

SCIENCE

Poacher loses shell game

DNA testing used to identify illegal scallop catch

BY MOIRA BAIRD
THE TELEGRAM

Call it the case of the scurrilous sea scallop.

Memorial University biologist Steven Carr recently used DNA testing to help the federal Department of Fisheries and Oceans catch a sea scallop poacher.

The trick was to identify a quantity of out-of-season shellfish among 2,388 pounds of sea scallops and Icelandic scallops landed by a Fortune fisherman in October 2005.



Steven Carr

1,000 samples

DNA analysis of the 1,000 samples collected dockside by DFO officers revealed 99 per cent of that catch consisted of sea scallops, a closed fishery.

"It was exactly the opposite of what was supposed to be there," said Carr. "We had to exclude the fact that this could be a bycatch."

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Professor Steven Carr (right) and honours student Anna Duggan look over DNA results in a laboratory in the science building at MUN. — Photo by Keith Gosse/The Telegram

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In January, the fisherman was fined \$21,000 for fishing violations that included possession of illegal scallops.

For DFO fisheries officer Leon Slaney, DNA is an extra tool that can guarantee a conviction.

In the sea scallop case, the landed catch has already been shucked.

"It was just plain meat," said Slaney. "At that stage, it's very difficult to prove one is Icelandic scallop or one is sea scallop."

"There are indications. You could look at them and based on size and colouration you could make a good guess.

"But, of course, in our business a good guess is not enough sometimes. You have to be 100 per cent accurate."

Enter DNA analysis.

"This was certainly a major tool for us in this case," said Slaney.

It was a trickier-than-usual case for Carr and his MUN colleague, Dawn Marshall.

In cases of cod poaching, for example, they are often asked to identify the species from a specific DNA sample, such as fish scales, blood or offal.

This time, they had to tell the difference between the same gene in the two kinds of scallops.

"The difficulty in this particular case is that we were looking at on the order of 1,000 confiscated scallops," said Carr.

That would take considerably more time.

"It simply isn't practical to do the procedure ... on each and every scallop," he said. "We can't do this and have a day job."

So, the biologists devised a test to detect the specific genes, or characteristics, of sea scallops.

In fact, they used the same kind of medical test that identifies cystic fibrosis in humans. But it was a

first for Carr and Marshall in distinguishing between different types of scallops.

"All it takes is blood and then you use a very specific (DNA) marker," Carr explained.

"It's a very specific test for these two species. If you wanted to do it for any of the other scallop species that are present in the North Atlantic, that would work"

Slaney has spent 23 years as a federal fisheries officer working in the Marystown and Clarenville areas.

He says DNA has been used as an enforcement tool by DFO since the late 1980s, and more frequently in the '90s, to combat cod poaching.

When fisheries officers draw near, the poachers usually dump their catch — but the traces of DNA left behind can give them away.

Even a boat's bilge water can be analysed.

Slaney says DNA evidence often persuades people "their goose is cooked" and can prevent illegal fishing in the first place.

"It's not just a successful tool in prosecuting people with illegal fish.

"It's also a good deterrent — people who were inclined to break the law have seen this as well. You can't even throw away the evidence and you're still getting dinged."

Carr enjoys working on the DFO cases.

"The partnership has worked out extremely well."

"We have the technical expertise. They don't have to duplicate the machinery, the technical expertise, and the questions they are asking are also of scientific interest to us ... and all this winds up being published."