

## RARE PLANTS

*Adiantum capillus-veneris* (southern maidenhair-fern) historically is known to be abundant on stream banks in J.H. Keith Picnic Ground with widely scattered clumps along Cascade Creek to Cascade Falls. It occurs in tufa deposits at waters edge with *Epipactis gigantea* (stream orchid) and is mostly shaded by sparse riparian zone of Russian olive, juniper and elm [South Dakota Natural Heritage Database (SDNHP)]. Dr. C. E. Bessey first described it in 1898.



The following classification scheme applies to *Adiantum capillus-veneris*:

Kingdom:	Plantae	Order:	Pteridales
Division:	Polypodiophyta	Family:	Adiantaceae
Class:	Polypodiopsida	Genus:	<i>Adiantum</i>
Subclass:	Polypoidae	Species:	<i>capillus-veneris</i>

*Adiantum capillus-veneris* is often found growing on limestone cliffs away from direct sunlight and out of the way of drying southwest winds (Petersen, 2000). The genus name, *Adiantum*, is from the Greek Adiantos, meaning “unwetted” as the leaves of this plant repel water even though the herb grows in a wet environment. Larson and Johnson (1999) note that the fern is locally common as a disjunct population along Cascade Creek where it is found growing on wet limestone ledges and crevices along streams and springs. It is widespread in tropical and temperate regions of the world; in North America, south from Virginia, Missouri, Oklahoma, southwest Utah, southern Utah, and California, with disjunct populations in South Dakota and southern British Columbia. The fern owes its occurrence in the southern Black Hills to the warm, limey springs that feed Cascade Creek. Without the naturally warm waters of the creek, it could not survive severe winter weather (Larson and Johnson, 1999).

*Epipactis gigantea* (stream orchid) historically is known to occur on steep, mostly shaded stream banks of Cascade Springs and Creek. The Element Occurrence Record (EOR) from August 10, 1983, reported that between 150 and 250 plants were observed growing on moist banks and islands with *Adiantum*, and fewer than 50 plants were found on private land below the picnic area (SDNHP).



The following classification scheme applies to *Epipactis gigantea*:

Kingdom:	Plantae	Order:	Burmanniales
Division:	Magnoliophyta	Family:	Orchidaceae
Class:	Liliopsida	Genus:	<i>Epipactis</i>
Subclass:	Liliidae	Species:	<i>gigantea</i>

*Epipactis gigantea* is found on wet, seeping slopes, bluffs or ledges. It is scattered from Montana to Colorado, South Dakota, Oklahoma, Texas, Arizona, California, British Columbia, and Mexico (Kirkpatrick, 1992). Larson and Johnson (1999) note that it is uncommon and local along Cascade Creek south of Hot Springs in the southern Black Hills, growing on calcareous stream banks. It is listed as a sensitive species in the Black Hills because of its highly restricted distribution. It is one of several species whose only occurrence in South Dakota is along Cascade Creek, where warm springs enable survival of plants found nowhere else in the state or even in the region (Larson and Johnson, 1999).

The name *Epipactis* derives from a classical name used by Theophrastus (circa 350 BC) for a plant used to curdle milk. There are about 25 species worldwide, mostly in Europe and Asia. Two species are found in the US – *E. gigantea* and *E. helleborine*. *Epipactis gigantea* is virtually always found in wet places. It is found from sea level to 2600 m, always with a constant source of water at the roots, including wet cliff-faces, salty beaches, road-cuts, mountain bogs, hot springs, and sandbars in streams. One of the known pollinators is the Syrphid fly (Rach, 1998). It grows on calcareous, porous substrates or thin, partially decomposed, wet organic substrates. It is more common in the open than in the forest, and it can colonize suitable habitats quickly. It is a species of open, early successional habitats and a poor competitor later in succession (Williams, 1990).

***Eustoma grandiflorum*** (tulip gentian) is historically reported as locally abundant in low, wet sandy places along Cascade Creek [South Dakota Natural Heritage Database (SDNHD)]. The Element Occurrence Record (EOR) from August 10, 1983 reported 12 plants found within 25 feet of the stream bank in sandy loam, with graminoids, mostly exposed. One plant was found in 1983 at the Forest Service picnic area (SDNHD).



The following classification scheme applies to *Eustoma grandiflorum*:

Kingdom:	Plantae	Order:	Gentianales
Division:	Magnoliophyta	Family:	Gentianaceae
Class:	Magnoliopsida	Genus:	<i>Eustoma</i>
Subclass:	Gentianidae	Species:	<i>grandiflorum</i>

*Eustoma grandiflorum* is found in moist places in prairies and fields. It ranges from eastern Colorado to Nebraska, south to eastern New Mexico and Texas. *Eustoma*, from the Greek *eu* (“good”) and *stoma* (“mouth”), refers to the large opening into the flower’s throat where the corolla lobes join (Spellenberg, 1979). In “Rare Plants of Colorado” [Colorado Native Plant Society (CNPS), 1997] it is noted that this gentian was formerly found on the western half of the Great Plains from South Dakota south through Texas into Mexico but has been greatly reduced since settlement. Its habitat has been reduced to the point that it is now rare over much of its former range. It requires a fairly high water table in moist open fields and meadows underlain by sandy alluvial soils. Agricultural use, gravel mining, and urbanization have eradicated most populations near the eastern mountain front of Colorado. Whether it will continue to exist in the wild in Colorado is unclear (CNPS, 1997).

***Eleocharis rostellata*** (beaked spikerush) is a tufted perennial sedge with flattened, wiry stems 1.3 to 3.3 feet long and beaked achenes. Historically, beaked spikerush has been known in large stands along Cascade Creek from J.H. Keith Picnic Ground downstream to Cascade Falls (EOR of August 10, 1983 - SDNHP).



The following classification scheme applies to *Eleocharis rostellata*:

Kingdom:	Plantae	Order:	Cyperales
Division:	Anthophyta	Family:	Cyperaceae
Class:	Monocotyledoneae	Genus:	<i>Eleocharis</i>
Subclass:	Cyperidae	Species:	<i>rostellata</i>

Beaked spikerush regenerates by seed or vegetatively by sprouting and layering. It sprouts from short shallow rhizomes, and it has elongated layering culms, which arch to the ground and root in moist soil from the apical bulbils. Beaked spikerush is an obligate wetland species and occurs in many types of alkaline wetlands, including hot spring edges. It occurs near springs and seeps in desert areas of the Southwest. It typically occurs on sand bars and along stream edges in saturated soil, occasionally in partial shade. In New York, beaked spikerush occurs in wet minerotrophic sites, nutrient-poor marl beds, and organic soils. (Marl beds are soils formed from calcium carbonate precipitates.) It is an early colonizer of marl beds by seeding into wet depressions. After colonization, the marl sites can accumulate peat and gradually become small hummocks of beaked spikerush, needle beaksedge, and moss.

*Eleocharis rostellata* is a facultative seral species. It is widespread in the Americas from southern Canada south through Mexico to the West Indies, the Caribbean, and the South American Andes. Although it is widespread in the conterminous US, beaked spikerush occurs in scattered disjunct populations, and it may not be present in every state. In various states, *Eleocharis rostellata* is associated with such species as *Scirpus acutus* (hardstem bulrush), *Juncus balticus* (Baltic rush), *Phragmites australis* (common reed), and *Spartina patens* (saltmeadow cordgrass) ([www.fs.fed.us/database](http://www.fs.fed.us/database)).

Beaked spikerush occurs from sea level in Atlantic, Gulf, and Pacific coast salt marshes and tidal flats to nearly 9,000 feet elevation in Colorado. In Montana, it primarily occurs in valley and foothill zones from 3,200 to 5,500 feet elevation ([www.fs.fed.us/database](http://www.fs.fed.us/database)).