

Title: Microplastic abundance in avian digestive tracts across diverse trophic guilds

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Abstract: Microplastic pollution is an increasing environmental concern threatening various ecosystems and organisms. Microplastics are nonbiodegradable particles ranging from 250 μ m-5mm. Bioindicators are useful to show exposure rates and the potential effects of pollutants on environmental and human health. Avian wildlife are good bioindicators for microplastic pollution because of their high mobility, distribution across many trophic levels, and known examples of biomagnification for pollutants. Accidental ingestion of microplastics can lead to gut obstruction, false satiety, and direct mortality. Although microplastic research is increasing, a significant gap remains identifying where microplastics accumulate within the avian digestive tract and how species-specific accumulation varies regionally and with body mass and trophic position. Bird dissection was used to remove digestive tissues which were then liquified using a KOH solution. Microplastic particles were then separated using a saturated CaCl solution, and isolated on a filter prior to enumeration via microscopy. Plastic verification was completed through Fourier Transform Infrared (FTIR) spectroscopy. Preliminary data show a total of 1338 microplastic particles in digestive tracts of 83 surveyed birds (mean[range]=16.1[0-83] particles/bird). The results of this study will increase our knowledge of microplastic levels in terrestrial wildlife and address gaps and potential sources of microplastic pollution in the environment.