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# Species substitution in the seafood industry

*Nordic workshop on food fraud*

*Reykjavík 24. 09. 2018*

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*Product development and Value Chain*

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# Content of presentation

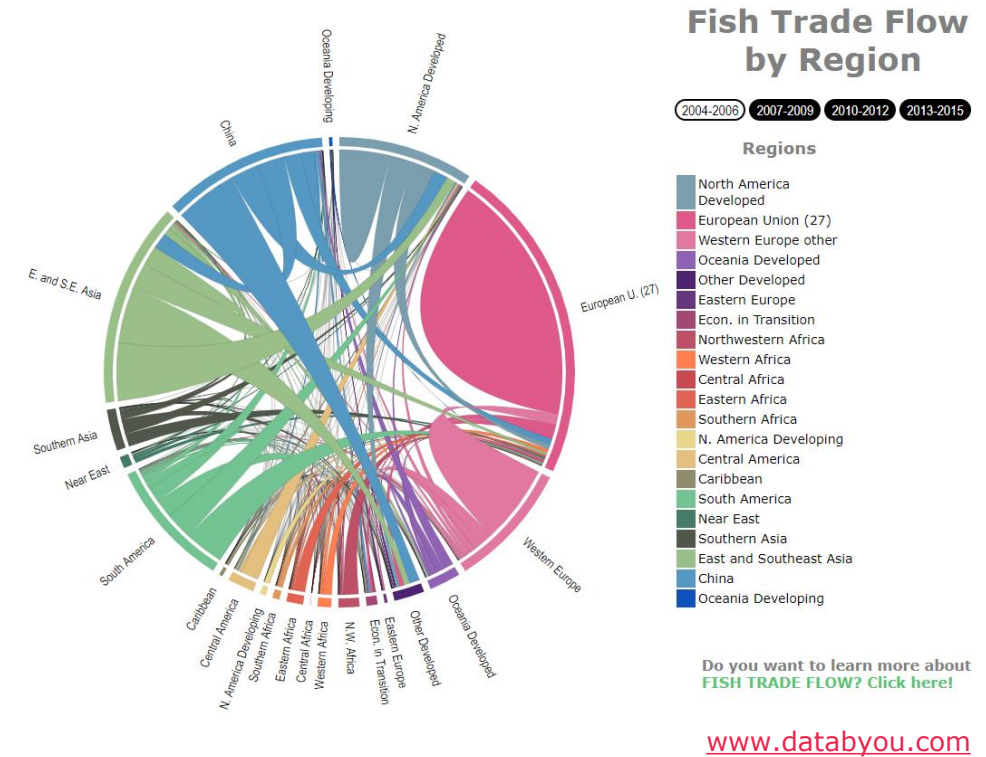
- **Seafood Species substitution – mislabelling**
- **Other mislabeling of seafood**
  - Falsifying place of origin
  - Claims and certifications
  - Fresh / frozen
  - Short-weighting / over glazing
  - Additives
  - Food safety
- **EU projects and other initiatives on (sea)food fraud**



# Why is seafood vulnerable to fraud?

- Fish is the world's single-most traded food commodity with an estimated export value of \$130bn in 2013. The estimated global fish export volume during the year was 57.8 million tonnes.
- Soybean was in second place with \$58bn and 108 million tonnes.
- Wheat was in third place with \$45bn and 154 million tonnes.
- Palm oil in fourth place with \$39bn and 43 million tonnes.
- Beef and Veal in fifth place with \$36bn and 56 million tonnes.

(Praveen Duddu, 2014)



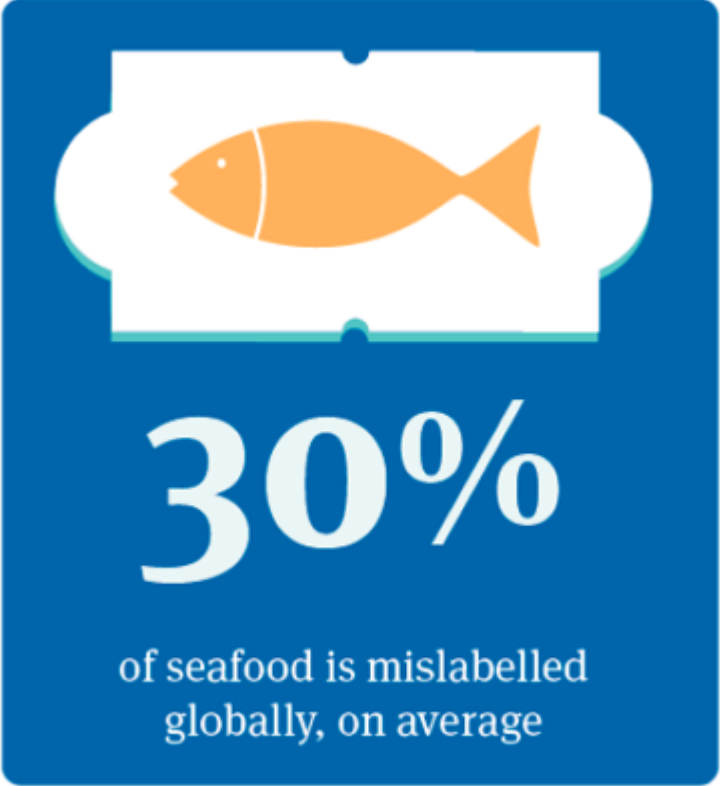
# Most fraudulent food items

1. Olive oil
2. Milk / dairy
3. Honey
4. Saffron
5. Orange juice
6. Coffee
7. Apple juice
8. Tea
9. Fish
10. Spices, balsamic vinegar, caviar, vines and spirits etc..





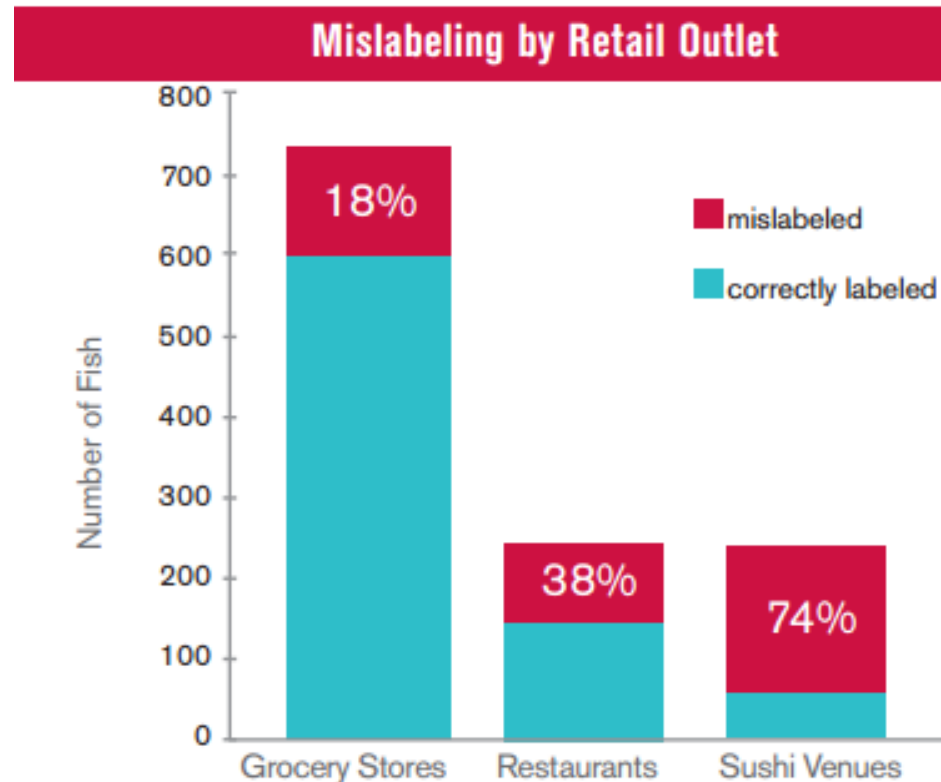
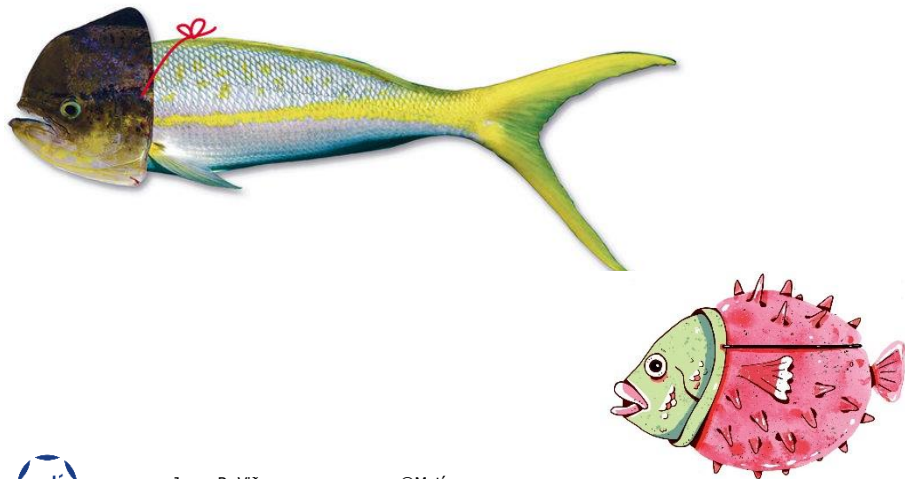
# Species substitution - mislabelling



# Species substitution - mislabelling

## Report from Oceana published in 2013 about mislabeling in the USA

- 1.200 samples from 674 outlets in 21 states of USA
- 33% mislabeling
- Red snapper 87% mislabeling
- White tuna 59% mislabeling
- Cod 32% mislabeling
- Salmon 7% mislabeling

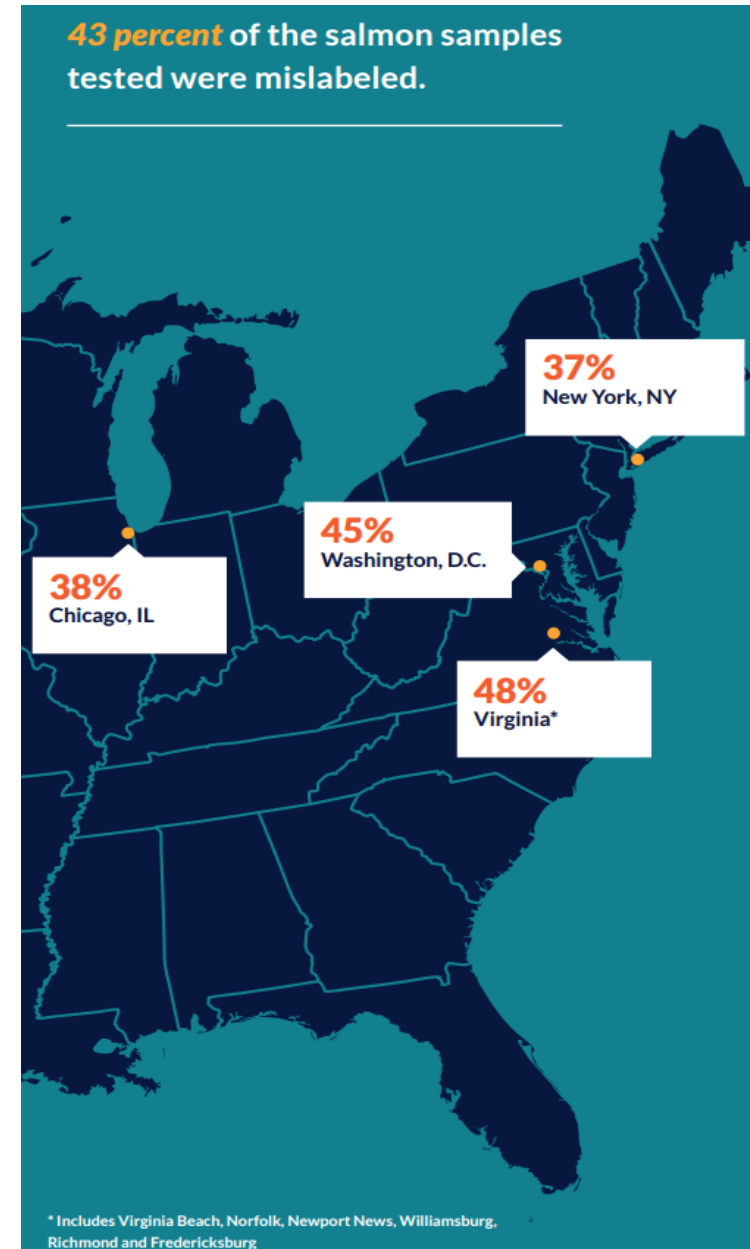


Commonly Mislabeled Fish	
What You Bought	What You Got
Chilean seabass	Antarctic toothfish
Alaskan/ Pacific cod	Pangasius (Asian "catfish"), Atlantic cod, threadfin slickhead, tilapia
Atlantic cod	Pacific cod, white hake
grouper	Pangasius (Asian "catfish"), king mackerel, whitefin weakfish
Alaskan/ Pacific halibut	Atlantic halibut, blue-line tilefish
salmon (wild, king and sockeye)	farmed Atlantic salmon
sea bass	Antarctic toothfish, Patagonian toothfish
snapper	giltheaded seabream, madai, tilapia, Pacific ocean perch, widow rockfish, yellowtail rockfish
red snapper	Caribbean red snapper, crimson snapper, spotted rose snapper, Pacific ocean perch, yellowtail rockfish, giltheaded seabream, madai, tilapia, white bass

# Species substitution - mislabelling

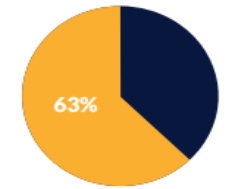
## Oceana report from 2015 focusing solely on salmon showed

- The situation was much worse than the 2013 report indicated.
- 43% mislabeling.
- Most common to sell farmed Atlantic salmon as wild Chinook, King and Sockeye
- Mislabeling much more common in restaurants than in grocery stores

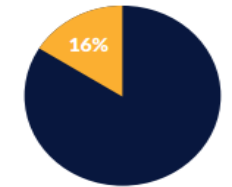


## mislabeled in restaurants than grocery stores.

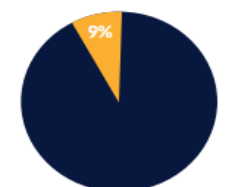
Correctly Labeled (Dark Blue) Mislabeled (Orange)



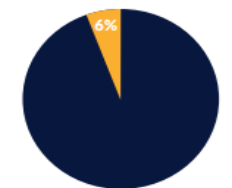
Out-of-Season Salmon from Restaurants



In-Season Salmon from Restaurants



Out-of-Season Salmon from Grocery Stores



In-Season Salmon from Grocery Stores

Oceana's combined salmon data (466 samples)

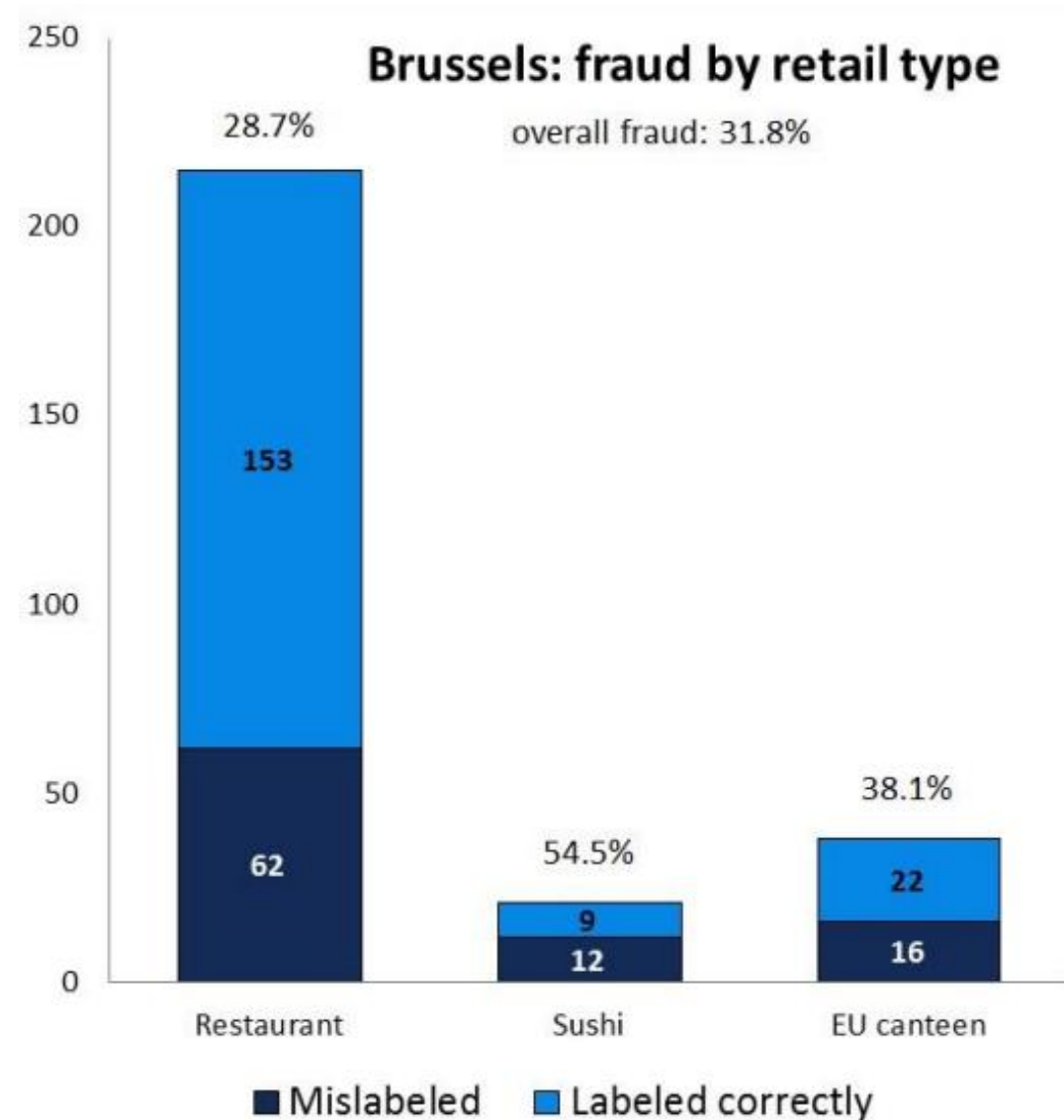
# Species substitution - mislabelling

## Oceana report about seafood mislabeling in Brussels

EC has invested a lot of funds and efforts in addressing food fraud.

Oceana did therefore look specially at mislabeling of seafood in Brussels and specifically at EU canteens in Brussels.

The results were shocking.....32% overall mislabeling and 38% mislabeling in EU canteens

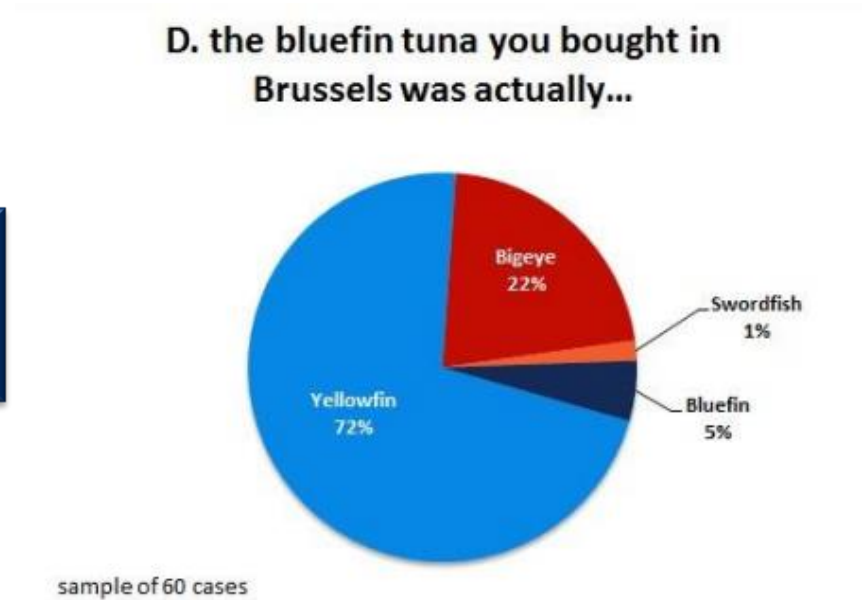
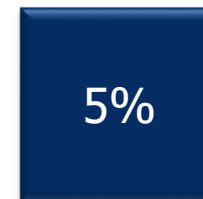
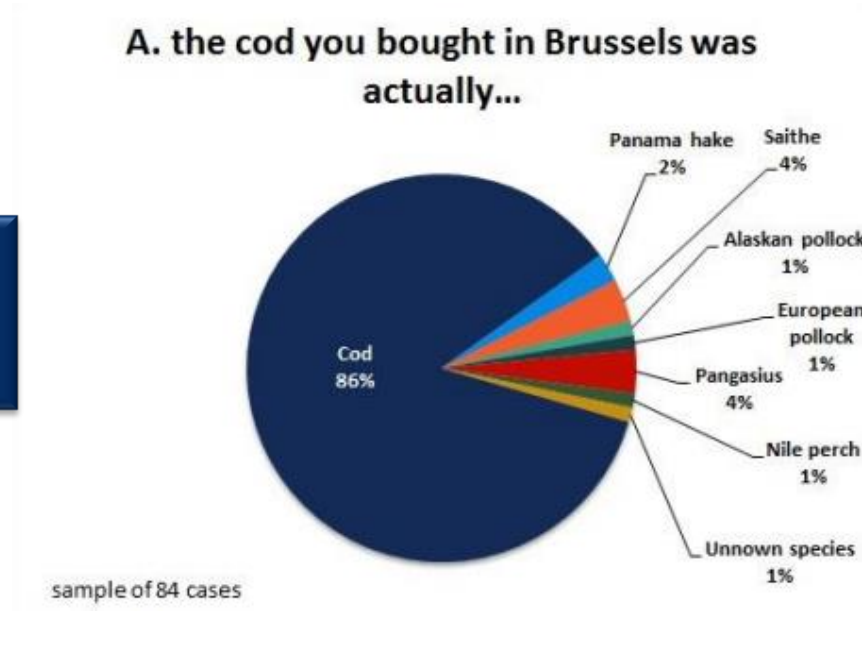
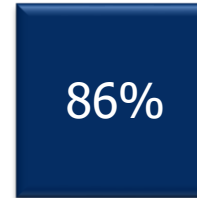




# Species substitution - mislabelling

## Oceana report about seafood mislabeling in Brussels

“Oceana carried out DNA testing on 280 fish samples collected from major restaurants and EU institutions canteens in Brussels – facilities used by EU civil servants and politicians. The testing focused on commonly served fish species under the denomination of cod (*Gadus spp.*), common sole (*Solea solea*) and bluefin tuna (*Thunnus thynnus*), and aimed at verifying the exact species sold and its origin in comparison to EU and Belgian law. Samples were analyzed by the Laboratory of Biodiversity and Evolutionary Genomics from the Katholieke Universiteit of Leuven. The results show an overall 31.8% of clear cases of mislabelling based on information gathered from either the menu or from restaurant staff. More than 77% of samples focused on popular restaurants from the EU districts and the city centre, with a particular focus on specialised fish restaurants. 15% of samples came from within the EU institution’s own canteens (EU Commission and European Parliament), while the remaining covered sushi restaurants.”



# Species substitution - mislabelling

**The UK Food Safety Authority published a report in 2011 revealing that 7% cod sold in Britain was not really cod.**

**This was followed with a similar research in Ireland that showed 28% mislabeling.**

- Takeaway sector with highest portion of mislabeling
- Pangasius og Alaskan Pollock most commonly substituted for cod
- 90% of the mislabeling is breaded & battered products or smoked products



# Species substitution - mislabelling

## Mislabelling also common in the Scandinavian countries

### 2014 Danish fishmongers cod red handed

MARINE conservation organization, Oceana has revealed high levels of seafood fraud amongst fishmongers in Denmark. Alongside the Danish newspaper Søndagsavisen and the TV program Go'Aften Denmark, Oceana conducted a study revealing that 18% of cod sold in fishmongers is not actually cod, but haddock or saithe. In total, 120 samples were collected from fishmongers, supermarkets and restaurants in the wider Copenhagen region in order to undergo DNA analysis.



# Species substitution - mislabelling

In 2016 Matis took 56 samples from 22 HoReCa outlets.  
13 samples (23%) turned out to be mislabelled

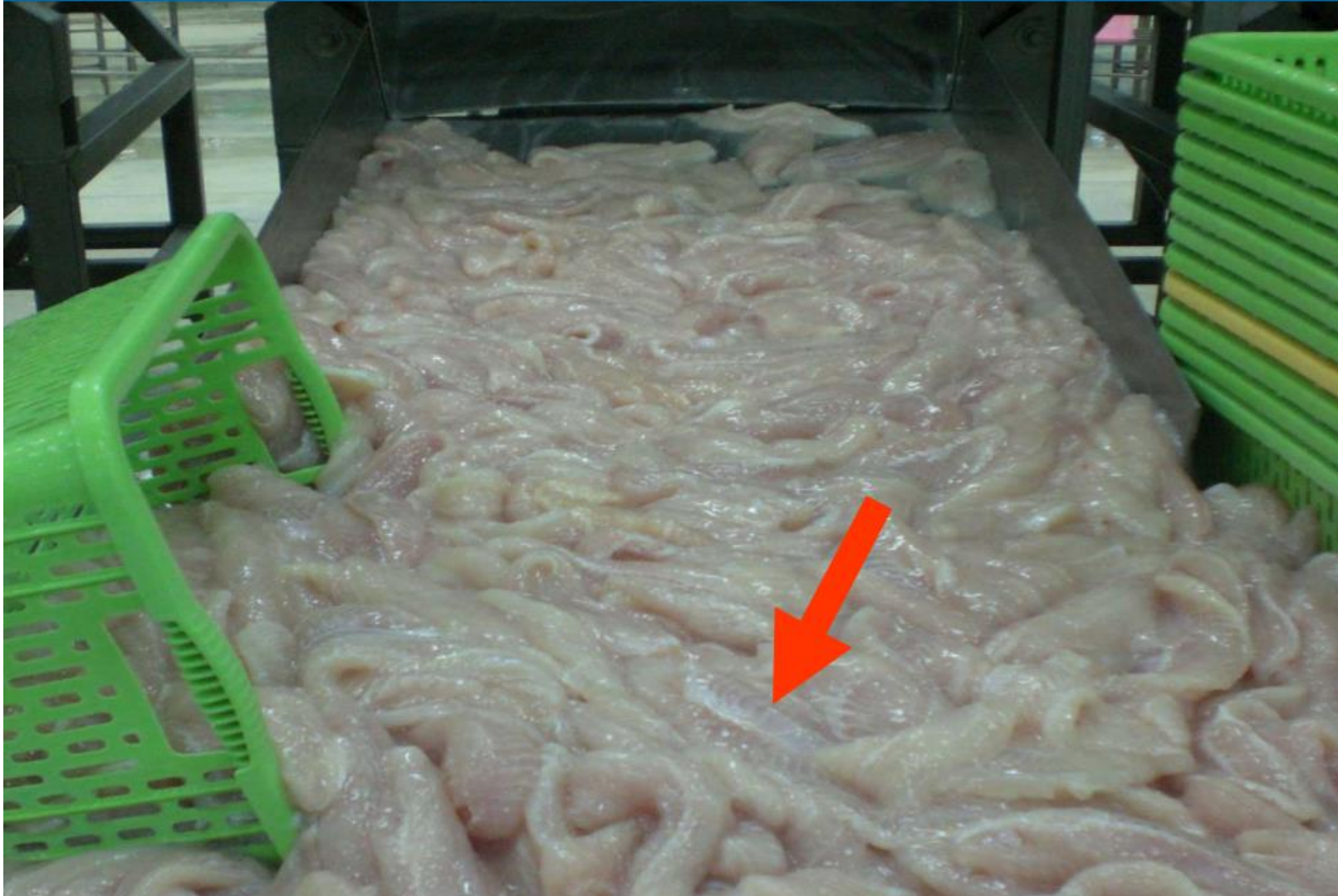
1. **Tusk sold as monkfish**
2. **Yellowfin tuna sold as Bluefin**
3. **Bigeye sold as Bluefin**
4. **Ling sold as cod**
5. **Ling sold as cod**
6. **Ling sold as cod**
7. Bigeye tuna sold as yellowfin
8. Bigeye tuna sold as yellowfin
9. Bigeye tuna sold as yellowfin
10. Wolffish sold as tusk
11. Haddock sold as cod
12. Wolffish sold as spotted wolffish
13. Spotted wolffish sold as wolffish





# Species substitution - mislabelling

White fish fillets at a processing plant: What are they?



Picture: Peter Whelan



# Species substitution - mislabelling



Picture: Peter Whelan





# Species substitution - mislabelling



Picture: Peter Whelan





# Species substitution - mislabelling

## Ambiguous labelling

- What is "Omega Fish"?
- Who would buy a 'Meat' Steak?
- What is River Cobbler?
- What is HekluBorri?





# Species substitution - mislabelling

## Circumventing the quota systems

- Choke species labelled as something else
- Species in quota labelled as species not subjected to catch limits



# Falsifying label of origin

- **Place of origin can provide competitive advantage**
  - Norwegian skrei,
  - Icelandic bacalao,
  - Bay of Biscay anchovy
  - etc.
- **Sustainable management and fish stocks**
  - Overfished stocks sold as well managed
- **Locally sourced**
  - Repacking or re-branding
- **Tariffs / taxes / import restrictions**



# Falsifying label of origin

## Tariffs / taxes / import restrictions (examples)

- Prawns caught in Canada and processed in Iceland, imported to UK as Icelandic because Iceland lower tariffs than Canada. Court case where the prawns were ruled to be Canadian.
- Russian/Barents sea H/G cod processed in Iceland and sold as product of Iceland.
- Salmon imported to Russia as Icelandic on "fake passport"
- Stories that frozen capelin and mackerel from Iceland is currently being imported to Russia and Ukraine ???
- One of the main export countries for Icelandic mackerel and capelin is Netherlands (Rotterdam)



# Falsifying label of origin



## IUU – Illegal, Unreported, Unregulated (Pirate fisheries)

- Estimated IUU up to 26 million tonnes a year globally, valued at 23 billion \$
- Estimated 500,000 tonnes of pirate fish entering the European Market each year, valued at 1.1 billion EUR

- ✓ Illegally Caught
- ✓ Transhipped at sea
- ✓ Re -Packaged
- ✓ Landed sometimes at ports of convenience
- ✓ Sold into the legitimate market





# Falsifying label of origin



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- ✓ Destruction of vulnerable stocks
- ✓ Compromising Stock assessments
- ✓ True catch of Eastern Baltic Cod estimated to be 35-45% greater than reported
- ✓ Unfair Trade
- ✓ Depressing price of legally caught fish
- ✓ Consumer fraud
- ✓ Lack of effective traceability
- ✓ Possibly Poor Food Safety Standards



# Claims and ecolabelling

## All sorts of claims on various favourable characteristics

- Ethical
- Responsible
- Organic
- CO2
- Food miles



# Claims and ecolabelling



- 1
- 2
- 3
- 4
- 5
- 6



# Claims and ecolabelling

## UK 2012

Cumbrian Seafoods lost reputation and incurred heavy losses in 2012 following a scandal where they were caught selling scrimp with BAP ecolabelling, which was not coming from BAP certified.

### Cumbrian Seafoods' BAP certification withdrawn

By SeafoodSource staff  
February 10, 2012

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The Global Aquaculture Alliance's Best Aquaculture Practices (BAP) program has withdrawn its certification of Cumbrian Seafoods Ltd. following allegations that the UK company marketed shrimp from a non-BAP-certified source as coming from a certified facility.

BAP Executive Director Jim Heerin warned in an e-mail on Friday that any abuse of the BAP logo or misrepresentation of product origin constitutes fraud and can lead to legal action.

"BAP vigorously defends the integrity of its brand, upon which the viability and credibility of the whole BAP certification process depends," said Heerin. "For this reason, the BAP program requires robust traceability systems in all certified facilities."

Cumbrian management informed the BAP program that it has terminated any identification of product as coming from BAP-certified facilities and is working to prevent misbranding in the future. Cumbrian was acquired Lion Capital out of administration last December.

The misbranded shrimp was reportedly sold at Asda stores in the UK. Asda is owned by Walmart.





# Fresh vs. Frozen

## Increasing market share of frozen thawed fish

Consumers not always aware of the meaning of:

- ✓ Fresh
- ✓ Chilled
- ✓ Refreshed
  
- ✓ May have been previously frozen
  
- ✓ Single frozen vs. Double frozen

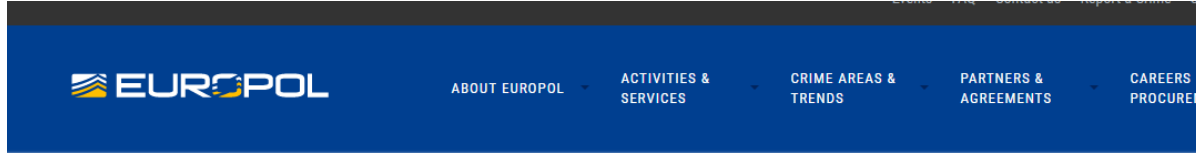


# Additives and food safety





# Additives and food safety



HOME > NEWSROOM > EUR 230 MILLION WORTH OF FAKE FOOD AND BEVERAGES SEIZED IN GLOBAL OPSON OPERATION TARGETING FOOD FRAUD

## EUR 230 MILLION WORTH OF FAKE FOOD AND BEVERAGES SEIZED IN GLOBAL OPSON OPERATION TARGETING FOOD FRAUD

25 April 2017

Press Release



Operation OPSON VI, the joint Europol-INTERPOL operation targeting counterfeit and substandard food and drink, as well as the organised crime networks behind this illicit trade, has resulted in the seizure of **9 800 tonnes**, over **26.4 million litres**, and **13 million units/items** worth an estimated EUR 230 million of potentially harmful food and beverages ranging from every day products such as alcohol, mineral water, seasoning cubes, seafood and olive oil, to luxury goods such as caviar.

### Portugal – More than 300 000 tin cans of fish seized in a factory

The Portuguese Food Safety and Economic Authority (ASAE) raided a factory in the area of Porto which resulted in the finding of processed fish manufactured without respect of safety rules. This outcome was achieved after several weeks of investigation and surveillance work. The plant was targeted as its licence to process food had been already withdrawn. ASAE uncovered illicit activities consisting in repacking almost expired sardines in tomato sauce, regardless of traceability and hygienic rules. Products were intended for exportation and intra EU deliveries. The business has been closed immediately after the action day. All material found in the premises was seized, namely 311 000 cans, 16 jars of tomato sauce, 9 900 packing boxes, 24 730 labels and 700 Kilos of salt.



# Additives and food safety

## FRAUD ON A PLATE: OVER 3 600 TONNES OF DANGEROUS FOOD REMOVED FROM CONSUMER MARKET

25 April 2018

Press Release



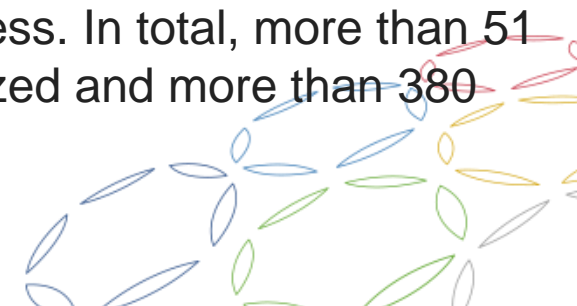
Trafficking in fake and substandard food is big business, and efforts to stop this global phenomenon are ongoing

Rotten meat, chemically coloured tuna and fake baby milk powder - these are just a small sampling of the products seized as part of the latest OPSON investigation into the presence of counterfeit and substandard food and beverage products on the market in Europe and beyond.

Run over the course of 4 months (December 2017 - March 2018) across 67 countries\*, OPSON VII resulted in the total seizure of more than 3 620 tonnes and 9.7 million litres of either counterfeit or substandard food and beverages as a result of more than 41 000 checks carried out at shops, markets, airports, seaports and industrial estates. In total some 749 people were arrested or detained with investigations continuing in many countries.



In this case, the tuna intended for canning was illegally treated with chemical substances that altered its colour to give the misleading impression of its freshness. In total, more than 51 tonnes of tuna were seized and more than 380 samples were taken.





# Short-weighting, over-glazing and over breading





# Research projects on seafood integrity



Labelfish finished last year. Thousands of DNA testing were done. Mislabeled dependent on geographical area, food sectors and how fragmented the value chains are.

<http://labelfish.eu/>



# Research projects on seafood integrity



[www.foodintegrity.eu](http://www.foodintegrity.eu)

Food integrity Network  
Publications

Download the [Food Integrity app](#)  
Download the [Food Integrity Handbook](#)



# Research projects on seafood integrity



<http://www.authent-net.eu/>

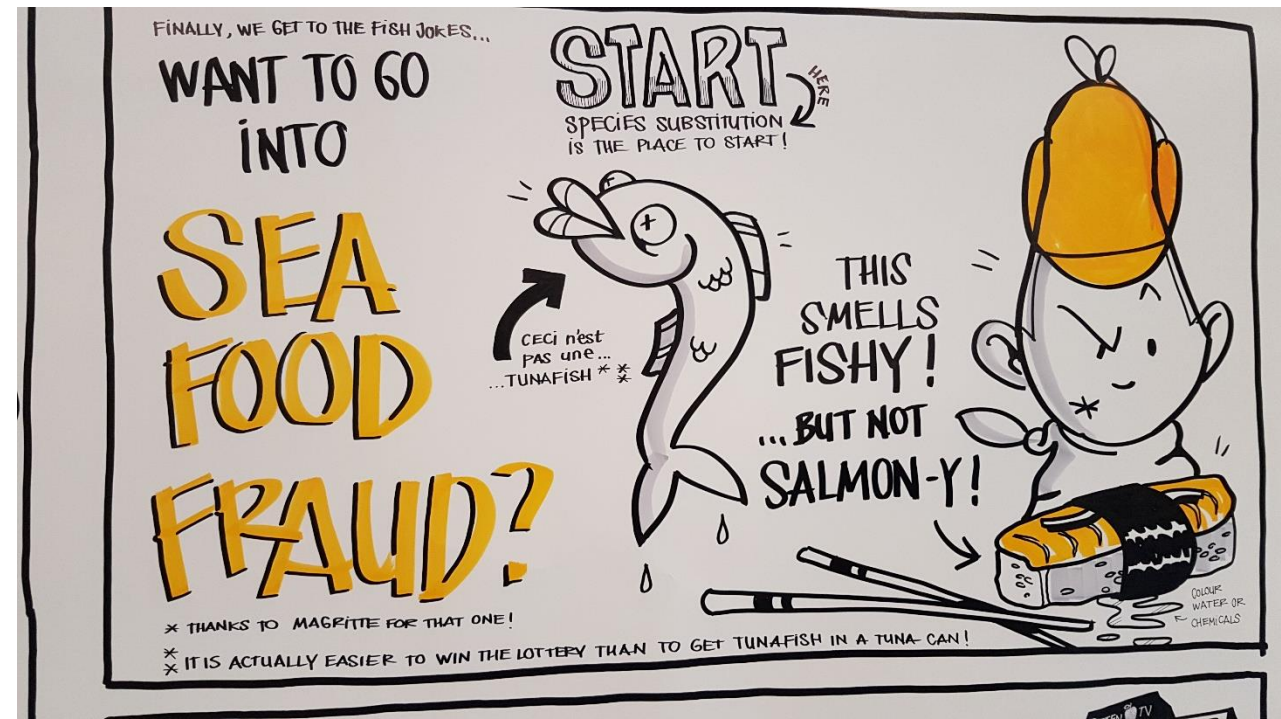
FARNHub

[http://www.authent-net.eu/AN\\_FARNH.html](http://www.authent-net.eu/AN_FARNH.html)

CEN-Workshop Agreement – [European standard on key terms and concepts](#)



# Thank you



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Kær kveðja / Best regards



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Kíktu / Look: [Twitter](#) / [LinkedIn](#) / [Facebook](#) / [Instagram](#) / [YouTube](#)  
Þessi tölvupóstur er eingöngu ætlaður þeim sem hann er stílaður á.  
Sjá nánar: [http://www.matis.is/fraedsla/medferd\\_tolvuposts](http://www.matis.is/fraedsla/medferd_tolvuposts)

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