Traceability - a tool to increase value of seafood products?

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Icelandic food research and Biotechnology

Matís is governmentally owned research institute which strives toward value creation in the food and biotech industries, food safety and public health
Definitions of traceability - no consensus

• Traceability defined in ISO 8402 (1994) as: “The ability to trace the history, application or location of an entity by means of recorded identifications”

• ISO 9000 (ISO, 2000) and ISO 22005 have a slightly less specific definition of traceability: “The ability to trace the history, application or location of that which is under consideration”.

• Traceability defined in Codex Alimentarius (FAO/WHO, 1997) defines traceability as “the ability to follow the movement of a food through specified stage(s) of production, processing and distribution”.

• The EU General Food Law (EU, 2002) defines traceability as “The ability to trace and follow a food, feed, food producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution”.

Definitions of traceability - no consensus
Definitions of traceability

• The most commonly referred definition of traceability that comes from a scientific paper is from Moe (1998). It says: “Traceability is the ability to track a product batch and its history through the whole, or part, of a production chain from harvest through transport, storage, processing, distribution and sales”.

In a product sense, this means that the product, or the traceable unit, shall be given a unique identification which is possible to trace/access information on including;
• the origin of materials and parts
• the product processing history
• the distribution and location of the product

The traceability concept has though expanded and is in the mind of most people in the seafood industry believed to include much boarder scope.
Definition of traceability

**Breadth:** the amount of information the traceability system records

**Depth:** how far upstream or downstream in the supply chain the system tracks

**Precision:** the degree of assurance with which the system can pinpoint a particular product’s movement or characteristics

**Access:** the speed with which track and trace information can be communicated to supply chain members
Current status in seafood chains - Status of traceability and recordkeeping highly variable

- Internal traceability usually good.
  - Integrated companies with for example catching, processing and marketing in the same company usually much more advanced
- New technology (standards) has made things more efficient i.e. electronic logbooks, fleet management and processing software's, different software solutions “talking together” now.
- Fragmented value chains though still miles behind and most of the information gets lost between links.
Traceability and legal requirements:

Previously:

Now: **EC 1224/2009 - Article 59**
All fishery and aquaculture products will need to be broken into traceable “lots” and basic electronic information will have to be attached. Full effect 1.1.2015 but some aspects already in effect (catch certificates for example)

- Lot Id
- Quantity
- Supplier
- Commercial name
- Scientific name
- Catch area
- Production method
- FAO alpha 3 code
- Name of fishing vessel or vessels
- Date of capture (landing)
- Whether previously frozen
Legal requirements and additional benefits

Traceability is necessary to follow up and facilitate numerous outcomes:

- EcoLabelling
- Quality
- Identifying potentials for improvements
- Demonstrating favorable characteristics
- Supply chain visibility
- Saving costs
- Streamlining value chain
- IUU/pirate fishing
- Documentation of sustainability
- Competitive advantage
- Chain communication
- Labour/cost reduction
- Certification
- Food safety
- Legislation
- Disseminating sustainability

(Source: Adapted from Olsen, 2005)
R&D projects

International seafood traceability projects

[Logos and images of Tracefish, WhiteFish, eTrace, WhiteFishMall, Sense, and Food Integrity]
Main outcome of this EC-funded TraceFish projects was two standards for seafood product traceability.

- In 2003 the TraceFish standards were published as CWA 14659 / 14660 “Traceability of fishery products — Specification of the information to be recorded in farmed / captured fish distribution chains”.
- In 2010 ISO TC234/WG01 delivered the ISO 12875 / 12877 “Traceability of finfish products — Specification on the information to be recorded in captured / farmed finfish distribution chains”, based on the CWAs.

TraceFish provided a standard for the seafood industry i.e. how to code, transmit or to make these data available in electronic form (XML format). The standard is though only voluntary and therefore only a limited number of companies using it.
R&D projects - eTrace (2009-2011)

Testing and demonstrating applicability of information capture and exchange by using the EPCIS (Electronic Product Code Information Service) standard from GS1.

Most of the research in this field presents traceability solutions where only the product packaging is used as traceable resource units (TRU-units) and tracked through the supply chains but fail to address the internal traceability issues linked to the production events within a food facility.

"Traceability has been a driver for increased sales, said Peter Kallstrom, owner of the retailer Fiskelyckan. Next to the cod we posted a map showing where the fish was caught and processed. The map told the story that our consumers have been waiting for, namely that the fish is local. We increased our sales x 10!"
“If the various initiatives start collecting their data in a standard format, all the different databases could be linked together in one huge internet for food.”

Knut Jörstad, TraceTracker’s chairman, New Scientist, June 2009.
**R&D projects - WhiteFish**

**WhiteFish**: “Automated and differentiated calculation of sustainability for cod and haddock products”

The objective of the WhiteFish project is to development of simple tool for self-assessment of sustainability – to enable small and medium-sized enterprises to make these calculations for themselves.

Information in the traceability systems used to profile environmental impacts on batch level.

[Graph showing greenhouse gas emissions per trip.]

[www.whitefishproject.org]
Example from fresh fillet chain

- Transport mode explains most of the EI

The catching link for long-line fishing in Iceland has extremely low carbon footprint.

Packaging impacts mainly caused by EPS.

Airfreight contributes to 85% of the carbon footprint in this chain.

Carbon footprint CO2 equivalent for long-lined cod and haddock fillets processed in Iceland and transported to UK by air- or sea freight.
The Sense project is very similar to the WhiteFish project, except there they are developing an online tool to calculate environmental impacts in food supply chains. Sense focuses on annual data, whilst WhiteFish focuses on batch based data (fishing trips). All depends on record keeping and traceability.

http://www.senseproject.eu/
R&D projects - WhiteFishMaLL

WhiteFishMaLL – North Atlantic Whitefish Living Lab

Nordic Marine Innovation project that has been running for the past three years. The main goals are:

a. to build a branding platform for whitefish from the North Atlantic that differentiates in terms of sustainable production and superior consumer benefits.

b. to demonstrate how Living Lab methodology can be applied in the marine industry

After a comprehensive work looking into consumer preferences and the applicability of meeting these consumer needs, we have developed and tested a web-based tool for disseminating to various links in the value chain information on favorable characteristics of N-Atlantic whitefish.

Some of the information is batch based, some will be updated regularly and some are static. The batch based information retrieved automatically from the documentation system of the supplier. Traceability is the key!!!
The tool is to be accessed through QR codes scanned with smart phones or tablets.

SMART FISH INSIDE
Check your smartphone

www.whitefishmall.com
R&D projects - WhiteFishMaLL

We have been testing the solution out in the UK.
- Fish&Chip sector has showed the biggest interest.
- There is a gap between what consumers want to know and what suppliers are willing to give away.

www.whitefishmall.com
The five-year FoodIntegrity project, supported by 12 million euros of EU funding, has been launched by the UK’s Food and Environment Research Agency (Fera)

- The project will bring together major stakeholders and scientific expertise from across the world to protect consumers and industry from food fraud.

- Food fraud is committed when food is deliberately placed on the market, for financial gain, with the intention of deceiving the consumer.

- There is a work package especially devoted to battling food fraud in the seafood industry. This WP is lead by Nofima in Norway, but Matís is a major contributor to that WP.

- Work in this field will be of interest to the Humber Seafood sector (more information on www.foodintegrity.eu or be directly in touch with us/me)
Success stories

Is traceability increasing value?

• Very difficult to proof and measure

• It is not the traceability itself, but the “story” that is possible to say because there is traceability

• The traceability is usually just one component of a bigger picture that collectively provide market access and price premiums.

• 18% price premium for line-caught and 10% for MSC-labelled is dependent on traceability (Sogn-Grundvåg et al. 2013)

• Eco-labelling dependent on traceability (chain of custody)
Success stories

Best practice example is the SIF system in Denmark

- The Danish electronic traceability system (SIF) provides full tracking from vessel and all the way to the consumers.

1. Fishermen provides tracking information in the same time as they upload data to their electronic logbook.
2. After the first sale, tracking information is updated automatically by the auctions as they form lots for sale.
3. Companies can download and upload updated tracking information on purchased fish. All users have access to tracking information on the fish, but not on previous owners except their own supplier of the relevant lot.
4. Consumer information is available, using a consumer presentation portal, such as foodtag.dk
Hermes AS is a Norwegian freezer trawler that has put a lot of effort into application of traceability onboard the vessel.

Each lot (block of H&G fish) has a unique ID that is printed on the packaging. Customers can enter the ID into their homepage http://www.hermes-as.no/en/traceability/ and can get very detailed information on the actual product in their hands.

Because of this Hermes was able to close a deal with Espersen Seafood that gives price premiums and that all whitefish catch is pre-sold at fixed prices.
Other examples

There are other similar solutions available:

www.thisfish.ca

www.followfish.de

www.john-west.co.uk

https://maritime.trackwell.com/Dispatching/qr_ife.htm?q=qeW_7D18CFpBBDz24iWLPku_7ZGH0uBX68QDnBts3_6M_9
Barriers / failures

Not easy to show concretely that traceability and messages of favorable characteristics really provides price premiums

Sainsbury’s
MSC certified
18,98 £/kg

Tesco
No certification or label of origin
22,00 £/kg
Barriers / failures

Retail chains are promoting own brands and do not want to give their customers “too much” information.
Barriers / failures

Can we have too much information?