Nominated Site Name: Pine Butte Peatlands

General Location: The Pine Butte Peatlands surround Pine Butte along the Rocky Mountain Front ca. 15 miles west of Choteau.

Site Coordinates: Coordinates are withheld because private land is included in the IPA.

Maps: Maps are withheld because private land is included in the IPA.

Photographs: Photos representing the landscape, various plant communities, and species of concern are included.

County: Teton

Elevation: 4,400 ft to 4,600 ft.

Size of Area: ca. 3,715 acres

Property Ownership: The Nature Conservancy, State of Montana, other private

Other designations for the site: Most of the proposed IPA is part of The Nature Conservancy's Pine Butte Swamp Preserve.

Table 1. Plant species of concern at proposed Pine Butte Peatlands IPA.

Species	MNHP Rank	Last observed	Population size	Trend	Source
Braya humilis	G5-S1	2011	small	decline	Hanna 2011
Gentianopsis macounii	G5-S2	2011		decline	Lesica 2011
Primula incana	G4G5-S2	2011	small	unknown	
Salix serissima	G4-S3	2011		decline	Lesica 2011
Carex crawei	G5-S2S3	2011	small	unknown	
Eleocharis rostellata	G5-S3	2011		unknown	
Juncus acuminatus	G5-S1	1982	small	unknown	Lesica #2337 (MONTU)
Kobresia simpliciuscula	G5-S3	2011		unknown	
Trichophorum cespitosum	G5-S2	2011		stable	Lesica 2002
Trichophorum pumilum	G5-S3	2011		unknown	
Cinclidium stygium	G5-S1	1988		unknown	Elliott & Moore 1989
Meesia triquetra		1988		unknown	Elliott & Moore 1989
Scorpidium scorpioides	G4G5-S2	2011		unknown	Elliott & Spribille 2000

Trend Information: Trend and occurrence information comes from several sources:

Elliott, J. C. and G. L. Moore. 1989. Additions to the moss flora of Montana. Bryologist 92: 194-197.

Elliott, J. C. and T. Spribille. 2000. Montana collections of *Scorpidium scorpioides* and *Meesia triquetra*. Evansia 17: 10-14.

Hanna, D. 2011. Monitoring Braya humilis at Pine Butte Swamp Preserve. 2011 Progress Report. The Nature Conservancy, Helena, MT.
Lesica, P. 2003. Monitoring changes in wetland vegetation on Pine Butte Preserve. 2002 Progress Report. The Nature Conservancy, Helena, MT.
Lesica, P. 2011. Monitoring changes in wetland vegetation on Pine Butte Preserve. 2011 Progress Report. The Nature Conservancy, Helena, MT.

Recent visual observations for species where the trend is reported as unknown do not reveal definite trends, but the populations are either currently large and/or occur in several locations in the IPA.

Braya humilis, *Primula incana*, *Carex crawei*, and *Juncus acuminatus* occur as small populations in discrete habitat patches. *Eleocharis rostellata* and *Trichophorum cespitosum* occur as large but localized populations in open fen and dwarf carr communities. *Gentianopsis macounii*, *Kobresia simpliciuscula*, and *Trichophorum* pumilum are widespread in open fen and dwarf carr communities. *Salix serissima* is widespread in dwarf carr and localized in carr communities. *Cinclidium stygium*, *Meesia triquetra*, and *Scorpidium scorpioides* are widespread in open fen communities.

Threats: There are several potential threats. Long-term changes in climate could result in hydrologic changes that adversely affect some species while being beneficial to others. Diversion or modification of the Teton River north of the proposed IPA could reduce or alter subsurface hydrology that feeds the peatlands. Oil and gas development could directly destroy habitat or disrupt hydrology. Mineral rights owned by Montana Department of Natural Resources and Conservation and some private entities within the proposed IPA are currently leased for oil and gas development. Federal mineral rights within the proposed IPA are currently unleased; those in T24N R8W are subject to a congressional mineral withdrawal but those in T24N R7W are not. Some other private mineral rights in the proposed IPA are currently not leased. Livestock grazing occurs on a portion of the proposed IPA and could be having an adverse effect on some palatable species; however, it is just as likely or more likely that this disturbance is advantageous to some species, such as *Gentianopsis macounii* or *Primula incana*. Fire occurred historically and may have provided disturbance needed by some species. Fire frequency may currently be lower due to fire suppression.

Justification: The proposed Pine Butte Peatlands IPA provides habitat for 13 species of concern considered rare in Montana although more common elsewhere. Many of these populations are very large. The Pine Butte Peatlands are possibly the largest peatland complex in Montana and include a large patterned area and several plant communities.
(1) Open fen dominated by *Carex simulata, Menyanthes trifoliata, Triglochin maritima, Potentilla fruticosa*, *Campylium stellatum* and *Drepanocladus revolvens.*
(2) Open fen dominated by *Scirpus acutus, Carex limosa*, and *Campylium stellatum.*
(3) Dwarf carr dominated by *Betula glandulosa, Potentilla fruticosa, Juncus balticus*, and *Campylium stellatum.*

(4) Carr dominated by *Salix bebbiana, S. candida, S. pseudomonticola, Betula glandulosa*, and *Potentilla fruticosa.* In some areas carr types merge with aspen communities.
(5) Two types of herbaceous wetlands: (1) dominated by *Scirpus acutus*, *Typha latifolia*, and *Carex utriculata* where standing water occurs until late in the season, and (2) dominated by *Potentilla fruticosa, Juncus balticus, Deschampsia caespitosa*, and *Carex nebrascensis* where water levels drop earlier in the season. *Braya humilis* occurs in sparsely vegetated areas dominated by *Potentilla fruticosa , Carex scirpoidea*, and bare soils. Due to the spatial distribution of wetland vegetation, some upland grassland and aspen communities are also included within the IPA boundary.

The Pine Butte Peatlands are fed primarily by sub-surface water from the Teton River moving through intervening alluvial deposits. Maintenance of the functional hydrologic system from the Teton River watershed to the Teton River and surrounding substrates is crucial to the existence of the Pine Butte Peatlands. While the importance of these areas outside of the IPA boundaries is recognized, they were not included within the IPA since current threats to hydrologic function between the Teton River and the peatlands appear limited.

The vegetation and hydrology of the Pine Butte Peatlands are further described in:

Lesica, P. 1982. Vegetation of the wetland and riparian areas of Pune Butte Preserve, Teton County, Montana. The Nature Conservancy, Helena, MT.

Lesica, P. 1986. Vegetation and flora of Pine Butte fen, Teton County, Montana. Great Basin Naturalist 46: 22-32.

Lesica, P. and P. B. Kannowski. 1998. Ants create hummocks and alter structure and vegetation of a Montana fen. American Midland Naturalist 139: 58-68.

Lesica, P., B. Richter, and D. Carr. 1992. Effects of climate and hydrology on peatland vegetation in north-central Montana. The Northwest Environmental Journal 8(1): 176-178.

McAllister, D.C. 1990. Plant community development in a minerotrophic peatland, Teton County, Montana. Ph.D. dissertation, School of Forestry, University of Montana, Missoula.

Nimick, D.A., R.S. Rasmussen, W.W. Woessner and J.C. Schmidt. 1983. Geologic and hydrologic investigations at Pine Butte and McDonald swamps, Teton County, Montana. The Nature Conservancy, Helena, MT.

Potts, D.F. 1989. The annual water balance of the Pine Butte Swamp Preserve wetlands, Teton County, Montana. The Nature Conservancy, Helena, MT.

Reichmuth, D.R. 1981. Glacial and groundwater geology of the Crab Butte-Pine Butte vicinity, Teton County, Montana. The Nature Conservancy, Helena, MT.

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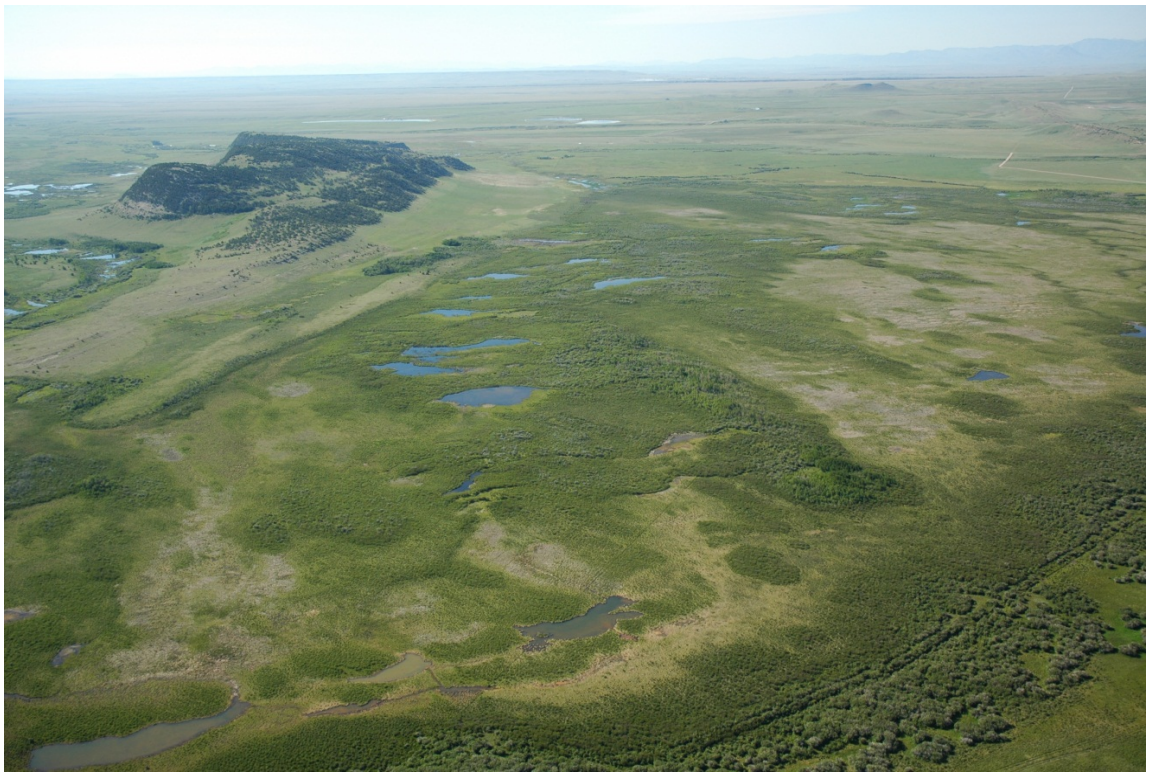
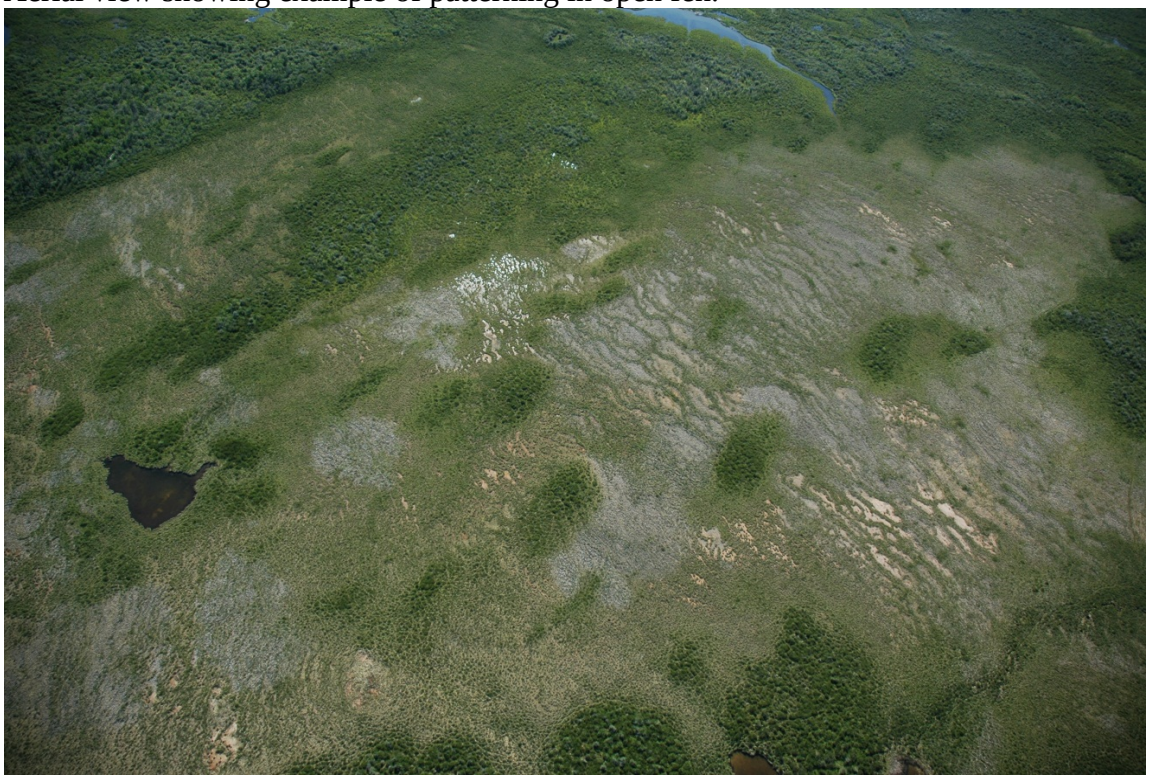
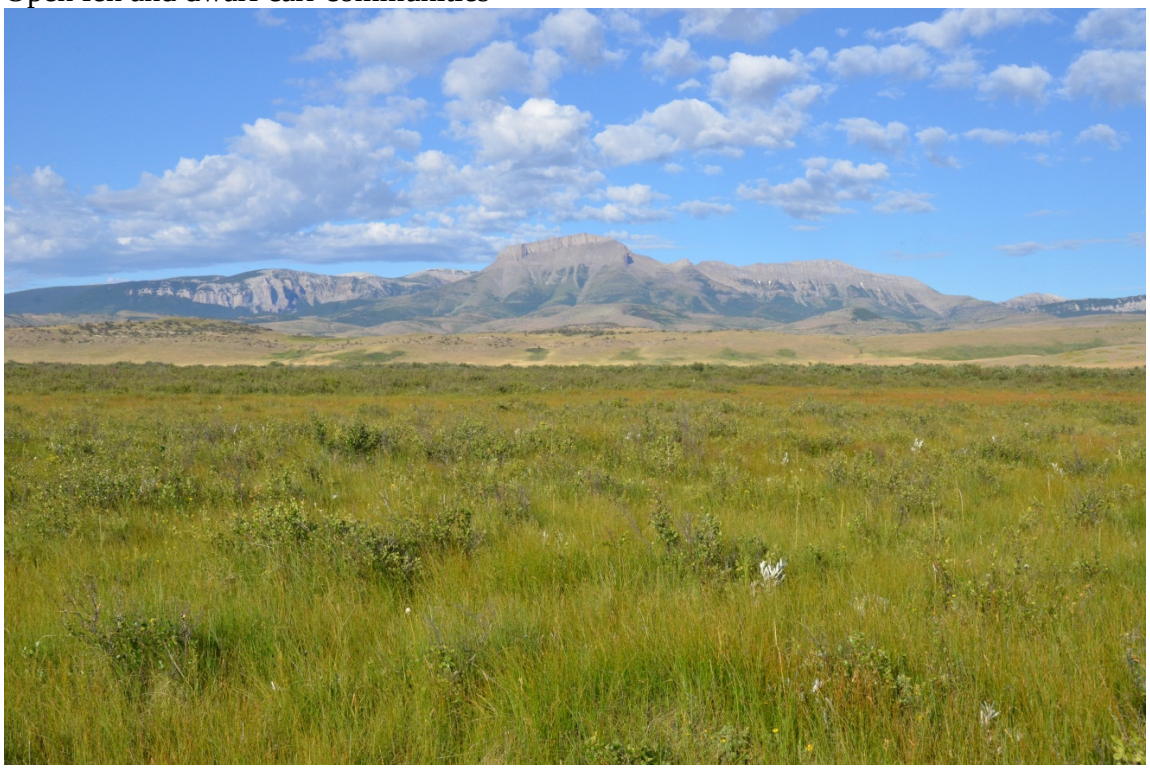
Photo 1. Aerial view of western portion of Pine Butte Peatlands IPA showing mosaic of communities



Aerial view showing example of patterning in open fen.



Open fen and dwarf carr communities



Open fen community dominated by *Scirpus acutus*.

Photo 4. Open fen with *Eleocharis rostellata* in foreground.

Open fen communities

Dwarf carr community (foreground) transitioning to carr community (background).

Herbaceous wetland supporting *Braya humilis*

Braya humilis

Gentianopsis macounii

Primula incana

Carex crawei

Kobresia simpliciuscula

Trichophorum pumilum

Salix serissima