

# Level 4 Potential Conservation Area (PCA) Report

Name Whitepine Iron Fen

Site Code S.USCOHP\*5083

## IDENTIFIERS

Site ID 1227 Site Class PCA  
Site Alias Tomichi Creek

## 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 383435N  
State Colorado Longitude 1062226W

## Quad Code Quad Name

38106-E4 Whitepine  
38106-E3 Garfield

## County

Gunnison (CO)  
Chaffee (CO)

## Watershed Code Watershed Name

14020003 Tomichi  
11020001 Arkansas Headwaters

## SITE DESCRIPTION

<b>Minimum Elevation</b>	9,800.00	<b>Feet</b>	2,987.00	<b>Meters</b>
<b>Maximum Elevation</b>	13,024.00	<b>Feet</b>	3,970.00	<b>Meters</b>

## Site Description

Tomichi Creek has cut a broad valley through Precambrian granite and Tertiary, intrusive rocks, modified by glaciers, which left a veneer of moraine on the lower valley slopes. Aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta*), and Engelmann spruce (*Picea engelmannii*) dominate upland slopes. Beavers have modified the valley into an extensive complex of wet meadows and ponds. A large willow carr dominated by Wolf's willow (*Salix wolfii*) and water sedge (*Carex aquatilis*) occupy much of the riparian area in the valley. Acidic springs support the iron fen. Additional iron springs are located upstream but have not developed extensive iron fen vegetation as the one documented in this report. 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 Ca<sup>2+</sup>, Na<sup>+</sup>, K<sup>+</sup>, and Mg<sup>2+</sup>). 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 Ca<sup>2+</sup> and SO<sub>4</sub><sup>2-</sup>). This occurs due to groundwater and surface water 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, lodgepole pine, bog birch (*Betula glandulosa*), dwarf blueberry (*Vaccinium cespitosum*), creeping wintergreen (*Gaultheria humifusa*), water sedge, bluejoint reedgrass (*Calamagrostis canadensis*), with a continuous carpet of mosses mainly dominated by sphagnum species (*Sphagnum* spp). Lodgepole pine and Engelmann spruce dominate the iron fen with an understory of water sedge and various sphagnum species. During the 2002 visit, the site was very dry and the sphagnum carpet was very yellow. The owners of the property indicated that they have never seen the wetland so dry in the 30 years they've owned the property. A private driveway cuts through the iron fen, covering part of it. Downstream of the driveway crossing, the fen appears somewhat drier, however typical iron fen vegetation remains intact.

## 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 P - Partial

Mapped Date 12/19/2002

Designer Rocchio, F.J.

## Boundary Justification

The boundary represents a preliminary estimate of the area needed to maintain local hydrological conditions and incorporate an area that will allow natural hydrological processes such as seasonal flooding, groundwater recharge, sediment deposition, and new channel formation to maintain viable populations of the elements. Groundwater recharge zones are of special importance, as they must be maintained to preserve the hydrological integrity of the iron fen. Additional research on the recharge zones is needed, as local groundwater hydrology is complex. The site contains areas where old oxbows, sloughs, and ponds could provide a source of recruitment for native wetland and riparian plant species and provide fish habitat. This boundary indicates the minimum area that should be considered for any conservation management plan.

Primary Area 6,116.65 Acres

2,475.33 Hectares

### SITE SIGNIFICANCE

Biodiversity Significance Rank B2: Very High Biodiversity Significance

## Biodiversity Significance Comments

This site supports a good (B-ranked) example of a globally imperiled (G2/S2) iron fen plant community, (*Picea engelmannii*) / *Betula glandulosa* / *Carex aquatilis* - *Sphagnum angustifolium*, and an excellent to good (AB-ranked) example of an apparently secure (G4/S3) riparian willow carr, *Salix wolfii* / *Carex aquatilis*. 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.

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

Hydrological processes originating outside the planning boundary, including water quality, quantity, and timing, must be managed to maintain site viability.

## Information Needs

No Data

### ASSOCIATED ELEMENTS OF BIODIVERSITY

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<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>
24847	( <i>Picea engelmannii</i> ) / <i>Betula nana</i> / <i>Carex aquatilis</i> - <i>Sphagnum angustifolium</i> Woodland	Iron Fen	G2	S2	Yes
24666	<i>Salix wolfii</i> / <i>Carex aquatilis</i> Shrubland	Subalpine Riparian Willow Carr	G4	S3	No

## REFERENCES

<u>Reference ID</u>	<u>Full Citation</u>
173839	Rocchio J., G Doyle, and R. Rondeau. 2003. Final Report: Survey of Critical Wetlands and Riparian Areas in Gunnison County, Colorado. Colorado Natural Heritage Program, Fort Collins, CO.
173182	Rocchio, J. 2002. Colorado Natural Heritage Program Field Survey of Critical Wetlands in Gunnison County.

## ADDITIONAL TOPICS

### Additional Topics

No Data

## VERSION

<b>Version Date</b>	12/19/2002
<b>Version Author</b>	Rocchio, F.J.

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