

IMPORTANT PLANT AREA NOMINATION FORM – MONTANA

Nominated Site Name: South Pryor Mountains Important Plant Area (IPA)

General Location: The South Pryor Mountains IPA is located between the Bighorn River on the east and the Clark's Fork of the Yellowstone River on the west, the Wyoming state line on the south in Carbon County ca. 50 miles south of Billings, Montana. The IPA includes most of the south-facing drainages of the Pryor Mountains, including from east to west; Davis Creek, Trail Creek, Layout Creek, Big Coulee, Crooked Creek, Gypsum Creek and Bear Creek.

Site Coordinates: Boundary Coordinates: Northwest: 45°11' 108°35' Southeast: 45°0' 108°11' including portions of the following Township/Ranges: T7S R27E, T8S R26E, T8S R27E, T8S R28E, T8S R29E, T9S R26E, T9S R27E, T9S R28E, T9S, R29E

Maps: (1) IPA boundary, ownership and location of SOC species

Photographs: Landscape photographs as well as photos of *Erigeron allocotus*, *Penstemon caryi*, *Physaria lesicii*, *Shoshonea pulvinata*, and *Sullivantia hapemanii*.

Counties: Carbon Co.

Elevation: 3,680 ft on the Bighorn River to 8,770 ft on the summit of East Pryor Mountain.

Size of Area: 114,950 acres

Property Ownership: Bureau of Land Management, U.S. Forest Service, National Park Service, State of Montana, and private.

Other designations for the site: East Pryor Mountain Area of Critical Environmental Concern (BLM), Lost Water Canyon Research Natural Area (USFS). Burnt Timber Canyon Wilderness Study Area (BLM) Pryor Mountain Wilderness Study Area (BLM), Pryor Mountain Wildhorse Range (BLM), Bighorn Canyon National Recreation Area (NPS), Bear Canyon Important Bird Area (Audubon, USFS, BLM).

Table 1. Plant Species of Concern in the South Pryor Mountains IPA

Species	MNHP global	MNHP state	Last observed	Population size	Trend
<i>Astragalus aretioides</i>	G4	S2S3	2001	1000+ plants	Unknown
<i>Astragalus geyeri</i>	G4	S2	2005	2000+ plants	Unknown
<i>Astragalus oreganus</i>	G4?	S2	2005	5,000+ plants	Unknown
<i>Boechera demissa</i>	G5	S1S3	1993	Unknown	Unknown
<i>Camissonia andina</i>	G4	S2	1991	1,000-10,000 plants	Unknown
<i>Camissonia parvula</i>	G5	S1S2	1993	100-1,000 plants	Unknown
<i>Cleome lutea</i>	G5	S1S2	1995	Unknown	Unknown
<i>Erigeron allocotus</i>	G3	S3	1999	10,000+ plants likely	Unknown
<i>Eriogonum salsuginosum</i>	G4?	S1	1995	Approx 1,000	Unknown
<i>Grayia spinosa</i>	G5	S2	2005	Approx 1,000	Unknown
<i>Leptodactylon caespitosum</i>	G4	S2	2010	2,000-5,000	Unknown
<i>Malacothrix torreyi</i>	G4	S1S2	2005	Unknown	Unknown
<i>Mentzelia pumila</i>	G4	S2S3	1999	Unknown	Unknown
<i>Nama densum</i>	G5	S1	1991	100-1,000	Unknown
<i>Penstemon caryi</i>	G3	S3	1995	Unknown	Unknown
<i>Physaria lesicii</i>	G2	S2	1998	10,000+ plants	Unknown
<i>Shoshonea pulvinata</i>	G2G3	S2	1999	4,000-5,000 plants	Possibly declining (Heidel 2001)
<i>Stipa lettermanii</i>	G5	S1S3	1999	Unknown	Unknown
<i>Sullivantia hapemanii</i>	G3	S2	2001	1,000+	Unknown
<i>Rhizoplaca haydenii</i> (Lichen)	G2G3	S1S2	1995	Unknown	Unknown

Trend Information: Trend data are lacking for almost all plant SOC within the proposed IPA. Only *Shoshonea pulvinata* has monitoring data available. In 1991-93 permanent monitoring transects were established for *Shoshonea pulvinata*, two of these are within the proposed IPA boundary near Mystery Cave. Transects were read from 1991 to 1993 and again in 1999. Populations remained stable at 2 sites, including one on the east slope of the Beartooth Plateau, while the Mystery Ridge transect within the proposed IPA showed a steep decline between 1991-1992 and an overall declining trend during the monitoring period (Heidel 2001).

Threats: Threats to the rare plants in the South Pryor Mountains proposed IPA include off-road vehicle use, trampling by livestock and wild horses, weed invasion, mineral exploration and extraction, and climate change. Most of the rare plants occur in open habitats that could be

negatively impacted by soil erosion or compaction from off-road vehicle use or mining exploration. *Halogeton glomeratus* is a pernicious weed in Wyoming and south and occurs in some low-elevation portions of the proposed IPA. Trampling by wild horses has caused terracing and degradation of *Physaria lesicii* habitat on Sykes Ridge (Lesica 1995). *Sullivantia hapemanii* occurs in seeps along Bighorn Canyon. Changes in hydrology associated with a drying or warming climate could cause loss of habitat for this species.

Table 2. Type and severity of threats for rare plants in the South Pryor Mountains IPA

Species	Threats	Level	Comments
All but <i>Shoshonea</i> and <i>Sullivantia</i>	Weed Invasion	Low	<i>Halogeton glomeratus</i> is common in some parts of proposed IPA at lower elevations and could exclude recruitment of native plants.
Low- and mid-elevation species of open habitats, especially <i>Physaria</i>	Trampling by livestock and wild horses	Low-moderate	Grazing is present throughout the IPA. Has the potential to damage habitat for <i>Physaria lesicii</i> and other species occupying steep slopes.
All species except <i>Sullivantia</i>	Off-road vehicle use and mineral exploration and extraction	Low	Limestone and bentonite are currently being mined on the periphery of the IPA.
<i>Sullivantia hapemanii</i>	Climate Change	Unknown	Changes in temperature and water availability could impact the calcareous seep habitat.

Justification: The proposed South Pryor Mountains IPA supports a large number of plants considered rare in Montana. The majority of these are plants with affinities to the Great Basin floristic province (14 species). They are more common in Wyoming and Utah but reach the northern margin of their range in the South Pryor Mountains area. For all SOC's included in the proposed IPA boundary, the IPA encompasses the entire known range or a significant portion of the known populations of these species within Montana. Five species of vascular plants are globally rare, being endemic to the north end of the Bighorn Basin of Montana and Wyoming.

The proposed South Pryor Mountains IPA has 5,000 ft of vertical relief and supports ca. 29 distinct plant communities (DeVelice and Lesica 1993). Forests and woodlands dominated by limber pine occur on warm, often exposed, stony-soil slopes at or above 6,500 ft. Douglas-fir forests occur on slopes at 5,000-7,000 ft. Woodlands dominated by Utah juniper occur on shallow, calcareous soil of slopes and ridges at 4,000-6,000 ft. Limber pine-juniper woodlands are found on shallow, calcareous soils of slopes between 4,000 ft and 5,300 ft. Shrublands dominated by black sagebrush and big sagebrush occur at 4,200-6,700 ft on slopes, ridgetops and benches. Toeslopes, terraces and alluvial fans at 3,800 ft to 5,300 ft, often with heavy soil, support shrublands dominated by big sagebrush (*Artemisia tridentata*), bird's-foot sagebrush (*Artemisia pedatifida*), black greasewood (*Sarcobatus vermiculatus*), and Gardner's saltbush

(*Atriplex gardneri*). Idaho fescue grasslands occur above 8,000 ft on gentle slopes. Grasslands dominated by bluebunch wheatgrass and cushion plants are common on gravelly soils of low-elevation ridgetops and upper slopes.

Several plant communities in the proposed South Pryor Mountains IPA were considered globally rare at the time of the last vegetation survey in the area (DeVelice and Lesica 1993, Lesica 1994). Three of these plant communities deserve mention because they are widespread in the proposed IPA and thought to be globally rare. These are (1) *Juniperus osteosperma/Cercocarpus ledifolius* woodlands, (2) *Pinus flexilis/Juniperus osteosperma* woodlands, and (3) *Atriplex nuttallii/Artemisia spinescens* shrublands (DeVelice and Lesica 1993, Lesica 1994). These communities are reported to be endemic to the Pryor Mountain Desert and adjacent Northern Bighorn Basin (DeVelice and Lesica 1993). The two woodland communities are common at mid elevations, while the shrubland type was recorded at some of the lowest elevations in the proposed IPA. Further research is needed to determine if other plant communities reported for the area are truly globally rare.

The IPA boundary is drawn to contain the highest concentration and exemplary populations of all the rare species and communities. The southern boundary is the Wyoming state line. The east boundary is the Bighorn River which is also the approximate boundary between the Bighorn Canyon National Recreation Area and the Crow Indian Reservation. The north boundary is the summit ridge of the Pryor Mountains. The west boundary was drawn to include Bear Creek Canyon and all of Crooked Creek Canyon.

References:

- DeVelice, R.L. and P. Lesica. 1993. Plant community classification for vegetation on BLM lands, Pryor Mountains, Carbon County, Montana. Montana Natural Heritage Program, Helena. 40 pp. + appendices.
- Heidel, B. 2001. Monitoring *Shoshonea pulvinata* in the Pryor and Beartooth Mountains, Carbon County, MT. 1999 trend report to Bureau of Land Management, MT. Montana Natural Heritage Program, Helena. 11 pp. + appendices.
- Lesica, P. 1994. Vegetation map of the rare plant community types in the Pryor Mountains and Pryor Mountain Desert, Carbon County, Montana. Montana Natural Heritage Program, Helena. 6 pp. + 6 map sheets.
- Lesica, P. 1995. Conservation status of *Lesquerella lesicii* in Montana. Unpublished report to USDA Forest Service, Missoula, MT and USDI-BLM, Billings, MT.
- Montana Natural Heritage Program. 2012. MTNHP Botany Database: Accessed February 4, 2012. Montana Natural Heritage Program, Helena.

Form submitted by: Peter Lesica and Scott Mincemoyer

Affiliation: Montana Native Plant Society

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Mailing address: 929 Locust, Missoula, MT 59802

E-mail address: lesica.peter@gmail.com



Photograph 1. Sagebrush steppe in the foreground; Utah juniper woodlands on red Chugwater sandstone; limber pine woodlands on the foothills in the background.



Photograph 2. Utah juniper woodlands in the foreground; limber pine woodlands in the background.



Photograph 3. Sagebrush steppe near Gyp Spring.



Photograph 4. Cushion plant grasslands in the foreground; Crooked Creek left-center; bentonite hills (mainly in Wyoming) in the background.



Penstemon caryi



Physaria lesicii



Sullivantia hapemanii



Erigeron allocotus



Shoshonea pulvinata