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Researchers examine microplastics in Edmonton waterways

Edmonton – The North Saskatchewan river may be hundreds of kilometres from the nearest ocean, but invertebrate, water and soil samples being collected by researchers could be tied to the plastic pollution crisis in the world's largest bodies of water – and the bodies of the animals that call them home.

Along with 10 student researchers, Dr. David Locky, Department of Biological Sciences and Dr. Matthew Ross, Department of Chemistry at MacEwan University, have been working on a project that focuses on microscopic fragments of plastic – the size of a sesame seed or smaller – in Edmonton waterways.

“Most people don’t understand that the vast majority of the plastic we use is never recycled,” says Ross. “Plastic doesn’t biodegrade back to its original components – it breaks down into smaller and smaller pieces, and those pieces have to end up somewhere.”

Since the research began in 2017, they’ve expanded the microplastics search to about 35 sites in and around Edmonton, including natural wetlands and several of the city’s stormwater ponds. “We’ve found microplastics in everybody of water we’ve tested,” said Locky.

Knowing the plastic is present gives the researchers a place to start looking for a way to stop the flow of plastics into our waterways. Now, they are collecting additional samples of water and sediment to determine where the plastic is coming from, how it gets into freshwater systems, and if the microplastics get trapped in sediment or travel downstream in water that is ultimately transported back to the oceans.

This year, they’ve also started looking to see if microplastics are making their way into the aquatic invertebrate species – insects, snails, earthworms and leeches – that live in freshwater systems. “Invertebrates represent the bottom of the food webs and if they are ingesting microplastics – either directly or indirectly – it could have implications for species further up the food chain,” says Locky.

The student research assistants, Ross and Locky will once again head into the field to collect additional samples of water and sediment, and the first invertebrate samples from the 35 sites around Edmonton. Once the samples are collected they’ll bring them back to the lab where they will use chemical reactions to eliminate organic materials and put what remains under a microscope to look for evidence of microplastics, usually fibres from synthetic clothing or broken-down pieces of larger plastics.

“There’s no doubt the research is important for many people, including those of us who might not realize that what we do in landlocked Alberta could have consequences in the world’s oceans,” says Locky.

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