Twenty-five per cent of seafood sold in Metro Vancouver is mislabelled

June 19 2018

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A quarter of the seafood tested from Metro Vancouver grocery stores, restaurants and sushi bars is not what you think it is.

A new UBC study used DNA barcoding to determine that 70 of 281 seafood samples collected in Metro Vancouver between September 2017 and February 2018 were mislabelled.

Researchers from UBC's Lu Food Safety & Health Engineering Lab conducted the study in partnership with independent charity Oceana Canada and the Hanner Lab at the University of Guelph.

"We aim to comprehensively understand the fraudulent labelling of fish products sold in Metro Vancouver, as the first step in studying the complicated seafood supply chain that serves the west coast of Canada," said Xiaonan Lu, who leads the Lu lab. "Our study demonstrates the importance of improving both the regulation of seafood labelling, and the transparency of the fish supply chain."

The supply chain for seafood is complex and opaque. A fish can be caught in Canada, gutted in China, breaded in the U.S., and ultimately sold back to Canada as an American product. Misidentification can happen anywhere along the way. When it's intentional, it's food fraud—a $52-billion worldwide problem defined as the misrepresentation of food for economic gain.

"Seafood fraud cheats Canadian consumers and hurts local, honest fishers as well as chefs and seafood companies looking to buy sustainable seafood. It causes health concerns and masks global human rights abuses by creating a market for illegally caught fish," said Julia Levin, seafood fraud campaigner with Oceana Canada. "The key to fighting seafood fraud is boat-to-plate traceability. This means tracking the seafood product through the supply chain and requiring that key information travels with the product."

The UBC team and Oceana Canada gathered samples from sellers in Vancouver, Richmond, Coquitlam, Burnaby, North Vancouver, West

Vancouver, Surrey and Langley. The Lu lab analyzed UBC's samples, while Oceana Canada's went to TRU-ID, a Guelph-based company that provides DNA certification of foods and natural health products. DNA barcoding involves comparing genetic information from test specimens with reference sequences that can help identify species. Data from the two sources was later collated.

Restaurants had the highest rate of mislabelling, at 29 per cent, followed by grocery stores (24 per cent) and sushi bars (22 per cent). The most commonly mislabelled fish was snapper, with 31 of 34 samples mislabelled.

The researchers found evidence of both intentional and unintentional mislabelling. For example, many fish sold as snapper or red snapper were actually far less valued species such as tilapia. Sutchi catfish took the place of halibut, snapper, sole and cod. Economic motivations were less likely in other cases, such as the substitution of sockeye for pink salmon.

The situation doesn't appear to be improving. An Oceana study conducted in the U.S. from 2010 to 2012 found the mislabelling rate to be 33 per cent. A study in Metro Vancouver 10 years ago had similar findings to the new UBC study, with a much smaller sample size. Oceana Canada found nearly half of samples tested last fall in Ottawa to be mislabelled. They will release a national seafood fraud report this fall with findings from testing done in Halifax, Toronto, Vancouver and Victoria.

"Canada is one of the top seafood-producing countries in the world and our industry complies with much more stringent labelling when exporting products to the European Union, but Canadian consumers don't benefit from this same level of transparency at home," said Robert Hanner, chief technology officer at TRU-ID. "This situation

compromises consumer choice and even facilitates laundering illegally harvested seafood into the domestic market, at the expense of legitimate suppliers. This situation must change."

A 2018 report by the Food and Agriculture Organization of the United Nations called for a harmonized DNA-based system that provides universal access to a standard database using scientific names.

Authors of the UBC study support several measures to help consumers understand what they're buying:

- harmonize common names of fish between major trading countries
- require scientific names on labels
- provide consumers with information about where fish was caught or farmed, its processing history, and the fishing/farming methods used

More information: Yaxi Hu et al, Study of fish products in Metro Vancouver using DNA barcoding methods reveals fraudulent labeling, *Food Control* (2018). DOI: 10.1016/j.foodcont.2018.06.023

Provided by University of British Columbia