

Level 4 Potential Conservation Area (PCA) Report

Name Opal Lake

Site Code S.USCOHP*23163

IDENTIFIERS

Site ID 600 Site Class PCA
 Site Alias White Creek at Opal Lake

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 371200N
 State Colorado Longitude 1064605W

Quad Code Quad Name

37106-B7 Harris Lake
 37106-B6 Elephant Head Rock

County

Archuleta (CO)

Watershed Code Watershed Name

14080101 Upper San Juan

SITE DESCRIPTION

Minimum Elevation	8,080.00 Feet	2,462.78 Meters
Maximum Elevation	9,300.00 Feet	2,834.64 Meters

Site Description

Opal Lake site is located in the east central part of Archuleta County, in a montane basin below Flat Top Mountain in the wonderfully erosive Chalk Mountain range. These mountains are forested in aspen (*Populus tremuloides*), blue spruce (*Picea pungens*) and fir (*Abies* spp. and *Pseudotsuga menziesii*), surrounding Opal Lake and White Creek. Opal Lake is approximately three acres, with a wide fringe of graminoids on the north and east edge supporting an occurrence of retrorse sedge (*Carex retrorsa*), and a dense riparian shrubland located above the hydrophytic fringe. Slopes on the other three sides of the lake drop sharply from the surrounding forests into the lake, supporting only a sporadic, thin fringe of graminoids. The lake is opaque whitish-gray in good weather, and turbid (muddy) during the summer monsoons. At least two small spring-fed creeks on the south edge feed the lake, both supplying white-tinged water to the lake. Two beaver live at the lake, and a new lodge sits at the southeast corner. A small dam controls the lake outflow at the northwest corner, where White Creek drains the lake, and near this outlet there is a dense, and healthy thinleaf alder - Drummond's willow (*Alnus incana* - *Salix drummondiana*) montane riparian shrubland. Additional shrub species including park willow (*Salix monticola*) and diamondleaf willow (*Salix planifolia*) combine to provide a 58% shrub canopy cover within this riparian area. The herbaceous understory is dominated by beaked sedge (*Carex utriculata*), with other native mesic graminoids and forbs such as largeleaf avens (*Geum macrophyllum*), northern green orchid (*Platanthera hyperborea* var. *hyperborea*), and common cowparsnip (*Heracleum maximum*). Below this riparian shrubland, White Creek flows down a valley with moderate to slightly steep slopes that are densely forested with conifers and aspen (*Populus tremuloides*). The creek appears to periodically flood and many overflow channels are present. Riparian shrubs including alder, Drummond's willow, and red-osier dogwood (*Cornus sericea*) as well as hydrophytic graminoids are found in the flood plain terrace and overflow channels. A rare blue spruce / thinleaf alder montane riparian forest occurs here with aspen and subalpine fir (*Abies lasiocarpa*) also present in the overstory. The herbaceous understory includes Richardson's geranium (*Geranium richardsonii*), Fendler's cowbane (*Oxypolis fendleri*), and cutleaf coneflower (*Rudbeckia laciniata* var. *ampla*). A trail follows and crosses White Creek only at its upper end near the lake, but the lake is a popular destination for hikers and trails criss-cross the area and encircle the lake. A popular campsite at the west edge of the lake sits just off the trail and within 350 feet of the lakeshore.

Key Environmental Factors

Soils around Opal Lake are described as Typic Ustorthents on the north shore, derived from andesite and quartz latite and found on fans and toe slopes, and Castelleia loam on the south shore, with similar parentage. Along White Creek, from Opal Lake to below the Forest Road, the soils shift from Skyway loams just downstream of the lake to mostly Castelleia loams the remainder of the length of the site. Both soil types are deep and well drained, and derived again from andesite and quartz latite parentage (USDA 1981). Specifically,

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soils at Opal Lake vary along the lake's graminoid fringe as to their geomorphic position. At the top of the north forest slope, a shallow, clayey A horizon (10 cm) lies over sand and gravels. At the edge of a rivulet within the graminoids, a shallow, mottled sandy loam (10 cm) lies over gravels. At the lake's edge within the graminoids and near some willow and alder shrubs, the soil is better developed. The top 10 cm is rooty, organic matter in mottled gray clay; the next 15 cm contains mottled sandy loam in mosaic with sand/clay. These textures are not mixed, but lie next to each other. The entire horizon is 40% mottled. Below this, the next 10 cm contains clay with some gravel and sand. The soils at this location are saturated to the surface and collect water at 20 cm deep. It should be noted that field ecologists in 2005 found that retrorse sedge (*Carex retrorsa*) appears to occupy clayey soils on muddy shorelines or creek banks, and sometimes within shallow standing water roughly between 8,000 and 9,500 feet elevation. It is nearly always associated with beaked sedge (*Carex utriculata*). Along White Creek, soils are typically alluvial, and the streambed consists of rounded and angular cobble, averaging 1"- 8" in diameter. Sediment deposition within the floodplain is silty clay loam, and on the first terrace, soils show a shallow clayey mineral horizon (10 cm) over sand and gravel.

Climate Description

No Data

Land Use History

No Data

Cultural Features

No Data

SITE DESIGN

Site Map Y - Yes

Mapped Date 12/16/2005

Designer Freeman, K.M.

Boundary Justification

The boundaries were drawn to include the wetlands around Opal Lake and to incorporate an area that will allow natural hydrological processes such as seasonal flooding, sediment deposition, and new channel formation to maintain viable populations of the plant communities along White Creek. It should be noted that the hydrological processes necessary to the elements are not fully contained by the site boundaries. This boundary indicates the minimum area that should be considered for any conservation management plan. The boundary also includes a buffer of approximately 1,000 feet. Eliminating disturbance within this 1,000 foot buffer would aid in reducing impacts from sedimentation (Karr and Schlosser 1978), and assist in maintaining the integrity of the occurrences and its associated avian, macroinvertebrate and periphyton communities (Noel et al. 1986, Spackman and Hughes 1995).

Primary Area

262.94 Acres

106.41 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank

B3: High Biodiversity Significance

Biodiversity Significance Comments

The Opal Lake site supports a good (B-ranked) example of the globally vulnerable (G3/S3) thinleaf alder - Drummond willow (*Alnus incana* / *Salix drummondiana*) montane riparian shrubland. As of 2005, this plant association has only been documented from Colorado and is limited in distribution, but widespread in Colorado. It is highly threatened by improper livestock grazing and stream impoundments. This association is generally found along steep-gradient streams with stable, shaded stream banks. The site also includes a fair (C-ranked) example of blue spruce / thinleaf alder (*Picea pungens* / *Alnus incana*) montane riparian forest, a community that is also globally vulnerable (G3/S3). This woodland occurs in deep, shaded canyons and narrow valleys along relatively straight stream reaches. It generally forms small patches, but can be continuous for several river miles. As of 2005, fewer than 100 stands exist in Colorado, and very few of these are in pristine condition. This association is threatened by development, road building and maintenance, heavy recreational use, improper livestock grazing, and stream flow alterations. An unranked occurrence of retrorse sedge (*Carex retrorsa*), a plant that is extremely rare (S1) in Colorado, although not threatened globally (G5) was documented at the site in 2001 but was not located in 2005. Site conditions have not changed dramatically so it is expected that the population still exists. Retrorse sedge has a broad distribution throughout the north half of North America, but, as of 2005, is known only in Colorado from several locations in Archuleta County.

Other Values Rank

No Data

Other Values Comments

No Data

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LAND MANAGEMENT ISSUES

Land Use Comments

Grazing and recreational use (such as hiking, hunting, horseback riding, fishing, and dispersed camping) have the greatest impacts on the site.

Natural Hazard Comments

No Data

Exotics Comments

Prominent exotic plant species observed at Opal Lake and the upper extent of White Creek were Canada thistle (*Cirsium arvense*) and timothy (*Phleum pratense*). In the lower extent of White Creek, only common dandelion (*Taraxacum officinale*) was noted as a prominent exotic species, but weeds may easily spread if introduced where the creek crosses FR 660.

Offsite

Hydrological processes originating outside of the planning boundary, including water quality, quantity, timing and flow are critical for maintaining the quality of the riparian and wetland communities.

Information Needs

The occurrence of retrorse sedge (*Carex retrorsa*) documented in 2001 was not relocated during the 2005 survey. Beaked sedge (*Carex utriculata*) was abundant at location described, but no retrorse sedge heads were identified; however it is possible that the seed heads were too immature or had dropped by the time of visit. No hydrologic or other alterations have occurred at the site since 2001, and soil and hydrology conditions are very similar to those occurring at other locations of retrorse sedge in Archuleta County. The associated species at the site also match what occurs at other sites; therefore, it is not unreasonable to assume the population still exists at this location. A small drainage coming into Opal Lake on the south shore supports a small sedge stand just upstream of the lake, and possibly has a small retrorse sedge population mixed with beaked sedge (specimens were not definitely identified, but photos were taken). Additional field work is necessary to verify the occurrence.

ASSOCIATED ELEMENTS OF BIODIVERSITY

<u>Element State ID</u>	<u>State Scientific Name</u>	<u>State Common Name</u>	<u>Global Rank</u>	<u>State Rank</u>	<u>Driving Site Rank</u>
20504	<i>Carex retrorsa</i>	retrorse sedge	G5	S1	No
24743	<i>Alnus incana</i> - <i>Salix drummondiana</i> Shrubland	Montane Riparian Shrubland	G3	S3	Yes
24518	<i>Picea pungens</i> / <i>Alnus incana</i> Woodland	Montane Riparian Forests	G3	S3	No

REFERENCES

<u>Reference ID</u>	<u>Full Citation</u>
193633	Freeman, K.M., March, M.A. and D.R. Culver. 2006. Final Report: Survey of Critical Wetlands and Riparian Areas in Archuleta County. Colorado Natural Heritage Program, Fort Collins, CO.
172808	J. R. Karr and I. J. Schlosser. 1978. Water resources and the land-water interface. Science 201: 229-234.
166839	Lyon, P. 2001. Colorado Natural Heritage Program Field Surveys.
165959	Noel, D.S., C.W. Martin and C.A. Federer. 1986. Effects of Forest Clearcutting in New England on Stream Macroinvertebrates and Periphyton. Environmental Management 10: 661-670.
193472	Sovell, J., P. Lyon, and L. Grunau. 2003. Final Report: Upper San Juan Biological Assessment. Colorado Natural Heritage Program, Fort Collins, CO.
159511	Spackman, S. C. and J. W. Hughes. 1995. Assessment of Minimum Stream Corridor Width for Biological Conservation: Species Richness and Distribution Along Mid-Order Streams in Vermont, USA. Biological Conservation 71:325-332.
193423	USDA, SCS. 1981. Soil Survey of Piedra Area, Colorado; Parts of Archuleta, Hinsdale, La Plata, Mineral, and Rio Grande Counties. In cooperation with the United States Forest Service and the Colorado Agricultural Experiment Station.

ADDITIONAL TOPICS

Additional Topics

Original site design by Lyon, M.J. 2002-02-15.

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VERSION

Version Date 12/16/2005

Version Author Freeman, K.M.

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