A COMPARISON OF MERCURY IN MINK AND FISHER IN RHODE ISLAND. James L. Lake, Stephan A. Ryba, Jonathan R. Serbst (serbst.jonathan@epa.gov), Atlantic Ecology Division – National Health and Environmental Effects Research Laboratory, Office of Research and Development, U.S. EPA, 27 Tarzwell Dr. Narragansett, R.I. 02882; and Charles F. Brown and Lori Gibson. Rhode Island Department of Environmental Management, Division of Fish and Wildlife P.O. Box 218, West Kingston RI 02892.

Comparison of total mercury concentrations and nitrogen and carbon stable isotope values in muscle tissue and stomach contents of mink (*Mustela vison*) and fisher (*Martes pennanti*) from Rhode Island in 2000- 2003 showed results which appeared to reflect dietary differences between these two predatory mammals. Mink are considered to be more dependent on aquatic resources for food and, therefore, to accumulate higher levels of Hg than fisher. The results of this study supported these contentions. Fish were found in the stomach contents of 22 of 45 mink, and other aquatic prey was found in 26 of the mink stomachs. In fisher, fish was found in one of 25 stomachs and most of the other stomachs contained small mammals and birds. As in previous work, mink could be easily separated into two groups based upon their habitat, and these groups showed differences in the total Hg concentration, $\delta^{13}C$ and $\delta^{15}N$ in muscle tissue. The salt marsh group (SMG) had a significantly lower mean Hg concentration (2440 ng/g(dry), s.d. = 1530, n = 12) and higher mean values of $\delta^{13}C$ (-15.8 ‰, s.d. = +/- 2.3, n = 12) and $\delta^{15}N$ (14.5 ‰ . s.d. = +/- 1.2, n = 12) than the upland group(UPG)-mean Hg concentration (4931. ng/g(dry), s.d. = +/- 1690, n = 27), mean $\delta^{13}C$ (-26.2. s.d. = +/- 1.2, n = 29) and mean $\delta^{15}N$ (11.3. s.d. = +/- 1.7, n = 29). Fisher showed mean values of Hg (628 ng/g(dry), s.d. = +/- 508, n = 24) and $\delta^{15}N$ (7.7 ‰, s.d. = +/-1.2 , n = 24) that were significantly below those of either mink group; and, the mean $\delta^{13}C$ value (-22.5 ‰, s.d. = +/- 0.81, n = 24) was intermediate between SMG and UPG. The correspondence between stomach contents and muscle tissue for these predators was assessed by comparing relationships between these sample types for Hg concentration, $\delta^{13}C$ and $\delta^{15}N$. Comparisons of total Hg muscle concentrations (dry weight), $\delta^{13}C$ and $\delta^{15}N$ between stomach contents and muscle tissue showed significant relationships for Hg in SMG, UPG and fisher; for $\delta^{13}C$ the relationship was significant for UPG, but not for SMG or fisher; for $\delta^{15}N$ the relationship was significant for SMG, UPG, but not for fisher. The lack of a relationship for the stable isotopes between stomach contents and muscle for fisher appears to result from the high variability of their diet. The mean $\delta^{15}N$ difference between stomach contents and muscle tissue found here was 3.9 ‰ for SMG, 3.9 ‰ for UPG and 3.6 ‰ for fisher. These values compare closely to 3.4 ‰ which has been suggested as a generalized increase in $\delta^{15}N$ between predator and prey. Over this trophic step the total Hg concentration (dry weight) increased by factors of 3.9, 3.2 and 5.3 for SMG, UPG and fisher respectively. This study also demonstrates the utility of stable isotopes for: delineating populations of mink, assessment of predator - prey relationships, and, supplying a framework for quantifying contaminant bioaccumulation.

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