



Patuxent Science Meeting 2004 Poster Abstract

Ecological Health Assessment in Riverine Faunal Communities at Rock Creek Park: Washington, D.C. and Effects of Fungicide Runoff on Aquatic Fungal Communities at Rock Creek Park: Washington, D.C.

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Urban development has had a dramatic effect on many of the parks and natural areas within the National Capital Region and across the United States. Numerous chemical contaminants are delivered to the park areas in streams and by atmospheric deposition. In Rock Creek, Washington D.C., and particularly in the sediments in the streambed, there is a complex mixture of chemical contaminants, many at concentrations above known criteria for the protection of aquatic life. These compounds include polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, metals, and organochlorine pesticides. To assess the degree to which aquatic organisms have been affected by chemical contaminants found within Rock Creek, we propose to examine whole tissue (filet) and gut samples from white suckers (*Catostomus commersoni*), to conduct histopathological analysis of white sucker tissue samples for the presence of disease, and to assess the trophic structure of the fish and invertebrate communities by analyzing fish stomachs for diet. Examination of the trophic interactions between invertebrate and fish communities will provide Rock Creek park managers an understanding of the community structure and biological health within Rock Creek, as well as the pathways for bioaccumulation of chemical contaminants. Cause and effect between chemical pollution and organisms will be inferred from multiple lines of evidence such as the concurrence of contaminants in the organisms and their environment, bioaccumulation in tissue, and histopathology.

Urban development has had a dramatic effect on many of the parks and natural areas within the National Capital Region and across the United States. Numerous chemical contaminants are delivered to the park areas in streams and by atmospheric deposition. In Rock Creek, and particularly in the sediments in the streambed, there is a complex mixture of chemical contaminants, many at concentrations above known criteria for the protection of aquatic life. These compounds include polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, metals, organochlorine pesticides, and fungicides. Management of the golf course located within Rock Creek Park includes application of herbicides, pesticides, and fungicides. Fungi, especially aquatic hyphomycetes, have been shown to be important functional components of the decomposer community that is involved in the breakdown and use of leaf litter in streams (Barlocher 1992, Suberkropp 1992). Leaf litter is a major source of carbon and energy for woodland stream ecosystems (Fisher and Likens 1973). To assess the degree to which the aquatic fungi and have been affected by fungicide application to the golf course found within Rock Creek Park, we propose to examine fungal biomass (measured as ergosterol) from experimental leaf packs placed in and natural leaf pack communities collected from Rock Creek. Examination of the aquatic fungal community will provide Rock Creek park managers an understanding of the potential effects fungicide application within Rock Creek Park has on the decomposer community involved in the breakdown of leaf litter.