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# Microplastic particles Observed in Multiple Tissues of Lake Ontario Sportfish

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## Abstract

Microplastics are a pervasive environmental contaminant, cycling through planetary cycles and food webs – leading to concerns regarding exposure and risk in humans. Here, we explore exposure and potential risks to humans by quantifying and characterizing microplastics in sportfish generally caught for human consumption. We sampled six species of fish from Humber Bay in Lake Ontario near Toronto, and examined their gastrointestinal (GI) tracts and fillets for the presence of microplastics and other anthropogenic particles. We also test hypotheses about bioaccumulation and biomagnification beyond the gut, and explore the data to look at patterns that may help understand mechanisms for translocation. We observed anthropogenic particles in both tissues of all fish sampled; fish had a mean of 147.9 particles (SD +/- 233.99), with the total number of particles in a single fish as high as 1508. The total particles per individual fish were significantly different among species ( $p < 0.05$ ), with the most plastic in Brown Bullhead fish (mean 299.9 particles; SD +/- 422.4) and the least in Largemouth Bass (mean 37.7 particles; SD +/- 23.9). Fish GI tracts had a mean of 92.6 particles/fish (SD +/- 225.96), and fish fillets had a mean of 55.73 particles/per fish (SD +/- 61.21). The number of particles observed in the GI tract was not correlated with the number of particles in the fillet, suggesting that the particles in the gut are transitory and not a predictor of the amount in other tissues. The particularly high number of particles that were observed to contaminate the fillets highlights the need for further research to better understand the mechanisms and consequences of the movement of microplastics within fish. Further, the presence of microplastics in tissues consumed by humans (the fillets), indicates that fish contribute to microplastic burdens in humans.

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