Dispersion limitation of aquatic macroinvertebrates in Pool 8 of the Mississippi River.

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Large rivers consist of communities that are connected by the movement of species, forming a metacommunity. Aquatic invertebrates disperse passively and actively within this metacommunity, attributing to a wide variety of transportation modes. A well-connected river system that facilitates dispersal may then bolster invertebrate diversity and abundance, which provides ecosystem functions and supports the entire aquatic community. However, dispersal limitation may have an increasingly important role in determining the diversity and abundance of communities in floodplain habitats away from the main river channel. Dispersing aquatic invertebrates may encounter constraints or barriers while moving between the main channel and floodplain habitats. Therefore, we hypothesize aquatic invertebrate communities within the floodplain habitats are likely determined by (1) dispersal ability or mode to bypass barriers that limit dispersion and (2) tolerance of invertebrate species to adverse environmental conditions. In summer 2025, we will estimate aquatic invertebrate diversity and density in floodplain habitats across a gradient of increasing flow path and Euclidean distance from the main channel. We will then examine invertebrate traits, such as dispersal ability and mode, life history, habit preference, and tolerance to pollution. Furthermore, we will collect supplemental data related to water quality and sediment data with the goal of understanding what biotic and abiotic factors influence floodplain invertebrate communities.