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Researchers detect microplastics in the muscle tissues of Oregon seafood

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By Responsible Seafood Advocate

Study finds microplastics are widespread in Oregon seafood, urging further research and policies to reduce contamination in the food supply

Tiny plastic particles shed from clothing, packaging and other products are making their way into the fish people eat, according to **a study (https://www.frontiersin.org/journals/toxicology/articles/10.3389/ftox.2024.1469995/full)** from Portland State University (PSU) researchers.

Expanding on prior research on microplastics in bivalves like Pacific oysters and razor clams, scientists in PSU's Applied Coastal Ecology Lab have now found evidence of microfiber pollution in commonly consumed finfish and crustaceans – underscoring the need for technologies and strategies to reduce microfiber pollution entering the environment.

To better understand microplastic contamination in Oregon's seafood, the researchers examined six economically and culturally significant species: black rockfish, lingcod, Chinook salmon, Pacific herring, Pacific lamprey and pink shrimp. Their goal was to assess variations in contamination across trophic levels – the position of a species in the food chain – and identify how these pollutants reach consumers. By analyzing the edible tissue of these species, the team quantified anthropogenic particles

A Portland State University study finds microplastics in seafood samples from Oregon and urges further research and policies to lower contamination in foods. Photo by Catherine Sheila (https://www.pexels.com/photo/close-up-photo-of-plastic-bottle-2409022/).

– materials produced or modified by humans – shedding light on the extent of plastic pollution in commonly eaten finfish and shellfish.

The team examined how a species' place in the food web influenced microplastic contamination, comparing particle concentrations across trophic levels. They also assessed whether seafood sourced from research fishing vessels differed in contamination from that sold in supermarkets and seafood markets.

Researchers identified 1,806 suspected microplastic particles in 180 of the 182 seafood samples, with fibers being the most common type, followed by fragments and films. Among the species studied, pink shrimp had the highest concentrations of particles in their edible tissue, while Chinook salmon had the lowest, followed by black rockfish and lingcod.

“We found that the smaller organisms that we sampled seem to be ingesting more anthropogenic, non-nutritious particles,” said Elise Granek, professor of environmental science and management. “Shrimp and small fish, like herring, are eating smaller food items like zooplankton. Other studies have found high concentrations of plastics in the area in which zooplankton accumulate and these anthropogenic particles may resemble zooplankton and thus be taken up for animals that feed on zooplankton.”

While researchers anticipated that seafood processing and plastic packaging might introduce additional contaminants, this wasn’t consistently true across species. To mimic typical home preparation, they rinsed fish fillets and shrimp before analysis, suggesting that some surface contamination from processing can be washed away.

However, the findings reinforce the pervasive presence of microplastic particles embedded in the edible tissues of Oregon’s marine and freshwater species, highlighting the extent of plastic pollution in the food supply.

“It’s very concerning that microfibers appear to move from the gut into other tissues such as muscle,” said Susanne Brander, an ecotoxicologist and associate professor in Oregon State University’s College of Agricultural Sciences. “This has wide implications for other organisms, potentially including humans too.”

The researchers say the findings signal the need for further studies to understand the mechanisms by which particles translocate into muscle tissue, which humans eat, as well as policy interventions to regulate anthropogenic particles.

“This project established critical baseline data for West Coast fisheries stakeholders and highlighted how much we still do not know about these pervasive microplastic pollutants,” said Summer Traylor, a graduate student who led the study and now serves as a NOAA Corps Officer.

The researchers are not advocating for people to avoid seafood because, as Granek says, microplastics are everywhere: in bottled water, beer, honey, beef, chicken, veggie burgers and tofu.

“If we are disposing of and utilizing products that release microplastics, those microplastics make their way into the environment, and are taken up by things we eat,” she said. “What we put out into the environment ends up back on our plates. We’re continuing to do work to understand the effects of anthropogenic particles on animals, but we’re also moving into experimental work to test what are effective solutions to reduce microplastics entering marine ecosystems.”

Read the full study (https://www.frontiersin.org/journals/toxicology/articles/10.3389/ftox.2024.1469995/full).

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