



MYSTERY FISH

Seafood Fraud in Canada
and How to Stop It

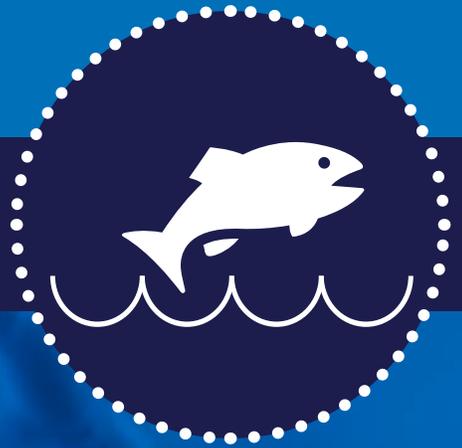
SEAFOOD FRAUD HURTS:

OUR HEALTH



OUR WALLETS

OUR OCEANS



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THE GOAL: SAFE, HONEST AND LEGAL SEAFOOD



REAL OR IMPOSTER?

EXECUTIVE SUMMARY

Despite concerns about the safety of fish in Canada, Canadian seafood consumers are routinely given little or no information about the seafood we purchase. Moreover, the information on the labels and menus is often misleading or fraudulent.

An increasing amount of our seafood is shipped from overseas—estimates suggest up to 80 per cent of what is consumed in Canada may be imported. This seafood follows a complex path from a fishing vessel to our plate, with a risk of fraud and mislabelling at each step along the way. Seafood fraud, which often involves substituting a lower value fish for a more expensive one, hurts our health, our wallets and our oceans. This “bait and switch” impacts public health and safety, cheats consumers, hurts honest, law-abiding fishers and seafood businesses and undermines the environmental and economic sustainability of fisheries and fish populations. It can even mask global human rights abuses by creating a market for illegally caught fish.

Over the last decade, numerous studies have exposed seafood fraud around the world. Despite the important role played by Canadian scientists in developing DNA barcoding, the leading technology for detecting seafood fraud, and the alarms these scientists rang more than a decade ago, seafood fraud continues to be widespread.

This summer, Oceana Canada collected seafood samples from Ottawa grocery stores and restaurants to better understand the extent of seafood fraud in the nation’s capital. The results revealed widespread misrepresentation: almost half of the samples tested—45 out of 98—were mislabelled. These results are in line with other testing in Canada, where up to 41 per cent of seafood samples have been found mislabelled, and with estimates in the United States.

Seafood fraud can be prevented through full chain traceability, which means tracking fish through every step from the water to our plate. The European Union (EU), the largest importer of

seafood in the world, has implemented full chain traceability as well as stringent catch documentation and comprehensive labelling requirements. The U.S. is moving quickly in this direction. Unfortunately, Canada lags behind and the federal government's current efforts to combat seafood fraud are not sufficient to address the key drivers of this phenomenon.

To most effectively fight seafood fraud and illegal fishing, Canada must establish a comprehensive system that harmonizes with its major trading partners and builds more transparency into seafood supply chains by requiring full chain traceability, catch documentation and improved consumer information.

SOLUTIONS

1. Trace all seafood from boat to plate: The Canadian Food Inspection Agency (CFIA), the government agency responsible for the safety of Canada's food supply, must require that key information follow all seafood products throughout the supply chain, from the boat or farm to the point of final sale, whether a restaurant, grocery store or fish market. This information should include the who, what, where, when and how of fishing, processing and distribution.

2. Require catch documentation: CFIA must work with Fisheries and Oceans Canada (DFO) to require catch documentation for all domestic and imported seafood, in line with that currently required by the EU and recommended by the Food and Agricultural Organization of the United Nations (FAO).

3. Introduce traceability verification measures: CFIA must introduce DNA testing for species authentication into its inspection program. It should incorporate inspection, verification and enforcement measures at levels high enough to deter fraud.

4. Improve consumer information: CFIA's labelling standards—which should apply to wholesale, retail and restaurants—must be brought in line with those used in the EU. They should include essential information such as the species' scientific name, whether the fish was wild-caught or farmed, where it came from (geographic origin) and the type of fishing gear used.

It's time to stop seafood fraud so Canadians can enjoy their seafood, knowing it is safe, honestly labelled and legally caught.

WHAT NEEDS TO BE FIXED?





**HIGH QUALITY OR
CHEAP SUBSTITUTE?**

INTRODUCTION



FROM LEADER TO LAGGARD

DNA barcoding is a made-in-Canada innovation. The technology was developed by Dr. Paul Hebert at the University of Guelph in 2003 as a tool to identify species of animals.¹¹ In 2005, Canada created the Canadian Barcode of Life Network, becoming the first nation to establish a national network dedicated to advancing species identification and discovery through the use of DNA barcodes.¹²

The University of Guelph is still considered the world's leader in barcoding, and is asked to test samples flown in from around the world.^{13,14} It now houses the Fish Barcode of Life initiative (FISH-BOL), a global research project launched in 2005 to collect DNA barcode sequences to assist in the identification of all fish species.¹⁵

DNA barcoding has spread across the world. Other government agencies, including the United States Food and Drug Administration, have recognized the value of implementing DNA barcoding as a regulatory tool to combat seafood fraud.^{16,17} Unfortunately, Canada has yet to do the same. DNA barcoding is not included in inspection protocols for seafood products.

Seafood is a popular choice among Canadians: 79 per cent eat seafood regularly or occasionally, according to a 2017 Oceana Canada survey conducted by Abacus Data.¹ Surprisingly, although Canada produces high-quality seafood, a significant amount of the seafood Canadians eat is from overseas and of lower value than what we produce domestically and export.^{2,3} Canada exports 85 per cent of the seafood it produces,^{4,5,6} and recent estimates suggest that up to 80 per cent of what we consume may be imported.⁷ This seafood follows a complex path from a fishing vessel to our plate, leaving unscrupulous actors with many opportunities to misrepresent their products.

Over the last decade, numerous studies around the world have shed light on the issue of seafood fraud, which can include mislabelling or swapping one species with another. The majority of these studies have had one thing in common: the use of DNA barcoding, a technology that uses a specific gene sequence to identify animal species. Scientists at the University of Guelph, including Dr. Robert Hanner, were among the first to demonstrate that DNA barcoding could be as a tool to uncover seafood fraud.^{8,9}

Despite Canada's leadership role in developing this important technology and its uses,¹⁰ Canada remains a laggard in implementing policies to address seafood fraud.

WHAT IS SEAFOOD FRAUD?

Seafood fraud is a long-standing and growing problem. Despite seafood's popularity in Canada and increasing concern about where our food comes from,^{18,19} consumers are routinely given little or no information about the seafood we purchase.²⁰ Moreover, the information on labels and menus is often misleading or fraudulent.

Seafood fraud includes any dishonest activity that misrepresents the product being purchased, including short-weighting (claiming it weighs more than it does), hiding the true origin of fish to avoid tariffs and improper labelling.

This report looks specifically at seafood mislabelling and species substitution, the practice of substituting one type of fish for another. Species substitution includes selling cheaper, less-desirable and more readily available products as more expensive species, mislabelling farmed products as wild-caught or selling black market fish as legally caught.

The seafood industry is extremely diverse, compared to other sources of animal protein. More than 900 different species from all over the world are sold in Canada,^{21,22} making it difficult for Canadian consumers to know exactly what fish is being sold or served.

Seafood fraud threatens consumer health and safety, cheats consumers and hurts our oceans.



SEAFOOD FRAUD INCLUDES ANY DISHONEST ACTIVITY THAT MISREPRESENTS THE SEAFOOD BEING PURCHASED.

MORE THAN 900 DIFFERENT SPECIES FROM ALL OVER THE WORLD ARE SOLD IN CANADA.

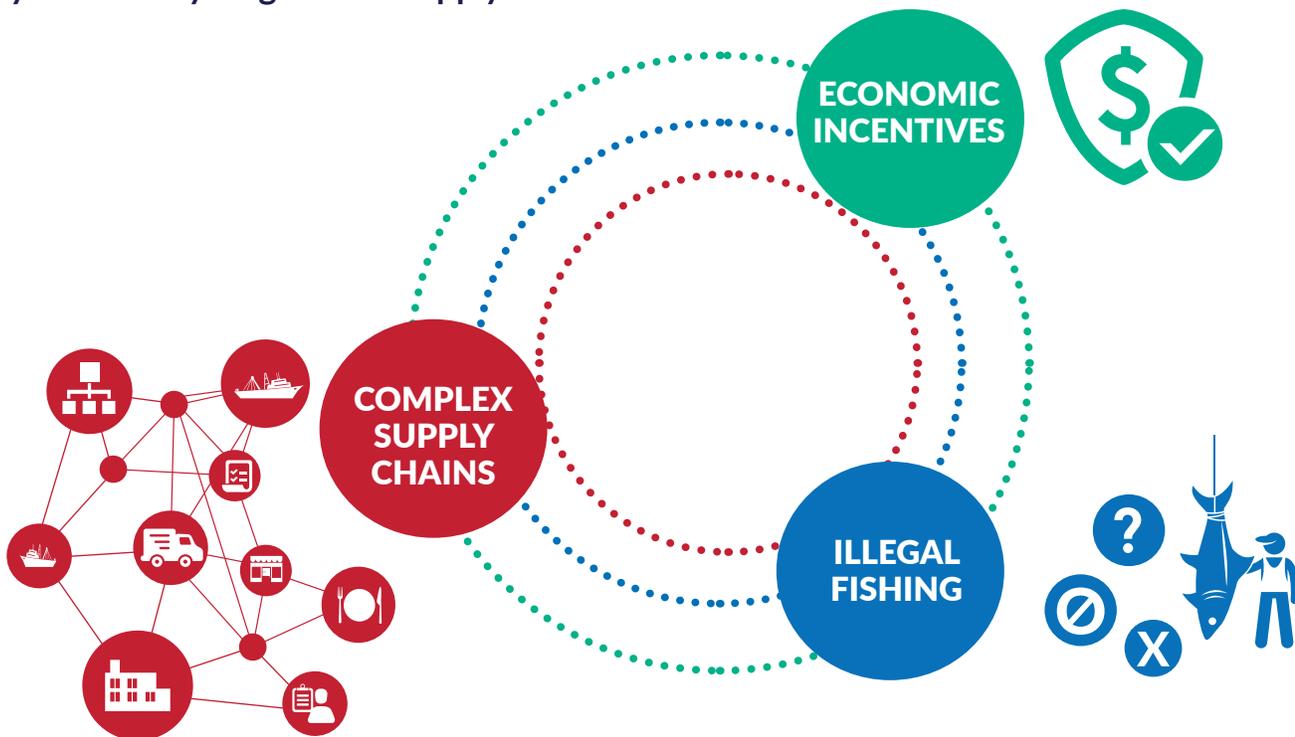
FARMED OR WILD-CAUGHT?



WHITE TUNA OR
HARMFUL ESCOLAR?

WHY DOES SEAFOOD FRAUD OCCUR?

Seafood fraud is driven primarily by the pursuit of economic gain and happens in Canada because of the many opportunities to mislead buyers at every stage of the supply chain.





ECONOMIC INCENTIVES

One form of fraud involves mislabelling cheap or readily available species so they can be sold as expensive, desirable, or supply-limited ones. In fact, a global review that Oceana conducted of more than 200 studies related to seafood fraud revealed that 65 per cent of the studies had found clear evidence of economically motivated adulteration of products.²³ Although some mislabelling may result from unintended human error in identifying fish or their origin, these practices are often intentional.

The potential for high profits is a strong motive. Seafood imported into Canada is of a lower average value than that caught in Canadian waters: when compared by value, Canadian imports of seafood were valued at just 57 per cent of Canadian exports, despite similar volumes.²⁴ This discrepancy could encourage unscrupulous actors to pass off lower-cost imports as higher-value species from Canadian waters. Previous studies in Canada have shown that price differences between the species of fish identified on the label and the one being sold can be up to 244 per cent.²⁵ Oceana Canada's own 2017 Ottawa testing revealed similar price differences.



ILLEGAL, UNREPORTED AND UNREGULATED (IUU) FISHING

Another important incentive for seafood fraud is the ability to allow illegally caught fish to enter the market by giving it a new "legal" identity.²⁶ Current estimates show that illegal, unreported and unregulated (IUU) fishing accounts for up to 30 per cent of global catches.²⁷

The global impact of IUU fishing is significant, with an estimated value of \$23 billion USD annually.^{28,29} It threatens approximately 260 million fishing jobs around the globe.³⁰ Developing countries lacking resources for effective fisheries management and enforcement bear the brunt of illegal

fishing through lost revenue and reduced food security and biodiversity.³¹ Furthermore, these communities are also vulnerable to the human impact of illegal fishing. Egregious human rights abuses often take place on illegal fishing vessels, including extremely unsafe work environments, forced labour, starvation, physical abuse, torture and even murder.³² The trafficking of humans and of black market products have also been documented in seafood supply chains and widely exposed via media and industry reports.^{33,34}

Canada has few measures in place to prevent illegal products from entering supply chains.³⁵ Reports indicate that 25–30 per cent of wild-caught seafood imported into the U.S. is from illegal and unreported sources and has a value of \$1.3–\$2 billion USD.³⁶

IUU FISHING



Illegal fishing is often grouped together with unregulated and unreported fishing under the abbreviation IUU. Illegal and unreported fishing activity is fishing that contravenes the law or established regulations or that is not reported or misreported. Unregulated fishing occurs when there are no management measures for a fishery. These three dimensions are a major threat to the oceans, consumers and seafood businesses around the world.

**THE GLOBAL IMPACT OF
ILLEGAL AND UNREPORTED
FISHING IS SIGNIFICANT,
WITH AN ESTIMATED
ANNUAL VALUE OF
\$23 BILLION USD.**

While similarly extensive studies have not been conducted in Canada, experts suggest that given similarities in imports, the significant amount of seafood imported from the U.S. into Canada and Canada's weaker legislation, the percentage would be the same if not higher in Canada.³⁷

A recent small-scale review by researchers from Dalhousie University and the University of York (UK) found that up to 22 per cent of seafood imported into Canada is at risk of being IUU. The report author notes that this is very likely an underestimate.³⁸ An Italian study of seafood imports found fish and seafood products that originated from Thailand, China and Vietnam had the highest rates of labelling inaccuracy.³⁹ In terms of both quantity and value of seafood imports into Canada, these countries rank second, third and fourth, following only the U.S.⁴⁰

THE CODFATHER

According to a Department of Justice Canada media release, on September 25, 2017, Carlos Rafael, a fishing industry giant in Massachusetts, was given a four-year prison sentence. Rafael owns one of the largest commercial fishing operations in the U.S. and is better known as "the Codfather." His charges included false labelling and falsifying fish records, among others. Rafael had been claiming his vessels caught haddock or pollock when in fact they were fishing valuable but depleted species subjected to stricter quotas, such as cod, which he then sold for cash.⁴⁹



COMPLEX AND OPAQUE GLOBAL SUPPLY CHAINS

The complexity of the seafood supply chain provides many opportunities for fraud. Seafood is traded internationally more than any other food product, following long, complex and notoriously opaque supply chains. The products cross several international borders as they move through catch, processing, distribution and final sale.^{41,42}

Seafood supply chains generally consist of five to seven stages, much more than those of other food products.⁴³ This presents opportunities for fraud and mislabelling at each step.⁴⁴

Furthermore, seafood is increasingly processed as it travels through this supply chain. Processing removes the skin, head and other parts of a fish used for identification, increasing the likelihood of fraud. Trade statistics suggest that a significant portion of seafood exported from Canada is re-imported after being processed abroad, much of it in China.⁴⁵ However, due to a lack of transparency, it is impossible to know the provenance of seafood imports from China.⁴⁶ In fact, seafood samples from China have been shown to have the highest rates of labelling inaccuracy⁴⁷ and are particularly at risk of being sourced illegally.⁴⁸

This anonymity through processing, even of Canadian-caught seafood, can increase the incidence and risk of fraud. With no traceability required, there is no guarantee that the Canadian seafood shipped for processing is the fillet we are getting in return.

“WHEN YOU BUY THINGS CAUGHT IN AFRICAN WATERS, PROCESSED AT SEA ON A CHINESE VESSEL, SOLD TO A RUSSIAN DISTRIBUTING FIRM THAT THEN MARKETS IT IN CANADA, YOU SEE WHERE THE OPPORTUNITY FOR A DISCONNECT COMES IN.”

— DR. ROBERT HANNER, ASSOCIATE PROFESSOR, UNIVERSITY OF GUELPH.

HOW WIDESPREAD IS SEAFOOD FRAUD?

Seafood is more prone to mislabelling than any other protein source in the Canadian food market.⁵⁰ Results of studies in various countries show that mislabelling and substitution in seafood supply chains have been on the increase relative to other products.⁵¹

In 2016, Oceana compiled a global review of more than 200 studies on seafood mislabelling and species substitution.⁵² All of them, except one,[†] found fraud. Seafood fraud has been exposed by scientists, students, journalists, governments and conservation and consumer groups in 55 countries and on every continent except Antarctica. On average, one in five of the more than 25,000 samples of seafood tested worldwide were mislabelled.

EXAMPLES OF COMMONLY MISLABELLED SEAFOOD*

WHAT YOU BOUGHT	WHAT YOU GOT
Butterfish	Escolar
Cod	Catfish, pollock, tilapia or whiting
Pickrel	Pike-perch
Sole	Catfish
Wild Pacific salmon	Farmed Atlantic salmon
Snapper	Pacific ocean perch or tilapia
Red snapper	Catfish, perch, rockfish or tilapia
White tuna	Escolar



*Based on results of testing done in Canada and the U.S.

† The exception, one small study in Tasmania, found no explicit fraud but did highlight unclear seafood labelling practices.

Seafood fraud is also widespread in Canada. Contrary to CFIA's own testing results, which show a very low level of mislabelling and fraud in imported seafood,⁵³ independent research has exposed much higher levels.

Over the last decade, more than 900 samples of seafood from both grocery stores and restaurants have been tested across multiple studies. These studies all found considerable mislabelling, with average rates of approximately 25–41 per cent.^{54,55,56,57,58} Furthermore, a 2014 investigation conducted by Quebec's Ministry of Agriculture, Fisheries and Food found mislabelling in 39 of 121 samples (32 per cent) collected from restaurants, fish markets and grocery stores. The Ministry fined those whose samples involved deliberate fraudulent marketing of species.⁵⁹

In July 2017, Oceana Canada collected seafood samples from Ottawa grocery stores and restaurants, focusing on popular establishments and those catering to Canada's decision-makers and politicians. This was the first time this type of study has ever been conducted in Ottawa and the results were staggering, revealing widespread seafood misrepresentation in our capital.

In fact, nearly half of the samples tested—45 out of 98—were mislabelled, when tested against CFIA's acceptable market names for seafood in Canada. This increased to 51 per cent of samples obtained only from restaurants (excluding sushi vendors) and 68 per cent for samples from sushi vendors; 10 of 12 vendors tested. Seafood fraud and mislabelling were found at 16 of the 22 restaurants tested, including the most popular and prestigious ones, as well as those known for serving sustainable seafood. Grocery stores had lower rates of fraud and mislabelling, with 18 per cent of samples mislabelled, from four of the ten grocery stores tested.

Oceana Canada will continue to conduct testing in major Canadian cities in order to better understand the extent of this issue nationally. For more information, visit oceana.ca/StopSeafoodFraud.

CANADIANS INCREASINGLY AWARE OF SEAFOOD FRAUD

A 2017 study commissioned by Oceana Canada found that almost half of all Canadians (46 per cent) believe seafood mislabelling or species substitution is a problem; however 52 per cent thought there are fewer instances of fraud than previous studies in Canada have demonstrated. The same study found that half of all Canadians (48 per cent) do not feel they have enough information about the seafood they purchase.⁶⁰

“YOU CAN ORDER ‘FISH AND CHIPS’ AT A RESTAURANT, BUT YOU’D NEVER SEE A ‘MAMMAL SANDWICH’ OR ‘BIRD SALAD’ ON THE MENU. YOU WANT TO KNOW EXACTLY WHAT SPECIES IS GOING INTO YOUR MEAL.”

– MATTHEW MORRIS, PhD CANDIDATE, AMBROSE UNIVERSITY

**SUSTAINABLE OR
ENDANGERED?**





WHILE VOLUNTARY RECALLS HAVE BEEN USED TO LIMIT THE DAMAGE FROM VEGETABLES, EGGS AND OTHER NON-SEAFOOD PRODUCTS, SUCH RECALLS CAN BE NEARLY IMPOSSIBLE FOR SEAFOOD BECAUSE OF THE LACK OF TRACEABILITY IN THE SUPPLY CHAIN.



OMEGA-3 OR
TOXINS?

SEAFOOD FRAUD HURTS OUR HEALTH, OUR WALLETS AND OUR OCEANS

Seafood fraud threatens public health and safety, cheats consumers, hurts honest, law-abiding fishers and seafood businesses, undermines the environmental and economic sustainability of fisheries and fish populations and even supports global human rights abuses. Oceana Canada's investigation into seafood fraud in Ottawa, accessible at oceana.ca/StopSeafoodFraud, found farmed fish sold as wild-caught; cheaper alternatives substituted for expensive varieties; fish that can cause illness substituted for safe fish; and threatened species being sold that aren't on CFIA's list of approved species.

HEALTH RISKS

Oceana's global review of seafood fraud found that 58 per cent of the substituted samples posed a species-specific health risk to consumers.⁶¹

When one species of fish is substituted for another, or correct species information is not provided, consumers risk exposure to parasites and allergens and the environmental chemicals, aquaculture drugs and pesticides used in industrial farming operations. Consumers are also at risk of exposure to natural toxins found in certain fish species. Furthermore, species known to be a health risk generally undergo screening tests. Mislabelled seafood may not be screened, exposing consumers to potential health risks.⁶²

While voluntary recalls have been used to limit the damage from vegetables, eggs and other non-seafood products, such recalls can be nearly impossible for seafood because of the lack of traceability in the supply chain.

Dangerous hidden allergens

Seafood fraud can be especially troubling—even life threatening—for people with seafood allergies. Seafood is one of the most common food allergens.⁶³ However, people rarely have allergies to all seafood, just to particular groups.⁶⁴



For example, someone may have an allergy to tuna, but not salmon. According to authors of a recent food fraud forensics book, this “turns purchasing fish into a rather risky game of allergen roulette.”⁶⁵

Escolar—the laxative of the sea

Oceana Canada’s testing revealed that 80 per cent of the white tuna samples collected from Ottawa sushi restaurants were actually escolar, an oily whitefish that can cause acute gastrointestinal symptoms. Individuals who eat more than a few ounces risk diarrhea, vomiting and nausea. This is in line with studies conducted by Oceana in the U.S., which found that 84 per cent of white tuna was actually escolar.

In 2007, several people in Toronto and Vancouver became ill when they purchased escolar labelled as cod.⁶⁶ This followed a similar incident in Hong Kong, which resulted in 600 people getting sick.⁶⁷ Although Canada has issued special guidelines for the sale of escolar, frequent mislabelling leaves consumers susceptible to unintentional consumption. Escolar is banned in Japan, South Korea and Italy.⁶⁸

The hidden risks of farmed fish

Selling farmed fish as wild can result in health risks for consumers. According to CFIA, certain species of farmed fish, including tilapia, salmon and catfish, may contain drug residues that pose health hazards.⁶⁹ For example, fish raised in aquaculture pens can carry antibiotics and dyes that would not be present in wild fish. Oceana Canada has found farmed tilapia sold as snapper, farmed catfish sold as sole and farmed salmon sold as wild. In some cases, much higher levels of certain contaminants are found in farmed salmon.⁷⁰ In fact, a Toronto public health guide recommends that pregnant women avoid farmed salmon and eat only wild salmon.⁷¹

Ciguatera

Ciguatera, a natural toxin in certain reef fish from affected waters, can cause long-term debilitating neurological symptoms. In 2011, CFIA warned the public against consuming a brand of leatherjacket—a large species of smooth puffer—imported from China after at least two diners were poisoned from ciguatera.⁷² Ciguatera is also associated with several species of amberjack, including Japanese amberjack. Oceana Canada’s study found that sushi restaurants in Ottawa frequently serve Japanese amberjack mislabelled as Hamachi, which is not an acceptable market name under CFIA regulations.

WHERE IS GENETICALLY MODIFIED SALMON?

The first shipment of genetically modified salmon in the world arrived in Canada earlier this year and likely ended up on the plates of Quebec consumers without their knowledge. Wherever consumers stand on genetic modification of food, they deserve to know more about their seafood before it arrives on their plates.

ECONOMIC RISKS

Seafood fraud cheats consumers, who are not getting what they pay for, and honest fishers and seafood businesses, who face unfair market competition when low-cost substitutions undercut prices for responsibly caught seafood.

Seafood fraud hurts your wallet

Oceana Canada’s testing in Ottawa found numerous examples of cheaper fish being labelled or sold as more expensive ones.

Southern blue whiting was sold as Atlantic cod. The price difference between these two species is significant. For example, online fish retailer Seafoodonline.ca sells southern blue whiting for \$7.33 per kilogram and Atlantic cod at \$33.33 per kilogram—4.5 times as much!

Dishes and products labelled as red snapper often turned out to be tilapia. Another online fish retailer, Giant Online, sells tilapia for \$6.09 per kilogram and red snapper for \$19.90 per kilogram—three times more expensive.

Seafood fraud threatens the Canadian economy

Seafood is an important part of Canadians’ diets and of Canada’s economy. The commercial fishing and aquaculture sectors provide more than 80,000 direct jobs⁷³ and in 2016 exported a record \$6.6 billion in fish and seafood products.⁷⁴ When including related businesses such as processors and restaurants, the ocean economy generates more than 300,000 jobs and contributes an estimated \$40 billion to Canada’s gross domestic product annually.⁷⁵

Although the cumulative economic losses from seafood fraud are unknown, seafood industry sources agree that even small price changes add up to major losses.





“FOOD FRAUD REPRESENTS A \$52 BILLION PROBLEM WORLDWIDE AND IS ALLEGEDLY WORTH MORE THAN THE HEROIN TRADE AND FIREARMS TRAFFICKING COMBINED.”

– DR. SYLVAIN CHARLEBOIS, PROFESSOR OF FOOD DISTRIBUTION AND POLICY, DALHOUSIE UNIVERSITY.

CONSERVATION RISKS

The world’s oceans are in trouble. Overfishing and the destruction of important habitats have led to severely depleted fish populations and more and more marine animals are ending up on a growing list of species threatened with extinction.⁷⁶

Seafood fraud makes destructive fishing profitable

Canada’s lack of requirements for traceability, catch documentation and comprehensive product labelling creates a market for illegal fishing by making it easy to import illegally caught seafood products into the Canadian market. This undermines responsible fisheries management and efforts to prevent overfishing, deter destructive fishing practices and protect areas and animals in need of conservation.⁷⁷

Seafood fraud threatens species at risk

According to Oceana’s global review of seafood fraud, 16 per cent of the species identified as substitutes are considered to be at some level of elevated conservation risk (either threatened or close to becoming threatened with extinction) by the International Union for Conservation of Nature (IUCN).⁷⁸

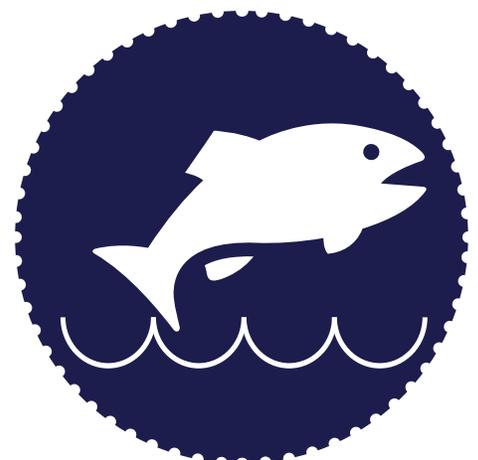
Oceana Canada found similar results in Ottawa:

- Lane snapper, one of the substitutes found, is near threatened due to overfishing, according to IUCN.⁷⁹
- White hake, another substitute, is listed as endangered by the Committee on the Status of Endangered Wildlife in Canada due to past overfishing and bycatch.⁸⁰ Seafood Watch recommends that consumers avoid white hake.⁸¹
- An instance of spinycheek grouper was found, a species listed as near-threatened by IUCN⁸² and not even on CFIA’s *Fish List*, which includes the acceptable names for labelling all seafood imported into Canada or produced by a CFIA-registered establishment.

Seafood fraud undermines consumer-driven conservation efforts

The widespread mislabelling of fish species prevents consumers from making responsible choices about their seafood. Market-driven conservation efforts depend on a consumer’s ability to make an informed purchase of a particular species based on its status, location and how it is caught.

Mislabelling can alter perceptions of the true availability of seafood and the state or health of fish populations. Because mislabelling maintains the appearance of a steady supply of popular fish, the general public remains unaware that the species may be at serious risk because of overfishing.⁸³ Red snapper, a wild-caught fish whose populations are vulnerable,⁸⁴ has an extremely high rate of mislabelling.^{85,86,87,88} In Oceana Canada’s Ottawa testing, none of the purported red snapper samples were actually red snapper. Since the market is flooded with fish mislabelled as red snapper, this creates the impression that the population is doing just fine.



FIGHTING SEAFOOD FRAUD: BOAT-TO-PLATE TRACEABILITY

An effective way to ensure seafood is safe and honestly labelled and put an end to illegal fishing is for fish to be tracked through every step of the process from the water to our plate.⁸⁹ Full chain traceability is the structured flow of information that makes it possible to systematically identify a unit of production, track its location and describe any treatments or transformations at all stages of production, processing and distribution.⁹⁰

TRACE OUR SEAFOOD

Today, non-governmental organizations, national governments and the seafood sector recognize the need for greater adoption of full chain digital traceability to ensure safe, legal and accurately labelled seafood products.⁹¹ In fact, both the EU and the U.S. have implemented traceability requirements to prevent both seafood fraud as well as the entry of seafood from illegal sources.

The more information that follows fish through the supply chain, the easier it is to prevent seafood fraud and the entry of illegally caught fish into the market. The basic information needed includes the who, what, where, when and how of fishing, processing and distribution. Seafood traceability creates transparency, helps prevent mislabelling and fraud and undermines the markets for illegally fished products.

Other benefits of traceability systems include ensuring a fair and transparent marketplace, improved customer confidence and trust,⁹² improved recall efficiency and reduced costs of recalls^{93,94} and more efficient value chains.⁹⁵

THE KEY ELEMENTS OF TRACEABILITY* ARE:

- Unique document number;
- Species-specific scientific name;
- Production method: wild-caught or farmed, gear type;
- Catch documentation: date, catch area, weight;

*Based on current EU requirements and forthcoming U.S. requirements.⁹⁶



**RESPONSIBLY
CAUGHT OR SUPPLY
CHAIN SLAVERY?**



FOOD TRACEABILITY, A MAJOR EMERGING SECTOR, IS EXPECTED TO REACH

\$14

BILLION GLOBALLY BY 2020.

- Key vessel identifiers, including vessel name and flag state;
- Evidence of authorization to fish: permits and licences; and
- Complete chain-of-custody information, including landing(s), transshipment, commingling, processing, distribution, export, import and re-export.

SOLUTIONS EXIST

An increasing number of innovators in the seafood industry recognize the importance of traceability and are creating new ways of making the system more transparent and products more traceable.⁹⁷ In fact, food traceability, a major emerging sector, is expected to reach \$14 billion globally by 2020.⁹⁸ An Oceana report looked at traceability pioneers, including wholesalers, retailers and restaurateurs in the U.S., to show that full chain traceability is feasible, even profitable. The report also showed that concrete solutions exist, which allow companies to trace their seafood products from the water to the final customer.⁹⁹

Some businesses have created their own tools, while others use third-party providers, such as TraceRegister. These traceability software platforms allow companies to share information, improve efficiency and manage logistics.

- Vancouver-based ThisFish is a consumer-focused traceability system designed to allow consumers to connect directly with the fishers who caught their fish. Fish are identified upon landing with unique alpha-numeric or quick response (QR) codes that can be scanned by customers and provide them with information about the provenance of their product.
- Community-supported fisheries, such as Skipper Otto's Community Supported Fishery in Vancouver, provide short supply chains and maintain custody of the seafood from the boat to the customer, ensuring customers know who caught, processed and distributed their fish, precisely when, where and how. Authentic traceability results from fishers delivering their catch directly to customers with no auctions, distributors, aggregators, wholesalers, retailers or other third parties involved.
- DNA fingerprinting technology is highly capable of monitoring the industry and the rapidly falling cost of this technology makes these tools increasingly accessible.¹⁰⁰ For example, GrouperChek, a handheld testing kit that can identify grouper species, is now available for less than \$300.¹⁰¹

CASE STUDY: THE EUROPEAN UNION

The EU has enacted some of the world's strongest legal provisions to stop seafood fraud and IUU fishing. Its catch documentation system and strict labelling requirements provide a strong example for Canada to adopt.

At the turn of this century, the EU began developing legal provisions aimed at tracing seafood and providing more consistent information to consumers.¹⁰² Following these early provisions, academic and government-sponsored seafood mislabelling investigations revealed weaknesses in the rules and their implementation and enforcement. These studies, which gained media attention, likely helped sway the public and policymakers to strengthen rules governing the EU seafood market.

In 2008, the EU established measures for combatting IUU fishing, which included, among other things, a third-country "carding" process. It imposes import restrictions on countries that are not actively addressing IUU fishing, penalties for EU nationals who engage in or support illegal fishing around the world and a catch certification scheme with catch documentation requirements for all imported seafood

in the EU market.¹⁰³ Catch certificates must be issued by competent national authorities at the country of origin.

In 2012 and 2014, the EU adopted additional provisions requiring even more stringent traceability and labelling to ensure seafood can be traced from catch or harvest to the retail level (i.e., grocers and restaurants).¹⁰⁴ Key information, including lot codes, vessel or aquaculture identifiers, catch documentation and scientific names, is required to be available throughout the supply chain.

The mandatory information now available to EU buyers and consumers about most of their seafood includes:

- Commercial and scientific names of the product;
- Production method: wild-caught (at sea or in freshwater) or farmed;
- Catch or production area where the fish was caught or farmed;
- Fishing gear used;
- Whether the product is fresh, frozen or had been previously frozen;
- "Best before" and "use by" dates; and
- Information about allergens.¹⁰⁵

A COMPARISON OF FRAUD RATES IN THE EU VERSUS THOSE IN CANADA AND THE U.S. STRONGLY SUGGESTS THAT EU LEGAL PROVISIONS ARE CONTRIBUTING TO A REDUCTION IN SEAFOOD MISLABELLING.



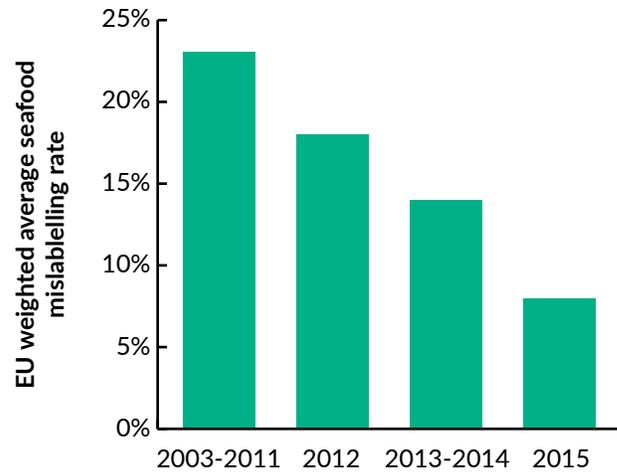
ARE THE RULES WORKING?

Studies of the EU's measures indicate that they are effective. The studies, which were done both before and after the stronger fisheries control, traceability and seafood labelling rules were implemented, have shown that, for the most part, where regulations have been in effect and enforced, rates of fraud have decreased.¹⁰⁶

Other factors that contributed to the decrease in seafood mislabelling and strengthened the political will to enact reforms were the large number of studies on mislabelling done since 2010, increased media attention and consumer awareness of the issue, EU-funded research on the problem and finally, increased monitoring and enforcement.¹⁰⁷

No such trend is evident in Canada or the U.S., regions with fewer requirements for transparency or traceability and comparatively less information available to consumers.

DECREASING TREND IN EU SEAFOOD MISLABELLING RATES¹⁰⁸



CASE STUDY: THE UNITED STATES AND THE SEAFOOD IMPORT MONITORING PROGRAM

Following the release of Oceana's seafood fraud reports¹⁰⁹ and subsequent growing public attention, President Obama established the Presidential Task Force on Combating IUU Fishing and Seafood Fraud,¹¹⁰ which released a list of 15 final recommendations in 2015.¹¹¹

In 2016, the Task Force finalized new regulations to enable U.S. authorities to require catch documentation and traceability measures for some imported seafood, from catch to the U.S. border.¹¹² The Seafood Import Monitoring Program, in effect as of January 1, 2018, establishes permitting, data reporting and record-keeping requirements for the importation of 13 species groups of seafood, including cod, shrimp, swordfish and

tuna. These species, which represent 40 per cent of the seafood entering U.S. markets, are deemed to be at risk of seafood fraud and illegal fishing.

Importers will be required to provide sourcing and chain-of-custody information similar to that of the EU, including the scientific name, harvest location, gear type, vessel identifiers and any transshipments and commingling or processing details.

Although there are serious limitations to the program, including its application to only 13 species groups, traceability only being required to the U.S. border and the lack of increased consumer labelling, this is an important first step.



CANADIAN POLICY IS INADEQUATE

Canada lags far behind other jurisdictions like the U.S. and the EU in terms of traceability, catch documentation and product labelling requirements. The federal government's current efforts will do little to resolve the key drivers of seafood fraud.

Fisheries and Oceans Canada (DFO) has the lead federal role in managing Canada's fisheries and safeguarding its waters. It coordinates government policies and programs respecting oceans and acts to prevent, deter and eliminate illegal fishing.¹¹⁴ DFO's External Relations division is tasked with market access issues that involve international trading partners.

Health Canada establishes policies, regulations and standards related to the safety and nutritional quality of all food sold in Canada. Health Canada is responsible for assessing CFIA activities related to food safety.¹¹⁵

Under the Growing Forward 2 program, Agriculture and Agri-Food Canada is the federal department responsible for seafood marketing and promotion.¹¹⁶

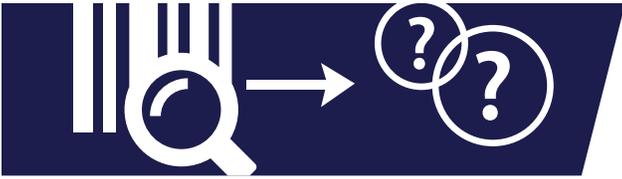
To further complicate the regulatory landscape, provinces and municipalities also play a role in regulating various levels of the seafood supply chain. However, these responsibilities are not consistent across the country.



FRAGMENTED REGULATORY SYSTEM

In Canada, no single agency is in charge of combatting seafood fraud. Instead, seafood trade is regulated and managed by multiple government departments at the federal, provincial and municipal levels.

At the federal level, seafood sold internationally or interprovincially is regulated by CFIA, whose mandate is to ensure the safety of Canada's food supply. CFIA sets and enforces inspection and verification standards, as well as other laws and regulations, such as those concerning labelling.¹¹³



LACK OF TRACEABILITY

Very little information is available on traceability and record-keeping requirements for fish supply chains in Canada and there are few standardized traceability requirements. Only a common name and country of origin (which may actually be the country in which the product was last transformed or processed) must follow products throughout the supply chain.¹¹⁷

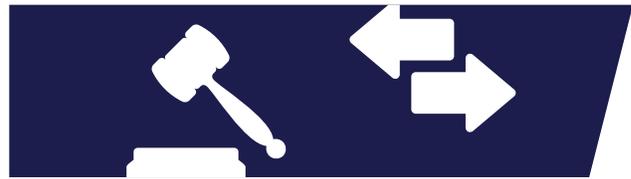
Although CFIA has recognized this as an issue and included traceability in its proposed Safe Food for Canadians Regulations, the requirements for traceability in the proposed regulations do not go far enough. Nor do they meet the Agency's own objectives to strengthen Canada's reputation as a food safety leader and secure access to existing markets or to ensure timely and efficient recalls.

This is clear from a comparison of the definitions of traceability used by CFIA and the EU. CFIA states that: "traceability is a way to track the movement of a food one step back and one step forward."¹¹⁸ EU legislation states that "all lots of fisheries and aquaculture products shall be traceable at all stages of production, processing and distribution, from catching or harvesting to the retail stage."¹¹⁹



INSUFFICIENT IMPORT REQUIREMENTS

The information collected by CFIA at the point of import includes only the common name, a taxonomic serial number (corresponding to a scientific name), the production method and the country of harvest.¹²⁰ This is insufficient to ensure that fish from illegal sources are not entering the country. For example, no information is required about the specific catch area, the vessel or chain-of-custody information, including all processing and transshipments. Furthermore, this information is not required to travel with the product through the supply chain.



INADEQUATE ENFORCEMENT AND INSPECTION

According to Dr. Sylvain Charlebois, food fraud expert and professor in food distribution and policy at Dalhousie University, despite hundreds of investigations by CFIA into seafood fraud and mislabelling, few companies have been fined.¹²¹ In the few instances where penalties were issued, they were very weak. For example, when MGM Restaurant in Nanaimo pleaded guilty in 2008 to two violations of the Food and Drugs Act for selling a low-end pollock mixture as scallops as well as for selling pork as veal, it only received a \$5,000 fine.¹²²

Notwithstanding the significant quantity of seafood imported into Canada, only an average of five per cent of annual imported lots are inspected.¹²³ These inspections are carried out to determine whether samples are suitable for human consumption, rather than to identify the fish or where there has been fraud or mislabelling.¹²⁴

Despite Canada's leadership role in developing the DNA barcoding technology used to identify species, CFIA has yet to adopt DNA barcoding as a regulatory tool.¹²⁵ In contrast, the United States Food and Drug Administration adopted DNA barcoding in 2011 as a seafood inspection tool to detect seafood fraud.^{126,127,128} Where specific concerns arise, CFIA employs electrophoresis, a much less efficient authentication technology that can identify only a limited number of species in comparison with DNA barcoding.¹²⁹

Adequate inspections and enforcement are important for deterring practices such as seafood fraud. If an actor believes that their chances of getting caught are low and that the consequences will be light even if they are caught, they are more likely to commit fraud.



POOR LABELLING STANDARDS

In Canada, the only information required on seafood labels is a generic marketplace name and the country of origin. Naming protocols, which are based on CFIA's *Fish List*, allow many different species to be listed under the same common name. For example, more than 200 species can be listed as snapper, more than 100 as rockfish, 125 as crab, 40 as shrimp, 21 as sole and 14 as tuna.¹³⁰ Country-of-origin labelling regulations allow the country of the last substantial transformation to be the only location listed. This means that in Canada we do not know what we're buying or where it was caught or farmed. This was apparent in the summer of 2017, when stories of Russian sockeye salmon being marketed as local sockeye in Vancouver stores generated controversy.¹³¹

CFIA was recently awarded a failing grade by environmental group SeaChoice for its seafood labelling practices. SeaChoice compared Canadian seafood labelling requirements to those of the U.S. and the EU and found that Canada lagged behind both in terms of the information required.¹³²



CANADA RISKS FALLING BEHIND GLOBALLY

Canada continues to lag behind two of its most important trading partners.¹³³ The EU is the largest importer of seafood in the world and has implemented stringent catch documentation, full chain traceability and comprehensive labelling requirements. The U.S. is moving quickly in this direction.

The Canadian-European Comprehensive Economic and Trade Agreement (CETA) came into effect in September 2017. EU tariffs immediately dropped from an average of 11 per cent—with some as high as 25 per cent—down to zero on 96 per cent of Canadian seafood exports. According to DFO,

CETA has the potential to increase Canadian exports by more than \$500 million.¹³⁴ In order for Canadian companies to access European markets, they must provide catch certificates and chain-of-custody information. Although companies can access this documentation through DFO's Catch Certificate program, standard regulations around catch reporting are not adequate to allow Canadians to export to the EU.

The U.S. is currently the top destination for Canadian seafood, receiving 66 per cent of exports.¹³⁵ If Canadian exporters of the species affected by the U.S. Seafood Import Monitoring Program want to keep exporting to the U.S., suppliers will need to improve their traceability and record-keeping systems in order to meet the new requirements.

With more stringent traceability requirements emerging in some of Canada's key export markets, the current traceability information required by the Canadian government may soon not meet foreign market standards.

MORE THAN
200
SPECIES
CAN BE LISTED
AS SNAPPER.



**CANADA RISKS
DAMAGING ITS
REPUTATION AS A
GLOBAL FOOD SAFETY
LEADER.**

HOW CANADA CAN STOP SEAFOOD FRAUD

In September 2017, chefs, restaurant owners, seafood industry leaders and thousands of Canadians joined Oceana Canada to demand that CFIA and DFO make combatting seafood fraud a priority.

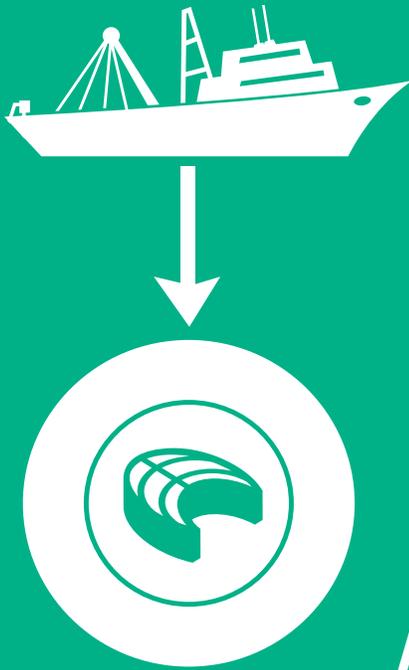
Approximately 85 per cent of Canada's seafood is exported, with about 66 per cent going to the U.S. and 10 per cent going to the EU.¹³⁶ Due to the clearer and more stringent traceability requirements of these major trading partners, a significant proportion of Canadian seafood suppliers and producers are implementing traceability systems for export purposes that are more robust than those required domestically.

SOLUTIONS

To most effectively fight seafood fraud and illegal fishing, Canada must establish a comprehensive system that harmonizes with those of its trading partners and builds more transparency into the supply chain. It must do this by requiring catch documentation, full chain traceability and improved consumer information.

85%
OF CANADA'S SEAFOOD
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1. TRACE ALL SEAFOOD FROM BOAT TO PLATE

The best way to put an end to illegal fishing and ensure that our seafood is both safe and honestly labelled is for fish to be tracked from boat to plate. National traceability requirements must be introduced so that key information flows through the supply chain with the seafood product.

CFIA must require that key product data and critical information follow all seafood products throughout the supply chain, from the boat or farm to the point of final sale, whether a restaurant, grocery store or fish market. This information should include the who, what, where, when and how of fishing, processing and distribution.

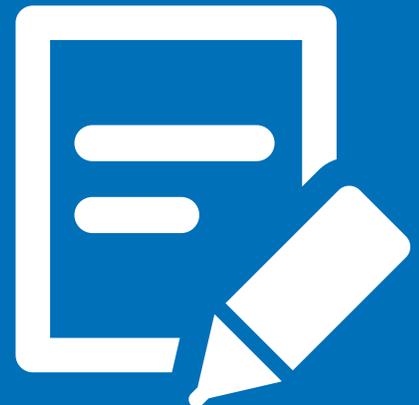
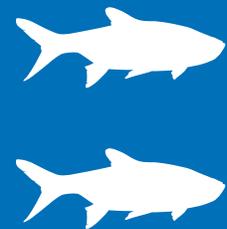
2. REQUIRE ELECTRONIC CATCH DOCUMENTATION

Catch documentation identifies the origin of the seafood and demonstrates that it has been harvested legally, with authorization and in compliance with relevant conservation and fisheries management measures.¹³⁷ A catch documentation scheme must require that information on catch, landings, transshipments, processing, distribution, imports, exports and re-imports accompany the seafood product.

FAO recommends moving beyond paper documentation and implementing electronic traceability systems.¹³⁸ Traceability systems must be electronic to allow regulatory bodies to access and screen the collected information in real time.

DFO established a Catch Certification Program in 2010 to meet EU traceability requirements and provide proof that Canadian fish and seafood do not originate from IUU fisheries. Currently, only products destined for the EU, Chile, Japan and Ukraine are issued catch certificates.¹³⁹

CFIA must work with DFO to require catch documentation for all domestic and imported seafood, in line with that currently required by the EU and recommended by FAO.





3. INTRODUCE TRACEABILITY VERIFICATION MEASURES

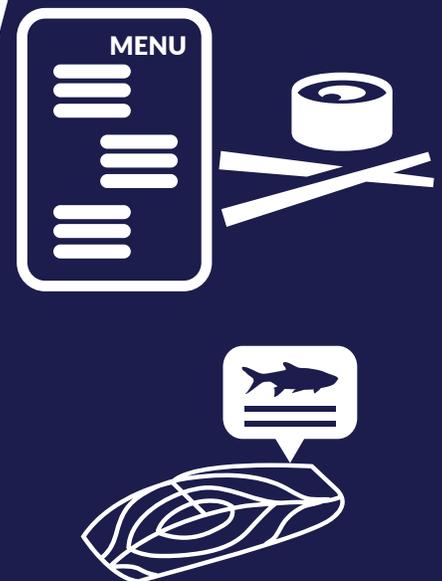
Verifiability refers to the elements of the traceability scheme that provide a series of checks and balances for the information received. These include the extent to which the information is audited by a third party, as well as the existence of penalties and sanctions for noncompliance.¹⁴⁰ For traceability to be effective, the requirements must include inspections, enforcement and verification mechanisms at levels high enough to deter fraud.¹⁴¹

CFIA must introduce DNA testing for species authentication into their inspection program¹⁴² or an equivalent species authentication technology. Traceability audits to check for systemic problems and false documentation are necessary components of an effective traceability system.¹⁴³

4. IMPROVE CONSUMER INFORMATION

Canadian consumers deserve to know that they're eating safe, honestly labelled and legal fish.

CFIA's labelling standards—which should apply to wholesale, retail and food services, including restaurants—must be brought in line with those used in the EU and include essential information such as the species' scientific name, whether the fish was wild-caught or farmed, where it came from (geographic origin) and the type of fishing gear used.





WHAT CONSUMERS CAN DO

WAYS TO PROTECT YOURSELF WHEN BUYING FISH:

- **Buy a whole fish:** it's harder to misrepresent a whole fish than a fillet.
- **Know the fish you eat:** when purchasing fish, ask what species it is, where and how it was caught and if it is sustainable. This can trigger a chain reaction extending back to the seafood supplier.
- **Be wary of fish that seems cheaper than it should:** if a price seems too good to be true, it probably is.
- **Learn about the seasonality of your favourite seafood products:** products sold out of season are more likely to be fraudulent.

HELP STOP SEAFOOD FRAUD IN CANADA:

- Support companies and fishers that have voluntary traceability and those that share information about their fish with the purchaser.
- Add your name to the petition at oceana.ca/StopSeafoodFraud.
- Reach out to your local government officials and CFIA representatives to demand better seafood traceability.
- Join Oceana Canada as a *Wavemaker* at oceana.ca to stay connected and get the latest updates on ending seafood fraud in Canada.



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**TO MOST EFFECTIVELY
FIGHT SEAFOOD FRAUD
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INTO THE SUPPLY CHAIN.**

WE CAN SAVE THE OCEANS AND FEED THE WORLD.

Oceana Canada was established as an independent charity in 2015 and is part of the largest international advocacy group dedicated solely to ocean conservation. Canada has the longest coastline in the world, with an ocean surface area of 7.1 million square kilometres, or 70 per cent of its landmass. Oceana Canada believes that Canada has a national and global obligation to manage our natural resources responsibly and help ensure a sustainable source of protein for the world's growing population.

Oceana Canada works with civil society, academics, fishers, Indigenous Peoples and the federal government to return Canada's formerly vibrant oceans to health and abundance. By restoring Canada's oceans, we can strengthen our communities, reap greater economic and nutritional benefits, and protect our future.

