SIERSZEN, M.E., G.S. PETERSON, AND J.V. SCHAROLD U.S. EPA, Mid-Continent Ecology Division, Duluth, MN, 55804

Nearshore - offshore patterns in food web characteristics in Lake Superior

We are exploring the use of food web properties to characterize nearshore and offshore habitats in the Great Lakes. We analyzed the stable isotope signatures of benthos (predominantly *Diporeia hoyi*) and plankton from Lake Superior habitats ranging from 20m to 300 m depth. Neither $\delta^{15}N$ nor $\delta^{13}C$ of plankton from the upper 50m water column varied with station depth. Benthos were ¹³C-enriched at stations < 40m depth, probably reflecting increased dietary importance of benthic algae. *Diporeia* exhibited a systematic increase in $\delta^{15}N$ with depth, described by the equation $\delta^{15}N = -4.37 + 1.74*\ln(depth)$. We believe that this phenomenon is due to decomposition and release of the lighter N isotope during sedimentation of *Diporeia*'s principal food source, detrital plankton. These contrasting patterns in benthic and planktonic food web relationships hold implications for understanding niche breadth and resource use by different fishes, interpretation of stable isotope data from deep systems, and understanding the nature of nearshore and offshore habitats in the Great Lakes. *This abstract does not necessarily reflect EPA policy*.