
Comparison of time, materials, procedural contamination, and data output between two methods for detecting anthropogenic microparticle ingestion in fish

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Abstract

In recent years the microplastics research community has called for method harmonization and standardized reporting. While alignment of research practices essential in obtaining robust microplastic data, resource managers should be concerned with how the costs of various permitted methods compare to data output. The intention of this study is to compare two recommended methods for isolating anthropogenic microparticles in fish gastrointestinal tracts. Using Icelandic capelin (*Mallotus villosus*) as a study species, and potassium hydroxide (KOH) digestion, a 1.2 μm filtration and 45 μm sieving protocol for isolating ingested anthropogenic microparticles were compared based on the amount of time they took to conduct, the materials and equipment required, procedural contamination and data output. I found no significant differences in material costs or procedural contamination between the two methods. However, the protocols detected anthropogenic microparticles with significantly different characteristics (i.e. colour, length, morphology), and the 45 μm sieving protocol took longer to conduct. Results of this study contribute toward a more holistic understanding of microplastic research methods and how they contribute to data outputs. Improved knowledge regarding resource differences between methods could help to inform the development of large-scale monitoring programs.

Keywords: Capelin, resource management, methods

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