

# Level 4 Potential Conservation Area (PCA) Report

Name North Boulder Grasslands

Site Code S.USWRO1\*841

## IDENTIFIERS

Site ID 1869 Site Class PCA  
Site Alias None

## Network of Conservation Areas (NCA)

NCA Site ID	NCA Site Code	NCA Site Name
2528	S.USCOHP*27454	Front Range Foothills-Carter Lake to Boulder

## LOCATORS

Nation United States Latitude 400546N  
State Colorado Longitude 1051702W

## Quad Code Quad Name

40105-A3 Boulder  
40105-B3 Lyons

## County

## Watershed Code Watershed Name

10190005 St. Vrain

## SITE DESCRIPTION

Minimum Elevation	5,360.00 Feet	1,634.00 Meters
Maximum Elevation	6,200.00 Feet	1,890.00 Meters

## Site Description

This foothill hogback area north of Boulder is an example of the abrupt transition between the mountains and plains, it is a compressed foothills area with significant mixing of montane and prairie species. This site spans the North Foothills Highway (Hwy 36) as there are significant areas of native grassland east of the road that are a continuation of the habitat gradient. Bedrock geology of the series of hogbacks is comprised of relatively thin layers of Lyons, Lykins, Dakota, Morrison, Sundance Formations, with various thickness of sandstone interbedded with shales, limestones, mudstones, and siltstones. This site contains one of the largest shale outcrops in Boulder County. Below the hogbacks are broad alluvial fans and terrace deposits of Quaternary alluvium that cap the underlying shale. The compressed hogback formations form a wide arc that is the boundary of the broad, flat Denver Basin landform to the east. The hogbacks are steep-sided and relatively narrow; they support ponderosa pine (*Pinus ponderosa*) savanna that spills down from the ridges. There are widely-spaced, mature ponderosa pine as well as intervening clusters of younger trees. There are broad patches of shrubs embedded within the savanna on sideslopes. These are largely composed of mountain mahogany (*Cercocarpus montanus*), but skunkbush (*Rhus trilobata*) and wax currant (*Ribes cereum*) are common. These habitats transition to grassland systems at the toeslopes and are predominantly needle-and-thread (*Hesperostipa comata*) and western wheatgrass (*Pascopyrum smithii*) with inclusions of New Mexico feathergrass (*Hesperostipa neomexicana*). Additional taller-statured grass species like Indiangrass (*Sorghastrum nutans*), green needlegrass (*Nassella viridula*), wildrye (*Elymus albicans*), big bluestem (*Andropogon gerardii*), porcupine grass (*Hesperostipa spartea*), prairie dropseed (*Sporobolus heterolepis*), mountain muhly (*Muhlenbergia montana*), sideoats grama (*Bouteloua curtipendula*), and are scattered throughout with variable cover. These grassland openings are the primary habitat for several rare butterflies known from the site. Further, the east-facing toeslopes have exposures of dark gray Pierre shale that tend to have sparse barrens vegetation. The globally rare Bell's twinpod (*Physaria bellii*) occurs on the shale barrens and in adjacent rich New Mexico feathergrass grasslands. Barrens support additional species not found in the adjacent grasslands like sweetvetch (*Hedysarum boreale*), prince's plume (*Stanleya pinnata*), and shortstem buckwheat (*Eriogonum brevicaulis*). The grassland expanse east of the highway blankets the dissected, east-west trending mesas and swales. The grasslands are a mosaic of New Mexico feathergrass grasslands on high slopes and slope crests, needle-and-thread Colorado Front Range grassland on sideslopes, and western wheatgrass dominated grasslands in swales. Forb diversity is remarkably high in the needlegrass grassland associations. There are inclusions of shrublands, especially below slope crests that include skunkbush, prickly rose (*Rosa sayi*), and Parry's rabbitbrush (*Chrysothamnus parryi*). Prairie dog towns are embedded within this grassland system, primarily in the landscape swales, but they are expanding upslope to some mesa tops. These towns have degraded vegetation dominated by bindweed (*Convolvulus arvensis*) and with knapweed (*Centaurea* spp.). Prairie dogs also impact some shale barrens habitat. At the south end of the site is the only known location for Colorado butterfly plant (*Gaura neomexicana* ssp.).

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*coloradensis*); it is historical in this location and not seen since 1984. The entirety of this site was burned in the Olde Stage Road fire on January 7-8, 2009.

## Key Environmental Factors

No Data

## Climate Description

Annual precipitation is 12 to 18 inches. Mean annual air temperature is 48 to 52 deg. F. and the frost-free season is about 140-155 days.

## Land Use History

Cultivation of non-native perennial grasses like smooth brome (*Bromus inermis*) and desert wheatgrass (*Agropyron desertorum*) occurred in many of the low-lying swales on the east side of the site. Livestock grazing also occurred on the site, but has not occurred on the west side of Highway 36 for more than fifteen years and has occurred infrequently (less than once in five years) on the east side of Highway 36. A small area in the southern portion of the site was mined historically.

## Cultural Features

No Data

### SITE DESIGN

Site Map P - Partial

Mapped Date 10/21/2008

Designer Neid, S.L.

## Boundary Justification

For botanical occurrences, the roadside and the exposed limestone soils are included, as well as the adjacent grassland, even though crossed by roads. For invertebrate (*Hesperiidae*) occurrences, the mixed-prairie is included in between actual documented occurrences because the habitat and hostplant are contiguous. In addition, the linkages between the sites are included to provide for genetic exchange between occurrences, and to buffer against weedy invasions. Wetland meadow includes area containing *Carex*, presumably *Carex nebrascensis*, which is the Colorado host plant for *E. bimacula* (Stanford pers. comm.), and the surrounding, more xeric areas for management of exotic flora.

Primary Area 4,369.65 Acres

1,768.34 Hectares

### SITE SIGNIFICANCE

Biodiversity Significance Rank B2: Very High Biodiversity Significance

## Biodiversity Significance Comments

The site contains two good (B-ranked) occurrences of the globally imperiled (G2G3/S2S3) Bell's twinpod (*Physaria bellii*), a good (B-ranked) occurrence of a globally imperiled (G1G2/S12) Great Plains mixed grass prairie (*Hesperostipa comata*), a good (B-ranked) occurrence of a globally imperiled (G2/S2?) foothills ponderosa pine scrub woodland (*Pinus ponderosa* / *Cercocarpus montanus* / *Andropogon gerardii*) and numerous healthy populations of global and state rare invertebrates. The federally Threatened Preble's meadow jumping mouse (*Zapus hudsonius preblei*) and the federally Threatened Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) were historically known from the site.

Other Values Rank No Data

## Other Values Comments

No Data

### LAND MANAGEMENT ISSUES

## Land Use Comments

No Data

## Natural Hazard Comments

No Data

## Exotics Comments

Exotics include Mediterranean sage (*Salvia aethiopsis*), jointed goatgrass (*Aegilops cylindrica*), Dalmation toadflax (*Linaria dalmatica*), yellow toadflax (*Linaria vulgaris*), diffuse knapweed (*Centaurea diffusa*), musk thistle (*Carduus nutans*), Scotch thistle (*Onopordium acanthium*), bull thistle (*Cirsium vulgare*), chicory (*Cichorium intybus*), burdock (*Arctium minus*) and sulfur cinquefoil (*Potentilla recta*). Wetland areas are heavily invaded by houndstongue (*Cynoglossum officinale*), Canada thistle (*Cirsium arvense*), Russian olive (*Elaeagnus angustifolia*) and teasel (*Dipsacus sylvestris*).

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## Offsite

Neva Road crosses E-W through site. Highway 36 also crosses N-S through site. To west, over the ridge and at bottom of slope is a paved road and housing development. Subdivisional development at Hwy 36 and Lee Hill Rd. Small cement plant on Hwy 36. Unknown activity taking place in Section 36 in and about warehouse areas. During 1996 field season, undeveloped road leading to warehouse was widened considerably. There are reservoirs to northeast (Left Hand Valley), east (Boulder Res.), and to south (Wonderland Lake). Horse corrals, breeding, training, grazing to north. Road and trails leading to site may increase spread of exotic flora.

## Information Needs

Investigate the impact of prairie dogs on shale barrens habitat, the dynamics of prairie dog disturbance, effects on population dynamics of Bell's twinpod, and restoration and recovery trajectories in light of prairie dog activity. Survey grasslands in subsequent field seasons for *Hesperia ottoe*, as 1996 was a poor year for this species (Stanford pers. comm). Flies with *Atrytone arogos* in July. One individual of Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) was documented along a road in 1984 at the southern tip of the site. It was searched for, but not located, in 2008. Further field surveys could locate this Federally Threatened plant.

## ASSOCIATED ELEMENTS OF BIODIVERSITY

Element State ID	State Scientific Name	State Common Name	Global Rank	State Rank	Driving Site Rank
16895	<i>Atrytone arogos</i>	Arogos Skipper	G3	S2	No
17488	<i>Polites origenes</i>	Cross-line Skipper	G5	S3	No
23937	<i>Physaria bellii</i>	Bell's twinpod	G2G3	S2S3	Yes
22673	<i>Hesperostipa neomexicana</i> Herbaceous Vegetation	Great Plains Mixed Grass Prairie	G3	S3	No
19893	<i>Hesperia ottoe</i>	Ottoe Skipper	G3G4	S2	No
23937	<i>Physaria bellii</i>	Bell's twinpod	G2G3	S2S3	Yes
18073	<i>Viola pedatifida</i>	prairie violet	G5	S2	No
21887	<i>Euphyes bimacula</i>	Two-spotted Skipper	G4	S2	No
21887	<i>Euphyes bimacula</i>	Two-spotted Skipper	G4	S2	No
17796	<i>Cynomys ludovicianus</i>	Black-tailed Prairie Dog	G4	S3	No
21778	<i>Nuttallia sinuata</i>	wavy-leaf stickleaf	G3	S3	No
24587	<i>Pinus ponderosa</i> / <i>Cercocarpus montanus</i> / <i>Andropogon gerardii</i> Wooded Herbaceous Vegetation	Foothills Ponderosa Pine Scrub Woodlands	G2	S2?	Yes
24703	<i>Hesperostipa comata</i> Colorado Front Range Herbaceous Vegetation	Great Plains Mixed Grass Prairie	G1G2	S1S2	Yes

## REFERENCES

Reference ID	Full Citation
166869	Carpenter, Alan. 1993. Rare plants of Colorado questionnaire.
195190	Neid, S., J. Lemly, K. Decker and D. Culver. 2009. Final Report: Survey of Critical Biological Resources in Boulder County 2007-2008. Colorado Natural Heritage Program, Fort Collins, CO.
168404	Pineda, P. M and A.R. Ellingson. 1998. A systematic inventory for rare and imperiled butterflies on the City of Boulder Open Space and Mountain Parks. Unpublished Report to the City of Boulder Open Space and City of Boulder Mountain Parks. 95 pp.
164863	Pineda, P. M., A. R. Ellingson, C. A. Pague. 1997. A systematic inventory for rare and imperiled butterflies on the City of Boulder Open Space and Mountain Parks, and recommendations for their management.
161922	Pineda, Phyllis M. 1996. Field Survey (Butterflies) to the City of Boulder Open Space and Mountain Parks, Larimer County and Cheesman Reservoir. Field Season 1996.
171931	Stanford, Ray E. 1996. Personal communication with Phyllis M. Pineda during field season of 1996.

## ADDITIONAL TOPICS

### Additional Topics

Original site design by Pineda, P.M. 1996-09-23.

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## VERSION

Version Date 10/21/2008

Version Author Neid, S.L.

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