

by Diane Pavék

# Endemic Amphipods in our Nation's Capital



**Kenk's amphipod**  
Photo by Irina Sereg

Hidden away in shallow, subsurface groundwater communities, the entire known distribution of two tiny species is restricted to only a few springs along Rock Creek in the District of Columbia. Rock Creek Park protects native biodiversity not found elsewhere within the fragmented landscape of the greater Washington, D.C., metropolitan area. Legislation in 1890 established the Rock Creek Park as a unit of the National Park Service (NPS). Once the best sources of drinking water during the 1700s and 1800s, nearly all of the District's original springs outside the parks have disappeared due to the diversion of rain water or direct piping into the sewers. Other springs and streams were entombed in concrete, filled in and paved over, or contaminated.

Both of the park's endemic species are amphipods, small shrimp-like freshwater crustaceans. The Hay's Spring amphipod (*Stygobromus hayi*) is known to exist only in five springs, all along Rock Creek. This District endemic was first collected from a spring within the National Zoological Park in 1938 (Hubricht and Mackin 1940, Holsinger 1967) and was listed federally as endangered in 1982. In the late 1990s and early 2000s, the Hay's Spring amphipod was confirmed to exist in four other springs within the borders of Rock Creek Park, which adjoins the National Zoo.

The park is a long-term advocate for amphipod conservation. Researchers and cooperators from universities, the U.S. Fish and Wildlife Service, and the Maryland Department of Natural Resources provide important assistance to Rock Creek Park natural resource managers. These professionals assist with monitoring questions, data gathering and

analyses, and species identifications. While Rock Creek Park does not have a formal management plan for the Hay's Spring amphipod, conservation measures in the park include restricting activities in an area around the springs and in their recharge areas.

We know little about Hay's Spring amphipod biology, its population dynamics, or the ecological community in which it lives. This tiny creature grows to only 0.4 inches (10 millimeters) in length and, because it lives primarily below the surface, is colorless and blind. We do not know whether it resides primarily in the flooded fractures of the park's metamorphic rock or only in the saturated overburden above the bedrock, or both. It appears that the Hay's Spring amphipod may spend its life in a shallow groundwater zone, moving in water that percolates among sand grains and gravel unless large volumes of water flush it up and out of an exit as a spring.

The unconsolidated sediments in running water are an important interstitial habitat; in many cases, the interstitial aquatic genera overlap those found in caves (Culver et al. 2000). Subterranean species are difficult to monitor since they appear seasonally and sporadically in seeps and springs or may not appear even during high water flows. Obvious vulnerability comes from the narrow distribution in the specialized subterranean habitat, and threats come from potential groundwater pollution. The urban area surrounding the park poses potential risks due to toxic spills (such as oil and gas), nonpoint source inputs (such as fertilizers and pesticides), land disturbances, sewer leaks, and excessive stormwater flows that might adversely affect groundwater. Except for parklands, additional potential habitat where Hay's Spring amphipod populations may have occurred in the District has largely been lost to development.

Another vulnerable species, Kenk's amphipod (*Stygobromus kenki*), occurs in Rock Creek Park in two other springs and may be more rare than the Hay's Spring amphipod. Kenk's amphipod was first found in 1967 (Holsinger 1978). Similar in general appearance to the Hay's Spring amphipod but smaller (up to 0.23 inches or 6 mm), Kenk's amphipod is considered by The Nature Conservancy to be highly rare and critically imperiled in the District of Columbia. At this time, our highest conservation priority for Kenk's amphipod is learning more about the distribution of this tiny creature.

Because of limited funds and competing needs, Rock Creek Park must be creative and persistent in its efforts to find funding for conservation efforts and outreach. American University zoologist Dr. David Culver will conduct a 2-year study in Rock Creek Park, to determine whether Kenk's amphipod is more secure than suspected or needs immediate intervention. In addition to monitoring spring outflows, a small pump attached to a pipe driven into the sediments will be used to search for

groundwater invertebrates. These cores allow a more thorough and direct sampling of the fauna and reduce sampling error (such as artificially low frequencies due to cumulative habitat disturbance). This spring, the Maryland Department of Natural Resources received funding from the Fish and Wildlife Service to conduct a status survey for the species outside of national parks. The information that is gathered by these partnerships may prevent the need to list Kenk's amphipod as endangered or threatened.

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**Dr. Florian Malard of the University of Leon, France, and American University graduate student Irina Sereg search for Kenk's amphipod in Rock Creek Park.**

*Photo by Bill Yeaman/NPS*

## References

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