

## Mountain Stream



*Tenderfoot Creek (D002) a Mountain Stream in the Belt Mountains*



*Boulder River (D004) a Mountain Stream in the Beartooth Mountains*



*LeMarche Creek (D004) a Mountain Stream tributary to the Big Hole in the Anaconda-Pintlar Mountains*

### **Aquatic Ecological System Type D002, D003, D004 and E010 View key to subtypes**

#### **Community Description**

##### **Summary:**

This ecosystem is found in the mountainous, moderate-high elevation (1600-2500m), forested, moderately confined-channel streams of the Middle Rockies and Isolated Ranges Ecoregion. These small-medium (2<sup>nd</sup>-3<sup>rd</sup> order, average wetted width of 7m, average summer temperature <15°C) moderately flowing streams have permanent flow with strong seasonal variability due to melting snow pack from higher elevation mountainous areas. They are often within National Forest Service boundaries. These streams represent the transitional areas from the alpine stream communities to foothills and intermontane rivers and provide substantial habitat for Montana's native cutthroat trout populations, which thrive in the cold water temperatures and complex in-stream habitats. The geomorphology of these streams is usually a step-pool configuration with substrate dominated by boulders, cobbles and 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 fish community is the Traditional Trout Stream Assemblage, specifically the Small Trout Stream Assemblage, which contains westslope cutthroat trout and mottled sculpin in high quality Missouri drainage streams, and the Yellowstone Mountain Stream Assemblage, which includes Yellowstone cutthroat trout, golden trout (introduced) and sculpin. Unfortunately, the introduced brook and rainbow trout have pushed many native cutthroat trout populations to the brink through aggressive competition (brook trout) and hybridization (rainbow trout). Mottled sculpin usually persist in all of these types, but single species assemblages of westslope and Yellowstone cutthroat trout occur in many streams that have sufficient downstream barriers to prevent the dispersal of the sculpin upstream. Interestingly, these downstream barriers have allowed the persistence of high quality, intact small mountain stream communities by impeding the colonization of introduced species into the pure cutthroat trout areas.

**Macroinvertebrate Community:**

This diverse community of coldwater stenotherms consists of the Mountain Stream and Medium Mountain Stream Assemblages. The community indicator species are characterized by intolerant, main channel, fast current mayfly, stonefly and caddisfly species (*Baetis bicaudatus*, *Caudetella* spp., *Drunella* spp., *Epeorus* spp, *Cinygmula*, *Zapada* spp. *Megarcys*, *Doroneuria*, *Sweltsa*, *Paraperla*, *Micrasema*, *Neothremma*, *Parapsyche*, *Neophylax* spp., and numerous *Rhyacophila* spp. groups) and the cold-water dipterans (*Rhabdomastix*, *Bibliocephala*, and *Glutops*). As mountain streams proceed downstream and begin to warm (>15 °C), a dominance shift occurs to the Medium Mountain Stream Assemblage. Populations of western pearlshell mussel have been reported from this stream type and this ecosystem may be their stronghold in the state east of the continental divide.

**Range:**

In Montana, the Mountain Stream type is reported from over 100 sites within the Middle Rockies and Isolated Ranges Ecoregions. These include streams in many of Montana's mountain ranges, including the Beartooths, Absorokas, Elkhorns, Big Belts, Little Belts, Crazy's, Gallatin-Madison-Bridgers, Anaconda-Pintlers, Pioneers and the Big Snowy Mountains. 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 in the riparian zone (e.g. logging) can have severe water quality impacts from bank erosion, sedimentation, increased stream temperatures, silt deposits and loss of large woody debris. Livestock use around the riparian areas can have strong local effects resulting in sedimentation and stream widening at cattle crossings.

**Global Rank:** G5**State Rank:** SU**Global Rank Comments:**

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