Changes in macroinvertebrate community composition across side channels of a large river system

Cheyana Bassham, MS Student – Biology, Aquatic Sciences

The Mississippi River is inherently diverse in habitat types and the biological communities it supports. Adjacent to the highly modified main channel, side channels of the Upper Mississippi River System (UMRS) may provide more favorable and heterogeneous habitats for organisms such as macroinvertebrates. However, few studies have quantified their biological communities and explored differences among side channels, particularly across large geographical scales, leaving their biodiversity value and function unknown. Our objective was to guantify aquatic macroinvertebrate community composition within side channels (n = 23) of six study reaches (Pools 4, 8, 13, La Grange, 26, and the Open River reach) in the UMRS along a 2000 river km longitudinal gradient. We tested for longitudinal patterns in taxonomic and functional diversity and community composition. Macroinvertebrates were collected using rock baskets and Hester-Dendy samplers following a 30-day colonization period (n = 134 samples) and a total of 83,000 were identified to genus. Macroinvertebrate abundance ranged from 50 -46,876 individuals/m² across side channels but there were no longitudinal trends in abundance among reaches. We found longitudinal trends for both taxonomic richness and composition, in which richness decreased and percentage of Ephemeroptera, Plecoptera and Trichoptera increased from upstream to downstream. Our results suggest that side channels may be more important habitat for certain taxa, such as EPT, in downstream reaches of the UMRS where offmain channel habitats are less abundant. Throughout the UMRS, side channels appear to support diverse macroinvertebrate communities suggesting this habitat type contributes importantly to overall macroinvertebrate biodiversity.