

# Compilation of presentations at BICEpS colloquium 2019

An opportunity to share Belgian contributions to and experiences with ICES as an inspiration for future work (2 December 2019, ILVO, VAC – Ghent)



The [abstracts book](#) is available on line on BICEpS website

The [summary](#) of the colloquium and participant list are included in BICEpS Annual report 2019



# Programme

## Session 1: Updates on ICES working with a special focus on Belgium's contribution

*Latest news from ICES Council, feedback on BICEpS initiative, good to know from ACOM, some thoughts from a SCICOM representative and testimonies from chairs of ICES working groups*

## Session 2: Sea food production

*Generate evidence and advice for management of wild-capture fisheries and aquaculture — to help sustain safe and sufficient seafood supplies*

## Session 3: Conservation and management science

*Develop tools, knowledge, and evidence for conservation and management — to provide more and better options to help managers set and meet objectives*

## Session 4: Ecosystem science

*Advance and shape understanding of the structure, function and dynamics of marine ecosystems — to develop and vitalize marine science and underpin its applications*

## Session 5: Cheers & Tears

*An opportunity to network, share souvenirs and pictures, learn anecdotes on our work with ICES and let know your expectations for future BICEpS activities*

# List of communications

## Session 1: Updates on ICES working with a special focus on Belgium's contribution

*Co-chairs: Kelle Moreau (RBINS) and Sofie Vandendriessche (ILVO)*

- ✓ Latest news from ICES Council and feedback on BICEpS initiative (*Hans Polet, ILVO, ICES Council representative & Marianne Schlessler, RBINS*)
- ✓ Good to know from ACOM (*Els Torreele, ILVO, ACOM representative*)
- ✓ Some thoughts from a SCICOM representative (*Steven Degraer, RBINS, SCICOM representative*)
- ✓ How much is Belgium involved? Pitch testimonies from chairs of ICES working groups
  - *WGMEDS – Sven Sebastian Uhlmann (ILVO): How discard survival research is shaping European policy?*
  - *WGFBIT – Gert Van Hoey (ILVO): Trading off benthic impacts and fisheries through integrative modelling*
  - *WGCSE – Sofie Nimmegeers (ILVO): The Working Group for the Celtic Seas Ecoregion: Drafting advice for 40 demersal stocks across the Celtic Seas Ecoregion*

# List of communications

## Session 2: Sea food production

*Co-chairs: Els Torrele and Hans Polet (ILVO)*

- ✓ VISTools - Fishing vessels as automatic data-gathering platforms – a win-win for fishers and scientists (*Lancelot Blondeel, ILVO*)
- ✓ Scientific surveys: the backbone to fisheries science (*Lies Vansteenbrugge, ILVO*)
- ✓ Some points to consider for exposed aquaculture: first experiences in Belgium - WGOOA (*Nancy Nevejan, Ghent*)
- ✓ Hackaton: An interactive fish stock assessment tool (*Kevin Decoster, ILVO*)
- ✓ Understanding vessel ownership and firm organization in French Atlantic fisheries: a typology (*Arne Kinds, IFREMER/Ghent University/ILVO*)
- ✓ Genetic structure of sole in the Irish and Celtic Sea (*Filip Volckaert, KU Leuven*)



# List of communications

## Session 3: Conservation and management science

*Co-chairs: Steven Degraer and Serge Scory (RBINS)*

- ✓ Providing ICES advice to OSPAR – an impression of the process (*Jan Vanaverbeke & Bob Rumes, RBINS*)
- ✓ Highlighting EARS: putting data and operations in the global environmental context (*Thomas Vandenberghe, RBINS*)
- ✓ Towards a coherent and coordinated monitoring of marine mammals? (*Jan Haelters, RBINS*)
- ✓ Genetic tool for Ecosystem health Assessment in the North Sea region – the GEANS project (*Annelies De Backer, ILVO*)
- ✓ Seascape-mediated patterns and processes of population differentiation in European seabass (*Pascal Hablützel, KU Leuven & VLIZ*)

# List of communications

## Session 4: Ecosystem science

*Co-chairs: Kris Hostens (ILVO) and Steven Degraer (RBINS)*

- ✓ Decadal changes in harmful algal events from the ICES area found in the HAEDAT database (*Maarten De Rijcke, VLIZ*)
- ✓ The fate of juvenile sole growth and survival in coastal nurseries under climate change scenarios (*Geneviève Lacroix, RBINS*)
- ✓ Marine plastics: aligning national research and monitoring with international guidelines (*Bavo De Witte, ILVO*)
- ✓ Long-term changes in demersal fish abundance and distribution in the Belgian part of the North Sea (*Jolien Buyse, ILVO*)
- ✓ Tributyltin: an aggressive bottom-up stressor in a marine multistressor environment. A quality status report (*Koen Parmentier, RBINS*)
- ✓ Towards open science products for ecosystem science (*Lennert Schepers & Lennert Tyberghein, VLIZ*)

# List of communications

## Session 5: Cheers & Tears

*Co-chairs: Sofie Vandendriessche (ILVO) and Kelle Moreau (RBINS)*

- ✓ What do cheers and tears have to do with ICES, which is all about work, right? Well, it's not! ICES is also about the power of face-to-face interaction, about kindred spirits, about unbridled enthusiasm, about exploring new places and cultures and even about real friendship! Do you think this is a load of sentimental crap? Let's find out during this final session.

[Interactive social session with the participants](#)

# Latest news from ICES Council and feedback on BICEpS Initiative

By Hans Polet (ILVO) and  
Marianne Schlessler (RBINS)

2nd BICEpS colloquium, Ghent, 2 December 2019

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# BICEpS

## Reinforcing Belgian ICES people

- 1. Genesis of the initiative**
- 2. Latest news from the Council**
- 3. How much are we involved in ICES?**
- 4. Call for nominations**
- 5. Activities and products**
- 6. Action points from BICEpS18 World-Café discussion**
- 7. Hosting the Annual Science Conference in Belgium?**

# 1. Genesis of the initiative (June 2018)

Since 2017, regular meetings of Belgian representatives in ICES decisional bodies

- to check the adequacy of our representation in SCICOM and ACOM
- to revise the participation of Belgian experts in the various WGs
- to elaborate a common Belgian position when so requested

77 Belgian scientists involved in 2018 but lack of visibility

- among the Belgian scientific community itself
- to Belgian policy makers

Creation of a Steering Committee for the promotion of ICES in Belgium through the BICEpS initiative (11/06/2018)



# BICEpS – Reinforcing Belgian ICES people

## General aim:

Reinforce Belgian ICES People to offer the Belgian ICES community an opportunity to **get to know each other's** better, improve the **collaborations** and share of information among its members, and to share and foster its **scientific contribution to ICES**.

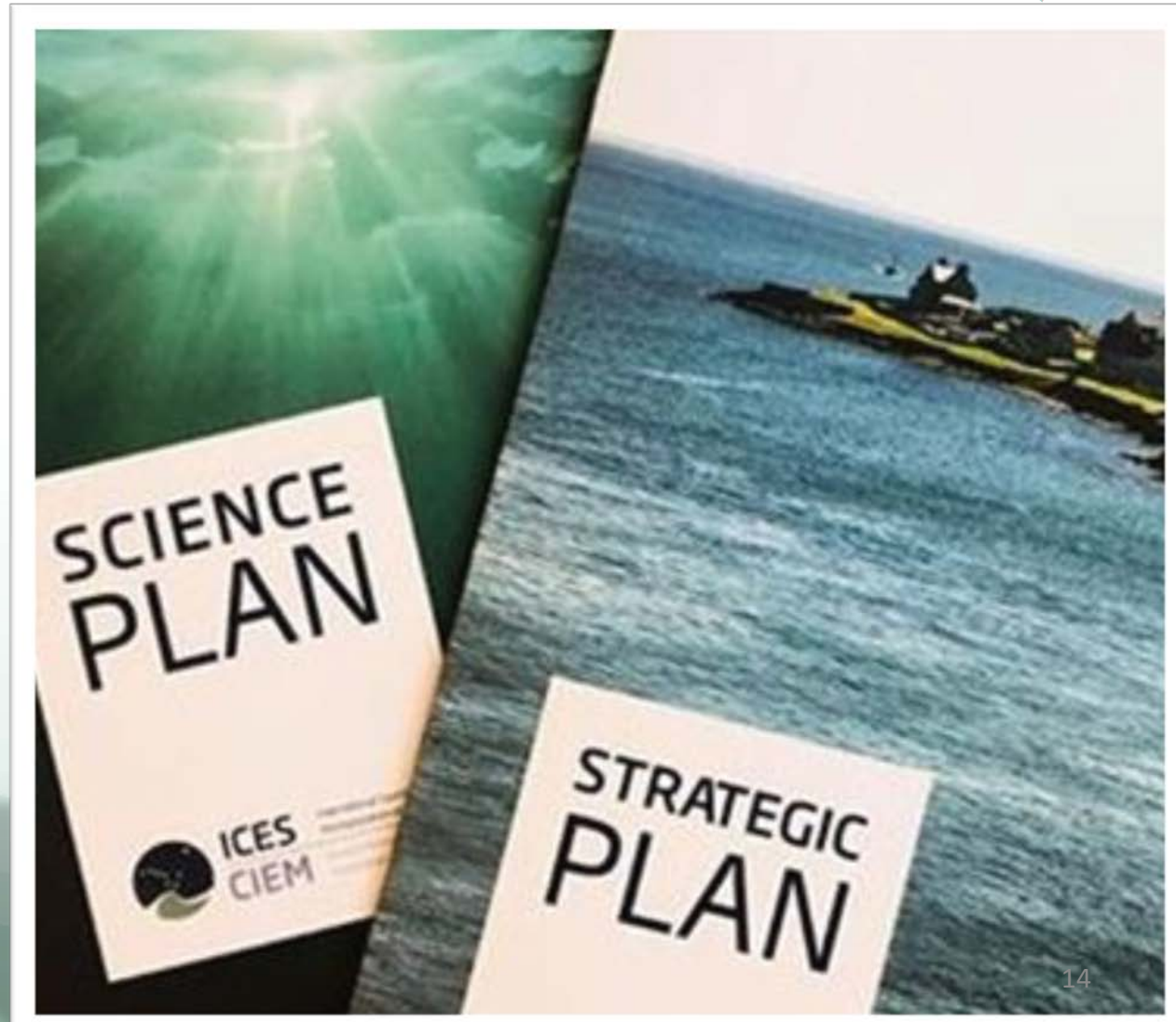


## 2. Latest news from the Council

9-10 October 2019, Copenhagen

# ICES Plans

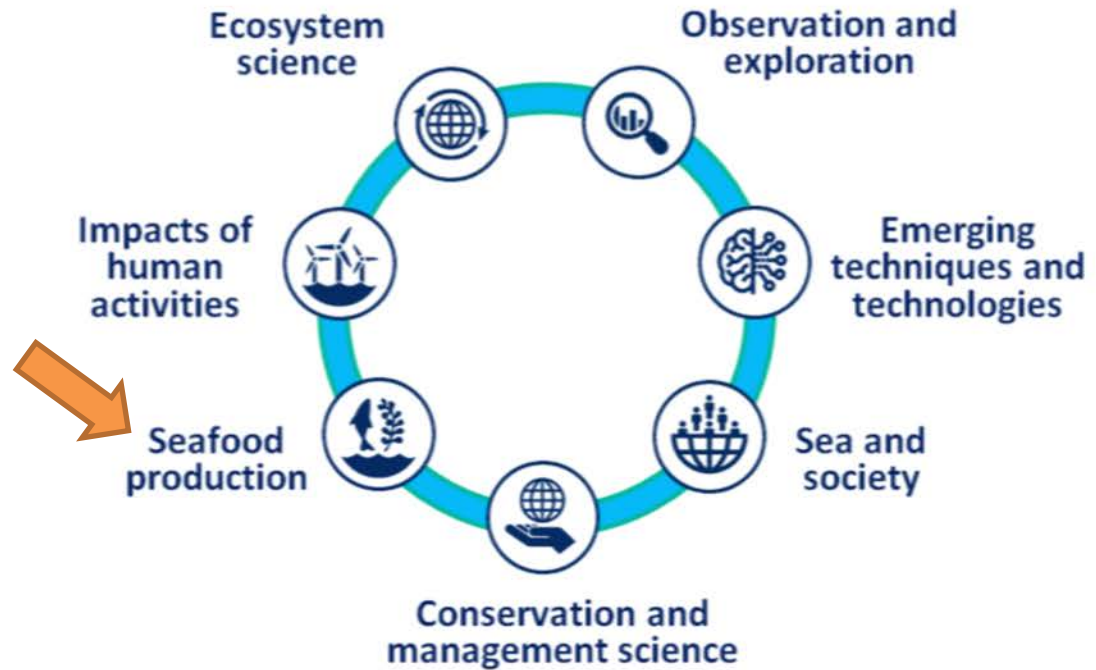
The strategic and science plan



# ICES Plans

## The science plan

To deliver **“Marine ecosystem and sustainability science for the 2020s and beyond”** we are addressing seven interrelated scientific priorities

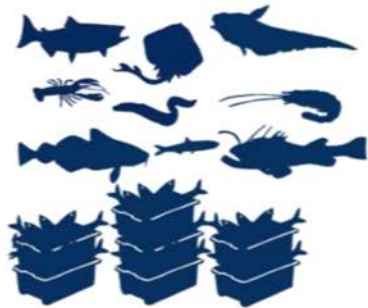


# ICES Plans

## ICES advice

### What does ICES advise on?

#### Fish & fisheries



*Fishing opportunities  
Data limited  
Precautionary MSY  
Management strategy  
Mixed fisheries  
IUCN approaches*

#### Species & habitat biodiversity



*Assessment & monitoring  
Indicators  
Bycatch & impacts  
Vulnerable marine ecosystem  
EBAS & MPAs  
Habitat loss & disturbance*

#### Marine activities

*Spatial footprint, biofouling, invasive species, renewables, trade-offs, contaminants*





# ICES Plans

## ICES advice

With & for who?

Governments &  
intergovernmental  
organisations.

Decision makers & policy  
developers.



# ICES Plans

## UN observer status

1. ICES wants to be a globally leading advisory body
2. Be active in UN working groups
3. 2-page leaflets to promote ICES on certain topics

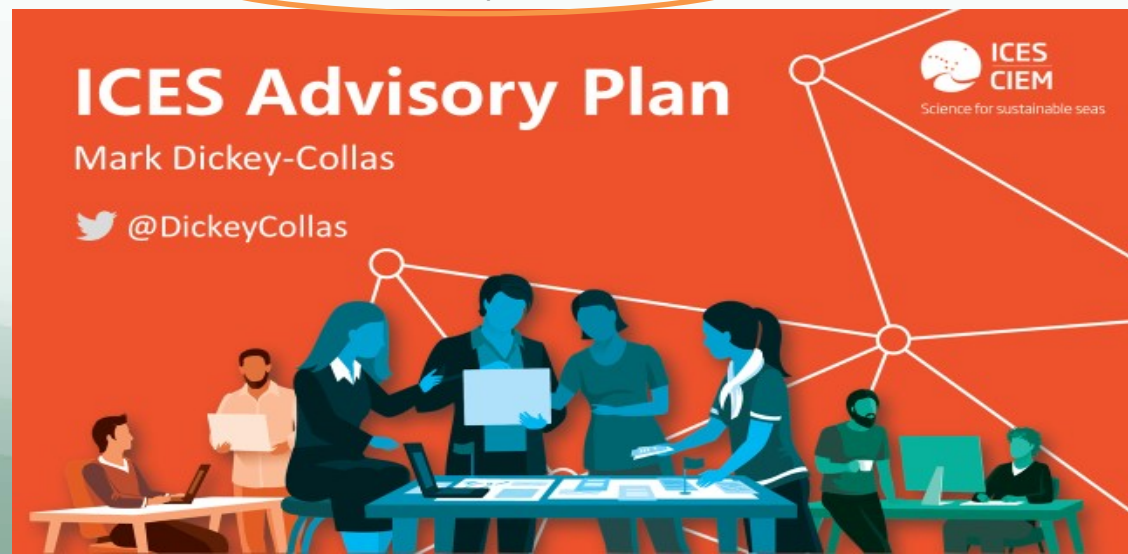




# ICES Plans

## The ICES Advisory plan

1. Map out process flows and critical control points...
2. Seek international quality accreditation for the ICES advisory system.
3. Develop a comprehensive ICES quality management system
4. Develop an ecosystem advice framework
5. Identify and develop new clients for ICES advice e.g. marine energy and spatial planning.
6. Develop stronger stakeholder engagement
7. Related to stakeholder involvement, assure independence



# ICES Plans

## ICES Data service

**22K**

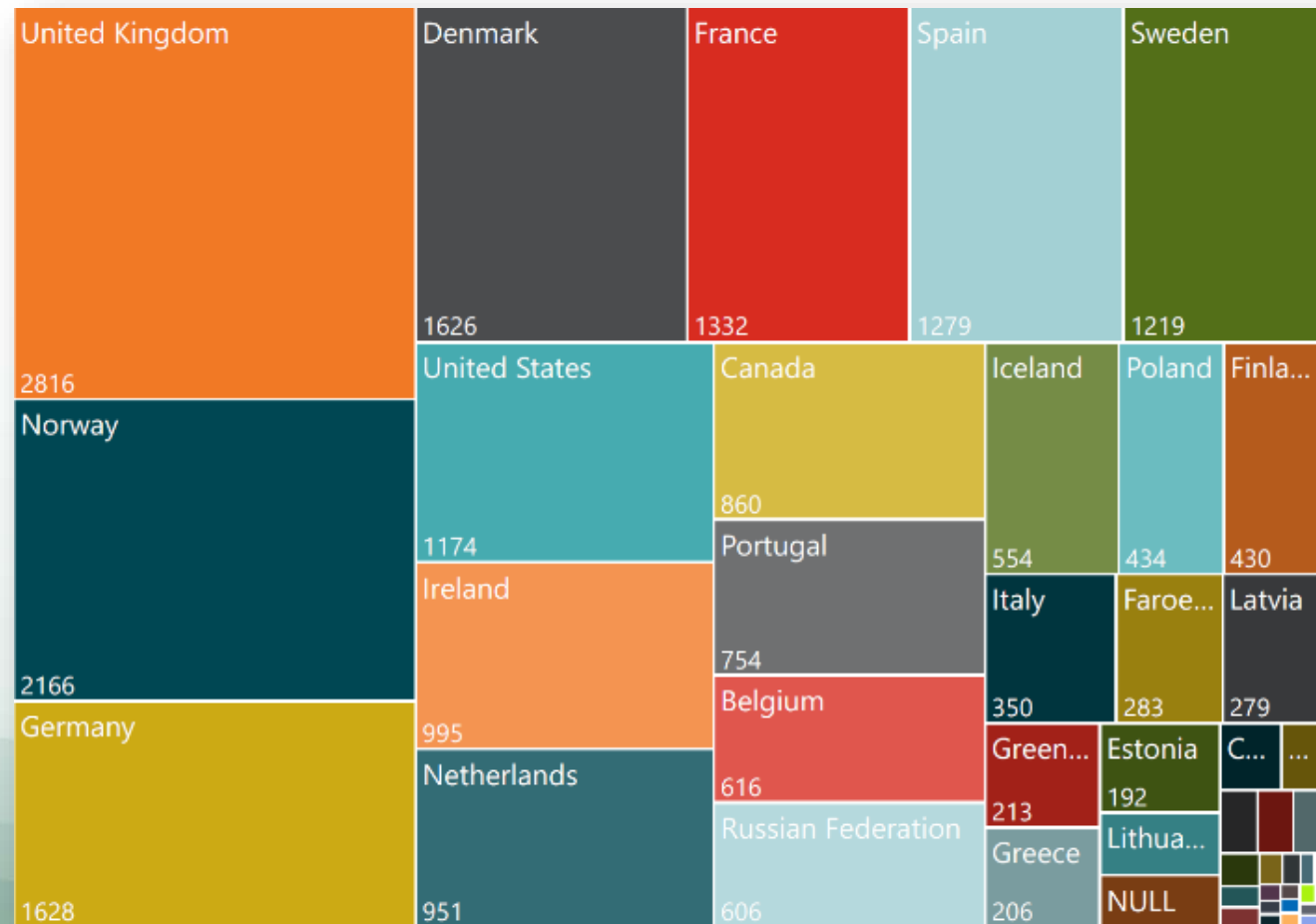
Expert Days in 2018

**588**

Institutes

**49**

Countries

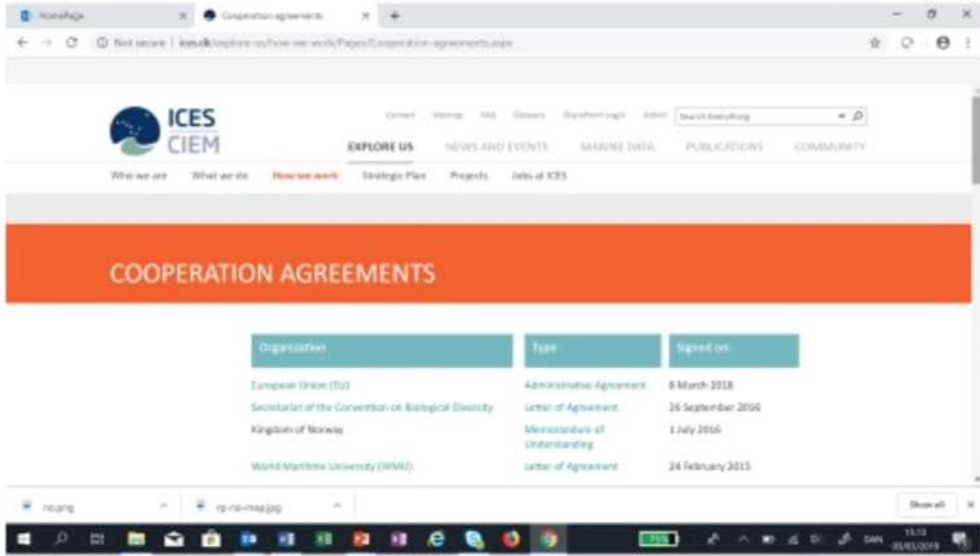




# ICES Plans

## ICES openess

### Agreements are publicly available



The screenshot shows the ICES CIEM website with a search bar and navigation menu. The main content area is titled "COOPERATION AGREEMENTS" and displays a table of agreements.

Organization	Type	Signed on
European Union (EU)	Administrative Agreement	8 March 2018
Secretary of the Convention on Biological Diversity	Letter of Agreement	26 September 2006
Kingdom of Norway	Memorandum of Understanding	1 July 2006
World Maritime University (WMU)	Letter of Agreement	24 February 2015

Science for sustainable seas

# ICES Plans

## ICES advice

### Final message:



ACOM needs to work with Council & SCICOM to  
make the position of Chair of an expert group  
attractive and relevant to career development.



## ICES investments

# Equity investments – proposals

## Why are investments needed?



### ICES Strategic Plan, Science Plan, and Advisory Plan

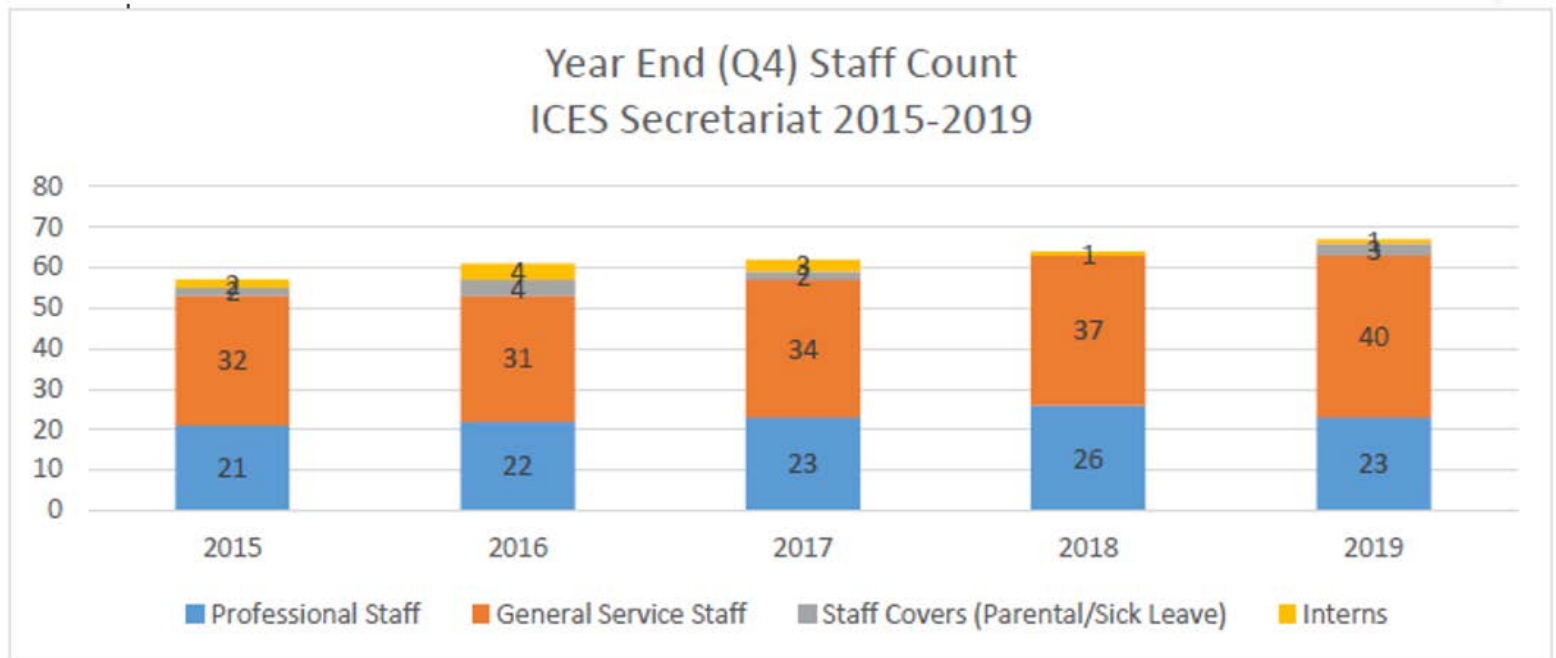
- The demands of the plans will require increased effort from the Community
- As well as increased support from the Secretariat to facilitate work of the Community
- Investments needed to both continue and initiate new activities

Coordination Group prioritized needs for investments, and discussed with Bureau

# ICES Plans

## ICES staff

### ICES work force – 5 year trend





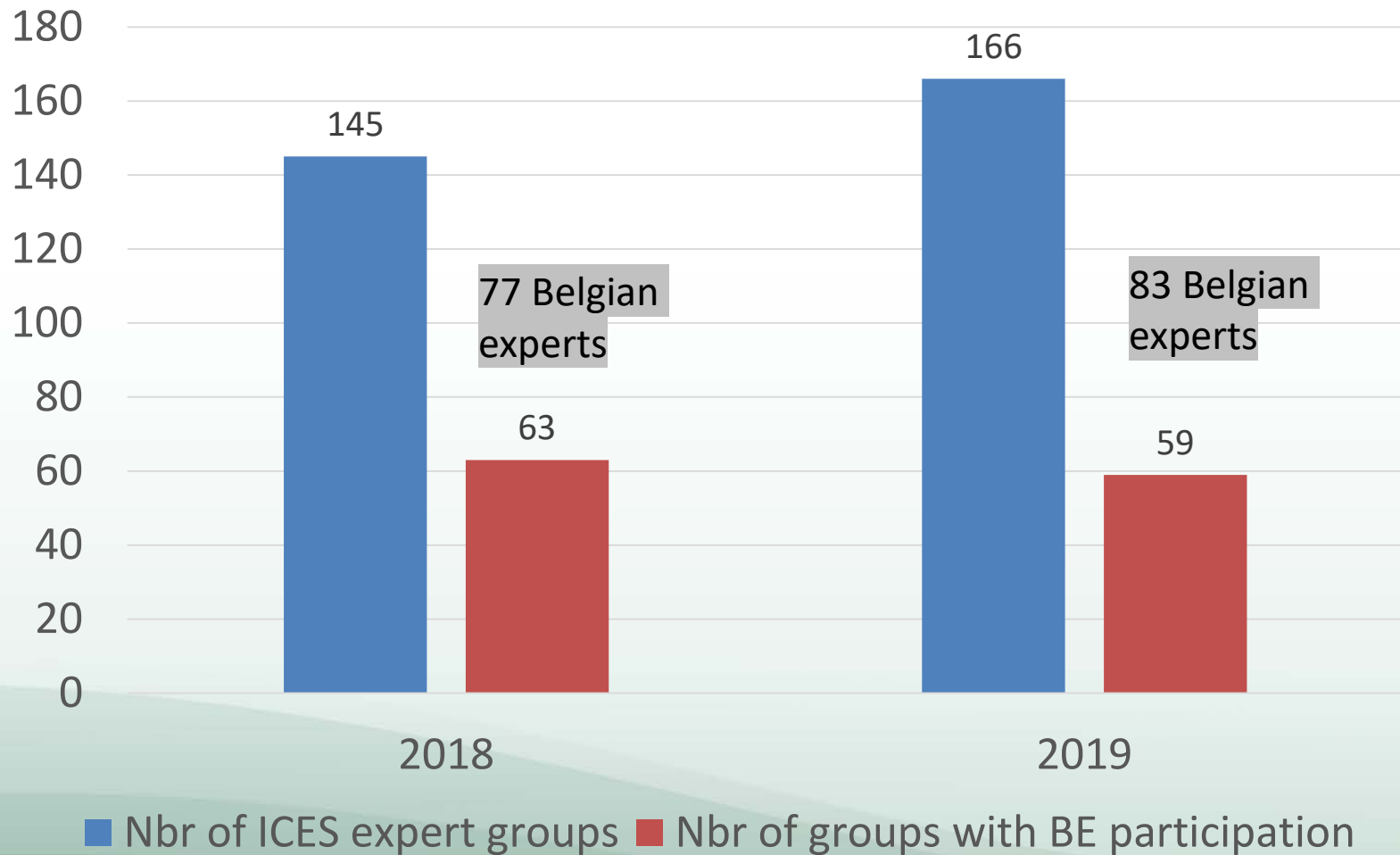
# 3. How much are we involved in ICES?

## Belgian membership in 2019

- No funding available from the Secretariat
- Participation can be :
  - physical attendance of meetings
  - by written procedure
- Both types of participation are acknowledged in reports and advices available online (but remain grey literature)
- Nominations go through our Council Representatives (they are otherwise indicated as “Chair-invited members”)

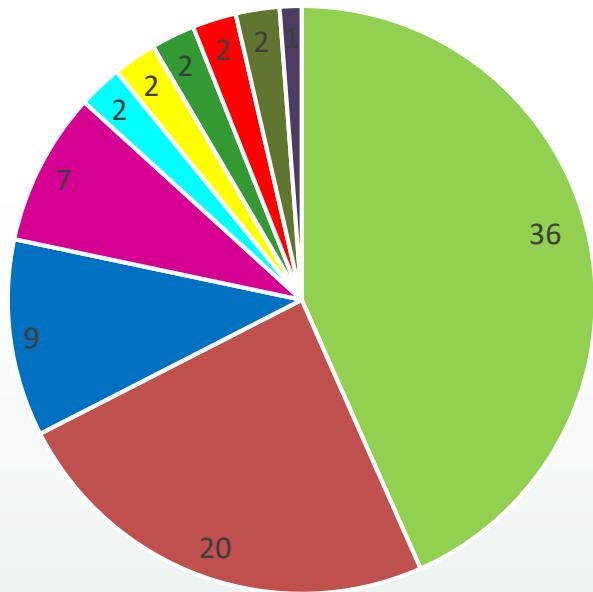
### 3. How much are we involved in ICES?

Belgian participation in ICES Expert Groups

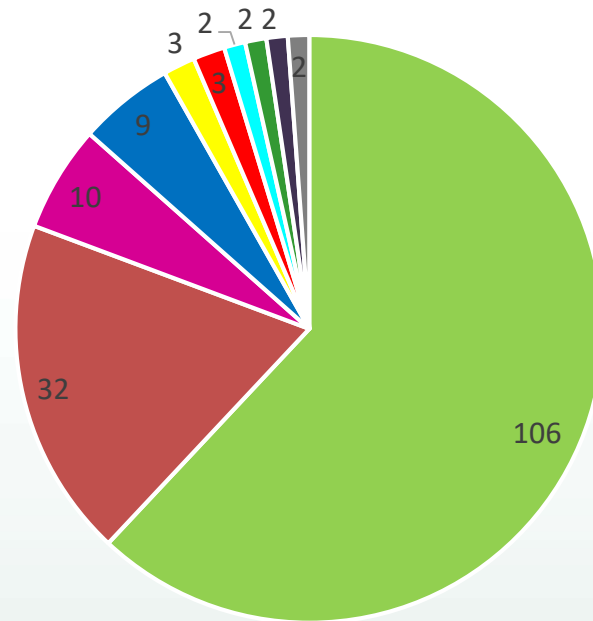


# 3. How much are we involved in ICES?

Number of Belgian experts involved in ICES per institution (2019)



Number of Belgian participants in ICES WG's per institution (2019)



- ILVO
- RBINS
- UGhent
- VLIZ
- FPS Mobility
- INBO
- KUL
- UA
- ULg
- Kust Beheer

- ILVO
- RBINS
- VLIZ
- UGhent
- INBO
- UA
- FPS Mobility
- KUL
- Kust Beheer
- ULg

**Members and Chair-nominated members all together (European members excluded)**

# 3. How much are we involved in ICES?

Number of ICES WG's where Belgian institutions are involved in 2019

# Belgian experts involved in ICES in 2019



**Help us clean the membership list for your institution by 15 Dec. 2019**

- ILVO
- RBINS
- VLIZ
- UGhent
- INBO
- UA
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- ULg

- ILVO
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- UGhent
- VLIZ
- FPS Mobility
- INBO
- KUL
- UA
- ULg
- Kust Beheer

No information on "active" participation (pre-cleaning ?)

# 4. Do you want to get involved in ICES?

## Preview of next call for nomination (in SCICOM)

Enregistrement automatique  EG meeting calendar\_1Dec2019to31Dec2020\_FINAL.xlsx - Excel Marianne Schlessler

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J1 ICES Supporting Officer

	A	B	C	D	E	F	G	H
	Steering Group	Group Acronym	Group Name	Meeting Name	Web URL	Meeting Start	Meeting End	Meeting Venue
1	EOSG	SCRDB	Steering Committee of the Regional Fisheries Database	SCRDB 2019		03/12/2019 08:00	05/12/2019 16:00	ICES HQ, Copenhagen, Denmark
2	FRSG	WKDEM	Benchmark Workshop for Demersal Species	WKDEM		09/12/2019 08:00	13/12/2019 16:00	ICES HQ, Copenhagen, Denmark
3	ASG	WKGenoTools	Stakeholder Workshop on the Value of Genetic and Genomic Data	WKGenoTools 2019	<a href="http://www.ices.dk/genetics">http://www.ices.dk/genetics</a>	30/12/2019 23:00	30/12/2019 23:00	TBD
4	FRSG	WKMSSEDEV	Workshop on MSE development	WKMSSEDEV		01/01/2020 08:00	01/01/2020 19:30	ICES HQ, Copenhagen, Denmark
5	EOSG	WKUSER	Workshop on unavoidable survey effort reduction	WKUSER 2020	<a href="http://www.ices.dk/user">http://www.ices.dk/user</a>	13/01/2020 07:00	17/01/2020 17:00	Seattle, USA
6	EOSG	WGIPS	Working Group of International Pelagic Surveys	WGIPS 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	13/01/2020 08:00	17/01/2020 17:00	Bergen, Norway
7	FRSG	WKCOLIAS	Workshop on Atlantic chub mackerel (Scomber colias)	WKCOLIAS 2020	<a href="http://www.ices.dk/c">http://www.ices.dk/c</a>	13/01/2020 08:00	17/01/2020 16:00	Santa Cruz de Tenerife, Spain
8	EOSG	WGNAEO	Working Group on Northwest Atlantic Ecosystem Observations	WGNAEO 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	14/01/2020 07:00	16/01/2020 17:00	Halifax, Canada
9	FRSG	WKSHARK6	Workshop on the OSPAR and NEAFC joint advice request to the ICES Working Group on Shark and Chondrichthyan Stocks	WKSHARK6		20/01/2020 09:00	24/01/2020 15:00	Galway, Ireland
10	EOSG	PGDATA	Planning Group on Data Needs for Assessment and Advice	PGDATA 2020	<a href="https://www.ices.dk/data">https://www.ices.dk/data</a>	21/01/2020 08:00	24/01/2020 15:00	ICES HQ, Copenhagen, Denmark
11	FRSG	WKRFSAM	Workshop on the Review and Future of State Space Stock Assessment	WKRFSAM	<a href="https://www.ices.dk/c">https://www.ices.dk/c</a>	21/01/2020 08:00	23/01/2020 17:00	ICES HQ, Copenhagen, Denmark
12	FRSG	HAWG	Herring Assessment Working Group for the Area South of the Herring	HAWG_Sandeel 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	22/01/2020 08:00	24/01/2020 16:00	ICES HQ, Copenhagen, Denmark
13	SCICOM-ACOM	WGCHAIRS	Annual Meeting of ICES Expert Group Chairs	WGCHAIRS 2020		28/01/2020 08:00	30/01/2020 16:00	ICES HQ, Copenhagen, Denmark
14	FRSG	WGTAFGOV	Working Group on Transparent Assessment Framework for the Arctic	WGTAFGOV 2020		31/01/2020 08:00	31/01/2020 16:00	ICES HQ, Copenhagen, Denmark
15	FRSG	WKGSS	Benchmark Workshop on Greater silver smelt	WKGSS 2020	<a href="http://communities.ices.dk">http://communities.ices.dk</a>	03/02/2020 08:00	07/02/2020 16:00	ICES
16	FRSG	WKCLuB	Benchmark Workshop on Herring in the Gulf of Bothnia	WKCLuB 2020	<a href="http://www.ices.dk/c">http://www.ices.dk/c</a>	04/02/2020 08:00	06/02/2020 15:00	ICES HQ, Copenhagen, Denmark
17	FRSG	WKEELMIGRAT	Workshop on relevant geographical area on the temporal variability of herring stocks	WKEELMIGRATION	<a href="http://communities.ices.dk">http://communities.ices.dk</a>	04/02/2020 08:00	06/02/2020 15:00	ICES HQ, Copenhagen, Denmark
18	ASG	WGPDMO	Working Group on Pathology and Diseases of Marine Organisms	WGPDMO 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	04/02/2020 23:00	06/02/2020 23:00	Reykjavik, Iceland
19	EPDSG	WGBIODIV	Working Group on Biodiversity Science	WGBIODIV 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	10/02/2020 08:00	14/02/2020 16:00	Barcelona, Spain
20	EPDSG	WGMME	Working Group on Marine Mammal Ecology	WGMME 2020	<a href="http://www.ices.dk/c">http://www.ices.dk/c</a>	10/02/2020 08:00	14/02/2020 16:00	Barcelona, Spain
21	FRSG	WKCELTIC	Benchmark Workshop on Celtic Sea Stocks	WKCELTIC	<a href="https://www.ices.dk/c">https://www.ices.dk/c</a>	10/02/2020 08:00	14/02/2020 16:00	ICES
22	FRSG	WKDEM	Benchmark Workshop for Demersal Species	WKDEM		10/02/2020 08:00	14/02/2020 16:00	ICES HQ, Copenhagen, Denmark
23	IEASG	WGIEAGS	Working Group on Integrated Ecosystem Assessment of the North Sea	WGIEAGS 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	10/02/2020 23:00	12/02/2020 23:00	ICES HQ, Copenhagen, Denmark
24	EOSG	WKBioArc	The Workshop on Scale, Otolith Biochronology Archives and the Role of Otoliths in Stock Assessment	WKBioArc 2020		11/02/2020 07:00	12/02/2020 16:00	Galway, Ireland
25	FRSG	WKFlatNSCS	Benchmark Workshop for Flatfish stocks in the North Sea and the Baltic Sea	WKFlatNSCS	<a href="http://www.ices.dk/c">http://www.ices.dk/c</a>	17/02/2020 08:00	21/02/2020 16:00	ICES, Copenhagen, Denmark

# 4. Do you want to get involved in ICES?

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25	EOSG	WKBioArc	The Workshop on Scale, Otolith Biochronology Archives	WKBioArc 2020		11/02/2020 07:00	12/02/2020 16:00	Galway, Ireland
26	FRSG	WKFlatNSCS	Benchmark Workshop for Flatfish stocks in the North Sea a WKFlatNSCS		<a href="http://www.ices.dk">http://www.ices.dk</a>	17/02/2020 08:00	21/02/2020 16:00	ICES, Copenhagen, Denmark
27	FRSG	WKTAF	Workshop on Training for the Transparent Assessment Framework WKTAF-BI			18/02/2020 08:00	19/02/2020 15:00	Lisbon, Portugal
28	FRSG	NIPAG	Joint NAFO/ICES Pandalus Assessment Working Group	NIPAG_PANDSKND 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	20/02/2020 08:00	21/02/2020 17:00	ICES HQ, Copenhagen, Denmark
29	FRSG	WKBaltSalMP	Workshop on Evaluation of certain provisions of a draft Baltic Sea Management Plan WKBaltSalMP 2		<a href="http://ices.dk/c">http://ices.dk/c</a>	23/02/2020 23:00	28/02/2020 16:00	ICES HQ
30	FRSG	WKREBUILD	Workshop on guidelines and methods for the evaluation of fish stocks WKREBUILD			24/02/2020 08:00	28/02/2020 15:00	ICES HQ, Copenhagen, Denmark
31	FRSG	WKBALTIC	Workshop on the Ecosystem Based Management of the Baltic Sea WKBALTIC 2020			25/02/2020 11:00	26/02/2020 13:00	ICES HQ, Copenhagen, Denmark
32	EPDSG	WGhabd	ICES - IOC Working Group on Harmful Algal Bloom Dynamics WGhabd 2020		<a href="http://www.ices.dk">http://www.ices.dk</a>	02/03/2020 08:00	04/03/2020 16:00	Gdynia, Poland
33	HAPISG	MCWG	Marine Chemistry Working Group	MCWG 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	02/03/2020 08:00	06/03/2020 17:00	Lisbon, Portugal
34	HAPISG	WGBEC	Working Group on Biological Effects of Contaminants	WGBEC 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	02/03/2020 08:00	06/03/2020 17:00	Lisbon, Portugal
35	HAPISG	WGBOSV	ICES/IOC/IMO Working Group on Ballast and Other Ship Vessels WGBOSV 2020		<a href="http://www.ices.dk">http://www.ices.dk</a>	02/03/2020 08:00	04/03/2020 17:00	Gdynia, Poland
36	HAPISG	WGMS	Working Group on Marine Sediments in Relation to Pollution WGMS 2020		<a href="http://www.ices.dk">http://www.ices.dk</a>	02/03/2020 08:00	06/03/2020 17:00	Lisbon, Portugal
37	FRSG	WKMIXFISH	Scoping workshop on next generation of mixed fisheries at WKMIXFISH 2020			03/03/2020 08:00	05/03/2020 16:00	ICES HQ
38	FRSG	WKTAF	Workshop on Training for the Transparent Assessment Framework WKTAF-BN			03/03/2020 08:00	05/03/2020 15:00	Lysekil, Sweden
39	HAPISG	WGITMO	Working Group on Introductions and Transfers of Marine Organisms WGITMO 2020		<a href="http://www.ices.dk">http://www.ices.dk</a>	04/03/2020 08:00	06/03/2020 17:00	Gdynia, Poland
40	EPDSG	WKSA	Workshop on Scallop Aging	WKSA 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	09/03/2020 08:00	13/03/2020 17:00	Aberdeen, Scotland, UK
41	IEASG	WGEAWESS	Working Group on Ecosystem Assessment of Western European Waters WGEAWESS 2020		<a href="http://ices.dk/c">http://ices.dk/c</a>	09/03/2020 08:00	13/03/2020 16:00	Galway, Ireland
42		ACOM	Advisory Committee	ACOM	<a href="https://ices.dk/">https://ices.dk/</a>	10/03/2020 08:00	13/03/2020 17:00	ICES HQ, Copenhagen, Denmark
43	HAPISG	WGBYC	Working Group on Bycatch of Protected Species	WGBYC 2020		10/03/2020 08:00	13/03/2020 16:00	Amsterdam, The Netherlands
44	FRSG	HAWG	Herring Assessment Working Group for the Area South of the Herring Bank HAWG 2020		<a href="http://ices.dk/c">http://ices.dk/c</a>	17/03/2020 08:00	25/03/2020 17:00	ICES HQ, Copenhagen, Denmark
45		SCICOM	SCICOM	SCICOM		17/03/2020 12:00	19/03/2020 12:00	ICES HQ, Copenhagen
46	EPDSG	WGZE	Working Group on Zooplankton Ecology	WGZE 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	23/03/2020 08:00	26/03/2020 16:00	Naples, Italy
47	EOSG	WGBEAM	Working Group on Beam Trawl Surveys	WGBEAM 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	24/03/2020 07:00	27/03/2020 16:00	Reykjavik, Iceland
48	FRSG	WGNAS	Working Group on North Atlantic Salmon	WGNAS 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	24/03/2020 08:00	02/04/2020 15:00	ICES
49	EPDSG	WGIMT	Working Group on Integrated Morphological and Molecular Data WGIMT 2020		<a href="http://ices.dk/c">http://ices.dk/c</a>	27/03/2020 08:00	27/03/2020 17:00	Naples, Italy
50	EOSG	IBTSWG	International Bottom Trawl Survey Working Group	IBTSWG 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	30/03/2020 06:00	03/04/2020 15:00	Lysekil, Sweden

Meetings REDO

# 4. Do you want to get involved in ICES?

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	A	B	C	D	E	F	G	H
81	EPDSG	BEWG	Benthos Ecology Working Group	BEWG 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	11/05/2020 07:00	15/05/2020 15:00	Torre Grande, Oristano, Italy
82	FRSG	WKENSEMBLE	Joint ICES-JRC Workshop on Model Ensembles for Stock Assessment	WKENSEMBLE 2020		11/05/2020 07:00	15/05/2020 15:00	ICES Secretariat, Copenhagen
83	IEASG	WGNARS	Working Group on the Northwest Atlantic Regional Sea	WGNARS 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	11/05/2020 07:00	15/05/2020 17:00	Woods Hole, USA
84	ASG	WGOOA	Working Group on Open Ocean Aquaculture	WGOOA 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	25/05/2020 22:00	27/05/2020 22:00	Portland, Maine, United States
85	EOSG	WGDG	Working Group DATRAS Governance	WGDG 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	26/05/2020 06:00	28/11/2019 16:00	Copenhagen, Denmark
86	HAPISG	WGSFDGOV	Working Group on Spatial Fisheries Data Governance	WGSFDGOV 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	26/05/2020 07:00	28/05/2020 16:00	ICES HQ, Copenhagen, Denmark
87	SCICOM Operational	DIG	Data and Information Group	DIG 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	26/05/2020 07:00	28/05/2020 16:00	ICES HQ, Copenhagen, Denmark
88	ASG	WGECCA	Working Group on Ecological Carrying Capacity in Aquaculture	WGECCA 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	30/05/2020 22:00	30/05/2020 22:00	TBD
89	EPDSG	WGCEPH	Working Group on Cephalopod Fisheries and Life History	WGCEPH 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	02/06/2020 07:00	05/06/2020 16:00	Santa Cruz, Tenerife, Spain
90	HAPISG	WGSFD	Working Group on Spatial Fisheries Data	WGSFD 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	08/06/2020 07:00	12/06/2020 16:00	Turku, Finland
91	EOSG	WGRFS	Working Group on Recreational Fisheries Surveys	WGRFS 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	15/06/2020 06:00	19/06/2020 13:00	Madeira or Gran Canaria, Spain
92	FRSG	WGEF	Working Group on Elasmobranch Fishes	WGEF 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	15/06/2020 07:00	27/06/2020 14:00	Horta, Azores, Portugal
93	FRSG	WKDSG	Workshop on Standards and Guidelines for fisheries dependent stocks	WKDSG (PENDING APPROVAL)		16/06/2020 08:00	19/06/2020 11:00	ICES HQ, Copenhagen, Denmark
94	FRSG	WGMIXFISH-M	Working Group on Mixed Fisheries Advice Methodology	WGMIXFISH-METHODS 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	22/06/2020 06:00	26/06/2020 14:00	Nantes, France
95	FRSG	WGWIDE	Working Group on Widely Distributed Stocks	WGWIDE 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	26/08/2020 07:00	01/09/2020 16:00	ICES HQ
96	EOSG	WKIDCLUP2	Workshop 2 on the identification of clupeid larvae	WKIDCLUP2		31/08/2020 06:00	04/09/2020 15:30	Bremerhaven, Germany
97	FRSG	WKDLSSLS	Workshop on Data-limited Stocks of Short-lived Species	WKDLSSLS II (PENDING APPROVAL)	<a href="http://www.ices.dk">http://www.ices.dk</a>	13/09/2020 22:00	18/09/2020 15:00	San Sebastian, Spain tbc.
98	FRSG	WGEEL	Joint EIFAAC/ICES/GFCM Working Group on Eels	WGEEL 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	21/09/2020 07:00	27/09/2020 22:00	Rabat, Morocco
99	HAPISG	MGWG	Methods Working Group	MGWG 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	21/09/2020 07:00	25/09/2020 15:00	Reykjavik, Iceland
100	HAPISG	WGCEAM	Working Group on Cumulative Effects Assessment Approach	WGCEAM 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	21/09/2020 07:00	25/09/2020 16:00	Canada (tbc)
101	FRSG	WGNSSK	Working Group on the Assessment of Demersal Stocks in the North Atlantic	WGNSSK_Pout	<a href="http://ices.dk/c">http://ices.dk/c</a>	22/09/2020 07:00	24/09/2020 15:00	By correspondence
102	FRSG	WGCSE	Working Group for the Celtic Seas Ecoregion	WGCSE_NEPH 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	28/09/2020 07:00	02/10/2020 15:00	By correspondence
103	EPDSG	WGGRAFY	Joint ICES/PICES Working Group on Impacts of Climate Change on Fisheries	WGGRAFY 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	29/09/2020 22:00	29/09/2020 22:00	TBD
104	EOSG	WGSMART	Working Group on SmartDots Governance	WGSMART 2020	<a href="http://ices.dk/c">http://ices.dk/c</a>	05/10/2020 05:00	05/10/2020 17:00	Gothenburg, Sweden
105	EPDSG	WGScallop	Scallop Assessment Working Group	WGSCALLOP 2020	<a href="http://www.ices.dk">http://www.ices.dk</a>	05/10/2020 07:00	09/10/2020 15:00	Reykjavik, Iceland
106	FRSG	WKLIFE X	Tenth Workshop on the Development of Quantitative Assessment Methods	WKLIFE X (PENDING APPROVAL)	<a href="http://ices.dk/c">http://ices.dk/c</a>	05/10/2020 07:00	09/10/2020 15:00	Lisbon, Portugal

Meetings REDO



# 4. Do you want to get involved in ICES?

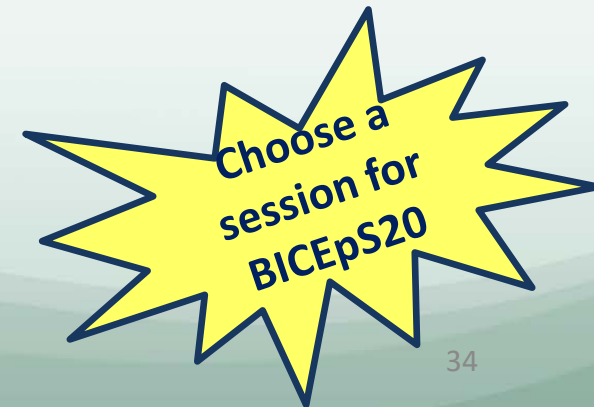
**In 2020, 153 active groups (incl. 35 new groups and workshops)**

	A	B	C		H
129	HAPISG	WGHIST	Working Group on the History of Fish and Fisheries	WGHIST	23:00 Boston, USA
130	HAPISG	WGMEDS	Working Group on Methods for Estimating Discard Survival	WGMEDS	to be confirmed
131	HAPISG	WGML	Working Group on Marine Litter		to be confirmed
132	HAPISG	WGMRE	Working Group on Marine Renewable Energy		to be confirmed
133	HAPISG	WGSHIP	Working Group on Shipping Impacts in the Marine		23:00 to be confirmed
134	HAPISG	WGVHES	Working Group on the value of Coastal Habitats for Explo		23:00 to be confirmed
135	IEASG	WGCERP	Working Group on Common Ecosystem Reference Points	WGCERP	00 TBD
136	IEASG	WGIAB	ICES/HELCOM Working Group on Integrated Assessments	WGIAB 20	0 TBD
137	IEASG	WGIBAR	Working Group on the Integrated Assessments of the Bare	WGIBAR	30/12/2020 TBD
138	IEASG	WGSOCIAL	Working Group on SOCIAL indicators	WGSOCIAL	30/12/2020 TBD
139	IEASG	WKTRANSPARE	Workshop on methods and guidelines to link human activi	WKTRANSPARE	30/12/2020 23:00 Copenhagen, Denmark
140	EOSG	WGACEGG	Working Group on Acoustic and Egg Surveys for Sardine an	WGACEGG 2020	31/12/2020 16:00 TBD
141	EOSG	WGELECTRA	Working Group on Electrical Trawling	WGELECTRA 2020	http://ices.dk/ 31/12/2020 16:00 TBD
142	EOSG	WGIDEEPS	Working Group on International Deep Pelagic Ecosystem Si	WGIDEEPS 2020	http://ices.dk/ 31/12/2020 07:00 31/12/2020 16:00 TBD
143	EOSG	WGISDAA	Working Group on Improving use of Survey Data for Asses	WGISDAA 2020	http://ices.dk/ 31/12/2020 07:00 31/12/2020 16:00 Copenhagen, Denmark
144	EOSG	WGNEPS	Working Group on Nephrops Surveys	WGNEPS 2020	http://ices.dk/ 31/12/2020 07:00 31/12/2020 16:00 TBD
145	EOSG	WGSINS	Working Group on Surveys on Ichthyoplankton in the Nort	WGSINS 2020	http://ices.dk/ 31/12/2020 07:00 31/12/2020 16:00 Belfast, Northern Ireland
146	FRSG	WKG MSE3	The third Workshop on guidelines for management strateg	WKG MSE3 (PENDING APPROVAL)	31/12/2020 07:00 31/12/2020 14:00 TBD
147	FRSG	WKNSROP	Workshop on the North Sea reopening protocol	WKNSROP (PENDING APPROVAL)	31/12/2020 07:00 31/12/2020 14:00 TBD
148	EOSG	SCRDB	Steering Committee of the Regional Fisheries Database	SCRDB 2020	31/12/2020 08:00 31/12/2020 14:00 TBD
149	FRSG	WGHANSA	Working Group on Southern Horse Mackerel, Anchovy, and	WGHANSA 2020_June	http://www.ices.dk/ 31/12/2020 08:00 31/12/2020 16:00 tbc.
150	FRSG	WGHANSA	Working Group on Southern Horse Mackerel, Anchovy, and	WGHANSA_Anchovy	http://www.ices.dk/ 31/12/2020 08:00 31/12/2020 16:00 tbc.
151	FRSG	WGMIXFISH-ADV	Working Group on Mixed Fisheries Advice	WGMIXFISH-ADVICE 2020	https://ices.dk/ 31/12/2020 08:00 31/12/2020 14:00 tbc
152	EOSG	WGCATCH	Working Group on Commercial Catches	WGCATCH 2020	http://ices.dk/c 31/12/2020 08:30 31/12/2020 15:00 TBD
153	EOSG	WGISUR	Working Group on Integrating Surveys for the Ecosystem A	WGISUR 2020	http://ices.dk/c 31/12/2020 17:00 31/12/2020 16:00 Bergen, Norway
154					

# 5. Activities and products

## Themes of BICEpS Colloquia

- 2018 => Presentation of ICES working (RBINS)
- . Presentation of ACOM & 5 Steering Committees under SCICOM
  - . Scientific presentations
  - . Brainstorming on future BICEpS activities
- 2019 => 3 themes of ICES Science Plan (ILVO)
- . Ecosystem science
  - . Seafood production
  - . Conservation and management science
- 2020 => 4 other themes of ICES Science Plan (RBINS)
- . Impacts of human activities
  - . Observation and exploration
  - . Emerging techniques and technologies
  - . Sea and society



# 5. Activities and products

All activities and products are on BICEpS website





# 5. Activities and products

World-Café brainstorming @ BICEpS Colloquium 2018



**Who's Who?**  
 o do we need to know?  
**YES!**  
 ecosystem networking funding  
 approach  
 o calendar/social media/website  
 o news -> mail/newsletter?

**Information flow**  
 o website ICES = bottleneck  
 o need 4 platform  
 -> Request to ICES  
 -> Repeat Biceps!  
 -> Incorporate in institute website

**Interaction**  
 o within loop  
 o outside loop  
 -> newsletter / highlights  
 -> exercises of / with members of different Wb's in BF  
 => repeat Biceps -> organisational  
 -> science

**Network**  
 o comprehensive networks?  
 o mapping  
 -> infographic  
 -> involve INBO & universities & policy?

**Recruitment**  
 o gaps in wq's  
 o ad hoc questions  
 -> biceps presented @ events  
 -> ICES-ambassadors  
 -> funding for long-term engagement

**Profile**  
 o web presence  
**YES** ↔ **NO**  
 informal transparency multi-disciplinary | time investment compete with ICES?

**BICEpS World Café**  
 REINFORCING BELGIAN ICES PEOPLE  
 14-11-2018 @RBINSmuseum  
 #ICESBelgium

ILVO



# 5. Activities and products

## Content of BICEpS Annual Report 2018

- BICEpS activities in 2018
- Summary of BICEpS colloquium
- Outcome of the World-Café discussion
- Expectations for the future & Action points
- Annexes:
  - Belgian ICES members 2018
  - BICEpS18: Programme, Abstracts, Participants
  - Compilation of BICEpS18 presentations



Check the  
Display Copies

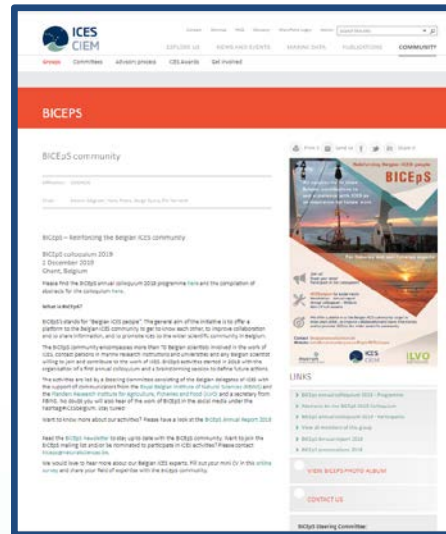
Legal deposit: D/2019/0339/1

ISBN: 9789073242432

# 5. Activities and products

Website hosted by ICES since May 2019

Newsletter since October 2019



BICEpS POSTER



[View this email in your browser and discover BICEpS web page](#)

## BICEpS News #1 - A newly born community



Joins us for **BICEpS 2019 Colloquium** hosted by ILVO in Ghent on 2 December 2019.

Call for abstracts until 31 October.

Registration is free but mandatory before 25 November.

Have a look at **BICEpS 2018 activities** and membership list. Browse the **abstracts** of the first colloquium, outcome of the World-Café discussion, actions points identified and **pictures of the day** or the compilation of **2018 PowerPoint presentations**.

### Latest news from the Belgian ICES community



**NEW NOMINATION**

Valérie Dulière is our latest nominated expert to ICES. She is an experienced environmental modeller. Working for the Royal Belgian Institute of Natural Sciences since 2010, she has, e.g. developed the state-of-the-art 3D drift and fate oil spill model OSERIT. She also worked on a wide range of applications of the Lagrangian approach from backtracking jellyfish blooms to simulating fish



# 5. Activities and products



Hashtag **#ICESbelgium** , no own account



## Mini CV compilation

to be published in January on BICEPs website (updated once a year)

# Belgian ICES experts - mini CV's

- Name + Affiliation(s)
  - Field of expertise delivered to ICES (max 100 words)
  - List of ICES group membership
  - Last contribution to ICES
  - Next contribution to ICES (Working Group, Workshop)
  - Can you send a picture of you?
- => Will be published online end of January



To date 27  
mini CV's  
submitted





# TORREELE EIs (ILVO, ACOM member)

**Expertise:** Fishery-dependent & -independent data, quality of data, landing obligation, management of fisheries, ecosystem approach of fisheries, MSFD, National Correspondent Data Collection Framework Belgium, co-chair of the Regional Coordination Group DCF, camera & digital analysis tools

**Membership:** ACOM, WGBIOP, PGDATA, SCRDBES, WGBEAM, WGMLEARN, several ADGs, BICEpS Steering Committee

**Last contribution to ICES:**  
ACOM September Meeting, ADG FOMIX

**Next contribution:** SCRDBES, PGDATA



# DEGRAER Steven (RBINS, SCICOM member)

**Expertise:** Benthic ecology, Offshore wind farm effects, Marine Strategy Framework Directive, Monitoring, Sea floor integrity

**Membership:** BEWG, WGMBRED, WGCEAM, SCICOM, BICEpS Steering Committee

**Last contribution to ICES:** ADGD6Pres (November 2019)

**Next contribution:**  
SCICOM mid-term meeting (March 2020)



# POLET Hans (ILVO, Science director)

**Expertise:** Fishing gear technology, discarding in demersal trawl fisheries, seafloor disturbance of beam trawling and demersal otter trawling, alternative fishing techniques for towed fishing gear, fleet dynamics, fisheries data and fishing vessel as a platform for data collection, business intelligence tools for skippers and vessel owners.

**Membership:** Working Group on Fishing Technology and Fish Behaviour, Working Group on Fisheries Acoustics Science and Technology, Working Group on Crangon Fisheries, Working Group on Pulse Fishing

**Last contribution to ICES:** Council (Oct. 2019)

**Next contribution to ICES:**

WGCran, written Council approval procedures, appointment of Delegates, securing BE financial contribution. Participation to next Council.



# SCORY Serge (RBINS)

**Expertise:** Marine engineering; Physical oceanography; Data Management; Management; Accounting; Connection with MSFD requirements; Connection with other international bodies (EEA, IODE, ARctic Council); Administrative contact for BE involvement in ICES

**Membership:** Formerly: WG-MDM (now "DIG");  
Currently: One of the two Belgian delegates to the Council

## **Last contribution to ICES:**

Participation to the Council meeting  
(9-10 Oct. 2019)

## **Next contribution to ICES:**

Continuous: written Council approval procedures, appointment of Delegates, securing BE financial contribution. Participation to next Council.



## 6. Action points

### from BICEpS18 World-Café discussion

#### Obj. 1: Actively recruit more experts in Belgium


- ✓ Create an enlarged BICEpS **mailing list**  
=> still difficult to find contact persons in key institutions
- ✓ Improve dissemination of information  
=> call for nominations circulated by email, creation of the website
- ✓ Clarify **who does what** in Belgium in relation to ICES  
=> Annual publication of the BE membership list, Mini CV's
- ❑ **Present BICEpS network** at other fora, conferences, meetings and to students  
=> Present where are the current gaps in expertise  
=> Participate to annual VLIZ marine science day, marine biology symposium
- ✓ Prepare posters and flyers that can be brought to events  
=> **Please, take some today !!! We count on YOU**

## 6. Action points

### from BICEpS18 World-Café discussion

#### Obj. 2: Support active participation of Belgium in the work of ICES

- ✓ Spread the news to the network, increase outreach com  
=> Poster, Mails, Newsletters and expand contact list to marine scientists in Belgium and policy makers
- ✓ Create a web space for the BICEpS community  
=> Website hosted by ICES Secretariat
- ✓ Harmonise communication on social media # ICESbelgium
- ✓ Organize an annual BICEpS meeting => Done
- ✓ Involve the other Belgian actors that are active in ICES and also involve policy makers
- Define a few case studies relevant for the policy in Belgium*
- Inverstigate how to create a calendar in the cloud*



For  
BICEpS20?



## 6. Action points

### from BICEpS18 World-Café discussion

#### Obj. 3: Communicate the added value of BICEpS to ICES

- ✓ Share BICEpS outcomes with ICES when attending ACOM, SCICOM, Council meetings, at the communication session of the ASC, the January meeting of WG Chairs  
=> Done
- ✓ Provide all ICES expert members with an identifier  
=> You received an ICES lanyard today 😊
- ✓ Strengthen the network of experts by publishing a list of members with a short description expertise  
=> Mini CV's from BE experts will be published online on BICEpS web page
- ✓ Invite other countries to follow the BICEpS approach to help recruiting more scientists => Done at Council, SCICOM
- ✓ Increase synergies and interactions among different expert groups => Ongoing by ICES



# 7. Hosting the Annual Science Conference in Belgium?

BELGIUM hosted ASC in 2000

With 20 members countries,  
it's time to host again...

Constraints:

Length of the procedure because of the obligation for European calls for tenders to select the venue

Budget need to be secured ~ 3 years in advance

Budget financed by host country is between 200 K€ to 250 K €

With a Federal government in “current affairs” in 2019 + elections, the fundraising strategy could not be launched

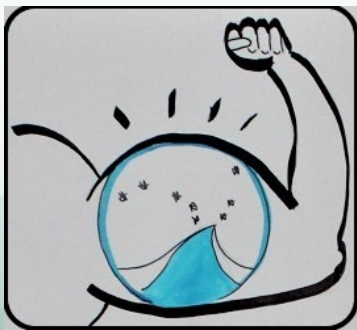
=> PROJECT POSTPONED



# Thank you for your attention



- You have an idea to share? Sent it to our virtual idea box: [biceps@naturalsciences.be](mailto:biceps@naturalsciences.be)
- All BICEpS **outputs** are communicated to ICES (direct contacts with the secretariat, via SCICOM delegate meeting and ACOM delegate meeting)
- A **special thank** for the members of the ICES Secretariat continuously supporting the communication work of BICEpS and maintaining [BICEpS website](#) for us, in particular Malene Eilersen, Karolina Reducha, Terhi Minkkinen and Vivian Piil (nominations).



# Good to know from ACOM

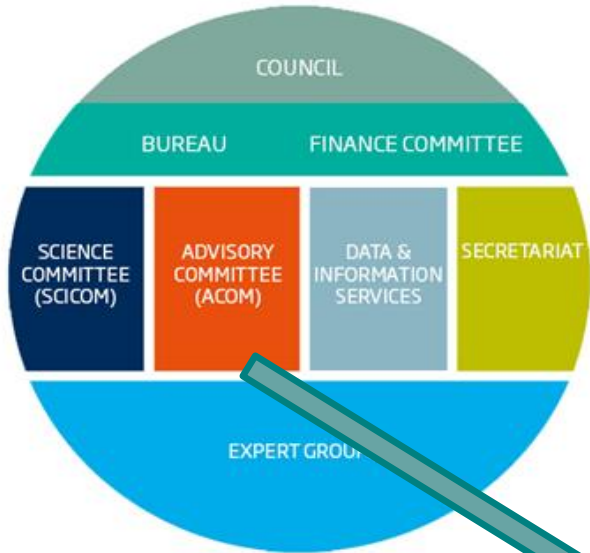
By Els Torreele (ILVO)

2nd BICEpS colloquium, Ghent, 2 December 2019

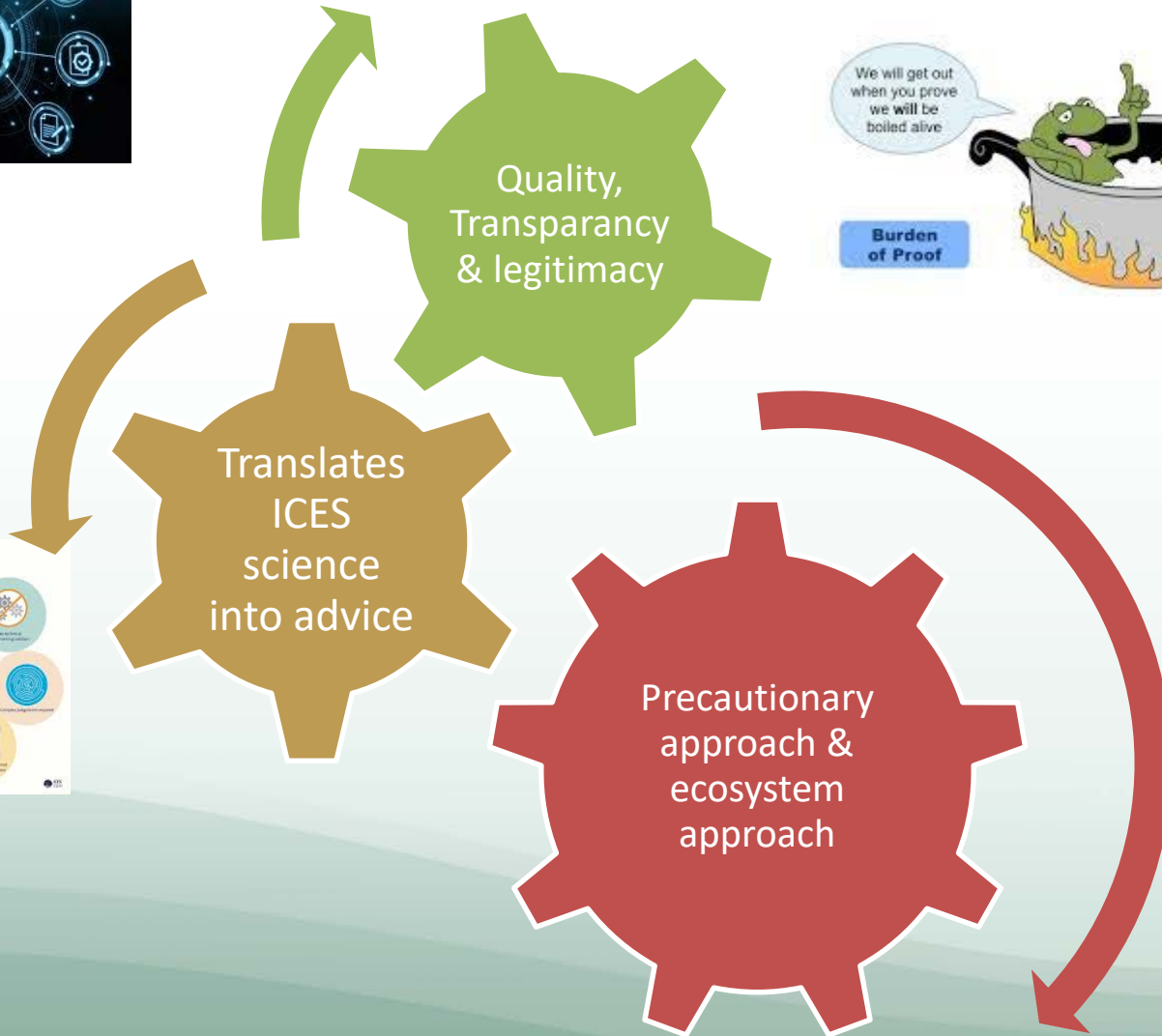
# CURRENT STATUS

- ✓ General structure
- ✓ Role ACOM
- ✓ Flow of the advice
- ✓ Phases of the advice season
- ✓ New structure

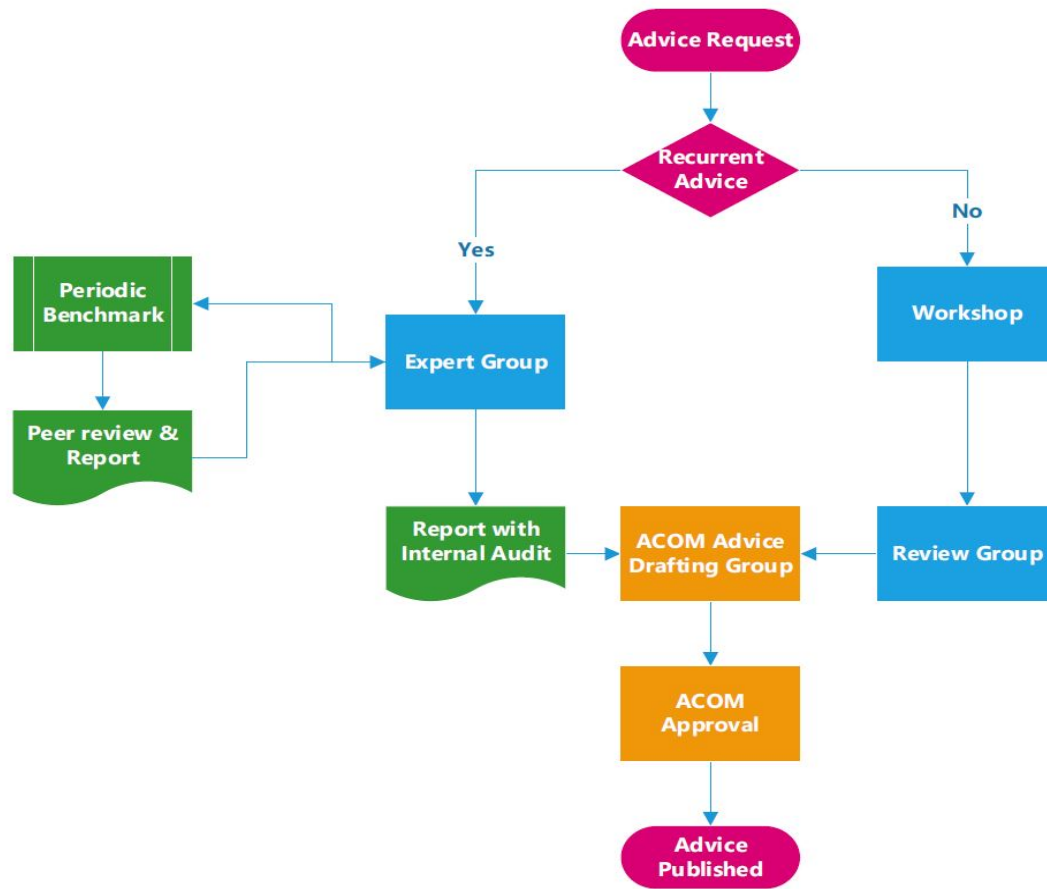
# General structure



# Role ACOM



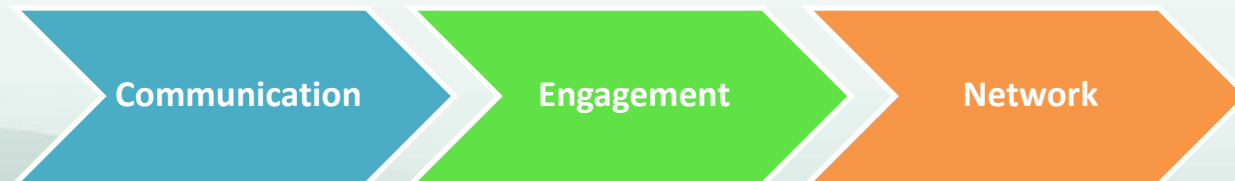
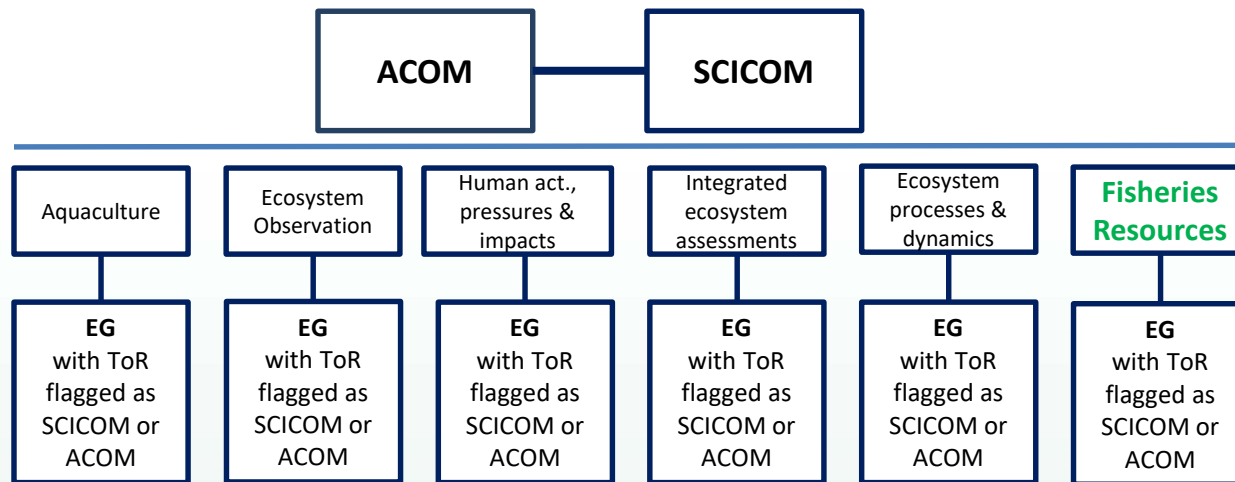
# General - Flow of the Advice





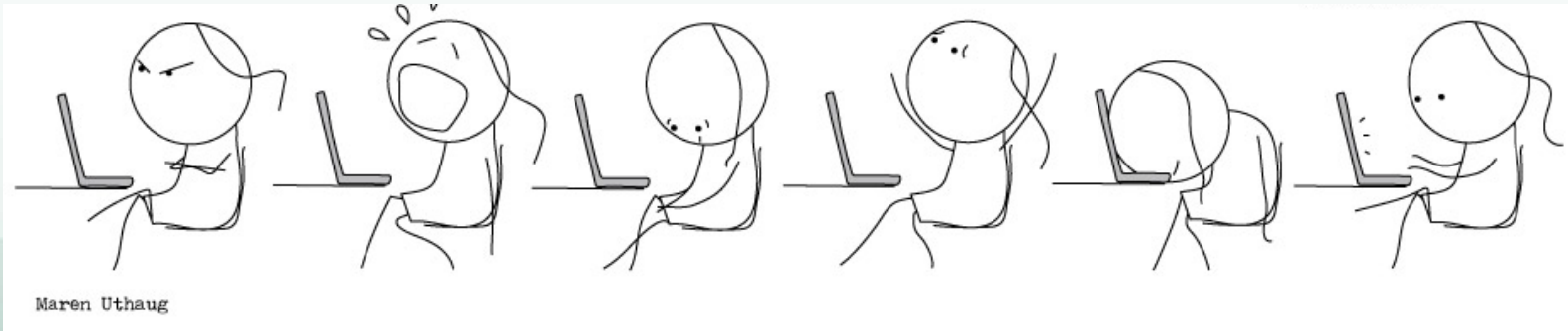
# NEW STRUCTURE

=> all EG's one structure



# Phases of an advice season

- Frustration (planning, workload)
- Inter-dependence of process steps (delivery in time of bits)
- ‘Why-oh-why’ are guidelines not followed? not on time available?
- We’re never gonna make it...
- ‘Send’...phew...



# Advice round done They are available in the library...

https://www.ices.dk/?k=#0ee8630b-6244-4748-a34d-8544e994db9f=%7b%22%22%22%2c%22r%22%5b%7b - Internet Explorer

ICES CIEM

Contact Sitemap FAQ Glossary SharePoint Login Admin Search Search in tile view

EXPLORE US NEWS AND EVENTS MARINE DATA **PUBLICATIONS** COMMUNITY

Library Our publications ICES Journal of Marine Science Aspiring authors ICES Style Guide ICES peer-review database

## LIBRARY SEARCH

Type

All

**Guidelines and Policies (19)** [Clear Search](#)

Advice (19) Search for all ICES publications. Use the refinement panel on the left to narrow down your search. Having trouble finding what you are looking for? Go to [Search FAQs](#) for more detailed instructions or contact our librarian at [library@ices.dk](mailto:library@ices.dk).

Year

2019 (2)

2018 (15) Relevance

2017 (14)

2016 (12)

Area

General (19)

- Technical Guidelines - Definitions of stock status**
- Technical Guidelines - Guidelines for Advice Drafting Groups**
- Technical Guidelines - Rounding rules to be applied in ICES advice**
- Technical Guidelines - Advisory process**

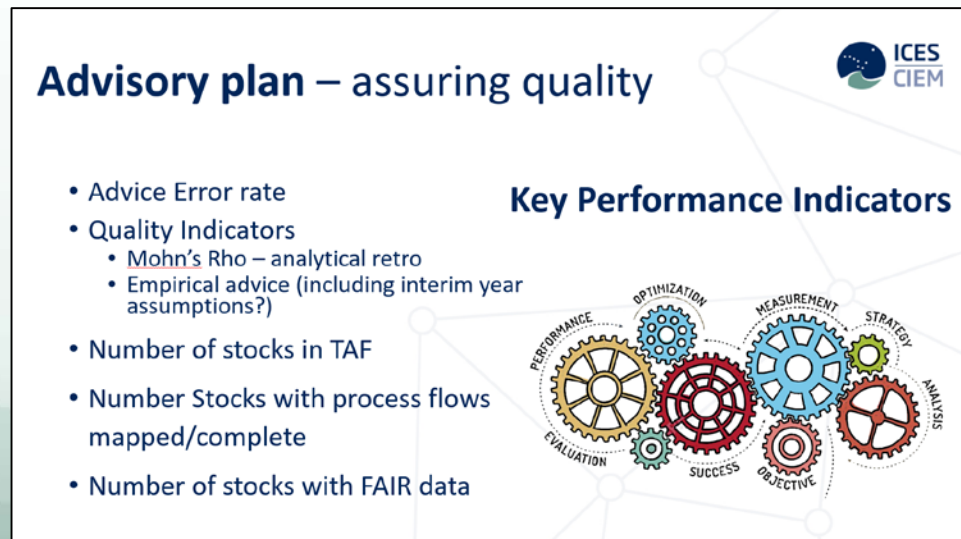
# CHALLENGES to COME for ACOM

- ✓ QUALITY – ACCREDITATION ICES DATA CENTRE
- ✓ ECOSYSTEM IMPACT FISHERIES
- ✓ FISHERIES OVERVIEW & MIXED FISHERIES

# QUALITY – ACCREDITATION ICES DATA CENTRE

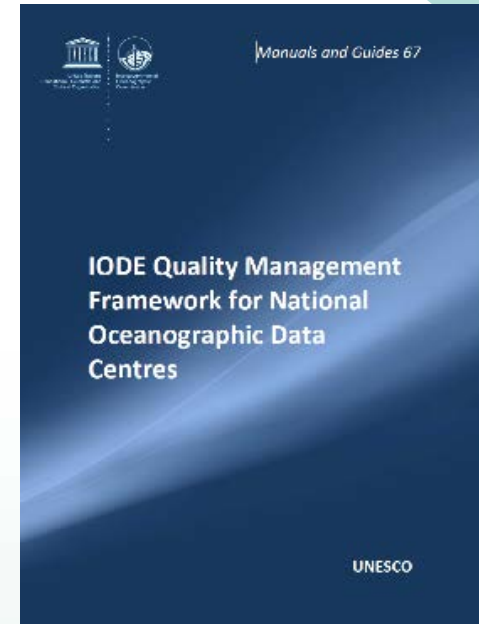
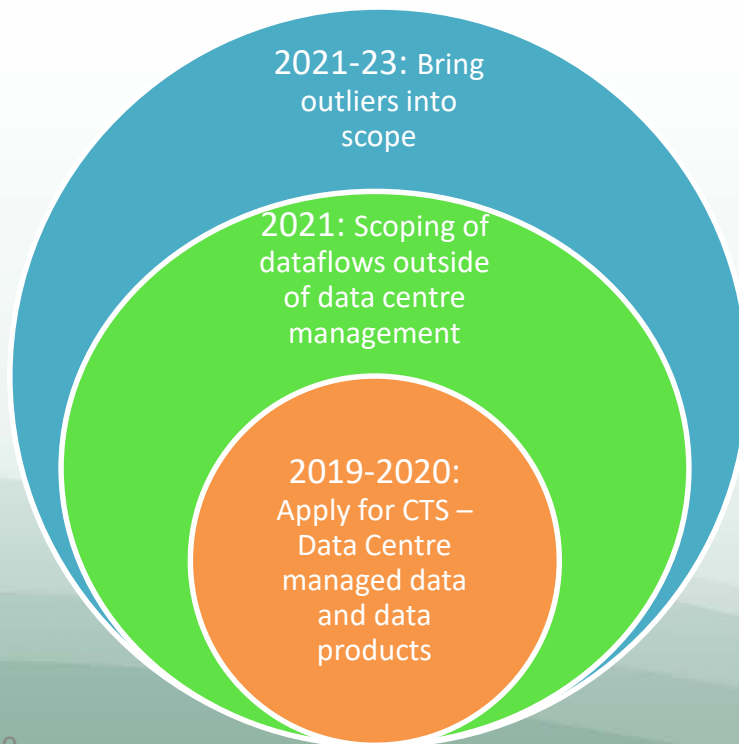
## WHY?

- External pressure (advice recipients)
- To audit our processes and documentation
- To identify gaps and areas for improvement
- To follow best practice
- Future proofing services
- External and impartial review



# QUALITY – ACCREDITATION ICES DATA CENTRE

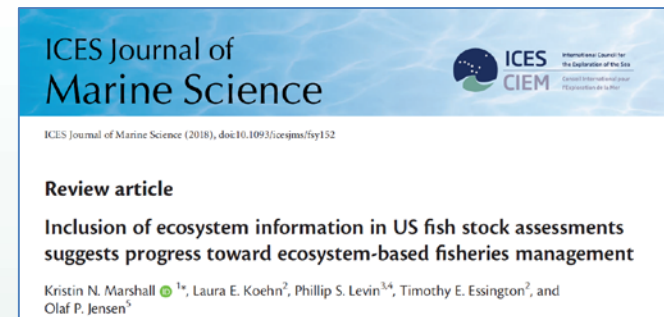
- <https://www.iode.org> (no dedicated site)
- 14 requirements
- 10 Data centres accredited
- **CoreTrustSeal** recommended by DIG
- Aim to apply in 2020



# ECOSYSTEM IMPACT FISHERIES

## Include Productivity changes in fishing opportunities

1. To evaluate the level of implementation of the ecosystem approach in fisheries advice and management in ICES, ACOM was asked in 2018 to consider how ICES accounts for changes in ecosystem productivity in the fishing opportunities advice.
2. ACOM 2019 suggested to consider the *Marshall et al. 2019* approach
3. To monitor the inclusion of changes in ecosystem/fisheries productivity, ACOM 2019 agreed to test an approach with a limited number of expert groups to see how to tailor the approach to ICES needs.





# ECOSYSTEM IMPACT FISHERIES

## IMPACT on WGs?

- Each EWG Chair be contacted before the end of 2019 to explain the motivation and expected workload (by ACOM leadership and secretariat)
- The SAG database ( <http://standardgraphs.ices.dk>) needs to prepare to accept the information from the productivity audit (ICES data centre)
- A generic term of reference for the *stock assessment expert groups* (ACOM leadership and FRSG Chair).

=> In October 2019, the following generic Term of Reference was added to the assessment expert group resolutions:

*“Take 15 minutes, and fill a line in the audit spread sheet ‘Monitor and alert for changes in ecosystem/fisheries productivity’; for stocks with less information that do not fit into this approach (e.g. higher categories >3) briefly note where and how productivity, species interactions, habitat and distributional changes, including those related to climate-change, have been considered in the advice.”*



WHAT IS THE...  
Impact

# FISHERIES OVERVIEW & MIXED FISHERIES

## Summary of :

- the fishing activity and impacts within an ecoregion.
- including which countries are catching what species,
- the various fishing methods being used,
- and how stocks are managed.



Regions FO available:

- ✓ [Baltic Sea](#)
- ✓ [Barents Sea](#)
- ✓ [Bay of Biscay and Iberian Coast ecoregion –](#)
- ✓ [Celtic Seas -](#)
- ✓ [Greater North Sea –](#)
- ✓ [Icelandic Waters](#)
- ✓ [Norwegian Sea](#)

# FISHERIES OVERVIEW incl. MIXED FISHERIES

**Mixed-fisheries** challenge for sustainable management of individual fish stocks.

⇒ Fisheries managers and stakeholders need understand the various interactions:

⇒ *who is catching what species with what gears and in what areas.*

**NEW** to

**THREE FO** inclusive MIXFISH considerations  
With the presentation of various scenarios illustrate the **tradeoffs** involved in **moving** from **single** stock management to **mixed** fisheries management

[Bay of Biscay and Iberian Coast ecoregion – including mixed-fisheries considerations](#)

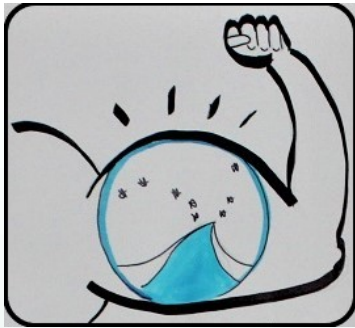
[Celtic Seas - including mixed-fisheries considerations](#)

[Greater North Sea - including mixed-fisheries considerations](#)



# Concluding slide

- In the possibility of giving input to strategic discussion within ACOM,
- Follow the whole process
- However: time consuming and sometimes a challenge 😊...



# The ICES Community

- 5000+ scientists
- 700+ organisations
- 20 member countries
- 2 committees
- 6 steering groups
- 200+ groups / committees





One size fits all ?



# The challenge...

dreamstime





NO

NL

LV

NO

IRL

BE

SCICOM  
Chair

FR

UK

FI

ISL

US

ICES

ICES

EST

PT

ACOM  
Chair

UK

RU

us

UK

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US

CA

ICES

ICES

UK

ICES

DE

ES

LT

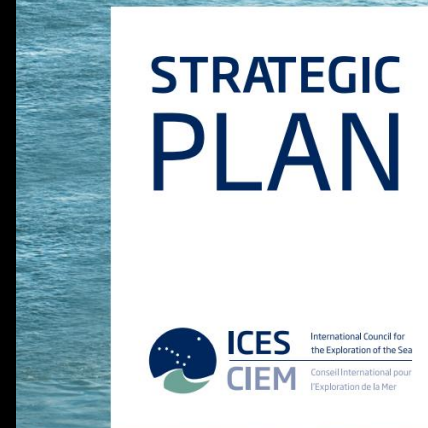
# The Science Committee

# SCICOM's tools & means

- ICES Mission
- ICES Science plan
- ICES Strategic plan
- Annual Science Conference
- Expert Groups



# Marine ecosystem and sustainability science for the 2020s and beyond



# Science priorities

To deliver “Marine ecosystem and sustainability science for the 2020s and beyond”, our network will address seven interrelated scientific priorities, each with an objective and purpose.



## Ecosystem science

Advance and shape understanding of the structure, function, and dynamics of marine ecosystems – to develop and vitalize marine science and underpin its applications



## Impacts of human activities

Measure and project the effects of human activities on ecosystems and ecosystem services – to elucidate present and future states of natural and social systems



## Observation and exploration

Monitor and explore the seas and oceans – to track changes in the environment and ecosystems and to identify resources for sustainable use and protection



## Emerging techniques and technologies

Develop, evaluate, and harness new techniques and technologies – to advance knowledge of marine systems, inform management, and increase the scope and efficiency of monitoring



## Seafood production

Generate evidence and advice for management of wild-capture fisheries and aquaculture – to help sustain safe and sufficient seafood supplies



## Conservation and management science

Develop tools, knowledge, and evidence for conservation and management – to provide more and better options to help managers set and meet objectives



## Sea and society

Evaluate contributions of the sea to livelihoods, cultural identities, and recreation – to inform ecosystem status assessments, policy development, and management

The collective and collaborative efforts of our science network to address the seven interrelated priorities will generate ecosystem and sustainability science that advances and shapes understanding of marine ecosystems and their interactions with society and climate. Such understanding, and the data and evidence streams that enrich it, will advance ICES capacity to provide authoritative and impartial insight and advice into the state and sustainable use of our seas and oceans.

# SCICOM's tools & means

- ICES Mission
- ICES Science plan
- ICES Strategic plan
- Expert Groups
- Annual Science Conference



## Example

**ICES approach as evidence provider to EBM – pressures on species & habitats biodiversity.**

 @ICES\_ASC

[www.ices.dk](http://www.ices.dk)



Science for sustainable seas

# Fish or ecosystems ?

Example

# IEA groups and advice

Mark Dickey-Collas

 @DickeyCollas



ICCF  
ICES

Science for sustainable seas

# Advice or science ?



WORKING GROUP ON MARINE BENTHAL  
RENEWABLE DEVELOPMENTS (WGMBRED)

VOLUME 1 | ISSUE 26  
ICES SCIENTIFIC REPORTS  
RAPPORTS SCIENTIFIQUES CIEM

Think bottom-up?  
Act top-down?



WORKING GROUP FOR THE CELTIC SEAS  
ECOREGION (WGCSE)

VOLUME 1 | ISSUE 29  
ICES SCIENTIFIC REPORTS  
RAPPORTS SCIENTIFIQUES CIEM



ICES 2019  
ANNUAL  
SCIENCE  
CONFERENCE

GOTHENBURG, SWEDEN

9-12 September 2019

WWW.ICES.DK/ASC2019

ICES 2018  
ANNUAL  
SCIENCE  
CONFERENCE

24-27 September 2018  
University of Hamburg, Germany

# Consolidating and attracting

**KEYNOTE**  
Integrating biological and  
economic perspectives of regime  
shifts in managed marine ecosystems  
Martin Quast, Kiel University, Germany &  
Christian Möllmann, University of Hamburg, Germany

Unexpected outcomes and  
unpredictable managers, fishers, and scientists  
Ingrid van Putten, CSIRO Oceans and Atmosphere, Australia

Understanding deep-sea Atlantic ecosystems at ocean basin scale  
Murray Roberts, University of Edinburgh, United Kingdom

#ICESASC18  
WWW.ICES.DK/ASC2018



**Your thoughts ?**

**Welcome to BICEpS !**



# How discard survival research is shaping European policy?

Sven Sebastian Uhlmann (ILVO)

2<sup>nd</sup> BICEpS colloquium, Ghent, December 2<sup>nd</sup>, 2019



## Policy context

**The Landing Obligation**



- Unless: exempt on the basis of 'high survival' – triggered need for survival studies

# ToR (WGMEDS)

1. Provide guidance on 'Methods to Estimate Discard Survival' studies
2. Review and meta-analysis of discard survival data
3. MEDS and ongoing monitoring requirements and methods?
4. Application of discard survival estimates in fisheries management

May 2014 the first version of the ICES guidance on survival assessments published



### 1 Vitality assessments:

- visual assessments
- at-vessel mortality and survival *potential*



### 2 Captive observation:

- monitor 'discarded' catches
- excludes predation, controls determine captivity effect



### 3 Tagging:

- electronic tags on discards
- includes predation

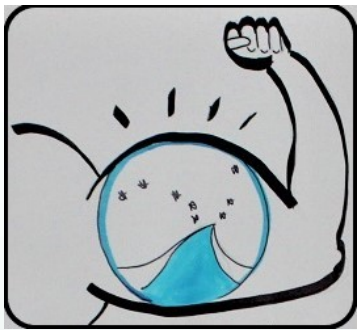






# Conclusions

- How was your work inspired by ICES
  - WKMEDS was set up upon STECF/ICES request
- How did/will your work contribute to the ICES advisory process and/or scientific knowledge basis?
  - Provided guidelines for field practitioners to harmonize methodology of discard survival studies
  - Highlighted decision making contributions of ACs, HLGs, EU Commission and the influence of STECF and ICES
  - Industry has benefited with award of exemptions; scientists benefited with opportunity for research
  - Provided new knowledge on fisheries – potential to improve stock assessments (cross-links with other WGs)



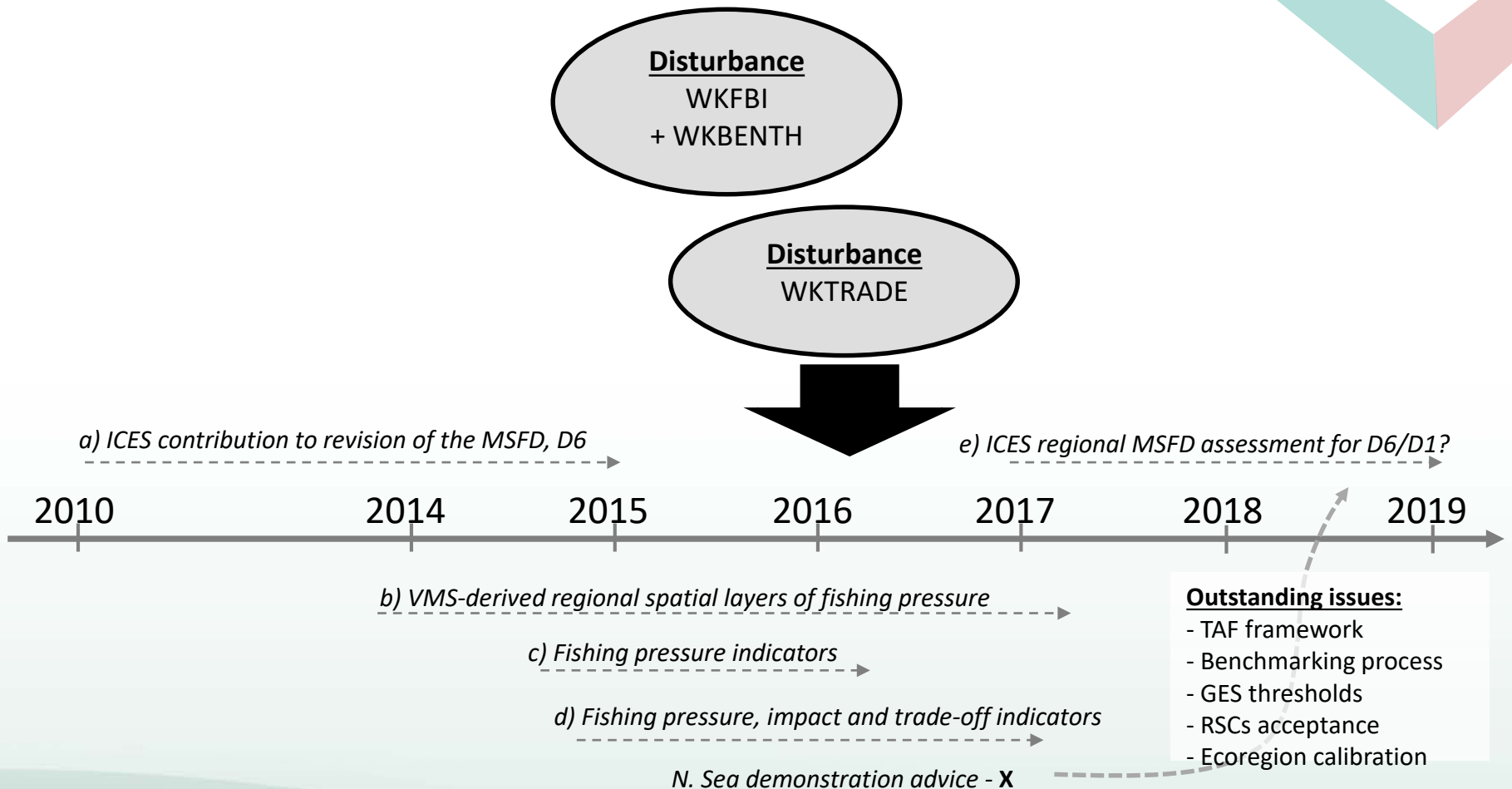
# Working group on fisheries benthic impact and trade-offs

By Gert Van Hoey, Jochen Depestele

2nd BICEpS colloquium, Ghent, 2 December 2019

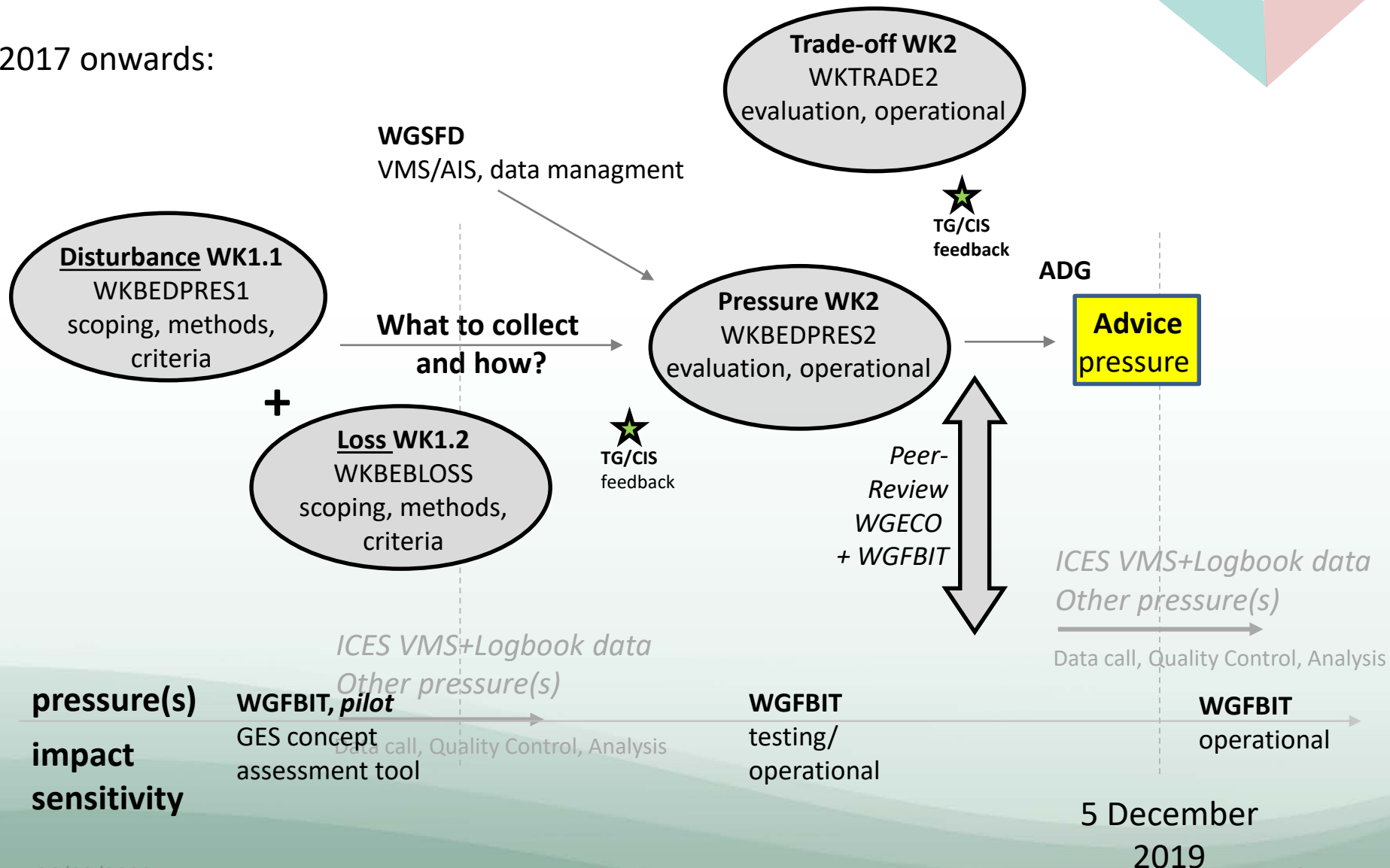


# ICES contribution to Seafloor integrity



# ICES contribution to Seafloor integrity

2017 onwards:



# Mission of WGFBIT

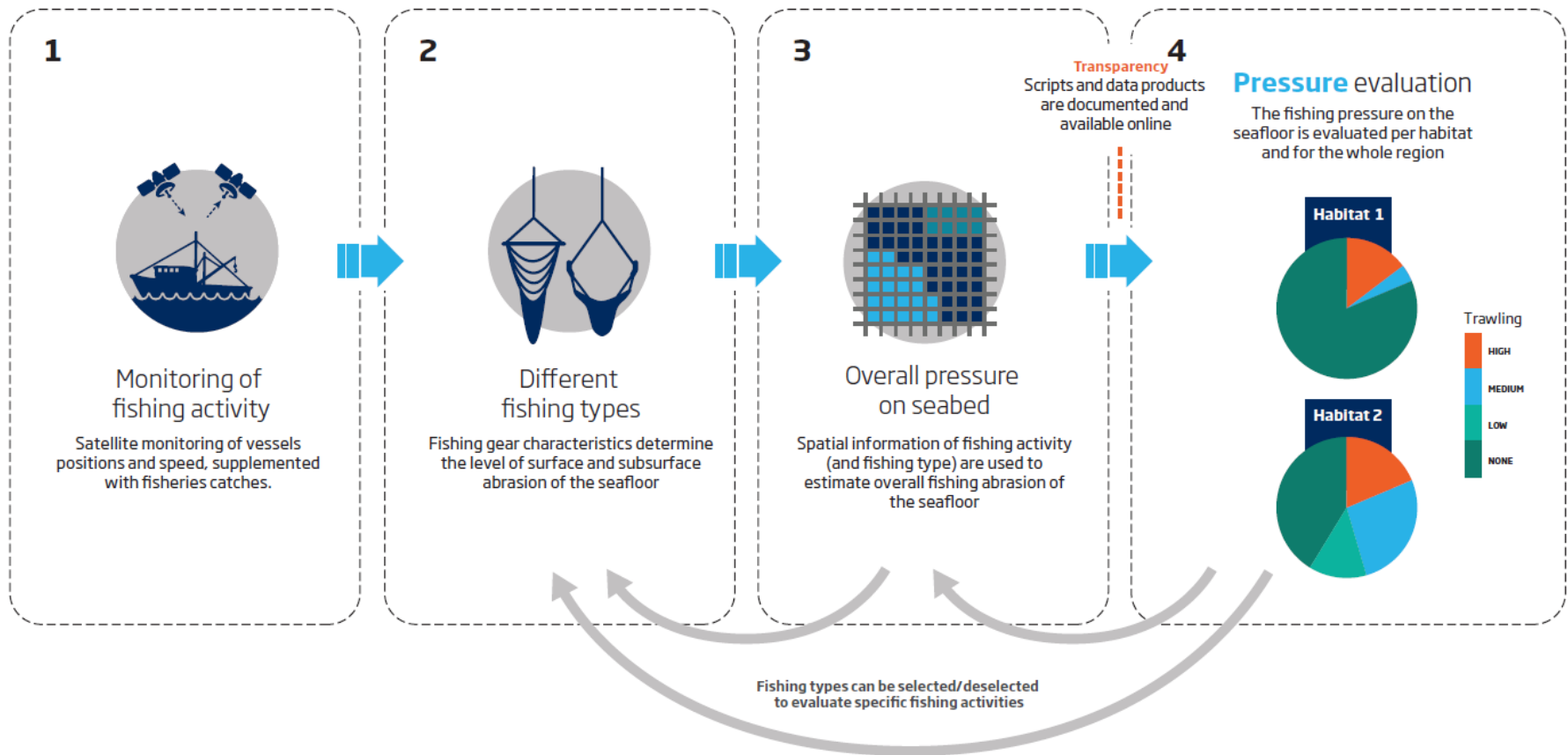


Developing the assessment framework and methods to be used as a “*common language*” for cross-regional assessments of the state of the sea floor.

- Estimate footprints of fishing pressure
- Modelling sensitivity of the sea floor to disturbances such as bottom trawling
- Establish reference values for avoiding habitat degradation
- Trade-offs between impact and landings or revenue from fishing.

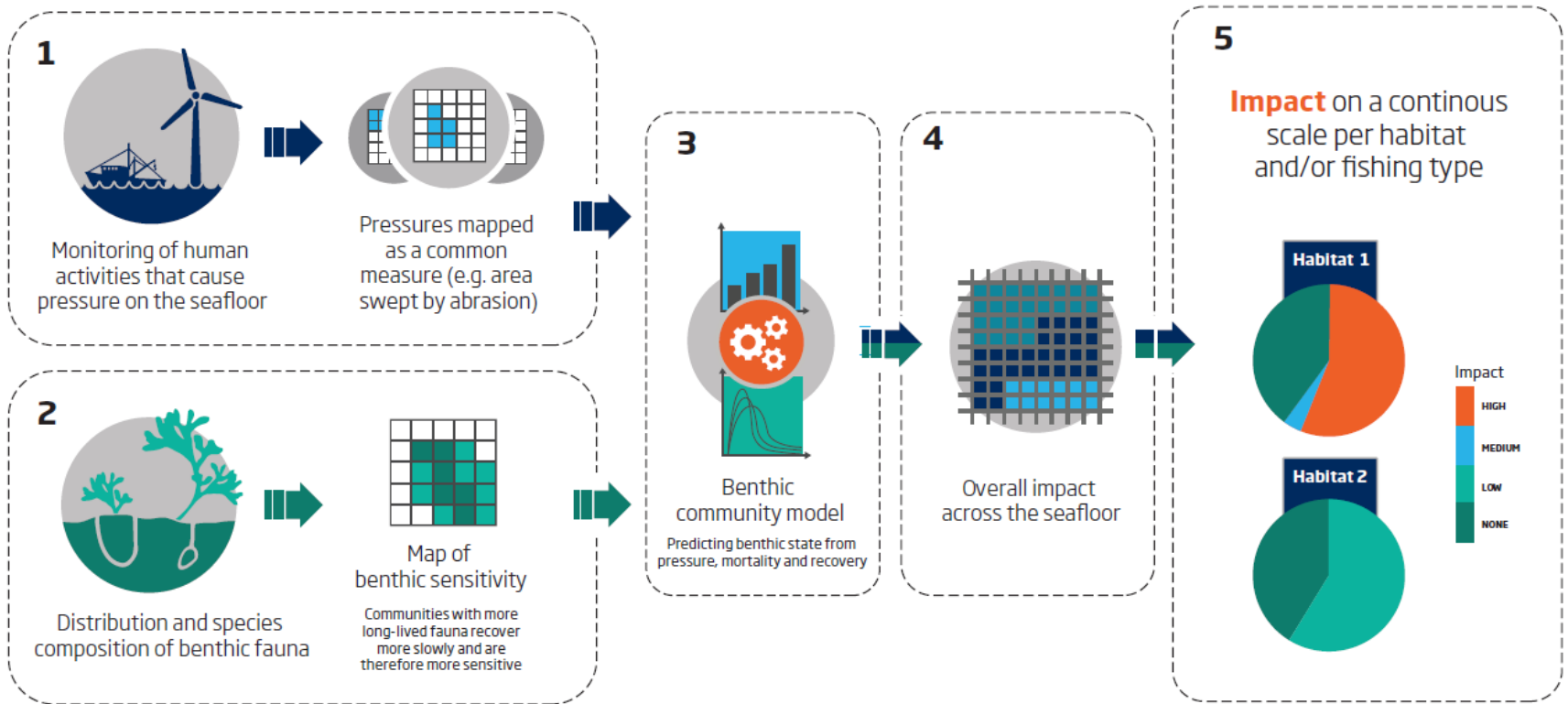
# Pressure

Translating human activities (e.g. different fishing types) into a common measure of pressure on the seafloor and its seafloor habitats



# Impact

Evaluating seafloor impact and benthic habitats that are at greatest risk from human activities disturbing the seafloor





# WGFBIT meeting 1: goals

## Fishing pressure

- ICES VMS dataflow for fishery data (WGSFD)
- Linking habitat maps – VMS-based fishing pressure output

## Habitat sensitivity

- Technical guideline about Benthic community model (Hiddink et al.)
- Compilation of possible data sources about benthos data, longevity, ...
- Ground truthing procedure

## Impact assessment & trade-off

- Some show-case scenarios to highlight the potential of the assessment framework under development to study the consequences of various management measure implementations (trade-off).

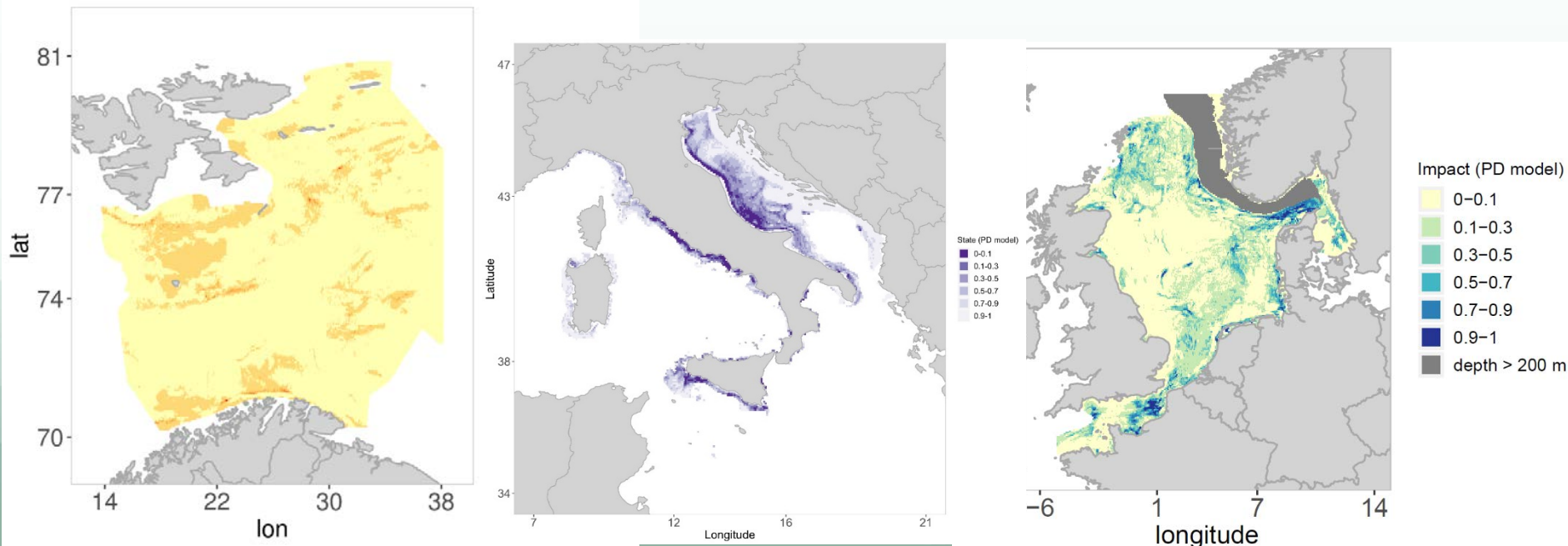
# WGFBIT meeting 2: goals

## Production of REGIONAL ASSESSMENTS

- FBIT assessment based on available data.
- Discussion of data, framework implementation and outcomes by regional experts
- Indicating, prioritizing and executing potential improvements
- Reporting in a “standard” regional fact-sheet.

# WGFBIT meeting 2: goals

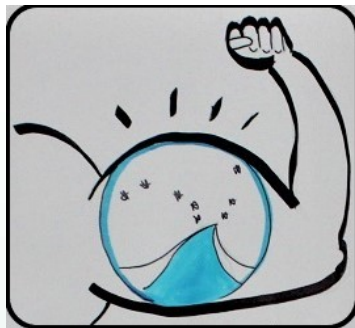
- Successful application of the FBIT framework in 5 regions with variable level of completeness and robustness.
- Increased consensus and utility of executing the FBIT framework





# Concluding slide

- How was your work inspired by ICES?
  - Core business of ICES now, so we fully contribute and base or national work on it.
- How did/will your work contribute to the ICES advisory process and/or scientific knowledge basis?
  - Our national seafloor integrity assessment work feed also strongly into the ICES work, as worked examples.



# The Working Group for the Celtic Seas Ecoregion (WGCSE):

## Drafting advice for 40 demersal stocks across the Celtic Seas Ecoregion

Sofie Nimmegeers (ILVO)

2nd BICEpS colloquium, Ghent, 2 December 2019



# The Working Group for the Celtic Seas Ecoregion

## What?

Update fisheries data, assessments and advice for:

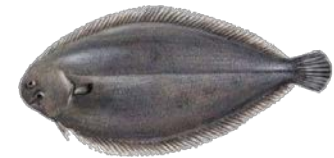
### Gadoid species

- *cod*
- *Haddock*
- *Whiting*
- *Saithe*
- *Pollack*



### Flatfish

- *Sole*
- *Plaice*
- *Megrim*



Norway lobster



Sea bass

### Anglerfish



# The Working Group for the Celtic Seas Ecoregion

## What?

Update fisheries data, assessments and advice across:

### ICES subareas 6

- *West of Scotland (6a)*
- *Rockall (6b)*

### ICES subareas 7

- *Irish Sea (7a)*
- *West of Ireland (7b)*
- *Porcupine Bank (7c)*
- *Western English channel (7e)*
- *Bristol channel (7f)*
- *Celtic Sea (7g, 7h)*
- *Southwest of Ireland (7j, 7k)*



# The Working Group for the Celtic Seas Ecoregion

## What?

Draft advice for **40** demersal stocks

### **Gadoid species**

- *cod*
- *Haddock*
- *Whiting*
- *Saithe*
- *Pollack*

### **Flatfish**

- *Sole*
- *Plaice*
- *Megrim*

### **Norway lobster**

### **Sea bass**

### **Anglerfish**

+

### **ICES subareas 6**

- *West of Scotland (6a)*
- *Rockall (6b)*

### **ICES subareas 7**

- *Irish Sea (7a)*
- *West of Ireland (7b)*
- *Porcupine Bank (7c)*
- *Western English channel (7e)*
- *Bristol channel (7f)*
- *Celtic Sea (7g, 7h)*
- *Southwest of Ireland (7j, 7k)*

# The Working Group for the Celtic Seas Ecoregion

## Who?

Scientific representatives from:

- **Belgium** 
- **Ireland** 
- **UK** 
- **France** 
- **The Russian Federation** 

Supply national data collected under the  
Data Collection Framework:

- Fishing effort and landings
- Length and age composition of the catch



**ILVO**

Flanders Research Institute for  
Agriculture, Fisheries and Food

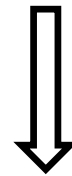
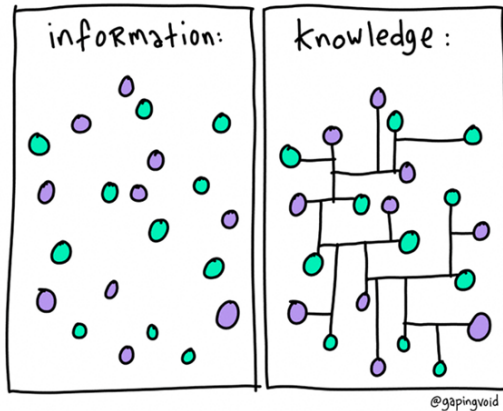


# The Working Group for the Celtic Seas Ecoregion

## How?

Compilation of fisheries dependent and independent data

as input for stock assessment



Stock status



Forecast catches



Draft advice

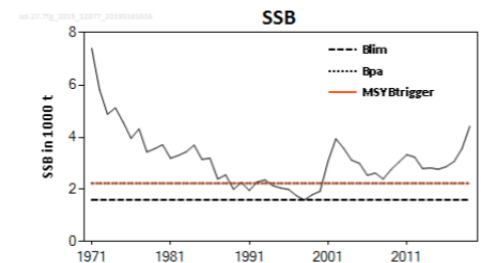
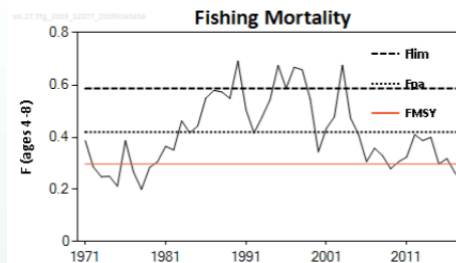
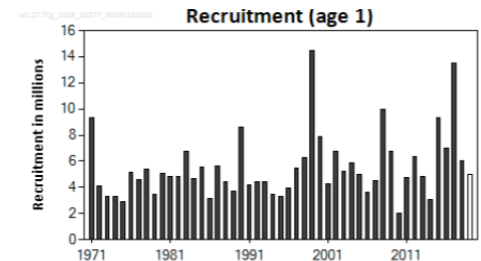
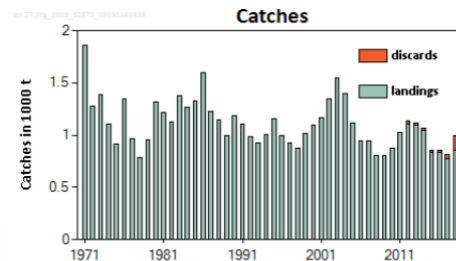


# The Working Group for the Celtic Seas Ecoregion

## Advice?

- **ICES advice on fishing opportunities**
- **Stock development over time**
- **Stock and exploitation status**
- Catch scenarios
- Basis of the advice
- Quality of the assessment
- Issues relevant for the advice
- Reference points
- Basis of the assessment
- Information from stakeholders
- History of the advice, catch, and management
- History of the catch and landings
- Summary of the assessment
- Sources and references

ICES advises that when the EU multiannual plan (MAP) for Western waters and adjacent waters is applied, catches in 2020 that correspond to the  $F$  ranges in the MAP are between 1020 and 2665 tonnes. According to the MAP, catches higher than those corresponding to  $F_{MSY}$  (1731 tonnes) can only be taken under conditions specified in the MAP, whilst the entire range is considered precautionary when applying the ICES advice rule.



**Table 1** Sole in divisions 7.f and 7.g. State of the stock and fishery relative to reference points.

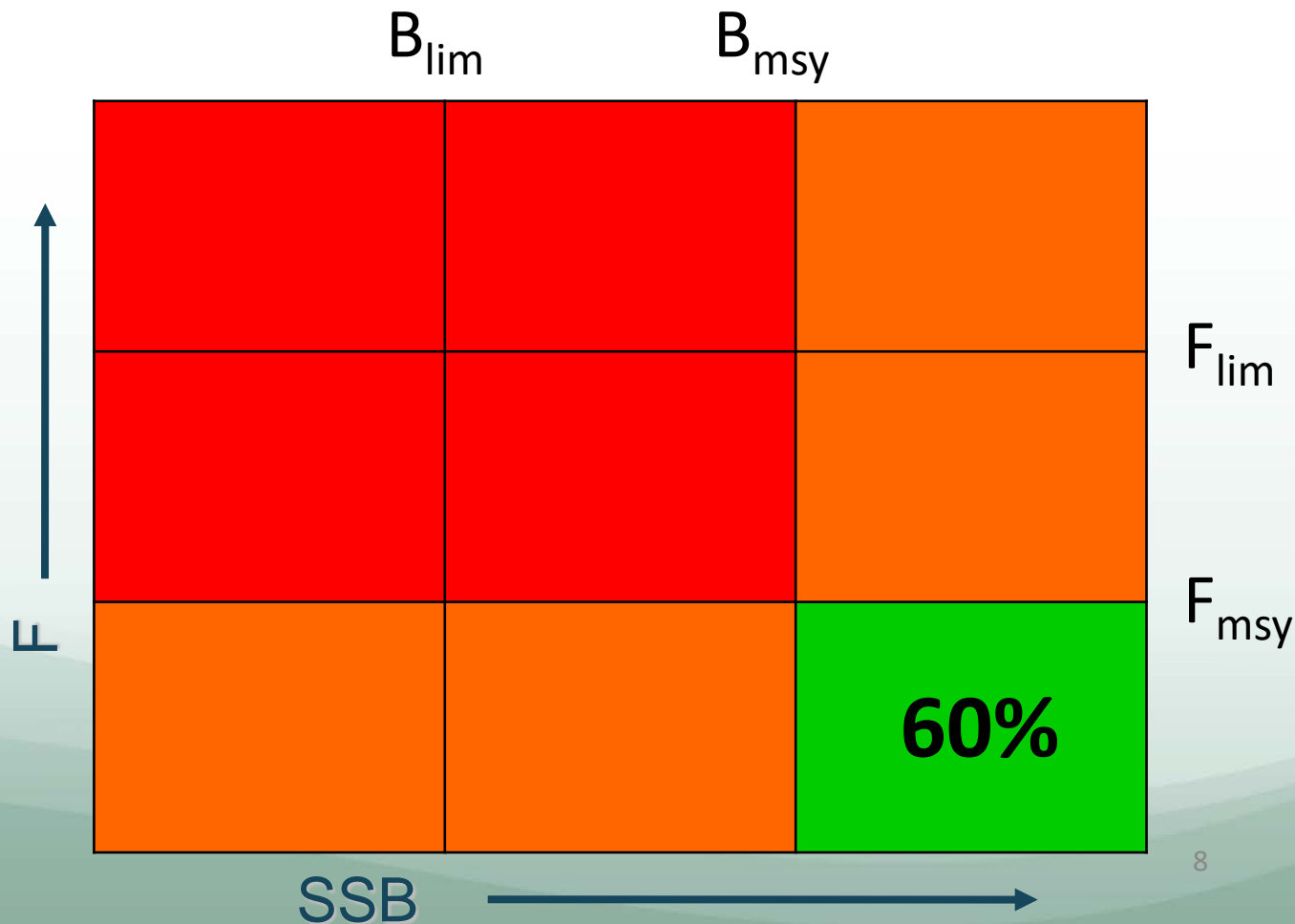
		Fishing pressure			Stock size				
		2016	2017	2018	2017	2018	2019		
Maximum sustainable yield	$F_{MSY}$	✘	✔	✔	Below	$B_{trigger}$	✔	Above trigger	
Precautionary approach	$F_{pa}, F_{lim}$	✔	✔	✔	Harvested sustainably	$B_{pa}, B_{lim}$	✔	✔	Full reproductive capacity
Management plan	$F_{MGT}$	✔	✔	✔	Within the range	$B_{MGT}$	✔	✔	Above trigger



# The Working Group for the Celtic Seas Ecoregion Status?

**Unknown:**  
**13**

**known:**  
**27**

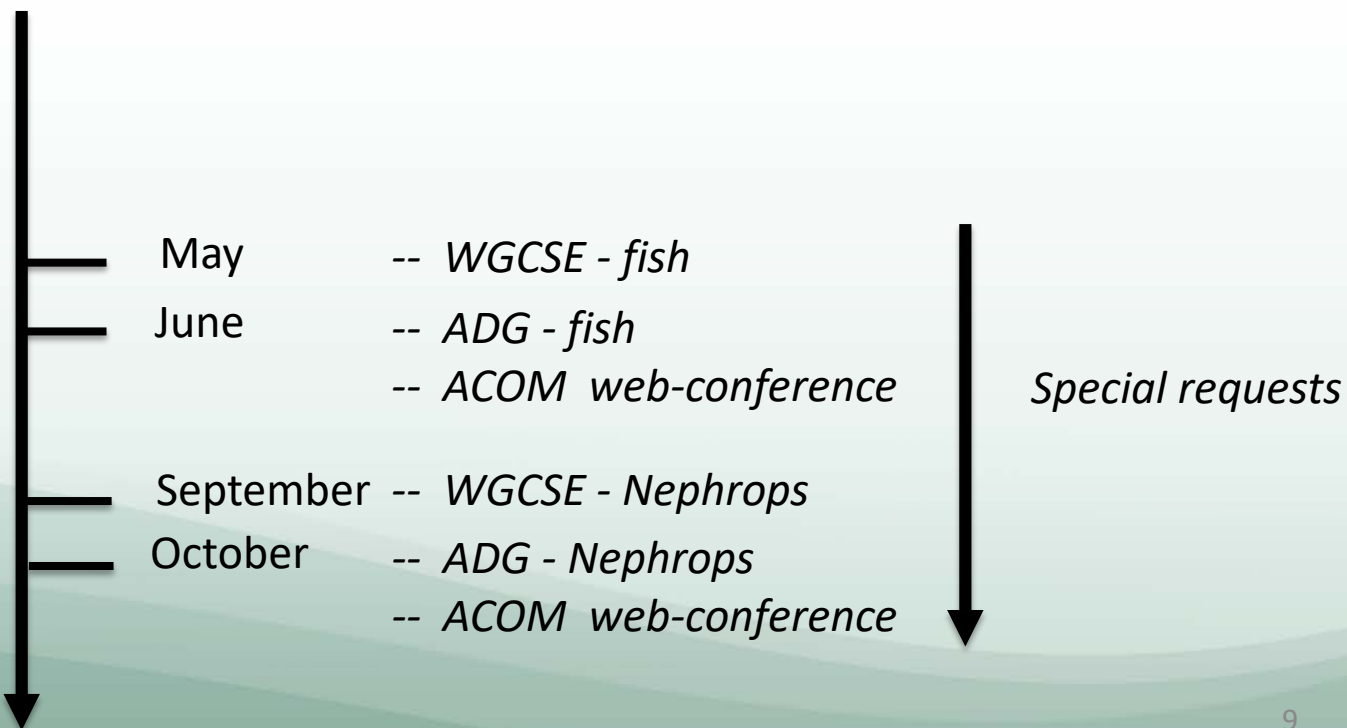
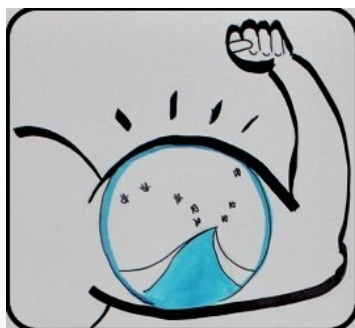




# Concluding slide

How did/will your work contribute to the ICES advisory process and/or scientific knowledge basis?

- WGCSE Co-chair for the period 2019-2021



## VISTools

# Fishing vessels as automatic data-gathering platforms

By Lancelot Blondeel, ILVO

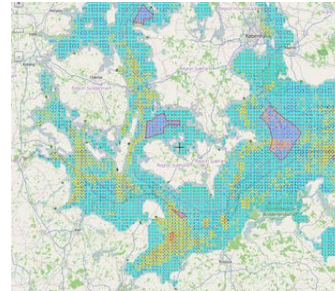
2nd BICEpS colloquium, Ghent, 2 December 2019

# VISTools Overview

- VISTools?

*The development of tools that automate the flow of information on board of a fishing vessel*

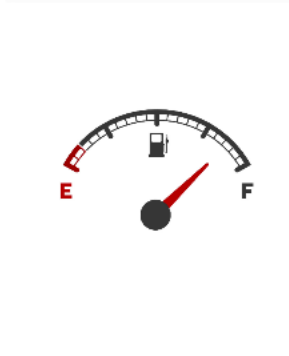
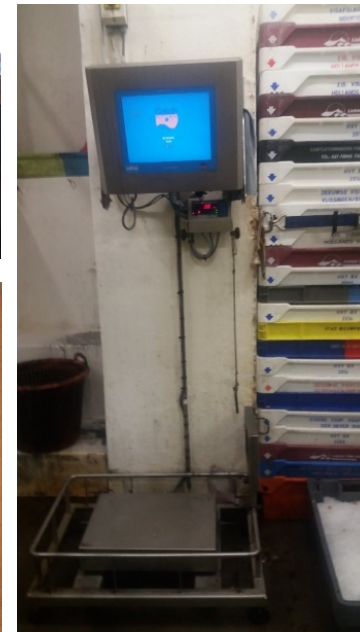
- One of the final products: **VISTools on Board**
  - Gathering information of available on-board equipment without extra effort from fishers
  - Reporting relevant information back to skippers and vessel owners through a business intelligence tool (PowerBI)
  - Evaluating possibility of sharing information for scientific research



# VISTools ?

## VISTools on Board

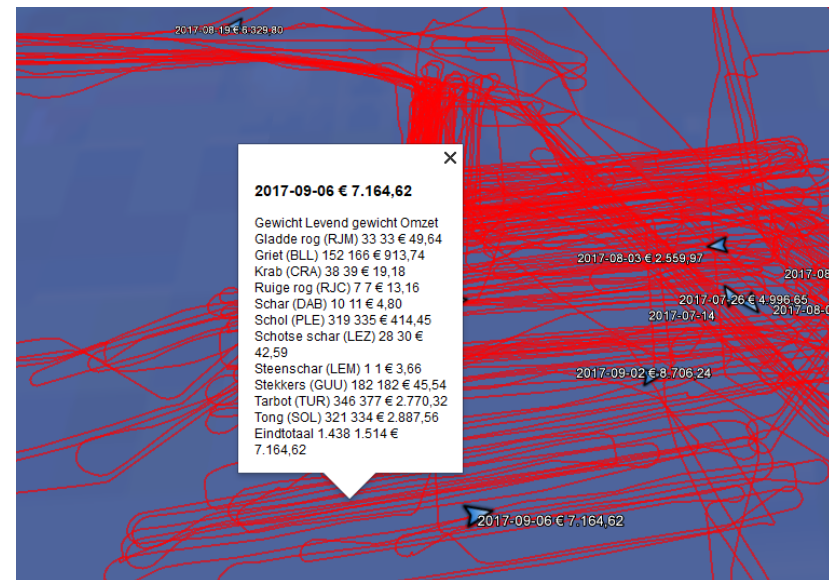
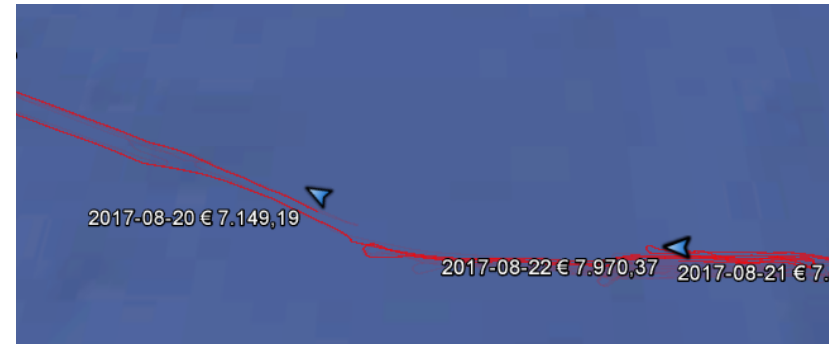
- Marine Monitoring System
  - Prototype by Pedro Rappé (Z.483)
  - Sensorintegration and storage



# VISTools ?

## VISTools on Board

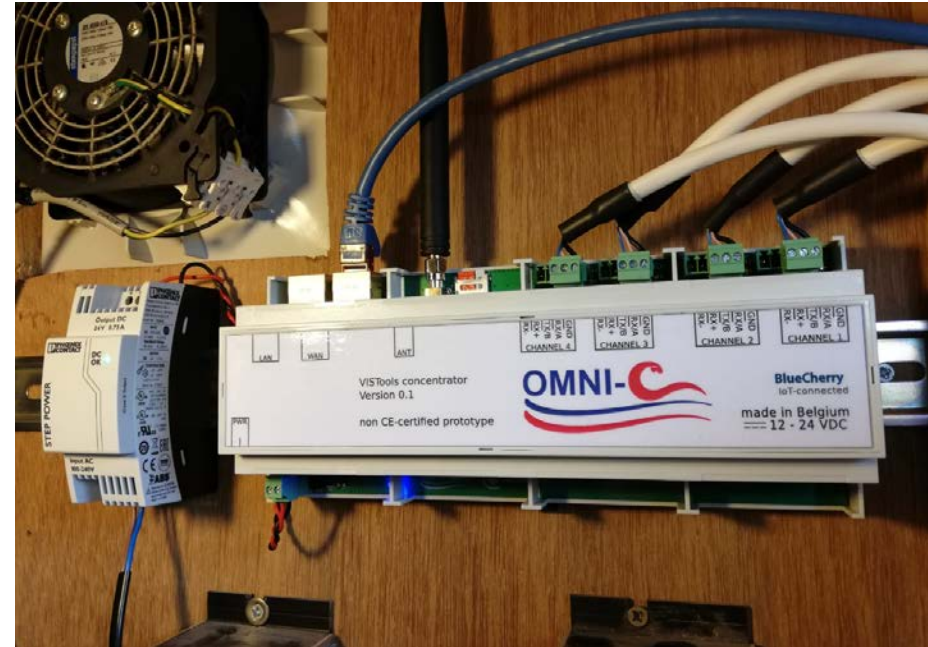
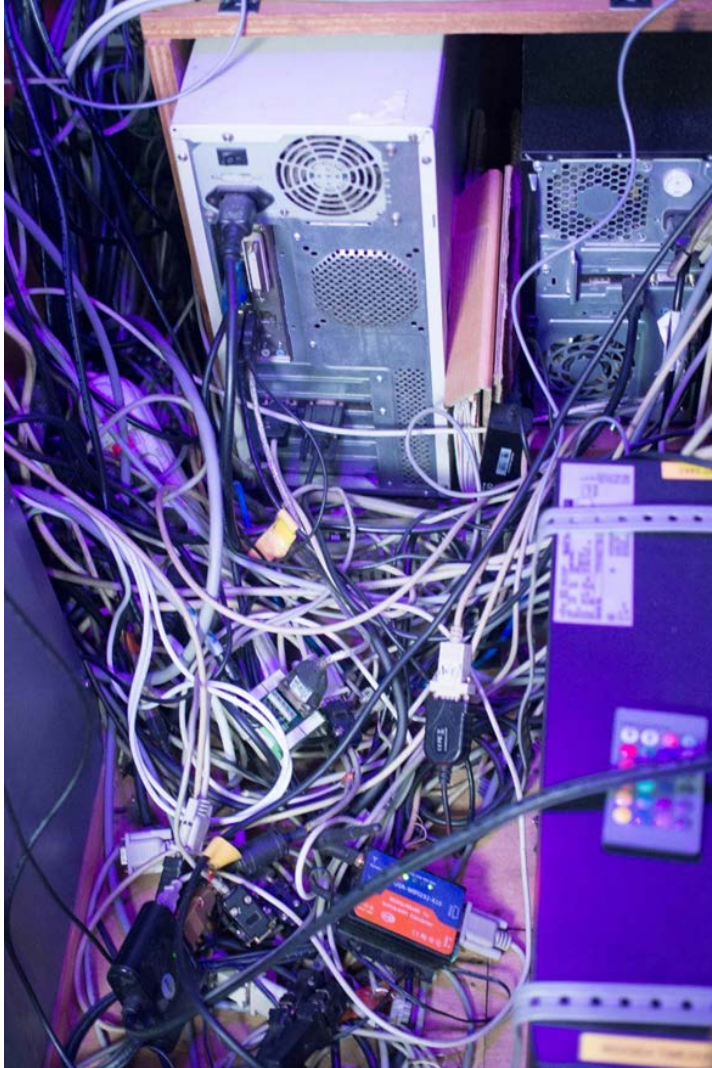
- Marine Monitoring System
  - Prototype by Pedro Rappé (Z.483)
  - Sensorintegration and storage
- Couple sensor-data with external data sources
  - Fuelprice + fish price
  - Estimates of landings, costs and catch composition
  - Visualising information per day
  - Ambition: on tow level





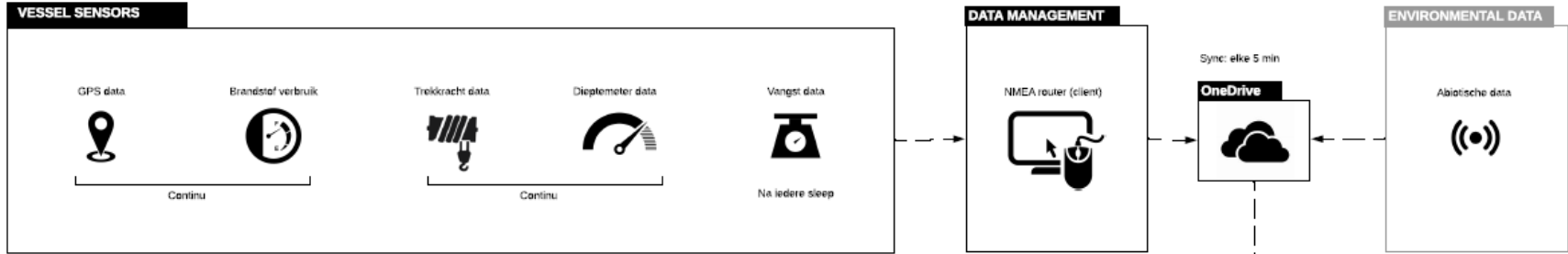
# VISTools ?

## Dataflow

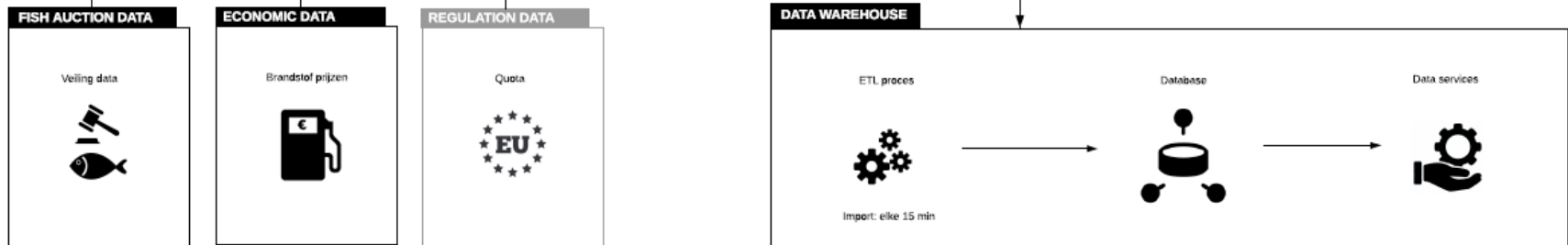


# VISTools ? Dataflow

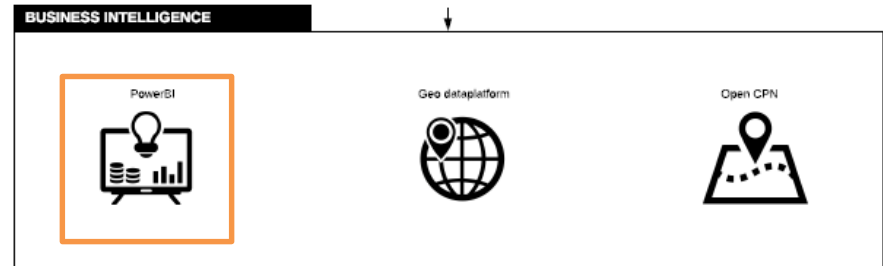
VESSEL



ILVO



SKIPPER / OWNER



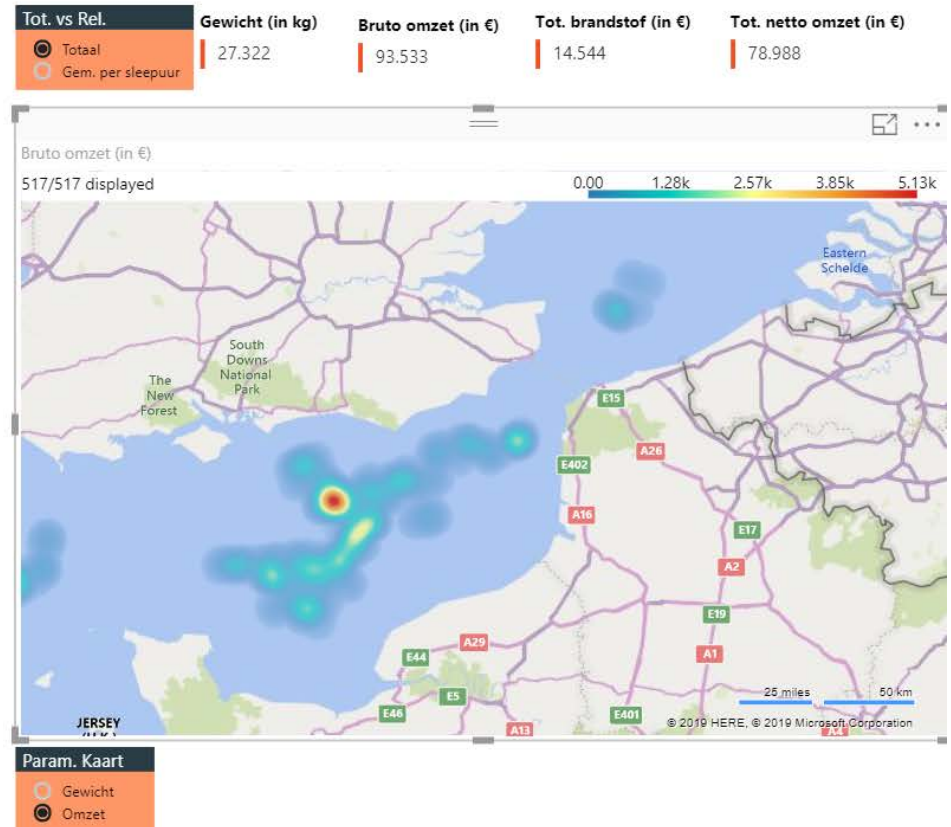
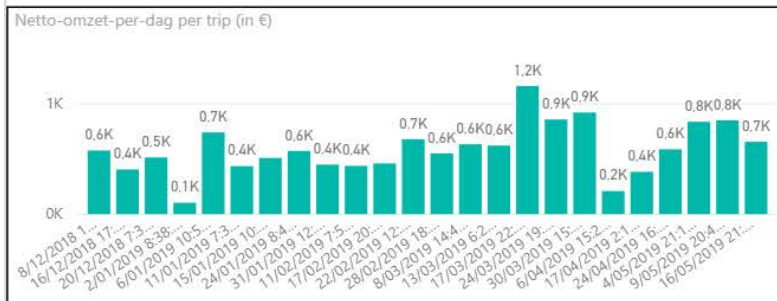
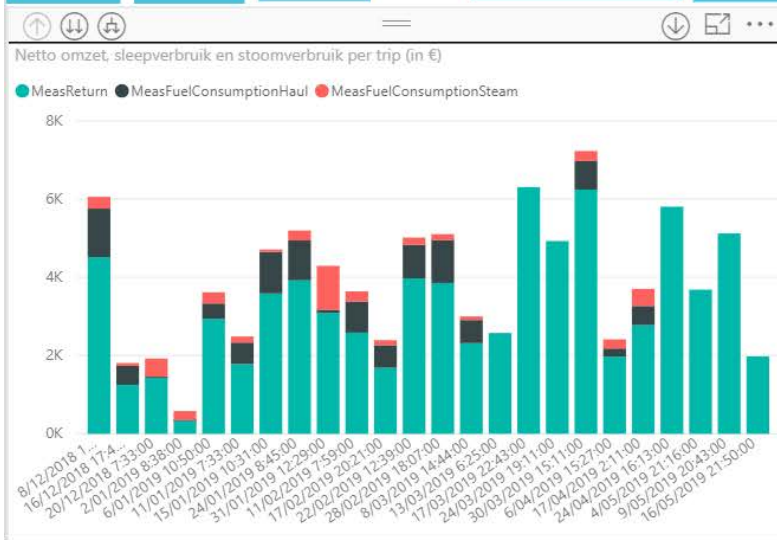
# VISTools ?

## VISTools on Board

VISTOOLS

Jaar: Alle | 
 Kwartaal: Alle | 
 Maand: Alle | 
 Trip: Alle | 
 Dag: Alle | 
 Sleep: Alle

IcesDivisie: Alle | 
 Vissoort: Alle



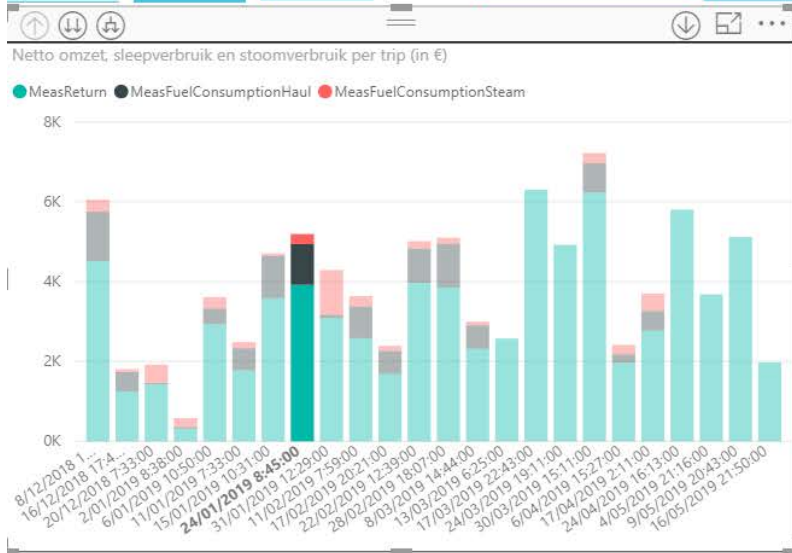


# VISTools

## VISTools on Board: functions

VISTOOLS

Jaar: Alle | Kwartaal: Alle | Maand: Alle | Trip: Alle | Dag: Alle | Sleep: Alle | IcesDivisie: Alle | Vissoort: Alle



Tot. vs Rel.	Gewicht (in kg)	Bruto omzet (in €)	Tot. brandstof (in €)	Tot. netto omzet (in €)
<input checked="" type="radio"/> Totaal	1.778	5.193	1.272	3.921
<input type="radio"/> Gem. per sleeppuur				

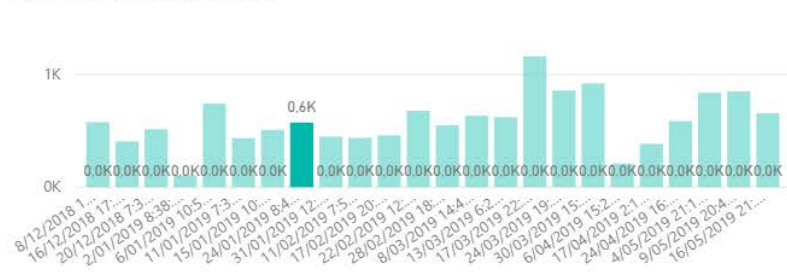
Bruto omzet (in €)

53/53 displayed

0.00 351 703 1.05k 1.41k



Netto-omzet-per-dag per trip (in €)

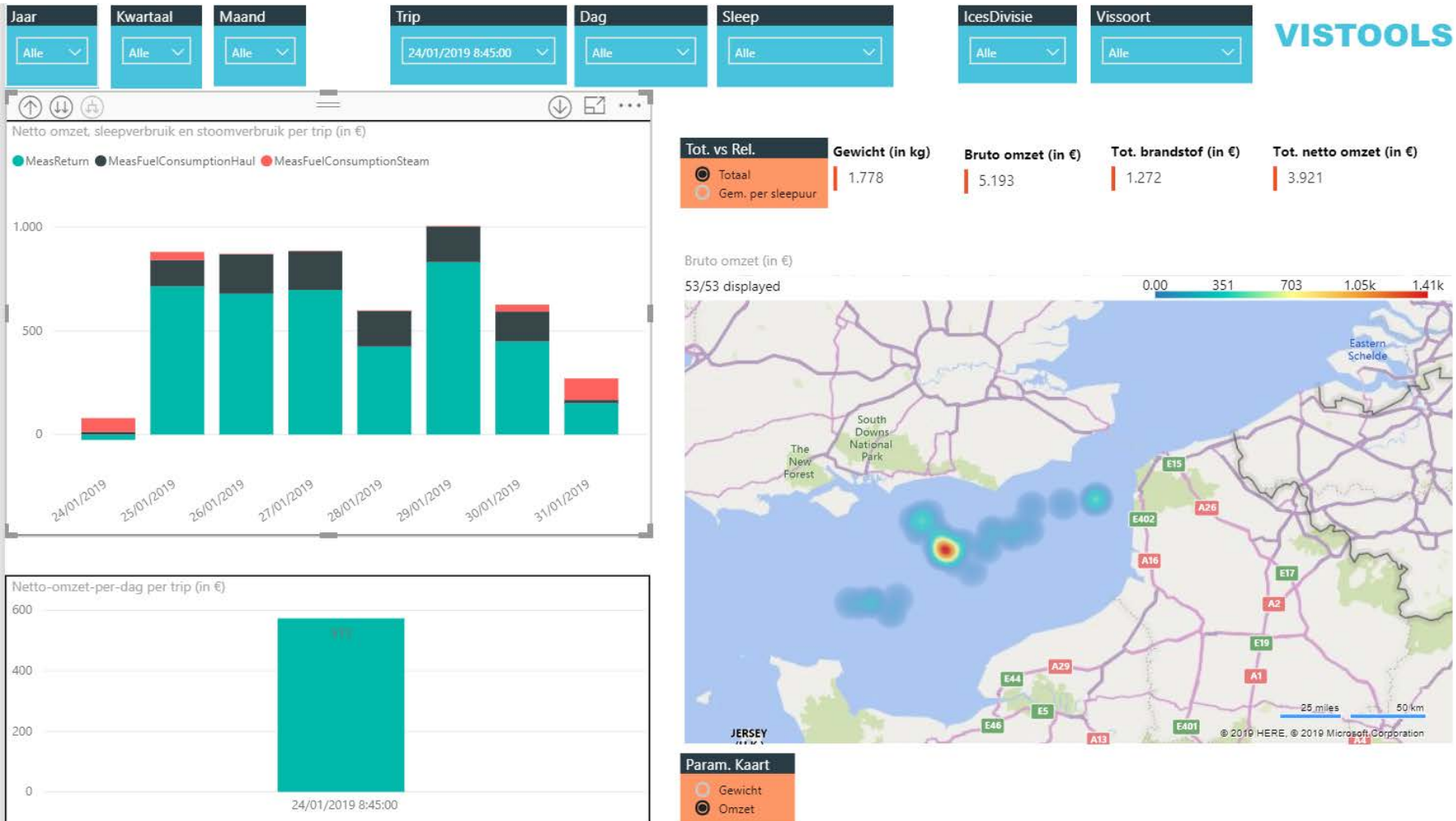


Param. Kaart

- Gewicht
- Omzet

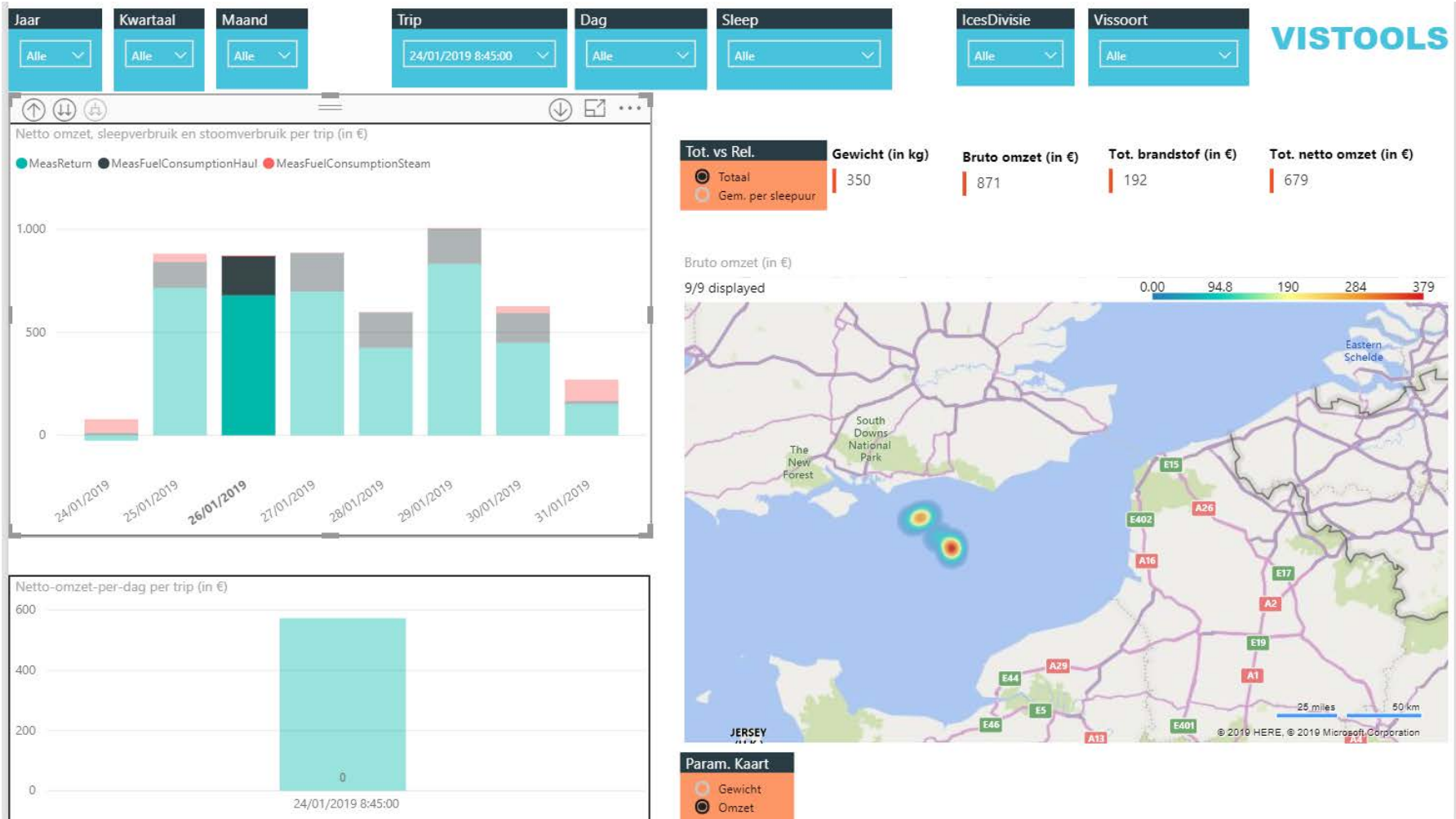
# VISTools

## VISTools on Board: functions



# VISTools

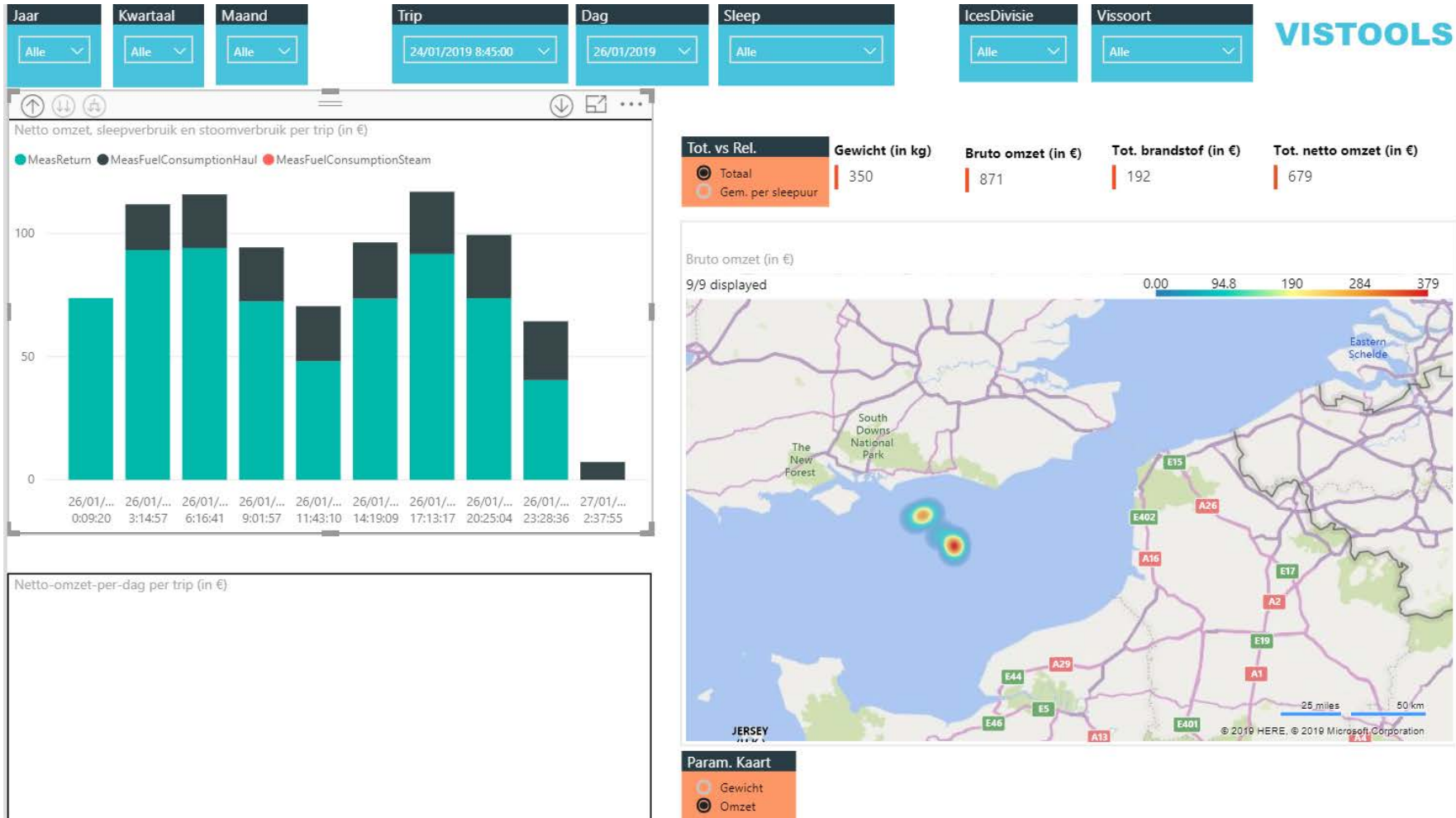
## VISTools on Board: functions





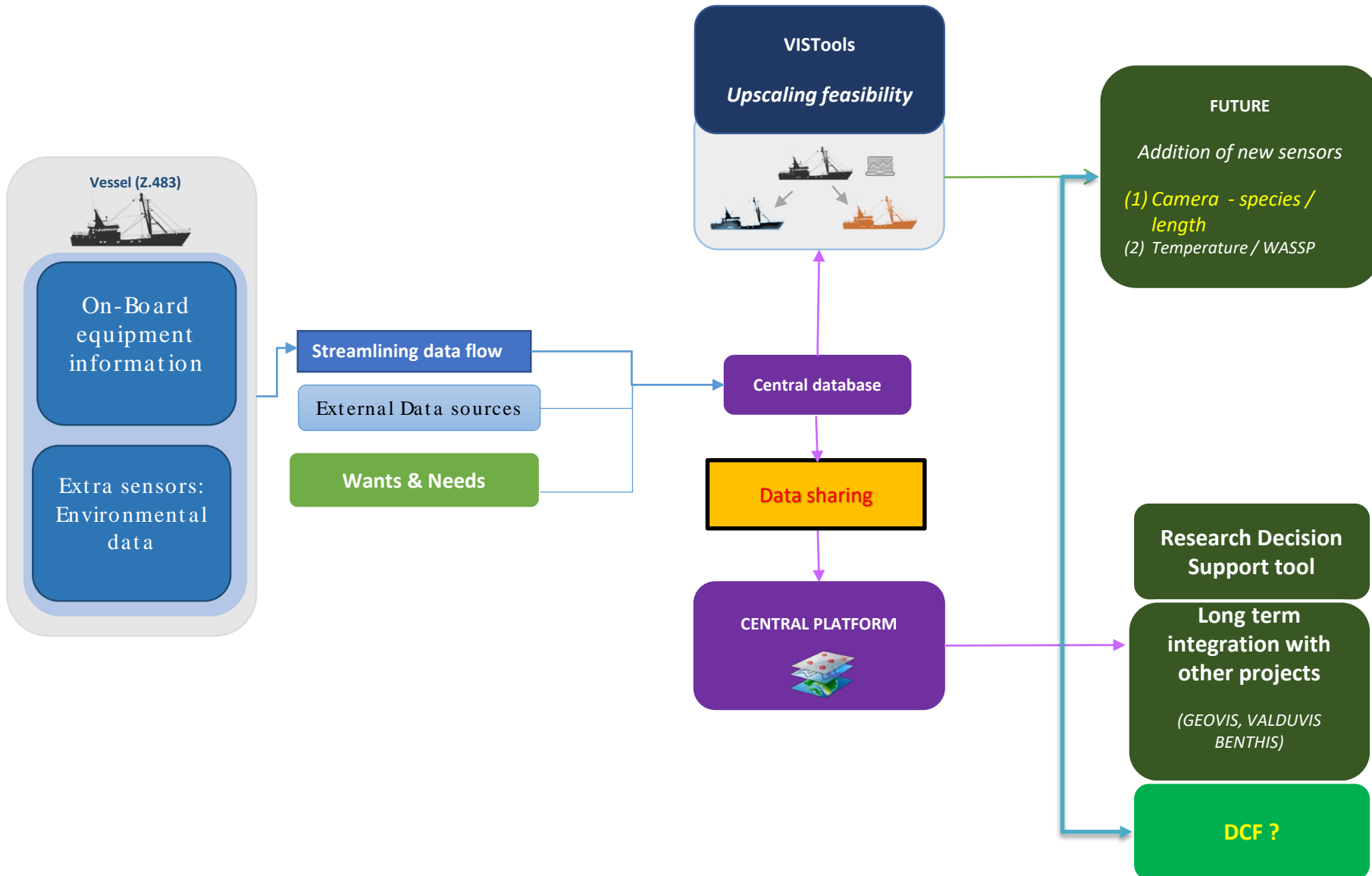
# VISTools

## VISTools on Board: functions



# VISTools

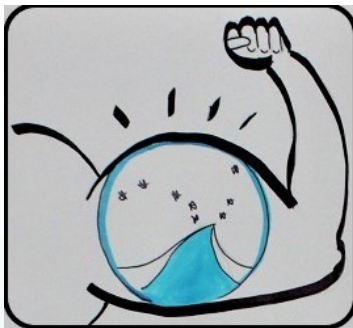
## Data sharing



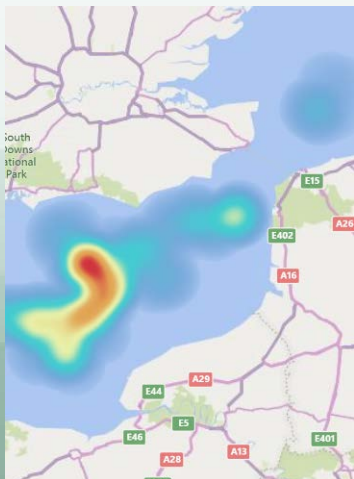
# Benefits and potential



- Currently proof of concept
  - Great interest from other vessels
  - Development of ‘concentrator’ - *CYBELE*



- For ICES?
  - VISTools on Board can be a powerful incentive to keep gathering industry data
  - Data sharing agreements and transparency are important
  - Extra sensors / protocols to make data relevant for ICES (and other users) – *self sampling* – *WK SCINDI*
  - Adapt system for scientific purposes without losing usability for the sector



# Surveys: The backbone to fisheries science

Lies Vansteenbrugge & Loes Vandecasteele (ILVO)

2nd BICEpS colloquium, Ghent, 2 December 2019

# The bigger picture

How was your work inspired by ICES?



MSFD

**The new Common Fisheries Policy: sustainability in depth**

**What?**

**MSY**  
Maximum Sustainable Yield is the best possible objective for renewable and profitable fisheries, harvesting the maximum amount of fish on a long term basis.

**Regionalisation**  
Natural resources and the socioeconomic, GBPs vary greatly from one place to another. A balanced representation of local stakeholders knows best how to apply EU rules in their respective areas.

**Fisheries science**  
Scientific advice is the basis for good policy making, setting fishing opportunities according to the state and productivity of fish stocks.

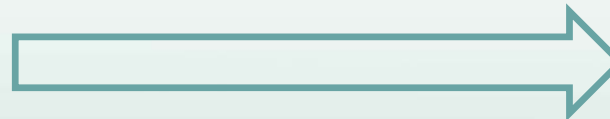
**Multianual plans**  
Consider the goals and tools for fish stock management and the roadmap to achieving the objectives in a sustainable and inclusive way.

$$C = \frac{F}{F+M} [1 - e^{-(F+M)N}]$$


Data Collection Framework (DCF)



€



DATA



STECF, ...



# Scientific surveys

## Marine data collection platforms

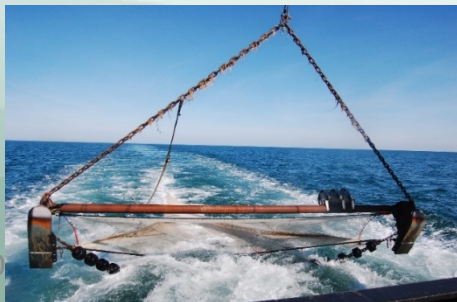


BTS (beam trawl survey)

- RV Belgica
- August/September
- 62 stations

DYFS (demersal young fish survey)

- RV Simon Stevin
- September
- 33 stations

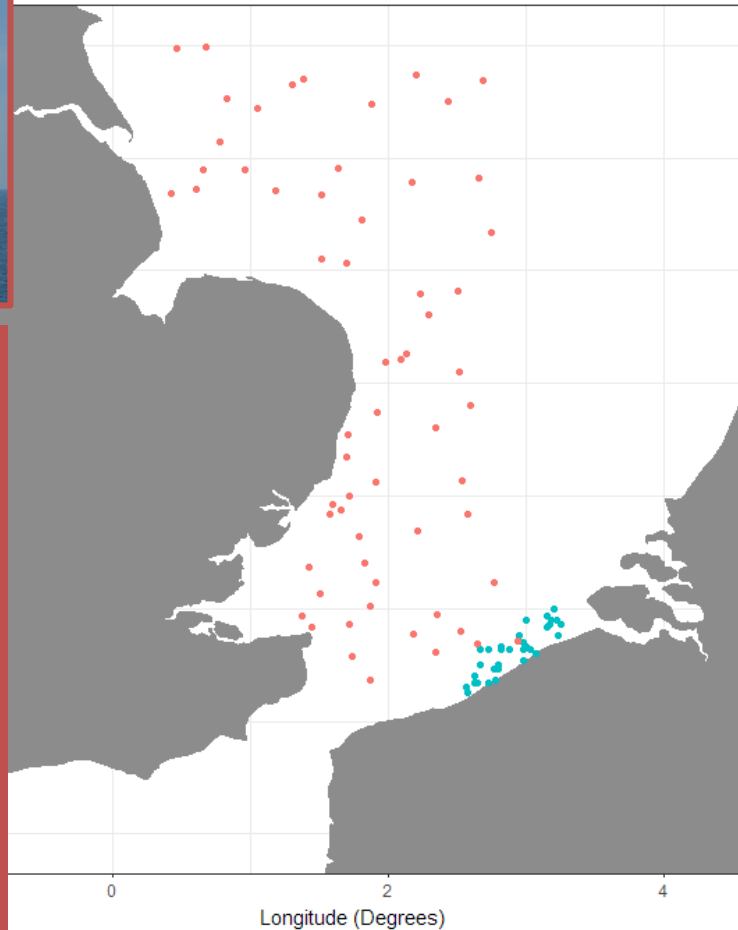


# Scientific surveys

## Marine data collection platforms



- Demersal fish
  - Catch weight
  - Length
  - Weight
  - Age
  - Sex and Maturity
- Epibenthos
  - Catch weight
  - Numbers
- Marine litter
- Environmental parameters



- Demersal fish
  - Catch weight
  - Length
  - Weight
  - Age
  - Sex
- Brown shrimp
  - Catch weight
  - Length
- Marine litter
- Environmental parameters

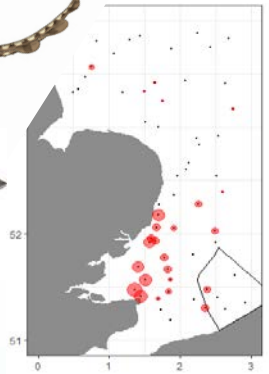




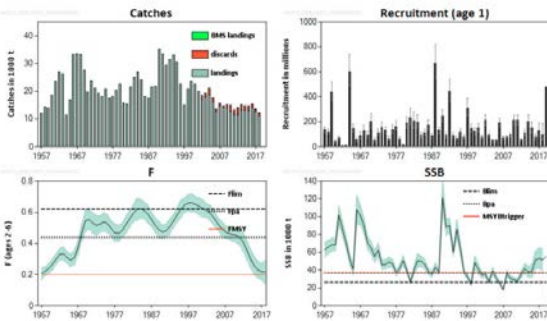
# Outreach



MSFD



## Belgian BTS & DYFS SURVEYS



**! Long-term monitoring!**

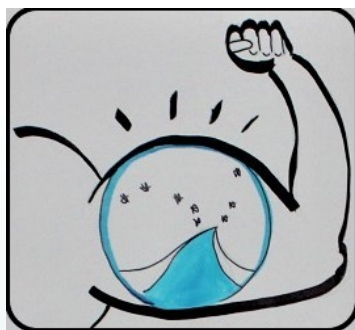






# Concluding slide

- How did/will your work contribute to the ICES advisory process and/or scientific knowledge basis?



## Photo credits:

Karl Van Ginderdeuren  
 Misjel Decler  
 Hans Hillewaert  
 ILVO  
 VLIZ



# Some points to consider for exposed aquaculture : first experiences in Belgium

By Nancy Nevejan

Laboratory for Aquaculture & ARC,  
Ghent University, Belgium

2nd BICEpS colloquium, Ghent, 2 December 2019



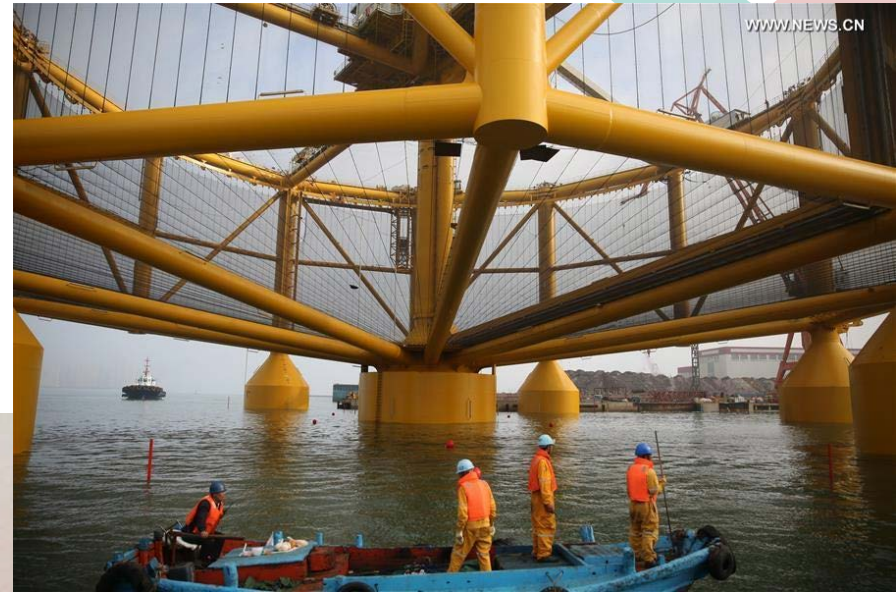
# Only few offshore examples in the world

## Norway : Oceanfarm 1

- 1,5 million salmon

## China : Shenlan 1

- 3,0 million salmon



06/02/2020  
Oceanfarm 1 (Photo Salmar)

# Few examples in place in the world

Bahamas/Panama/Mexico : The Ocean Spar Sea Station cage

Hawai : Aquapod



Cage culture (FAO 2007)



Aquapod (picture: pinterest.com)



# Few examples in place in the world

New Zealand : Hawkes Bay

- Greenshell musselfarm

UK : Offshore shellfish

- Blue musselfarm : 10 000 ton/yr

Faroe island : Ocean rainforest

- 4 species of seaweed



# Definition offshore aquaculture

- Suggested to use “exposed” instead of “offshore”

“Offshore aquaculture takes place in the open sea with significant exposure to wind and waves action with a requirement for equipment and servicing vessels to survive and operate in severe sea conditions from time to time. The issue of distance from the coast or from a safe harbor or shore base is often but not always a factor”.

*Drumm(2010)Evaluation of the promotion of offshore aquaculture through a technology platform (OATP), Ireland, Marine Institute*

# Edulis: Marine spatial plan 2014 - 2020

Sustainable aquaculture



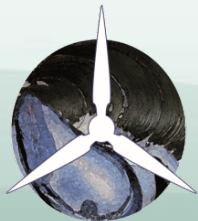
Offshore  
(commercial)

**Edulis**  
UGent

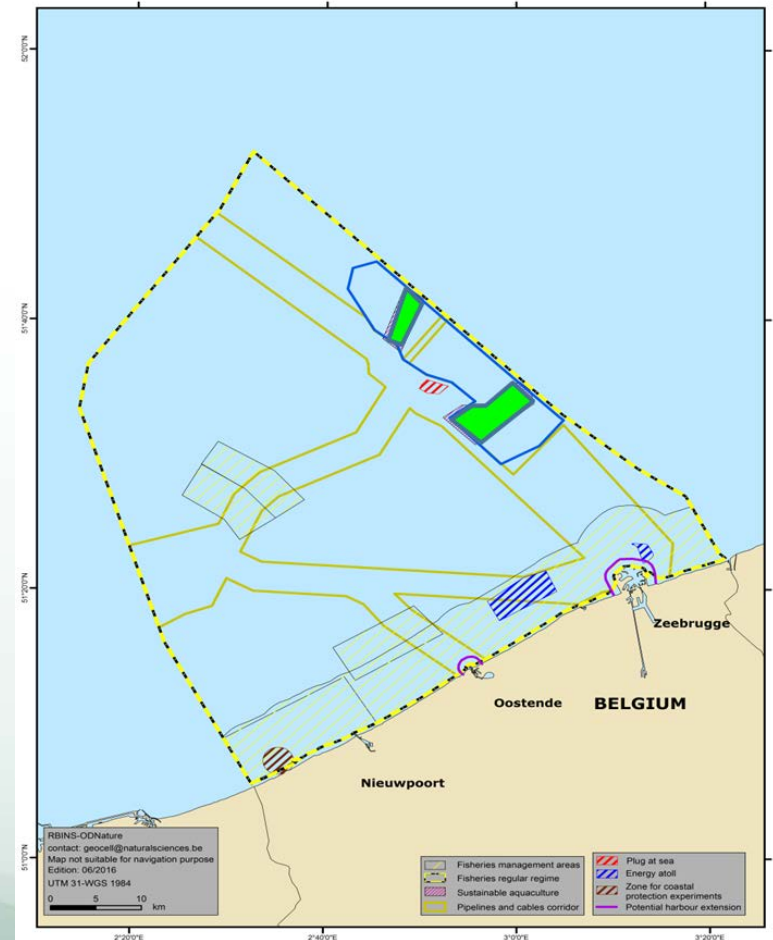


Nearshore (test)

**Value@Sea**  
ILVO



**EDULIS**  
OFFSHORE MOSSELKWEK  
IN WINDMOLENPARKEN



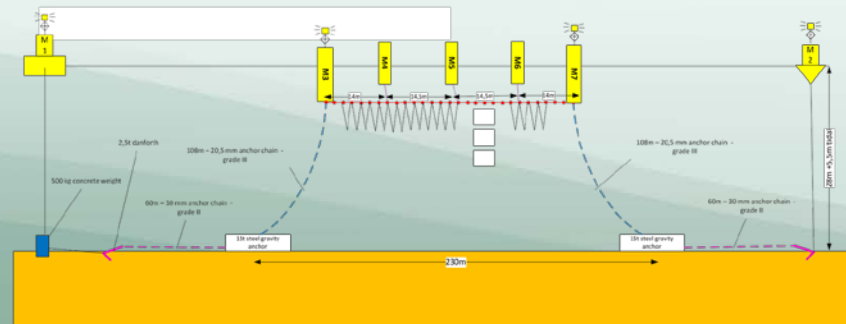


# Edulis: Marine spatial plan 2014 - 2020

## “Bioline” at C-Power



## “Forceline” at Belwind



# What determines success of exposed aquaculture ?

## Location

1. Suitable for species

## Edulis location

1. Good mussel spat collection & mussel growth



Photo N. Nevejan-Edulis



Photo D. Vuylsteke-Edulis



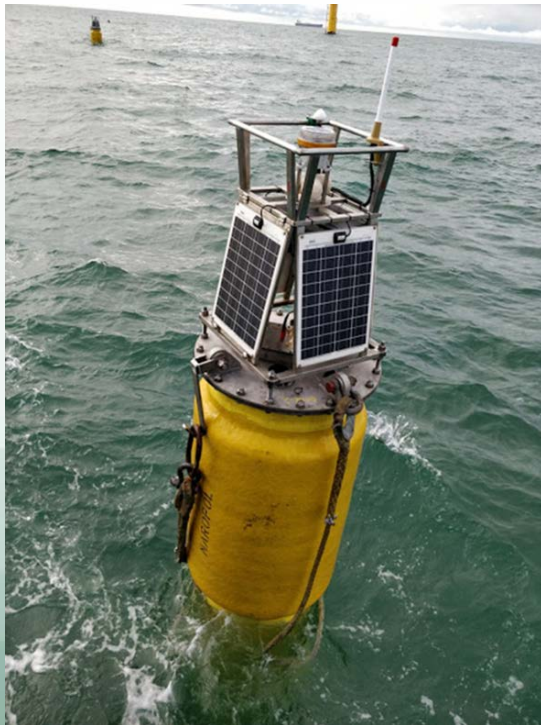
Photo N. Nevejan-Edulis



# What determines success of exposed aquaculture ?

## Location

2. Currents and waves are in control



06/02/2020

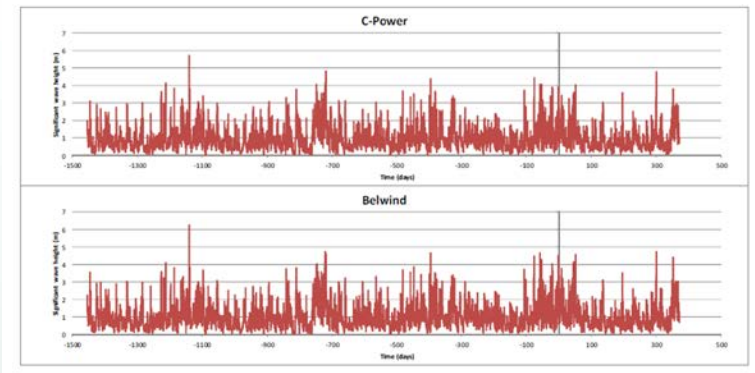
## Edulis location



2. Force line to measure forces on the system



Photos G. Lesage-Edulis



# What determines success of exposed aquaculture ?

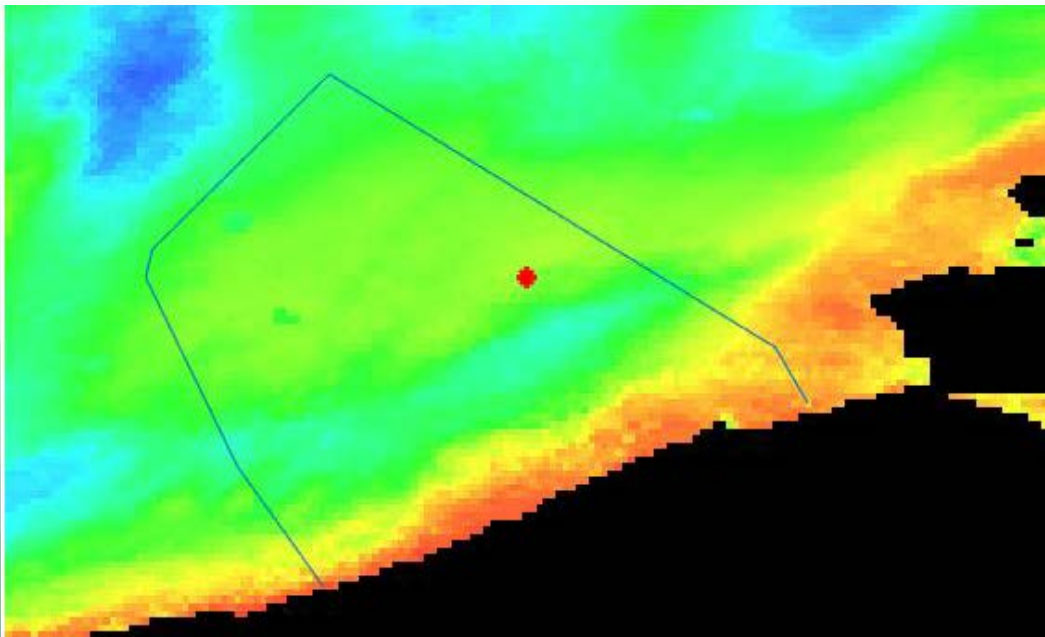
## Location

3. Orientation of your system
4. Enough nutrients

## Edulis location



3. Parallel to the coastline
4. Remote sensing and field data



# What determines success of exposed aquaculture ?

## Location

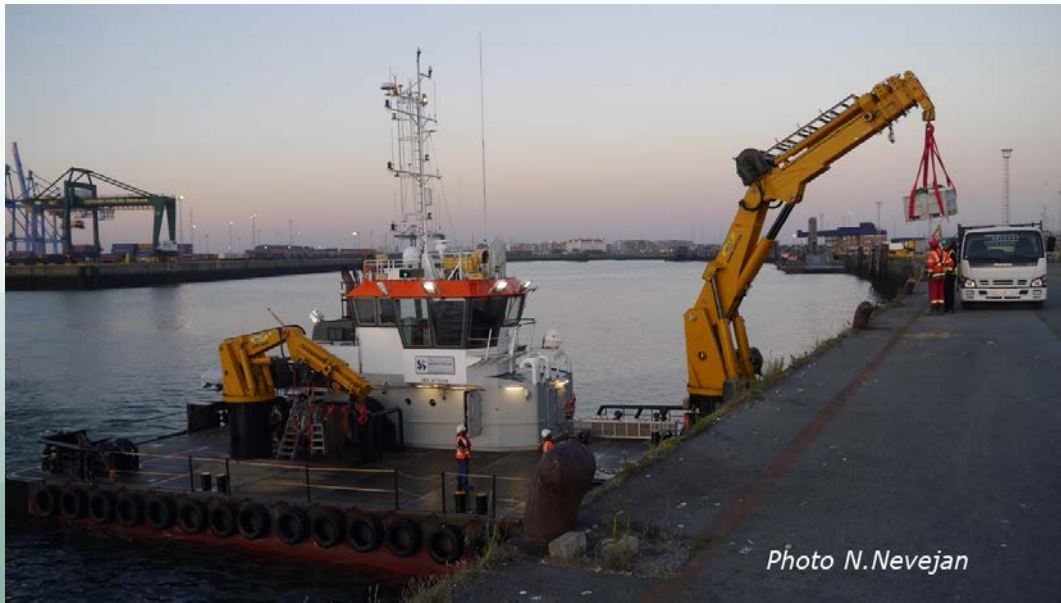
5. Control of fouling
6. Sanitation risks
7. Accessibility

## Edulis location



5. Tara of samples
6. Measurement heavy metals, PCB's, PAC's, microbiology
7. Complicated in WMP

- distance
- protocols
- requirement boat





# What determines success of exposed aquaculture ?

## Equipment

1. Bespoke/ own design :  
ropes, floats, anchor, boats
2. Model your intended  
system with verified model

## Edulis equipment



1. Based on literature and  
Ugent MT ; site specific !
2. Moordyn Ugent model :  
start & end



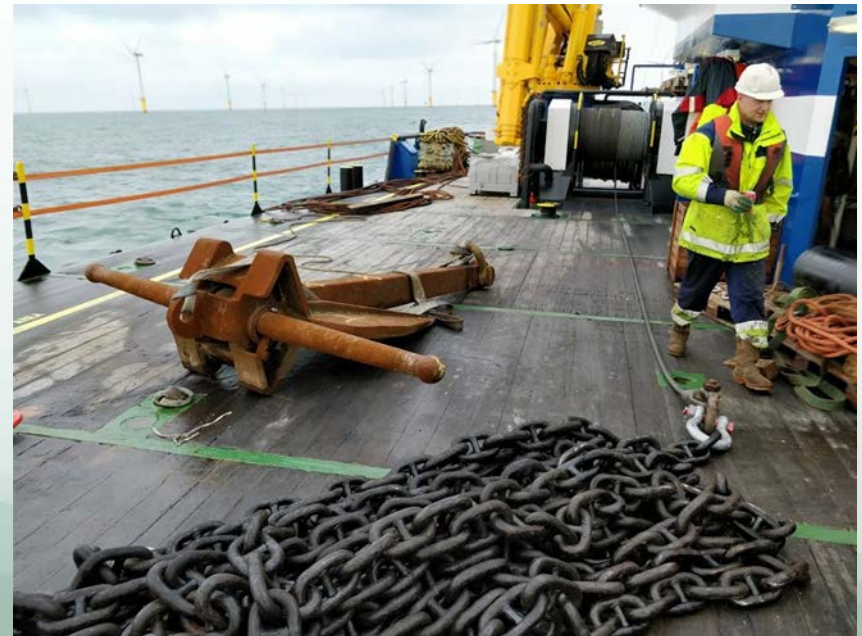
# What determines success of exposed aquaculture ?

## Equipment

3. Durability
4. Ease of handling
5. Threat to other species

## Edulis equipment

3. Oversized
4. Test pilot: **not** practical
5. Risk analysis



Photos G. Lesage-Edulis

# What determines success of exposed aquaculture ?

## Design

1. Simple
2. Robust
3. Repairable
4. Replaceable

## Edulis design



1. Bipline was simple but force line was complex
2. Problems with loadcells
3. Difficult and costly to repair measuring equipment forceline; not possible for broken anchor chain bioline
4. Too costly to repair measuring equipment forceline

# What determines success of exposed aquaculture ?

## Scale

“Control of high production costs requires large scale production”

Exposed conditions require large boats



Large boats require large production



Large scale production requires large investment

*f.ex. UK musselfarm 1560 ha*

# What determines success of exposed aquaculture ?

## Facilitating government

There needs to be a long term vision which creates an enabling environment and drives the development. (cf wind & wave energy)

Workshop AquaVitae, Kristineberg, Sweden October 2019:

*“Aquaculture should be part of the economic developing strategy. Areas with potential for aquaculture should be prioritized over other marine activities”*

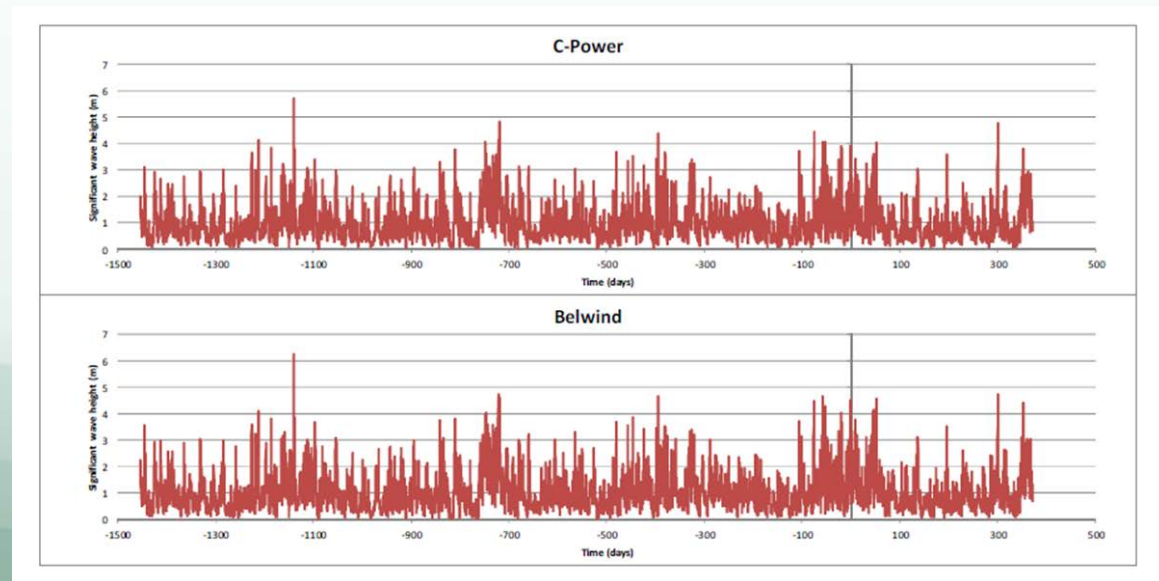
(so not “the left-over” areas 😊)



# Problems associated with exposed aquaculture ?

## Unpredictable access due to the weather

- Wave climate (based on hindcast calculations jan 2010- dec 2014)
  - 2-3m sign. waveheight on average
  - 11.22 m – 12.26 m max. waveheight
- Currents : max. 1,05m/sec of tidal origin



# Problems associated with exposed aquaculture ?

## Damage by fishing boats

Strong motivator to develop aquaculture in WMP (multi-use of space)

## Biofouling



Right choice of material !

# Problems associated with exposed aquaculture ?

## Wear and tear



Right choice of material !

*Photo N. Nevejan-Edulis*

# Future exposed aquaculture

- Offshore aquaculture cannot replace inshore aquaculture – they are complementary to each other
- Offshore : if you have no other option for upscaling (cf Belgium)
- There needs to be a long term vision which creates an enabling environment and drives the development.



# Future exposed aquaculture

- Need for innovation
  - New systems
  - Remote monitoring (reduce costs)
  - Multi-use platforms (shared costs)
  - Strong predictive models f.ex. optimizing harvest time thr' site-specific DEB-model (Ugent)

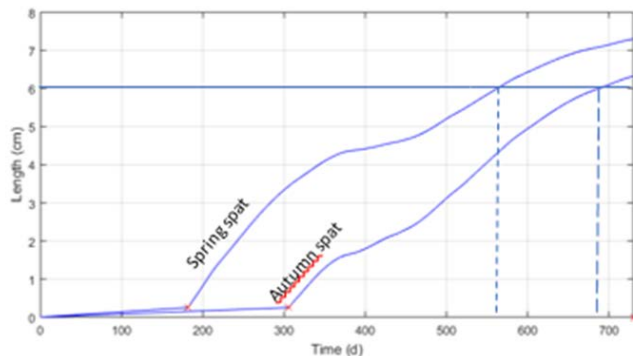
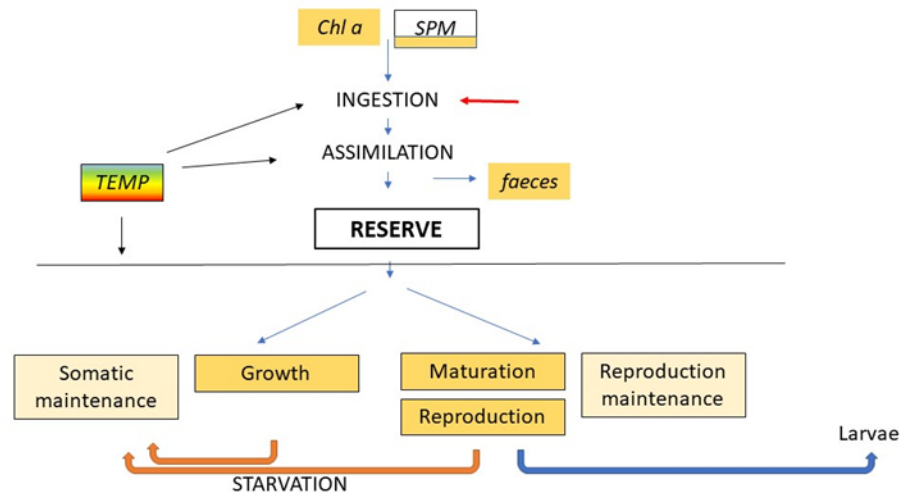


Fig. 7: modelled mussel growth starting from spring spat and winter spat

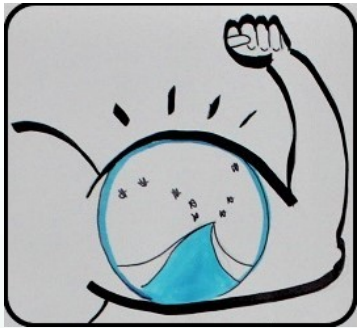






# Concluding slide

- Recent ICES working group (March 2018) : Open Ocean Aquaculture (WGOOA) chaired by Bela Buck
- Invitation to become full member May 2019
- Next meeting WGOOA on 26-28 May 2020 in Portland/Maine
- Experience of Edulis and subsequent projects (Horizon2020 United/Belgian pilot) will be shared
- Publication in ICES Journal of Marine Science in the future



# Interactive fish stock status tool

By Kevin De Coster (ILVO)

2nd BICEpS colloquium, Ghent, 2 December 2019

# About the tool

## The idea

1. Created at the Open Sea Lab 2019 hackaton
2. Use data from ICES webservices
3. Combine this data in GIS layers
4. Implement it in our already existing GeoFish platform
5. Make use of traffic light indicators to make it understandable for everyone
6. Use a timeline so we can quickly see the evolution



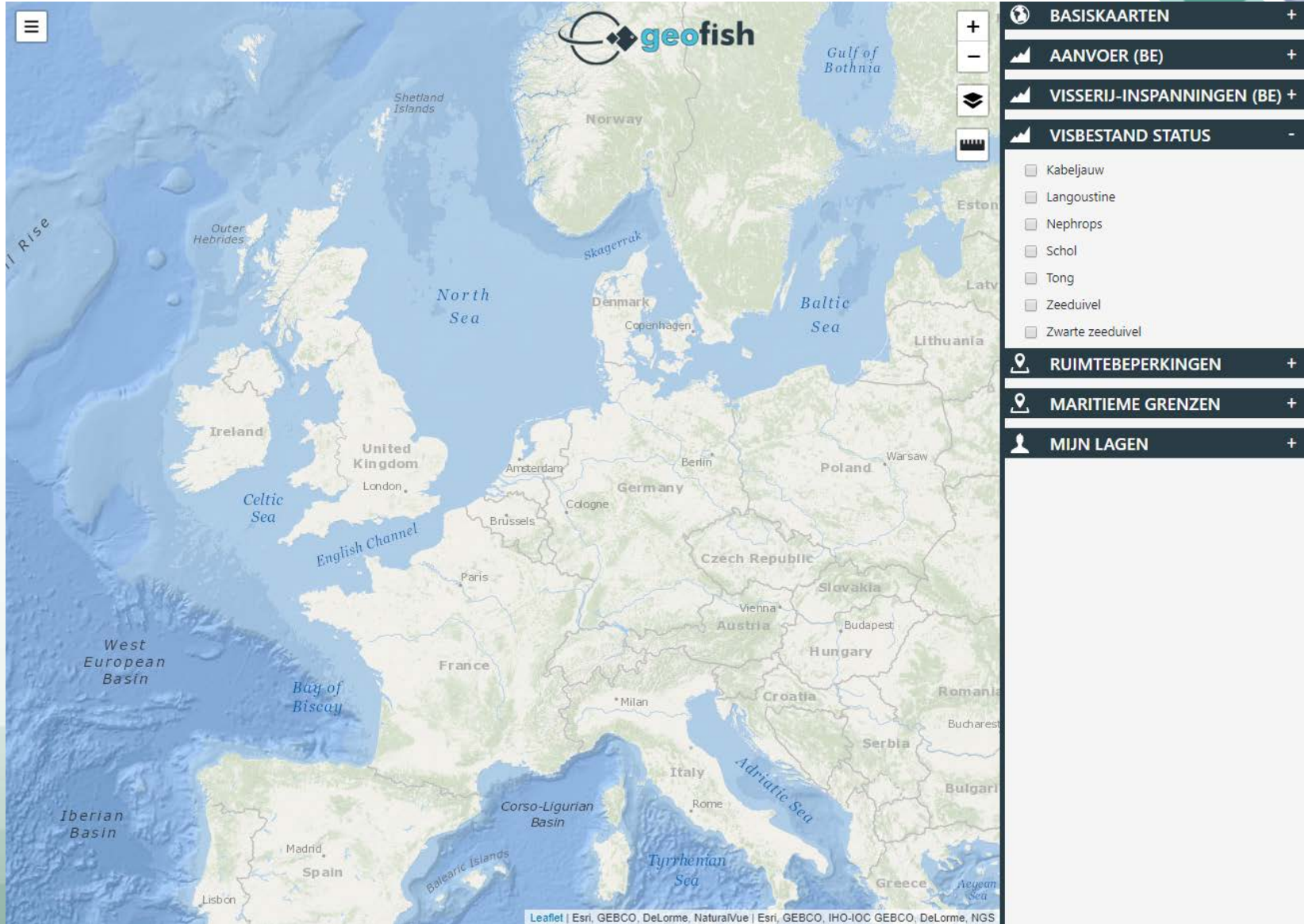
# About the tool

## The implementation



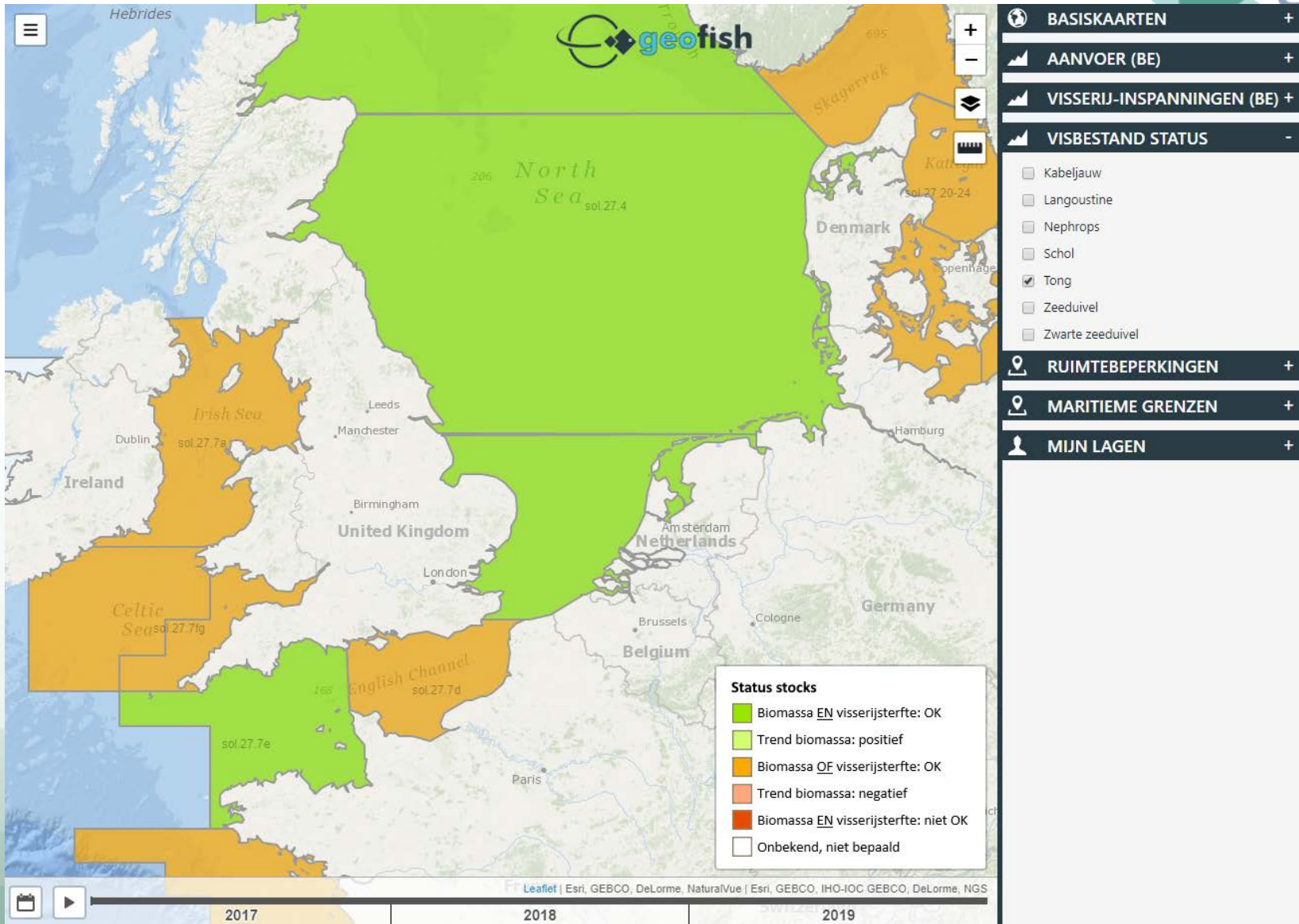
1. Get all info about the stock advice
2. Get all the spatial data for the stock
3. Write logic that assigns a (traffic light) colour to the stock
4. Repeat steps 1-3 for all other stocks for the same species for the same year
5. Merge all this info in a usable (GeoJSON) layer
6. Repeat steps 1-5 for other years
7. Repeat steps 1-6 for other species
8. Upload the layers to the GeoFish platform

# The result - platform

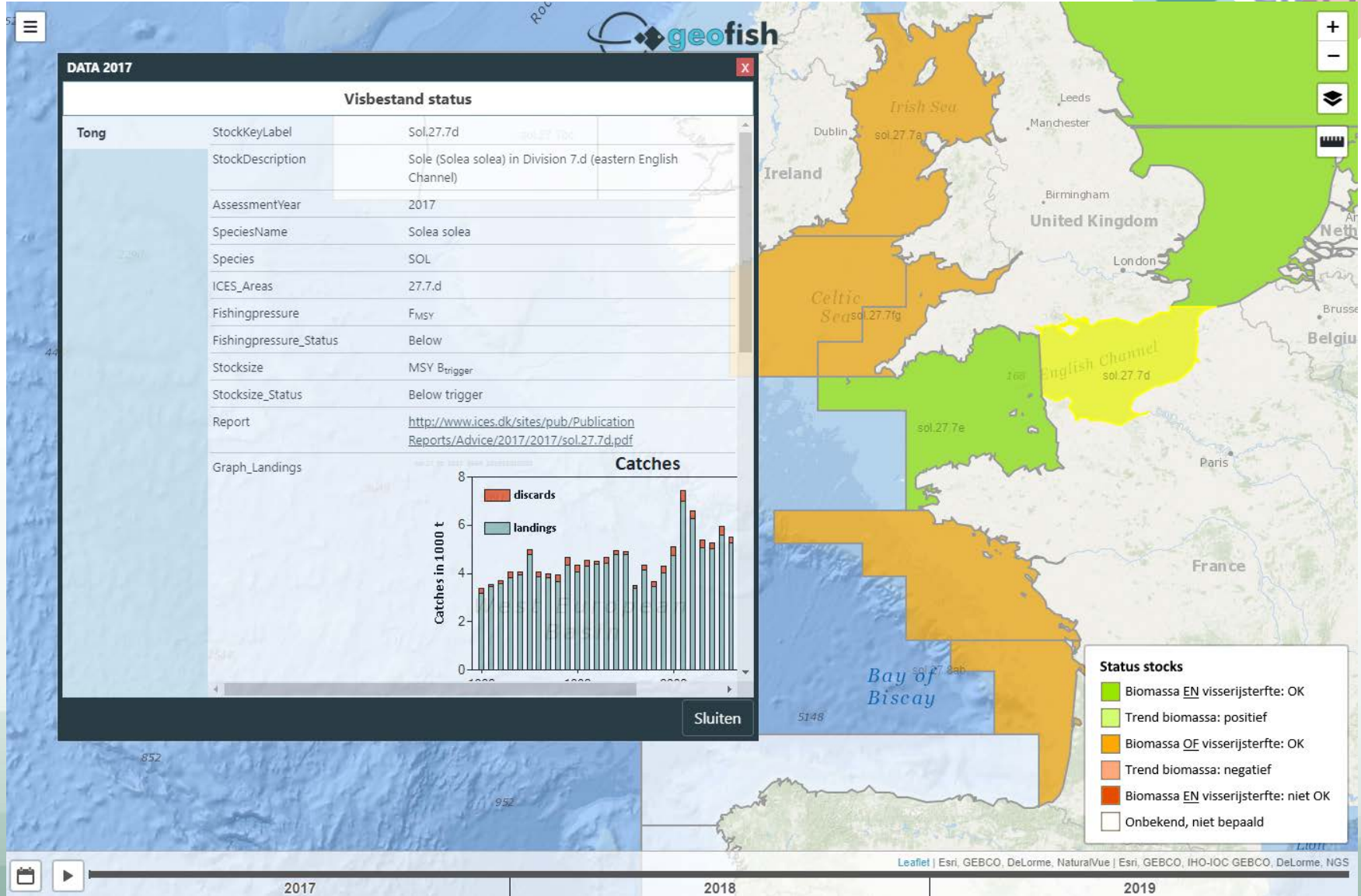




# The result – stock advice as traffic lights

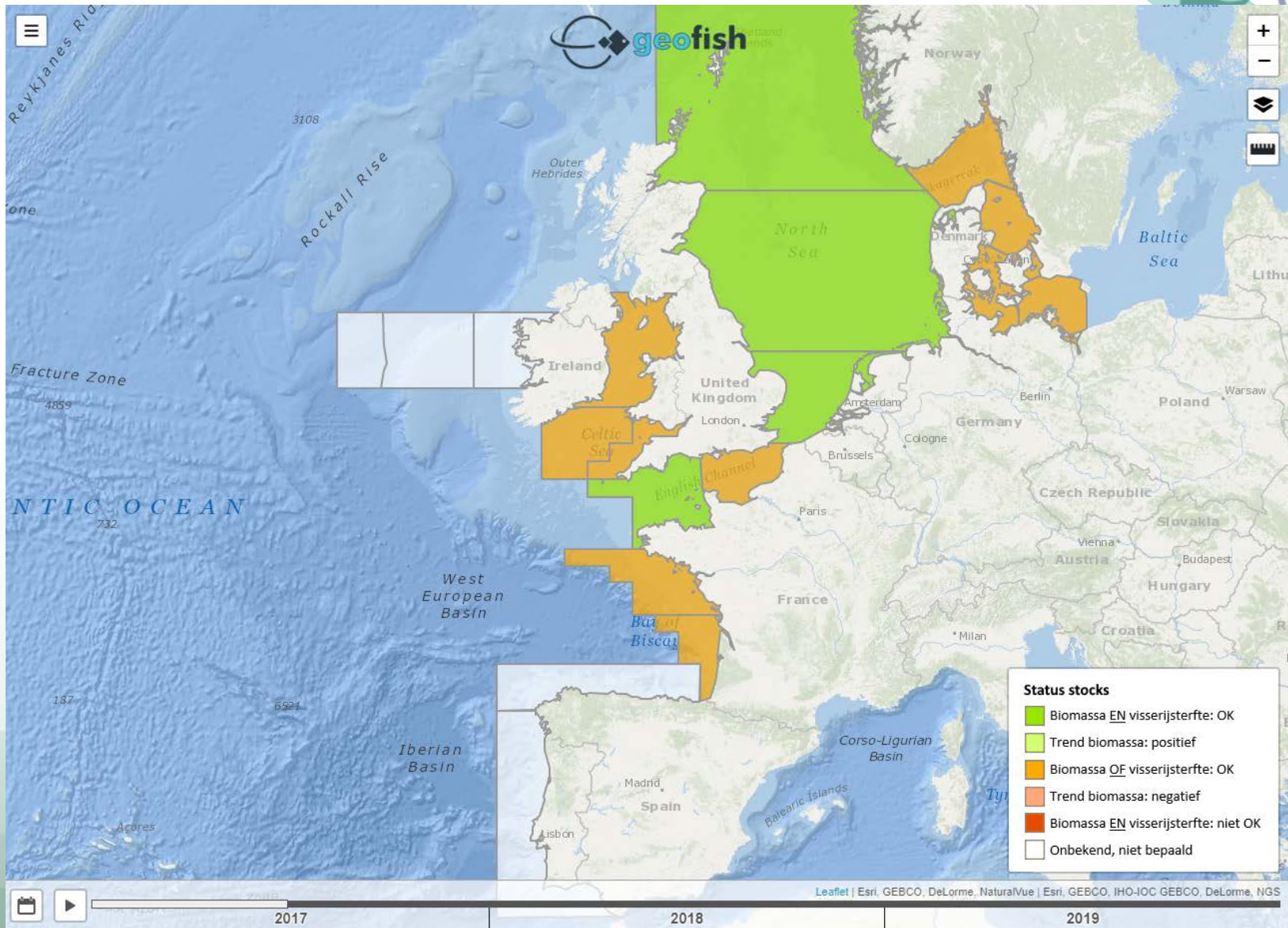


# The result – stock status information

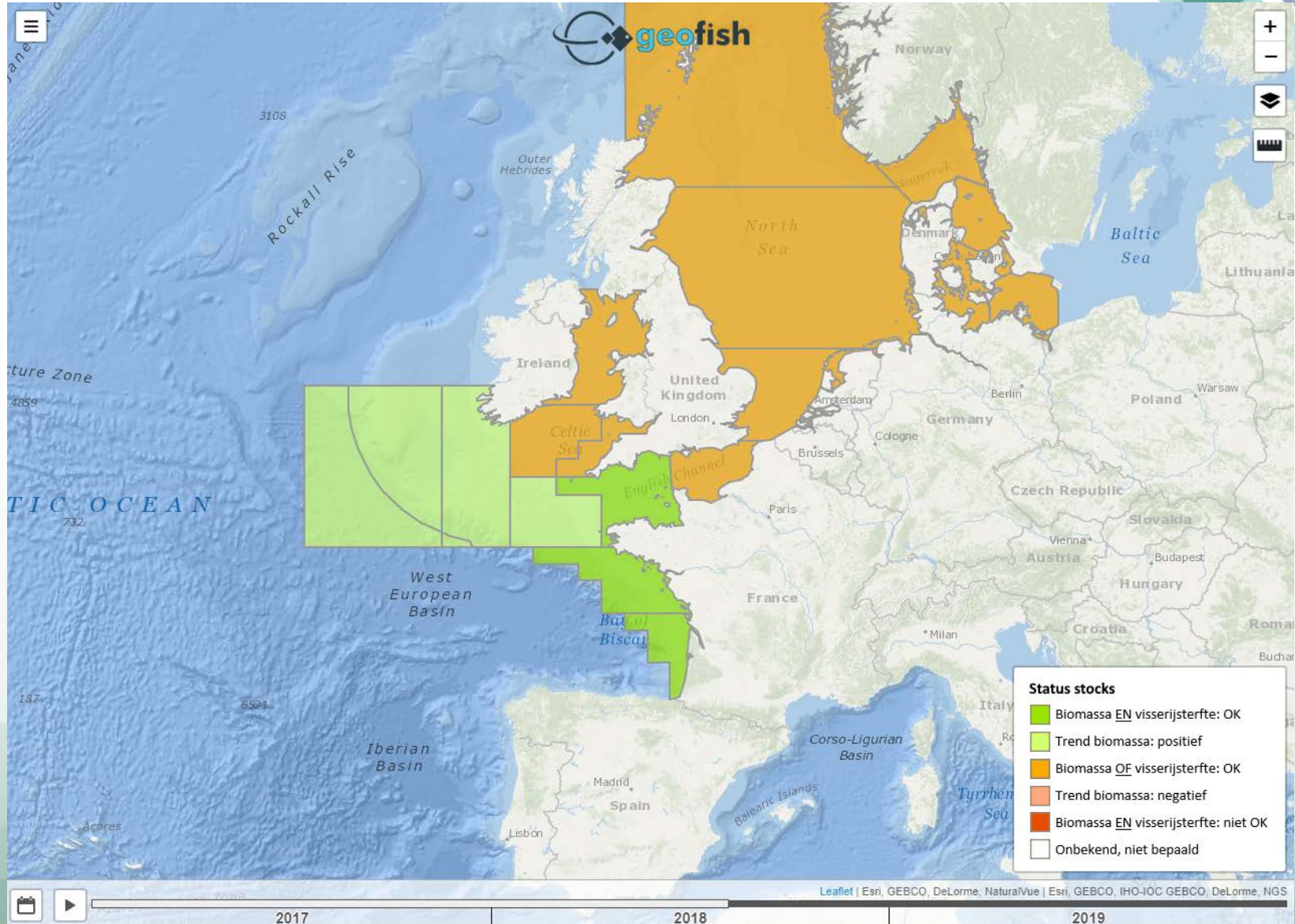




# The result – timeline (2017)

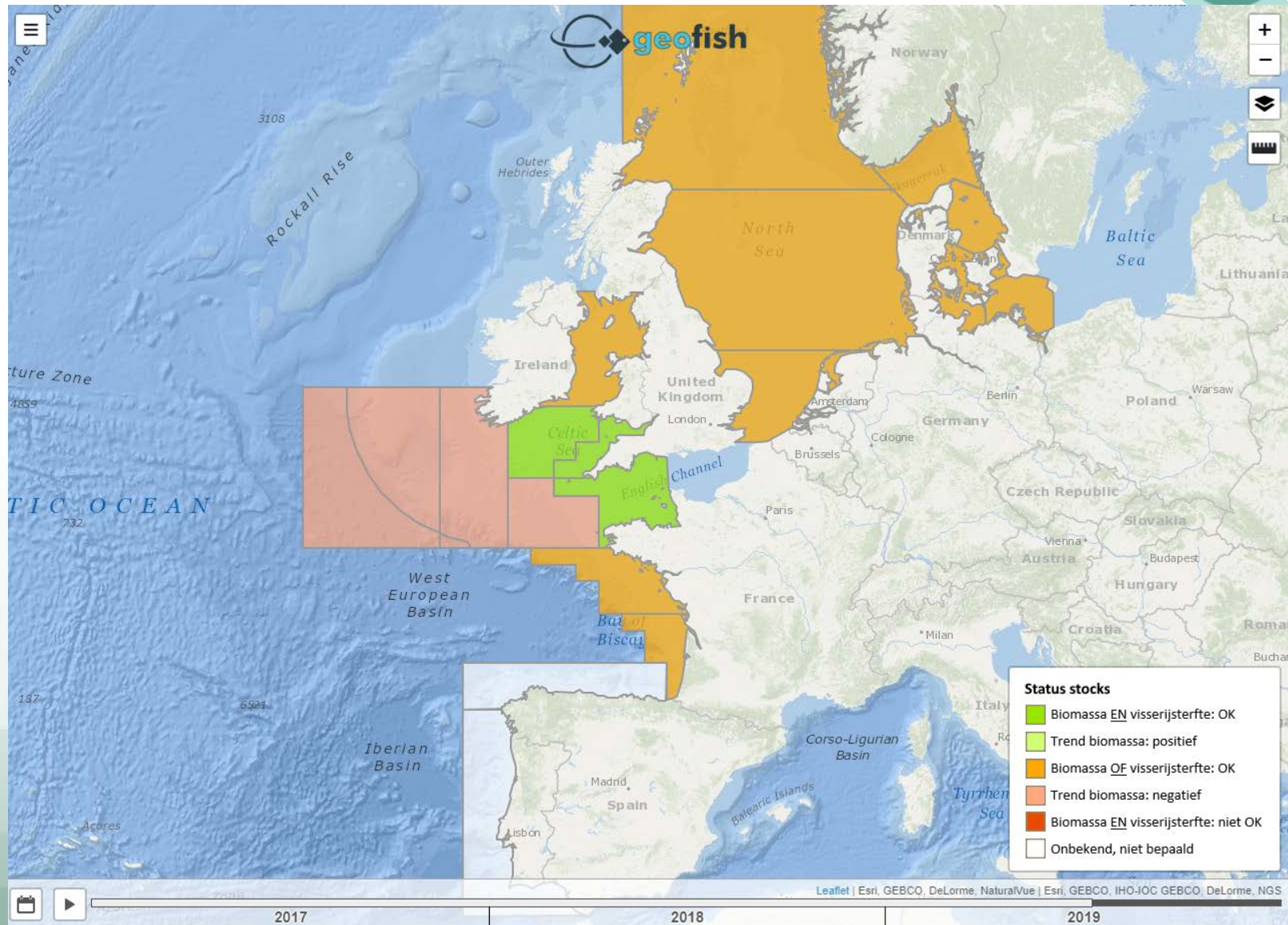


# The result – timeline (2018)





# The result – timeline (2019)





## NEWS

### Open data inspires at OpenSeaLab Hackathon 2019

The city of Ghent in Belgium played host to three intense days of networking, team-building, problem solving in September when the second edition of the OpenSeaLab hackathon took place.

Published: 11 November 2019

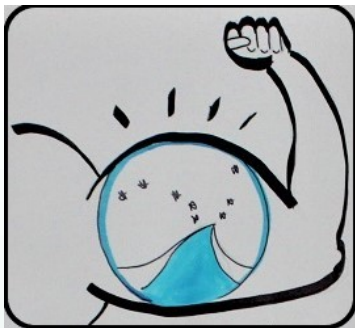
The organizers the [OpenSeaLab](#) asked coders, communicators, data enthusiasts, entrepreneurs, and creative minds to work together and use the wealth of open marine data from ICES, [EMODnet](#), and [Copernicus Marine](#) to develop novel marine and maritime applications.

Seventy hackers from 19 countries brought their individual skills and expertise and formed teams to tackle the [three challenges](#): sustainable blue economy, blue society & ocean literacy, marine environment protection & management (including climate change).



*Team ILVO - Kevin De Coster, Wim Allegaert, and Brahim Al Farisi - overall winners of OpenSeaLab hackathon 2019.*

# Conclusion



How was your work inspired by ICES?

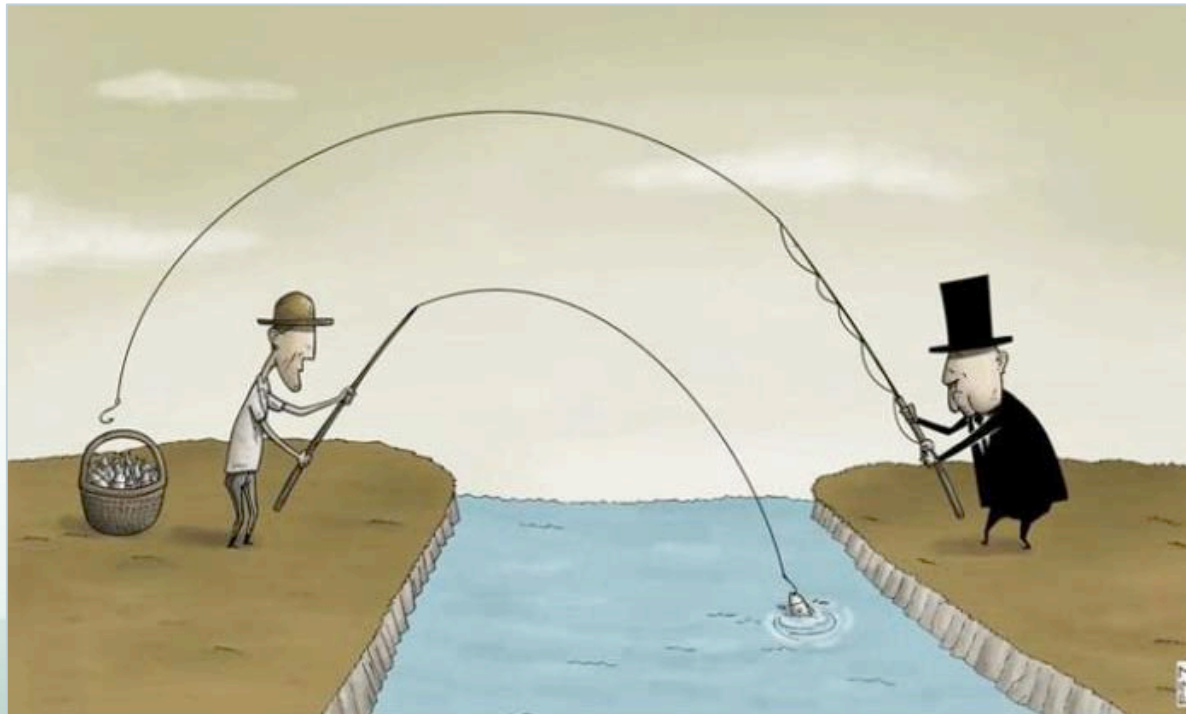
We made a very useful tool that displays stock advices in a complete and easy to understand way. This was only possible thanks to the ICES webservices.

How did/will your work contribute to the ICES advisory process and/or scientific knowledge basis?

This tool may be helpful to use during stock assessments to quickly find and present historical information.

Thank you!

## Understanding vessel ownership and firm organization in French Atlantic fisheries: a typology



**Arne Kinds (UBO, UGent, ILVO)**  
2nd BICEpS colloquium, Ghent, 2 December 2019

# What is required to go fishing?

## The fishing operation



Material inputs



Fishing vessel



Crew



Fishing opportunities  
(quotas, licenses)

## The fishing firm



Bookkeeping



Crew  
management



Workspace,  
atelier



Maintenance and  
repairs



Informal help  
(e.g., family)

## The broader context



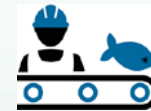
Commodity markets



Banks



Governance  
structures



Fish processors



European and  
national legislation



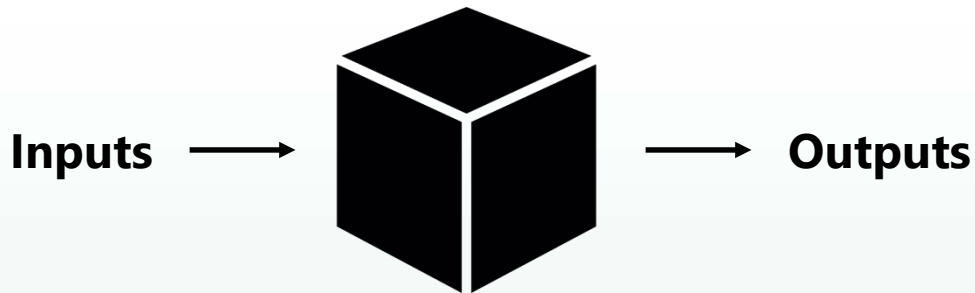
# Problem statement

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- Emergence of fishing firms with > 10 vessels
- A range of organizational forms exist and *coexist* in France
- Foreign investors accumulating fishing capital

**BOULOGNE-SUR-MER: Unipêche s'associe à des Hollandais pour acheter des bateaux, le modèle du patron-pêcheur en voie de disparition**

*La Voix du Nord, 11/05/2017*

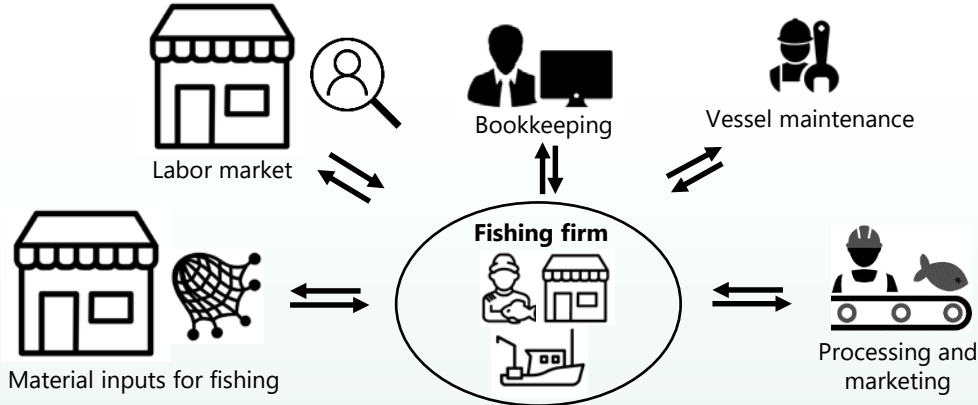


## Neoclassical economics:

Internal relations left undetermined (black box)

- **Transaction cost theory** (Williamson, Coase), **theory of industrial organization** (Tirole), **agency theory** (Jensen & Meckling)

# Transaction costs



## Transaction costs

Coase (1937): 'A firm will integrate any part of its production process, as long as doing the work in-house is cheaper than purchasing the input or service on the market'

# Research questions and methodology

Which organizational forms exist and what are the drivers behind their emergence and success? What can be expected from them in the future?

- Semi-structured interviews with vessel owners (multi-owners)
- Typology construction: Multiple Correspondence Analysis (MCA) and hierarchical clustering

Theme	Aspects considered
Ownership structure	Owner profile; shareholdership (distribution)
Legal structure	Sole proprietorship vs. company structure
Management strategy	Owner = manager vs. salaried manager; involvement of family; crew management
Production strategy	e.g., specialization/diversification; standardization of vessels
Internalization/externalization	Maintenance, administration
Financing strategy	Bank/personal/corporate funding
Valorization strategy	Processing, sales (vertical integration)

# Interviews



Face to face interviews (1-3 hours)

Data collected: quantitative and qualitative

80 interviews in Bretagne, Pays Basque, Arcachon, Normandie, Vendée, Nord

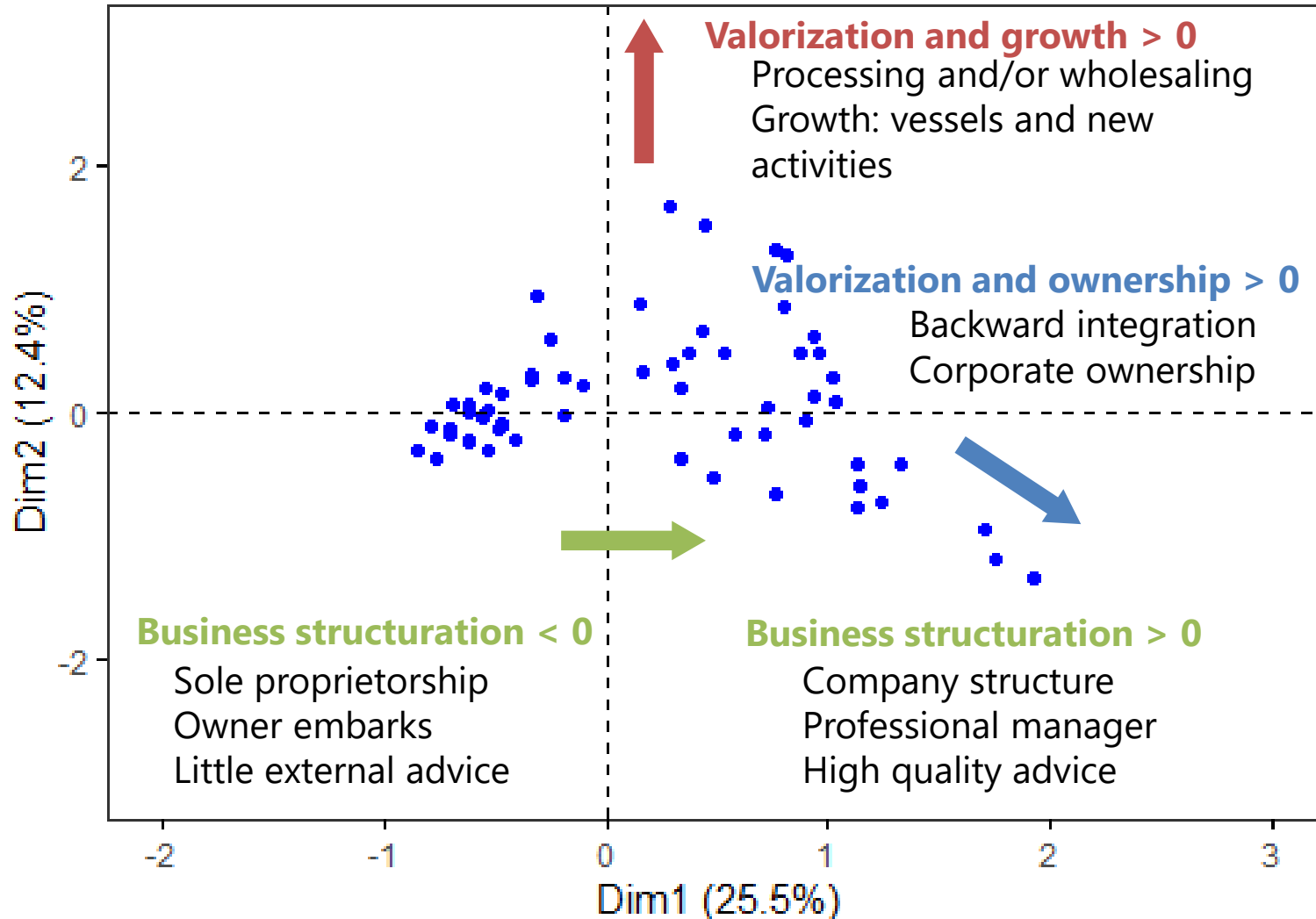
Other key actors: banks, business lawyers, management centers, vessel traders, producer organizations, professional organizations, ...

# Results: MCA

Dim. 1: 'Business structuration'

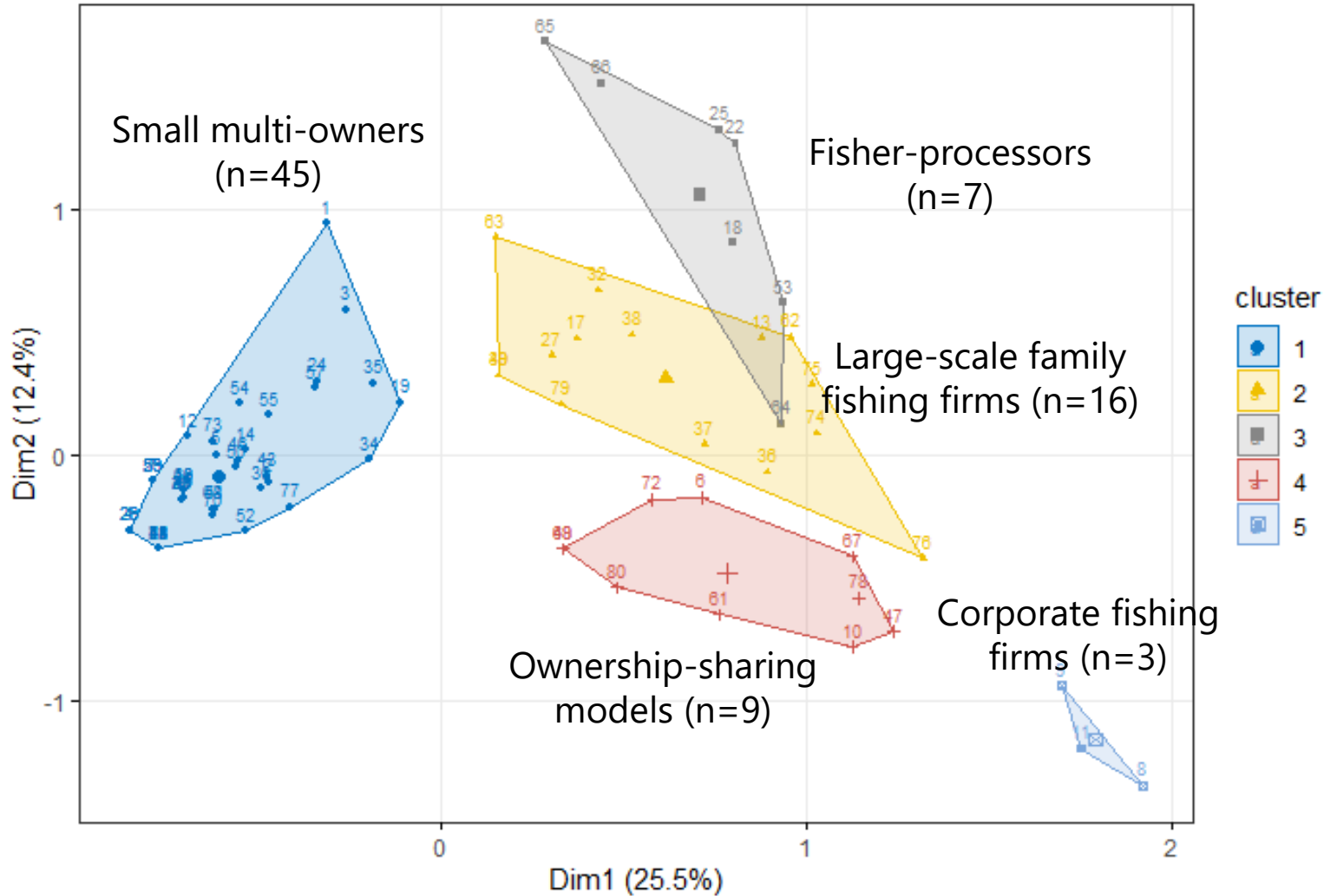
Dim. 2: 'Valorization and growth'

Dim 3: 'Valorization and ownership'





# Results



# Discussion

---

- The 5 groups resulting from MCA and clustering correspond to what is observed in the field
- But **insufficient** for understanding dynamics... **A historical perspective must be taken**
  - Recent elements:
    - Cessation of EU subsidies
    - France: Quota management and changed role of the POs
- Created **incentives** to invest in **multiple fishing vessels and/or to integrate value chains**
- **Trends**
  - Vertical integration, foreign ownership, uncoupling between ownership and management
  - Hybrid governance structures (Williamson, Ménard) ('ownership sharing')
  - Cooperatives: opening of capital to downstream players
- **Concerns**
  - Future of family fishing: who will buy these companies?
  - Access for young artisanal fishers

# Relation to ICES WGs (Strategic Initiative on the Human Dimension)

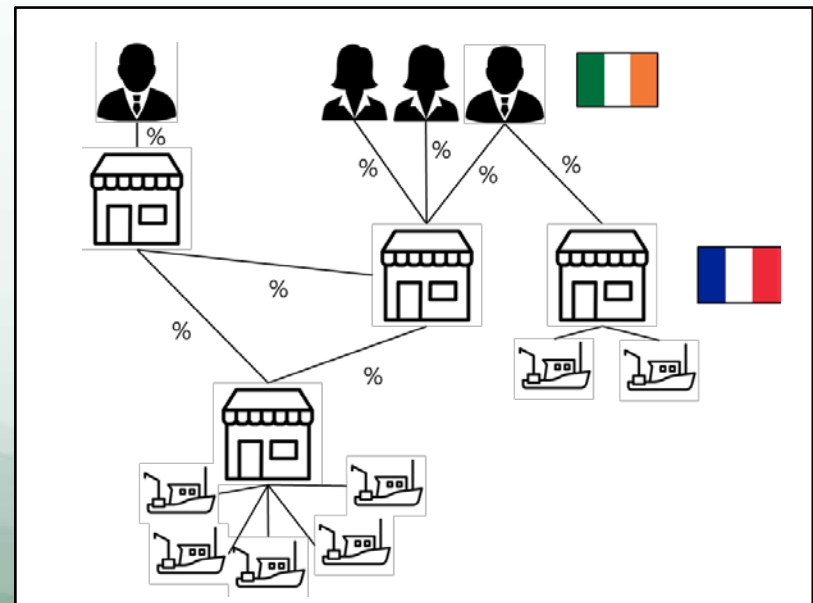
The Working Group on Economics (WGECON) addresses the challenge of bringing fisheries economics into ICES science and advice.

The Working Group on Social Indicators (WGSOCIAL) focuses on improving the integration of social sciences into ICES Ecosystem Overviews and Integrated Ecosystem Assessments through the development of culturally relevant social indicators.

The SIHD Workshop on Balancing Economic, Social, and Institutional Objectives in Integrated Assessments (WKSIED-BESIO) examined European national and international policy documents to identify economic, social and institutional (ESI) objectives.

## Suggestions

- Map the evolution of multi-ownership in the European fishing sector
- Analysis of the concentration of the production means in EU fisheries (paper 2 of PhD)



# Thank you!



# Genetic structure of common sole in the Irish and Celtic Sea by Filip Volckaert, KU Leuven

2nd BICEpS colloquium, Ghent, 2 December 2019





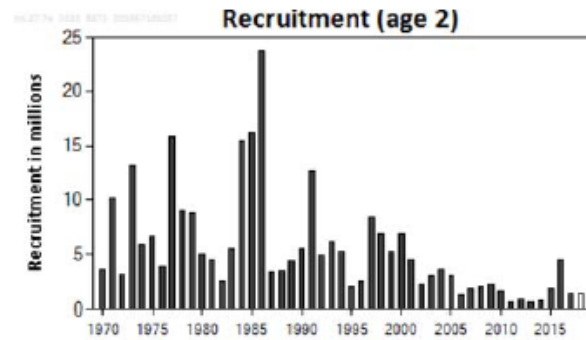
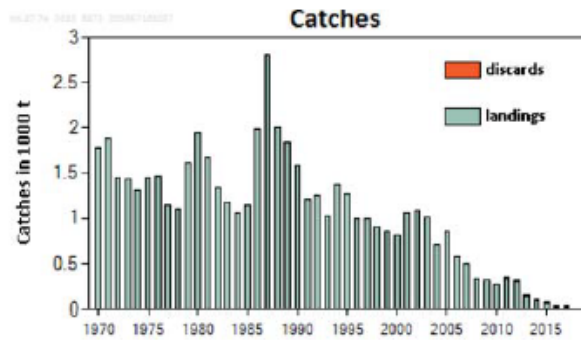
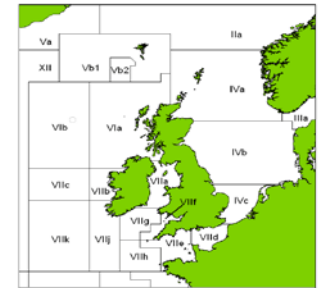
## Genetic structure of common sole in the Irish and Celtic Sea

1. Atlantic stocks of common sole
2. Seascape genomics of the NE Atlantic Shelf
3. The Irish and Celtic Sea stock of common sole
4. Connectivity in the Southern North Sea
5. Take-home message

# 1. Atlantic stocks of common sole

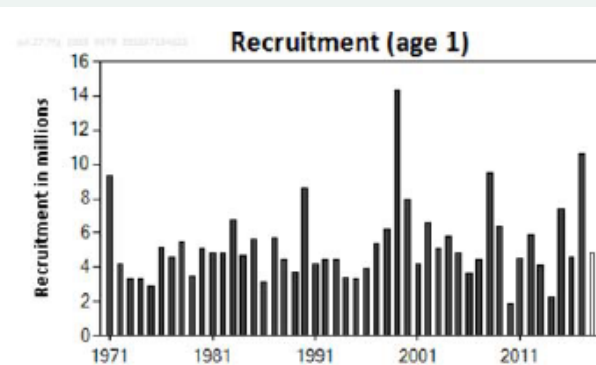
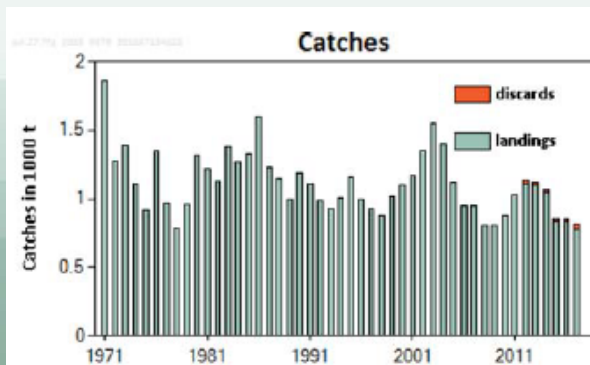
## Irish Sea - VIIa

Advice: catches in 2019 should be no more than 414 tonnes



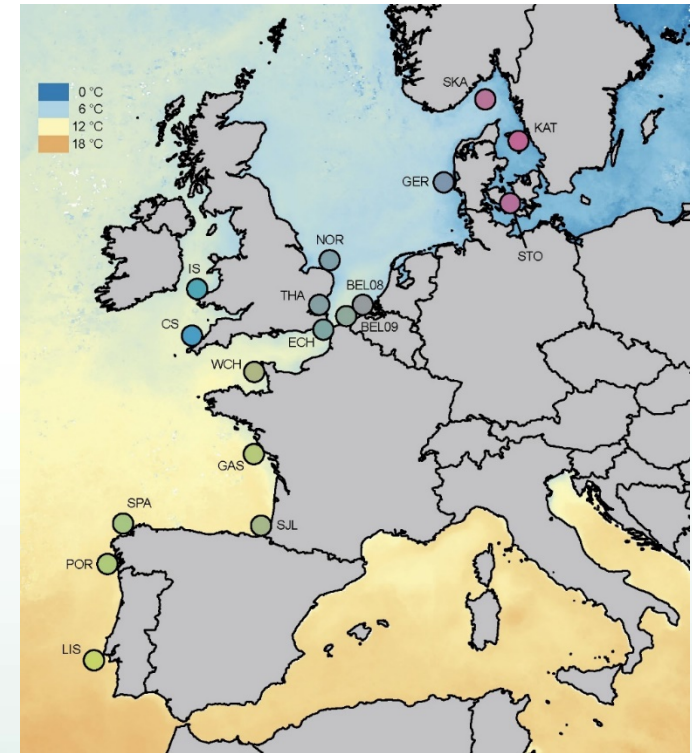
## Celtic Sea and Bristol Channel - VIIf and VIIg

Advice: catches in 2019 should be 864 tonnes



## 2. Seascape genomics of the NE Atlantic Shelf

- $F_{ST} = 0.007$  (very low)
- Isolation by distance
- 4 groups:
  - Baltic Transition Zone
  - North Sea and Eastern English Channel
  - **Irish and Celtic Sea**
  - Western English Channel and Bay of Biscay



Nielsen et al. *Nature Comm.* 2012  
Diopere et al. *ICES J. Mar. Sci.* 2018

## 2. Seascape genomics of the NE Atlantic Shelf

Clusters when analysing environmental factors and

A) Neutral SNP genotypes (n = 407) : Iberian peninsula and North Sea

B) Outlier SNP genotypes (n = 19): Baltic Sea and English Channel/Celtic Sea

C) All SNP genotypes (n = 426): Baltic Transition Zone and North Sea

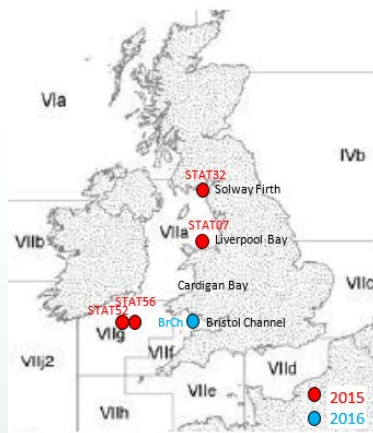


Diopere et al. *ICES J. Mar. Sci.* 2018

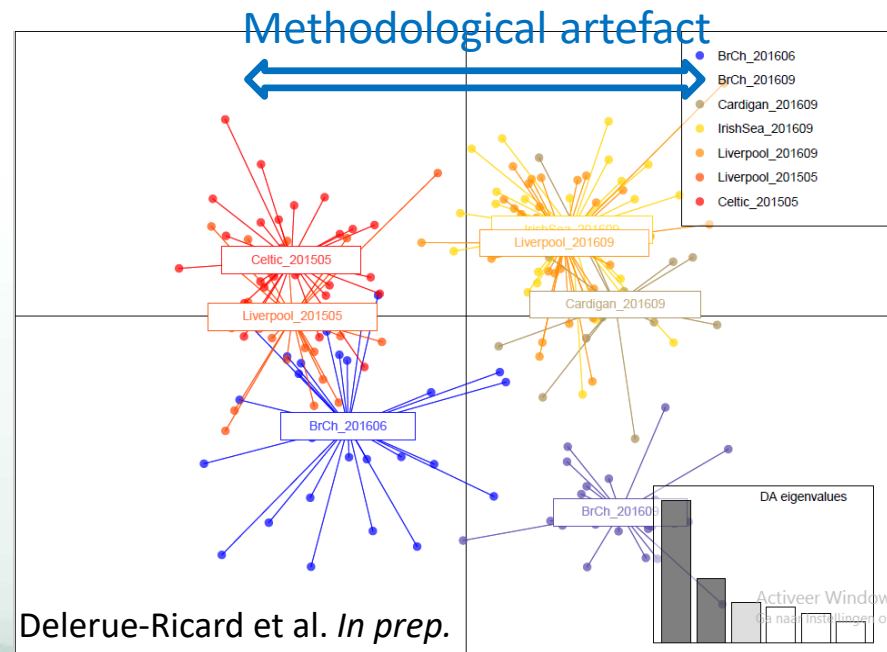
### 3. The Irish and Celtic Sea stock of common sole

Liverpool Bay, Bristol Channel and Celtic Sea show subtle genetic differentiation ( $F_{ST} = 0.007$ ).

Some evidence for limited connectivity.



Subtle differentiation

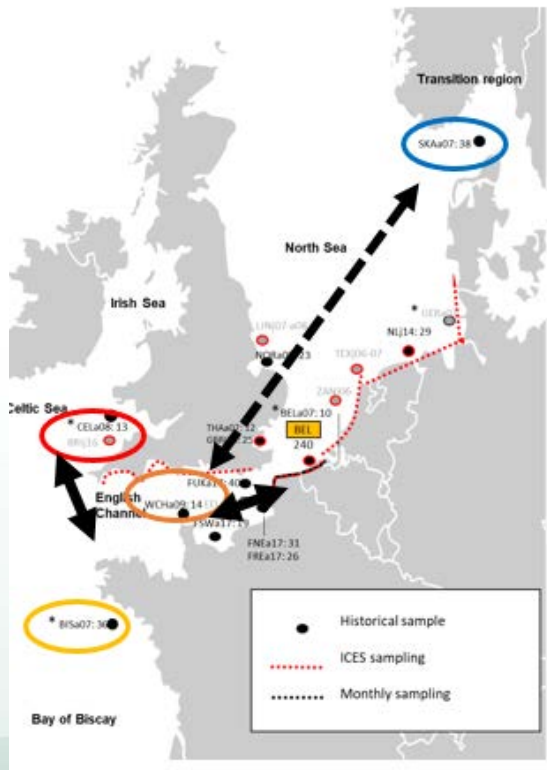




# 4. Connectivity in the Southern North Sea

SNP genotype discriminates regional populations unlike local populations.

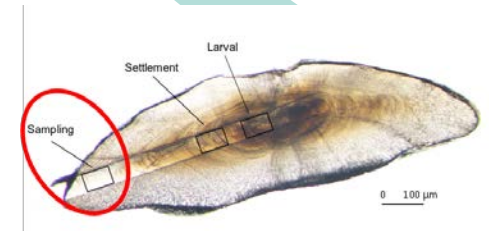
Local differences are higher between adults and recently settled larvae (cohort effect).



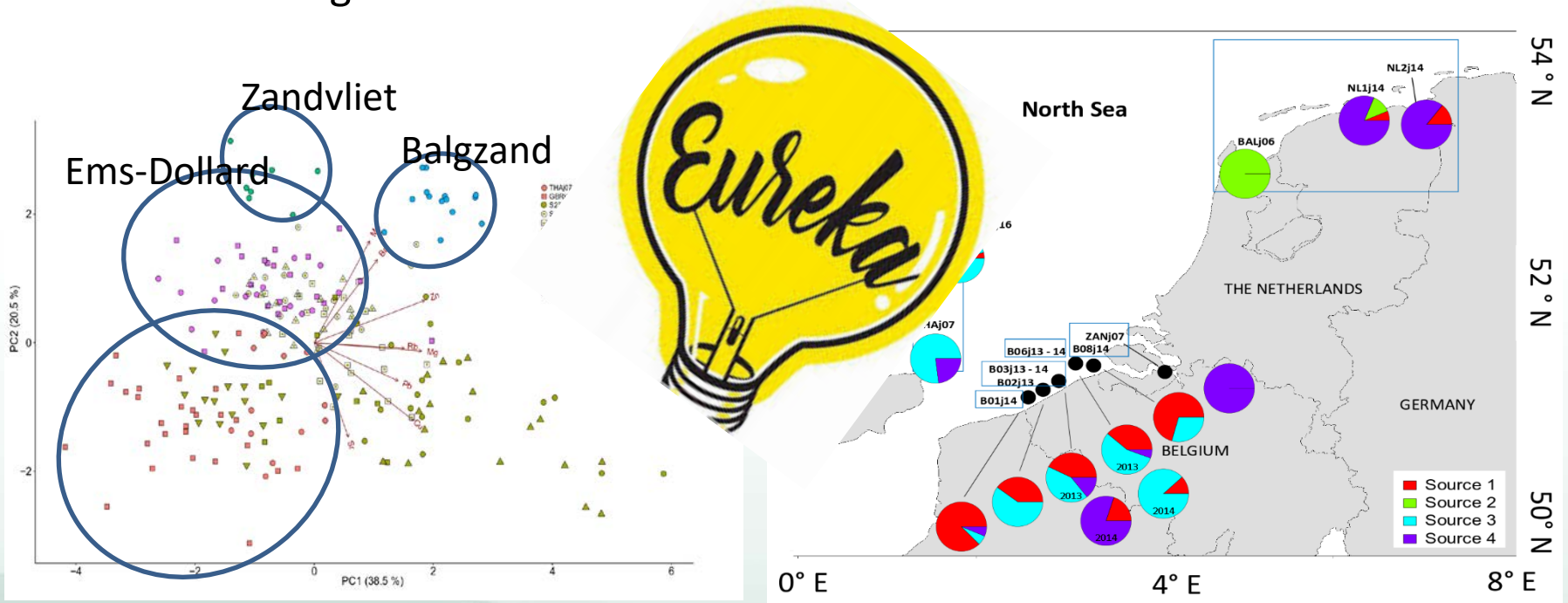
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	A	A	A	J	J	J	J	J	J	J	J	J	J	J	A	J	A	J	A	
BISa07	A	0.005	0.007	0.004	0.007	0.008	0.006	0.011	0.004	0.009	0.006	0.006	0.005	0.010	0.009	0.005	0.005	0.005	0.013	
CELa08	A	0.06		0.008	0.002	0.003	0.007	0.004	0.005	0.003	0.005	0.003	0.004	0.003	0.007	0.006	0.004	0.005	0.004	0.011
WCHa09	A	0.01	0.04		0.005	0.006	0.006	0.008	0.007	0.005	0.006	0.005	0.007	0.005	0.007	0.004	0.006	0.006	0.008	0.016
B08j14	J	0.07	0.00	0.07		0.000	0.003	0.001	0.003	0.001	0.000	0.001	0.002	0.001	0.001	0.003	0.001	0.001	0.001	0.010
B12j13	J	0.07	0.05	0.06	0.04		0.000	-0.001	-0.002	0.001	0.000	0.000	0.002	-0.002	0.002	0.005	0.001	0.000	-0.001	0.009
B03j14	J	0.05	0.08	0.05	0.05	0.00		0.003	0.003	0.003	0.004	0.003	0.004	0.003	0.004	0.002	0.004	0.004	0.004	0.011
B03j13	J	0.07	0.06	0.06	0.05	-0.01	0.00		0.002	0.001	0.000	0.001	0.001	0.000	0.004	0.001	0.002	0.002	0.008	
B07j13	J	0.06	0.02	0.07	0.00	0.02	0.04	0.04		0.003	0.001	0.004	0.005	0.002	0.004	0.005	0.001	0.005	0.001	0.013
B02j13j	J	0.05	0.02	0.05	-0.01	0.04	0.04	0.04	0.01		0.003	0.003	0.001	0.000	0.003	0.002	0.002	0.002	0.001	0.009
B06j13	J	0.06	0.05	0.06	-0.01	0.04	0.03	0.04	0.00	0.00		0.001	0.004	0.003	0.003	0.006	0.001	0.002	0.002	0.011
B04j13	J	0.07	0.02	0.06	0.02	0.01	0.01	0.01	0.01	0.02	0.01		0.002	0.001	0.003	0.003	0.001	0.000	0.001	0.009
B01j14	J	0.06	0.02	0.05	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.00		0.002	0.003	0.004	0.003	0.002	0.001	0.010
B10j13	J	0.07	0.04	0.07	0.02	0.01	0.03	0.02	0.01	0.02	0.01	0.01	0.00		0.003	0.004	0.001	0.002	0.001	0.009
B05j13	J	0.06	0.08	0.07	0.00	0.05	0.05	0.05	0.00	0.00	0.00	0.01	0.01	0.01		0.006	0.002	0.004	0.005	0.009
THAa07	A	0.04	0.04	0.04	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	-0.01	0.00				0.012
GBRj16	J	0.03	0.05	0.01	0.03	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.04	0.03		0.02	0.003		0.004	0.010
NORa08	A	0.05	0.05	0.04	0.05	0.00	0.01	0.00	0.04	0.04	0.04	0.01	0.01	0.02	0.05	0.00	0.02			0.009
NL1j14	J	0.05	0.03	0.04	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.01		0.010
SKAa07	A	0.06	0.05	0.03	0.05	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.03	0.02	0.04	0.06	0.04	0.02	0.03	0.02

Delereue-Ricard et al. *In prep.*

# 4. Connectivity in the Southern North Sea



Otolith elemental analysis discriminates locally between settled larvae, such that assignment identifies four sources of larvae in the North Sea.



Delerue-Ricard et al. *J. Sea Res.* In press.

# Genetic structure of common sole in the Irish and Celtic Sea

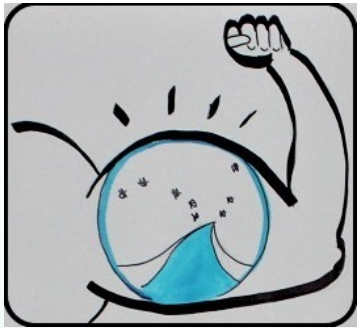
## 5. Take-home message

- High fishing mortality and low recruitment in the Celtic and Irish Sea.
- Genetic differentiation on a regional scale, but not locally.
- Connectivity between the Irish and Celtic stocks is limited.
- Environment plays a role in adaptation: northern and southern stock.
- Geographical stock management looks fine.
- Rebuilding of the Irish and Celtic Sea stocks will depend on local recruitment dynamics.



# Concluding slide

- Our research was inspired by a management-focused question of assigning fish to their source population (EU project **FishPopTrace**) and the fundamental question of connectivity between populations (FWO project **B-FishConnect**).
- Most of the scientific results have been published while some remain to be submitted to the scientific literature in 2020. Results have been presented at ICES-ASC, EU-JRC, the scientific and public press. FishPopTrace and B-Fishconnect have contributed to the training of several PhDs and postdoctoral fellows.



# Providing ICES advice to OSPAR – an impression of the process

Jan Vanaverbeke & Bob Rumes  
RBINS – OD Nature - MARECO

2nd BICEpS colloquium, Ghent, 2 December 2019



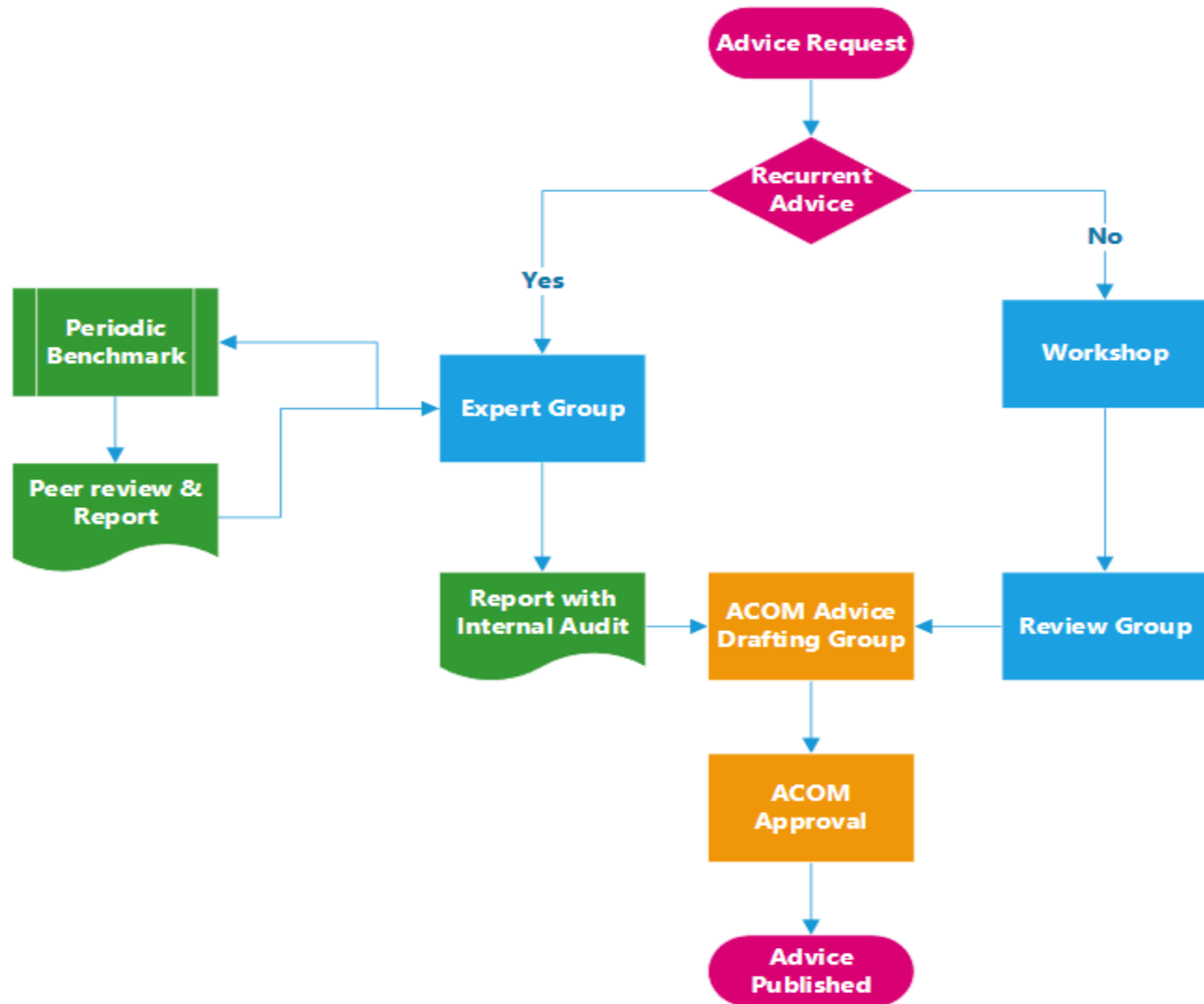
## Some (very recent) history

- March 2018: WGMBRED elect new chairs: Joop Coolen and Jan Vanaverbeke
- March 2018: WGMBRED proposes new ToRs
- July 2018: ICES forwards a request for advice to acting chairs of WGMBRED and WGMRE: **Advice on the current state and knowledge of studies into the deployment and environmental impacts of wet renewable technologies and marine energy storage systems.**
- ICES timing: through a 2-days workshop (WKWET) at joint meeting of WGMBRED and WGMRE

## Some (very recent) history

- But: initial timing of WGMBRED and WGMRE was not at all coinciding
- Initial timing of WGMBRED was too close to the deadline
- Keep WG dates, extend deadline for advice? NO
- SUMMER HOLIDAY
- Early September: WGMBRED changes meeting dates to February 2019
- Late September: WGMBRED and WGMRE cannot be organised simultaneously

# ICES advice procedure



## Some (very recent) history

- Use the network!! Call to Steven Degraer: ask for a way to organise joint WGMBRED – WGMRE meeting before the WG-meetings.
  - Goal: kickstart the work, finalise at WGMBRED/WGMRE
- Procedure to organise such a workshop was explained (ICES has money available!)
- Procedure was initiated, approved by ICES (thanks Steven)

## Some (very recent) history

- WKWET to be organised at ICES HQ, January 2019
- November 2018: preparatory Teleconference
  - WGMRE Chair is WKWET Chair
  - WGMRE Chair to recruit participants (mainly WGMRE, Chair's Institute (Marine Scotland), WGMBRED members. Bob on parental leave, to participate through teleconference)



## Some (very recent) history

- End December 2019...
- Chair of WGMRE steps down
- =>no chair for WKWET (solution: Jan)
- =>difficult contact with WGMRE (solution: Bob is liason with WGMRE)

# WKWET

- WKWET ICES HQ, 15 - 16 January 2019
- 2 days, 10 scientists (+Bob via TC)
- Great support by ICES!!
  - Infrastructure physical and digital
  - Financial
- Structure of report agreed on, tasks allocated.
- Deadline for finalisation: 12 February 2019



# WGMBRED

- WG meeting @ Brussels
- Additional information added
- Provided information checked
- Deadline: 23 February 2019



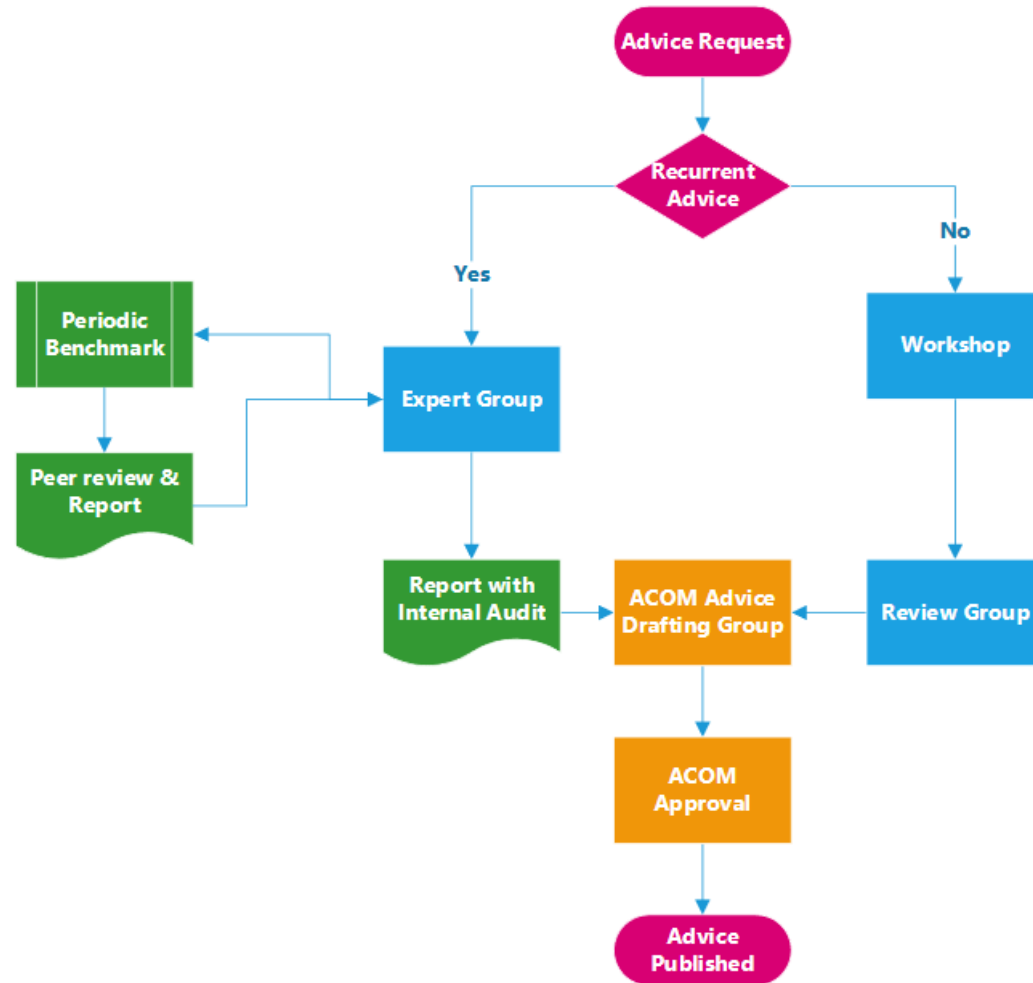


# WGMRE

- WG Meeting @ Ostend
- Additional information added
- Provided information checked
- Some iterations with WKWET Chair and ICES Secretariat
- Submitted knowledge base for advice to ICES



# ICES Procedures...





# ICES Advice Drafting Group

- Based on the report + remarks reviewers  
⇒ Draft the advice towards OSPAR
- ADG meeting at ICES HQ
  - Advice Drafting Group
  - Chair of WKWET
  - Chair of WGMBRED
  - Chair of WGMRE (replaced by Bob)
- Strong support by ICES (logistics, review procedure, formatting)
- Advice drafted

# Conclusions

- Being involved in advice drafting activities is
  - Challenging
  - Time consuming
  - Rewarding
- Rewarding because of
  - Valorisation of your own research
  - Increasing own knowledge and expertise
  - Increasing network

# EARS: data and operations in the global environmental context

By Thomas Vandenberghe (RBINS)

2nd BICEpS colloquium, Ghent, 2 December 2019

# Eurofleets+

An alliance of European marine research infrastructures



- Introducing Eurofleets+ and its grant possibilities
- Why use EARS anyway
- Showcasing and promoting the uptake of the EARS software

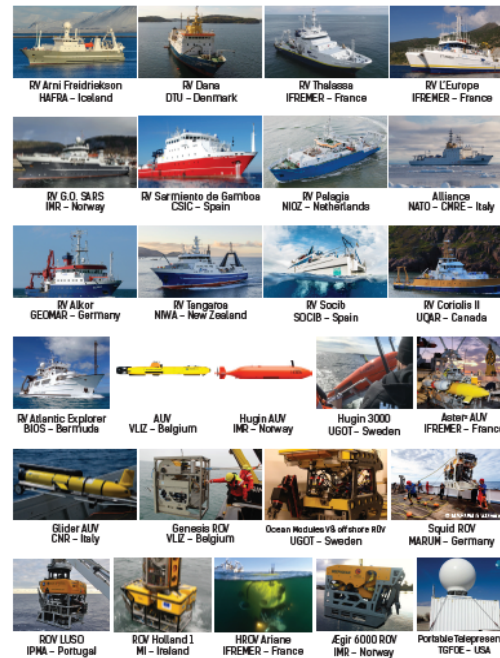
# Eurofleets+

An alliance of European marine research infrastructures



*"An alliance of 42 European marine research institutes and SMEs to meet the evolving requirements of the research and industrial communities"*

- Horizon 2020
- 2019-2023
- Lead: MI.ie
- EF1-EF2 since 2009





# Eurofleets+

## And what RBINS is doing for it

### Different Work Packages:

- Offer shiptime for both R/V Belgica
- Innovation management
- Guide development of Data Management Plans (DMPs)
- Data management (of funded scientific cruises)
  - → SeaDataNet → GBIF/OBIS, EMODnet
- Develop a software tool to register metadata about punctuated "manual" measurement operations
  - EARS

# Shiptime calls

'SEA' (Ship-time and equipment)

Regional

Deadline: 28/02/2020

Oceans

Closed for now

'Co-PI' (partake in SEA cruise)

Deadline: begin 2022

'RTA' (sampling on SEA cruise)

Deadline: begin 2022

Scientific Excellence

+Link with existing infrastructures

+DMP

North Atlantic



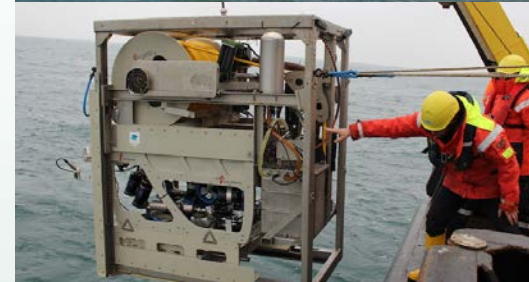
North Atlantic



North Sea  
& Baltic



Oceans



Mediterranean,  
Atlantic Ocean



# EARS

Onboard data and events logbook application

## **Continuous en-route data acquisition (Backend)**

*Happens without anyone knowing*

## **Logging events (Front-end application)**

*Any circumstance, malfunction or situation that happens on board and should be logged*

## **Webservices (Back-end)**

*Bind both, make them interoperable from the start and send them to shore*

# EARS Events

Circumstances, samples and deployments

## Better than Excel

- Match event with location and en-route parameters
- Sample management
- Uplifting raw data to international data repositories – Linked data
  - SeaDataNet data standards – CSR and CDI
  - Only NERC/BODC Vocabularies
  - In theory: ICES vocabularies as well

# Vocabularies

The meaning of things: intrinsic and/or relational

*In practice...*

- **Purse Seines**

- <https://vocab.ices.dk/services/rdf/collection/SMTYP/PRS>
- <https://vocab.ices.dk/services/rdf/collection/Gear/PRS>

- **Plankton purse seine - Murphy and Clutter (1972)**

- <http://vocab.nerc.ac.uk/collection/L22/current/NETT0138>



# Vocabularies

## Drive data searches



PAN-EUROPEAN INFRASTRUCTURE FOR  
OCEAN & MARINE DATA MANAGEMENT

FEEDBACK

### NEW SEARCH

Agri-Food and Biosciences Institute  
Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research  
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-W... ▼

Data custodian  
country ?

Platform type ?

aeroplane  
autonomous surface water vehicle  
autonomous underwater vehicle  
beach/intertidal zone structure ▼

Instrument Type ?

centrifuges  
Chirp  
colorimeters  
continuous air samplers  
continuous water samplers ▼

# EARS Front-end application

## Components

***Arrived at sampling station U455 at 11:20***

Research vessel

Belgica

Station

Start

Identifier

11:20

U455

***Beam trawl 22 finished at 12:23 over length of 80m***

Beam trawls

beam trawl 6m

Towing

End

Length

Identifier

12:23

8m

22

# EARS Front-end application

## New evolutions for EARS 3

- Precreate events from Excel and fill them in during the cruise
- Predefine properties such as Bucket – 10l or Beam trawl – 8m
- Create CSRs at end of cruise

# EARS Front-end application



Eurofleets Automatic Reporting System 2

File Edit Window Help

Create new cruise... Create new program... Edit Cruise Edit Program Create/edit events... Set current program by selecting a cruise: 2017/19A (2017/06/15-2017/06/15) No programs for selected cruise

View concept list Browse trees Browse individuals of earsv2-onto x

- acoustic backscatter sensors
- active fishing gear
- ADVs and turbulence probes
- aerosol samplers
- airgun array
- anemometers
- atmospheric radiometers
- bathymographs
- beam trawls
- bench particle sizers
- benthic lander
- benthos samplers
- centrifuges
- colorimeters
- CTD
- current meters
- current profilers
- demersal trawl nets
- discrete air samplers
- discrete water samplers
- Autosampling and Recording Instrumental Environmental Sampler - Dunn et
- Autosampling and Recording Instrumental Environmental Sampler rosette w
- BIOPROBE benthic lander
- Bucket
- Carboy
- EnviroTech LLC Aqua Monitor Smart Water Sampler
- Friedinger bottle water sampler
- General Oceanics GO-FLO water sampler
- Glass bottle and bung water sampler
- Knudsen reversing water bottle
- Lancaster University syringe water sampler
- Lever Action Niskin Bottle
- Lindahl dividable phytoplankton sampling hose
- Marine Scotland Opening Closing Environmental Acoustic Net water bottle
- Max Planck Institute Pump CTD water sampler
- McLane RAS-100 remote-access sampler
- McLane RAS-500 remote-access sampler
- Nansen-Pettersson water bottle
- National Institute of Oceanography plastic reversing water bottle
- National Institute of Oceanography water sampling bottle
- Nereides 300l sample bottle
- NIOZ PRISTINE ultraclean water sampler
- Niskin bottle
- OSIL Marine Snow Catcher
- Plymouth Marine Laboratory Interfacial Sampler
- Plymouth Marine Laboratory Near-Surface Sampling Device
- Polypropylene 10L surface sample bottle
- RAPID ISOMAP-UK manual water sampler
- Technicap NOEX bottle
- Teflon-coated Niskin bottle

Visual

- root
  - beam trawls
  - benthos samplers
    - Hyperbenthic sledge
      - Sampling
        - End
          - label
          - sampleid
        - Subsampling
          - label
          - sampleid
          - subsampleid
        - Towing
          - End
            - label
            - length\_m
          - Start
            - label
  - centrifuges
  - compound water sampler
  - CTD
    - Sea-Bird SBE 19 SEACAT CTD
    - Sea-Bird SBE 19plus SEACAT CTD
    - Sea-Bird SBE 19plus V2 SEACAT CTD
    - Sea-Bird SBE 911 CTD
  - current profilers
    - Teledyne RDI Workhorse Mariner 600kHz ADCP
  - discrete water samplers
  - dissolved gas sensors
  - YSI 6-series multiparameter water quality sondes

End - Properties x

Properties

label	End
alt label	Finish
definition	Ending a process.
kind	ACT
uri	http://ontologies.ef-ears.eu/ears2/1#concept_801
urn	ears:act:d8e39610-df23-11e3-89ba-d850e6ba987a
status	Validated
creation date	May 19, 2014 9: 04: 37 AM
internal details	id=2; hash=757014601; name=End - ears:act:d8e39610-df23-11e3-8...

End

ACT: Ending a process.

Output x

Messages x Exceptions x

```
2017-09-28T13:26:35.904Z: Note that the ears2Nav webservises are offline. This doesn't impact the application.
2017-09-28T13:26:35.920Z: Vessel: Belgica
2017-09-28T13:26:35.924Z: Newer version of the file earsv2-onto.rdf found and downloaded.
2017-09-28T13:26:35.942Z: Newer version of the file earsv2-onto.rdf found and downloaded.
2017-09-28T13:26:35.972Z: Newer version of the file earsv2-onto.rdf found and downloaded.
2017-09-28T13:26:35.976Z: Country metadata has been updated
2017-09-28T13:26:35.981Z: Vessel metadata has been updated
2017-09-28T13:26:35.985Z: Sea area metadata has been updated
2017-09-28T13:26:35.988Z: Harbour metadata has been updated
2017-09-28T13:26:35.991Z: Organisation metadata has been updated
2017-09-28T13:26:35.994Z: There is no actual cruise ongoing.
2017-09-28T13:35:40.981Z: -----
[Trid URL: https://ears.bdc.be/ears20nt/uploadVesselOntology
Server response status code: 200
Response message: File correctly saved.: identifier null
-----
2017-09-28T13:35:41.183Z: The tree has been saved.
2017-09-28T13:36:10.496Z: -----
[Trid URL: https://ears.bdc.be/ears20nt/uploadVesselOntology
```

# EARS Front-end application



Eurofleets Automatic Reporting System 2

File Edit Window Help

Create new cruise... Edit Cruise Edit Program Create/edit events... Set current program by selecting a cruise: 2017/19A (2017/06/15-2017/06/15) OD Nature - MSFD (Ilse De Mesel)

View concept list Browse trees Browse individuals of earsv2-onto x earsv2-onto-vessel.rdf x Create/edit events x

TZ  ToolCat  Process  Actor Limit dates Export events

Date	Time	Timezo...	Tool category	Tool	Process	Action	Actor	Delete	Properties
2017-06-15	14:2...	+02:00	underwater cameras	MacArtney MultiCam	Line	Start	De Mesel Ilse		Edit
2017-06-15	14:3...	+02:00	underwater cameras	MacArtney MultiCam	Line	End	De Mesel Ilse		Edit
2017-06-15	15:0...	+02:00	underwater cameras	MacArtney MultiCam	Track	InWater	De Mesel Ilse		Edit
2017-06-15	15:0...	+02:00	underwater cameras	MacArtney MultiCam	Track	OnBottom	De Mesel Ilse		Edit
2017-06-15	15:1...	+02:00	underwater cameras	MacArtney MultiCam	Track	OnBoard	De Mesel Ilse		Edit
2017-06-15	15:2...	+02:00	underwater cameras	MacArtney MultiCam	Track	InWater	De Mesel Ilse		Edit
2017-06-15	15:2...	+02:00	underwater cameras	MacArtney MultiCam	Track	OnBottom	De Mesel Ilse		Edit
2017-06-15	15:3...	+02:00	underwater cameras	MacArtney MultiCam	Track	Ascend	De Mesel Ilse		Edit
2017-06-15	15:3...	+02:00	underwater cameras	MacArtney MultiCam	Track	OnBoard	De Mesel Ilse		Edit
2017-06-15	11:1...	+02:00	hydrophones	Chelonia C-PoD	Deployment	InWater	Rumes Bob		Edit
2017-06-15	11:2...	+02:00	hydrophones	Chelonia C-PoD	Deployment	InWater	Rumes Bob		Edit
2017-06-15	11:3...	+02:00	hydrophones	Chelonia C-PoD	Deployment	InWater	Rumes Bob		Edit
2017-06-15	12:3...	+02:00	hydrophones	Chelonia C-PoD	Deployment	InWater	Rumes Bob		Edit
2017-06-15	12:4...	+02:00	hydrophones	Chelonia C-PoD	Deployment	InWater	Rumes Bob		Edit
2017-06-15	12:5...	+02:00	hydrophones	Chelonia C-PoD	Deployment	InWater	Rumes Bob		Edit
2017-06-15	16:0...	+02:00	underwater cameras	MacArtney MultiCam	Track	InWater	De Mesel Ilse		Edit
2017-06-15	16:0...	+02:00	underwater cameras	MacArtney MultiCam	Track	OnBottom	De Mesel Ilse		Edit
2017-06-15	16:0...	+02:00	underwater cameras	MacArtney MultiCam	Track	Ascend	De Mesel Ilse		Edit
2017-06-15	16:1...	+02:00	underwater cameras	MacArtney MultiCam	Track	OnBoard	De Mesel Ilse		Edit
2017-09-19	17:4...	+02:00	compound water sampler	Rosette	Sampling	End	Saudemont Daniel		Edit
2017-09-19	17:4...	+02:00	compound water sampler	Rosette	Profile	Ascend	Saudemont Daniel		Edit

Output x

Messages x Exceptions x

2017-09-28T13:26:35.904Z: Note that the ears2Nav webservises are offline. This doesn't impact the application.  
 2017-09-28T13:26:35.920Z: Vessel: Belgica  
 2017-09-28T13:26:35.924Z: Newer version of the file earsv2-onto.rdf found and downloaded.  
 2017-09-28T13:26:35.927Z: Newer version of the file earsv2-onto.rdf found and downloaded.

15 | 2:02:23 PM



# EARS Front-end application

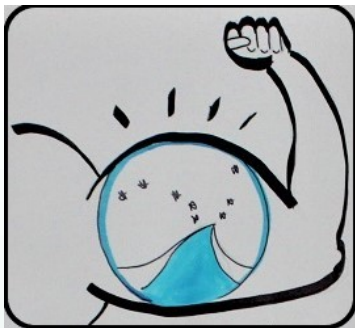
(Getting to) using it

- Java, runs on any pc
- Installed on the Belgica by MSO, maintained by BMDC
- Source code and software on <https://github.com/naturalsciences/ears>
- Use of EARS is mandatory for EF+ Cruises
- **Training in EF+ framework: Q1 2020**
  - Watch the BICEpS newsletter
  - Watch the Eurofleets+ site



# Contribution of EARS to the scientific knowledge basis

EARS = annotate meta-information for your use case  
= making the life of the PI easier

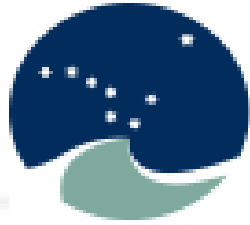


Use case for BMDC:

Annual reporting of pollutant data to ICES via BMDC

**Contribution into the OSPAR Coordinated  
Environmental Monitoring Programme (CEMP)**

**Data used by OSPAR MIME WG**



# Towards a coherent and coordinated monitoring of marine mammals?

Jan Haelters, RBINS



# ICES and marine mammals

## WG MME

- Data collection and assessments
- Status assessments
- Ecology (eg. diet)
- Environmental problems
- EC requests (MSFD)
- OSPAR requests (MSFD)

## WG BYC

- Marine mammal bycatch, including assessing (EC) 812/2004
- Bycatch of other species
- Bycatch mitigation

# ICES and marine mammals

## WG MME

- Data collection and assessments
- Status assessments
- Ecology (eg. diet)
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- EC requests (MSFD)
- OSPAR requests (MSFD)

## WG BYC

- Marine mammal bycatch, including assessing ~~(EC)~~ ~~812/2004~~
- Bycatch of other species
- Bycatch mitigation
- DCF: 2017/1004 en Technical Measures Regulation: 2019/1241



# ICES and marine mammals

## WG MME

- Data collection and assessments
- Status assessments
- Environmental problems

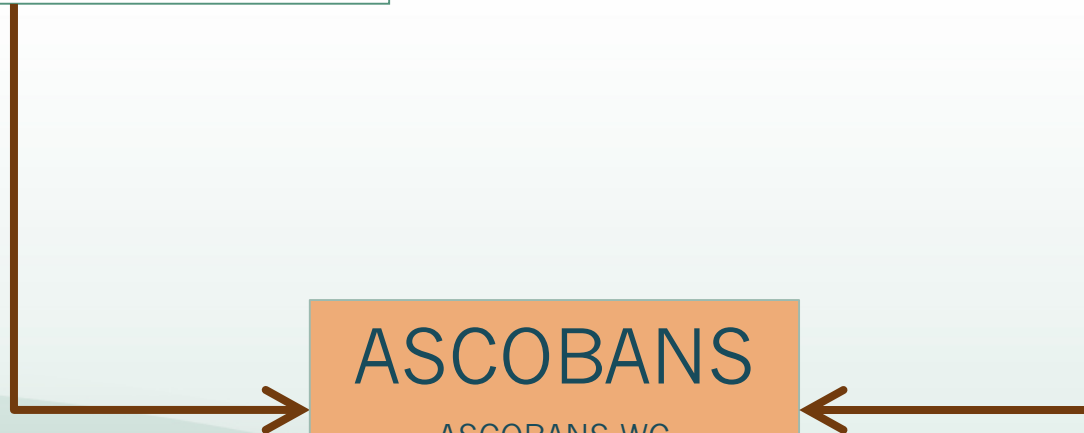
## WG BYC

- Marine mammal bycatch

## ASCOBANS

ASCOBANS WG

ASCOBANS/ACCOBAMS



# EC and marine mammals

## EC Env

- Habitats Directive
- MSFD

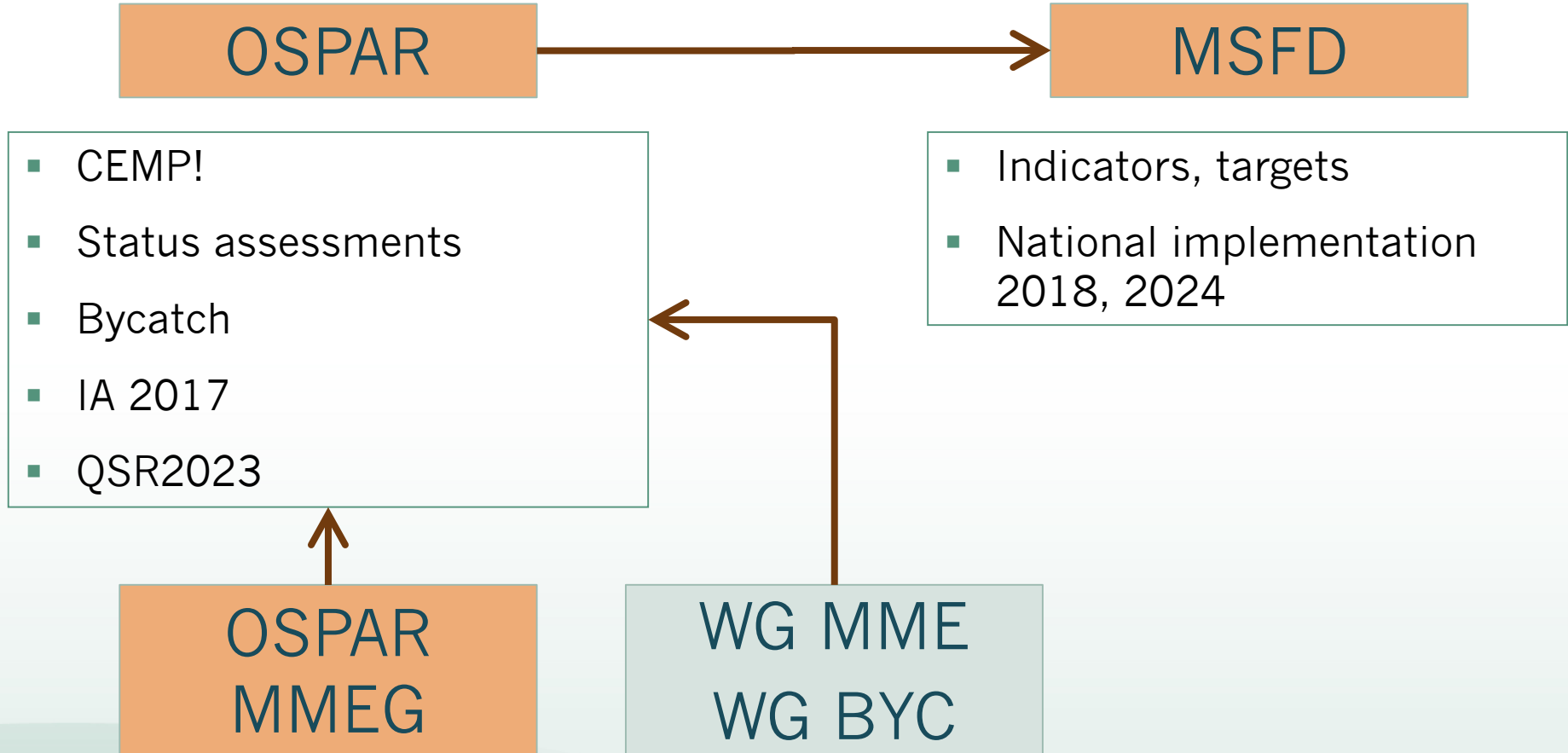
## EC Fisheries

- Marine mammal bycatch
- DCF: 2017/1004 en  
Technical Measures  
Regulation: 2019/1241

Coordination?

```
graph TD; Coordination[Coordination?]; Coordination --> EC_Env[EC Env]; Coordination --> EC_Fisheries[EC Fisheries];
```

# OSPAR and marine mammals



## Marine Mammals



Seal Abundance and Distribution



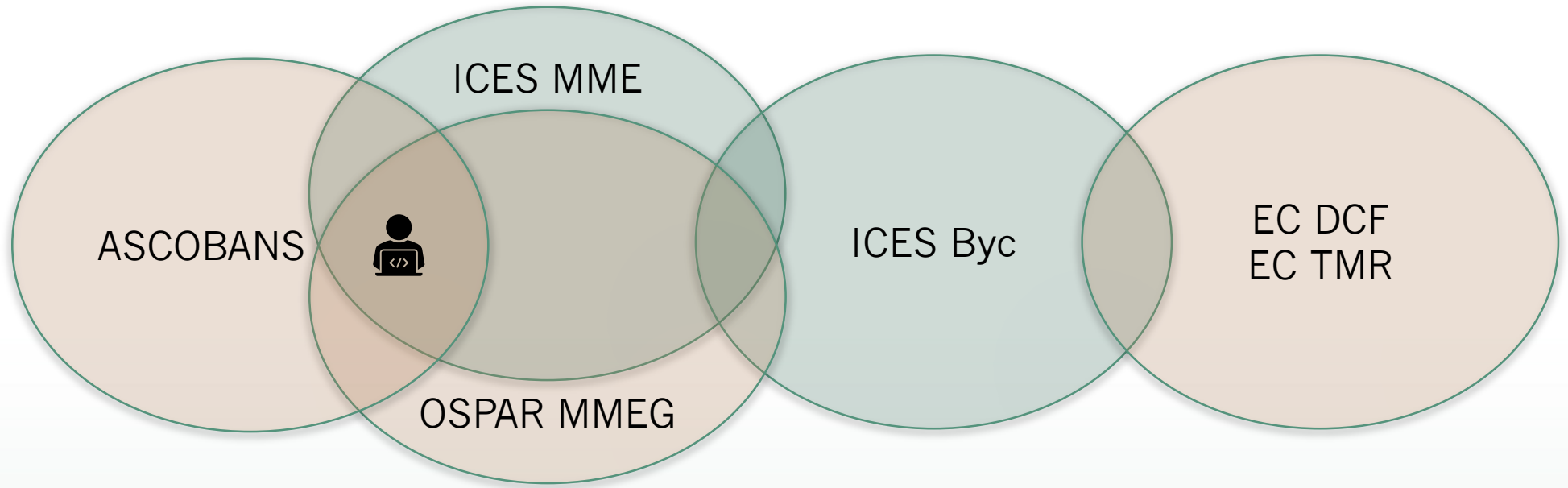
Grey Seal Pup Production



Harbour Porpoise Bycatch



Abundance and Distribution of Cetaceans



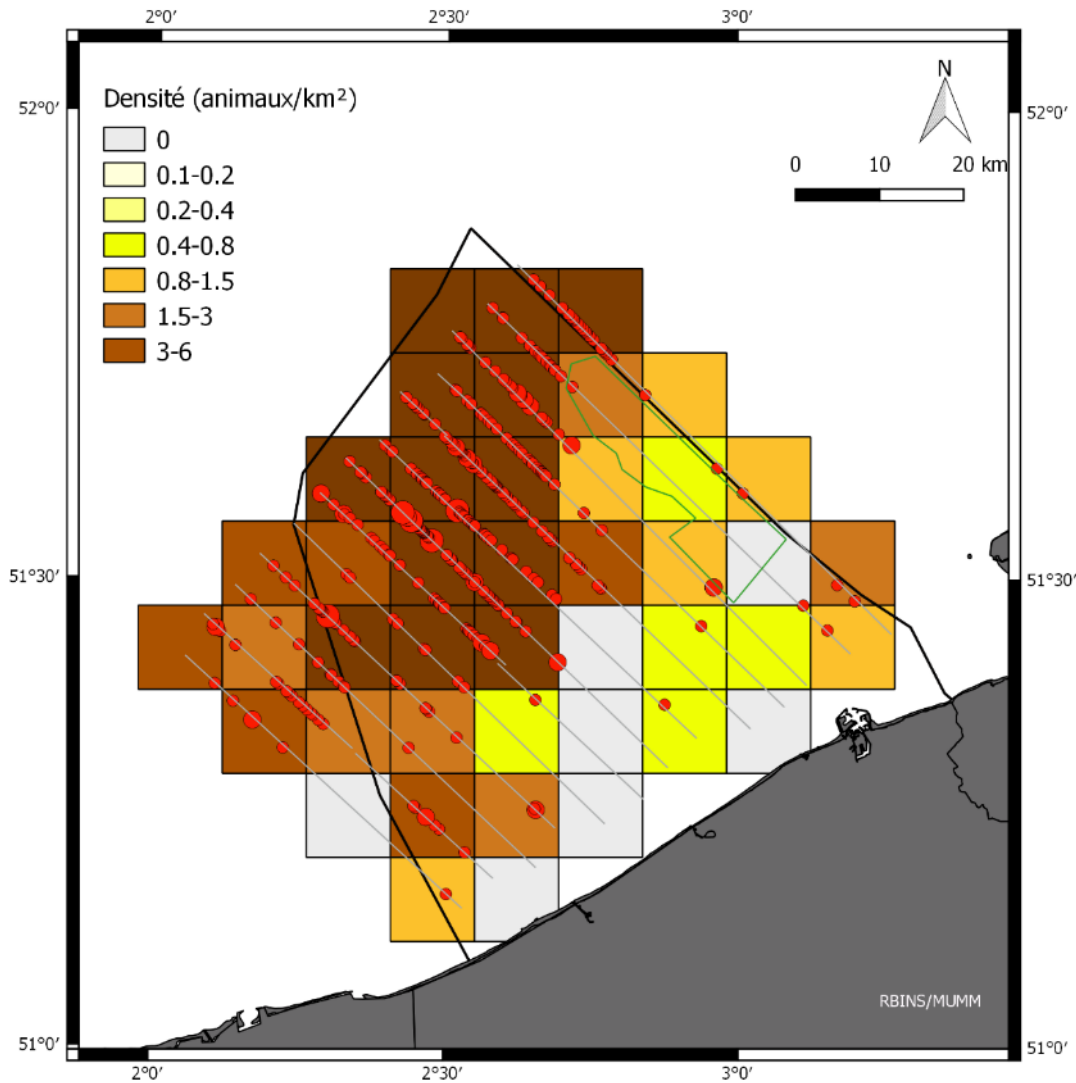


# Data collected nationally (and used by ICES, ASCOBANS, OSPAR, MSFD,...)

- Abundance and distribution of harbour porpoises
  - Ad hoc publications
  - No participation in SCANS surveys used for OSPAR/MSFD, but Belgian waters covered



# National aerial surveys

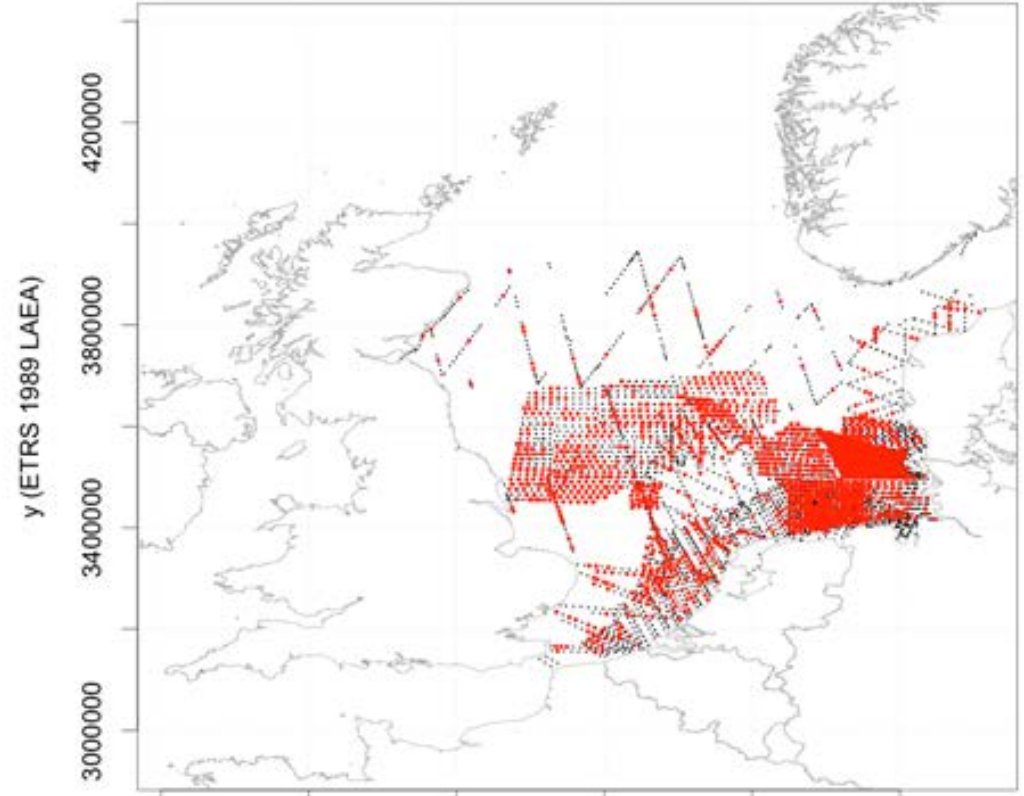


# National surveys and SCANS combined

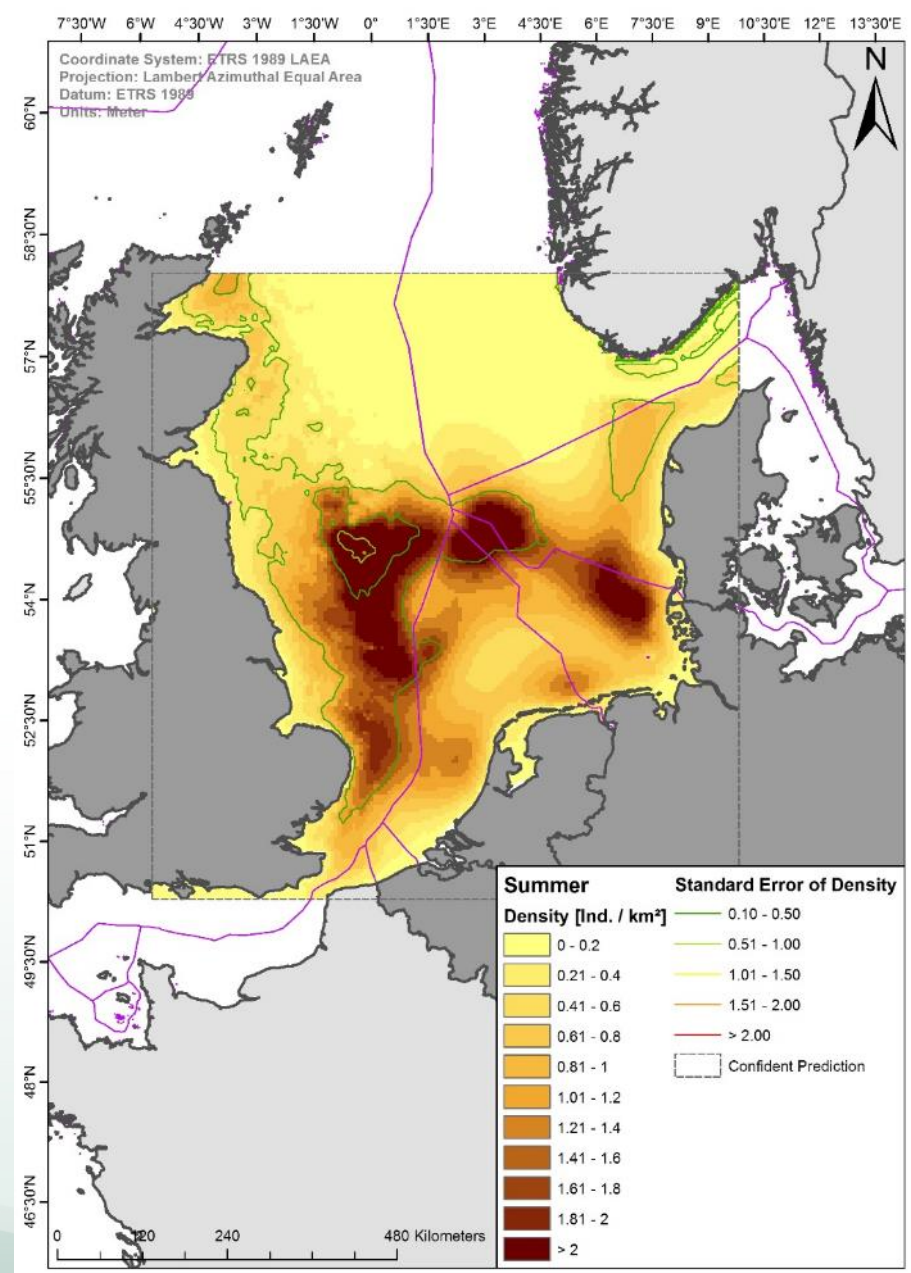
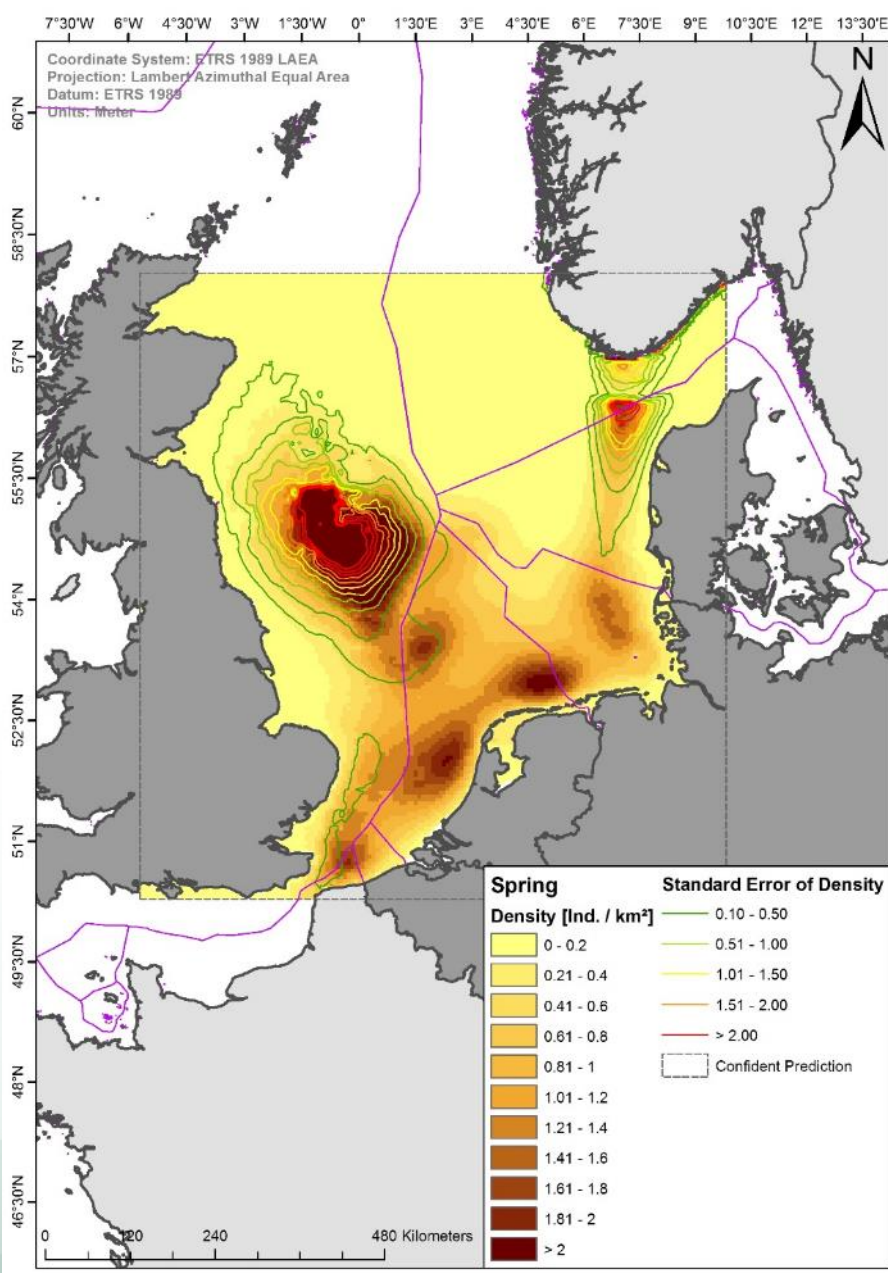
spring



summer

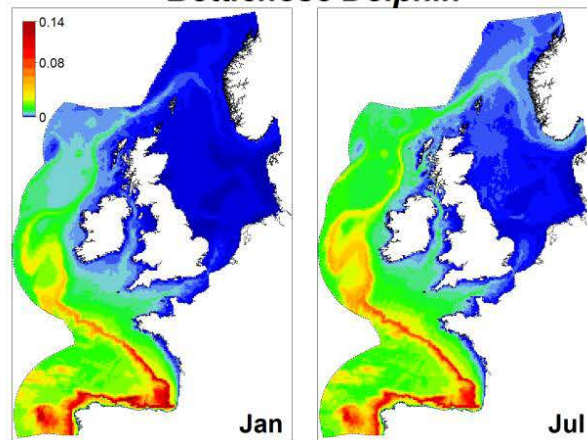
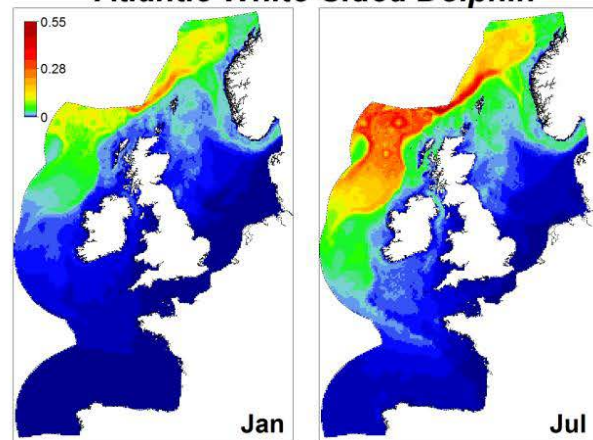
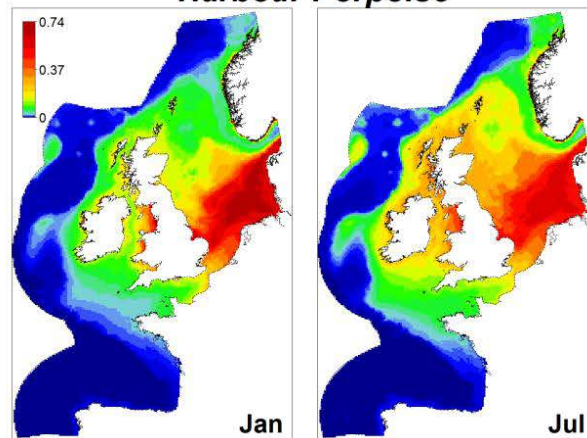
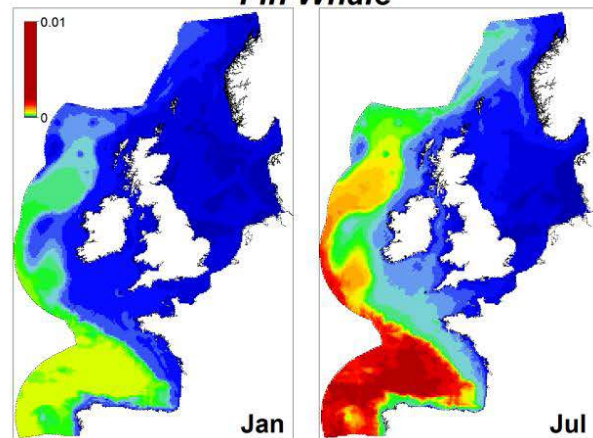
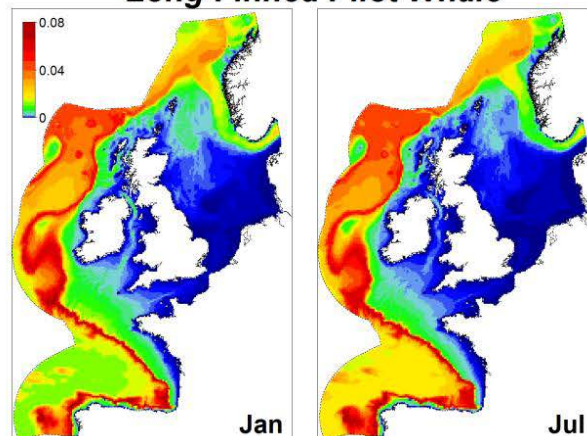
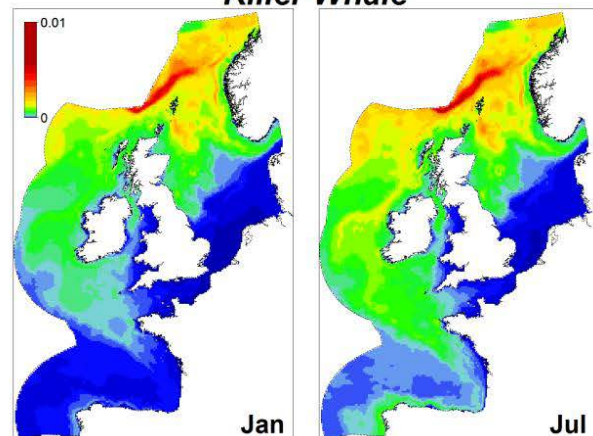


Gilles, A., Viquerat, S., Becker, E., Forney, K., Geelhoed, S., Haelters, J., Nabe-Nielsen, J., Scheidat, M., Siebert, U., Sveegaard, S., van Beest, F., van Bemmelen, R. & Aarts, G., 2016. Seasonal habitat-based density models for a marine top predator, the harbor porpoise, in a dynamic environment. *Ecosphere* 7(6): e01367. DOI: 10.1002/ecs2.1367



Gilles, A., Viquerat, S., Becker, E., Forney, K., Geelhoed, S., Haelters, J., Nabe-Nielsen, J., Scheidat, M., Siebert, U., Sveegaard, S., van Beest, F., van Bemmelen, R. & Aarts, G., 2016. Seasonal habitat-based density models for a marine top predator, the harbor porpoise, in a dynamic environment. *Ecosphere* 7(6): e01367. DOI: 10.1002/ecs2.1367



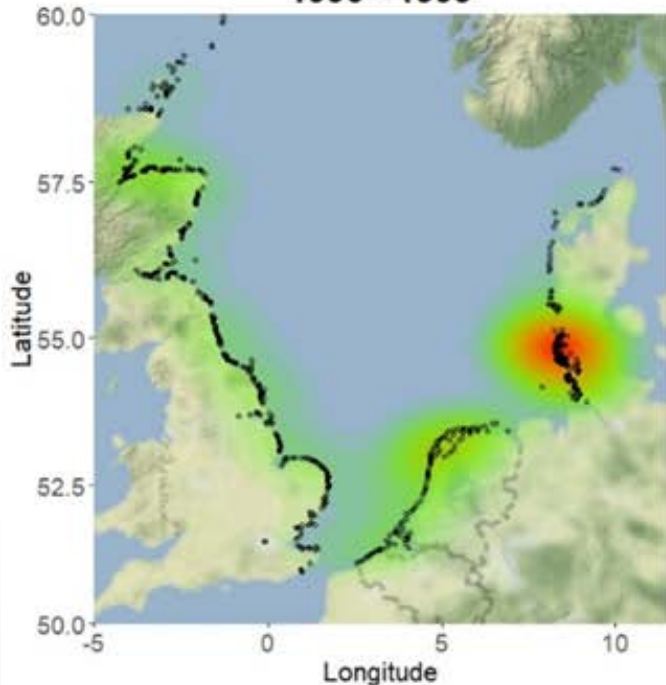
**Atlantic White-Sided Dolphin****Bottlenose Dolphin****Fin Whale****Harbour Porpoise****Killer Whale****Long-Finned Pilot Whale**

Waggit, J., Evans, P.G.H., Andrade, J., Banks, A., Boisseau, O., Bolton, M., Bradbury, G., Brereton, T., Camphuysen, C., Durinck, J., Felce, T., Fijn, R., Garcia-Baron, I., Garthe, S., Geelhoed, S., Gilles, A., Goodall, M.; Haelters, J., Hamilton, S., Hartny-Mills, L., Hodgins, N., James, K., Jessopp, M., Kavanagh, A., Leopold, M., Lohrengel, K., Louzao, M., Markones, N., Martinez-Cediera, J., O'Cadhla, O., Perry, S., Pierce, G., Ridoux, V., Robinson, K.P., Santos, M.B., Saavedra, C., Skov, H., Stienen E., Sveegaard, S., Thompson, P., Vanermen, N., Wall, D., Webb, A., Wilson, J., Wanless, S. & Hiddink J., 2019 (in press). Distribution maps of cetacean and seabird populations in the North-East Atlantic. *Journal of Applied Ecology*, in press.

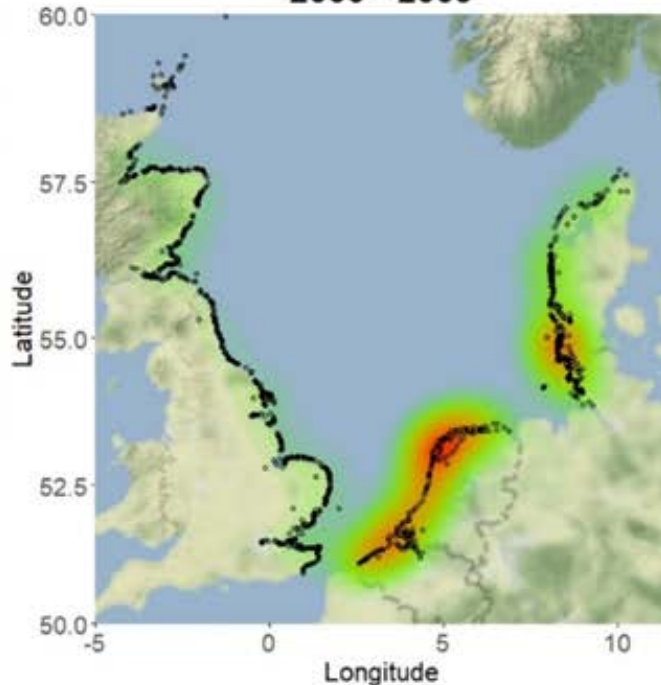


# Strandings 1990-2017

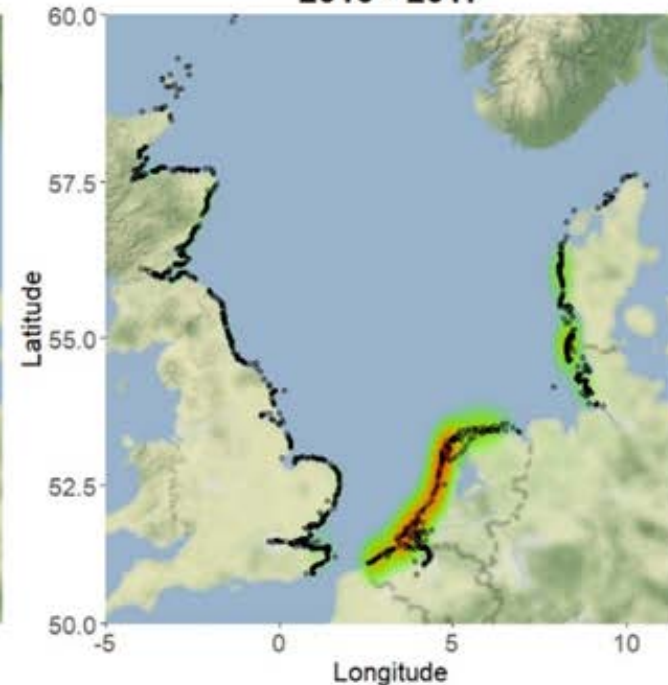
1990 - 1999



2000 - 2009

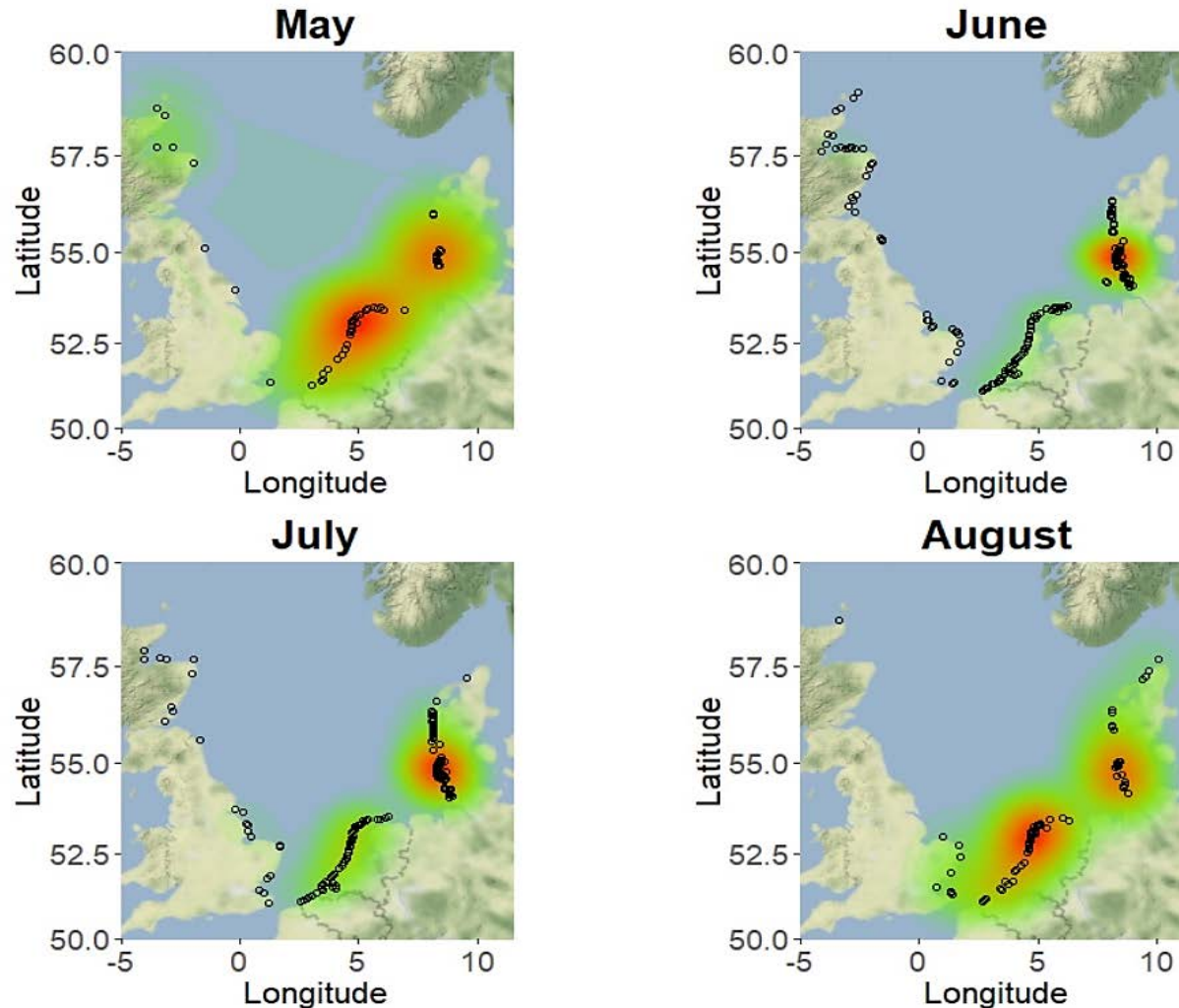


2010 - 2017



Ijsseldijk, L., ten Doeschate, M., Brownlow, A., Davison, N., Deaville, R., Galatius, A., Gilles, A., Haelters, J., Jepson, P., Keijl, G., Kinze, C., Olsen, M.T., Siebert, U., Thøstesen, C.B., van den Broek, J., Gröne, A., Heesterbeek, H. (submitted to Biological Conservation). Spatiotemporal trends in harbour porpoise strandings across the North Sea area: A guide for conservation management.

# Strandings 1990-2017: neonates

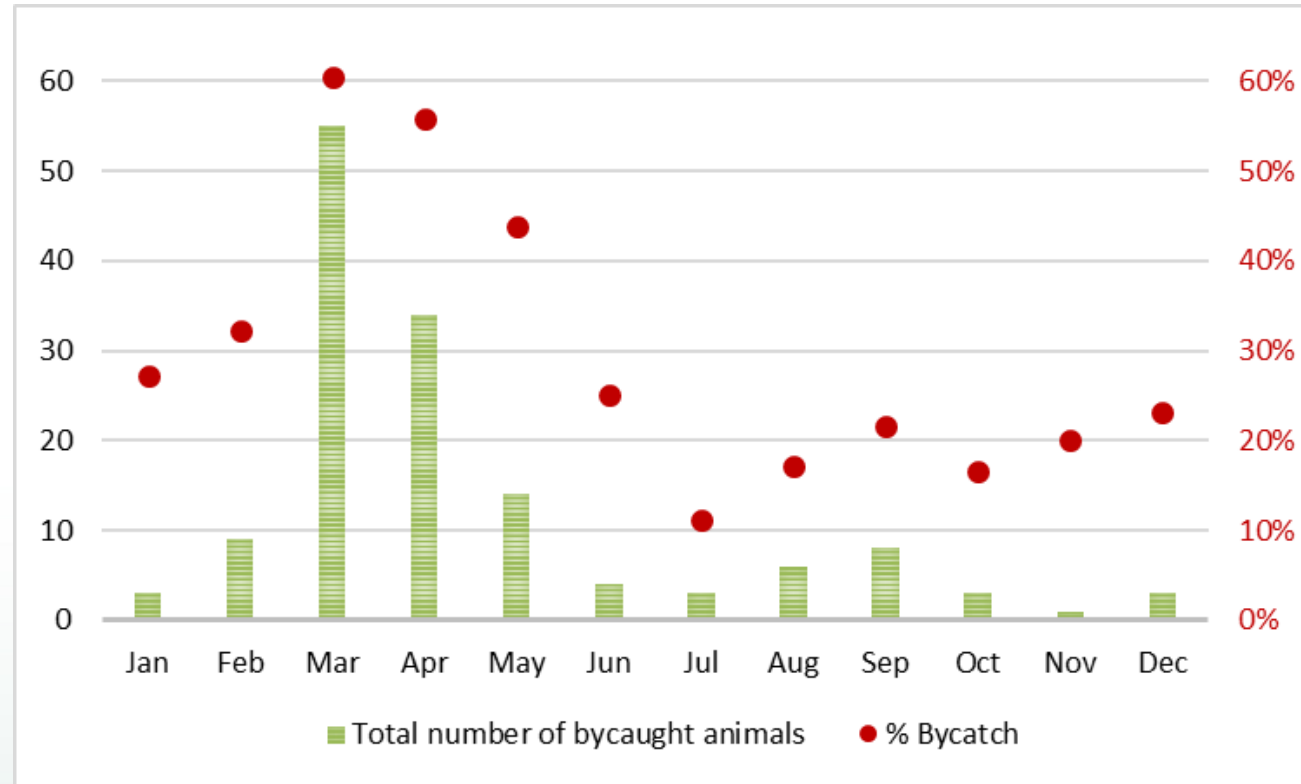


IJsseldijk, L., ten Doeschate, M., Brownlow, A., Davison, N., Deville, R., Galatius, A., Gilles, A., Haelters, J., Jepson, P., Keijl, G., Kinze, C., Olsen, M.T., Siebert, U., Thøstesen, C.B., van den Broek, J., Gröne, A., Heesterbeek, H. (submitted to Biological Conservation). Spatiotemporal trends in harbour porpoise strandings across the North Sea area: A guide for conservation management.

# Data collected nationally (and used by ICES, ASCOBANS, OSPAR, MSFD,...)

- Bycatch
  - Data from strandings: ad hoc publications, MSFD reporting
  - Not used (yet) by WG BYC or OSPAR, as not originating from onboard observer schemes

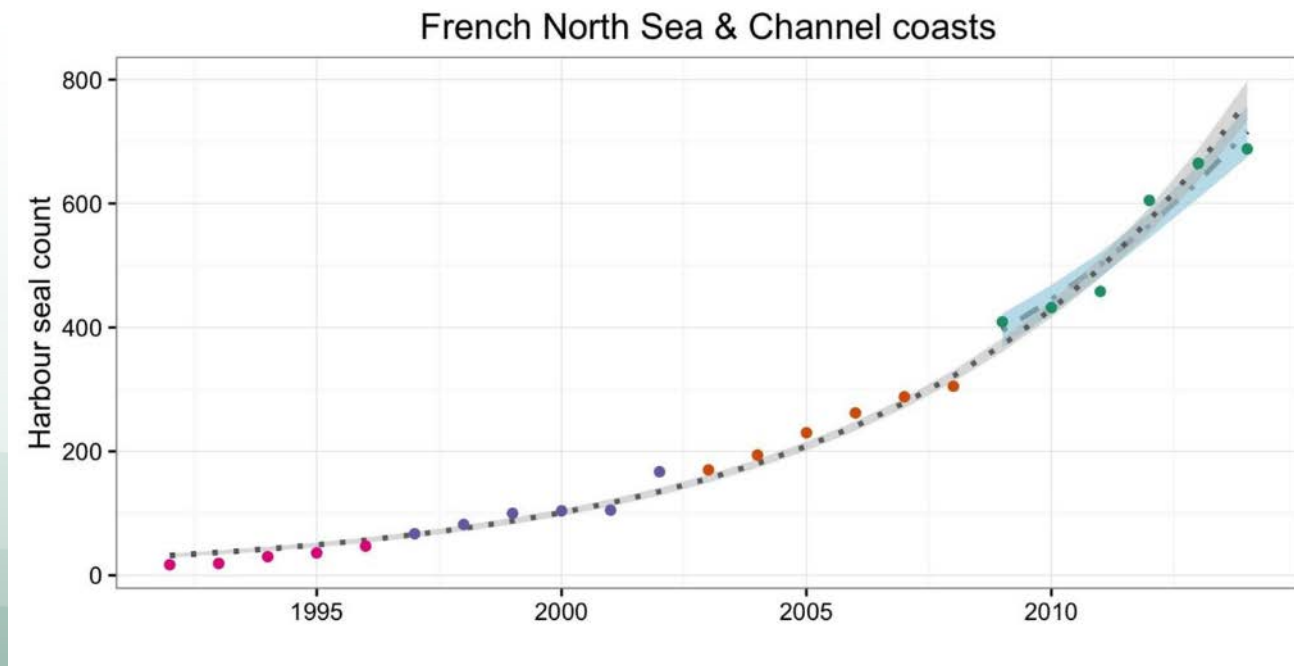
# Bycatch 2008–2016: from strandings



National MSFD report, 2018

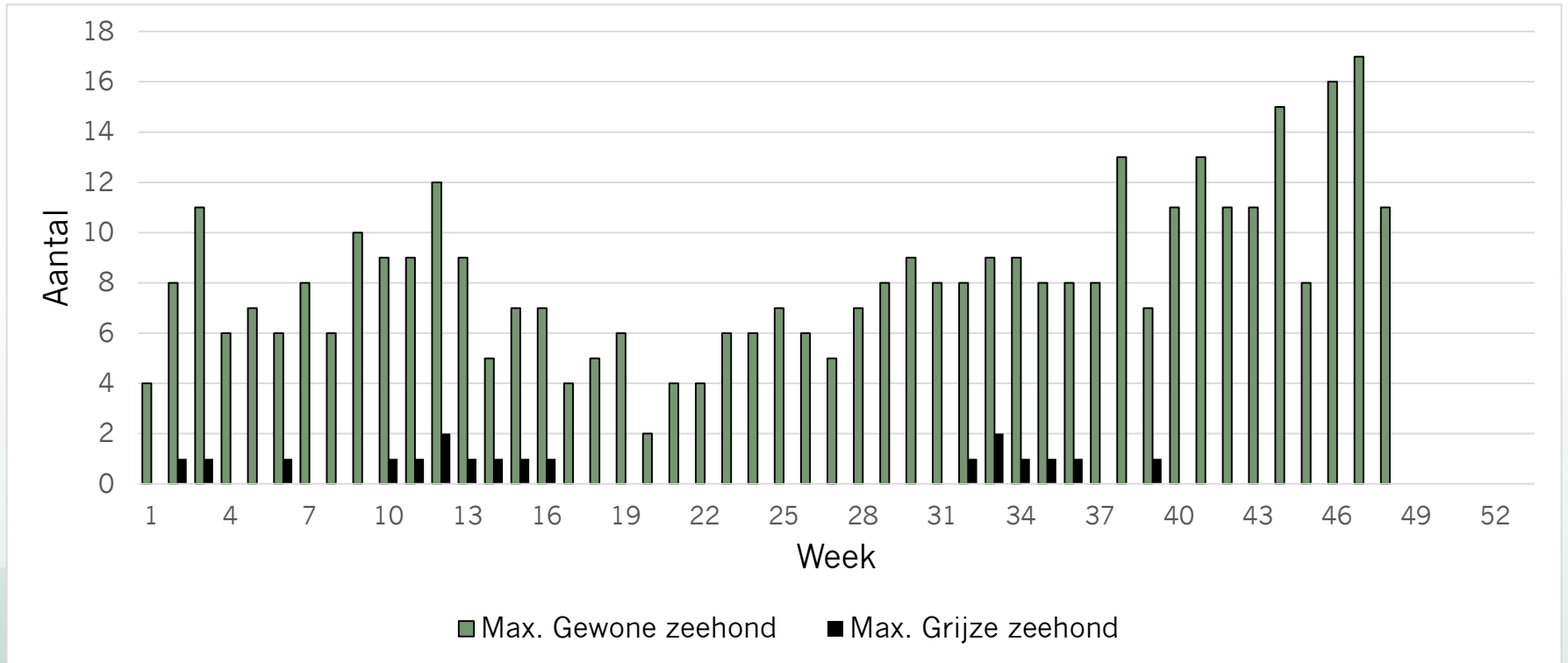
# Data collected nationally (and used by ICES, ASCOBANS, OSPAR, MSFD,...)

- Seal population
  - Numbers of hauled-out harbour seals (negligible) – ICES database





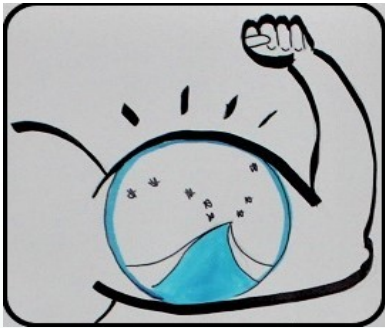
# Data collected nationally (to be used by ICES, OSPAR, MSFD,...) Seals hauled out @ Nieuwpoort (max./week)





# Conclusions

- How was your work inspired by ICES?
  - Monitoring methodology
  - Monitoring/data needs
  
- How did/will your work contribute to the ICES advisory process and/or scientific knowledge basis?
  - Data provision (both published as unpublished)
  - New/emerging issues: steering of subjects
  - As a small country: information on parallel initiatives or obligations



# Thank you for your attention Questions?



# Genetic tools for Ecosystem health Assessment in the North Sea region – the GEANS project

By Annelies De Backer - ILVO

2nd BICEpS colloquium, Ghent, 2 December 2019







# Project info

- Funding: EU Interreg North Sea region

– Under Priority 3



- Duration: 1 March 2019 – 1 March 2022
- Budget: € 2.5 million (50% own contribution)
- Consortium: 9 partners
- Project coordinator: ILVO, Belgium

# Project partners



# Why GEANS?

Sustainable use and management of the North Sea = grand challenge!



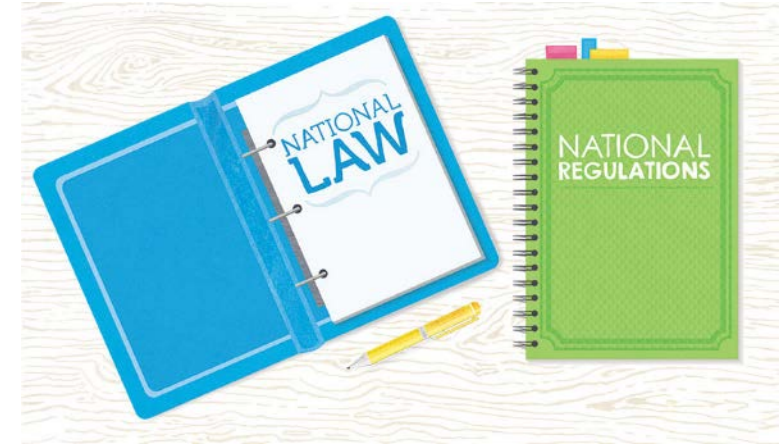
⇒ Fast and accurate monitoring needed!



# Monitoring for ecosystem health

## Marine Strategy Framework Directive (MSFD)

1. Biological diversity 	2. Non-indigenous species 	3. Population of commercial fish/shellfish 	4. Elements of marine food webs 
5. Eutrophication 	6. Sea floor integrity 	7. Alteration of hydrographical conditions 	8. Concentrations of contaminants 
	9. Contaminants in fish/seafood for human consumption 	10. Marine litter 	11. Introduction of energy including underwater noise 



## Water Framework Directive



## Environmental Impact Assessments



# Ecosystem health indicators

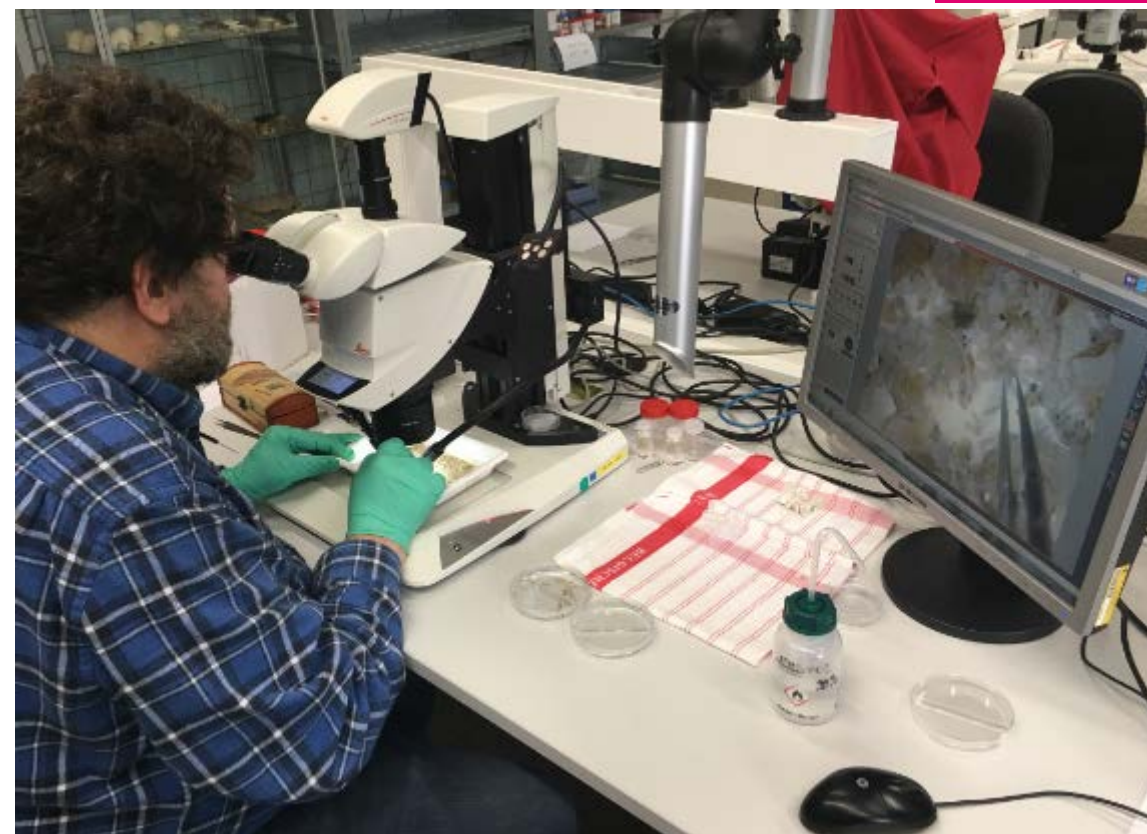
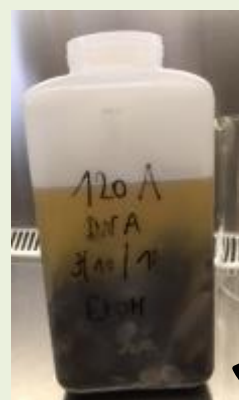




# Current monitoring - morphology-based



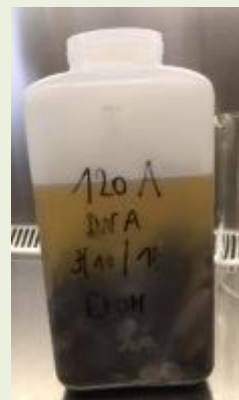
Grab sample



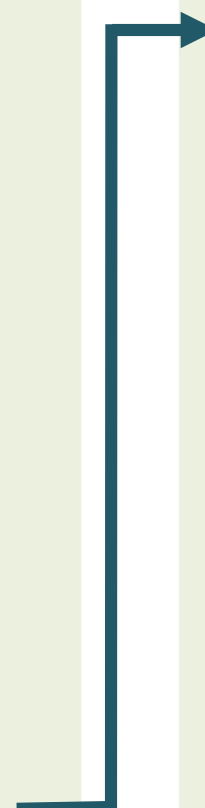
Processing time 1 sample ~ upto 3 days



# The future!? - DNA-based analysis (metabarcoding)



Processing 96 samples ~ 10 days



# Current obstacles for routine use of metabarcoding

- Link with traditional monitoring data is missing
- Reliable reference sequence library needed for bio-informatics pipeline
- Only relative abundance useable
- Different approaches between countries hamper standard routine application
  - Primer and barcode choice introduce bias
  - Lab protocols are not standardized
  - Sample used: bulk – ethanol - ...

# Goals GEANS

- Set-up of a reliable and open **DNA reference library**
- **Harmonisation and consolidation** of metabarcoding approach across NS countries
- **Real time pilot studies** for validation of genetic tools and methods
  - in close cooperation with (local) managers, policy makers and involved stakeholders
- **Transnational co-operation** will create synergies and assure comparability



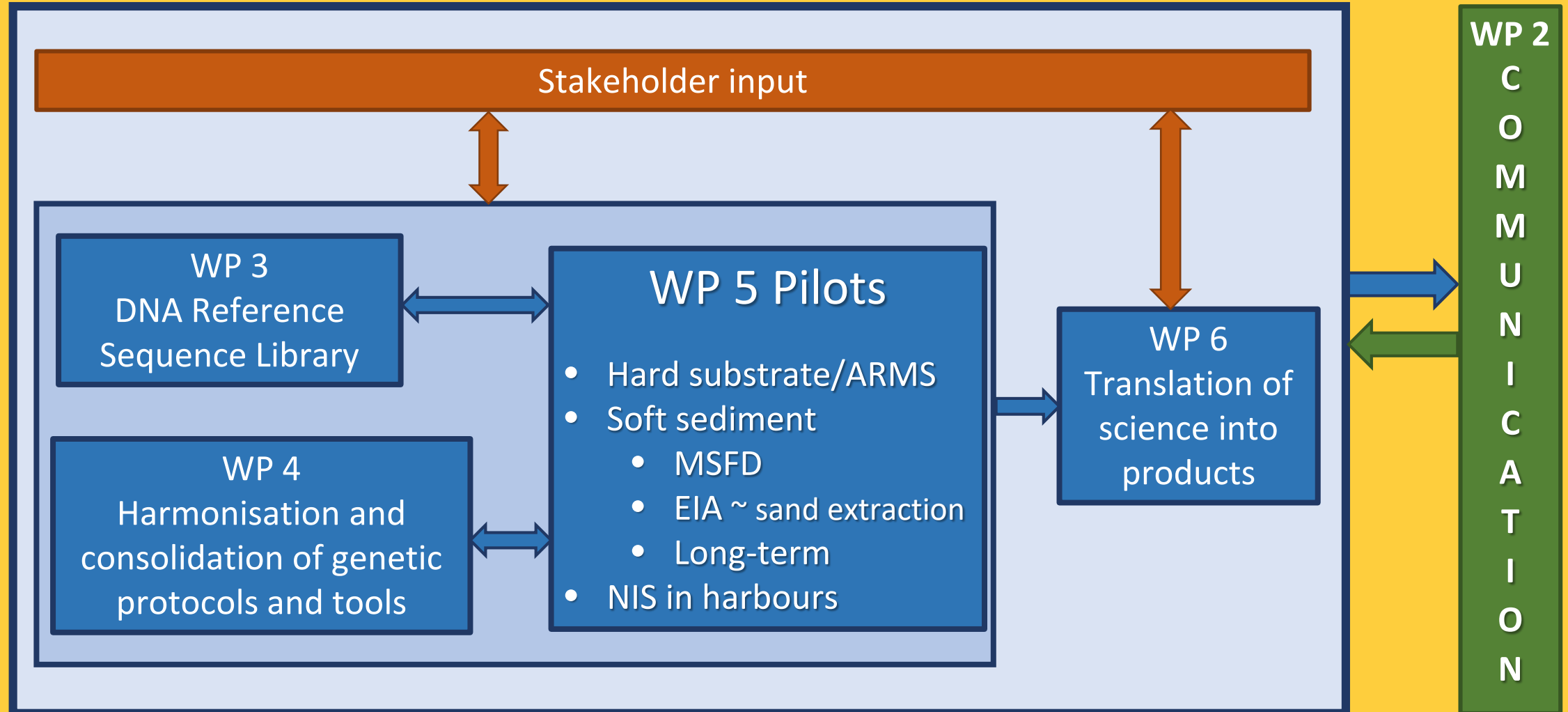
# Aims and objectives

1. Develop **joint time- and cost-reducing genetic monitoring tools that feed into existing indicators** to assess NSR ecosystem health
2. **Implement standardised genetic tools and SOPs** in routine biological assessments
3. Develop a **policy decision framework** including fit for purpose choice of genetic tools and protocols, helping to translate genetic results into simple indicators

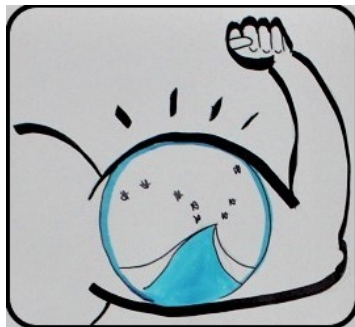


# GEANS Project overview

## WP 1 – GEANS Project Management



# Concluding slide



- Consortium built through connections via ICES network
- ICES endorsement through support letter at application
- ICES Techniques in Marine Environmental Sciences (ICES TIMES series) for publication of developed SOPs
- Interested in helping to collect voucher species for barcoding?
  - Let us know!



## Genetic tools for Ecosystem health Assessment in the North Sea region

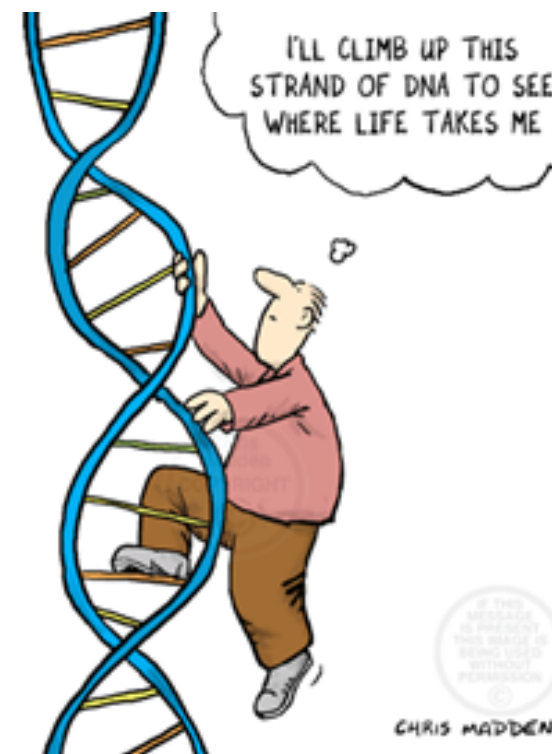


The quality of the seafloor habitat is an important barometer for marine **ecosystem health**. In order to accurately measure that quality, GEANS will mainstream implementation of fast, accurate and cost-effective **DNA-based** assessments. This will enable national authorities to improve the management of human activities and protection of the marine environment across the **North Sea Region** in a transnational coherent way.

GEANS will conduct pilot studies concerning environmental impact assessments (renewable energy, aquaculture and sand extraction and suppletion), and concerning monitoring in relation to European directives (non-indigenous species and hard substrates). These pilots will be conducted in close cooperation with stakeholders.



# Thank you !



Contact: [annelies.debacker@ilvo.vlaanderen.be](mailto:annelies.debacker@ilvo.vlaanderen.be)

Website: <https://northsearegion.eu/geans>



@GEANS\_Interreg



Seascape-mediated patterns and  
processes of population  
differentiation in European seabass  
by Pascal Hablützel, KU Leuven and VLIZ

2nd BICEpS colloquium, Ghent, 2 December 2019

# Seascape-mediated patterns and processes of population differentiation in European seabass

1. Questions on the stock management of seabass
2. Population genomics of seabass
3. Seascape genetics of seabass
4. Complementary information
5. Take home message



© 2010 Decler, Misjel



**KU LEUVEN**



# Seascape-mediated patterns and processes of population differentiation in European seabass

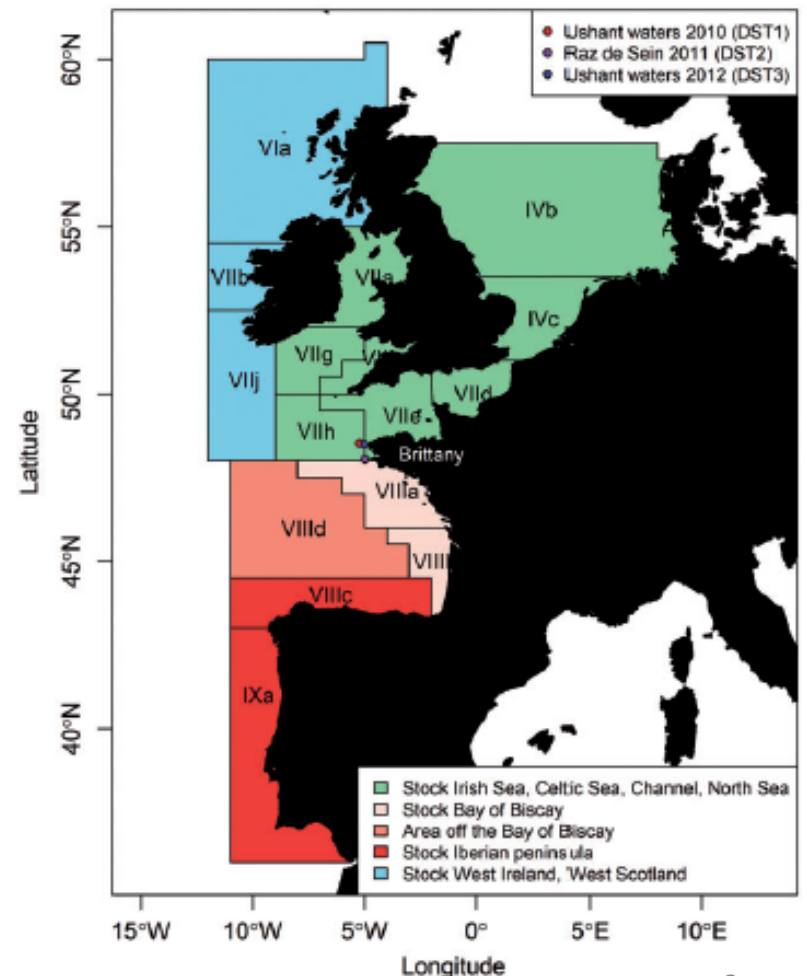
## 1. Questions about the stock management of seabass

4 “stocks” with lacking or even conflicting support from biological data

Increasing fishing pressure from anglers and professionals and poor recruitment

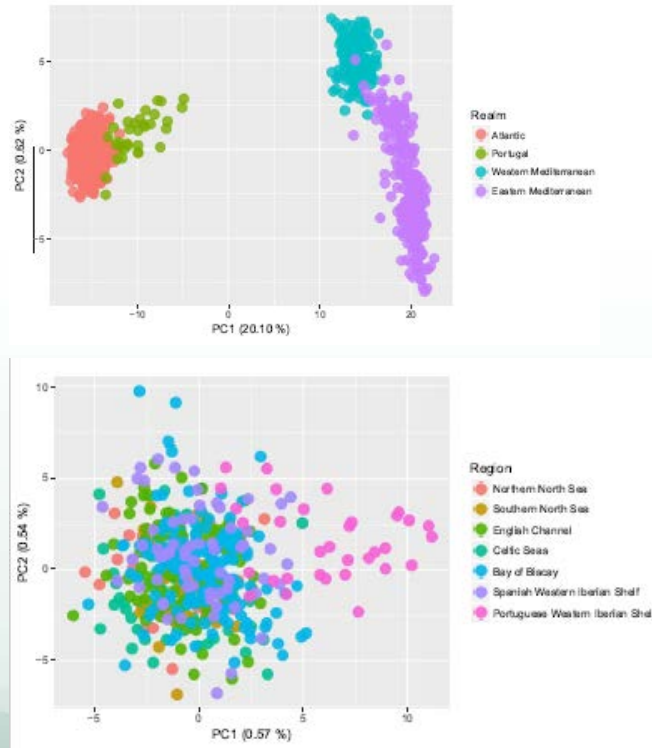
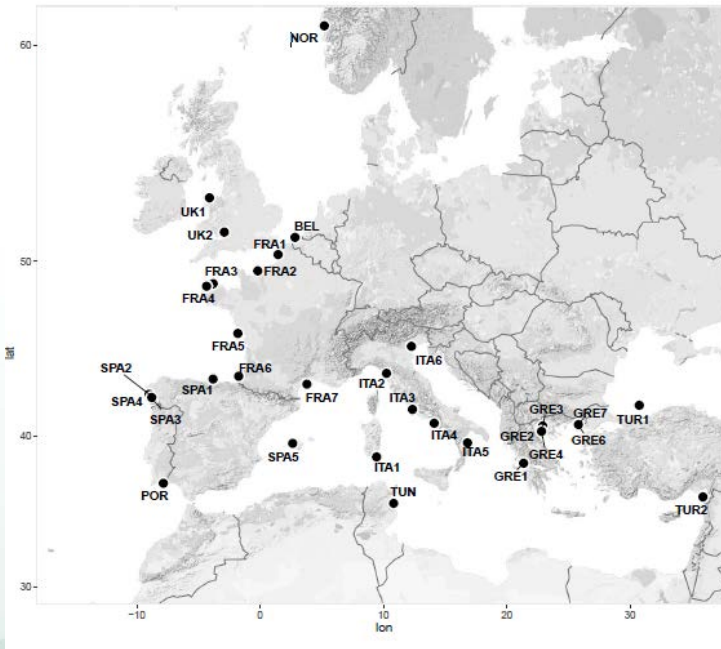
→ Emergency conservation measures by the EU Commission

*Follow-up by ICES-WKBASS*



# Seascape-mediated patterns and processes of population differentiation in European seabass

## 2. Population genomics of seabass

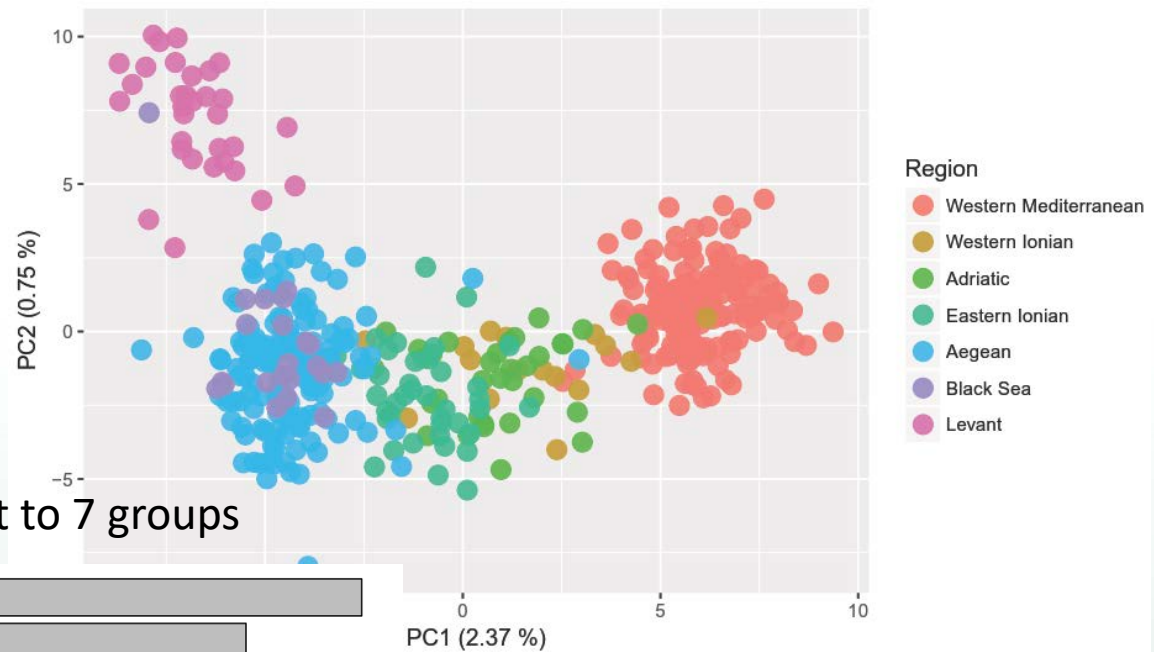


2 distinct clades:  
- Atlantic Ocean  
- Mediterranean Sea

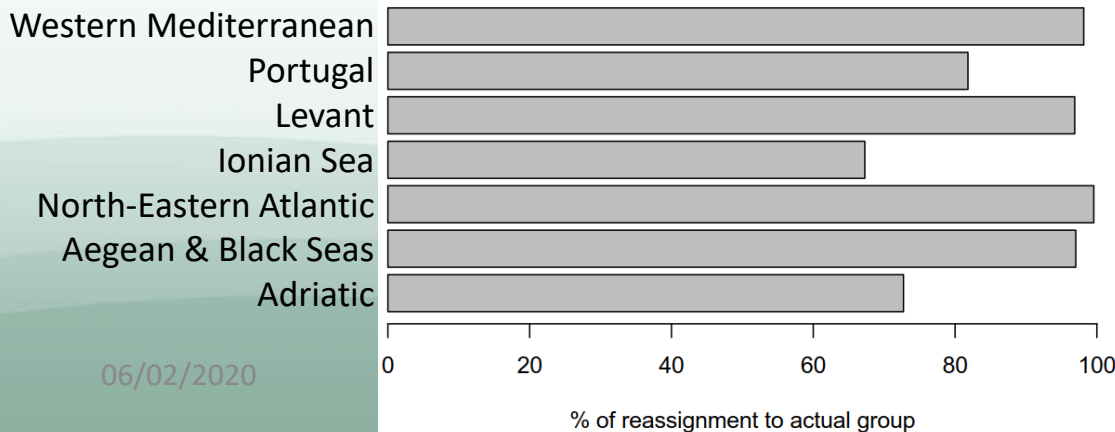
Atlantic Ocean:  
- Portuguese population  
- NW European population (with evidence of isolation by distance)

# Seascape-mediated patterns and processes of population differentiation in European seabass

## 2. Population genomics of seabass

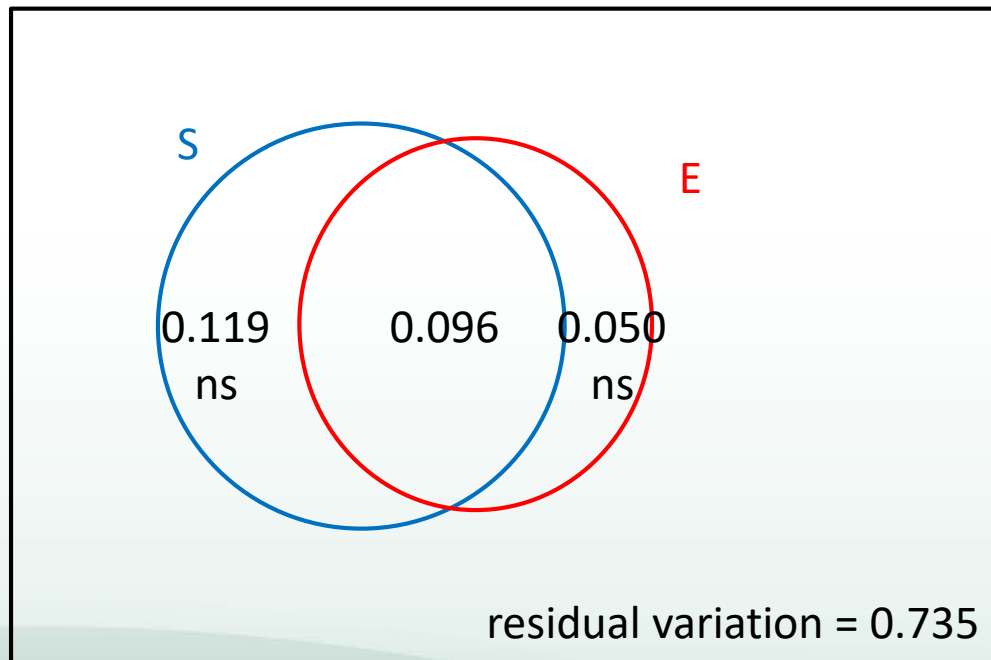


Re-assignment to 7 groups



# Seascape-mediated patterns and processes of population differentiation in European seabass

## 3. Seascape genetics of Atlantic seabass



Variation partitioning using distance-based RDA

S = Space

E = Environment

chlorophyll a

mixed layer depth

primary production

salinity

euphotic depth

sea surface temp.

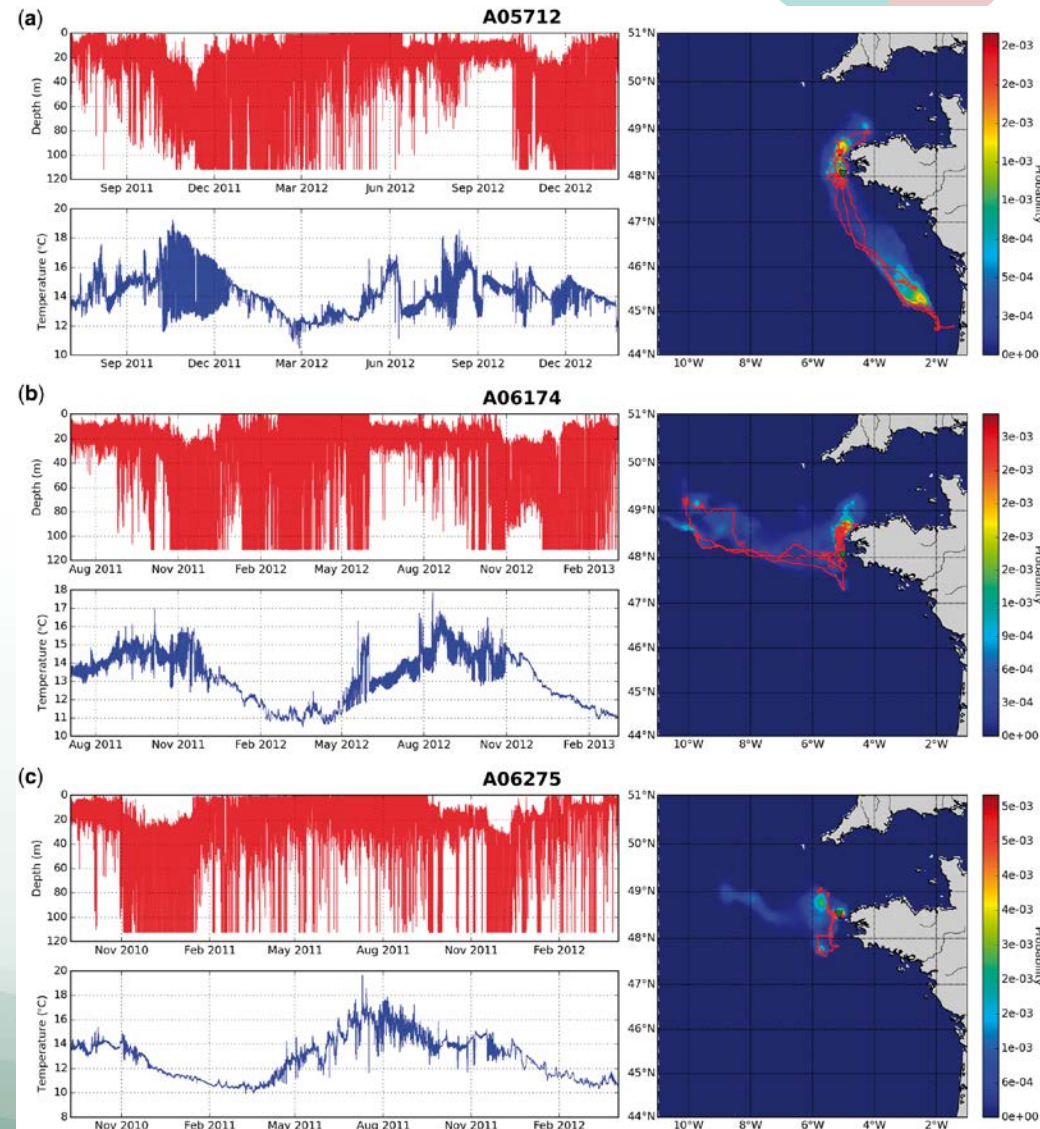
=> Water parameters restrict the distribution of seabass, but not neutral gene-flow among sampling sites

# Seascape-mediated patterns and processes of population differentiation in European seabass

## 4. Complementary information

Tagging study

Migration strategies vary among individual seabass

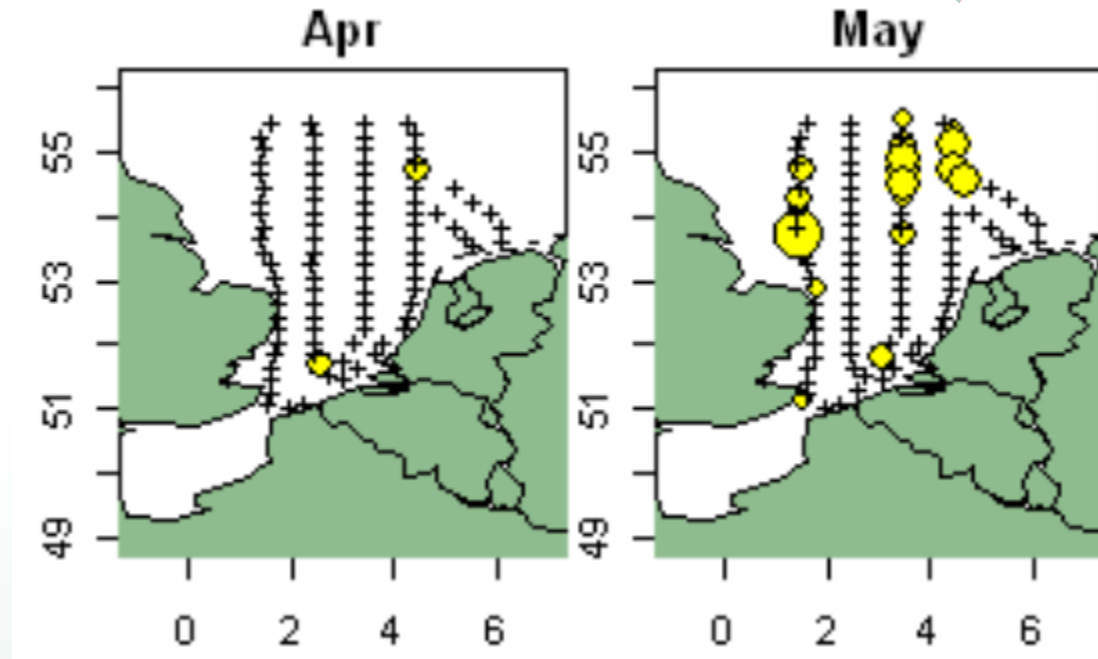




# Seascape-mediated patterns and processes of population differentiation in European seabass

## 4. Complementary information

New spawning grounds in the North Sea



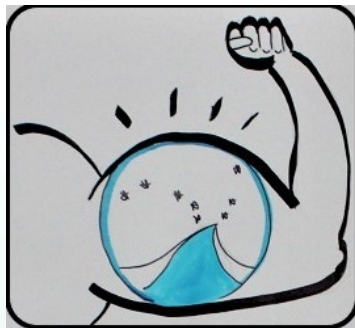
van Damme et al. 2011

# Seascape-mediated patterns and processes of population differentiation in European seabass

## 5. Take home message

- High fishing mortality and low recruitment.
- Limited genetic differentiation.
- Phenotypic variation remains to be assessed, but indications of individual behaviour point to diverse life-history strategies.
- Division in stocks needs to be re-evaluated.
- Careful management based on low spawning stock biomass is advised.

# Concluding slide



- Our research was inspired by a management-focussed question of establishing a baseline for escapees from aquaculture (EU project *Aquatrace*).
- The scientific results will be submitted to the scientific literature in early 2020 and has been presented at ICES-ASC, EU-JRC, the scientific and public press. *Aquatrace* has contributed to the training of several PhDs and postdoctoral fellows.



# Decadal changes in harmful algal events from the ICES area found in the HAEDAT database

**Maarten De Rijcke (VLIZ)**

+ Evelien Van de Vyver, Martin Verdievel, Mirjana Andjelkovic, Tom Van Vooren  
+ the entire ICES WG HABD and the IOC-UNESCO's IPHAB

2nd BICEpS colloquium, Ghent, 2 December 2019

# Harmful Algal Blooms (HABs)

“Red tides”, “Brown tides”, “Green tides”

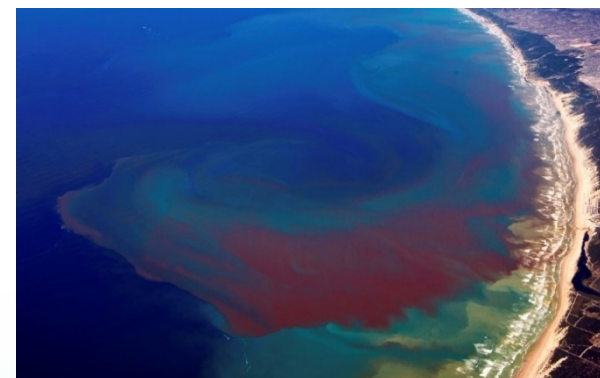
Excessive presence of phytoplankton, ranging from hundreds to millions of cells.l<sup>-1</sup>, that causes any form of environmental or societal cost

- Hypoxia / Anoxia
- Shading
- Nutritional value (e.g. *Phaeocystis* spp.)
- Physical shape
- Toxicity

Estimated economic cost to EU: 813 mil. €/ y.

Expanding globally

- Shipping & ballast water dispersal
- Overfishing & habitat destruction
- Eutrophication
- Climate change





*Phycologia* (1993) Volume 32 (2), 79–99

## PHYCOLOGICAL REVIEWS 13

### **A review of harmful algal blooms and their apparent global increase\***

→ Cited 2759 times

G.M. HALLEGRAEFF

*Department of Plant Science, University of Tasmania, GPO Box 252C, Hobart,  
Tasmania 7001, Australia*



A. Zingone

## Questions to Answer

Is there a GLOBAL increase in 1) <sup>species</sup> distribution 2) frequency 3) intensity HABs

## REGIONAL

Can we identify

### DRIVERS for CHANGE

1. increased awareness
2. eutrophication (regional examples)
3. range expansions
4. anthropogenic transport

IMO

5. CLIMATE CHANGE

IPCC  
link

Learn from EL Nino etc

IDENTIFY

KNOWLEDGE GAPS → funding opportunities (industry, social sciences) student projects

monitoring effort

justify

OBIS

is there evidence for increased societal impacts

WHO human health

FAO resource utilisation

HAEDAT

TIME SERIES (regional examples)

\* Quality Flags  
Confidence Levels \*



## => Distribution of potentially harmful species



OBIS is a global open-access data and information clearing-house on marine biodiversity for science, conservation and sustainable development

### Explore OBIS

#### Taxon search

#### Dataset search

#### Country statistics

#### Marine World Heritage Sites

#### Common name search

#### Institute search

#### ABNJ statistics

#### EBSA statistics



# GHSR

United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission



## => Distribution of HAB events

HARMFUL ALGAE INFORMATION SYSTEM

# Harmful Algae Event Database

(HAEDAT) IOC-ICES-PICES

Home | Browse Events | Search Events | Add Event | Browse Grids | Contact | Login

## What is the Harmful Algal Information System?

The Harmful Algal Information System, HAIS, will when fully established consist of access to information on harmful algal events, harmful algae monitoring and management systems worldwide, current use of taxonomic names of harmful algae, and information on biogeography of harmful algal species. Supplementary components are an expert directory and a bibliography.

The HAIS System is being built within the "International Oceanographic Data and Information Exchange" (IODE) of the "Intergovernmental Oceanographic Commission" (IOC) of UNESCO, and in cooperation with WoRMS, ICES, PICES, IAEA and ISSHA.

HAIS components:

**The IOC Taxonomic Reference List of Toxic Microalgae** provides a reference for the use of names and information on each species of toxic microalgae. You can follow its merge into the World Register of Marine Organisms (WoRMS) [here](#).

**The International Directory of Experts In Harmful Algae and Their Effects on Fisheries and Public Health** is a specialized section of the IOC OceanExpert directory.

**The biogeography of harmful algal species, HABMAP within OBIS** (with ISSHA), is in preparation.

**The HAEDAT** is a meta database containing records of harmful algal events. HAEDAT contains records from the ICES area (North Atlantic) since 1985, and from the PICES area (North Pacific) since 2000. IOC Regional networks in South America, South Pacific and Asia, and North Africa are preparing to contribute. Guidance on submission of data and questions re HAEDAT can be found [here](#). **The HAEDAT associated Decadal Maps for the North Atlantic**

**HAEDAT Disclaimer:** The HAEDAT database contains information based on yearly national reports by ICES and PICES member states. The available information on individual events varies greatly from event to event or country to country. Monitoring intensity, number of monitoring stations, number of samplings, stations, etc. also varies greatly and therefore there is not a direct proportionality between recorded events and actual occurrences of e.g. toxicity in a given region. Furthermore, areas with numerous recorded occurrences of HAE's, but with an efficient monitoring and management programmes, may have very few problems and a low risk of intoxications, whereas rare HAE's in other areas may cause severe problems and represent significant health risks.

Therefore, HAEDAT maps should be interpreted with caution regarding risk of intoxication by seafood products from the respective areas/regions/countries.

The IOC, ICES and PICES are not liable for possible misuse of this information.

IOC-UNESCO's intergovernmental panel on Harmful Algal Blooms aims to release a **Global HAB Status Report** by the end of 2020.

Requires input of regional working groups (e.g. ICES WGHABD)





# ICES WG HABD

ICES Working group on Harmful Algal Bloom Dynamics (1984-...) contributes to GHSR for Atlantic Region

Nat. representative: Anne Goffart (2001-2005/2018)



# Belgian data entry

In collaboration with VMM, Sciensano & FAVV-AFSCA

=> OBIS (928 records)

Identifiers				Date			Location					Phytoplankton Quantity					
Scientific name*	Reported name (if different)	Identification status	Reference	Additional references	HAEDAT URI	Last modified	Date*	Verbatim date	Latitude*	Longitude*	Coordinate	WKT	Locality	Minimum depth	Maximum depth	Value	Unit
3	<i>Phaeocystis globosa</i>	1 - good	Antajan, E.; Chrétiennot-Dinet, M.-J.; Leblanc, C.; Daro, M.-H.; Lancelot, C.				2001-04	2001 (17 and 25 a	51.5833	2.7972	2200	POINT	Belgian Continental Shelf				
4	<i>Phaeocystis globosa</i>	1 - good	Antajan, E.; Chrétiennot-Dinet, M.-J.; Leblanc, C.; Daro, M.-H.; Lancelot, C.				2001-04	2001 (17 and 25 a	51.4333	2.8139	2200	POINT	Belgian Continental Shelf				
5	<i>Phaeocystis globosa</i>	2 - probable	Beccqueort, S.; Rousseau, V.; Lancelot, C. (1998). Major and comparable roles of				1994	Late april-early M	51.35	2.8	2200	POINT	Belgian Continental Shelf			500	Milligrams per cubic
6	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T06	17.10.73 0830	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			2000	number per litre
7	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T06	17.10.73 0915	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			2500	number per litre
8	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T01	17.10.73 1045	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			4000	number per litre
9	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T11	17.10.73 1130	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1667	number per litre
10	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T11	17.10.73 1215	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			667	number per litre
11	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T11	17.10.73 1345	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			500	number per litre
12	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T14	17.10.73 1410	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			750	number per litre
13	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-12-12T12	12.12.73 1230	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
14	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-01-10T10	10.01.74 1015	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			2000	number per litre
15	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-08-07T11	08.07.74 1330	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			4000	number per litre
16	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-08-06T06	06.08.74 0915	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			2000	number per litre
17	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-08-06T11	06.08.74 1130	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			2000	number per litre
18	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-08-06T14	06.08.74 1215	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			2000	number per litre
19	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-08-06T14	06.08.74 1430	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			9000	number per litre
20	<i>Pseudo-nitzschia ser Nitzschia seriata</i>	3 - uncertain	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-08-06T11	06.08.74 1215	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			2000	number per litre
21	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T06	17.10.73 0830	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			500	number per litre
22	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T06	17.10.73 0915	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
23	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T01	17.10.73 1000	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
24	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T01	17.10.73 1045	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
25	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T11	17.10.73 1130	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			333	number per litre
26	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T11	17.10.73 1215	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			333	number per litre
27	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T11	17.10.73 1300	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			250	number per litre
28	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T11	17.10.73 1345	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			500	number per litre
29	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-10-17T14	17.10.73 1410	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			500	number per litre
30	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-12-12T06	12.12.73 0930	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
31	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-12-12T10	12.12.73 1015	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			500	number per litre
32	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-12-12T11	12.12.73 1315	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			750	number per litre
33	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-12-12T11	12.12.73 1355	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
34	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1973-12-12T14	12.12.73 1430	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			200	number per litre
35	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-01-10T11	10.01.74 1100	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
36	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-01-10T11	10.01.74 1145	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
37	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-01-10T11	10.01.74 1230	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			200	number per litre
38	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-01-10T11	10.01.74 1315	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			800	number per litre
39	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-01-10T11	10.01.74 1355	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			400	number per litre
40	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-01-10T11	10.01.74 1425	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			750	number per litre
41	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-02-07T06	07.02.74 0915	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			500	number per litre
42	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-02-07T10	07.02.74 1000	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			667	number per litre
43	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-02-07T11	07.02.74 1045	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			333	number per litre
44	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-02-07T11	07.02.74 1130	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			250	number per litre
45	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-02-07T11	07.02.74 1215	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			250	number per litre
46	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-02-07T11	07.02.74 1300	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			333	number per litre
47	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-03-13T11	13.03.74 1055	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1000	number per litre
48	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-03-13T11	13.03.74 1215	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			500	number per litre
49	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-03-13T11	13.03.74 1300	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			250	number per litre
50	<i>Amphora coffeaeformis</i>	2 - probable	Beuls, V.; Brankaer, M.; Buelens, S.; Van Noten, M. (1975). Ekologische en a				1974-03-13T11	13.03.74 1345	51.1425	2.7428	387	POLYG	Nieuwpoort Harbour			1333	number per litre

# Belgian data entry

In collaboration with VMM, Sciensano & FAVV-AFSCA

=> HAEDAT (3 records)

## Search Results

[\[Download these events as a CSV file\]](#)

3 results for **BELGIUM**



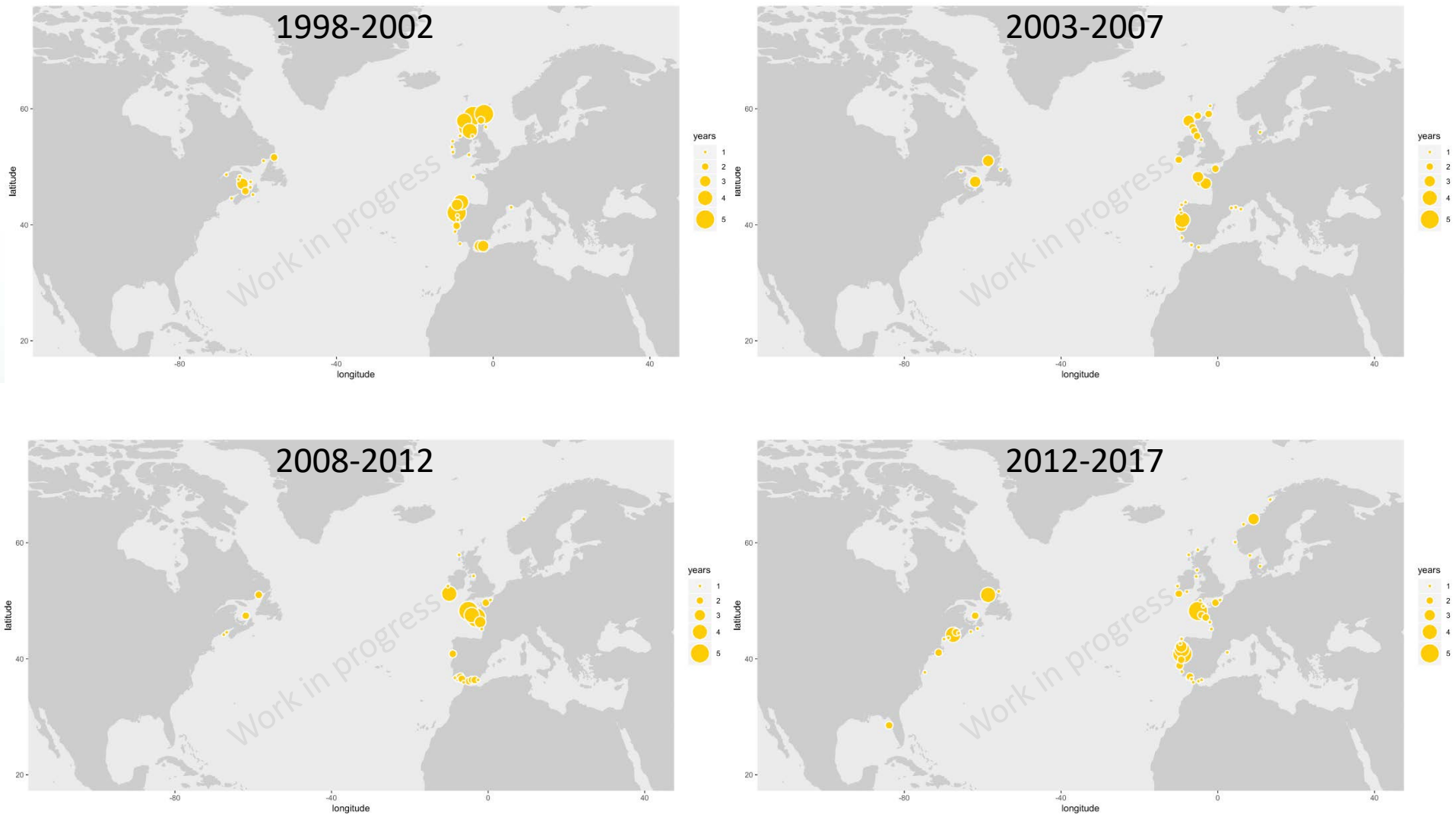
Results 1-3 of 3 (ordered by name)

[\[View larger map\]](#)

EVENT NAME	SYNDROME	YEAR	LOCATION (REGION, COUNTRY)
<b>BE-38-001</b>	PSP	1938	Brugge-Zeebrugge Canal (Belgian part of the North Sea, Belgium)
<b>BE-08-001</b>	DSP	2008	Nieuwpoort Bank (Belgian part of the North Sea, Belgium)
<b>BE-01-001</b>	DSP	2001	Spuikom (Ostend Harbor, Belgium)

# ICES region trends

Ongoing analyses are revealing shifts in HAB events => GHSR





# Conclusion



- How was your work inspired by ICES?

Working together with competent authorities and monitoring agencies to achieve the goals of the ICES WGHABD group created a two-way flow of information at the regional level.

- How did/will your work contribute to the ICES advisory process and/or scientific knowledge basis?

Provided access to Belgian data to support a global initiative, making sure that Belgian monitoring and research efforts both contribute to and are acknowledged by ICES & IOC-UNESCO.



# Sole growth and survival under climate change conditions

By

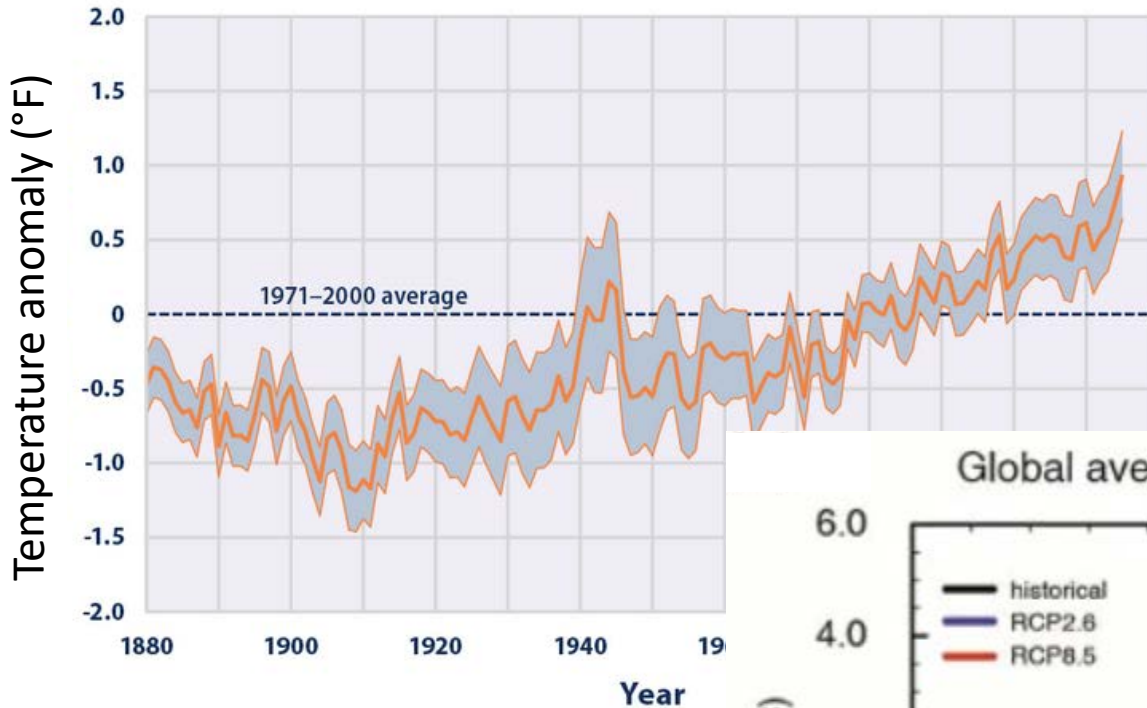
Karen van de Wolfshaar (Wageningen Marine Research, NL)

Geneviève Lacroix & Léo Barbut (RBINS)

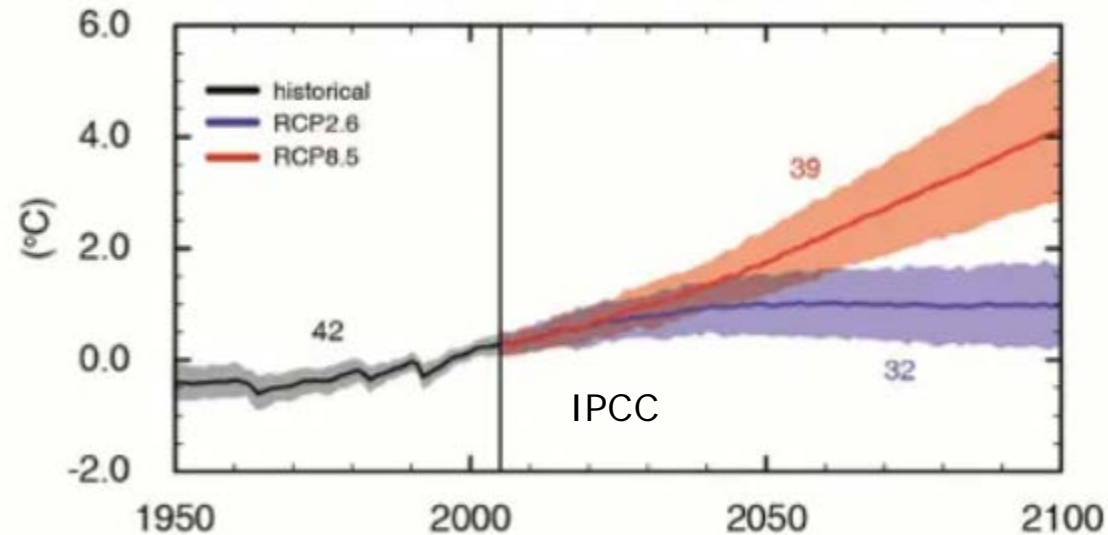


# Climate change effects on temperature

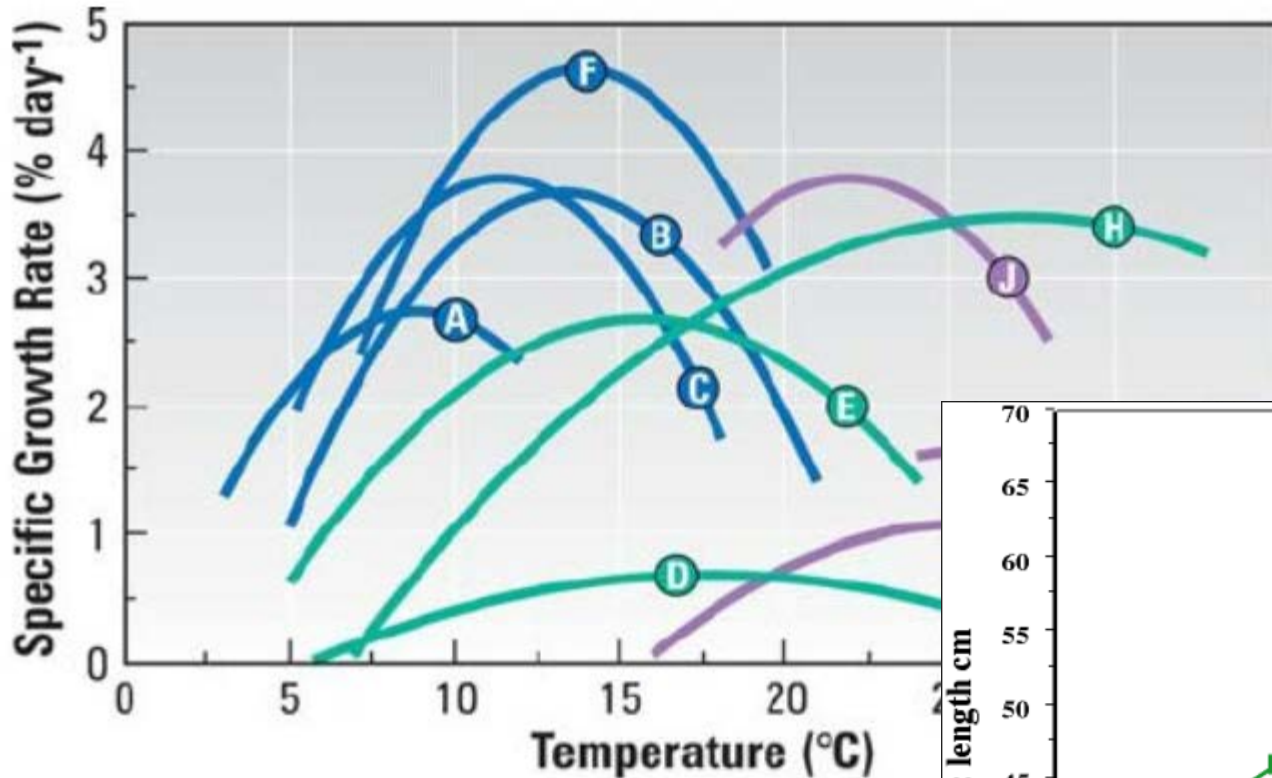
Average Global Sea Surface Temperature, 1880-2015 (NOAA, 2016)



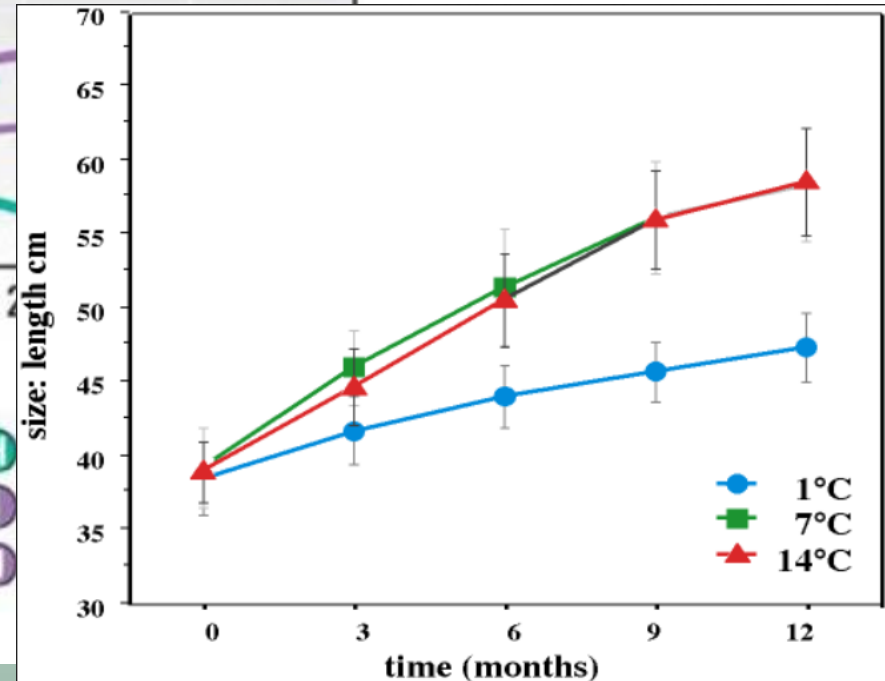
Global average surface temperature change



# Temperature - Growth



- A** Arctic Char
- D** Northern Pike
- H** Lake Herring
- B** Lake Cisco
- E** Lake Whitefish
- I** Inconnu
- C** Lake Trout
- F** Brook Trout
- J** Golden Shiner
- G** Bluegill



The effects of environmental temperature on the growth of cod over a period of 12 months

# Climate change effects on fish?

Received: 20 December 2016 | Revised: 29 August 2017 | Accepted: 5 September 2017

DOI: 10.1111/gcb.13915

**PRIMARY RESEARCH ARTICLE**

WILEY **Global Change Biology**

## Complex effect of projected sea temperature and wind change on flatfish dispersal

Geneviève Lacroix<sup>1</sup> | Léo Barbut<sup>1,2</sup> | Filip A. M. Volckaert<sup>2</sup>



**Global Change Biology**

Global Change Biology (2012) 18, 3291–3305, doi:10.1111/j.1365-2486.2012.02795.x

### Bio-energetics underpins the spatial response of North Sea plaice (*Pleuronectes platessa* L.) and sole (*Solea solea* L.) to climate change

LORNA R. TEAL\*, RALF VAN HAL\*, TOBIAS VAN KOOTEN\*, PIET RUARDIJ† and ADRIAAN D. RIJNSDORP\*



Contents lists available at [SciVerse ScienceDirect](#)

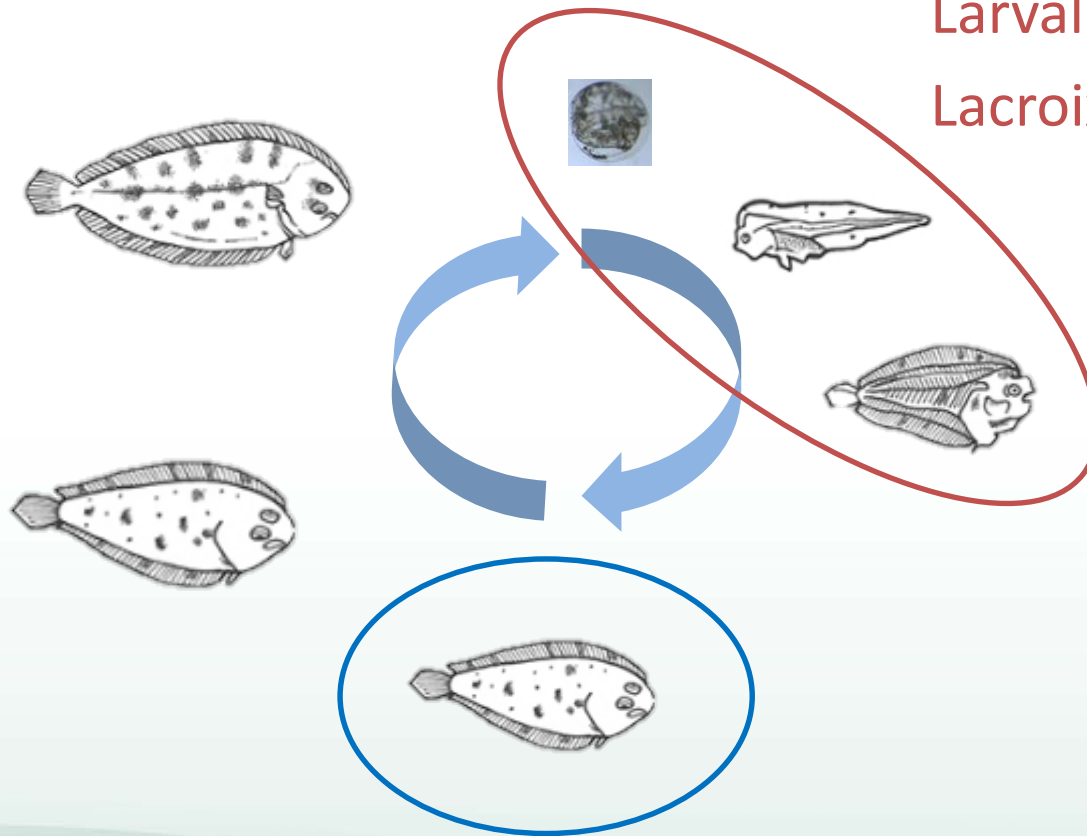
### Journal of Sea Research

journal homepage: [www.elsevier.com/locate/seares](http://www.elsevier.com/locate/seares)

### Shifts in the timing of spawning in sole linked to warming sea temperatures

Jennifer I. Fincham<sup>a,b</sup>, Adriaan D. Rijnsdorp<sup>c,d</sup>, Georg H. Engelhard<sup>a,\*</sup>

# Sole life cycle



Larval Transport Model (LTM)

Lacroix et al. 2018

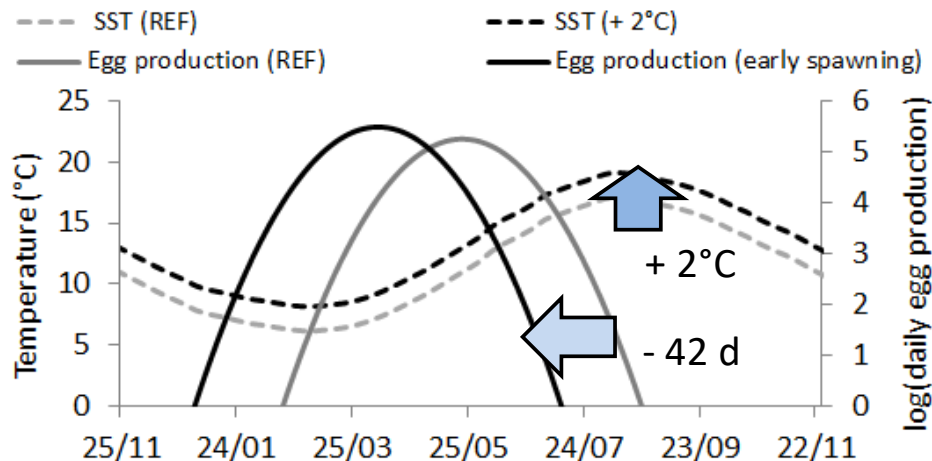
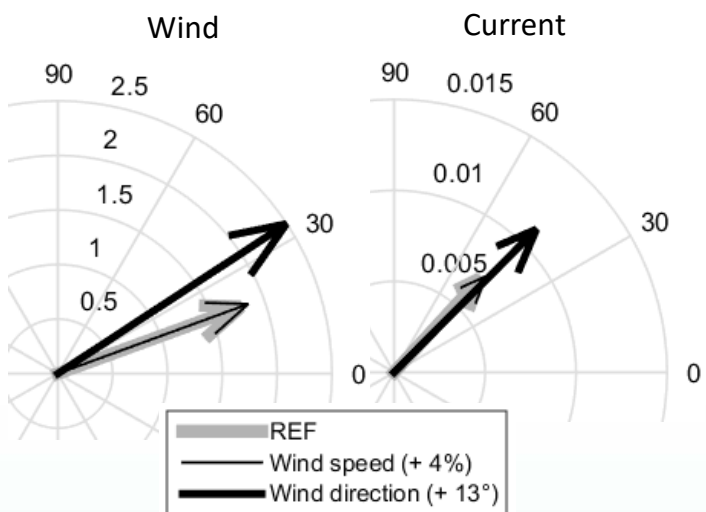
Dynamic Energy Budget (DEB) model

Teal et al. 2012



# Scenarios

## Scenarios IPCC 2040



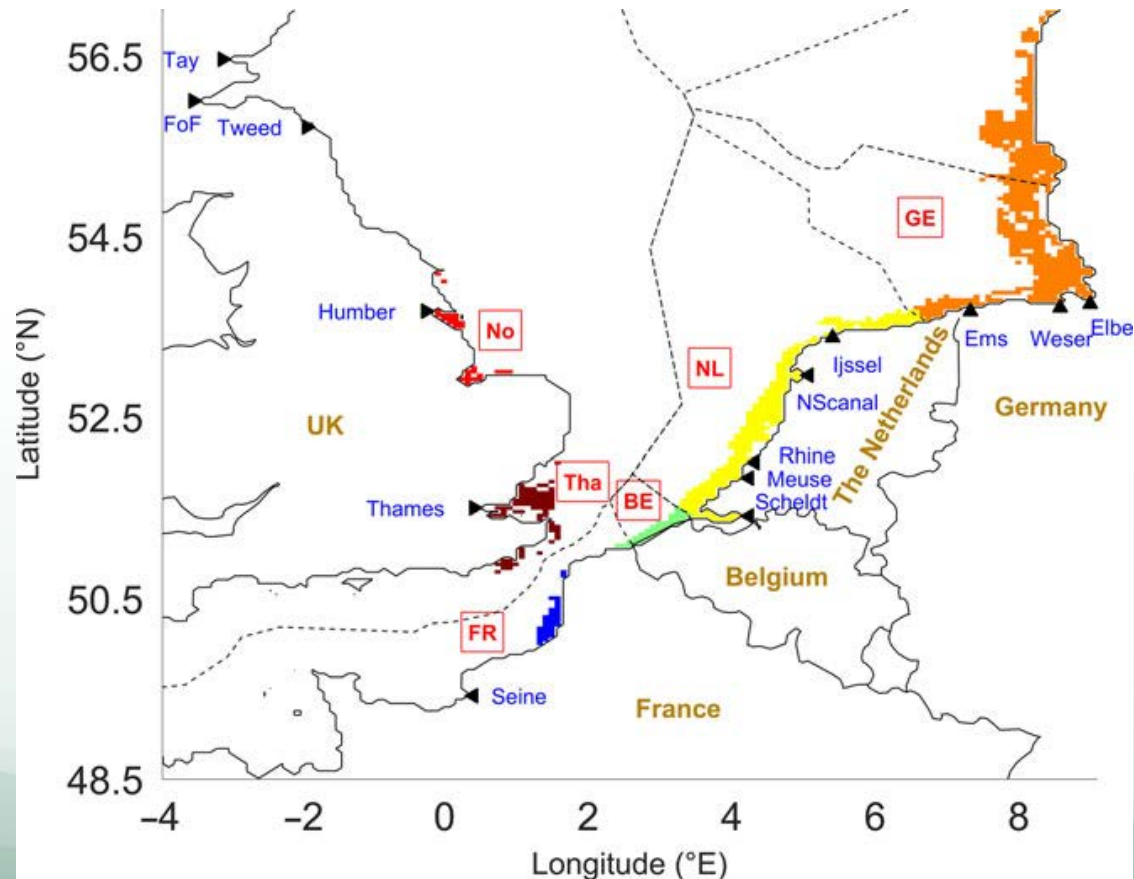
Scenario	Climate	Spawning
<b>REF</b>	<b>Baseline</b>	<b>Baseline</b>
<b>T2</b>	<b>SST +2°C</b>	<b>Baseline</b>
<b>T2S</b>	<b>SST +2°C</b>	<b>Advanced</b>
<b>T2SW</b>	<b>SST +2°C</b> <b>Wind change</b>	<b>Advanced</b>

# Effects on post-settlement growth and survival?

4 climate scenarios (IPCC 2040)

6 nurseries

9 years (2003-2011)

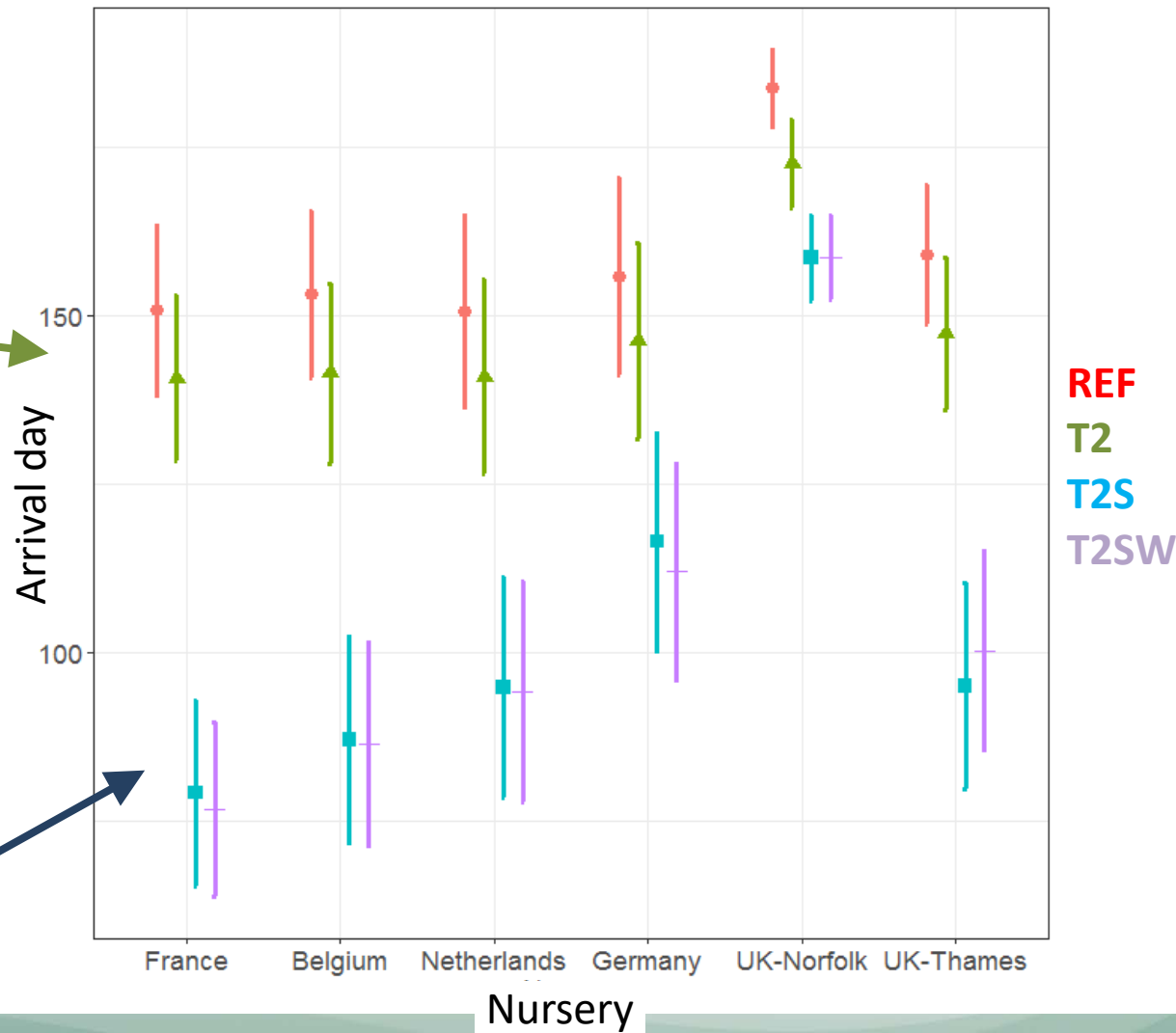


# Arrival day in nurseries

Temperature increase

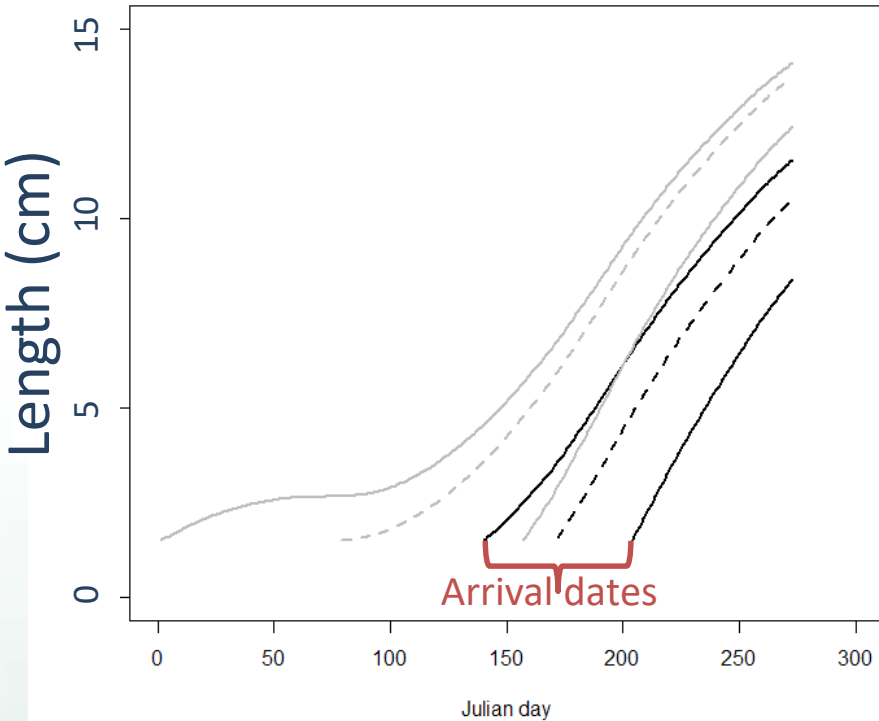


Temperature increase & advanced spawning



# Sole growth & mortality

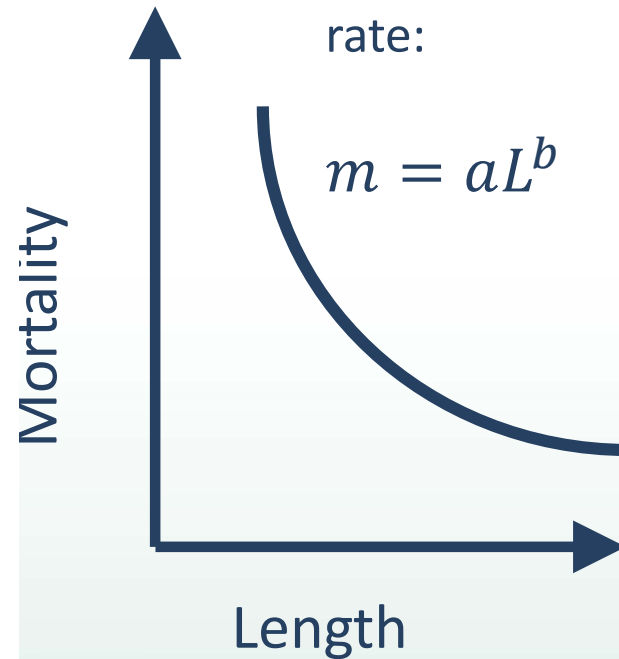
## Growth with a DEB model



## Mortality

Length based mortality rate:

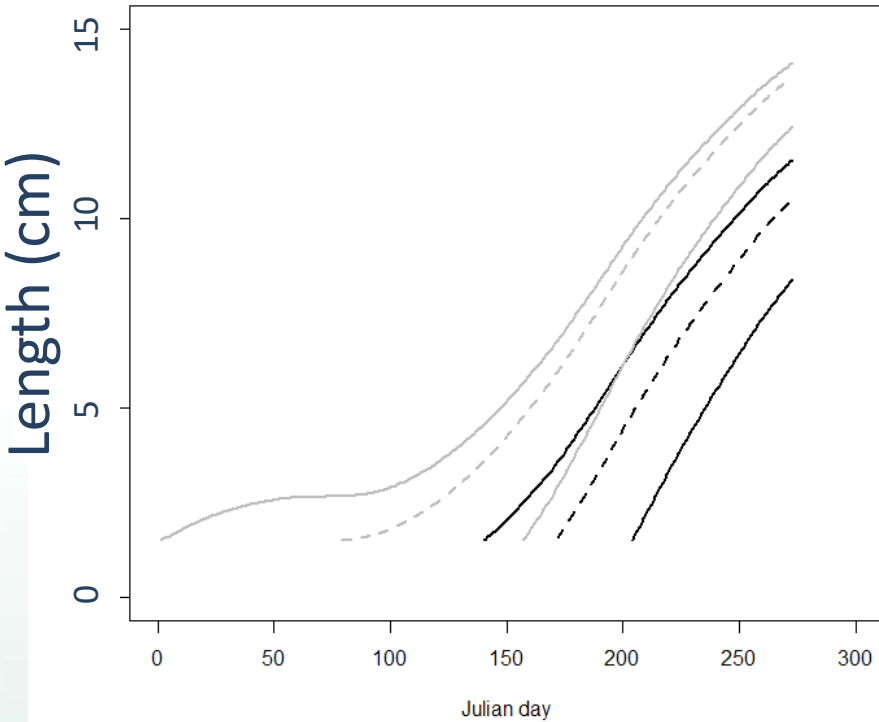
$$m = aL^b$$



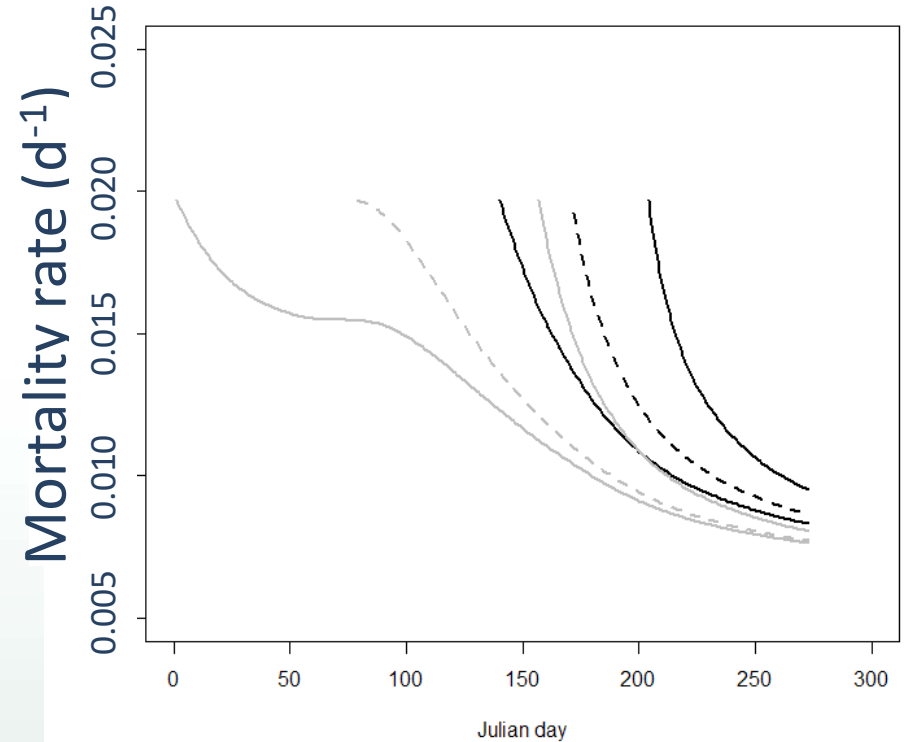
Smaller size means higher mortality rate

# Sole growth & mortality

## Growth with a DEB model



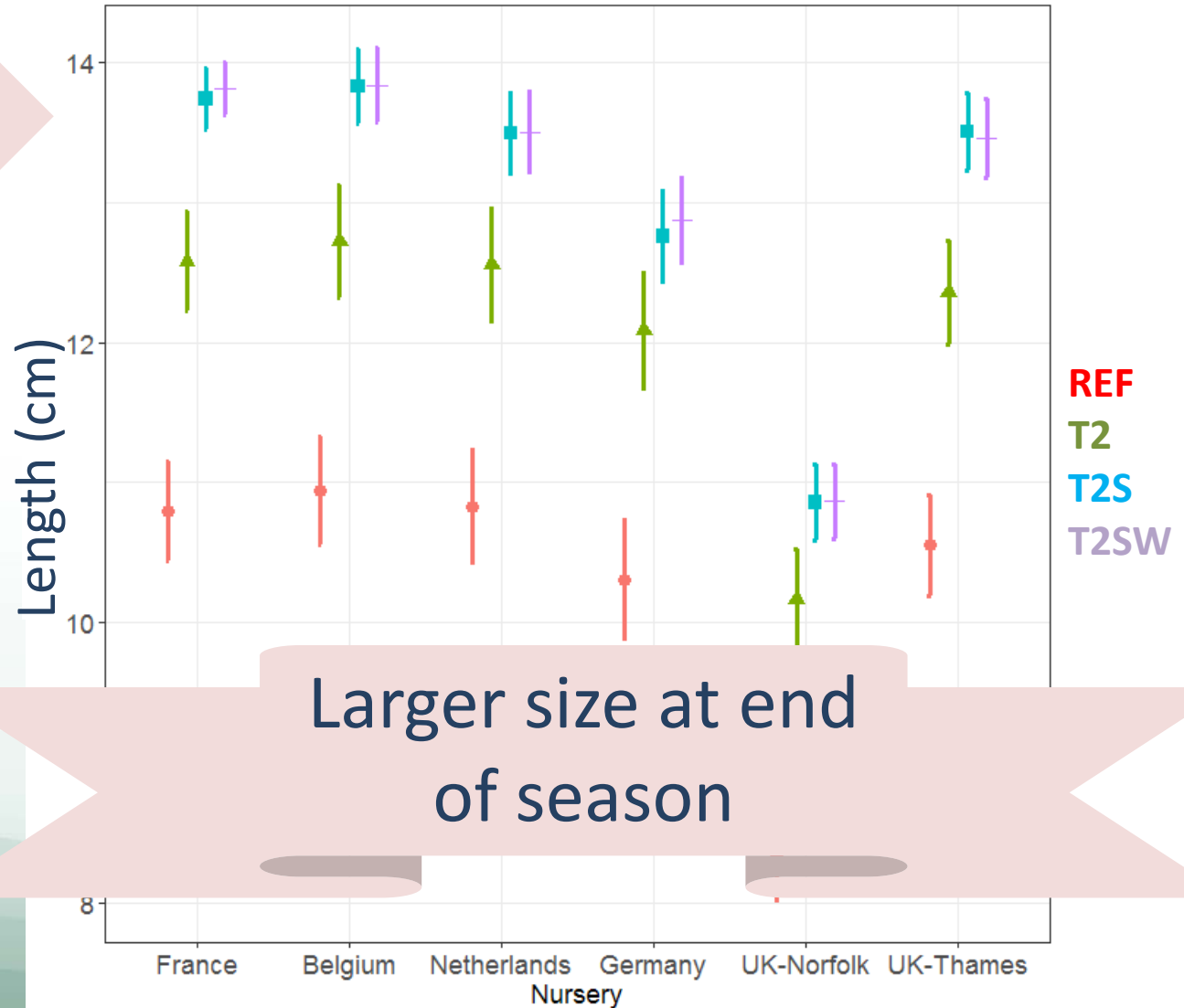
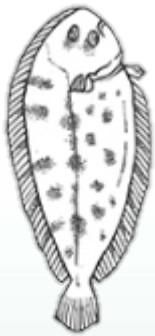
## Mortality





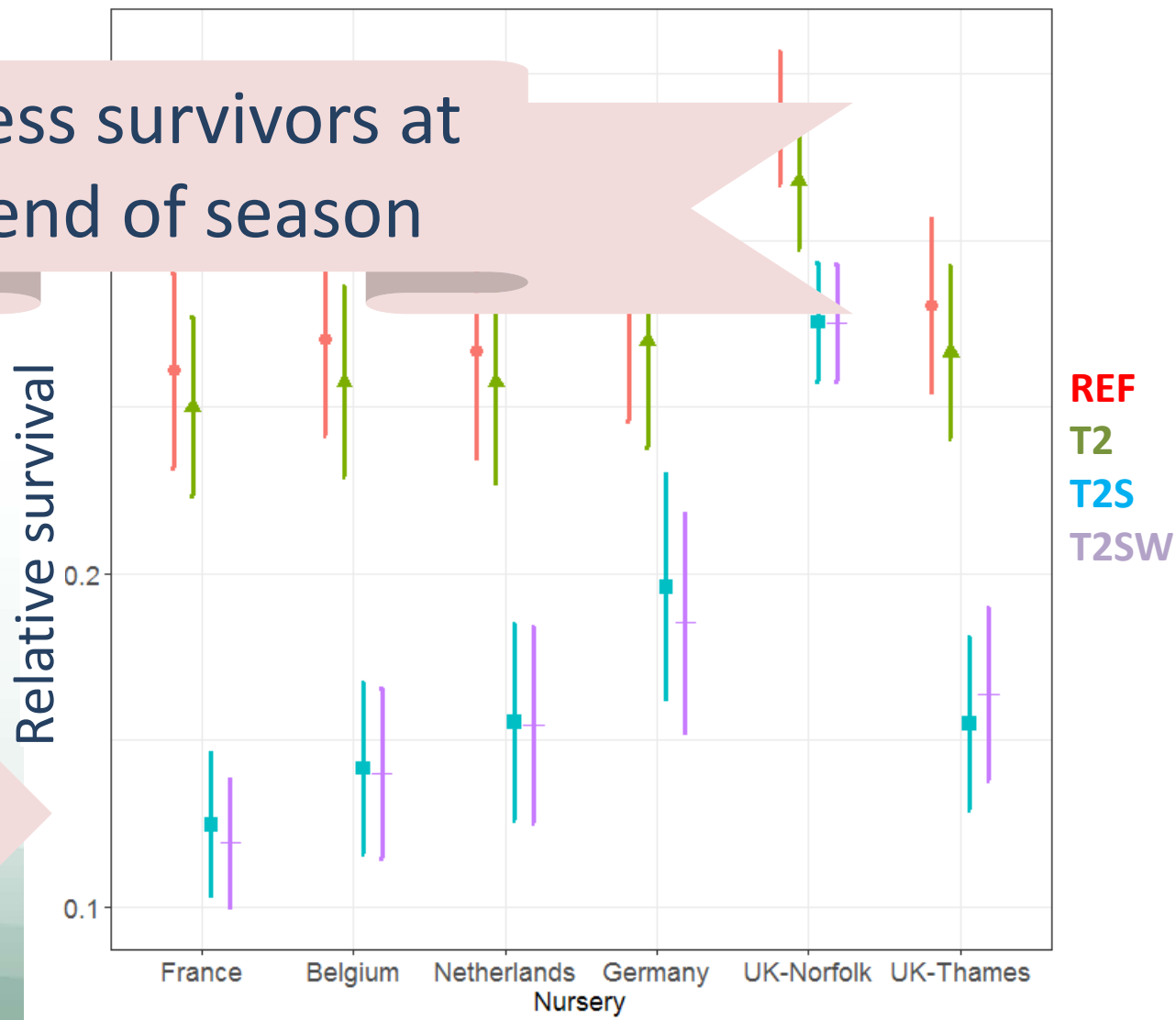
# Climate change effects on growth

Advanced spawning



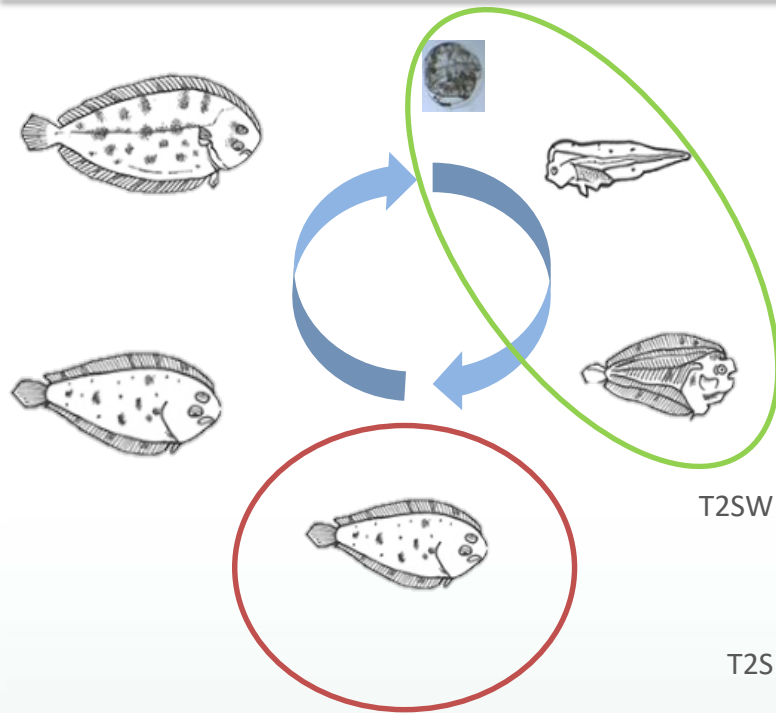
# Climate change effects on survival

Less survivors at end of season

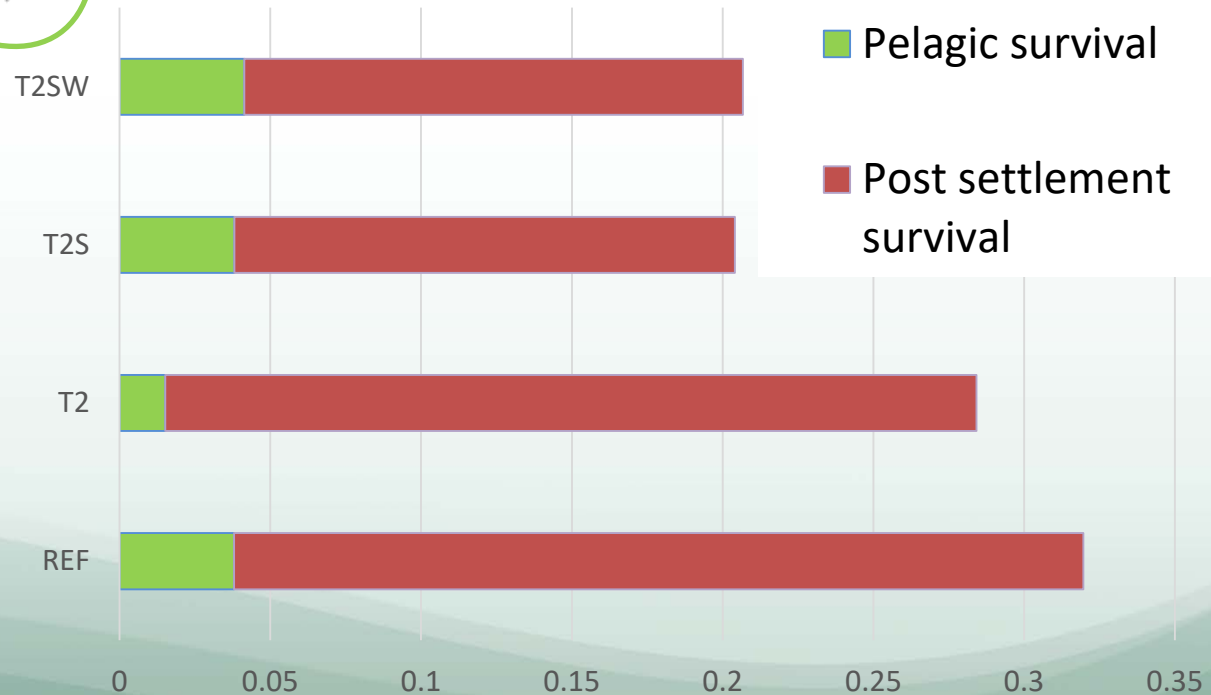


Advanced spawning

# Overall losses from spawning to post-settlement in climate change scenarios



Lacroix et al. 2018



Van de Wolfshaar & Lacroix (in prep.)

# Climate change effects on sole growth and survival

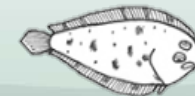
Climate change:

- Increased sizes at th
- Reduce

➤ Advanced sp

Nursery function

Stock management

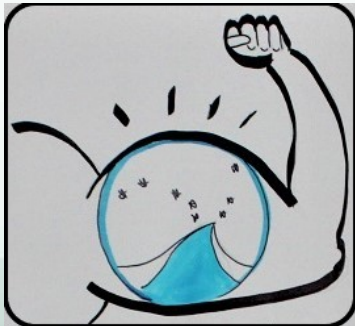


# Conclusion



- How was your work inspired by ICES?  
Work initiated in WGIPEM 2018
- How did/will your work contribute to the ICES advisory process and/or **scientific knowledge basis**?

Preliminary results (WGIPEM 2019)  
Updated results (WGIPEM 2020)  
Paper in prep.





# Acknowledgements



# Marine plastics: aligning national monitoring with international guidelines

By Bavo De Witte (ILVO)

2nd BICEpS colloquium, Ghent, 2 December 2019

# Impact on the marine ecosystem



- Negative effects
  - Entanglement of marine biota
  - Uptake of plastics (macro-, micro- and nanoplastics)
  - Influence on geochemical cycles
  - Release of chemicals (e.g. plastic additives)
  - ...

➔ Need for harmonized monitoring

# Marine plastics: project aims

- Macrolitter
  - Collect and digitize litter data at the Belgian Part of the North Sea and Belgian fisheries area
  - Detailed data-analyses
  - Comparison with international data
- Microplastics
  - Start-up of microplastic monitoring at the Belgian Part of the North Sea
  - Comparison exercise of microplastic contamination in seafood from different Belgian fisheries areas
- Data management
  - Microplastic database

# Macrolitter data

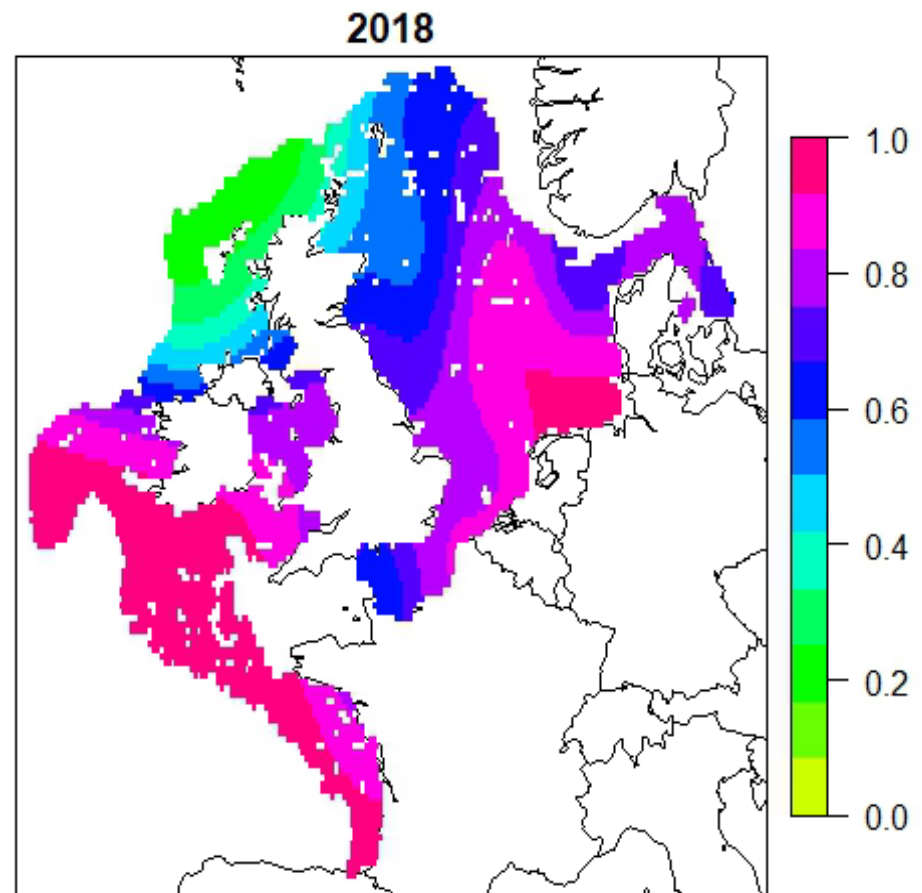
- Number and weight of litter items present in the fishing net
  - 6 categories and 39 subcategories: (A) plastic, (B) metal, rubber, (C) glass/ceramics, (D) natural products, (F) miscellaneous

4	<b>A1. Bottle</b>	<b>B1. Cans (food)</b>	<b>A: &lt;5*5 cm= 25 cm<sup>2</sup></b>
5	<b>A2. Sheet</b>	<b>B2. Cans (beverage)</b>	<b>B: &lt;10*10 cm= 100 cm<sup>2</sup></b>
6	<b>A3. Bag</b>	<b>B3. Fishing related</b>	<b>C: &lt;20*20 cm= 400 cm<sup>2</sup></b>
7	<b>A4. Caps/ lids</b>	<b>B4. Drums</b>	<b>D: &lt;50*50 cm= 2500 cm<sup>2</sup></b>
8	<b>A5. Fishing line (monofilament)</b>	<b>B5. appliances</b>	<b>E: &lt;100*100 cm= 10000 cm<sup>2</sup>= 1 m<sup>2</sup></b>
9	<b>A6. Fishing line (entangled)</b>	<b>B6. car parts</b>	<b>F: &gt;100*100 cm = 10000 cm<sup>2</sup>= 1 m<sup>2</sup></b>
10	<b>A7. Synthetic rope</b>	<b>B7. cables</b>	
11	<b>A8. Fishing net</b>	<b>B8. other</b>	
12	<b>A9. Cable ties</b>		<b>F: Miscellaneous</b>
13	<b>A10. Strapping band</b>		<b>F1. Clothing/ rags</b>
14	<b>A11. crates and containers</b>		<b>F2. Shoes</b>
15	<b>A12. diapers</b>		<b>F3. other</b>
16	<b>A13. sanitary towel/tampon</b>		
17	<b>A14. other</b>		
18			
19	<b>C: Rubber</b>	<b>D: Glass/ Ceramics</b>	<b>E: Natural products</b>
20	<b>C1. Boots</b>	<b>D1. Jar</b>	<b>E1. Wood (processed)</b>
21	<b>C2. Balloons</b>	<b>D2. Bottle</b>	<b>E2. Rope</b>
22	<b>C3. bobbins (fishing)</b>	<b>D3. piece</b>	<b>E3. Paper/ cardboard</b>
23	<b>C4. tyre</b>	<b>D4. other</b>	<b>E4. pallets</b>
24	<b>C5. other</b>		<b>E5. other</b>



# ICES WGML

- Macrolitter
  - Data processing based on
    - presence/absence
    - Number of items
    - Weight of the items



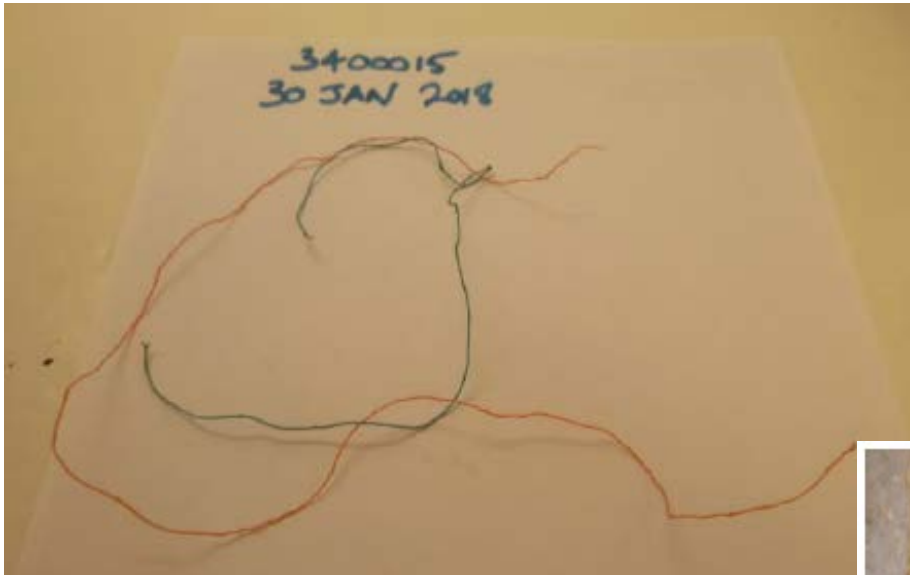
# ICES WGML

- Macrolitter
  - Different gear → different amount of macrolitter
    - GOV, BAK, TVS, beam trawl,...
    - Mesh size differences



# ICES WGML

- Macrolitter
  - Differences in reporting between countries
    - Monofilament or synthetic rope?



# ICES WGML

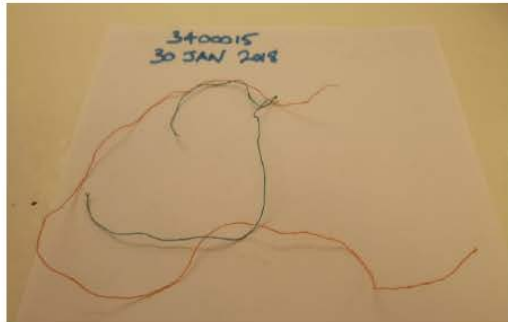
- Macrolitter
  - Differences in reporting between countries
- How to categorise and count a broken bottle with a lid?



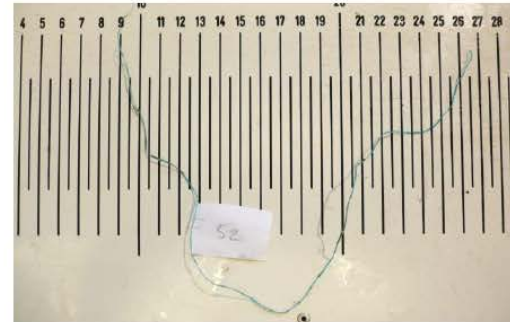
# ICES WGML

- ICES WGML products
  - Photoguide for the IBTS marine litter protocol
  - Guidelines for monitoring seafloor litter (report 2019, coming soon)

## A Plastic



A5: Monofilament



## B Metals



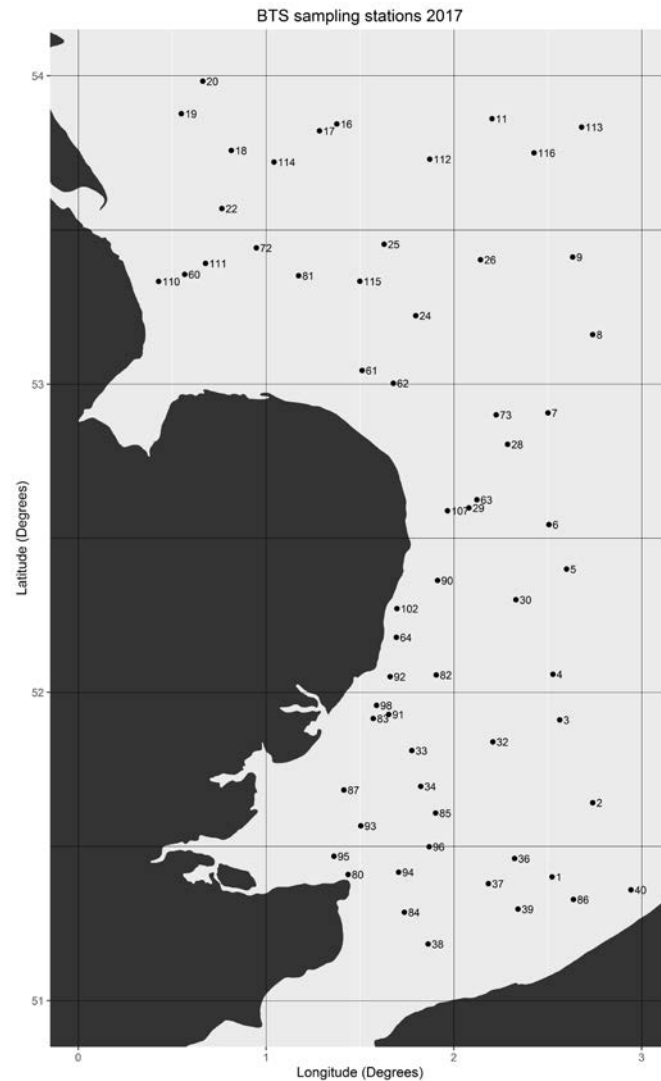
B2: Cans (beverages)





# Marine plastics

- Unique Belgian dataset
  - BTS: large area covered by the same gear



# Marine plastics

- Unique Belgian dataset
  - Environmental monitoring
    - Small mesh size (20 mm), coastal zone  
→ more litter items
  - Maps by subcategory (bottles, ropes, metal,...)
  - Link with activities at the Belgian Part of the North Sea

# Microplastics

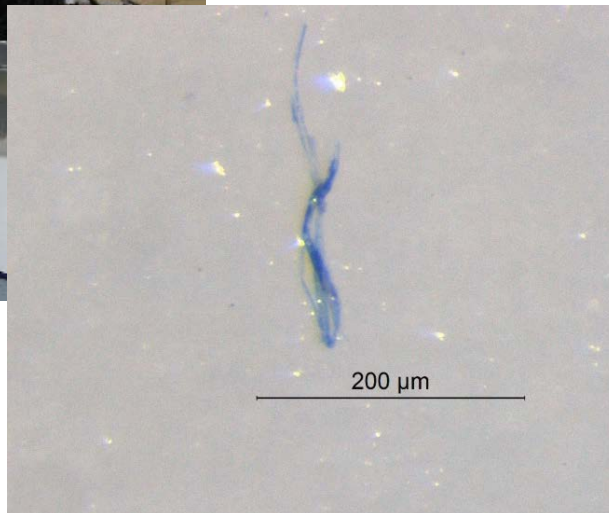
- QA/QC for microplastic analysis
  - Background contamination



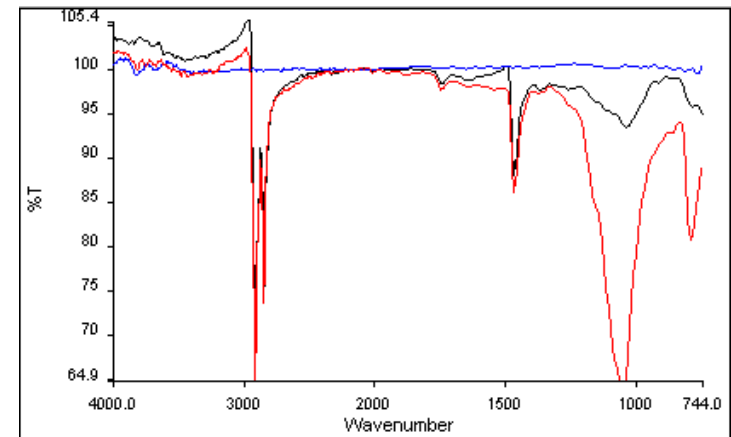
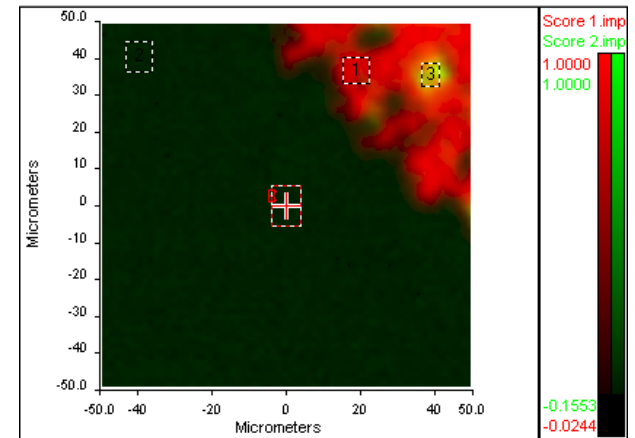
- Determination of the quantification limit
- Positive control samples
- Method validation

# Microplastics

## Detection by binocular

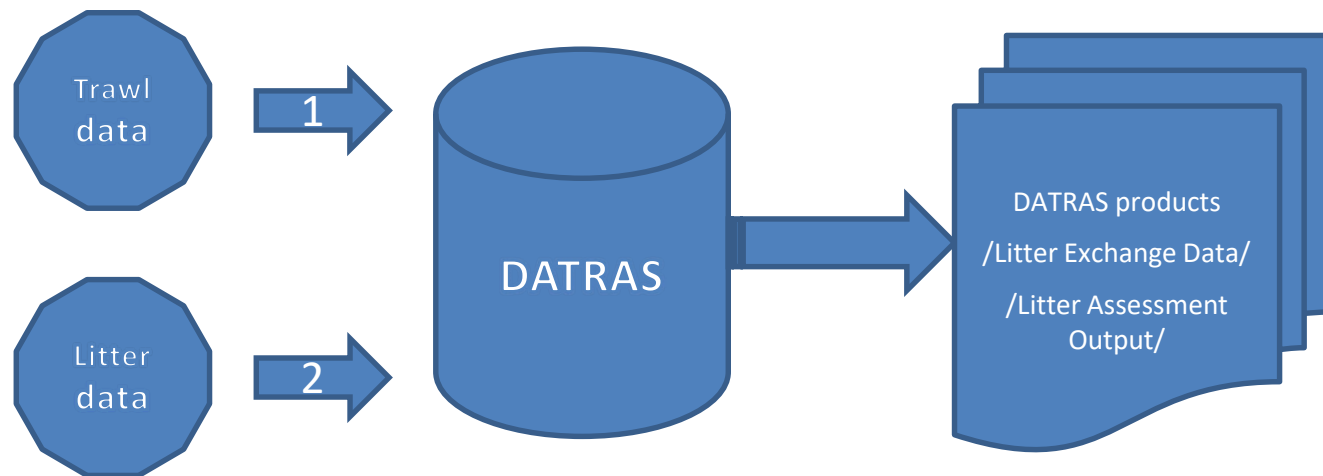


## Detection by $\mu$ FTIR



# Data management

- Close connection with ICES data centre
  - Litter collected within fisheries campaigns (BTS): Dattras
  - Litter collected within environmental monitoring: DOME
  - Microplastics: DOME



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	RecordTyp	Quarter	Country	Ship	Gear	Survey	Reseved1	Reseved2	StNo	HaulNo	Year	LTREF	PARAM	LTSZC	UnitWgt	LT_Weight	UnitLter
2	LT		3 ENG	END	BT4A	BTS			39	77	2016	C-TS-REV	C6	C	kg/haul	0,143	items/he
3	LT		3 ENG	END	BT4A	BTS			29	79	2017	C-TS-REV	C3	C	kg/haul	0,043	items/he
4	LT		3 ENG	END	BT4A	BTS			75	8	2017	C-TS-REV	C3	C	kg/haul	0,675	items/he
5	LT		3 ENG	END	BT4A	BTS			83	100	2015	C-TS-REV	A5	C	kg/haul	0,095	items/he
6	LT		3 ENG	END	BT4A	BTS			-9	73	2015	C-TS-REV	A5	C	kg/haul	0,012	items/he
7	LT		3 ENG	END	BT4A	BTS			20	69	2016	C-TS-REV	A6	C	kg/haul	0,0781	items/he
8	LT		3 ENG	END	BT4A	BTS			40	74	2017	C-TS-REV	A14	B	kg/haul	0,023	items/he





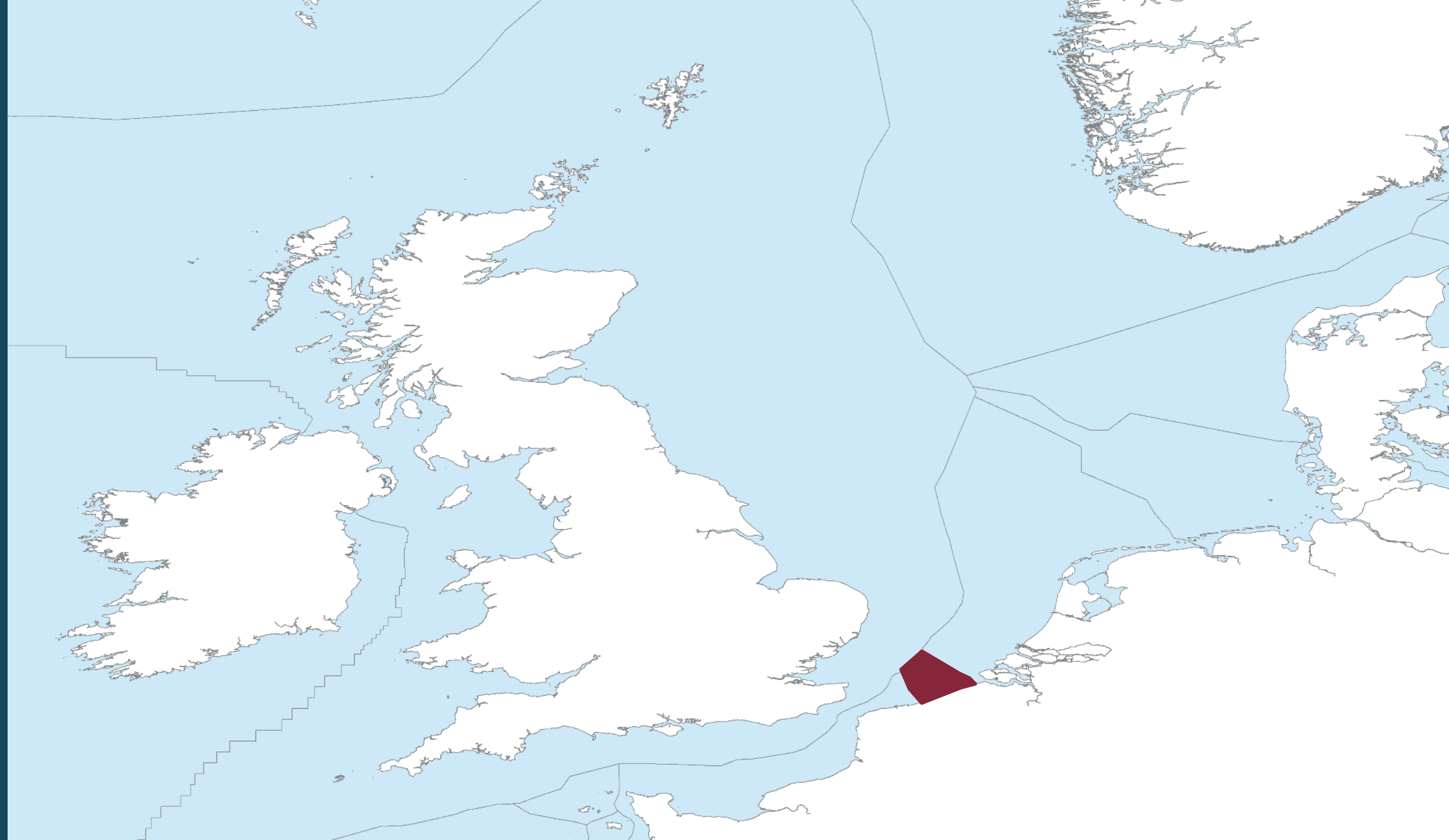
# Concluding slide

- ICES WGML influences marine plastics
  - Harmonisation and standardisation
  - Data assessment
  - QA/QC measures
- Marine plastics influences ICES
  - Belgian datasets
  - Input in standardisation and QA/QC measures

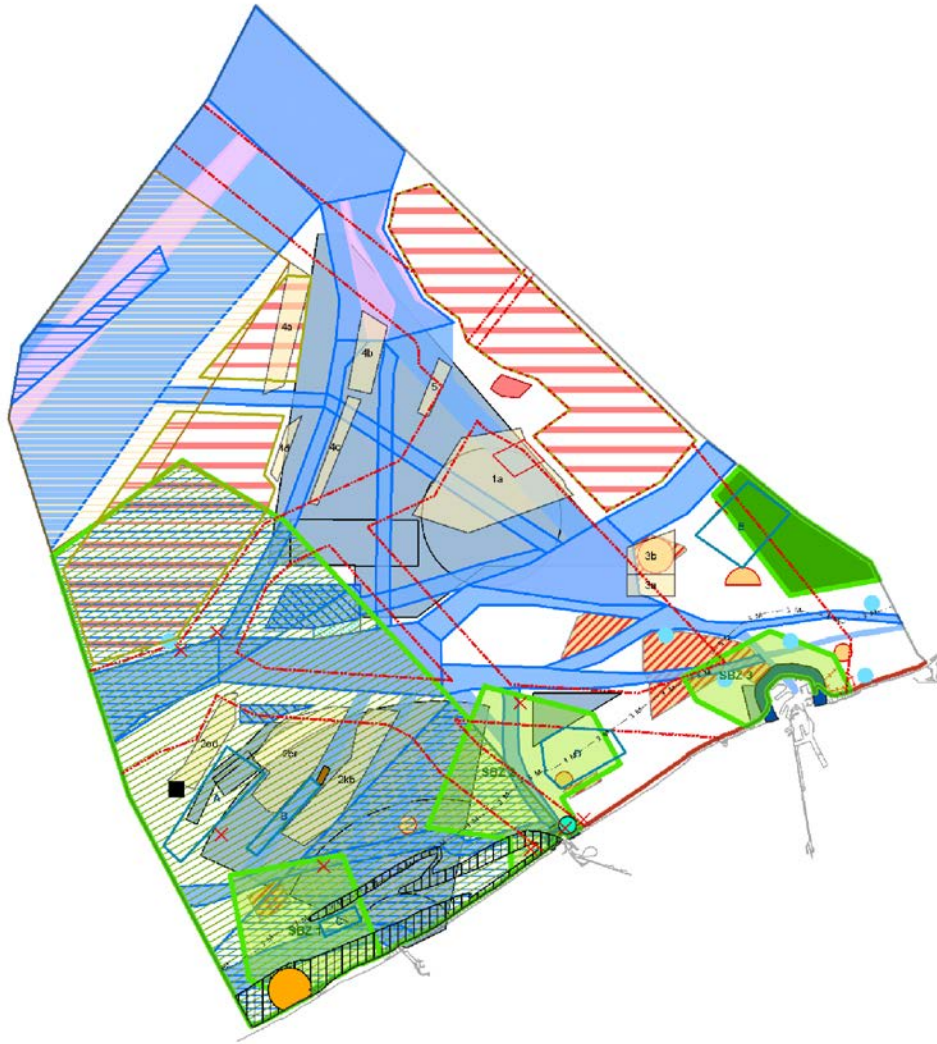
# Long-term changes in demersal fish abundance and distribution in the Belgian part of the North Sea

By Jolien Buyse, ILVO

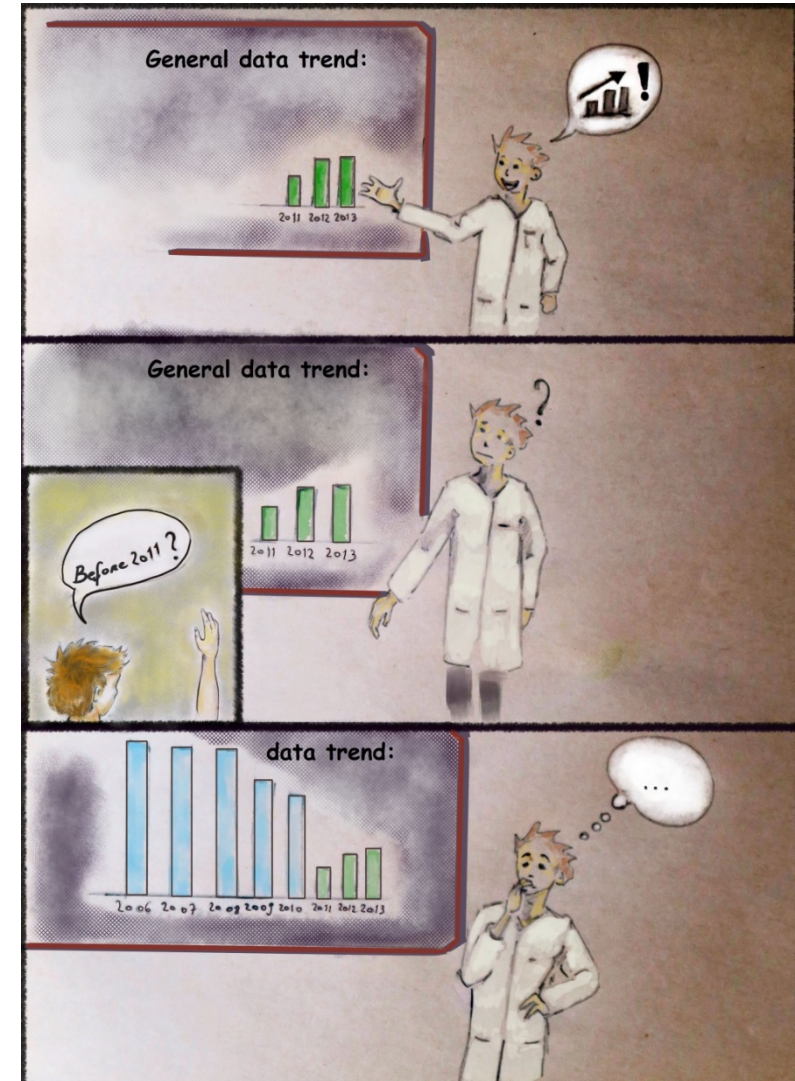
2nd BICEpS colloquium, Ghent, 2 December 2019



# WHY local ?



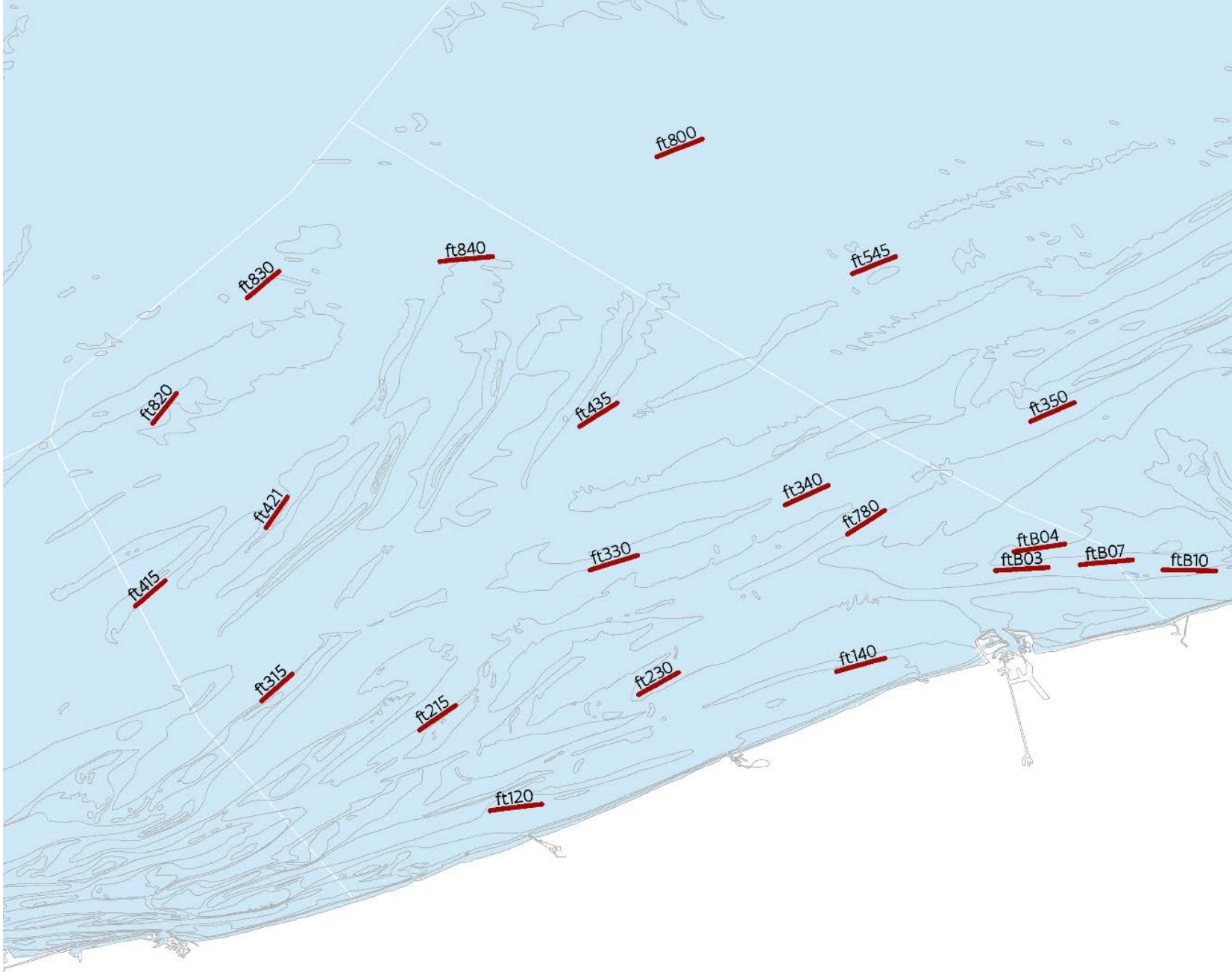
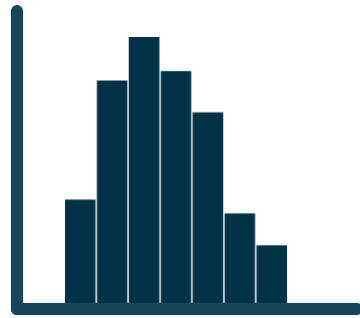
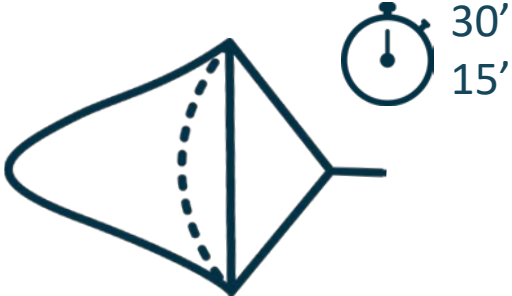
# WHY long-term ?





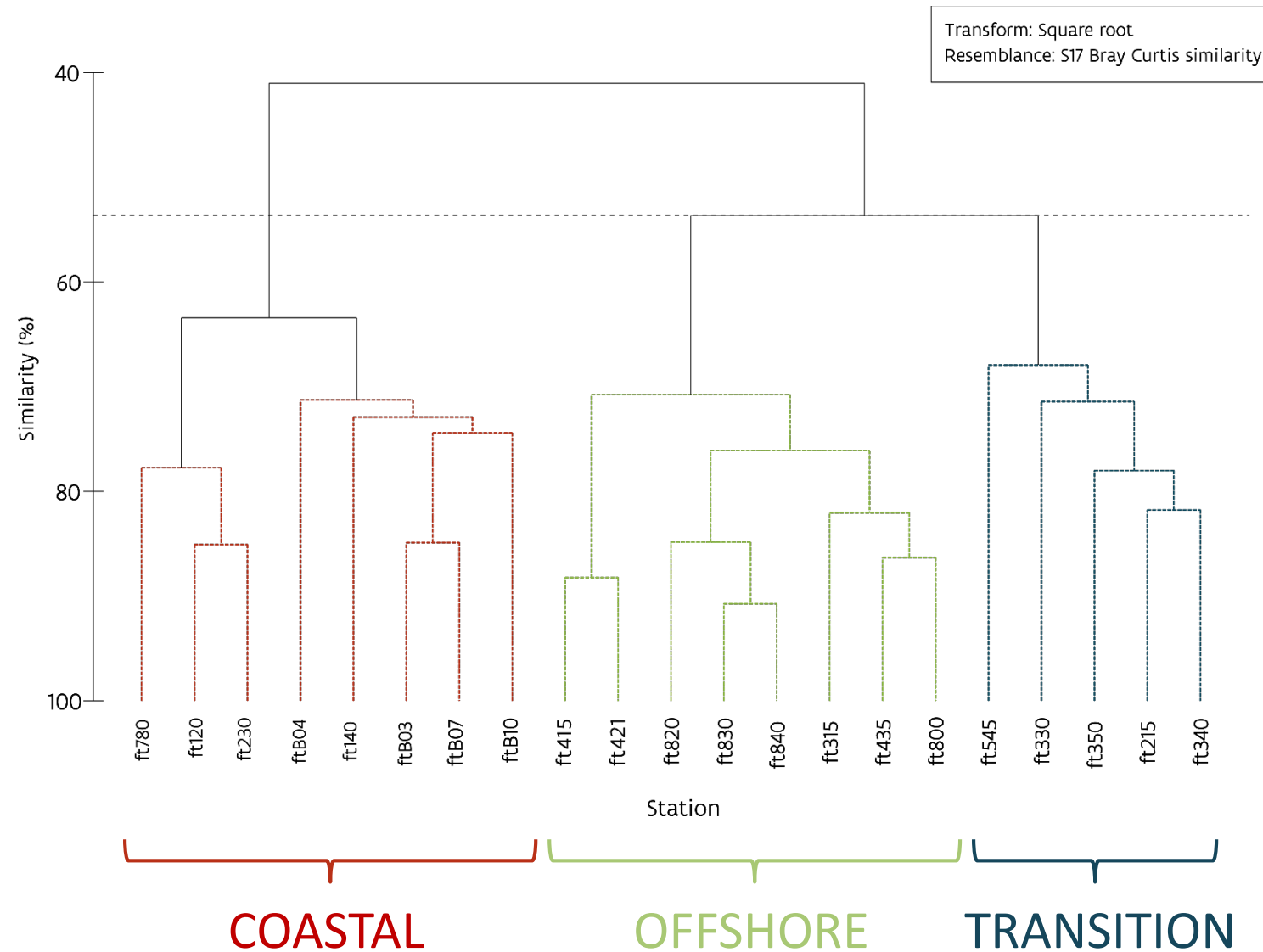


1985 - 2018

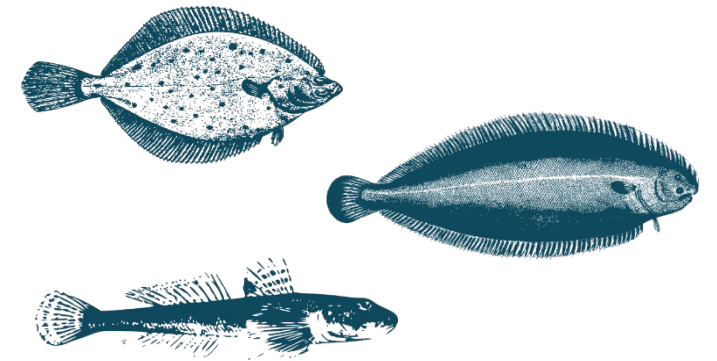




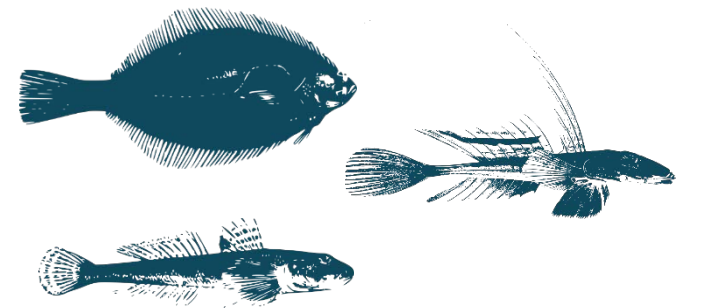
# Cluster analysis + SIMPER



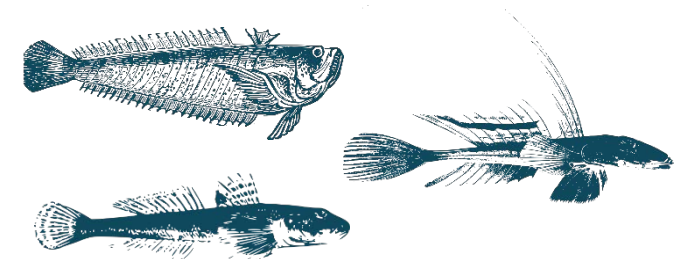
## COASTAL



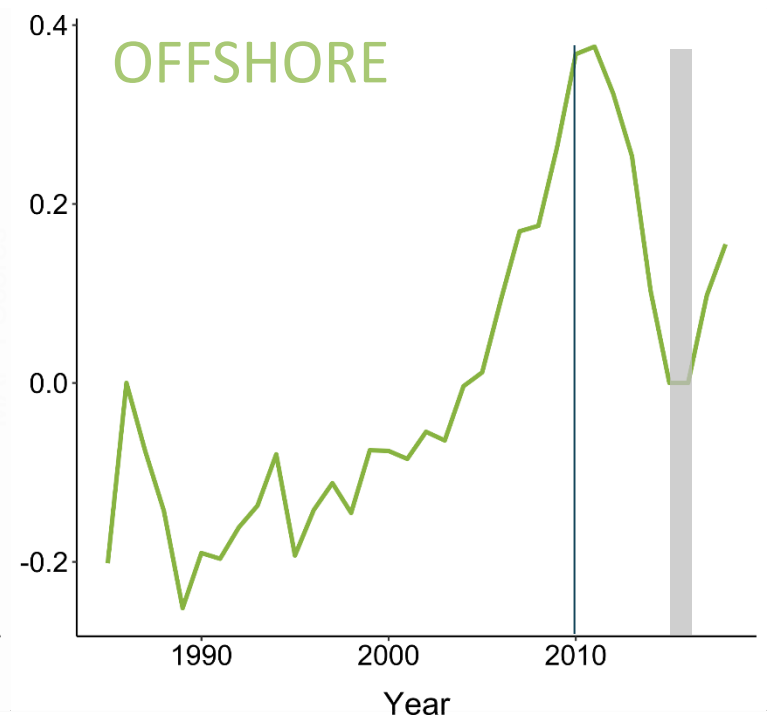
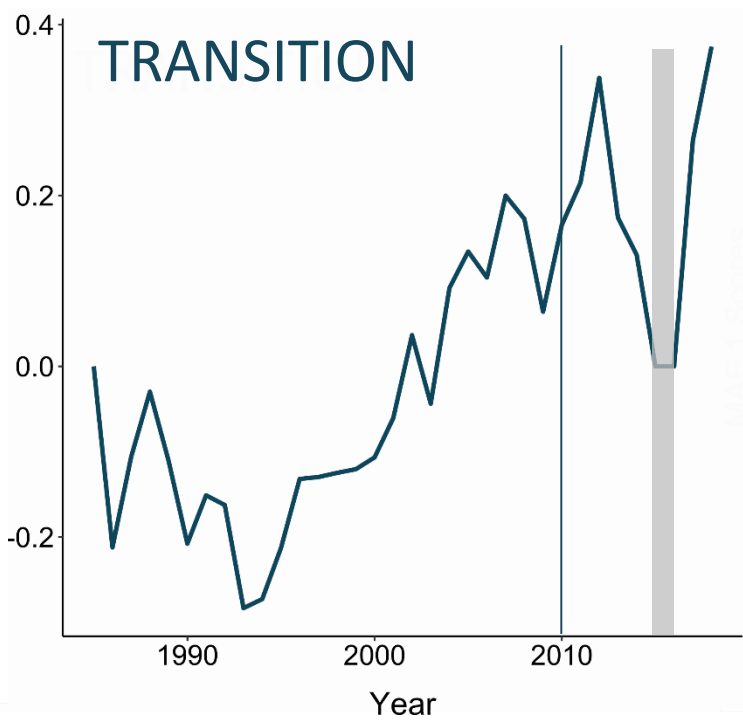
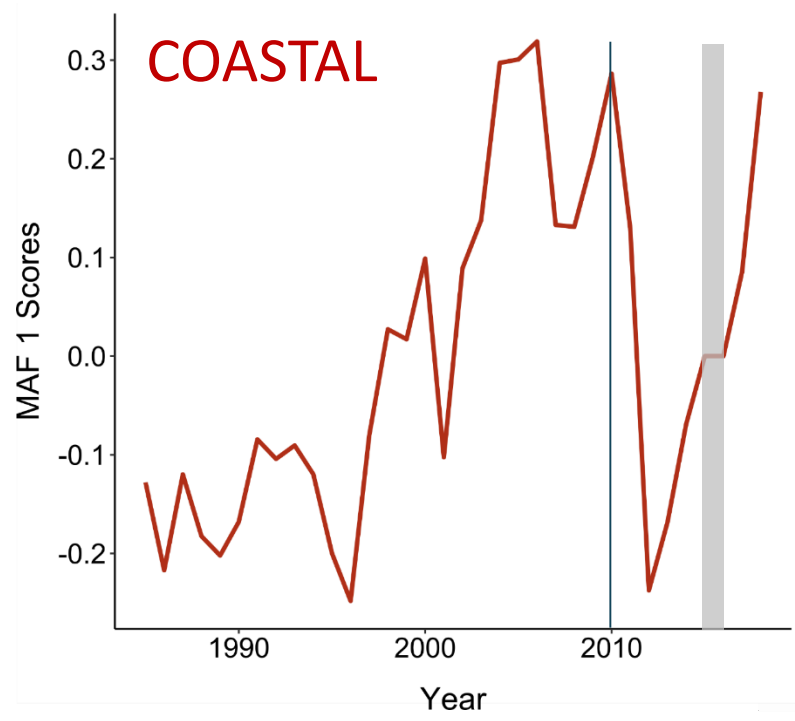
## TRANSITION



## OFFSHORE



# Min/max autocorrelation factor analysis - MAFA



**winteramo**            **0.65** (p<0.05)  
**SST lag 3 years**    **0.55** (p<0.05)  
**yearlyamo**            **0.54** (p<0.05)

**winteramo**            **0.64** (p<0.05)  
**yearlyamo**            **0.55** (p<0.05)  
**SST lag 3 years**    **0.48** (p<0.05)

**winteramo**            **0.48** (p<0.05)  
**yearlyamo**            **0.47** (p<0.05)  
**SST lag 3 years**    **0.46** (p<0.05)

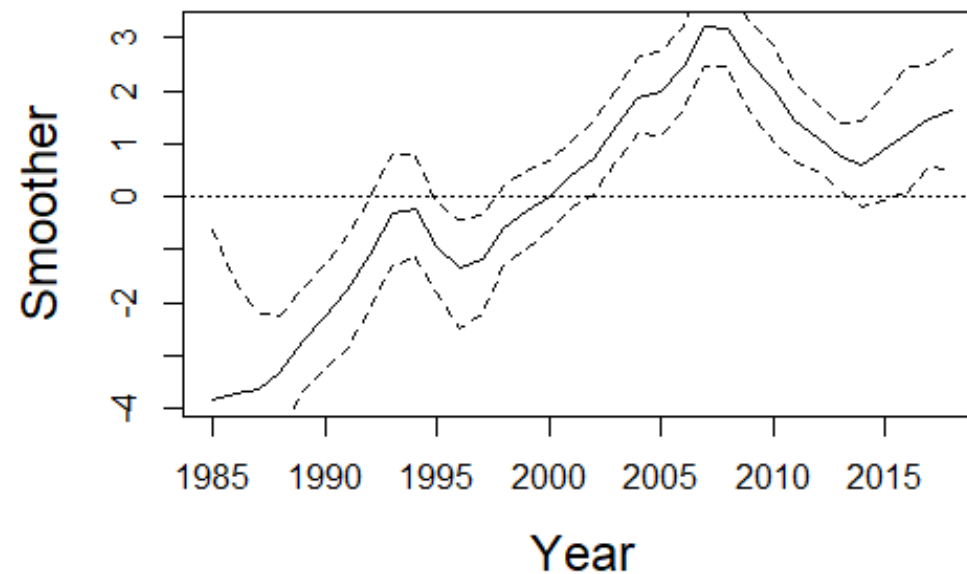
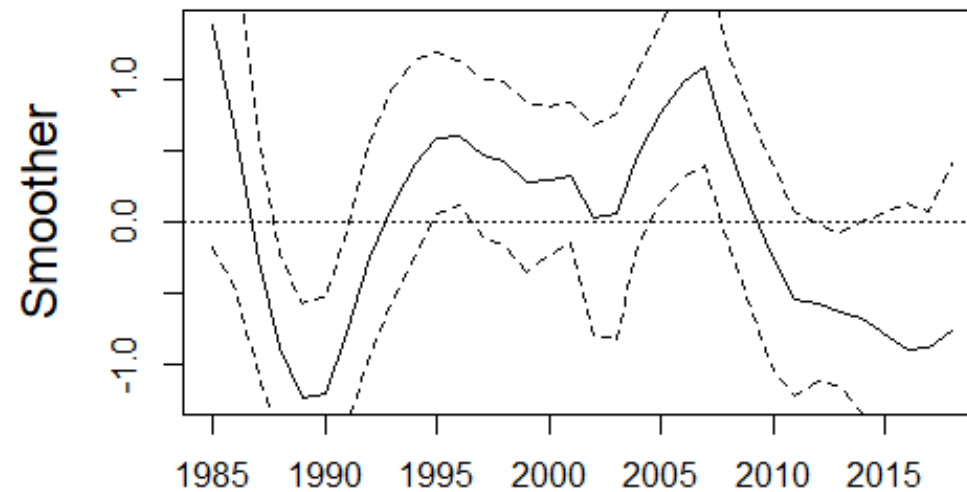
## R-INLA models with random walk Year effect and random effect of Station

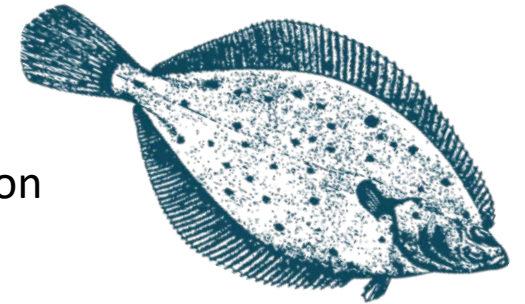
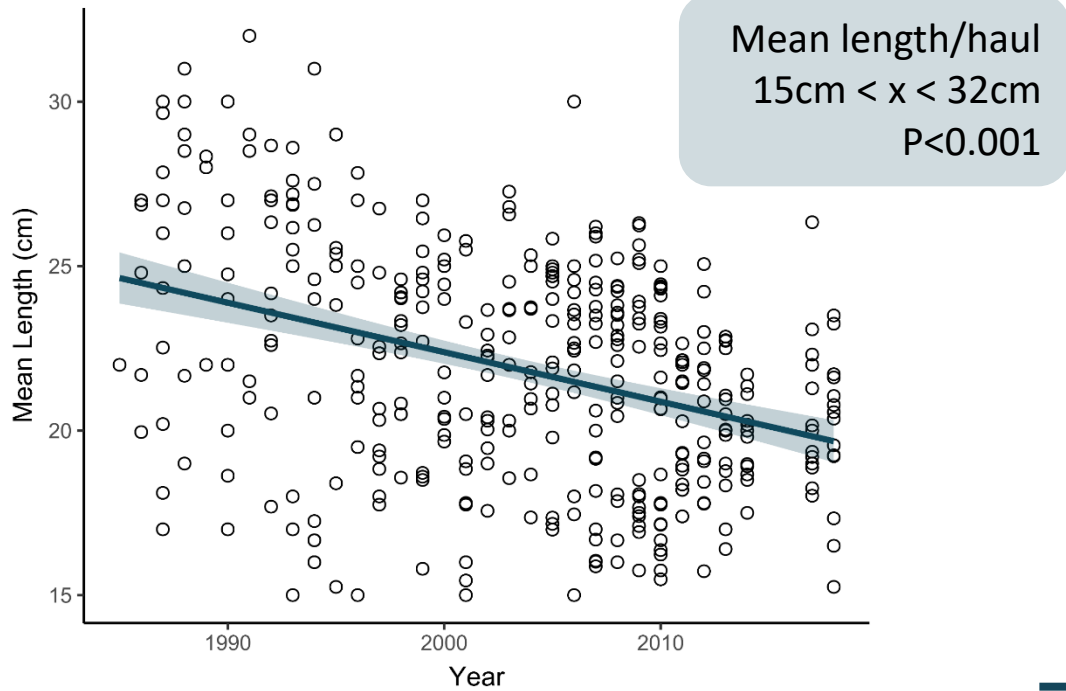
## AGONUS CATAPHRACTUS - BOREAL

	<i>mean</i>	<i>sd</i>	<i>0.025</i>	<i>0.975</i>
(Intercept)	4.29	3.09	-2.09	10.10
sst	-0.20	0.26	-0.69	0.33
winteramo	0.21	1.06	-1.85	2.34
winternao	-0.48	0.18	-0.83	-0.14
nao	0.28	0.31	-0.33	0.88

## ARNOGLOSSUS LATERNA - LUSITHANIAN

	<i>mean</i>	<i>sd</i>	<i>0.025</i>	<i>0.975</i>
(Intercept)	-1.87	3.69	-9.06	5.51
sst	0.06	0.31	-0.55	0.65
winteramo	1.71	1.25	-0.76	4.17
winternao	0.45	0.20	0.04	0.83
nao	0.06	0.34	-0.62	0.71



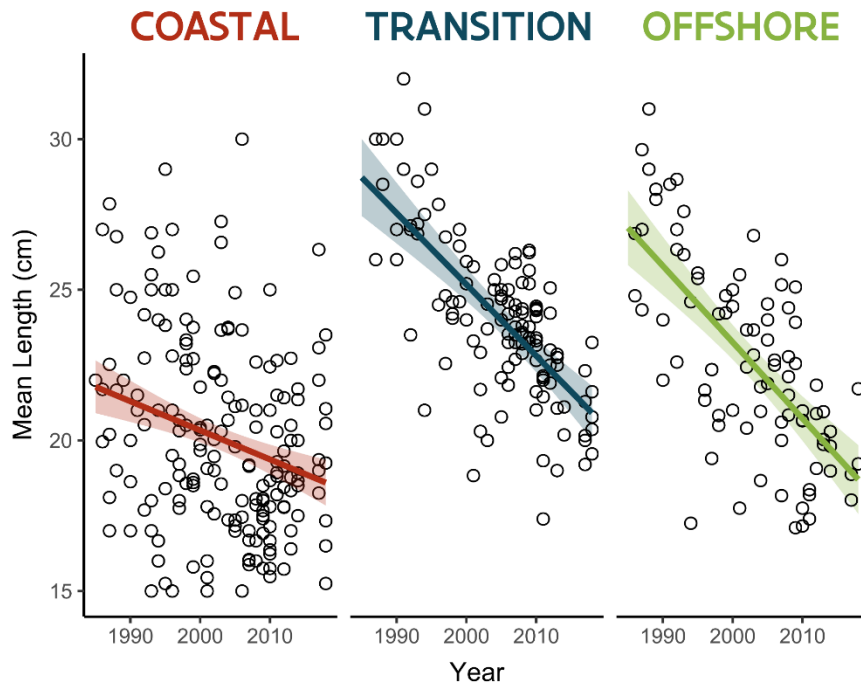


Fisheries-induced selection



Earlier maturation at smaller size

*(Grift et al., 2003)*



Climate change-induced shift in location



Shift towards deeper water  
T tolerance/food availability

*(van Keeken et al., 2008)*

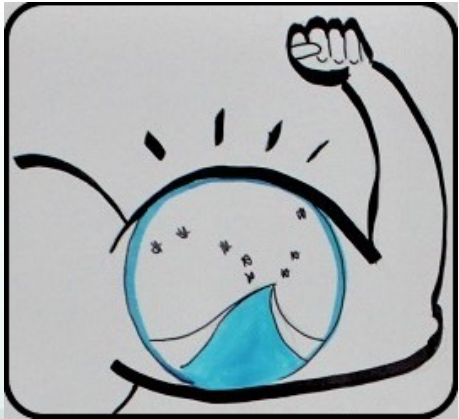


# Conclusion

- > Scientific plan ICES
- > Complementary to large scale studies

## FUTURE

- > Shifts in distribution of species related to climate change on a North Sea scale
- > Effects of windfarms on flatfish (WGMBRED)
- > Windfarms as OECMs (WGMBRED)





# Tributyltin: an aggressive bottom-up stressor in a marine multi-stressor environment.

## A Quality Status Report

By Koen Parmentier, RBINS & Kris Cooreman, ILVO

2nd BICEpS colloquium, Ghent, 2 December 2019

# TriButylTin (TBT): broad-spectrum biocide and all-in antifoulant from 1960s.

1. In the 80s and 90s, biological dose/response relationships in organisms in TBT-exposed water pathways addressed TBT toxicity in the marine environment for two reasons:
  1. strong correlations between biological endpoints and the bioconcentration factor (BCF). (Later: other studies reported high correlations with body residues as well)
  2. lack of chemical data on TBT residue detection at ppb to sub-ppb level until mid-90s.
2. Severe topical and population impacts on marine molluscs in late '70s: fertility and calcification impairment, local extinction,... and, LOECs of 1 to 2 ng TBT cation/l exposure water for population-relevant endpoints up to extinction.
3. Imposex and intersex key indicators in TBT effects monitoring monitoring on molluscs.

# Highest sensitivity to TBT assigned to molluscs

1. TBT regulations and bans based on these morphological data.
2. Toxicity on metabolic pathways seldom identified until 2000.
3. In the 80s and 90s, effects of TBT on other taxa were considered much less sensitive.
  - e.g. No particular sensitivity from acute toxicities on adult crustaceans. Larvae responded more sensitive (approx. 500-fold less than some molluscs).
  - New chronic data based on LOEC and NOEC in SSDs revealed similar to higher sensitivities of species from other taxa.

# *Crangon crangon* as target species

*Crangon crangon* was target species in this study :

- High ecological and economical value
- High TBT body burdens in 2003 which raised major concerns on:
  1. risks of transfer of TBT to the human food chain
  2. the health of the population in its major habitat, the southern North Sea

# The outcome of this study on TBT impact provides answers and explanations on:

1. TBT accumulation potential in *C. crangon*,
2. Detailed metabolic diagnose of TBT Mode of Action (MoA),
3. TBT toxicity and topical and population-relevant endpoints in crustaceans,
4. Knowledge gaps on toxicity related to tissue residues and TBT-exposed water,
5. The biogeochemical behavior of TBT, a new and detailed approach,
6. the context of the impact of TBT in a multi-stressor environment, mainly
7. the German Bight incident in the late '70s to '90s



## TBT accumulation potential in *C. crangon*:

1. average 326  $\mu\text{g}$  TBT cation/kg tail dw (first data in 2003 from offshore Western Scheldt, even higher upstream )
2. Calculated individual heavy metal-type BSAF~10 indicating:
  - a high biomagnification potential, multifold transcending bioconcentration
  - extrapolated 650-900  $\mu\text{g}$  TBT cation/kg dw in open sea and Western Scheldt suggest extreme accumulation
  - no signs of TBT catabolism: measured TBT levels are the actual body residues in *C. crangon*
3. TBT catabolism is very species-specific

# Effect of global TBT ban on levels

1. The global TBT ban reduced the TBT levels *in C. crangon* and its habitat sediment 10-fold, already in 2009
2. Transfer to human food chain: TDI improved > 25-fold between 2003 and 2009
3. The drastic TBT reductions led to large-scale progressive recoveries of the marine ecosystem
4. Current TBT levels are at a threshold due to historical contaminations

# Metabolic diagnose of TBT MoA

1. Strong agonistic interference with MoA of natural hormones for growth and reproduction
2. Affected gene expression:
  1. disruption of the calcium homeostasis
  2. Upregulation of vitellogenin
  3. Up- as well as downregulation of several cuticular proteins
3. Molecular MoA of TBT is strong indication of distorted growth and reproduction.
4. Deregulation in crustaceans  $\pm$  identical to molluscs, not exceptional (cfr. RXR).

# TBT toxicity and topical and population-relevant endpoints in crustaceans:

1. Chronic TBT toxicity on topical and population-relevant endpoints in *C. crangon* was not confirmed in whole-lifecycle tests (cultures still in development)
2. Endocrine toxicity on ecdysis, vitellogenesis, calcium resorption and macroscopic changes of molting, limb abnormalities, intersex, fecundity, % ovigerous females, reproduction and larval development were confirmed in whole life-cycle tests on other crustaceans
3. MoA of TBT in crustaceans & molluscs similar in all taxa
4. This explains the high sensitivity of many species in different taxa in the SSD approach

# The biogeochemical behavior of TBT, a new and detailed approach

1. Biogeochemical behavior of TBT has long been discussed
2. TBT is ionisable ( $pK_A$  at 6.25) - 97% is in a neutral form and behaves hydrophobic in coastal water at pH 8
3. This hydrophobic form linked its partitioning behavior to  $K_{ow}$
4. However: 3% remains cationic and forms stable metal-type fixations with electronegative ligands in e.g. sediment
5. This fixation causes continuous disequilibrium in lipophilic partitioning
6. Usefulness of  $\log K_{ow}$  in partitioning and bioaccumulation scenarios is therefore strictly conditional



# Effect of ionic vs neutral partitioning

1. In biota is the metal-type fixation of TBT predominant by the acidic intracellular  $\text{pH}_i$  which is in electrochemical equilibrium with the pH of the extracellular fluid
2. Cellular intracellular compartments have different acidic  $\text{pH}_i$
3. At the lowest pH, over 50% of the TBT is in the ionic form and directly bioavailable
4. This results in aggressive intracellular behavior of TBT at ppb concentrations

# Knowledge gaps on toxicity related to tissue residues and TBT-exposed water

New theory on biogeochemical partitioning may explain knowledge gaps between TBT body burdens, bio-concentration and biological processes in affected organisms:

1. Tissue residues seem to reflect bioavailability and effective target doses more accurately than water-based toxicity
2. Tissue residue-based toxicity reduces the variability between species, time periods and exposure conditions
3. Unequal tissue distributions and TBT behavior

# The context of the impact of TBT in a multi-stressor environment

## German Bight incident in the '70s to '90s

1. An incident in the German Bight led to a collapse in landings in '90/'91
2. Research since the '70s observed increasing morphological disorders on:
  - recruitment (low % ovigerous females) with minimum (< 10%) in late '80s
  - cuticular impairments (shell dissolutions; Watermann & Dethlefsen, 1983)

# Was a mass predator invasion the cause, as ICES suggested?

## Not justifiable as argument:

1. All observed disorders were later diagnosed in full life-cycle tests on crustaceans and supporting metabolic pathway interferences on *C. crangon*
2. Successive TBT bans led to a progressive & fast recovery of the habitat
3. Recent decreasing landings are due to growth and recruitment overfishing (ICES' Advice)

## Final word

1. A potential threat on important ecosystem components may have passed unnoticed
2. The local and global TBT bans led to a large-scale progressive recovery of the marine ecosystem
3. The TBT prevalence as indicator of the ecosystem health is no longer relevant
4. However, it remains a scientific and societal obligation to inform
5. In addition, the gathered and new information in this paper may serve other assessments
6. Our recommendation: read the paper



## Read the article:

Open source

Parmentier KfV, Verhaegen Y, De Witte BP, Hoffman S, Delbare DHR, Roose PM, Hylland KDE, Burgeot T, Smagghe GJ and Cooreman K (2019) Tributyltin: A Bottom–Up Regulator of the *Crangon crangon* Population? *Front. Mar. Sci.* 6: 633.

[doi: 10.3389/fmars.2019.00633](https://doi.org/10.3389/fmars.2019.00633)

# Conclusion

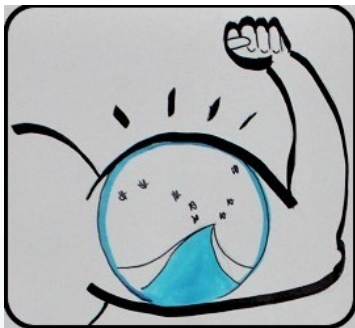
We hope our work can contribute to the ICES advisory process.

Recovery of fish stocks in the latest decennium should be assessed versus the reduced effect of TBT in the environment

Especially fecundity was affected, but so was food abundance

The fish stock now should show improved resilience to overfishing

Will we sooner detect a “new TBT”?



# Towards open science products for ecosystem science

Lennert Schepers, Lennert Tyberghein  
Data Centre, Flanders Marine Institute (VLIZ)



2nd BICEpS colloquium, Ghent, 2 December 2019

# Ecosystem Science – complex but needed

## ICES Ecosystem Overviews

*“to describe the state of the ecosystem and to comment on pressures accounting for changes in state”*

### Status of ecosystem



- Food web
- Productivity
- Plankton
- Benthos
- Fish
- Cephalopods
- Marine Mammals
- Seabirds
- Non indigenous species trends
- Threatened and declining species and habitats

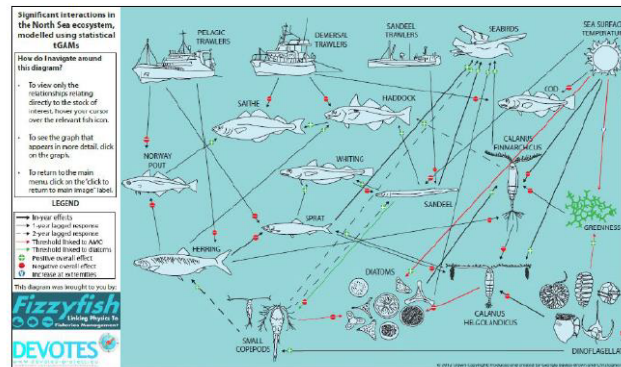


Figure 6.1.12<sup>244</sup> The major components of the Greater North Sea foodweb.  
[http://www.ices.dk/community/Documents/Expert%20Groups/Lynam\\_tSAMmodel\\_key\\_mov.pdf](http://www.ices.dk/community/Documents/Expert%20Groups/Lynam_tSAMmodel_key_mov.pdf).

# Ecosystem Science – complex but needed

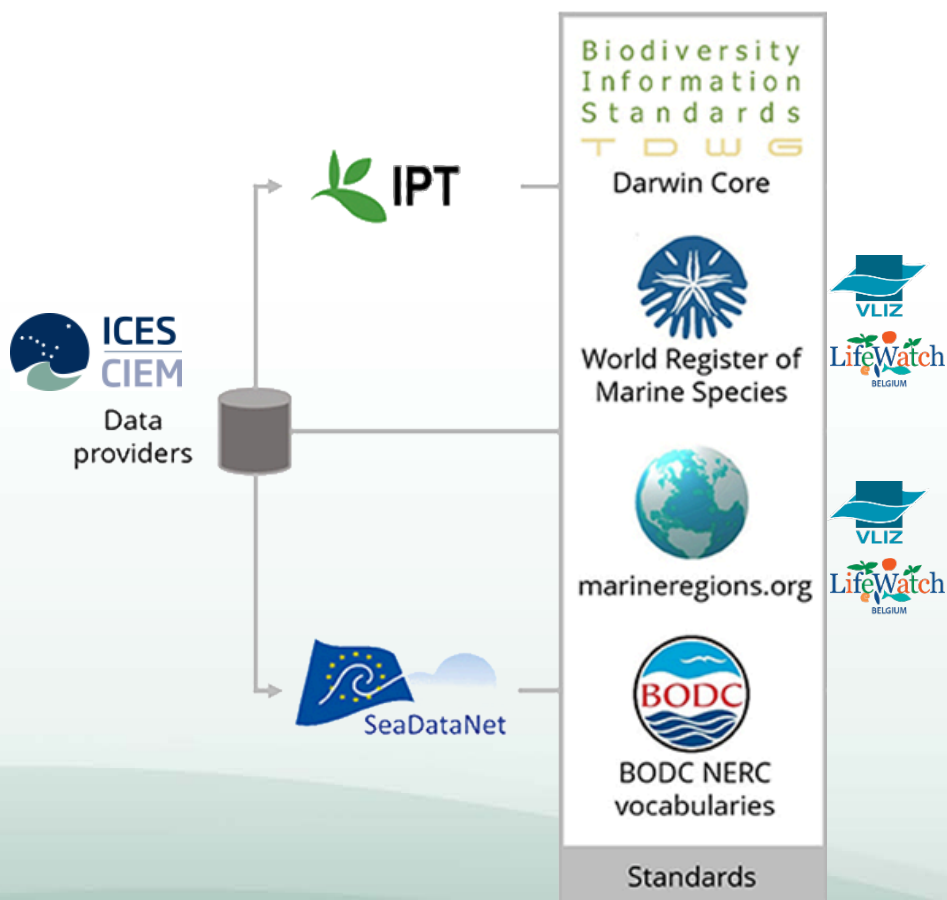
1. Complex food web and interactions
2. Integration of different data sources
3. Quantitative: Large amount of data needed
4. Open science workflow

*How is Flanders Marine Institute's Data Centre helping?*



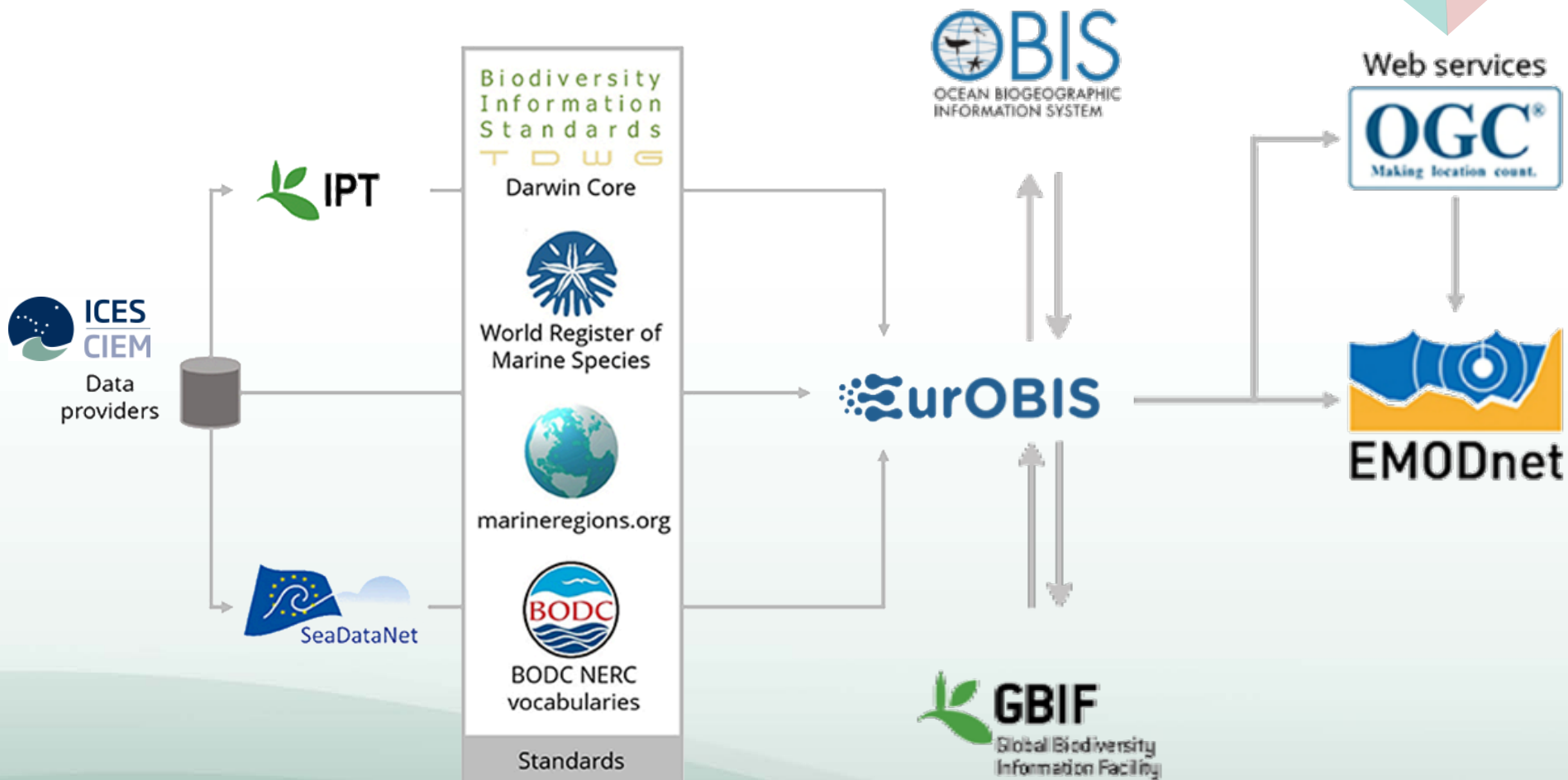


# Integrating and standardizing European biological data



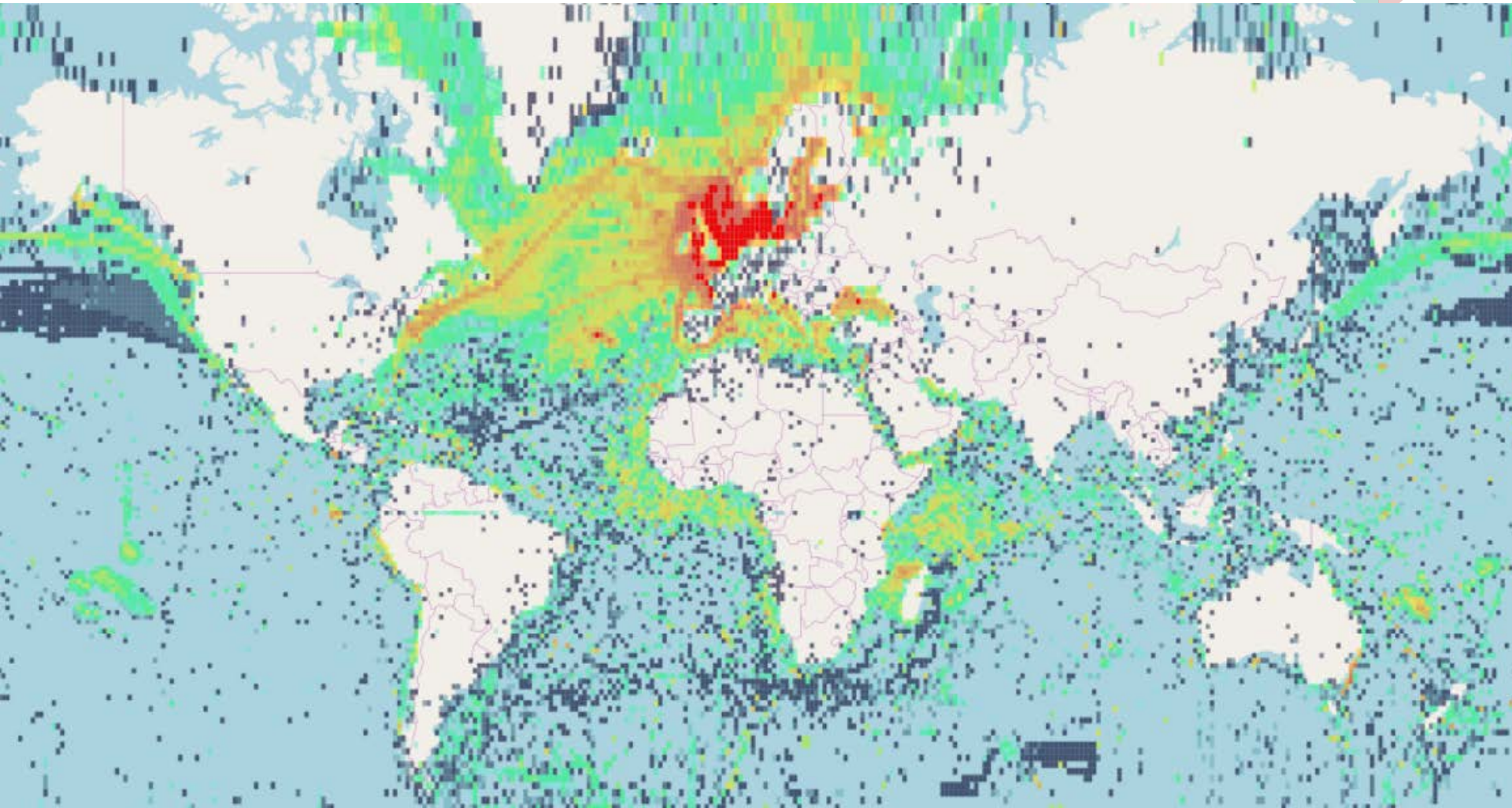
- Standardisation:
  - WoRMS - taxonomy
  - MarineRegions - geography
  - BODC/SeaDataNet Vocabulary
- BioCheck Tool
  - RShiny
  - SeaDataCloud

# Integrating and standardizing European biological data



# Integrating and standardizing European biological data

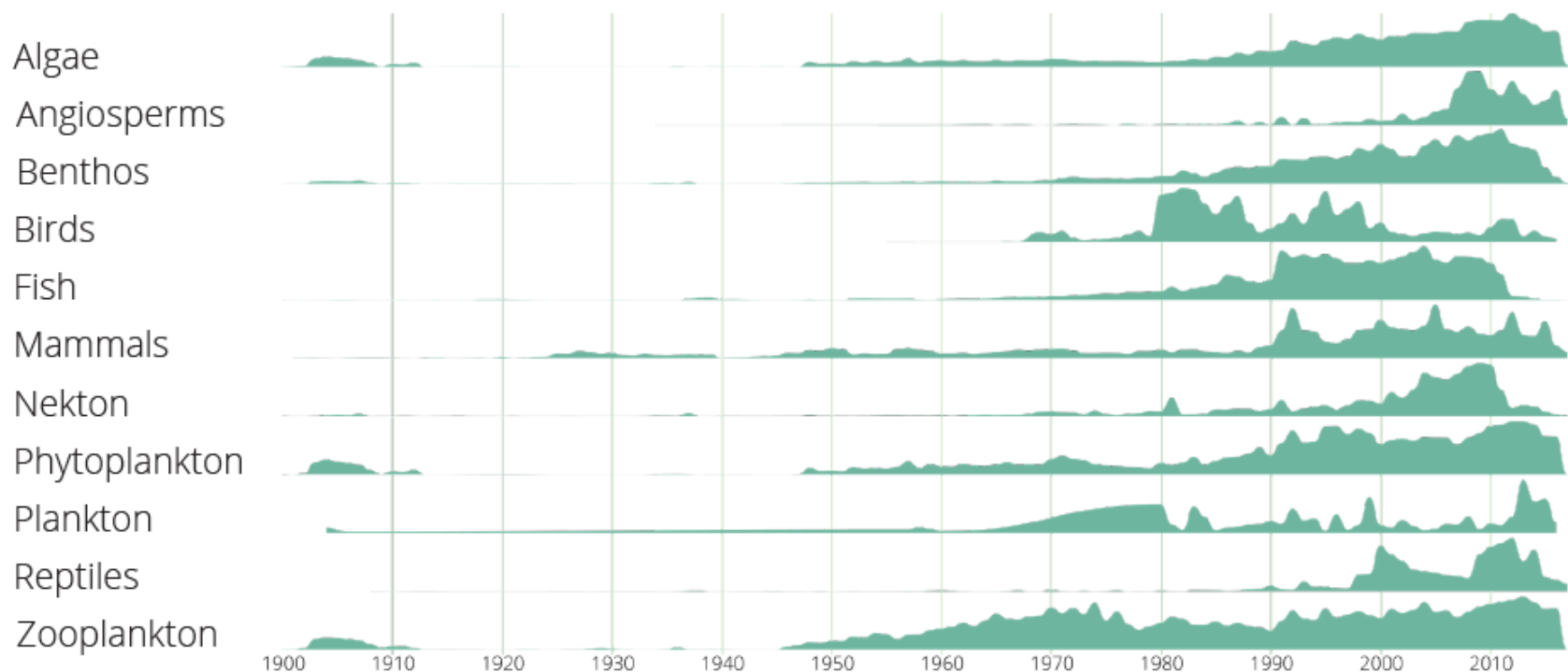
> 25 000 000 records



# Integrating and standardizing European biological data

## Temporal coverage per functional group

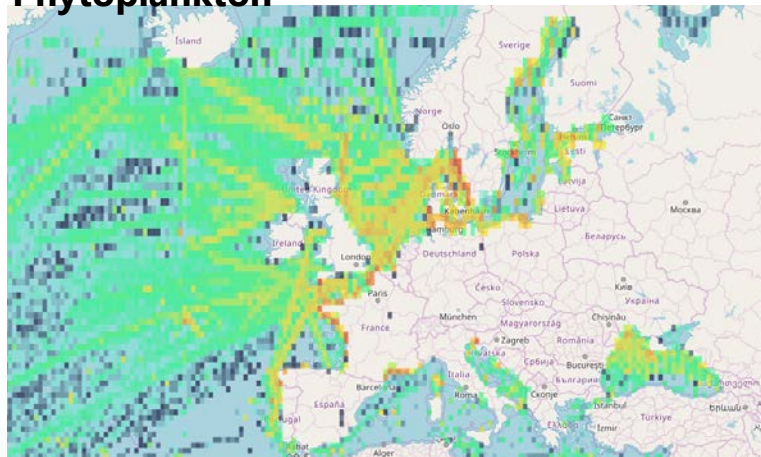
Time series of the relative number of records per functional group from 1900 to present. EMODnet offers historical records of species occurrences that date back to 1526.



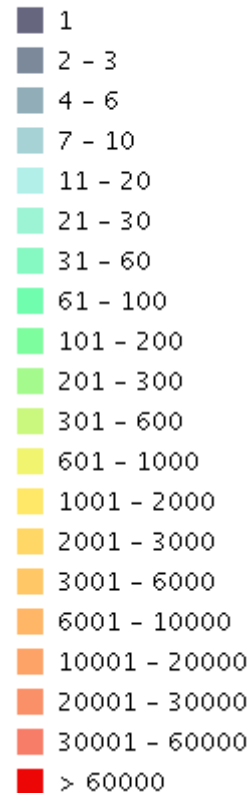


# Integrating and standardizing European biological data

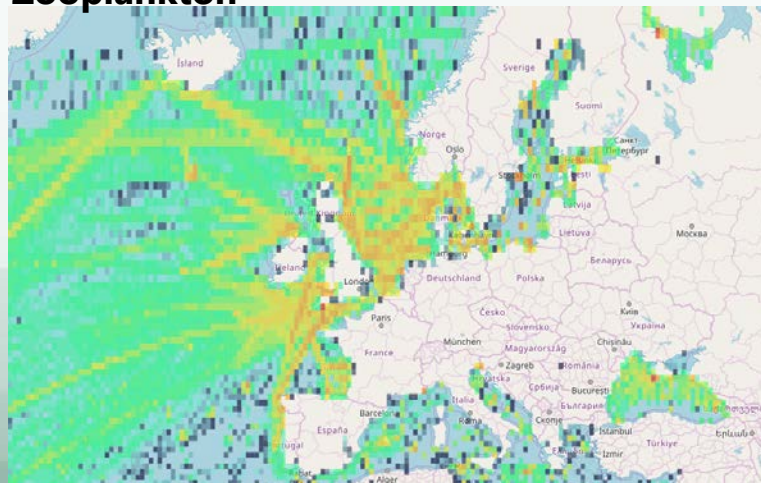
## Phytoplankton



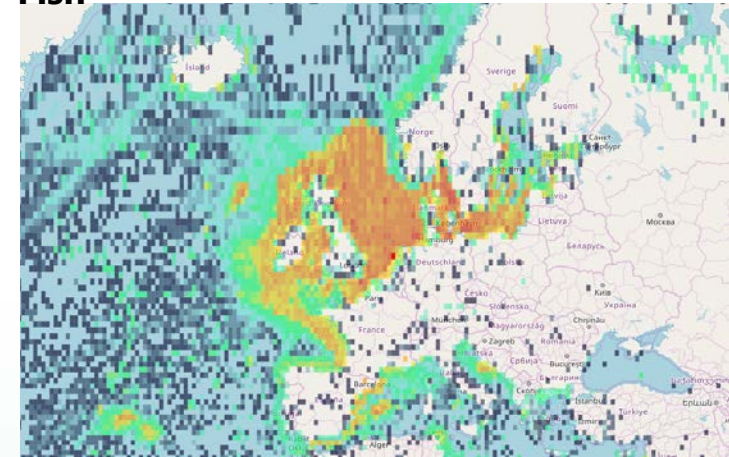
Legend:  
eurobis\_grid\_30m  
records/grid



## Zooplankton



## Fish

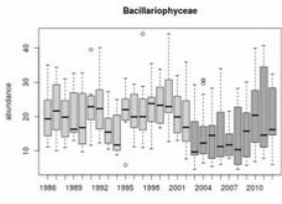


## Marine mammals





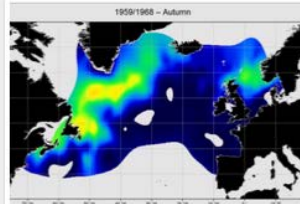
# From data into products



Phytoplankton community analysis in the Northern Adriatic

Source: EMODnet Biology, OGS & Deltares

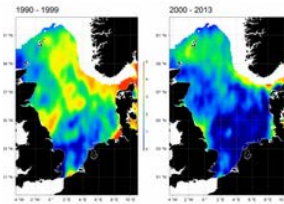
Visualize



Gridded abundance maps of most common Atlantic Copepod species

Source: EMODnet Biology, VLIZ, Ulg And MBA

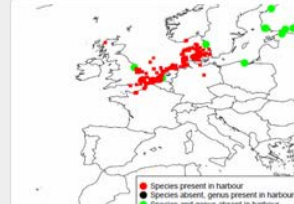
Visualize



Trends in abundance of fish species in the North Sea

Source: EMODnet Biology, ICES

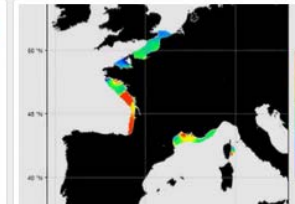
Visualize



Invasive marine species occurring in European marine harbours

Source: EMODnet Biology

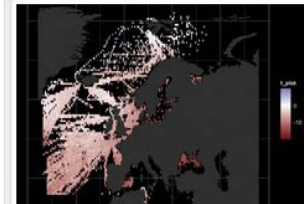
Visualize



Temporal trend of algal toxicity along the French coast

Source: EMODnet Biology, Ifremer

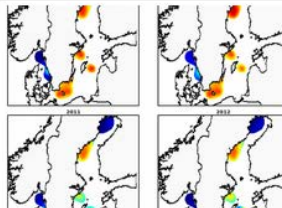
Visualize



Thermal affinities for European marine species groups

Source: EMODnet Biology, UK MERP, University Of Sheffield

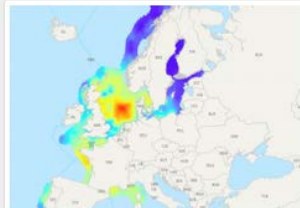
Visualize



Data workflow analyzing trends of Swedish zooplankton species

Source: EMODnet Biology, Deltares

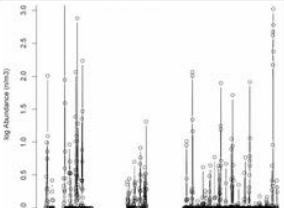
Visualize



Distribution of macrobenthos living modes in European seas

Source: EMODnet Biology

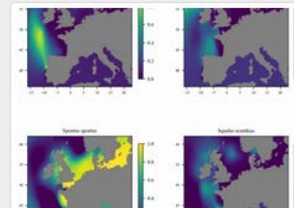
Visualize



Long term zooplankton time series analysis from the West Med Sea

Source: CNRS, Deltares

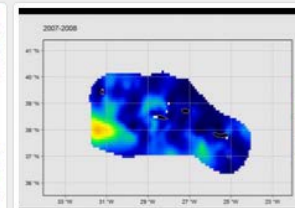
Visualize



Distribution of fish living modes in European seas

Source: Beauchard, Olivier

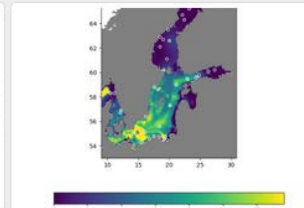
Visualize



Maps of marine birds, mammals and reptiles around the Azores

Source: Claus, Simon

Visualize



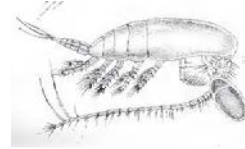
Neural network modelling of Baltic zooplankton abundances

Source: EMODnet Biology, Ulg, Deltares

Visualize

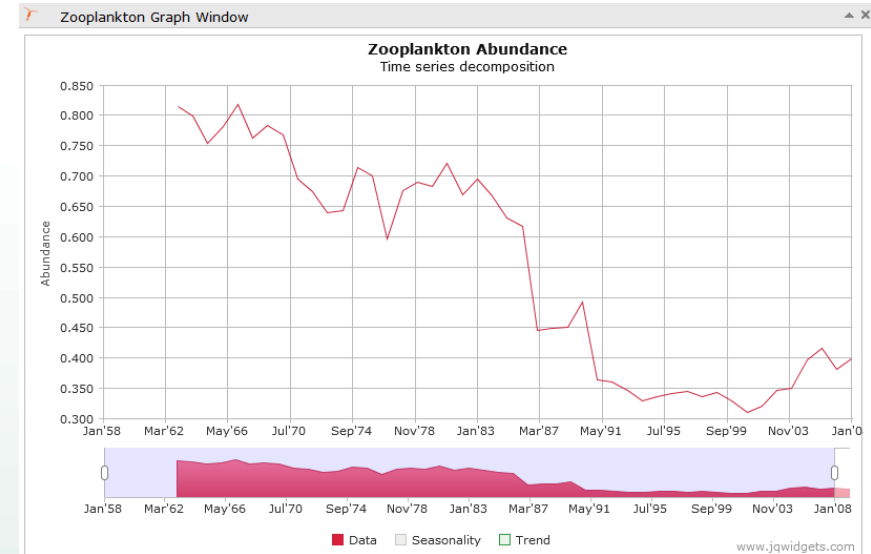
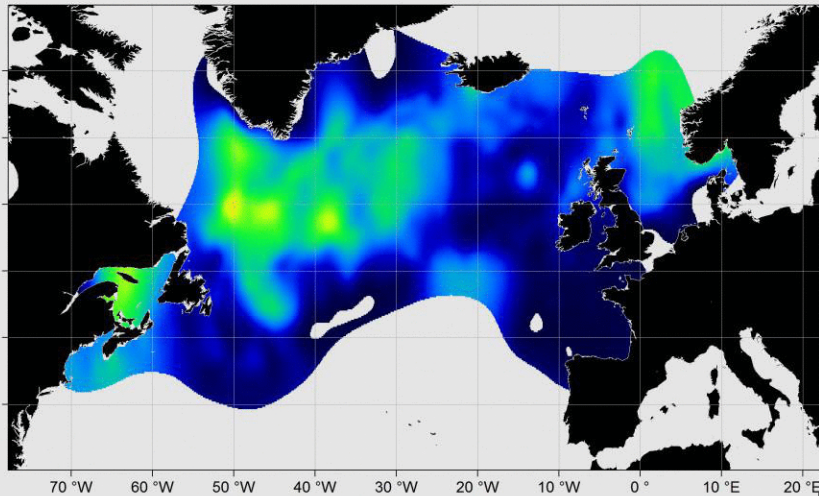


# From data into products



*Calanus finmarchus*

1958/1967 – Summer



Service for ICES Ecosystem Overviews

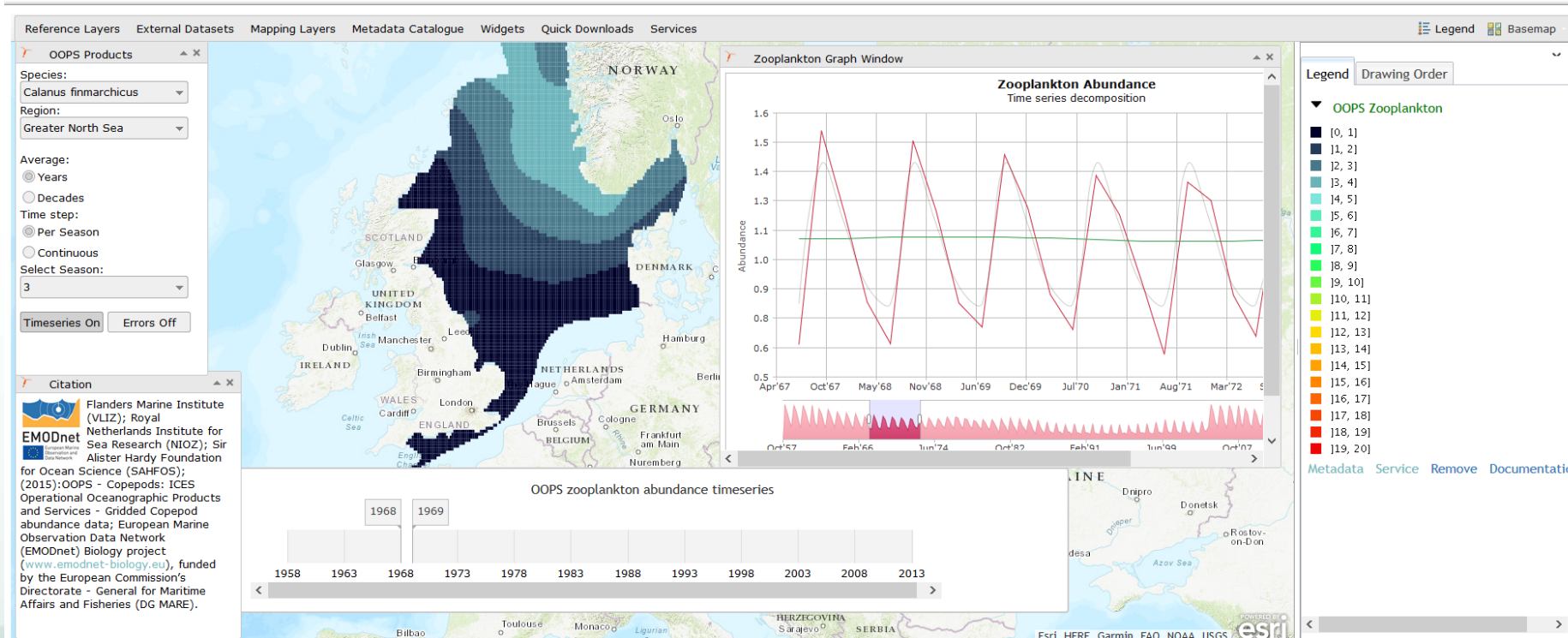


# From data into products



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ICES' Operational Oceanographic Products and Services (OOPS)

<http://gis.ices.dk/sf/index.html?widget=oops-z>

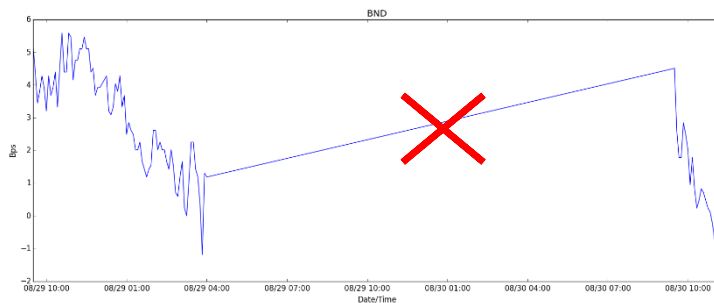
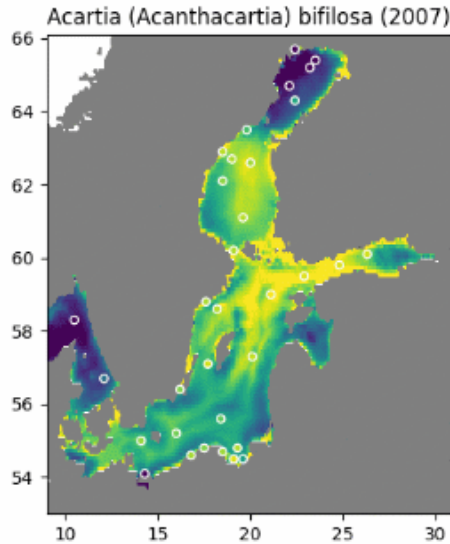
# Open science products in the cloud



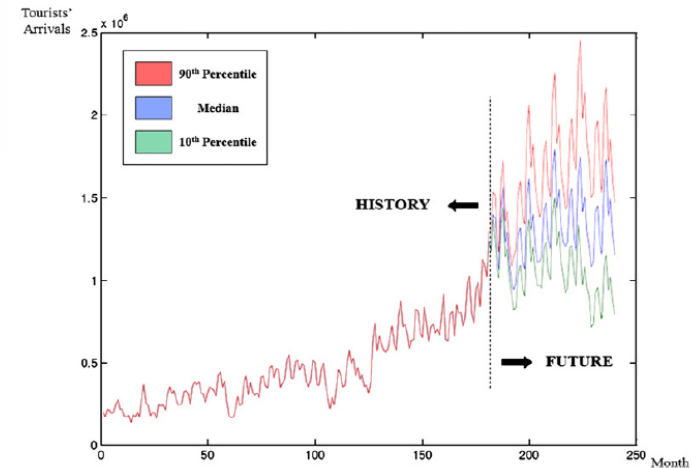
**Blue-Cloud**  
Piloting innovative services for Marine Research & the Blue Economy



**EUROPEAN OPEN  
SCIENCE CLOUD**




- Machine learning techniques  
Barth et al. (2014)
- Scientific validation
  - Data gaps
  - Near future predictions





# Take home messages



- We ingest data from ICES into the  database
- Much more data in the database
- We create open science products that serve ICES advisory processes
- Future products fully open in the EOSC cloud
- To be included in ICES workflows?



Thank you for your attention