Groundwater Quality in the Caves and Karst of Illinois' Salem Plateau

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Abstract

Several factors (examples: row crop agriculture, livestock, private septic systems, and urbanization) have been identified as potential contributors to groundwater contamination in the karst of Illinois' Salem Plateau. We review some of the potential problems and present data from recent and ongoing studies of the groundwater in this area, with an emphasis on four major caves within the range of the federally endangered Illinois Cave Amphipod, *Gammarus acherondytes*, (Amphipoda: *Gammaridae*). Information on microbial contamination, basic water chemistry, and agricultural chemical use are presented. Potential impacts of these contaminants on humans and the Illinois Cave Amphipod are discussed.

In water samples collected monthly from four caves, spring fecal coliform counts were high (some samples with more than 4,800 colony forming units per 100 ml), but dropped during the summer months. Microbial taxa associated with both human and livestock waste were common in groundwater samples. In Stemler Cave, where the Illinois Cave Amphipod has not been found since 1965, dissolved oxygen levels are typically lower than at the other three caves. Agrichemicals have been detected in base level flow groundwater samples mainly during the spring application of agricultural pesticides. Together, these data suggest that several types of human impacts are having a negative impact on groundwater quality in the Salem Plateau.