

## **Site-Specific Fish Tissue Mercury at Four Eastern North Carolina National Wildlife Refuges**

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Mercury concentrations above levels of concerns in fish tissue have prompted the North Carolina Division of Public Health to issue a consumption advisory for several species of freshwater fish in eastern North Carolina. Historic fish tissue data collected by the North Carolina Division of Water Quality and the U.S. Fish and Wildlife Service from eastern North Carolina National Wildlife Refuges (NWRs) documented mercury concentrations at or above levels of concern for public consumption in a few fish species (e.g., largemouth bass). Other game species have not been frequently sampled (e.g., crappie, flier, and bluegill). Based on this concern, updated information on the mercury concentration in important recreational fish species was collected to inform refuge fisheries management. Between 2004 and 2006, 305 fillet and 18 whole body fish samples were collected from Alligator River, Mattamuskeet, Pocosin Lakes, and Pee Dee NWRs. Mercury concentrations in fish fillets indicate that catfish (geometric mean = 0.16 ppm-ww; range 0.01 to 0.99 ppm-ww) and sunfish (geometric mean = 0.18 ppm-ww; range 0.03-0.46 ppm-ww) species are generally below the state action level for issuing public health consumption advisories. Half of the perch (geometric mean = 0.33 ppm-ww; range 0.13-0.67 ppm-ww) and 84 percent of largemouth bass (geometric mean = 0.57 ppm-ww; range 0.03-1.6 ppm-ww) fillets exceeded human consumptive levels of concern. In addition to the State fish consumption advisory, our data would support species-specific fish size thresholds for refuge waters to minimize health risks of mercury exposure for the general public for bluegill (eat fish smaller than 36 cm total length) and largemouth bass (eat fish smaller than 21 cm total length). Because bluegill rarely exceed 36 cm in length, most individuals caught on refuges are safe to eat. The current legal size limit for largemouth bass (of 35.6 cm) precludes consumption of individuals caught in refuge waters; only catch and release fishing for this species is advised. The toxicological significance of fish tissue mercury residues to piscivorous birds was also evaluated. Mercury concentrations measured in whole fish frequently exceeded levels reported to adversely affect sensitive avian species. Estimates of whole fish mercury concentrations (based on fillet mercury residues) also frequently (84 percent) exceeded avian dietary toxicity thresholds.