

Intermountain Transitional River

Mainstem Intermountain Transitional River



Big Hole River (B001) an Intermountain Transitional River



Gallatin River (B002) an Intermountain Transitional River



Smith River (B003) an Intermountain Transitional River



Musselshell River (B004) a dewatered representative of the Intermountain Transitional River

Aquatic Ecological System Type B001, B002, B003, B004 and B007

View key to subtypes

Community Description

Summary:

This well-known cool to cold-water ecosystem occurs throughout the upper Missouri and Yellowstone River Drainages and includes some of the most famous trout rivers in the country. Habitats occur in moderate elevation (1200-2000m), medium-sized streams (4th-5th order, wetted width from 15 to 30m, average summer temperature <20°C) with moderate gradient and a permanent flow. There is strong seasonal variability due to melting snow pack from higher elevation mountainous areas. These rivers represent the ecotonal area from high-elevation steep-gradient mountain streams to the eastern prairie rivers. They are typically direct tributaries of the Missouri and Yellowstone Rivers except the Mainstem Transitional subtype, which describes portions of the Yellowstone and Missouri River. These are classic freestone trout rivers with boulder/cobble riffles, cobble/gravel runs and pools, and silt on the margins or in the deepest pools. Deep runs and pools with undercut banks and large woody debris provide the best fish habitats, while the riffles harbor the most diverse macroinvertebrate communities. These are clear running rivers except during spring run-off or where cattle intrusions, bank erosion or stream incisement

has caused sedimentation and silt deposits in the main channel areas. Over 50% of the sites in this ecosystem type were classified as impaired by sediments or de-watering by the MT DEQ.

Fish Community:

The members of this community are dominated by the Traditional Trout Stream Assemblage. The fish community historically had native species including westslope cutthroat, mountain whitefish, mottled sculpin, longnose sucker, longnose dace, with Yellowstone cutthroat trout and mountain sucker in the Yellowstone drainages. However, introduced brown and rainbow trout tend to dominate and become the focal species of these systems. One member of the Large Mainstem River Assemblage occurring frequently in deeper coldwater habitats of this system is burbot, a potential Species of Concern in the state. Additionally, white sucker, walleye, northern pike and carp may be found at the warmer lower end of this transitional gradient. The shallow gravel runs of these rivers provide spawning habitat for downstream populations of brown trout during their fall migration, and rainbow trout and sucker species in the spring. The Big Hole Assemblage is unique and found only in the Big Hole River drainage. It includes the indicator species fluvial arctic grayling (candidate for federal threatened status) and redbside shiner.

Macroinvertebrate Community:

This diverse community consists of the Medium Coolwater Transitional, Traditional Trout Stream, Medium Mountain Stream and Foothills Transitional Assemblages. The community indicator species are characterized by main channel fast current stonefly and caddisfly species (*Pteronarcys californica*, *Hesperoperla pacifica*, *Brachycentrus americanus*, *Arctopsyche grandis*, *Hydropsyche*, *Glossosoma*, and *Lepidostoma*) and the tipulids (*Hexatoma* and *Antocha*). Mayflies are diverse and contain many genera including *Baetis*, *Ephemerella*, *Serratella*, *Rhithrogena*, *Drunella* and *Epeorus*. As these transitional rivers proceed downstream and begin to warm (>17 °C) or are degraded or dewatered, they will quickly lose the Traditional Trout Stream and Medium Mountain Stream Assemblages and shift to the mayfly, caddisfly, beetle and dipteran species that form the Medium Coolwater Transitional and Foothills Transitional Assemblages with indicator species *Hydropsyche*, *Optioservus*, *Baetis tricaudatus*, *Brachycentrus occidentalis*, *Helicopsyche borealis*, *Corynoneura*, *Prosimulium*, *Amiocentrus aspilis*, *Lara*, *Phaenopsectra*, *Plauditus*, and *Narpus*. Populations of western pearlshell mussel have been reported from this river ecosystem, although it may be in decline.

Range:

The Intermountain Transitional River ecosystem occurs in the rivers that dominate trout fishing throughout central and southwest Montana; these include the Smith, Jefferson, Madison, Gallatin, Beaverhead, Big Hole, Dearborn, Sun and the mainstem Missouri from Three Forks to Cascade. In the Yellowstone drainage they include the mainstem Yellowstone River from Gardiner to Big Timber, Clarks Fork of the Yellowstone, and the lower Boulder, Stillwater, and Shields Rivers. The Middle Missouri/Musselshell drainages contain the Judith and Musselshell Rivers.

Management:

Livestock use around the riparian areas of this ecosystem is common and can have strong local effects resulting in sedimentation, a shift of the macroinvertebrate communities from a Traditional Trout Stream Assemblage to the Medium Coolwater Transitional Assemblage, and a shift in fish communities from native cutthroat trout to coolwater introduced species, such as brook trout. High-density cattle usage can cause severe degradation, bank erosion, sedimentation and siltation on the riffle habitats and gravel spawning areas downstream. Water diversions lower in the foothills for agriculture may be an issue for this ecosystem since these streams usually flow onto private lands as foothills grade into the valleys and decrease in elevation and gradient.

Global Rank: G5

State Rank: S4

Global Rank Comments:

The number of quality occurrences is unknown, but probably common. In Montana, this community is reported from ~75 sites within the Foothills and Valleys Ecoregion.