Deep within the caves of southwestern Illinois, the existence of one invertebrate species hinges on water quality.

Cave Amphipods

(Photo by Frank Wilhelm, SIU-C, Zoology Department.)

The Illinois cave amphipod (*Gammarus acherondytes*) is a small crustacean (related to shrimp) that inhabits underground streams of several cave systems in southwestern Illinois—an area called the sinkhole plain because of the high density of sinkholes and caves in the bedrock limestone.

The cave amphipod's survival depends on the quality of the groundwater. In the sinkhole plain, surface activities strongly affect the groundwater because it is extremely shallow, allowing virtually no filtering to occur before water enters caves through sinkholes. The close connection of surface and ground water allows pollutants, such as road runoff, human and livestock waste, pesticides and other chemicals to be transported almost directly into the habitat of the amphipod.

Water quality is critical for this species. Protection measures include strategies to reduce development in sensitive areas, protect natural habitat buffering sinkholes, prevent dumping and spilling into sinkholes and cleaning old sinkhole dumps that may be leaching toxic chemicals.

—**Diane Tecic**, Regional Administrator, DNR Division of Natural Heritage

Freshwater mussel populations are shrinking in Illinois—some species are gone forever.

A Case of Mussel Atrophy

(Photo by Kevin Cummings)

Freshwater mussels are one of the most endangered groups of animals in North America. Surveys conducted over the past few decades have documented significant declines in mussel populations across the entire continent. Among the factors thought to be responsible for the decline are over-harvest; siltation of their habitat from poor land management, channelization and impoundments; competition from exotic species such as the zebra mussel; and pollution by herbicides, pesticides and other chemicals.

Illinois once supported 80 species of mussels and a large and vibrant mussel fishery. Today, 20 species are no longer found in the state; six of these are totally extinct. An additional 25 are either listed as threatened or endangered or are very rare. Only 35 of the original 80 species can still be found with some regularity in our streams.

The Department of Natural Resources, in cooperation with the U.S. Fish and Wildlife Service and state of Ohio, have begun a recovery project for two mussels, the clubshell (*Pleurobema clava*) and the northern riffleshell (*Epioblasma turulosa rangiana*). The clubshell, formerly known from many sites in the Wabash River drainage, is one of the rarest mussels in Illinois, known only from a single location. The northern riffleshell has not been seen alive in Illinois since the early 1900s but numerous relict shells suggest that it, too, was widespread in the Wabash River drainage. With improved water quality and awareness of the importance of streamside vegetation and erosion control, conditions are favorable for the recovery of these species in Illinois.

—**Kevin Cummings**, Center for Biodiversity, Illinois Natural History Survey, and **Bob Szafoni**, District Heritage Biologist, DNR Division of Natural Heritage