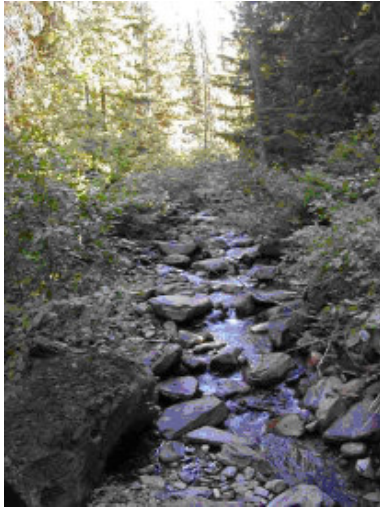


## Mountain Spring



*Step-pool boulder spring*



*Cobble/gravel spring*

### Aquatic Ecological System Type S003

#### View key to subtypes

#### Community Description

##### Summary:

Mountain Springs are found in the moderate to high elevation (1600-2500m) steep-forested slopes of the Middle Rockies and Isolated Mountain Ranges Ecoregion. These moderately confined, single-thread channel streams are 1<sup>st</sup> order spring rivulets with an average wetted width up to 0.5m and average summer temperature <12°C. Although there is strong seasonal variability due to melting snow pack, permanent groundwater-based flow contributes year-round to headwater foothills and mountain streams. These systems are often within National Forest Service boundaries. The geomorphology of these streams is usually Rosgen A-2 with a step-pool configuration. Substrate ranges from boulder and cobbles to gravel in the short pools. Large woody debris from the surrounding hillslopes can provide significant channel material and additional substrate to these streams.

##### Fish Community:

The typical Mountain Spring is fishless, although pioneering members of the Headwater Trout Stream Assemblage, specifically Westslope and Yellowstone Cutthroat Trout, may migrate up these small tributaries. Unfortunately, the introduced brook trout may also migrate up and aggressively compete with the native cutthroats in this limited habitat.

##### Macroinvertebrate Community:

This community of coldwater stenotherms typically consists of the shredder and predator functional groups of the Mountain Stream assemblage. The community indicator species include intolerant, moderate current mayflies (*Baetis bicaudatus*, *Ameletus*, *Caudetella spp.*, and *Drunella spinifera*), stoneflies (*Yoraperla*, *Zapada colombiana*, *Despaxia augusta*, Leuctridae, and *Megarctys*), caddisflies (*Neothremma alicia*, *Parapsyche*, *Cryptochia*, *Lepidostoma*, and *Neophylax splendans*), cold-water dipterans (*Bibiocephala*, and *Glutops*), and the non-insect turbellarian *Polycelis*.

**Range:**

In Montana, the Mountain Spring type is only represented from 10 sites within the Middle Rockies and Isolated Mountain Ranges Ecoregion. However, these small and usually unnamed streams are numerous, but under sampled. They originate in all of Montana's Upper Missouri River mountain ranges including the Absaroka-Beartooth, Big Snowy, Elkhorn, Big Belt, Little Belt, Crazy, Gallatin-Madison-Bridger, Anaconda-Pintler, Pioneer and Tendoy Ranges. These ecosystems typically fall within the boundaries of National Forest Service lands and wilderness areas.

**Management:**

Due to the confined valley nature of these streams, the largest management issue involves keeping the riparian zone intact. Disturbances within the riparian zone (e.g. logging) can have severe water quality impacts including bank erosion, sedimentation, increased stream temperatures, silt deposits and loss of large woody debris. Grazing and livestock use in the riparian areas occurs, even on National Forest Lands, and can have strong local effects of sedimentation and stream widening at cattle crossings.

**Global Rank:** G5**State Rank:** S5**Global Rank Comments:**

The number of viable occurrences is unknown, but probably abundant. These stream ecosystems are abundant across the mountain ranges of Western North America and are usually afforded some measure of protection due to National Park or Forest Service land ownership.