

Northern Glaciated Prairie Stream



Battle Creek riffle/run upstream reach (C006) of a small Northern Glaciated Prairie stream



Cottonwood Creek (C006) severely incised Northern Glaciated Prairie stream



Whitewar Creek reference condition (C006) Northern Glaciated Prairie stream

Aquatic Ecological System Type C006 and C008

View key to subtypes

Community Description

Summary:

This ecosystem is distributed widely throughout the Northern Glaciated Plains and Northwestern Great Plains Ecoregions. Habitats are small to medium (3rd-4th order, 30-100 river miles long, average wetted width of 6m), perennial cool/warm-water streams. In low elevation (800-1000m) areas, these are meandering streams with long runs and wide continuous pools (0.5-1.5 m in depth), connected by narrow (average wetted width ~2m) infrequently spaced riffles that may maintain connectivity throughout the year, although riffles may be absent in incised and degraded channel sections. Substrate characteristics are typically cobble/pebble riffles (when present) to pebble/gravel runs and deeply silted pools. Side-channel vegetation, undercut banks and vegetated deep pools provide the most diverse fish habitat. Woody debris is largely absent from the typical C006 and C008 stream.

Fish Community:

The members of the resident fish community are dominated by the Core Prairie Stream and the Brook Stickleback Assemblages and in clear non-degraded streams, the Northern Redbelly Dace Assemblage. Without aquatic macrophytes in the pools or runs, brook stickleback or northern redbelly dace will be rare. A typical Northern Glaciated Prairie Stream community will have fathead minnow, lake chub (not as

common), brook stickleback, northern redbelly dace, pearl dace, and brassy minnow in the vegetated pools and white sucker, longnose dace and potentially plains minnow, stonecat and Iowa darter in the cobble/pebble riffle and gravelly run sections. Unfortunately, northern pike has been widely introduced as a gamefish in the northern regions of Montana, and small prairie streams containing reproducing populations of these predators will quickly lose their water column species, such as northern redbelly dace, pearl dace, Iowa darter, plains minnow, and brassy minnow. A fish community with the introduced pike will usually degrade to fathead minnow and white sucker.

Macroinvertebrate Community:

This community consists of the Large Prairie River and Prairie Stream Assemblages in the riffles, and the Medium River Side-Channel and Prairie Pool Assemblages in the slow current areas, side channels and vegetated pools. The community indicator species are characterized by the crustaceans (*Hyaella* and *Gammarus*), damselfly genera (*Coenagrion/Enallagma* spp. and *Enallagma civile*), many genera and species of the water boatman (Corixidae: *Sigara grosslineata*, *Trichocorixa*, *Trichocorixa nais*, and *Corisella*), snails (*Physella*, *Gyraulus*, and *Stagnicola*), mayflies (*Caenis* and *Callibaetis*), in the cobble riffles, caddisflies (*Hydropsyche morosa* group, and *Cheumatopsyche*), and riffle beetles (*Dubiraphia* and *Microcylloepus*). The giant floater mussel (*Pyganodon grandis*) can be found in the gravel to silted side-channels since two of its host fish species are members of the Brook Stickleback Assemblage.

Range:

The Northern Glaciated Prairie Stream type occurs throughout the north-central glaciated region of North America within the Missouri and Mississippi River Drainages. Within Montana this community exists in a multitude of streams such as Woody Island Coulee, upper Battle, upper Whitewater, Snake, People's, Stinky, Big and Little Warm, Assiniboine, Willow, Little Cottonwood, Porcupine and Little Porcupine Creeks and the West Fork Poplar River.

Management:

Small stock ponds, dams, water diversions and introduced gamefish species have had the most significant negative impact on this community. Anywhere dams occur, the downstream reaches are affected by altered water temperatures, introduced fish, unnatural water level fluctuations, and changes in sediment and nutrient transport. Other threats include cattle intrusions with the resulting riparian degradation and bank trampling.

Global Rank: G5

State Rank: S3

Global/State Rank Comments:

The number of quality occurrences in the state is unknown, but probably only ~50% of original streams represent quality occurrences mainly due to game fish introductions, especially northern pike. The unimpaired stream community contains northern redbelly dace and the Montana Species of Concern northern redbelly/finescale hybrid dace (S3), pearl dace (S2), and the potential Species of Concern, Iowa darter and brassy minnow. The occurrence of numerous rare, threatened or declining fish and macroinvertebrate species, and consistent (e.g. water diversions, northern pike populations) or future threats (natural gas wells) warrants a state rank of an S3.