

Level 4 Potential Conservation Area (PCA) Report

Name Mount Emmons Iron Fen

Site Code S.USCOHP*23631

IDENTIFIERS

Site ID 2027 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 385224N
State Colorado Longitude 1070228W

Quad Code Quad Name

38107-G1 Mount Axtell
38107-H1 Oh-be-joyful

County

Gunnison (CO)

Watershed Code Watershed Name

14020001 East-Taylor

SITE DESCRIPTION

| | | | | |
|--------------------------|-----------|-------------|----------|---------------|
| Minimum Elevation | 9,400.00 | Feet | 2,865.00 | Meters |
| Maximum Elevation | 10,160.00 | Feet | 3,097.00 | Meters |

Site Description

The Mt. Emmons iron fen is a slope fen in the West Elk Mountains near Crested Butte. The fen lies on the flank of Mt. Emmons, a local landmark. The water sources for the site are perennial cold springs of highly mineralized water, fed by groundwater percolating through the complex fault systems underlying Mt. Emmons. The fen drains south and is captured by a drainage ditch and rerouted to a culvert to pass underneath County Road 12 down into Coal Creek, a major tributary of the Slate River. Limonite surrounds much of the upslope area around the fen, indicating that previous springs had discharged in this area. Iron fens are unusual peatlands in that surface/groundwater pH and the associated plant species are typical of ombrotrophic bogs and acidic, nutrient poor fens, while the concentration of ions is more typical of rich and extreme rich fens (Cooper 1999). Peatlands are often classified along a chemical gradient (pH and concentration of cations such as Ca²⁺, Na⁺, K⁺, and Mg²⁺). The gradient is typically as follows: ombrotrophic bogs and poor fens are characterized by low pH and low cation concentration, whereas rich and extreme rich fens (e.g., High Creek Fen near Fairplay, CO) are characterized by high pH and high cation concentration. Iron fens do not fit into this gradient because of the unusual biogeochemistry (low pH but high concentration of cations (especially Ca²⁺ and SO₄²⁻). This occurs due to groundwater draining through rock rich in pyrite. As the pyrite becomes oxidized, it produces a sulfuric acid, which leaches ions from surrounding rock while also creating an acidic solution, leading to a nutrient rich yet acidic water supply (Cooper 1999). Iron fens are characterized by limonite ledges, which form when iron precipitates out of solution and then solidifies into hard rock. Organic substrates (e.g., peat and coarse woody debris) often are mixed with the iron precipitate thus limonite often contains large amounts of organic materials. The plant species typically found in iron fens include: Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), bog birch (*Betula glandulosa*), dwarf blueberry (*Vaccinium cespitosum*), creeping wintergreen (*Gaultheria humifusa*), water sedge (*Carex aquatilis*), bluejoint reedgrass (*Calamagrostis canadensis*), with a continuous carpet of mosses mainly dominated by sphagnum species (*Sphagnum* spp). The iron fen at this site consists of a complex of vegetation associated with the acidic seepage. The upper pond margin and the lower end of the fen are forested with lodgepole pine and an understory of water sedge, bluejoint reedgrass, and various sphagnum species. Closer to the pond, bog birch, water sedge, and sphagnum are dominant. Fewflower spikerush (*Eleocharis quinqueflora*) is common in the low rills. Dwarf blueberry and creeping wintergreen are growing on higher sphagnum mounds. Star sedge (*Carex angustior*) and cottonsedge (*Eriophorum angustifolium*) are scattered about the site. Silvery sedge (*Carex canescens*) is also scattered through the site both in monotypic patches and individually. The northern margins of the fen near the pond support a population of the state rare roundleaf sundew (*Drosera rotundifolia*).

Key Environmental Factors

No Data

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Climate Description

No Data

Land Use History

No Data

Cultural Features

No Data

SITE DESIGN

Site Map Y - Yes

Mapped Date 12/19/2002

Designer Rocchio, F.J.

Boundary Justification

Boundaries are drawn to include the potential groundwater recharge zones, which must be maintained to preserve the hydrological integrity of the iron fen. These boundaries, however, are preliminary and additional research on the recharge zones is needed, as local hydrology is complex.

Primary Area 897.20 Acres 363.09 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank B2: Very High Biodiversity Significance

Biodiversity Significance Comments

Supports an excellent (A-ranked) example of a globally imperiled (G2/S2) iron fen plant community ((*Picea engelmannii*) / *Betula glandulosa* / *Carex aquatilis* - *Sphagnum* sp.) and a state rare (G5/S2) plant, roundleaf sundew (*Drosera rotundifolia*). Iron fens are unusual peatlands where the surface/groundwater pH and plant species are typical of ombrotrophic bogs and acidic, nutrient poor fens (pH <4.4), while the concentration of ions is more typical of rich and extreme rich fens (pH > 6.0) (Cooper 1999). The combination of species (more typical of true bogs) that occur in iron fens is rare in Colorado (approximately 9 occurrences of iron fens are known in the state). In Colorado, iron fens are found in the mineral belt. Mineralized zones in Idaho, Montana, Wyoming, and South Dakota may contain similar wetlands (George Jones, personal communication, 1999). For example, there is an Iron Bog Research Natural Area within the Challis National Forest in Idaho where cation concentrations and pH are very similar to the iron fens documented here in Colorado (Fred Rabe, personal communication, 1999). More research is needed within the Rocky Mountain region to determine the extent of this wetland type. The roundleaf sundew is common in the northern portion of the U.S. and in Canada but only seven populations are found in Colorado in Gunnison, Grand, and Jackson counties.

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

No Data

ASSOCIATED ELEMENTS OF BIODIVERSITY

| <u>Element</u> | | | <u>Global Rank</u> | <u>State Rank</u> | <u>Driving Site Rank</u> |
|-----------------|---|--------------------------|--------------------|-------------------|--------------------------|
| <u>State ID</u> | <u>State Scientific Name</u> | <u>State Common Name</u> | | | |
| 23578 | <i>Drosera rotundifolia</i> | roundleaf sundew | G5 | S2 | No |
| 24847 | (<i>Picea engelmannii</i>) / <i>Betula nana</i> / <i>Carex aquatilis</i> - <i>Sphagnum angustifolium</i> Woodland | Iron Fen | G2 | S2 | Yes |

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REFERENCES

| <u>Reference ID</u> | <u>Full Citation</u> |
|---------------------|---|
| 173182 | Rocchio, J. 2002. Colorado Natural Heritage Program Field Survey of Critical Wetlands in Gunnison County. |

ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

| | |
|-----------------------|---------------|
| Version Date | 12/19/2002 |
| Version Author | Rocchio, F.J. |

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