

Level 4 Potential Conservation Area (PCA) Report

Name James Peak

Site Code S.USCOHP*28179

IDENTIFIERS

Site ID 2711 Site Class PCA
 Site Alias None

Network of Conservation Areas (NCA)

<u>NCA Site ID</u>	<u>NCA Site Code</u>	<u>NCA Site Name</u>
-		No Data

LOCATORS

Nation United States Latitude 395118N
 State Colorado Longitude 1054026W

Quad Code Quad Name

39105-G6 Empire

County

Gilpin (CO)
 Clear Creek (CO)

Watershed Code Watershed Name

10190005	St. Vrain
10190004	Clear
14010001	Colorado headwaters

SITE DESCRIPTION

Minimum Elevation	10,500.00	Feet	3,200.40	Meters
Maximum Elevation	13,294.00	Feet	4,052.01	Meters

Site Description

The James Peak site is located on the east slope of the Front Range in the James Peak Wilderness in Gilpin County, Colorado. James Peak and the Continental Divide form the western boundary of this site which encompasses two glacial cirques and extends from the alpine zone down into the upper subalpine. North and south boundaries are defined by glacially sculpted, east-west trending ridges and the eastern boundary by a topographic transition to steep valley walls. Large tarns occur in each of the two cirques that were excavated by glaciers during the Pleistocene ice age. These cirques are the headwaters for Mammoth Gulch and the source of numerous first order streams that flow through the site. Glacial action carved a complex landscape leaving arêtes, low ridges, rocky cliff faces, steep valley walls and gently sloping terraces and morainal deposits that created the template for the development of current-day ecosystems. Upland ecosystems in the alpine zone are an expansive and complex mosaic of snowfields, rocky outcrops, willow carrs, turf meadows, fellfields, and talus and scree slopes and glacially carved rock outcrops. Bristlecone pine (*Pinus aristata*) occupies rocky ridges between cirques and tarns and are scattered across the landscape below the Continental Divide. Krummholz stands of Engelmann spruce - subalpine fir (*Picea engelmannii* - *Abies lasiocarpa*) signal the transition to upper subalpine zone forests which are also dominated by extensive stands of spruce and fir. A variety of wetland ecosystems with diverse plant communities and species occur in both the alpine and subalpine zones of this site. Wetland systems include riparian and lacustrine, depressional and slope wetlands, often with deep accumulations of peat that have resulted in fen development. These wetlands are characterized by an intricate and diverse mosaic of plant communities that includes willow (*Salix spp.*) shrublands, graminoid-dominated wet meadows, fens and lacustrine sites and forb-dominated riparian habitat. Shrub dominated wetlands occur on lake and stream margins and in depressions and are characterized by a community mosaic of planeleaf willow (*Salix planifolia*) with a forb-dominated understory and graminoid-dominated herbaceous vegetation that includes water sedge (*C. aquatilis*) and mountain sedge (*C. scopulorum*). Soils in these depressional wetland sites are typically saturated or inundated and contain moderate accumulations of peat, to 50 cm deep, that is underlain by glacial till. Riparian habitat is characterized by a lush and diverse cover of forbs with communities of heartleaf bittercress - tall fringed bluebells - arrowleaf ragwort (*Cardamine cordifolia* - *Mertensia ciliata* - *Senecio triangularis*) and marsh marigold (*Caltha leptosepala*) herbaceous vegetation. Fens also occur on low-gradient slopes and are characterized by herbaceous cover dominated by few-flower spikerush (*Eleocharis quinqueflora*). Other graminoids and forbs are also present distributed along a soil moisture gradient with hydric species dominating the site. Typical herbaceous species include water sedge (*Carex aquatilis*), mountain sedge (*C. scopulorum*), small-head sedge (*C. illota*) and black alpine sedge (*C. nigricans*), elephantella (*Pedicularis*

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groenlandica), marsh marigold (*C. leptosepala*), star gentian (*Swertia perennis*) and queen's crown (*Sedum rhodanthum*), bog saxifrage (*Saxifraga odontoloma*) and rosy paintbrush (*Castilleja rhexiifolia*). Geology on the Continental Divide and down into the cirque is primarily Precambrian age metamorphic rock derived principally from sedimentary rock that is composed of biotitic gneiss, schist and migmatite. Additionally, a northeast trending area at the middle of the cirque and an area at the lower and eastern side of the site are composed of Precambrian age metamorphic felsic and hornblendic gneisses derived principally from volcanic rocks (Tweto 1979). Soils in the site vary from talus and scree on high ridges and steep slopes to deep peat in depressions, swales and low slopes. On the crest of the Continental Divide as well as on east-west trending ridges of the cirque walls, soils are classified as Bross family-Rubble land-Matcher family complex, 40 to 150 percent slopes and Bross-Matcher families-Lithic Cryorthents complex, 5 to 40 percent slopes. On high and mid slopes of the cirques soils are classified as Cirque land, 40 to 150 percent slopes. Low slopes and cirque basin soils are characterized as Bross family-Cryaquepts complex, 5 to 25 percent slopes. Soils on low-gradient slopes that underlie slope wetlands are Leighcan family, till substratum-Cryaquolls complex, 5 to 40 percent slopes (USDA 2010). Local wetland hydrology is strongly influenced by the interaction of climate, geomorphology, and biota. Wetland hydrology in this site is strongly connected to shallow ground and surface water flow and snowmelt contributes the largest proportion of water to these wetlands through its influence on ground and surface water dynamics. Snowmelt interacts with local geomorphology to maintain high water tables in wet meadows, marshes, and fens and also exerts major control over riparian wetlands by influencing soil saturation characteristics (flooding frequency, duration, timing and depth) that results from groundwater flow and out-of-bank flooding in the riparian zone (Rocchio 2005). Additionally, by releasing water throughout the growing season, these high altitude headwater wetlands make an important contribution to late summer flows in lower elevation streams. Finally, in a positive feedback process, the native plant communities in this site contribute to the maintenance of wetland hydrology by slowing runoff, insulating soils and by adding organic matter that increases the water holding capacity of soils. Within the boundaries of this site the local natural hydrologic regime is intact; wetlands are connected with uplands and there is no evidence of recent anthropogenic wetland alteration. Copious shallow ground and surface water discharge from adjacent, steep, alpine hillslopes sustains wetland development and maintenance. Stream and channel habitat are in sustainable condition: banks are stable and well vegetated; erosion is in balance with deposition; channel structure is diverse; and width/depth ratio is appropriate to the stream class.

Key Environmental Factors

Climate, hydrology, and geology are key driving factors that have enabled the development and maintenance of the element plant communities and animal species present in the site. A natural hydrologic regime is essential to the sustainability of elements in this site. Especially essential to wetland and stream sustainability is shallow ground and surface water flow derived from the melting snowpack and, secondarily, out-of-bank streamflows which replenishes shallow groundwater and is essential to riparian vegetation and stream stability.

Climate Description

Climate in Gilpin County varies dramatically with elevation, aspect and time of year. Higher elevations to the north and west are colder and wetter than lower elevations to the east and south. Temperature and precipitation varies from east to west corresponding to elevation change. Average annual temperature and length of the growing season decrease as elevation increases while average annual precipitation increases. In general, temperatures decrease at a rate of approximately 3 °F for every thousand feet of elevation gain. Additionally, the pattern of precipitation distribution varies from the eastern to the western parts of the county. Western locations at higher elevations receive the majority of their precipitation during late winter and early spring while eastern locations receive the majority of their moisture during early spring and summer (Siemer 1977). The James Peak site is located in the most western part of the county at elevations between approximately 13,000 and 10,500 feet elevation. Average annual precipitation from 1971 through 2000 was 36.45 inches; coldest temperatures occurred in January with an average maximum temperature of 23.25 °F and an average minimum of 2.66 °F; warmest temperatures occurred in July with an average maximum of 61.27 °F and an average minimum temperature of 36.18 °F (Prism 2010).

Land Use History

Although much of Gilpin County was impacted by mining exploration, most of the high elevations landscape near the Continental Divide, including this site, did not see mining exploration (Gilpin County 2010). The first humans to use the land in this site were likely Native Americans. Numerous sites in alpine ecosystems along the Continental Divide of the Front Range, including near the Rollins Pass area, have been identified as Paleoindian and Prehistoric age game drive sites (Benedict 2005).

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Cultural Features

Paleoindian to Prehistoric age Native American artifacts are potentially present (Gellhorn 2002).

SITE DESIGN

Site Map Y - Yes

Mapped Date 11/29/2010

Designer Malone, D.G.

Boundary Justification

The site was delineated to include ecological systems and processes that are essential to maintaining the wetlands as well as to provide a buffer against disturbance. Climate change was also considered in boundary delineation; alpine ecosystems are especially vulnerable and species that depend on tundra may disappear as alpine tundra diminishes with the advance of trees and shrubs (USFWS 2010). Hydrology is the primary process essential to long-term wetland plant community viability. Alpine/subalpine wetlands are often isolated hydrologically from other wetlands, and easily impacted by surrounding land use (Rondeau 2001). Thus maintaining an intact and unfragmented hydrologic regime is essential to element viability. The element wetland plant communities in this site are reliant on water levels at or near the surface for much or all of the growing season (Rondeau 2001). Snowmelt from nearby surrounding ridges and slopes maintains abundant shallow ground and surface flow which contributes the primary source of water to these depressional, slope and riparian wetlands.

Primary Area 1,074.20 Acres

434.71 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank B4: Moderate Biodiversity Significance

Biodiversity Significance Comments

This site is drawn for an excellent (A-ranked) occurrence of the state vulnerable (G4/S3) wetland fen community, few-flowered spikerush (*Eleocharis quinqueflora*).

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

No Data

Offsite

No Data

Information Needs

Additional inventories are needed to identify and update the status of the historic and general records within and near this site.

ASSOCIATED ELEMENTS OF BIODIVERSITY

<u>Element</u>			<u>Global</u>	<u>State</u>	<u>Driving</u>
<u>State ID</u>	<u>State Scientific Name</u>	<u>State Common Name</u>	<u>Rank</u>	<u>Rank</u>	<u>Site Rank</u>
23155	<i>Eleocharis quinqueflora</i> Herbaceous Vegetation	Alpine Wetlands	G4	S3S4	Yes

REFERENCES

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<u>Reference ID</u>	<u>Full Citation</u>
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ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

Version Date 11/29/2010

Version Author Malone, D.G.

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