> ASCLEPIAS VERTICILLATA WHORLED MILKWEED Family: Asclepiadaceae

Status:

US Fish & Wildlife Service: None. Agency Status: None.

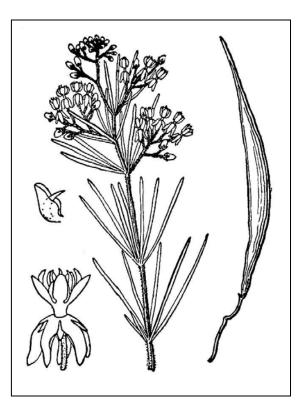
Heritage Rank: Global: G5 State: S1?

Range Context: Widespread/Edge Wyoming Contribution Rank: Low

Description: Whorled milkweed is a perennial herb arising from a fibrous rootcrown. The 3.5-9 dm stems are solitary to few, simple or sparingly branched, and usually sparsely hairy. The leaves are whorled or nearly so, sessile, and linear to thread-like (1.5-8 cm x)0.5-2 mm). The inflorescences are 6-20 flowered and found in the upper leaf axils. The flowers are 5.5-7.5 mm tall, with green or purple-tinged sepals, and white to greenish-purple tinged petals. The "eye" is greenish-white, and the horns arch over the anther head. The fruits are narrowly spindle shaped (8-10.5 cm x 6-8 mm), ascending to erect, sparsely hairy, and smooth (Great Plains Flora 1986, Dorn 2001).

Similar Species: Asclepias pumila also has thread-like leaves, but they are alternate in a tight spiral or sometimes whorled just at the base, and the stem is generally shorter. A. subverticillata has leaves 2-4 mm wide. A. stenophylla has mostly opposite leaves 1-5 mm wide, and its horns do not arch over the anther head (Great Plains Flora 1986, Dorn 2001).

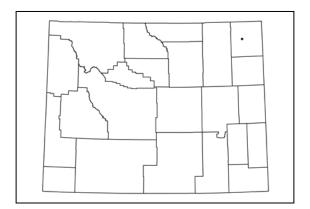
<u>Flowering/Fruiting Period</u>: Flowering and fruiting occur from late June to September.



Above: *Asclepias verticillata*, from: Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 32.

<u>Distribution</u>: Occurs from Saskatchewan east to Ontario and south to Mexico. There is one known occurrence in Wyoming, from the Black Hills in Crook County.

<u>Habitat</u>: Whorled milkweed grows on rocky, sandy, soil in open ponderosa pine grassland at about 4300 ft.



Wyoming distribution of Asclepias verticillata

<u>Occurrences in Wyoming</u>: Known from a single occurrence in Wyoming, last observed in 1981. More recent surveys have failed to find it. *A. pumila* is widespread in the area of the original collection, and determination of the original specimen is discussed in Heidel (2008).

Abundance: Not known.

Trends: Not known.

<u>Protection status</u>: The one occurrence is in Devils Tower National Monument.

Threats: Not known.

<u>Managed Areas</u>: Known from lands managed by Devils Tower National Monument.

References:

Dorn, R.D. 2001. Vascular Plants of Wyoming, third edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W. 2000. Rare plants of Devils Tower National Monument. Prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS.

Heidel, B. 2008. Survey for special plant species of concern in Devils Tower National Monument. Prepared for the National Park Service. Wyoming Natural Diversity Database, Laramie, WY.

Larson, G.E. and J.R. Johnson. 1999. Plants of the Black Hills and Bear Lodge Mountains. South Dakota State University College of Agriculture and Biological Sciences & South Dakota Agricultural Experiment Station, Brookings, SD. <u>Author</u>: Joy Handley and Bonnie Heidel 2008-12-10

> CAREX EMORYI EMORY'S SEDGE Family: Cyperaceae

<u>Status:</u> US Fish & Wildlife Service: None. Agency Status: None

Heritage Rank: Global: G5 State: S1

Range Context: Widespread/Edge Wyoming Contribution Rank: Low

Description: Emory's sedge is a rhizomatous graminoid with smooth to roughly triangular stems (culms) 3-11.5 dm high. Leaves are 3-6 mm wide with basal sheaths red-brown and convex apices. Ligules are truncate or broadly rounded. Uppermost spikes are staminate, and lower spikes are pistillate, 2.5-10 cm long. Pistillate scales dark, outer margins that no wider than the light central band. Perigynia are ellipsoid, finely 3-5 nerved on each face, and 1.7-3.2 x 1-2.1 mm. The perigynia beak is 0.1-0.3 mm long. Achenes are lens-shaped with 2 stigmas (Ball and Reznicek 2002; Hermann 1970).

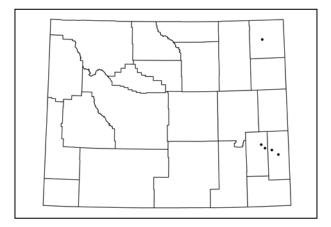
Similar Species: *Carex aquatilis* has dark perigynia scales except for a narrow, light midrib, and the leaf ligule forms an elongate, acute triangle. *Carex lenticularis* has a bract at the base of the inflorescence that is longer than the inflorescence (usually at least 1.5 times as long). *Carex stricta* has little or no perigynia beak (Dorn 2001; Ball and Reznicek 2002).

Flowering/Fruiting Period: May-June.



Above: Carex emoryi, by B. Heidel

<u>Distribution</u>: Manitoba south to Colorado and Texas, east to New York and Virginia. In Wyoming it is known from the Black Hills and Goshen Hole, on the Belle Fourche and North Platte Rivers, in Crook, Goshen, and Platte counties.



Above: Wyoming distribution of Carex emoryi

<u>Habitat</u>: Wet meadow zone along open or partially shaded shores of perennial rivers. In moist to wet alluvial loams at 3850-4320 feet.



Above: Carex emoryi habitat, by B. Heidel

Occurrences in Wyoming: Known from 5 recent records (all observed since 1996, most recently in 2008).

<u>Abundance</u>: The occurrence has many 1000's of individuals at Devils Tower National Monument and at least 100's at Fort Laramie National Historic Site.

<u>Trends</u>: Stable at present but with historic declines. Persists at one reservoir but likely to have lost habitat elsewhere.

<u>Protection status</u>: Two occurrences are protected in Devils Tower National Monument and Fort Laramie National Historic Site. All other occurrences are from state or federal lands managed for multiple use.

<u>Threats</u>: May be threatened by altered river flows, impoundment or lowering of water table, grazing, trampling, and invasion of exotic species.

<u>Managed Areas</u>: Known from lands managed by the Fort Laramie National Historic Site, Devils Tower National Monument, Camp Guernsey Training Area and Rawhide Wildlife Management Area. References:

Dorn, R.D. 2001. Vascular Plants of Wyoming, third edition. Mountain West Publishing, Cheyenne, WY.

Ball, P.W. and A.A. Reznicek. 2002. Carex. In: Flora of North America north of Mexico. 26+ volumes. Oxford University Press, New York and Oxford. Vol. 23, pp. 254-572.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS.

Heidel, B. 2004. Floristic inventory of Fort Laramie National Historic Site. Prepared for the Northern Great Plains Inventory Program and Fort Laramie National Historic Site. Wyoming Natural Diversity Database, Laramie, WY.

Heidel, B. 2008. Survey for special plant species of concern in Devils Tower National Monument. Prepared for the National Park Service. Wyoming Natural Diversity Database, Laramie, WY.

Hermann, F.J. 1970. Manual of the Carices of the Rocky Mountains and Colorado Basin. Agriculture Handbook 374: 1-397. USDA Forest Service, Washington DC.

Marriott, H. 1982. Devils Tower National Monument Plant Checklist. Unpublished list prepared for the Devils Tower Natural History Association, 1980-1982.

<u>Author</u>: Joy Handley and Bonnie Heidel 2008-12-10

> ELYMUS VILLOSUS HAIRY WILD-RYE Family: Poaceae

Status:

US Fish & Wildlife Service: None. Agency Status: None.

Heritage Rank: Global: G5 State: S1

Range Context: Widespread/Edge Wyoming Contribution Rank: Low

Description: Slender wild-rye is a tufted, nonrhizomatous perennial grass with culms 3-15 dm tall. Leaves have flat, soft-hairy blades 3-10 mm wide, glabrous to sparsely pubescent sheaths, and membranous ligules 0.3-1 mm long. The inflorescence is a straight to arching spike 4-10 cm long that does not fracture at maturity. Spikelets typically occur in pairs at each node and have 1-3 florets and slender, bristle-like glumes 15-30 mm long. Lemmas are 6-8 mm long, 1.5 mm wide across the back, and covered with long, soft hairs. Anthers are 2-3.5 mm long (Great Plains Flora Association 1986; Dorn 2001).

<u>Similar Species</u>: Elymus diversiglumis has divergent, wavy awns on lemmas that are 2 mm wide across the back and bristle-like glumes that are occasionally absent. E. innovatus has creeping rhizomes and densely pubescent lemmas (Dorn 2001).

Flowering/Fruiting Period: July-Sept.

<u>Distribution</u>: Occurs from Ontario to Quebec, south to Texas and Georgia. In Wyoming it is known from the Black Hills in Crook County.



Above: Spikelet of *Elymus villosus* from Hitchcock, A.S. (rev. A. Chase). 1950. Manual of the grasses of the United States. USDA Miscellaneous Publication No. 200. Washington, DC. 1950.

Below: Elymus villosus, by B. Heidel

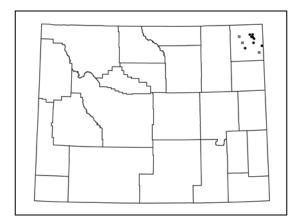


<u>Habitat</u>: Rangewide, this species is reported from sandy, shaley, or loamy soils in woods and streambanks (Great Plains Flora Association 1986). Wyoming populations are found in shady wooded valleys and ravines in Bur oak/Ironwood and Bur oak/Green ash/Sprengel's sedge communities at 3800-5600 feet.



Above: Elymus villosus habitat, by B. Heidel

Occurrences in Wyoming: Known from 9 extant locations in Wyoming (all relocated or discovered since 1983) and 2 historical records.



Wyoming distribution of *Elymus villosus*.

<u>Abundance</u>: Largest colonies have 500 stems; most individuals having multiple stems.

<u>Trends</u>: Stable in Devils Tower National Monument where collected in 1897 and 2008, and at remote settings.

<u>Protection status</u>: One occurrence is known from Devils Tower National Monument. All other reports are from state, private, or public lands managed for multiple use.

<u>Threats</u>: May be impacted by grazing, competition from exotic species, or loss of habitat to road and home construction.

<u>Managed Areas</u>: Occurs on Devils Tower National Monument and lands managed by Black Hills National Forest and the BLM Newcastle Field Office.

References:

Church, C.L. 1967. Taxonomic and genetic relationships of eastern North American species of Elymus with setaceous glumes. Rhodora 69:121-162.

Dorn, R.D. 2001. Vascular Plants of Wyoming, third edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W. 2000. Rare plants of Devils Tower National Monument. Prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

Barkworth, M.E., J.J.N. Campbell and B. Salomon. 2007. Elymus. In: Flora of North America north of Mexico. 26+ volumes. Oxford University Press, New York and Oxford. Vol. 24, pp. 288-343.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS. Heidel, B. 2008. Survey for special plant species of concern in Devils Tower National Monument. Prepared for the National Park Service. Wyoming Natural Diversity Database, Laramie, WY.

Larson, G.E. and J.R. Johnson. 1999. Plants of the Black Hills and Bear Lodge Mountains. South Dakota State University College of Agriculture and Biological Sciences & South Dakota Agricultural Experiment Station, Brookings, SD.

<u>Author</u>: Walter Fertig <u>Updated</u>: by Joy Handley and Bonnie Heidel 2008-12-10

GLANDULARIA BIPINNATIFIDA DAKOTA VERVAIN Family: Verbenaceae

<u>Status</u>: US Fish & Wildlife Service: None. Agency Status: None.

Heritage Rank: Global: G5 State: S1

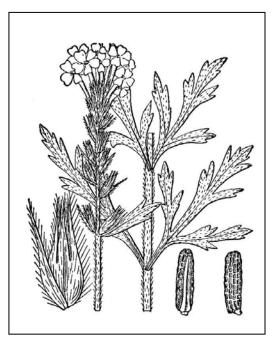
Range Context: Widespread/Edge Wyoming Contribution Rank: Low

Description: Dakota vervain is a perennial herb, diffusely branched at the base. Stems are prostrate, decumbent, ascending, or erect, 0.5-6 dm long, sometimes rooting at nodes, and moderately to densely hairy. Leaves are opposite, 1-6 cm long, 1-6 cm wide, deeply lobed 1-3 times, and hairy. Inflorescences are spikes 1-20 cm long, tightly clustered during flowering and elongating or compact in fruit. Small, hairy, sometimes glandular, bracts surround the flowers and are up to 1.2 times longer than the calyx. The calyx is 7-10 mm long, hairy, and sometimes glandular. The corolla is pink to lavender or purple, hairy, tubular, and ca 1.5 times longer than the calyx (Great Plains Flora Association 1986; Dorn 2001).

<u>Similar Species</u>: Verbena spp. have corolla tubes 7 mm or less long and calyxes 2-6 mm long (Dorn 2001).

Flowering/Fruiting Period: May-October.

<u>Distribution</u>: Occurs from Wyoming to South Dakota, south to California and Georgia. In Wyoming it is known from the Black Hills and historically in the Wind River Basin, in Crook and Fremont counties.



Above: *Glandularia bipinnatifida*, from: Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 97.

Below: Glandularia bipinnatifida, by B. Heidel.



<u>Habitat</u>: Rangewide, this species is reported from dry plains and prairies, pastures, stream

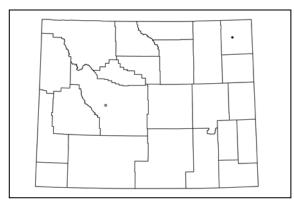
valleys, and roadsides (Great Plains Flora Association 1986). The one extant Wyoming population is found in a prairie dog town with *Buchloe dactyloides* and *Elymus smithii*. Known elevations range from 3800-5600 feet.



Above: *Glandularia bipinnatifida* habitat, by B. Heidel

Occurrences in Wyoming: Known from 1 extant location in Wyoming (last observed in 2008) and 1 vague historical record.

Abundance: Estimated at 276 plants in 2007.



Wyoming distribution of Glandularia bipinnatifida.

<u>Trends</u>: The known population doubled in numbers and expanded slightly in extent between 1988-2007.

<u>Protection status</u>: The extant occurrence is known from Devils Tower National Monument. The other report is from lands managed for multiple use.

Threats: Not known.

<u>Managed Areas</u>: May occur on lands managed the Wind River Indian Reservation, state, or the BLM Lander Field Office. A known occurrence is at Devils Tower National Monument.

References:

Dorn, R.D. 2001. Vascular Plants of Wyoming, third edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W. 2000. Rare plants of Devils Tower National Monument. Prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS.

Heidel, B. 2008. Survey for special plant species of concern in Devils Tower National Monument. Prepared for the National Park Service. Wyoming Natural Diversity Database, Laramie, WY.

Larson, G.E. and J.R. Johnson. 1999. Plants of the Black Hills and Bear Lodge Mountains. South Dakota State University College of Agriculture and Biological Sciences & South Dakota Agricultural Experiment Station, Brookings, SD.

Marriott, H. 1982. Devils Tower National Monument Plant Checklist. Unpublished list prepared for the Devils Tower Natural History Association, 1980-1982.

Marriott, H. 1989. Programs for monitoring rare and noxious plant species at Devils

Tower National Monument, Wyoming. Report prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

<u>Author</u>: Joy Handley and Bonnie Heidel 2008-12-10

HELIANTHEMUM BICKNELLII PLAINS FROSTWEED Family: Cistaceae

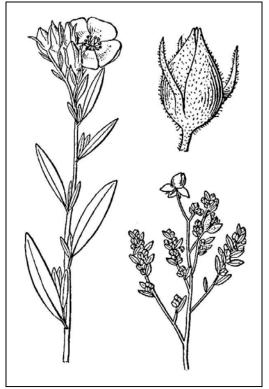
Status:

US Fish & Wildlife Service: None. Agency Status: None.

Heritage Rank: Global: G5 State: S1 Range Context: Widespread/Edge Wyoming Contribution Rank: Low

Description: Plains frostweed is a perennial forb with densely whitish-gray hairy stems 15-60 cm tall that are clustered at the top of a branched caudex. Leaves are linear-oblong to narrowly elliptic, 5-35 mm long, entire, alternate, and stellate-pubescent. The first flowers of the season have 5 yellow petals 7-12 mm long and numerous, separate stamens and are arranged in clusters of 5-12 in a loose, terminal raceme. Petals fall off within 2 days. The calyx is stellate-pubescent with 3 broad and 2 narrow sepals. Later flowers are much smaller, do not open (cleistagamous), and are crowded in short axillary branches that do not overtop the larger, open flowers. Fruiting capsules of open flowers are 4-5 mm in diameter and rounded with numerous seeds, while the capsules of closed flowers are strongly 3-sided, less than 2 mm in diameter, and bear 1-3 seeds (Dorn 2001; Great Plains Flora Association 1986).

<u>Similar Species</u>: *Lechea intermedia* has linear leaves and reddish-purple flowers less than 2 mm long. *Hypericum* spp. have numerous stamens grouped in clusters, and gland-dotted yellow petals. *Lysimachia ciliata* has broader leaf blades with ciliate petioles and flowers with 5 stamens.

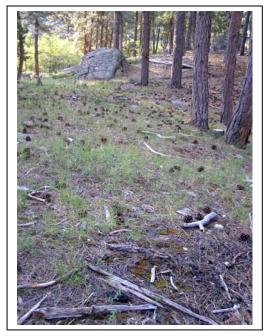


Above: *Helianthemum bicknellii*, from: Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 2: 540.

Below: Helianthemum bicknellii, by B. Heidel

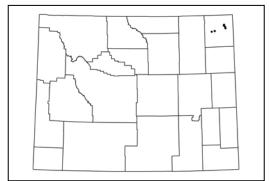


Flowering/Fruiting Period: June-September.



Above: Helianthemum bicknellii habitat, by B. Heidel

<u>Distribution</u>: Maine to Manitoba, south to Georgia, Arkansas, and Colorado. In Wyoming it is known only from the Black Hills in Crook County



Wyoming distribution of Helianthemum bicknellii.

<u>Habitat</u>: Rangewide, this species occurs on dry, usually sandy soils in open woods and plains. In Wyoming populations occur in Ponderosa pine woods associated with sandstone outcrops and sandy soils at 4200-4800 feet.

<u>Occurrences in Wyoming</u>: Known from 6 occurrences in Wyoming, the last observed in 2008.

Abundance: Not known.

Trends: Not known.

<u>Protection status</u>: One occurrence is in Devils Tower National Monument and another is partially in the Hay Creek RNA on Black Hills National Forest. Other populations are on public lands managed for multiple use.

Threats: Not known.

<u>Managed Areas</u>: Occurs on lands managed by Black Hills National Forest and Devils Tower National Monument.

References:

Dorn, R.D. 2001. Vascular Plants of Wyoming, third edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W. 2000. Rare plants of Devils Tower National Monument. Prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS.

Heidel, B. 2008. Survey for special plant species of concern in Devils Tower National Monument. Prepared for the National Park Service. Wyoming Natural Diversity Database, Laramie, WY.

Heidel, B. 2008. Report on the proposed Hay Creek research natural area. Prepared for Black Hills National Forest. WYNDD, Laramie, WY.

<u>Author</u>: Walter Fertig <u>Updated</u>: by Joy Handley and Bonnie Heidel 2008-12-10

OENOTHERA LACINIATA CUT-LEAVED EVENING-PRIMROSE Family: Onagraceae

Status:

US Fish & Wildlife Service: None. Agency Status: None.

Heritage Rank: Global: G5 State: S1

Range Context: Widespread/ Edge Wyoming Contribution Rank: Very Low

<u>Description</u>: Cut-leaved evening-primrose is an annual herb, 10-30 (80) cm tall, nearly hairless to spreading-hairy, with slender to stout taproots and simple to much branched stems. Leaves are oblanceolate, 1-9 cm long, and smooth margined to deeply cleft. Basal leaves are clustered and stem leaves are alternate. The flowers are solitary in axils and open near sunset. The 4 petals are yellow, fading to pink and 5-18 mm long. Capsules are cylindric, usually spreading, and 2-4 cm long (Great Plains Flora Association 1986).

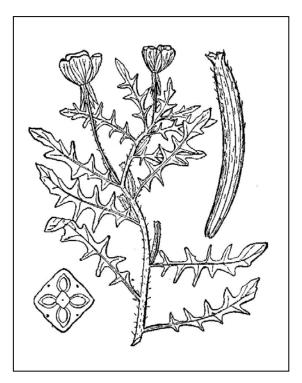
<u>Similar Species</u>: *Oenothera albicaulis* and *O. cornopifolia* have white flowers and are perennial. *Oenothera villosa* is a biennial with entire to coarsely toothed leaves.

Flowering/Fruiting Period: June-August

<u>Distribution</u>: Occurs from Maine to New Mexico and California, south to South America. In Wyoming, it is known from the Powder River Basin and Black Hills in Campbell and Crook counties.

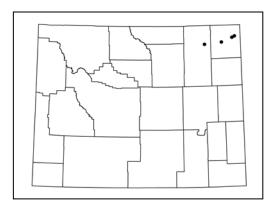
<u>Habitat</u>: Across its range, this species is reported from fields, pastures, stream valleys,

open woodlands, prairie ravines, and waste places (Great Plains Flora Association 1986). Wyoming populations are found on dry open sandy ponderosa pine slopes, plains, and prairie dog towns at 3500-4200 feet.



Above: *Oenothera laciniata*, from: Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 2: 597

<u>Occurrences in Wyoming</u>: Known from 4 records in Wyoming, the most recent observed in 2007.



Wyoming distribution of Oenothera laciniata

Abundance: Not known.

Trends: Not known.

<u>Protection status</u>: One population occurs in Devils Tower National Monument. All other known occurrences are on public or private lands managed for multiple use.

<u>Threats</u>: Threats probably low (plant may be expanding along roadsides).

<u>Managed Areas</u>: Occurs on the Black Hills National Forest, Devils Tower National Monument, and state lands.

References:

Dorn, R.D. 2001. Vascular Plants of Wyoming, third edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W. 2000. Rare plants of Devils Tower National Monument. Prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

Gleason, H.A. and A. Cronquist. 1991. Manual of Vascular Plants of Northeastern United States and Canada. New York Botanical Garden, Bronx, NY.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS.

Heidel, B. 2008. Survey for special plant species of concern in Devils Tower National Monument. Prepared for the National Park Service. Wyoming Natural Diversity Database, Laramie, WY.

<u>Authors</u>: Joy Handley and Bonnie Heidel <u>Updated</u>: 2008-12-11

> VIOLA PEDATIFIDA PRAIRIE VIOLET Family: Violaceae

Status:

US Fish & Wildlife Service: None. Agency Status: None.

Heritage Rank: Global: G5 State: S1

Range Context: Widespread/Edge Wyoming Contribution Rank: Low

Description: Prairie violet is a stemless perennial herb without rhizomes or stolons. Leaf blades are palmately divided into 3 or more segments, with the main segments further subdivided nearly to the base. Stipules are lance-shaped. Flowering stalks are equal to longer than the leaves and glabrous. Sepals are lance to ovate-lanceolate. Petals are violet to reddish violet, 10-18 mm long, and strongly veined. Cleistogamous (nonopening) flowers are borne on short peduncles among the basal leaves. Fruits are glabrous, yellow-green capsules 8-12 mm long (Great Plains Flora Association 1986).

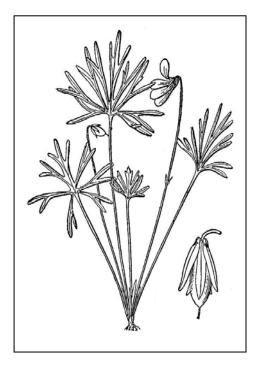
Similar Species: All other Wyoming *Viola* spp. have simple leaves with entire to lobed margins.

Flowering/Fruiting Period: April-June.

Distribution: Occurs from southern Ontario to Alberta and south to Virginia and New Mexico. In Wyoming it is known only from the Black Hills in Crook County.

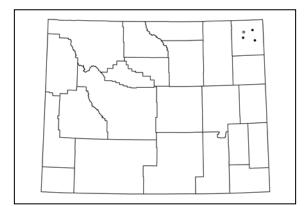
Habitat: Rangewide, this species occurs in plains and open woodlands (Great Plains

Flora Association 1986). Wyoming occurrences are found in grassy hillsides and open Ponderosa pine woodland at 4000-4600 feet.



Above: *Viola pedatifida*, from: Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 2: 554.

Occurrences in Wyoming: Known from 3 extant occurrences (all observed since 1982) and 1 historical record in Wyoming.



Wyoming distribution of Viola pedatifida

Abundance: Population size is not known statewide, although one subpopulation

observed at Devils Tower in 1999 contained 2 individuals.

Trends: Could not be relocated in Devils Tower National Monument surveys. Preliminary vegetation plot information indicates it may persist of increase with prescribed burning.

Protection status: One occurrence was found in at least two locales in Devils Tower National Monument. Other known populations are on public lands managed for multiple use or private lands.

Threats: Not known.

Managed Areas: Occurs on Devils Tower National Monument and lands managed by Black Hills National Forest and the BLM Newcastle Field Office.

References:

Dorn, R.D. 2001. Vascular Plants of Wyoming, third edition. Mountain West Publishing, Cheyenne, WY.

Fertig, W. 2000. Rare plants of Devils Tower National Monument. Prepared for the National Park Service by the Wyoming Natural Diversity Database, Laramie, WY.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS.

Heidel, B. 2008. Survey for special plant species of concern in Devils Tower National Monument. Prepared for the National Park Service. Wyoming Natural Diversity Database, Laramie, WY.

Larson, G.E. and J.R. Johnson. 1999. Plants of the Black Hills and Bear Lodge Mountains. South Dakota State University College of Agriculture and Biological Sciences & South Dakota Agricultural Experiment Station, Brookings, SD.

Marriott, H. 1982. Devils Tower National Monument Plant Checklist. Unpublished list prepared for the Devils Tower Natural History Association, 1980-1982.

Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. Colorado Rare Plant Field Guide. Prepared for the Bureau of Land Management, US Forest Service, and US Fish and Wildlife Service by the Colorado Natural Heritage Program, Ft. Collins, CO.

Author: Walter Fertig Updated: by Joy Handley and Bonnie Heidel 2008-12-10