

MERCURY BIOACCUMULATION IN FLORIDA GREEN WATERSNAKE (*NERODIA FLORIDANA*) AMONG THREE WETLANDS ON THE SAVANNAH RIVER SITE

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Anthropogenic activities have significantly increased the amount of mercury cycling globally. Mercury can become bioavailable, accumulate in organisms, biomagnify in food webs, and can negatively impact wildlife health. Mercury contamination on the Savannah River Site (SRS) is a result of atmospheric deposition, coal combustion, and use of contaminated water from the Savannah River in nuclear reactor cooling reservoirs. Florida green watersnakes (*Nerodia floridana*) are top predators that inhabit the reservoirs and can serve as bioindicators of mercury contamination. We used minnow traps and funnel traps to capture snakes from three reservoirs: Pond B (n=23), Pond 2 (n=44), and PAR Pond (n=11). We took tail clip samples from captured snakes and quantified the total mercury (THg). Total mercury concentrations ranged from 0.167 to 2.096 mg/kg dry weight. Snakes from PAR Pond had significantly higher average THg (0.567 ± 0.176 mg/kg), than snakes from Pond 2 (0.293 ± 0.029 mg/kg) and Pond B (0.293 ± 0.027 mg/kg). In addition, there was a significant relationship between snout-vent length and THg in *N. floridana* from Pond B



Amelia in the field.

($r=0.669$, $r^2=0.447$, $p<0.001$) and Pond 2 ($r=0.463$, $r^2=0.214$, $p=0.002$). Florida Green Watersnakes are primarily fish eaters. Interestingly, snake mercury levels were much higher than the Environmental Protection Agency (EPA) reference dose for daily fish consumption (i.e., 0.00001 mg/kg/day) and 3 snakes were at or above the EPA's no consumption threshold for individual fish (i.e., 1.9 mg/kg). There is potential for snakes to serve as a bioindicator of Hg contamination levels as they may relate to human consumption of fish in aquatic systems. Future efforts should determine what proportion of total mercury detected was methyl-mercury, the most bioavailable form of mercury in aquatic systems.