

NewScientist Environment

Teenage DNA detectives expose US fish fraud

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Up to a quarter of fish in stores and restaurants in New York City was mislabelled as a more expensive variety, according to samples collected by two US teenagers and tested with genetic "barcoding" methods.

In the worst cases, two samples of filleted fish sold as red snapper, caught mostly off the southeast United States and in the Caribbean, were instead the endangered Acadian redfish from the North Atlantic, according to the tests, revealed on Friday.

"We never expected these results. People should get what they pay for," said Kate Stoeckle, 18, of the project with Louisa Strauss, 17.

The two classmates from New York's Trinity school collected and sent off 60 fish samples to the University of Guelph in Canada. Of 56 samples that could be identified by a the DNA barcoding identification technique, 14 were mislabelled.

Student success

In all cases, the fish was labelled as a more costly type, apparently ruling out simple chance. It was the first known student use of DNA barcoding technology in a public market.

"We really like sushi and we'd take home fish samples and put them in alcohol," Stoeckle said of fish bought in shops and restaurants in Upper Manhattan.

Stoeckle's father Mark is an expert in genetic barcoding – a system that produces a unique readout of a species' genes similar to the black and white barcode stripes often used to identify items sold in shops.

"Americans spend an estimated \$70 billion per year on seafood and we think authorities should do routine DNA barcoding of fish," Louisa Strauss said in a statement. Costs of barcoding run to tens of dollars per sample.

The DNA of fish from a sushi restaurant called "white tuna" turned out to be Mozambique tilapia, a cheaper variety often raised on fish farms. One restaurant offered "Mediterranean red mullet" but the DNA matched spotted goatfish from the Caribbean.

The project did not give the names of the restaurants and shops since it was unclear if they were knowingly to blame or had been deceived by suppliers.

Fishy management

The findings raise questions about the management of fish stocks, under pressure from overfishing and facing new threats such as climate change. About 160 nations are meeting in Accra, Ghana, this week to discuss ways to combat global warming.

"It bears on a number of issues – food safety, fraud and protection of endangered species," said Bob Hanner of Guelph, who oversaw the analysis of samples. Other imports, such as meat, could also benefit from DNA checks.

Scientists have catalogued barcodes for about 46,000 animal species so far. The barcoders are looking to raise \$150 million to create 5 million records from 500,000 animal species by 2014 - or a cost of \$30 each.