Large Prairie River

Powder River (A003) riffle habitat near Moorehead, MT

Powder River (A003) gravel run habitat near Broadus, MT

Marias River (A004) riffle habitat near Loma, MT

Aquatic Ecological System Type A003 and A004
View key to subtypes

Community Description

Summary:

This ecosystem consists of mainstem prairie tributaries to the Missouri and Yellowstone Rivers: the Milk, Marias, Little Missouri, Lower Tongue, Bighorn and Powder Rivers. These large (5th order and larger, >200 river miles long, 35m average wetted width) warm-water rivers have low to moderate gradients. These low elevation (below 1000m) rivers are characterized by long deep runs, pools (1-2m deep) and interspaced riffles. Substrate characteristics are typically cobble riffles (when present) to sand and gravel dominated runs and pools, with variably textured side channels. Large woody debris and undercut banks in the lower parts of these rivers provide substantial fish habitat. During spring and early summer, lower sections of these rivers offer many miles of spawning/nursery habitat for sauger, walleye, channel catfish, and the characteristic fishes of the Yellowstone and Missouri: pallid sturgeon, shovelnose sturgeon, and blue sucker.

Fish Community:

The members of this community consist of the Large, Medium Warmwater River and Creek Chub Assemblages. The community indicator species are characterized by mainly native species, channel catfish, stonecat, mooneye, sauger, flathead chub, plains minnow, sand shiner, white sucker, shorthead redhorse, emerald shiner and some introduced species, including walleye, northern pike, black bullhead and spottail shiner (Milk and Marias Rivers). The shallow riffle habitats are inhabited by longnose sucker, longnose dace and flathead chub with mountain sucker included in the Yellowstone drainages. The state

threatened sturgeon chub has good populations in the gravel run habitats of the Powder River, but not in any other A003 or A004 river of MT.

Macroinvertebrate Community:
This community consists of members of the Large Prairie River and Filtering Collector Assemblages in the riffles, and the Large River Slow Current and Medium River Side-Channel Assemblages in the slow current and side-channels areas, and the special sand-dwelling mayfly community group in the vast sandbar areas of the Powder River. The community indicator species are characterized by main channel riverine dragonfly species (*Stylurus* and *Ophiogomphus*), mayflies (*Neochoroterpes oklahoma, Choroterpes, Camelobatidius, Fallceon quilleri, Acentrella insignificans, Ephoron album,*and *Travarella albertana*), caddisflies (*Icthythrichia, Psychomyia, Hydropsyche morosa* group, and *Cheumatopsyche*), side-channel Hemiptera, Corixidae (*Ambrysus mormon*) and the freshwater mussels - fatmucket (*Lampsilus siliquiodea*) and giant floater (*Pyganodon grandis*).

Range:
Large Prairie River types occur throughout the Great Plains region of North America within the Missouri River Drainage, with notable rivers such as the Niobrara and Platte (NB), Kansas River (KS), Belle Fourche and James Rivers (ND and SD). The Northern Glaciated Plains Ecoregion has the lower Milk and Marias River watersheds below Fresno and Tiber Dams, respectively, to their confluence with the Missouri River. Within the Northwestern Great Plains Ecoregion, Montana has the Lower Bighorn River from Hardin to the Yellowstone, the Powder River from the Wyoming border to the Yellowstone and a 100-mile stretch of the Little Missouri from the Wyoming to the North Dakota border. This section of the Little Missouri is more typical of a Medium Prairie River, but transitions into a Large Prairie River type further downstream in North Dakota.

Management:
Large dams and reservoirs have had the most significant negative impact on this community. Fresno and Tiber Dams have substantially altered the downstream hydrology of the Milk and Marias Rivers (Jones 2003). The Milk River becomes increasingly incised below Fresno Dam, and in many segments is not able to access the floodplain. The Milk and Marias Rivers also suffer from degrading channels, where their streambeds are deepening without renewed influx of sediments trapped behind the dams. In the lower Bighorn River, the Yellowtail dam has effectively turned 40 miles of a large prairie river into a trout river, and it only resembles its true nature of a prairie river downstream of Hardin for the last 42 river miles. Anywhere dams occur, the downstream reaches are affected by altered water temperatures, unnatural water level fluctuations, and changes in sediment and nutrient transport. Other threats to these large prairie rivers include water diversions and irrigation for agriculture in the adjacent floodplains.

Global Rank: G4 **State Rank:** S2

Global/State Rank Comments:
The number of quality occurrences in the state makes this type rare, and it is at risk across its range (Dodds et al. 2004). Within Montana, it contains sturgeon chub (S2, Species of Concern), and provides suitable spawning/rearing for two other Species of Concern, sauger (S2) and blue sucker (S2S3). It also contains the globally rare sand-dwelling mayfly group, which is currently unranked in Montana. The occurrence of many threatened, rare and declining species, and present or future threats (eg. sedimentation, water diversions, coal bed methane) to the habitats required for successful spawning and rearing warrants a state rank of an S2.