Abstract

A Study of Mercury in Bald Eagle Feathers and Quills

Methylmercury is a naturally occurring and toxic form of mercury which may biomagnify through the food chain and bioaccumulate in individuals. This study examines a full body loading and mercury analysis completed for 33 feathers including tail feathers, primary feathers and breast feathers within a single, individual bald eagle (*Haliaeetus leucocephalus*). Mercury analysis was completed using an AMA 254 Mercury Thermal Analyzer for feather tissue and quill samples. Of all samples analyzed in this project, approximately 46% were quality assurance and quality control samples. Feathers are commonly analyzed for contaminants in avians. Quill analysis has not been reported in any of the related literature. This study is the first study to report analysis of feather quills for mercury in bald eagles or in any other avian species. An implicit assumption of the literature seems to be that the quills are of no significant interest because the mercury levels are low. This study reports elevated levels of mercury in both bald eagle feathers and quills. Feathers ranged in mercury concentration from 7.8 ± 1.6 ppm Hg to 30.4 ± 5.2 ppm Hg. Feather quills ranged from 8.0 ± 2.3 ppm Hg to 34.3 ± 10.9 ppm Hg. The average quill mercury concentration, 15.1 ppm Hg, is actually quite high and is, for individual feathers, correlated with the mercury levels in the vein portion of the feather. The discovery that feather quills contain measurable concentrations of mercury may revolutionize feather analysis and has the potential to expand opportunity for future research.