

## Great Plains Perennial Spring



*Cow Creek (S005) reference spring example within the Custer National Forest*



*Charcoal Spring (S005) a slightly impaired example within the Custer National Forest*

### Aquatic Ecological System Type S005

#### View key to subtypes

#### Community Description

##### Summary:

This ecosystem is found in the moderate elevation (1000-1600m), upland hill areas of the Northwestern Great Plains Ecoregion. It occurs in small (0.2-2m in width) perennial fishless headwater springs with low to moderate gradient flowing through sedimentary geology. Benthic habitats are typically long riffle/run reaches dominated by shale cobbles and gravel with some woody debris.

##### Environment:

Throughout its Montana range, it occurs in seeps and springs within the Custer National Forest, Wolf Mountains and the higher elevation ponderosa pine forests of the Powder River Basin. Surface topography is sometimes undulating or hummocky and the gradient is moderate. Disturbance by cattle is widespread, as these springs often represent the only water source.

##### Fish Community:

This is a fishless system.

##### Macroinvertebrate Community:

The reference condition ecological system (S005) indicator macroinvertebrates include the midges (*Odontomesa*, *Radotanypus*, *Heleniella*, and *Pseudodiamesa*), diptera (*Tipula*, *Dicranota*, *Ormosia*, and *Pedicia*), snails (*Hydrobiidae* and *Physa*), the mayfly (*Baetis tricaudatus*), the caddisfly (*Hesperophylax designatus*), the water mite and leech (*Hydrachna* and *Glossophona complanata*), beetles (*Oreodytes*, *Optioservus* and *Hydroporus*), and the damselfly larva *Argia*. Sediment impaired and cattle degraded springs will quickly lose the mayfly, caddisfly, and dipteran species (above), and form a community dominated by tolerant midges, biting dipteran larvae (*Ceratopogonidae*) and air breathing beetles.

**Range:**

The Great Plains Perennial Spring type has been recorded in the Custer National Forest, Wolf Mountains and the higher elevation ponderosa pine forests of the Powder River Basin.

**Management:**

Soils adjacent to the springs are often waterlogged and are easily trampled and hummocked by livestock, causing severe streambed degradation, sedimentation and siltation downstream. Stock tanks and fencing can help preserve these ecosystems.

**Global Rank:** GU**State Rank:** S4**Global Rank Comments:**

The number of occurrences is unknown. In Montana, this ecosystem is reported from 25 site visits within the Custer National Forest Ashland District, but only three of these sites contained a quality, fully functional S005 community (Stagliano 2004). In a similar ecological type, the caddisfly *Hesperophylax designatus* was also found to be an indicator species of perennial springs in the Glass Mountains of the Great Basin (UT) in a 1994 survey (Myers 1995). Therefore, this ecosystem may be widespread, but because of the limited occurrence of high integrity sites in Montana, long-term monitoring and restoration of degraded sites may be recommended.