
University of Pennsylvania
Institute for Environmental Studies



presents

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Rocks with Sieves and Guts: The Hidden Effects of Freshwater Mussels on Stream Water Quality

Abstract: North America is home to the greatest biodiversity of freshwater mussels (Mollusca: Unionacea) in the world. Unfortunately, approximately 70% of our native species are currently at risk of extinction in the U. S., and the abundance of most species is also declining. Reduced water quality, lost and altered habitat, and introduced species appear to be primary agents impacting freshwater mussel populations. There is little information available to gauge the possible ecological consequences of losing these animals. Freshwater mussels can grow to larger sizes, be more abundant, and/or contain greater biomass than other aquatic fauna living in streams and rivers. When mussel biomass is high, they also have the potential to regulate biogeochemical cycling and water quality to a greater extent than other fauna because of their feeding physiology and lifestyle. A dense population of mussels can process a large amount of microparticulate material during feeding, and hence, provide an important "filtering" mechanism for suspended matter and algal blooms. By reducing turbidity, these animals also improve light penetration and water clarity for benthic (i.e., bottom-dwelling) organisms. In addition, the material removed from the water column (the "pelagic" zone) by mussels eventually enriches the sediments with nutrients. This "pelagic- benthic coupling" by suspension-feeding mussels could be a key functional process in streams but at this point little is known about the ecology of freshwater mussels.

Dr. Kreeger will describe a pilot study of the energy and nutrient processing by freshwater mussels in the lower Brandywine River. If populations of freshwater mussels are found to be important in the maintenance of stream water quality, then current conservation interest directed at preserving mussel species might be expanded to also include biomass of all species that are connected by the benthic-pelagic coupling. Furthermore, species of mussels might be propagated specifically for water quality improvement, particularly in systems suffering from eutrophication.

Date: Thursday, February 21, 2002

Time: 12:15 pm - 1:45 pm

Place: Auditorium at Wistar Institute

On Penn's campus: Spruce Street & Penn's 36th Street Walkway

NO REGISTRATION REQUIRED

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