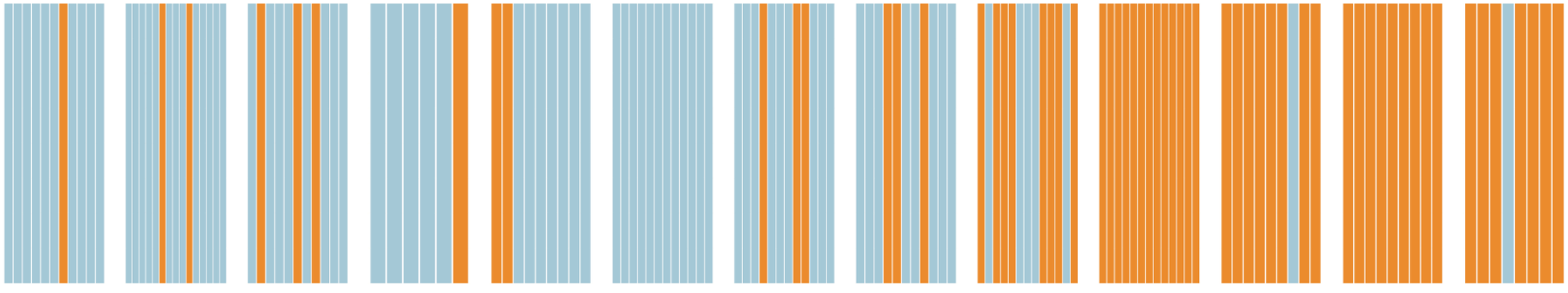

Genetics in support of fisheries and aquaculture management

17-19 September
Faro, Portugal

ICES
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UNIVERSIDADE DO ALGARVE

CCMAR
Centro de Ciências do Mar

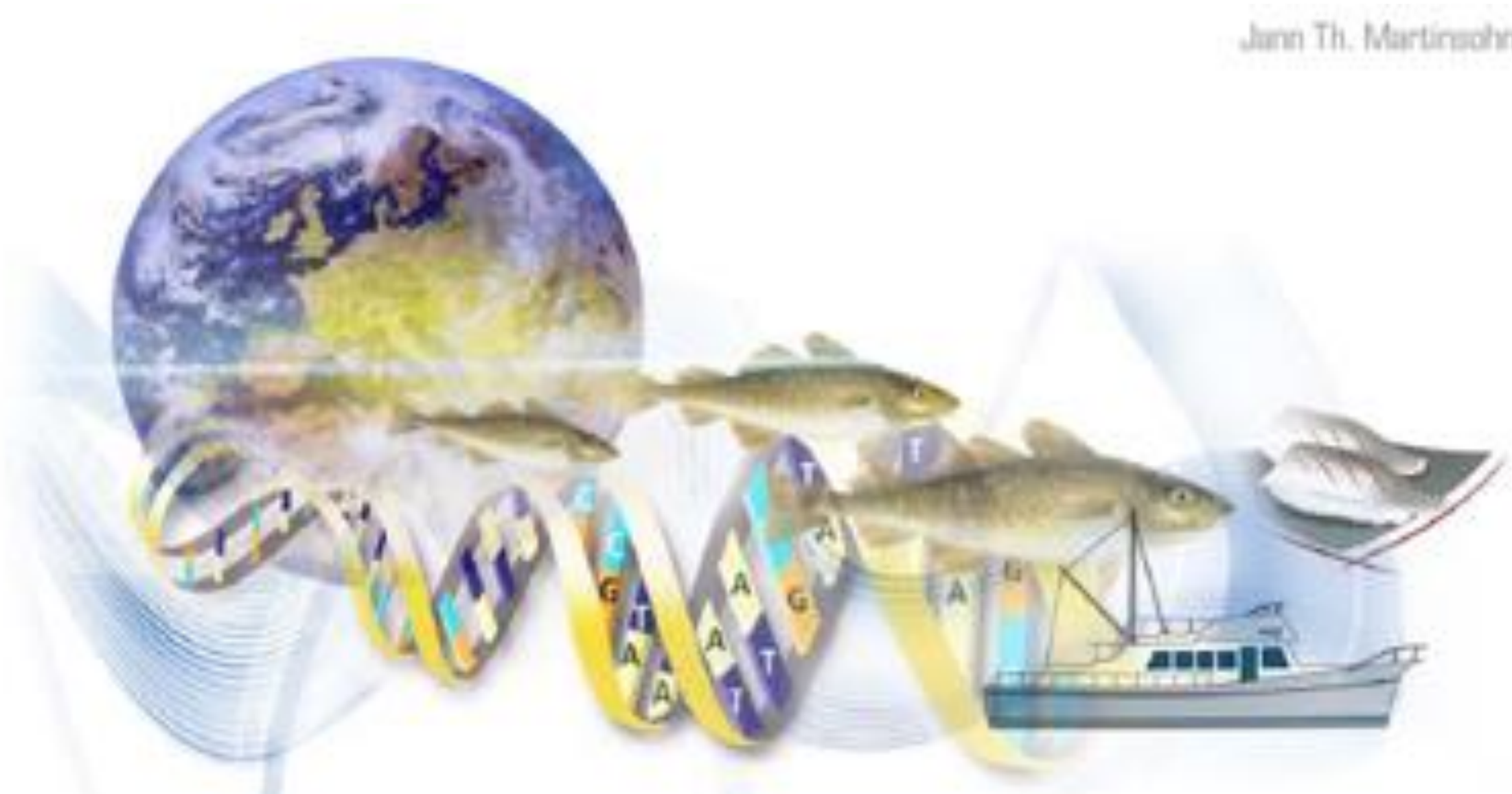
DTU

QUEEN'S UNIVERSITY BELFAST

PRIFYSGOL BANGOR UNIVERSITY

European Commission

Monitoring, Control, Enforcement



Justice, Fairness, Transparency

Monitoring, Control, Enforcement

- Consumer protection & confidence
- Fairness
- Socio-Economics
- Environment

Fraud in the Seafood Sector

False labelling

- EU : 60% Imports
- Great value;
- Difficult to detect;
- Undermines consumer information & protection.

The New York Times

Tuesday, January 15, 2008

Europe's Appetite for Seafood Propels Illegal Trade

SeaFood Intelligence .com

Written By: Newsdesk
Category: Regulatory
Date Posted: 15/01/2008 6:45 AM

The New York Times
nytimes.com

May 27, 2007

That Grouper on the Menu? Turns Out It Was a Fish Tale

By LYNN WADDELL

The New York Times

Fish Tale Has DNA Hook: Students Find Bad Labels

By JOHN SCHWARTZ
Published: August 21, 2008

Poisonous Puffer Fish Sold as Salmon Kill 15 in Thailand

Thursday, August 23, 2007
Associated Press

Print | ShareThis

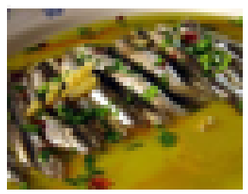
FIS News

counterfeit sardine

EUROPEAN UNION

Tuesday, January 29, 2008, 16:30 (GMT + 8)

The sardine scam
A lack of suitable Moroccan sardine has boosted sales of alternative canned fish to the EU countries.



i watch news

Hake hoax in Spanish markets

By Mar Cabra, Marcos García Rey and Kate Wilson

October 05, 2011

Fraud in the Seafood Sector

The New York Times

Tuesday, January 15, 2008 Last Update: 7:12 AM ET

EMPTY SEAS

Europe's Appetite for Seafood Propels Illegal Trade

By ELISABETH ROSENTHAL
Published: January 15, 2008

INTERNATIONAL
Herald Tribune

Europe takes Africa's fish, and migrants follow

By Sharon Lafraniere
Monday, January 14, 2008

Policy Makers as Victims: A Driver

November 2015

Oceana carried out DNA testing on 280 fish samples collected from major restaurants and EU institutions canteens in B
T
th
s
ve
to
boratory of Biodiversity and Evolutionary Genomics from the Katholieke Universiteit of Leuven.

ed from major restaurants and EU institutions canteens in Brussels - facilities used by EU civil servants and politicians.

FISH SAMPLES LOCATION

TOO CHEAP TO BE TRUE: SEAFOOD FRAUD IN BRUSSELS

Relevant Legislation (EU)

Article 53 of Regulation (EC) No 882/2004 on official controls (OCR) gives the Commission the mandate to recommend coordinated plans where considered necessary, on an *ad-hoc* basis, to assess the prevalence of hazards in feed, food or animals.

Regulation (EU) No 1169/2011 on Food Information to Consumers (FIC) and Regulation (EU) No 1379/2013 on the Common Market Organisation of fishery and aquaculture products (CMO) represent the detailed legislation on identification and labelling of fishery and aquaculture products.

Approaches and Legislation

VMS & VDS

Council Regulation (*EC*) No *1224/2009*

Labeling

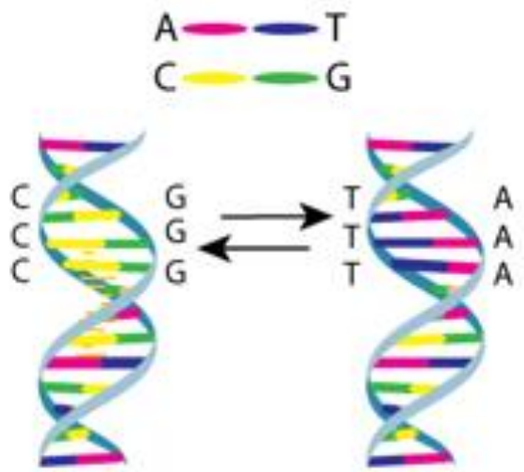
REGULATION (EC) No 178/2002

Traceability/Genetics

Council Regulation (*EC*) No *1224/2009*

Genetic Polymorphism

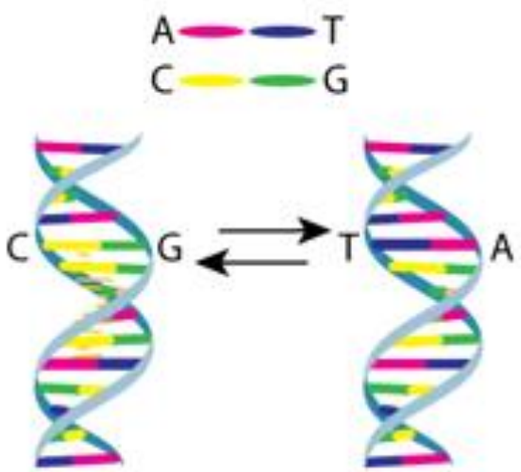
Species



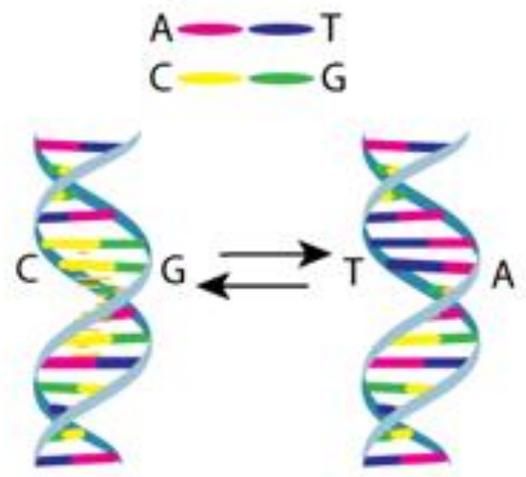
Alosa aestivalis
(Blueback Herring)

Alosa pseudoharengus
(Alewife)

Individual

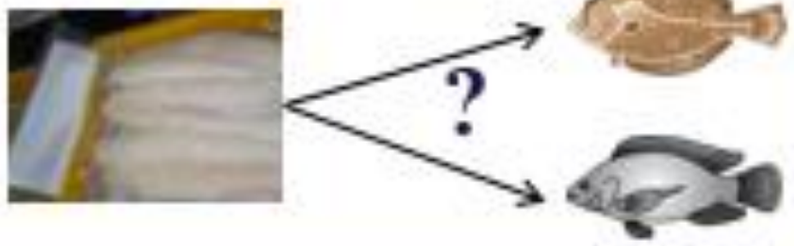


Population

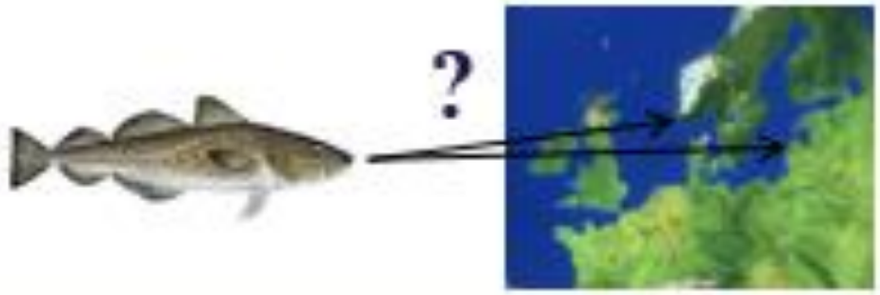


Basic Relevant Questions

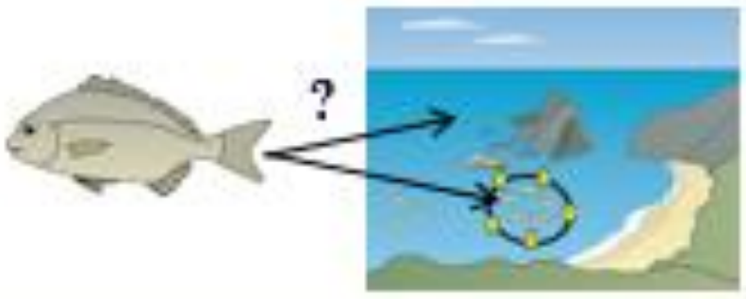
What species?



Where from?



Wild or Aquaculture?



Monitoring, Control, Enforcement

REGULATION (EC) No 178/2002

of 28 January 2002

'laying down procedures in matters of food safety'

Labelling

COUNCIL REGULATION (EC) No 1224/2009

of 20 November 2009

'establishing a Community control system'

Traceability

COUNCIL REGULATION (EC) No 1005/2008

of 29 September 2008

'IUU Regulation'

Catch Certificate

LACEY ACT AMENDMENTS OF 1981 ("LACEY ACT"), 16 U.S.C. § 3371 et seq., 18 U.S.C. § 42

16 U.S.C. § 3371 - Definitions
16 U.S.C. § 3372 - Prohibited Acts
16 U.S.C. § 3373 - Penalties and Sanctions
16 U.S.C. § 3374 - Forfeiture
16 U.S.C. § 3375 - Enforcement
16 U.S.C. § 3376 - Administration
16 U.S.C. § 3377 - Exceptions
16 U.S.C. § 3378 - Miscellaneous Provisions

FAO: International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU; 2001).

Monitoring, Control, Enforcement

REGULAT

of

'laying down proc

L

COUNCIL REGULATION (EC) No 1224/2009

of 20 November 2009

'establishing a Community control system'

Traceability

ION (EC) No 1005/2008

ember 2008

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Certificate

The European Court of Auditors: A Policy Driver

IV

(Notices)

NOTICES FROM EUROPEAN UNION INSTITUTIONS AND BODIES

COURT OF AUDITORS

SPECIAL REPORT No 7/2007

on the control, inspection and sanction systems relating to the rules on conservation of Community fisheries resources together with the Commission's replies

(pursuant to Article 248(4) second paragraph, EC)

(2007/C 317/01)

The European Court of Auditors: A Policy Driver

SPECIAL REPORT No 7/2007

Monitoring, Control, Enforcement

FishPopTrace

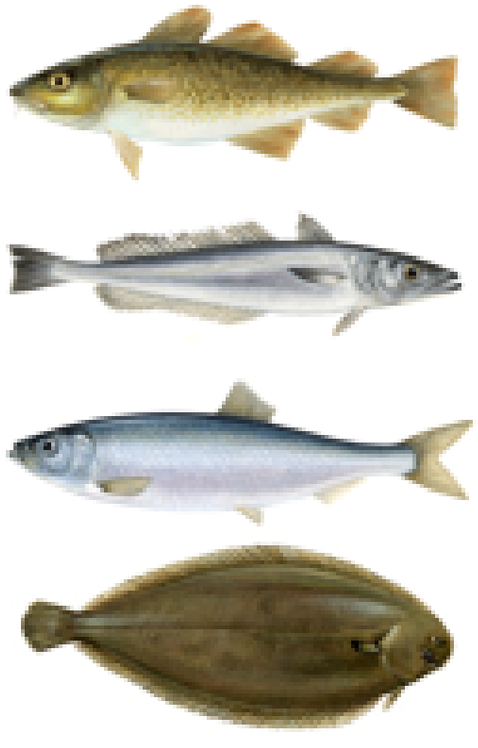
The Structure of Fish Populations and Traceability of Fish and Fish Products

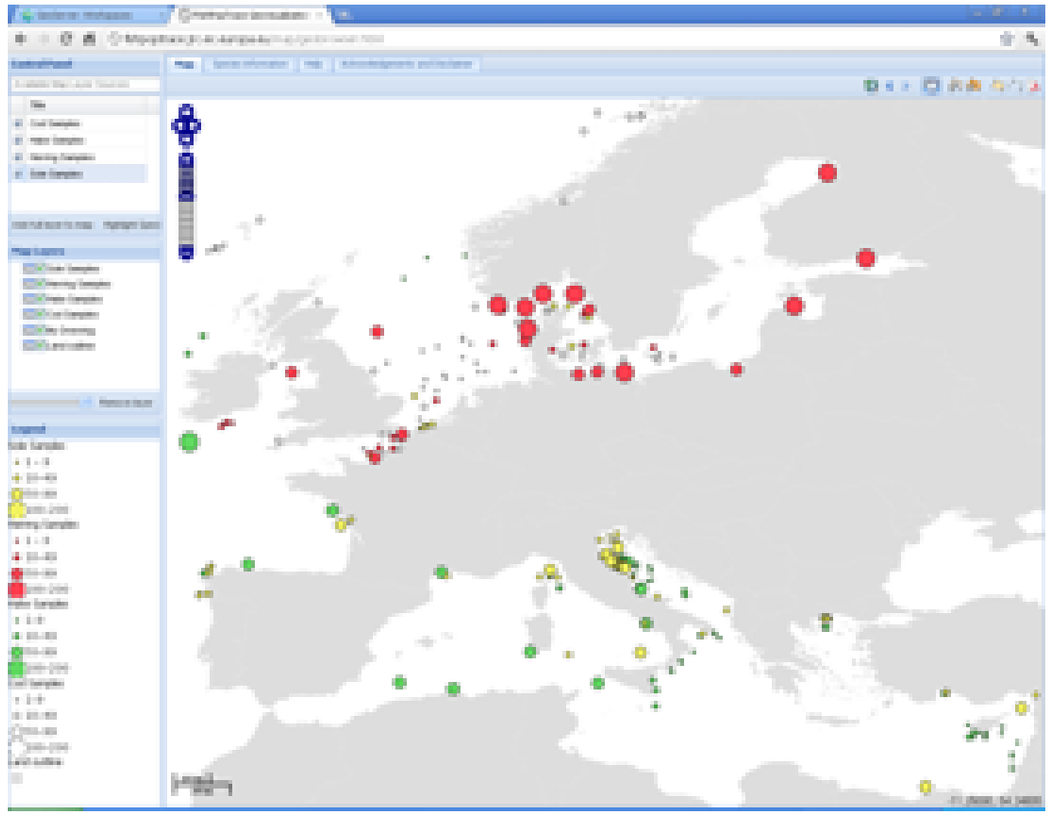
Towards a Framework for Sustainable Fisheries Management & Conservation Based on Genetics, Chemistry & Forensics

https://fishpoptrace.jrc.ec.europa.eu

FishPopTrace built a framework by:

- Developing traceability tools fully supporting a "from ocean to fork" approach;
- Integration of new and established technologies based on molecular genetics;
- Applying forensic standards to technology development for traceability, fisheries control, enforcement and conservation;
- Tailoring newly-developed tools to the needs of end-users and stakeholders.





Monitoring, Control, Enforcement

COUNCIL REGULATION (EC) No 1224/2009

of 20 November 2009

establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006

Article 13

New technologies

1. The Council may decide on the basis of Article 37 of the Treaty on the obligation to use electronic monitoring devices and traceability tools such as genetic analysis. In order to assess the technology to be used, Member States, on their own initiative or in cooperation with the Commission or the body designated by it, shall carry out pilot projects on traceability tools such as genetic analysis before 1 June 2013.

Monitoring, Control, Enforcement

- Whole fish
- Part fish
- Trace sample
- Product

- Fresh
- Frozen
- Dried
- Salted
- Canned
- Cooked

- Boiled
- Fried
- Baked etc.

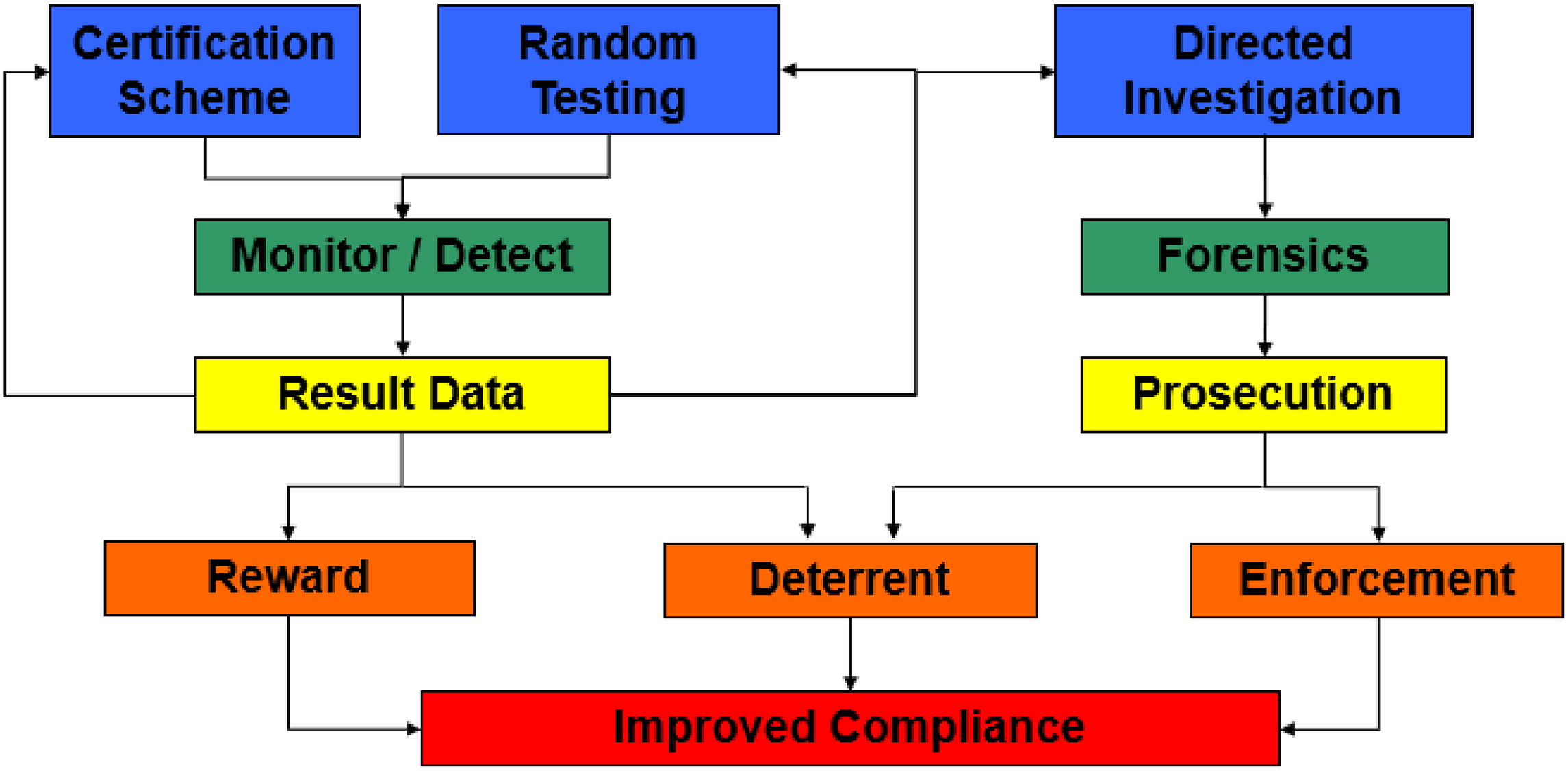
- Mixed

Species

- Mixed Fish

Courtesy of R. Ogden

Monitoring, Control, Enforcement



Monitoring, Control, Enforcement

Catfish for Grouper

U.S. Department of Justice

United States Attorney
Northern District of Florida

[illegible]

Please reply to: Pensacola

PRESS RELEASE

May 8, 2006
FOR MORE INFORMATION CONTACT:
Lea Register at (850) 444-4040

INDIVIDUALS AND BUSINESSES CHARGED WITH ILLEGAL IMPORTATION AND SALE OF OVER ONE MILLION POUNDS OF FALSELY LABELED CATFISH

PANAMA CITY - Gregory R. Miller, United States Attorney for the Northern District of Florida; David M. Uhlmann, Chief of Environmental Crimes Section, Washington, D.C.; Hal Robbins, Special Agent In Charge, National Oceanic and Atmospheric Administration (NOAA) Fisheries Service's Office for Law Enforcement, Southeast Division; Robert W. Weber Special Agent in Charge, U.S. Immigration and Customs Enforcement (ICE), and United States Customs

Two more convicted in false labelling scheme

UNITED STATES
Friday, October 31, 2008, 22:30 (GMT + 9)

A federal jury in Los Angeles convicted two Virginia seafood importers of conspiring to sell falsely labelled fish that originated in Vietnam.

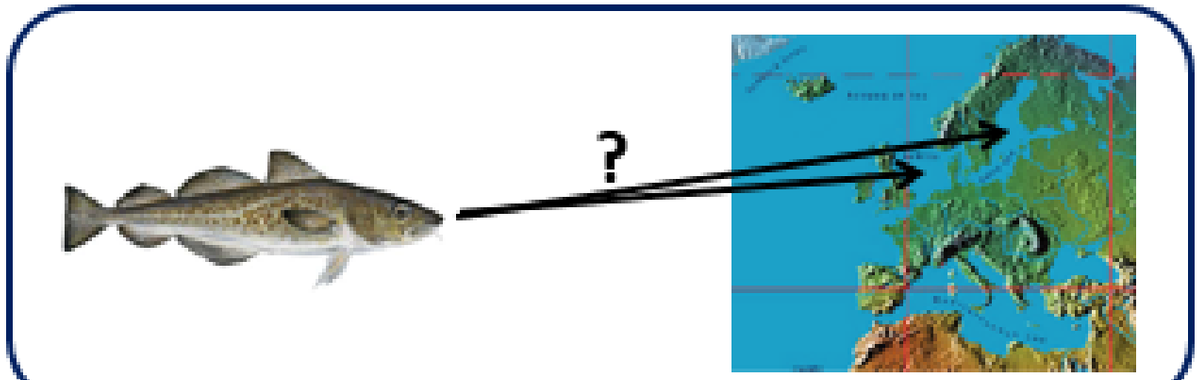
Peter Xuong Lam was found guilty of conspiring to import mislabelled fish in order to avoid federal taxes, and guilty on three counts of selling fish that he knew to be illegally imported.

Arthur Yavelberg of Virginia was found guilty of conspiring to deal in mislabelled food.

The two Virginia-based companies for which the men worked - Virginia Star Seafood Corporation and International Sea Products Corporation - imported 10 million pounds of frozen fish fillets worth USD 15.5 million from Vietnam.

Forensic DNA analysis revealed the true species identity of falsely labelled products.

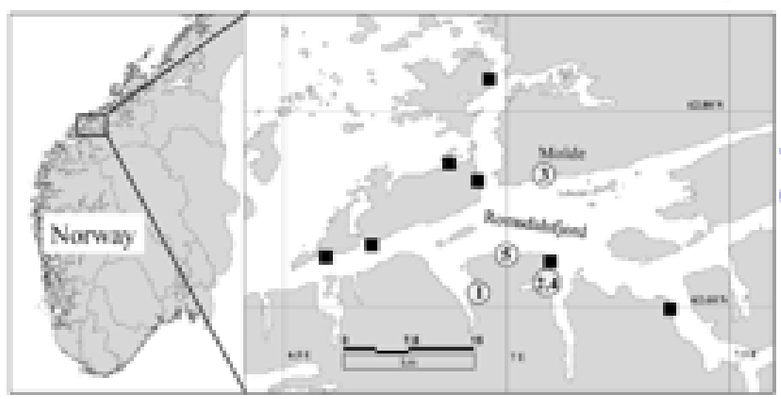
False origin declaration for Baltic cod



Case (2006):

- *Fisherman claimed that cod was landed in Baltic Sea;
- *DNA tests provided overwhelming evidence that in fact North Sea cod;
- *Catch was confiscated and a fine of 50.000DKr imposed.

Identification of farm escapees in Norway



DNA analysis revealed the farm of origin of escaped salmon.

Enabling Factors

- **Feasibility:**
  - ➢ **Expert knowledge required**
  - ➢ **Infrastructure availability**
- **Response time**
- **Costs (and Benefits)**

Costs & Benefits

GHOTI | Open Access

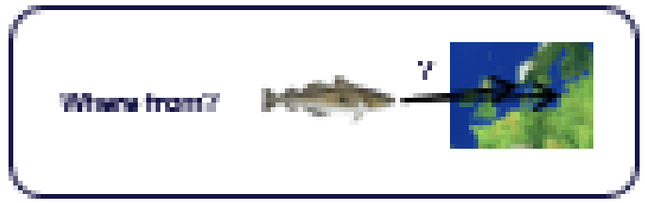
DNA-analysis to monitor fisheries and aquaculture: Too costly?

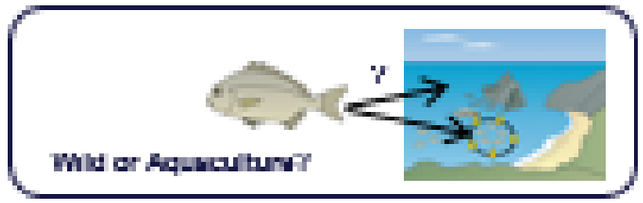
Jann Th. Martinsohn, Paul Raymond, Trey Knott, Kevin A. Glover, Einar Eg Nielsen, Lars Bonde Eriksen, Rob Ogden, John Casey, Jordi Guillen

First published: 21 December 2018 | https://doi.org/10.1111/faf.12343

Costs & Benefits

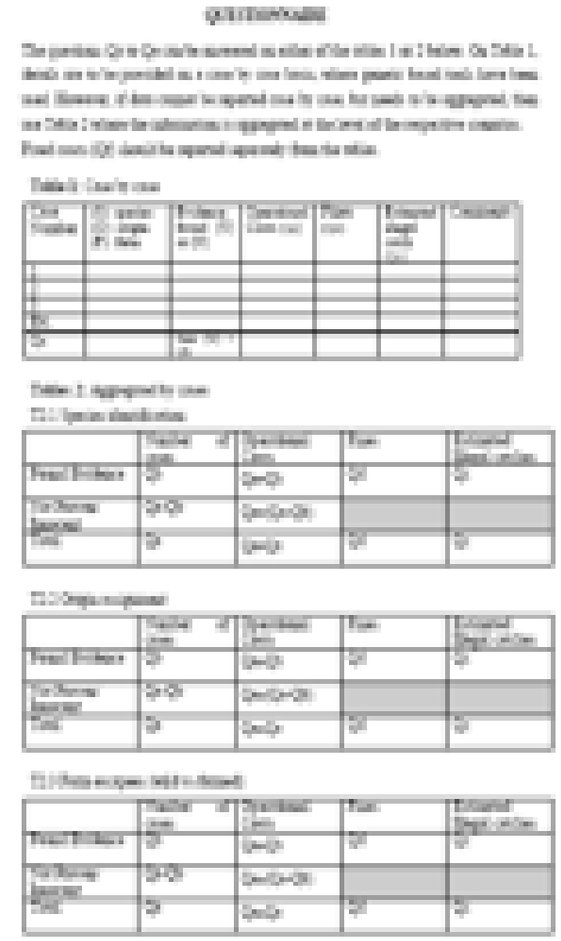
Covered:





Questions:

- In how many cases genetics were used?
- How many of these cases obtained positive evidence of fraud?
- What was the estimated total value of illegal catches found?
- What was the total value of the fines applied?
- Total operational costs?
- Other estimated costs (training courses for inspectors etc.)?



Costs & Benefits

A Cost Benefit Analysis weighs costs and benefits of procedures or actions in monetary terms and can thereby rationalise and facilitate the decision finding process on their implementation.

FishPopTrace

Cost Benefit Analysis for Fisheries Control using Genetic Tools

January 2011

The EU funded project FishPopTrace (http://fishpoptrace.jrc.ec.europa.eu), aims to build a framework for sustainable fisheries management and conservation by:

- Developing traceability tools supporting a "from ocean to fork" approach through technologies based on molecular genetics, otolith microchemistry and morphometrics;
- Applying forensic standards to technology development for fisheries control and enforcement and to fight Illegal, Unreported and Unregulated (IUU) fishing;
- Tailoring newly-developed tools to the needs of end-users and stakeholders.

If you have any questions do not hesitate to contact juan.martinsohn@jrc.ec.europa.eu

We greatly appreciate your support and wish to thank you in advance.

Sincerely,

Jordi Guillen (Ph.D.; Fisheries Economist)

Juan Th. Martinsohn (Ph.D.; Member of the FishPopTrace Consortium)

European Commission (EC)
Joint Research Centre (JRC)
Institute for the Protection and Security of the Citizen (IPSC)
JRC.G.4 - MARITIME AFFAIRS
Via Enrico Fermi 2749 (TP 051)
I-21027 Ispra (Va), Italy

Tel: +39.0332.78.6567
Fax: +39.0332.78.9658

QUESTIONNAIRE

The questions Q1 to Q4 can be answered as either of the tables 1 or 2 below. On Table 1, details are to be provided on a case by case basis, where genetic based tools have been used. However, if data cannot be reported case by case, but needs to be aggregated, then use Table 2 where the information is aggregated on the level of the respective variables. Fixed costs (Q5) should be reported separately from the tables.

Table 1: Case by case

Case Number	(S): species (O): origin (F): Fleet	Evidence found (T) or (F)	Operational Costs (Qo)	Fines (Qf)	Estimated illegal catch (Qc)	Comments
1						
2						
3						
Etc						
Qx		Sum (T) + (F)				

Table 2: Aggregated by cases

T2.1 Species identification

	Number of cases	Operational Costs	Fines	Estimated illegal catches
Found Evidence	Q1	Qo=Q1	Qf	Qc
Not Proven Innocent	Qo-Q1	Qo=(Qo-Qf)		
Total	Qo	Qo=Qo	Qf	Qc

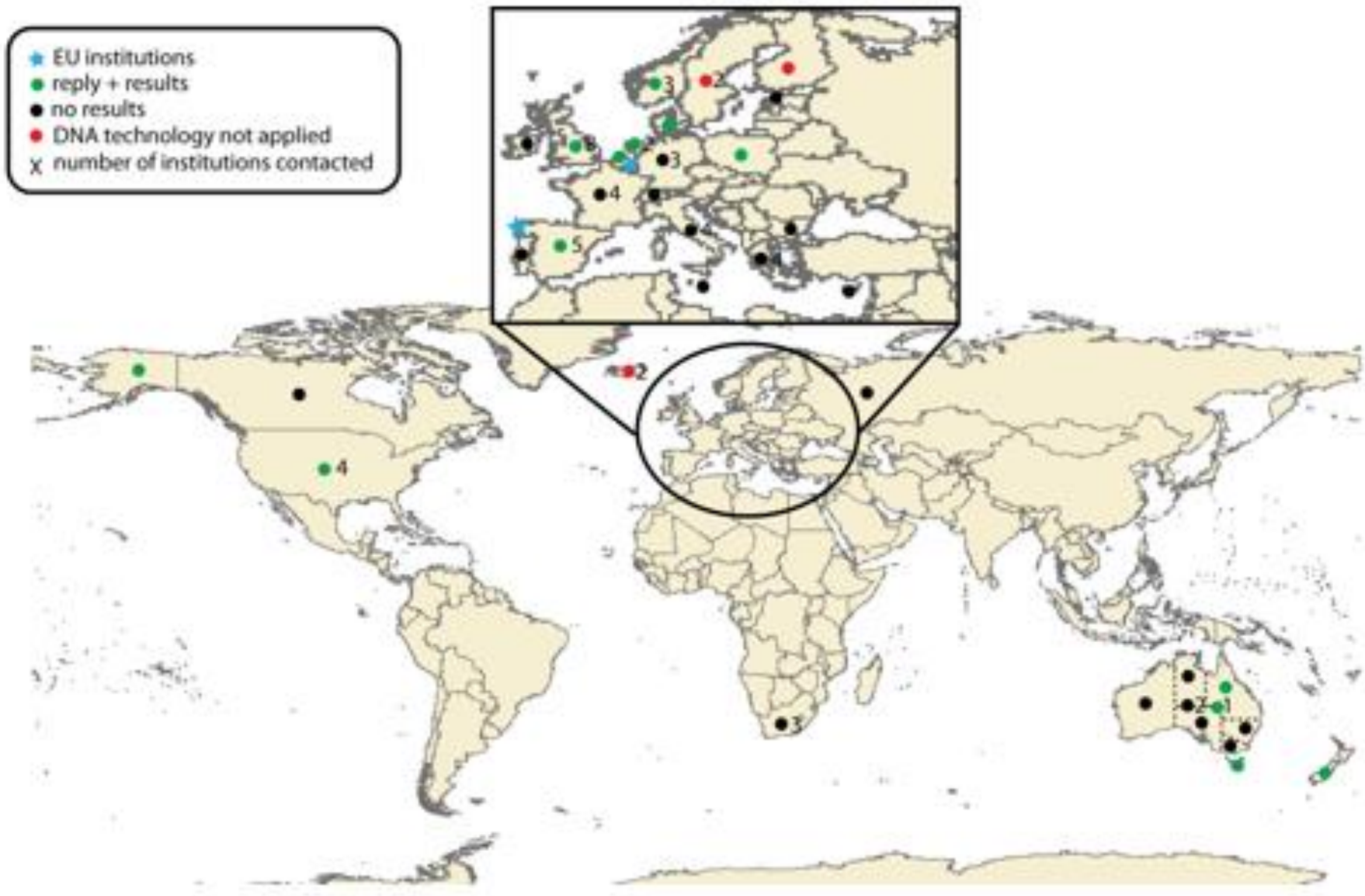
T2.2 Origin assignment

	Number of cases	Operational Costs	Fines	Estimated illegal catches
Found Evidence	Q1	Qo=Q1	Qf	Qc
Not Proven Innocent	Qo-Q1	Qo=(Qo-Qf)		
Total	Qo	Qo=Qo	Qf	Qc

T2.3 Fleets european (with/without)

	Number of cases	Operational Costs	Fines	Estimated illegal catches
Found Evidence	Q1	Qo=Q1	Qf	Qc
Not Proven Innocent	Qo-Q1	Qo=(Qo-Qf)		
Total	Qo	Qo=Qo	Qf	Qc

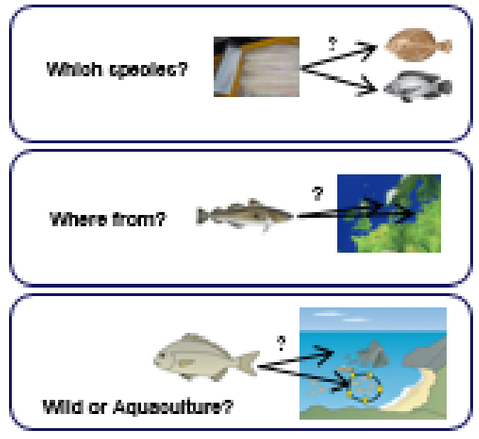
Costs & Benefits



- **European Commission DG MARE, DG ENV ;**
- **Community Fisheries Control Agency;**
- **73 institutions in 26 countries (18EU and 8 third countries);**
- **focus on EU member states ;**
- **degree of likelihood that DNA technologies are employed for fishery MCS.**

Covered:

- **Species Identification**
- **Origin Assignment**
- **Farmed vs. Wild**



Questions:

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- **How many of these cases obtained positive evidence of fraud?**
- **What was the estimated total value of illegal catches found?**
- **What was the total value of the fines applied?**
- **Total operational costs?**
- **Other estimated costs (training courses for inspectors etc.)?**

Answers:

- **Case by case;**
- **Aggregated.**

The Green Deal: Avoiding Waste

A review of the European Union landing obligation focusing on its implications for fisheries and the environment

Abstract:
Discarding is a common practice in fisheries. Total discards are estimated to be about 30 million tonnes, representing around 23% of the world-wide catches. Discarding is an undesirable practice, not only because of the waste of resources, but also because of its contribution to the overexploitation of fish stocks. Several countries have already established discard bans, to different extents (e.g. Norway, Iceland, Chile, New Zealand). The EU's landing obligation (discard ban) is a major measure of the latest reform of the Common Fisheries Policy for EU fisheries. It aims to reduce unwanted catches in EU fisheries, by incentivising improved selectivity and restoring fish stocks to levels that can sustain the maximum production over time without harming the biodiversity and the capacity of future generations to obtain fish. However, banning discards will inevitably induce diverse short- and long-term ecological, economic and social impacts, which may determine whether the landings obligation's objectives will be achieved.

URI: http://www.mdpi.com/2071-1050/10/4/900
Authors: GUILLEN GARCIA Jordi

The Landing Obligation: How to monitor?!

Discard plans

Since October 2014 the Commission has adopted several discard plans (through so-called delegated acts) in preparation of the implementation of the landing obligation:

Commission Delegated Regulation (EU) 2016/2376 of 13 October 2016 establishing a discard plan for **mollusc bivalve Venus spp. in the Italian territorial waters**

Commission Delegated Regulation (EU) 2016/2377 of 14 October 2016 amending Delegated Regulation (EU) No 1394/2014 establishing a discard plan for certain pelagic fisheries in **South-Western waters**

Commission Delegated Regulation (EU) 2017/86 of 20 October 2016 establishing a discard plan for certain demersal fisheries in the **Mediterranean Sea**

Commission Delegated Regulation EU) 2017/87 of 20 October 2016 establishing a discard plan for turbot fisheries in the **Black Sea**

Commission Delegated Regulation (EU) 2018/153 of 23 October 2017 amending Delegated Regulation (EU) 2017/86 establishing a discard plan for certain demersal fisheries in the **Mediterranean Sea**

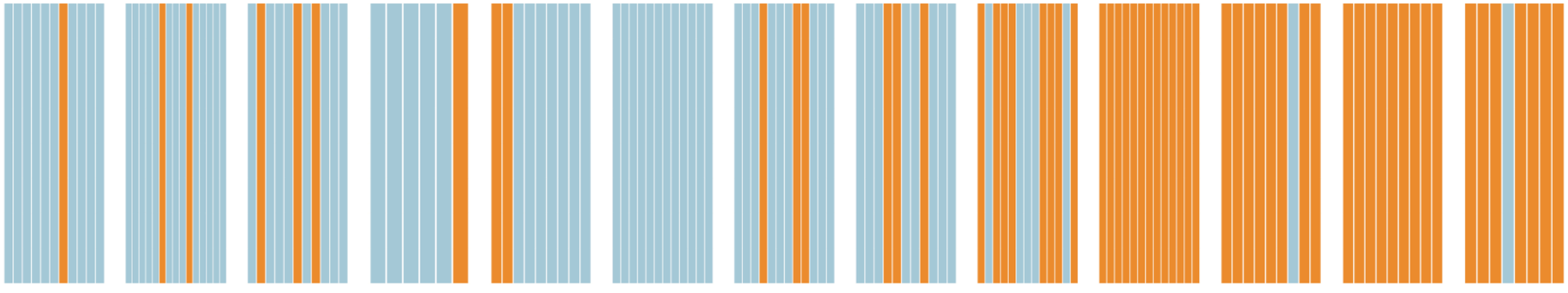
Commission Delegated Regulation (EU) 2018/211 of 21 November 2017 establishing a discard plan as regards salmon in the **Baltic Sea**

Commission Delegated Regulation (EU) 2018/188 of 21 November 2017 amending Delegated Regulation (EU) No 1394/2014 establishing a discard plan for certain pelagic fisheries in **South-Western waters**

Sep. 2019: 15

The Landing Obligation: How to monitor?!

Indeed: How?!



Genetics in support of fisheries and aquaculture management

17-19 September
Faro, Portugal

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European Commission