

UTILIZING SPATIAL VARIATION IN NITROGEN ISOTOPIC SIGNATURES OF WHITE PERCH (*MORONE AMERICANA*) TO IDENTIFY POTENTIAL AREAS OF NUTRIENT ENRICHMENT IN A COASTAL ESTUARY

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Recognition of areas within coastal systems sensitive to nutrient loading is crucial to controlling negative ecological impacts exacerbated by anthropogenic practices. The use of higher trophic-level organisms (e.g. fish) as bio-indicators of perturbations such as nutrient loading in estuarine environments can be advantageous to restoration, remediation, and conservation efforts due in part to the increased public interest and attention given to such organisms. This study assessed the practicability of utilizing juvenile fish as indicators of spatial differences in nitrogen enrichment within an estuarine system. Juvenile white perch were collected from sites throughout the Albemarle Estuarial System (AES) from June-October 2005, and analyzed for nitrogen stable isotope enrichment ($\delta^{15}\text{N}$). Mean nitrogen enrichment in white perch tissue was significantly lower in the Alligator River Estuary ($10.79\text{‰} \pm 0.46$; $n=10$) than from fish sampled at multiple sites throughout northern and western areas of the AES ($12.68\text{‰} \pm 0.15$; $n=57$). White perch sampled at the mouths of Chowan and Roanoke Rivers were significantly more nitrogen enriched (mean $\delta^{15}\text{N} = 13.32\text{‰} \pm 0.18$ $n=17$) compared to fish sampled from sites in Chowan River proper (mean $\delta^{15}\text{N} = 12.19 \text{‰} \pm 0.71$ $n=13$). This study demonstrates juvenile white perch reflect spatial differences in nitrogen enrichment and therefore may be useful in identifying areas potentially subjected to nutrient loading in the AES.