

Great Plains Intermittent Stream



Deer Creek (D005) an intermittent Great Plains stream near Decker, MT



Tooley Creek (E005) a reference condition Great Plains intermittent fishless pool near Otter, MT

Aquatic Ecological System Types D005 and E005 View key to subtypes

Community Description

Summary:

This community is widely distributed throughout the coulees, small streams (1st to 3rd order) and headwaters of Medium Prairie Rivers (B005) and Great Plains Prairie Streams (C005) within the Northwestern Great Plains Ecoregion. These are small, warm-water, low to moderate gradient and elevation (900-1200m) intermittent streams. Stream sections in the moderate gradient reaches (riffles/runs) are the first to lose flowing water connections and become interrupted pools (D005). Once these systems lose their connectivity to fish recruitment pools of downstream reaches (this may be due to climatic factors over many years such as drought) they become fishless isolated pools (E005). Throughout their range, these clear to turbid streams are characterized by short to long (~2-25m) pools that are sometimes vegetated with silted gravel to cobble substrates. The fishless pool community type provides substantial amphibian breeding and rearing habitat in otherwise harsh, dry upland conditions, so *Bufo* spp. (toads) and *Rana pipiens* (northern leopard frog) tadpoles and adults are usually present.

Fish Community:

The resident fish community is dominated by the Lake Chub or the Core Prairie Stream Assemblage (2 potential members). If connectivity to downstream reaches exists on an annual basis lake chub or fathead minnow will be the dominant species with the occasional pioneering white sucker. If there is vegetation in the pools brook stickleback may be present, but often it is just a single fish species in the pool. The only introduced fish species reported from a D005 stream was black bullhead.

Macroinvertebrate Community:

This community consists of the Prairie Stream and Pool Assemblages, occurring in the cobble and vegetative pool areas respectively. The reference community indicator species are characterized by the crustaceans (*Hyalella* and *Gammarus*), damselfly genera (*Coenagrion/Enallagma* sp. *Enallagma civile*, and *Ishnura*), many genera and species of the water boatman (Corixidae: *Sigara alternate*, *Sigara grosslineata*, *Trichocorixa*, *Trichocorixa nais*, and *Corisella*), snails (*Physella*, *Gyraulus*, and *Stagnicola*), mayflies (*Caenis* and *Callibaetis*), and beetles (*Oreodytes*, *Laccophilus*, *Hydroporus* and *Hygrotus*). As the complexity of the pool habitat decreases the clinger habitat species are lost, such as the damselflies and many of the water boatman taxa. The truly intermittent fishless pools (E005) may be only in existence for a few months. If these pools are dry for more than a year and then rehydrate, invertebrates with resting egg stages dominate the pools, including the crustaceans (*Ostracoda*, *Cladocera*, and *Copepoda*), fairy shrimp (*Branchinecta* and *Eubbranchipus*), clam shrimp (*Caenestheriella*), and tadpole shrimp (*Lepidurus*).

Range:

The Great Plains Intermittent Stream type occurs throughout the Northwestern Great Plains Ecoregion of North America within the Missouri and Mississippi River Drainages. Within Montana, this community exists in a multitude of streams and coulees with a few notable examples including the Ranch, Rough, Deer, Tooley, Little Bear, Little Pumpkin, Buffalo, Home and Taylor Creeks.

Management:

Small stock ponds, dams, and cattle intrusions have had the most significant negative impact on this community. Anywhere stock ponds and dams occur the downstream reaches are affected by altered water temperatures and flow, and changes in sediment and nutrient transport (Winston et al. 1991). The spring flows backed up behind stock pond dams could have potentially filled numerous E005 pools, and possibly connected these pools for a brief period to downstream fish populations for recolonization. Therefore, unless there is sufficient outflow streams and coulees below stock ponds usually do not develop this community type. Another threat to this community is cattle intrusions, which cause trampling of stream banks with the subsequent siltation and nutrient inputs into the pools. This siltation and nutrient loading may eliminate aquatic macrophytes and cause blue-green algae blooms.

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

The number of quality occurrences in the state is unknown, but probably numerous, although this is a difficult type to quantify given the past years of drought in the state. Intermittent pools containing the *Ostracoda* group could be inventoried for unique crustaceans, such as fairy or tadpole shrimp.