Investigating the Presence of Microplastics in the Gastrointestinal Tract of Mountain Whitefish in the Spokane River

Caruso, Isaac

Microplastics, plastic particles smaller than 5 mm, have been regularly found within marine, freshwater, and estuarine environments. These tiny plastic polymers have been discovered in various species of marine vertebrates in numerous studies; however, few studies have examined the ingestion of microplastics by fish in freshwater river systems. This study documents microplastic ingestion by Mountain Whitefish, Prosopium williamsoni, in the Spokane River in eastern Washington. A total of 33 fish were sampled from two sites, 10 from a sampling location immediately downstream from the city of Spokane surrounding the Riverside State Park Wastewater Treatment Plant, and 23 from a sampling location immediately downstream from the Nine Mile Dam. Of the 33 whitefish, 22 (66%) contained microplastics, a percentage larger than that of previous freshwater studies. A recently developed method of microplastic isolation with a much higher extraction yield was utilized in this study, suggesting that this higher percentage of contaminated fish may more accurately represent the level of pollution in river systems. Unlike a previous study in the Brazos River Basin in Central Texas, no correlation between size of fish and number of microplastics was noted; however, several fish were gravid and had little food in their gastrointestinal tracts during sampling which could have contributed to the lack of correlation (many larger fish with little food in their gastrointestinal tracts). The high percentage of fish with microplastics found in their gastrointestinal tract suggests that additional research is needed to determine the extent of microplastic pollution in vertebrates residing in local rivers and the potential adverse effects this pollution is having on the overall ecosystem.

Awards Won: