so the forb component, especially in the areas where the sheep concentrate, is still depauperate.

Diversity: Good. In addition to the Idaho fescue dominated communities, two lithosolic (scabland) communities and coyote willow/basin wildrye (*Salix exigua* / *Leymus cinereus*) riparian communities appear at Darr Flat.

Rarity: Fair. Idaho fescue communities of this size are unusual. The federally threatened plant, *Silene spaldingii*, is listed as extirpated at Darr Flat (Hill and Grey 2004).

Value for Science and Education: Poor. Darr Flat occurs along a state highway, making it easily accessible to scientists and educational groups. Community colleges are within a 2-hour drive and major universities are 4 to 6-hour drives. However, private land ownership may limit access.

3. MacGregor Hills

Location: Whitman County, Washington

Size: 275 acres

Ownership: Private and Washington State Department of Natural Resources

Illustrative Character: Good. MacGregor Hills occurs on two adjacent, isolated Palouse hills at the topographic transition from Palouse hill to Channel scablands. The bluebunch wheatgrass - Idaho fescue association occupies most of the site with bluebunch wheatgrass - Sandberg's bluegrass in the intervening shallow soils. Soils are derived from deep loess on two aspects.

Present Condition: Fair. This site has been grazed in the past and is currently grazed. Observed in 2007, the ecological condition varies with better ecological condition on the upper steep slopes. Lower slopes are of poorer quality with weedy species common (primarily weedy annual bromes).

Diversity: Fair. The bluebunch wheatgrass - Idaho fescue grassland is complimented by occurrences of the bluebunch wheatgrass - Sandberg's bluegrass community.

Rarity: Poor. Similar quality grassland communities are unusual. No rare species are known at MacGregor Hills.

Value for Science and Education: Fair. The site is within a 2-hour drive of Washington State University and the University of Idaho and accessible from a county road 6 miles from a state highway. However, private land ownership could limit access.

4. Sand Hollow

Location: Morrow County, Oregon

Size: 160 acres

Ownership: Private

Illustrative Character: Good. Sand Hollow occurs along a hillside and top of a long north-south ridge. Bluebunch wheatgrass - Idaho fescue association occupies most of the site.

Present Condition: Good. This site has been grazed in the past but is fenced and not grazed at present. Oregon Natural Heritage Program observed Sand Hollow in 2008 and concluded it is in similar condition as previous observations although the invasive, exotic yellow star thistle (*Centaurea solstitialis*) is invading the very lowest slopes near the road. This site is on private land.

Diversity: Fair. The bluebunch wheatgrass - Idaho fescue grassland is complimented by occurrences of lithosolic or scabland communities and the big sagebrush (*Artemisia tridentata*)/bluebunch wheatgrass association.

Rarity: Poor. Similar quality grassland communities are unusual. No rare species are known at Sand Hollow.

Value for Science and Education: Poor. Sand Hollow occurs along a state highway making it easily accessible to scientists and educational groups. Community colleges are within a 2-hour drive and major universities are 4 to 6-hour drives. However, private land ownership may limit access.

5. Washtucna

Location: Adams County, Washington

Size: 4 acres

Ownership: Private

Illustrative Character: Fair. This small site is centrally located in the Central Palouse in Washington. It occurs in deep loess soils in a climate characteristic of the sub-theme. Topographic variation is limited although most indicator species of the bluebunch wheatgrass-Idaho fescue association are present.

Present Condition: Fair. Washtucna, a 4-acre remnant, is on private land, surrounded by agricultural fields, has a power line overhead, and road cut along one boundary. Despite these threats the site retains its natural character.

Diversity: Poor. In addition to the bluebunch wheatgrass - Idaho fescue grassland, the site supports a small occurrence of the three-tip sagebrush/Idaho fescue association.

Rarity: Fair. Central Palouse grassland in this condition is rare. Additionally, Washtucna supports the rare plant Piper's daisy (*Erigeron piperi*).

Value for Science and Education: Fair. Washtucna Steppe is and has been a field trip location for Washington State University and University of Idaho field ecology field trips since the 1970's. The site is readily accessible from a state highway.

Comparative Analysis and Discussion

All occurrences of Central Palouse grassland steppe are small, isolated in landscapes fragmented by agriculture and have been subject to some degree of livestock grazing or other on-site disturbance that has altered native vegetation composition. Almost all Central Palouse remnants are on private land. Comparison with other sites concluded that Kahlotus Ridgetop best illustrates the sub-theme in the best condition and provides access for on-going scientific research and educational activities. Although Darr Flat is larger and more diverse, its flatter topography not typical of Palouse Hills, its recent landuse history makes it a less likely candidate to achieve NNL status. The other sites are similar or smaller size, lesser condition.

Recommendation

Summary of Significance Statement

The Palouse prairie is the most endangered and the most altered landscape in the inland Pacific Northwest (Noss et al. 1995, Lichthardt and Moseley 1997, Crawford and Kagan 2001). Approximately one percent of the original prairie remains and is represented in small fragments within a cultivated landscape. Areas that remain continue to change in structure and species composition (Klepeis 2001). Comparison with other sites concluded that Kahlotus Ridgetop best illustrates the sub-theme in the best condition and provides access for current scientific research and educational activities. Kahlotus Ridgetop, recommended for Landmark status in 1987, still best illustrates the Central Palouse Prairie grassland subtheme of the sites evaluated. The site is managed for its natural grassland qualities by the Washington Department of Natural Resources.

Proposed Landmark Boundary and Ownership Maps

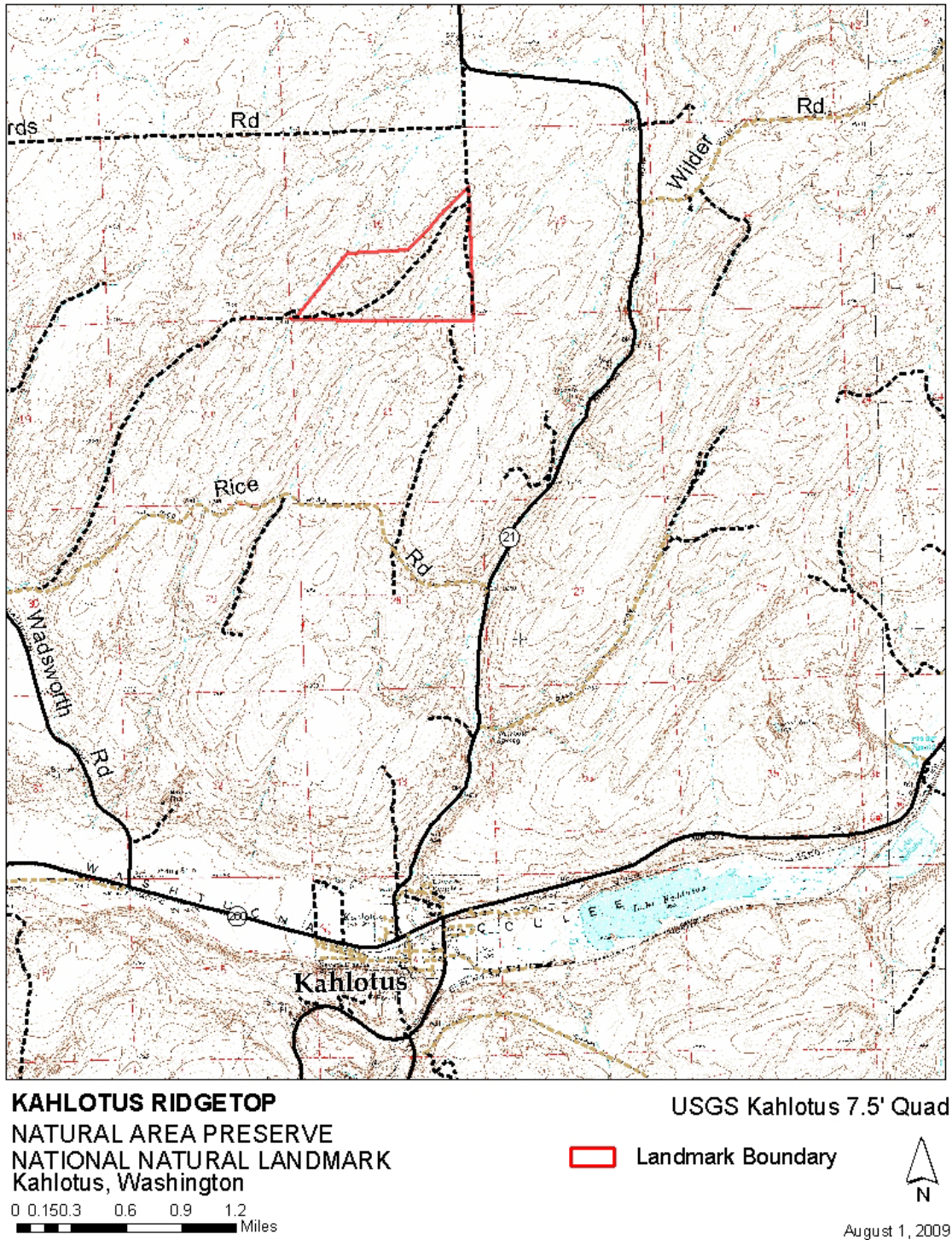
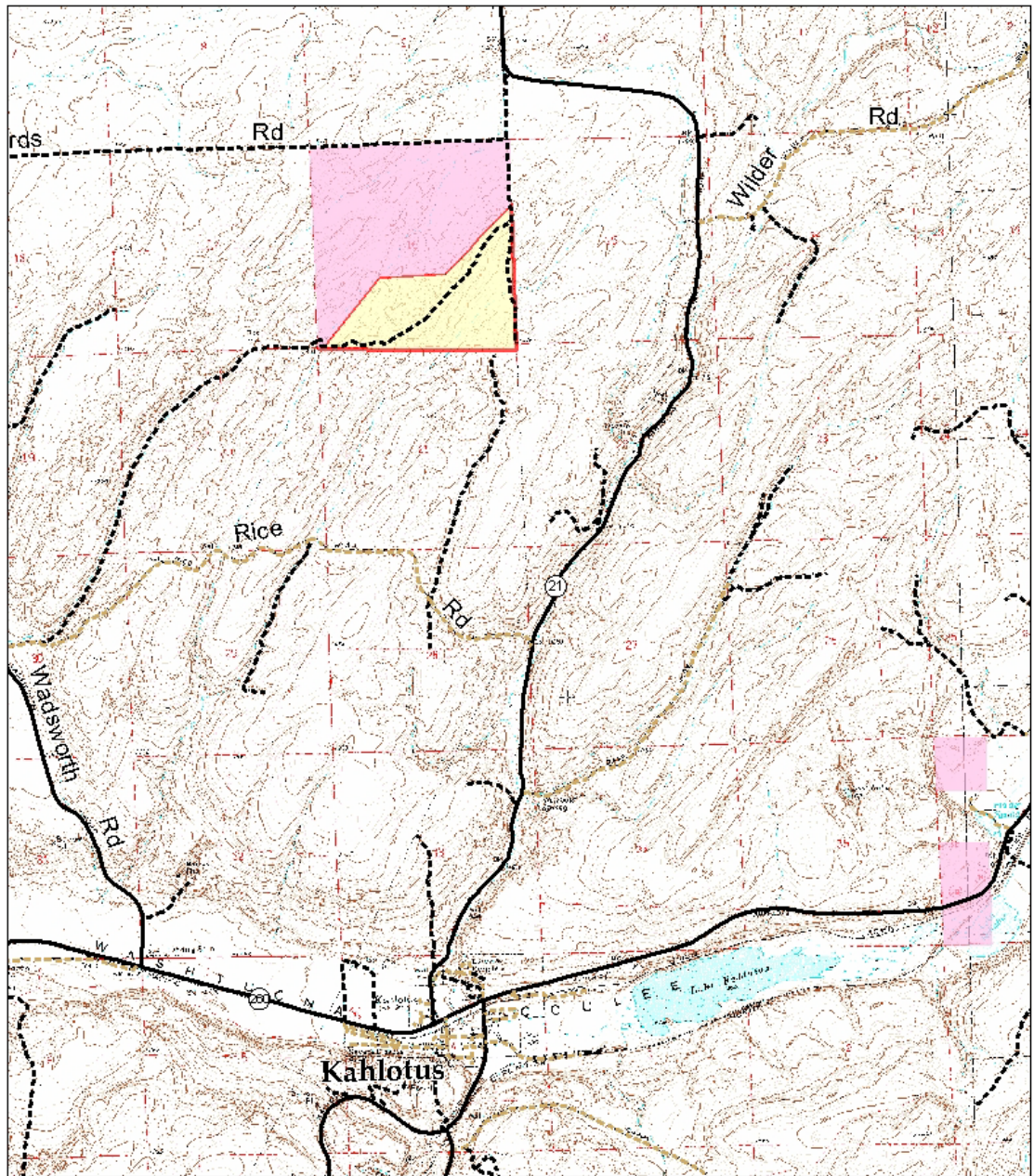


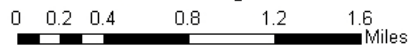
Figure 3. Proposed Kahlotus Ridgetop Landmark Boundary Map



**KAHLOTUS RIDGETOP
NATURAL AREA PRESERVE
NATIONAL NATURAL LANDMARK
Kahlotus, Washington**

USGS Kahlotus 7.5' Quad

- NAP / Landmark Boundary
- DNR Trust Lands



August 1, 2009

Figure 4. Proposed Kahlotus Ridgetop Landmark Ownership Map

To access the site from Kahlotus, Washington go 9.6 km (6 mile) north on State Highway 21, turn south on farm road and go 0.8 km (0.5 mi) to the northeast corner of the site signed as a Natural Area Preserve.

Natural Landmark Brief

Name: Kahlotus Ridgetop

Location: Franklin County, Washington

Description:

Kahlotus Ridgetop is located approximately 3.5 miles north of the town of Kahlotus, Washington in Franklin County. Most of Kahlotus Ridgetop supports the bluebunch wheatgrass – Idaho fescue (*Pseudoroegneria spicata* – *Festuca idahoensis*) Palouse grassland association (Daubenmire 1970, NatureServe 2001). It is best expressed on northerly aspects. Scattered rabbitbrush (*Euthamia nauseous* = *Chrysothamnus nauseous*) and big sagebrush (*Artemisia tridentata* ssp. *tridentata*) shrubs are seen across the site reflecting past land use of seasonal cattle grazing up until 1978. Grazing has been eliminated since 1978. Threetip sagebrush (*Artemisia tripartita*), found sparsely at the heads of minor drainages in 1987, has increased in cover in those areas. Southerly aspects support a mixed community of bluebunch wheatgrass – Idaho fescue, bluebunch wheatgrass – Sandberg’s bluegrass (*Poa secunda*) and needle-threadgrass (*Hesperostipa comata*=*Stipa comata*). Currently, southerly aspect condition typically displays a high cover of the exotic annual cheatgrass (*Bromus tectorum*). Overall condition of southerly aspects has been poorer than northerly aspects and currently that difference is more obvious than in 1987.

Significance:

The Palouse prairie is the most endangered and the most altered landscape in the inland Pacific with approximately one percent of the original remaining represented in small fragments. A comparison with other sites concludes that Kahlotus Ridgetop best illustrates the sub-theme and provides access for continuing scientific research and educational activities. The site is managed for its natural grassland qualities by the Washington Department of Natural Resources.

Ownership: State

Designation:

Evaluation: Rex Crawford and Joe Rocchio, Washington State Department of Natural Resources, 2009

Summary Presentation

See accompanying Powerpoint.

Supporting Documentation

Acknowledgments

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