

COMPARATIVE ANALYSIS OF AQUATIC INSECT, AMPHIPOD, AND ISOPOD  
COMMUNITY COMPOSITION ALONG ENVIRONMENTAL GRADIENTS IN  
RHEOCRENE SPRING SYSTEMS OF MISSOURI

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ABSTRACT

Spring systems in Missouri harbor a unique biota and provide critical initial discharge from subterranean aquifers to streams. However, little research has been conducted on the crenobiology or ecology in these systems. In this study, aquatic insect, amphipod, and isopod communities were examined in 16 spring systems in Missouri, in some of which associated environmental gradients were also measured. The goal of this study was to create a comprehensive list of species present in all studied systems, as well analyze changes in community composition among and within spring systems in relation to environmental gradients in selected springs. Sorenson's similarity coefficient and UPGMA cluster analysis showed that differences between high discharge spring systems may be related to the presence of trout and trout fisherman. Renkonen's similarity coefficient and UPGMA cluster analysis showed that differences between low to medium discharge spring systems may be related to the aquatic faunal region in which each is located, as species assemblages in Prairie and Big River faunal region springs were dissimilar from those in Ozark springs. Canonical correspondence analysis (CCA) showed that environmental conditions differ among springs and affect species differently in each aquatic faunal region, which may explain the observed differences in community composition. In addition, several state and federally listed species of conservation concern were collected, as well as several species endemic to the Interior Highlands.