Compilation of presentations BICEpS colloquium 2018

(14/11/2018, RBINS, Brussels)

Annex to BICEpS report 2018 that contains the summary, outcome, abstracts and participants list

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List of communications (1)

Institutional presentations

1. BICEpS: presentation of the initiative *(Serge Scory and Hans Polet, ICES Council representatives)*
2. ICES Council in a nutshell and strategic initiatives *(Serge Scory, RBINS, ICES Council representative)*
3. Current trends in advice requests from ICES *(Els Torreele, ACOM representative)*
4. The Science Committee, a guarantee for science for sustainable seas *(Steven Degraer, SCICOM representative)*
5. ICES Data & Information Services *(Ruth Lagring, DIG representative)*

Belgian participation to advisory and scientific expert groups

I. Institutional posters

(2)

6. OD Nature and ICES: taking responsibility and multi-disciplinary involvement *(Kelle Moreau, RBINS)*
7. Fisheries and beyond: ILVO expertise in the ICES network *(Sofie Vandendriessche, ILVO)*
8. *Flanders Marine Institute in ICES networks and expert groups: a two-way collaboration* *(Ann-Katrien Lescrauwaet, VLIZ)*

II. Scientific posters

9. Establishing a vitality assessment protocol for rays within the INTERREG 2-SEAS SUMARiS-project *(Noémi Van Bogaert et.al., ILVO)*
10. SmartDots: A flexible open source software tool for age reading of calcified structures of marine species *(Karen Bekaert, ILVO)*
11. ICES support for development of catch sampling programmes *(Sofie Vandemaele, ILVO)*

III. ACOM Expert Group (3)

12. Introductions to ACOM Expert Groups *(Els Torreele, ACOM representative, ILVO)*
13. From data to quota: How are the Belgian quota determined? *(Bart Vanelslander, Lies Vansteenbrugge, Sofie Nimmegeers, ILVO)*
14. Causes of death of harbour porpoises found in Belgium between 1990 and 2015 *(Thierry Jauniaux et.al., ULg)*

IV. EPDSG - Ecosystem Processes and Dynamics Steering Group

15. Introductions to the work of EPDSG *(Steven Degraer, RBINS, Jan Vanaverbeke, RBINS, Silvana Birchenough, CEFAS)*
16. Benthic biodiversity and ecosystem functioning research at UGent Marbiol: the ICES context *(Carl Van Colen et.al, ILVO)*

V. ASG – Aquaculture Steering Group (4)

17. Introductions to the work of EPDSG *(Steven Degraer, RBINS, Kelle Moreau, RBINS, Michael Rust, NOAA)*
18. *Seascape-mediated patterns and processes of population differentiation in European seabass* *(Filip A. M. Volckaert, KUL, et.al.)*

VI. HAPISG - Human Activities, Pressures and Impacts Steering Group

19. Introductions to the work of HAPISG *(Koen Parmentier, RBINS)*
20. VLIZ contributes to multidisciplinary research on long-term changes in the marine environment *(Ann-Katrien Lescrauwaet, VLIZ)*
21. VLIZ as a knowledge broker for the marine expert. The Story of Marine Litter *(Lisa Devriese, VLIZ)*

(HAPISG continued)

22. The Marine Chemistry WG: A Mix of Challenges and Opportunities, a Source of Operational Guidelines *(Koen Parmentier, RBINS)*
23. The Working Group on Marine Benthal and Renewable Energy Developments *(Jan Vanaverbeke, RBINS)*
24. Keeping Blue Energy Green: How ICES helps us keep track of Marine Renewables *(Bob Rumes, RBINS)*
25. The seafloor ecosystem in an ICES context *(Kris Hostens et.al., ILVO)*

VII. EOSG - Ecosystem Observation Steering Group (6)

26. Introduction to the work of EOSG *(Maarten Soetaert, ILVO, chairman of Electrical Trawling WG under EOSG)*
27. Work done under the Electrical Trawling Working Group *(Maarten Soetaert, ILVO)*
28. Setting up a recreational fisheries survey in Belgium with the help of ICES Working group for Recreational Fisheries Surveys *(Frankwin Van Winsen, ILVO and Thomas Verleye, VLIZ)*

VIII.IEASG - Integrated Ecosystem Assessments Steering Group

29. Introduction to the work of IEASG *(Geneviève Lacroix, RBINS)*
30. How larval traits of six flatfish species impact population connectivity? *(Leo Barbut, RBINS)*

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BICEpS : Reinforcing Belgian ICES people

(1) First BICEpS annual colloquium

"An opportunity to share Belgian contributions to and experiences with ICES as an inspiration for future work"

Presentation of the initiative by Serge Scory

RBINS, Brussels, 14 November 2018

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(2) The International Council for the Exploration of the Sea

The Council

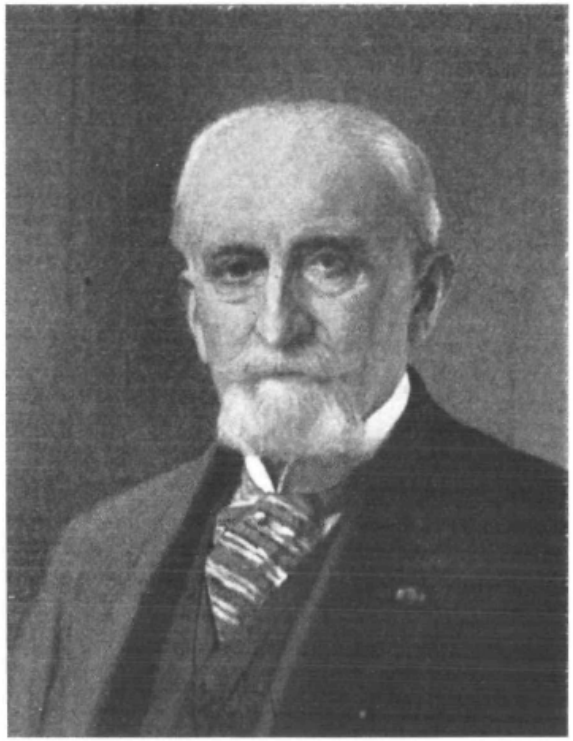
The Strategic initiatives

by Serge Scory

1st BICEpS colloquium, Brussels, 14 November 2018

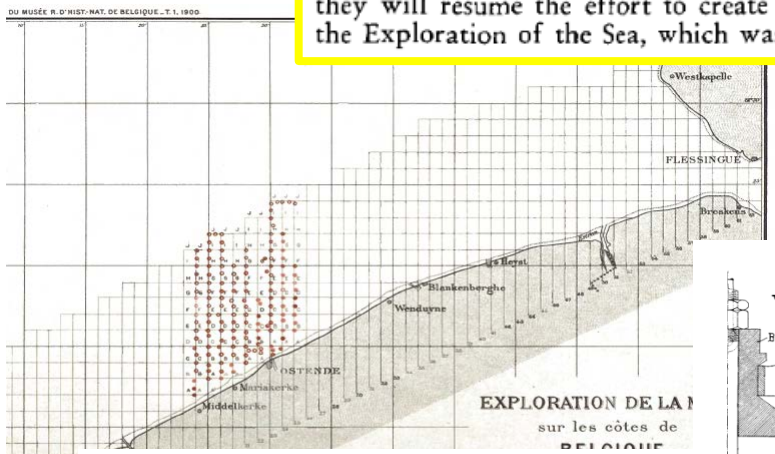
The International Council for the Exploration of the Sea

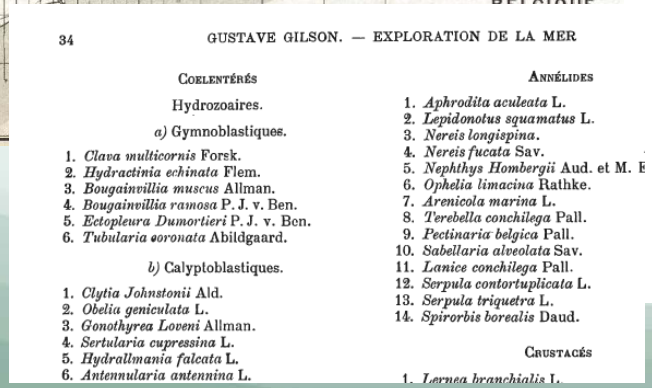
- ICES was established in 1902 by exchange of letters between participating countries
- Belgium joined the year after.
- In 1964, through an agreed Convention, ICES received a legal foundation and full international status. Belgium officially adhered to the Convention by the Law of 18 July 1967.



H.J. Koch, "Gustave Gilson. 1859-1944", *ICES Journal of Marine Science*, Volume 15, Issue 2, 1 April 1948, Pages 132–134

Gilson's charming personality brought him many friends, among the younger as well as the older, biologists of his country: they will resume the effort to create the Belgian Institute for the Exploration of the Sea, which was Gilson's dream.




34 GUSTAVE GILSON. — EXPLORATION DE LA MER

COELENTÉRÉS

Hydrozoaires.

a) Gymnoblastiques.

1. *Clava multicornis* Forsk.
2. *Hydractinia echinata* Flem.
3. *Bougainvillia muscus* Allman.
4. *Bougainvillia ramosa* P. J. v. Ben.
5. *Ectopleura Dumortieri* P. J. v. Ben.
6. *Tubularia coronata* Abildgaard.

b) Calyptoblastiques.

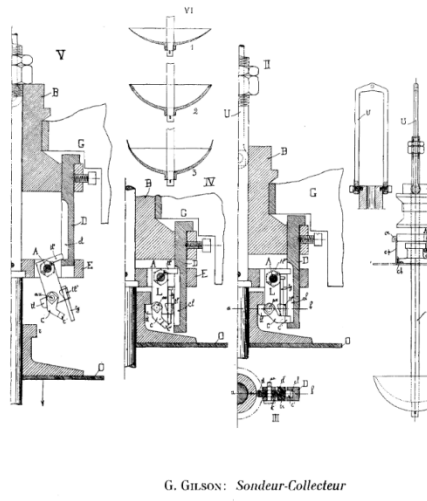
1. *Clytia Johnstonii* Ald.
2. *Obelia geniculata* L.
3. *Gonothyrea Loveni* Allman.
4. *Sertularia cupressina* L.
5. *Hydrallmania falcata* L.
6. *Antennularia antennina* L.

ANNÉLIDES

1. *Aphrodita aculeata* L.
2. *Lepidonotus squamatus* L.
3. *Nereis longispina*.
4. *Nereis fucata* Sav.
5. *Nephthys Hombergii* Aud. et M. E
6. *Ophelia limacina* Rathke.
7. *Arenicola marina* L.
8. *Terebella conchilega* Pall.
9. *Pectinaria belgica* Pall.
10. *Sabellaria alveolata* Sav.
11. *Lanice conchilega* Pall.
12. *Serpula contortuplicata* L.
13. *Serpula triquetra* L.
14. *Spirorbis borealis* Daud.

CRUSTACÉS

1. *Lernea branchialis* L.


G. GILSON: *Sondeur-Collecteur*

Gustave Gilson.
1859—1944.

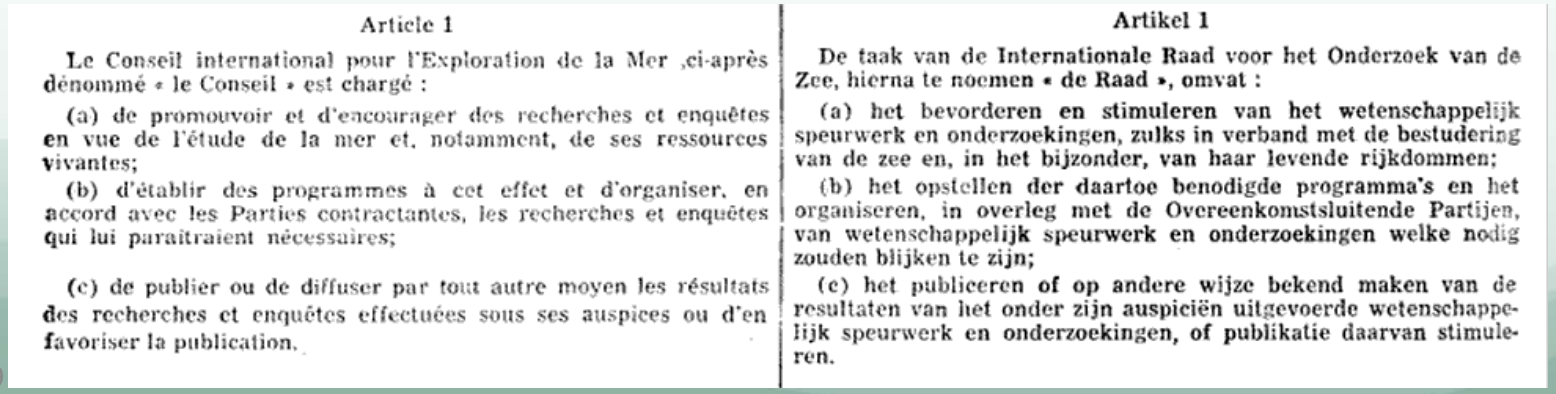
THE part which Belgium has played in the activities of the International Council for the Exploration of the Sea has, from the very beginning, largely depended on Gilson's personal influence.

- Three major axes:
  - Hydrography, physical oceanography
  - Ichthyology
  - Fisheries

ICES Journal of Marine Science, Volume s1

- Issue 1, 1 July 1903: "*How to distinguish between mature and immature plaice throughout the year*", C.G.Joh. Petersen
- Issue 2, July 1903: *"On the standard-water used in the hydrographical research until July 1903*", M. Knudsen
- Issue 6, November 1903: "*On a new form of trawl net, designed to fish in midwater as well as on the ground*", Harry M. Kyle

- The overall duties of ICES are:
  - to promote and encourage research and investigations for the study of the sea particularly those related to the living resources thereof;
  - to draw up programmes required for this purpose and to organise, in agreement with the Contracting Parties, such research and investigation as may appear necessary;
  - to publish or otherwise disseminate the results of research and investigations carried out under its auspices or to encourage the publication thereof.



Article 1

Le Conseil international pour l'Exploration de la Mer ,ci-après dénommé « le Conseil » est chargé :

(a) de promouvoir et d'encourager des recherches et enquêtes en vue de l'étude de la mer et, notamment, de ses ressources vivantes;

(b) d'établir des programmes à cet effet et d'organiser, en accord avec les Parties contractantes, les recherches et enquêtes qui lui paraîtraient nécessaires;

(c) de publier ou de diffuser par tout autre moyen les résultats des recherches et enquêtes effectuées sous ses auspices ou d'en favoriser la publication.

Artikel 1

De taak van de Internationale Raad voor het Onderzoek van de Zee, hierna te noemen « de Raad », omvat :

(a) het bevorderen en stimuleren van het wetenschappelijk speurwerk en onderzoekingen, zulks in verband met de bestudering van de zee en, in het bijzonder, van haar levende rijkdommen;

(b) het opstellen der daartoe benodigde programma's en het organiseren, in overleg met de Overeenkomstsluitende Partijen, van wetenschappelijk speurwerk en onderzoekingen welke nodig zouden blijken te zijn;

(c) het publiceren of op andere wijze bekend maken van de resultaten van het onder zijn auspiciën uitgevoerde wetenschappelijk speurwerk en onderzoekingen, of publikatie daarvan stimuleren.

- ICES has currently 20 member countries, each of which mandating two delegates to the Council.
- The Council is the principal decision and policy-making body of ICES. It meets physically once per year. The Bureau acts as the Executive Committee of the Council, and the Finance Committee is responsible for overseeing the organization's financial matters.
- The work of the Council is carried out through the Advisory Committee (ACOM), Science Committee (SCICOM), Data and Information Group (DIG), and the Secretariat.

- Over the last 40 years (at least), Belgium has always been represented by one fishery scientist and one physical oceanographer (+ N/F balance, + Regional/Federal balance…)
- As a result of the re-organization of the competences concerning agriculture and fisheries, the Federal level pays the contribution to the organization (*Samenwerkingsakkoord/Accord de coopération*, 19/06/2003)

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"Science for sustainable seas"

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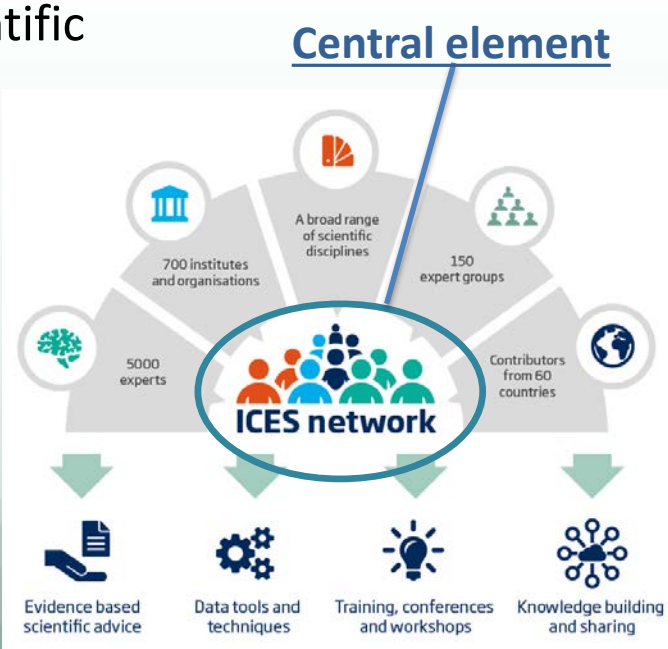
ICES is committed to providing sound and leading science to underpin the best advice and solutions for the sustainable use of our oceans.

- Coordination, leadership and facilitation of science are central to realizing the ICES vision: to be a world leading scientific organization concerning marine ecosystems and to provide the knowledge needed to secure sustainable use of the seas.
- Provision of knowledge, education, and the scientific underpinning to advise on the sustainable management of human activities affecting, and affected by, marine ecosystems.
- Science at ICES is conducted by around 1500 scientists who meet in more than 150 Expert Groups. These scientists come from over 350 institutions.



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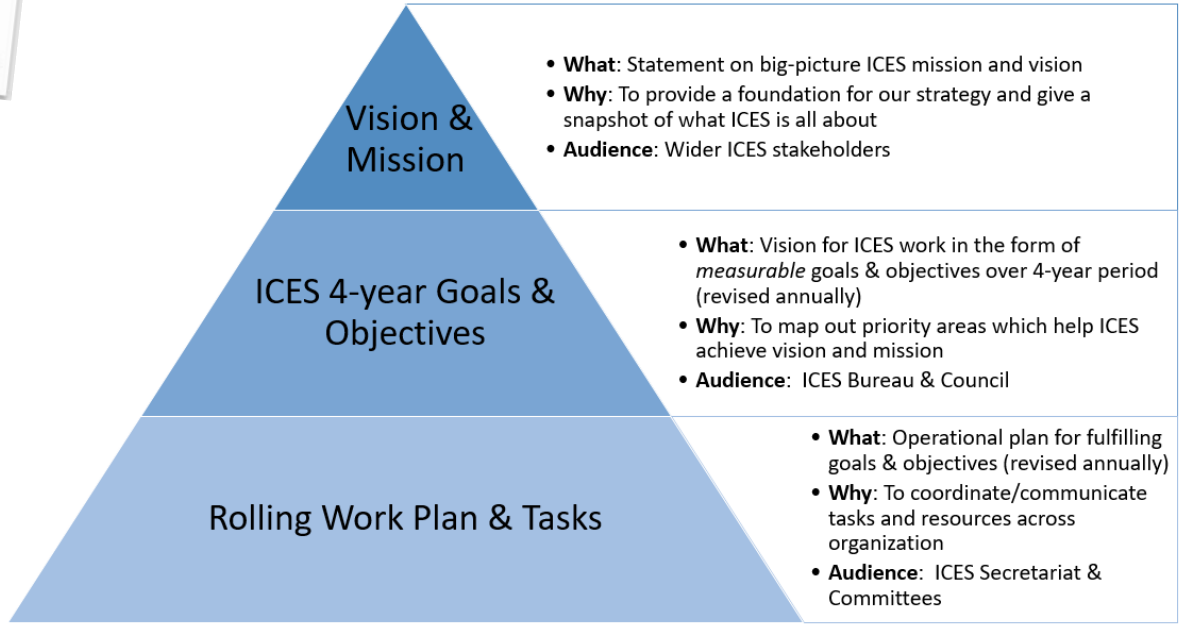
Strategic plan

Current

2019 onwards



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Strategic plan

Vision

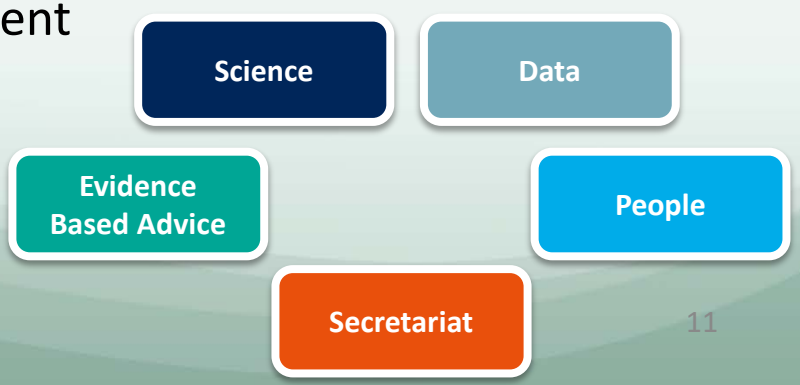
- *To be a world-leading marine science organization, effectively meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.*

Mission

- *To advance and share scientific understanding of marine ecosystems and the services they provide, and to employ this knowledge to generate state-of-the-art advice on meeting conservation, management and sustainability goals.*

Rolling plan: Provides ICES with an opportunity to be flexible and responsive to the dynamic national and global environment

Five components



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SCIENCE PRIORITIES

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Understanding ecosystems: 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 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

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Want more?

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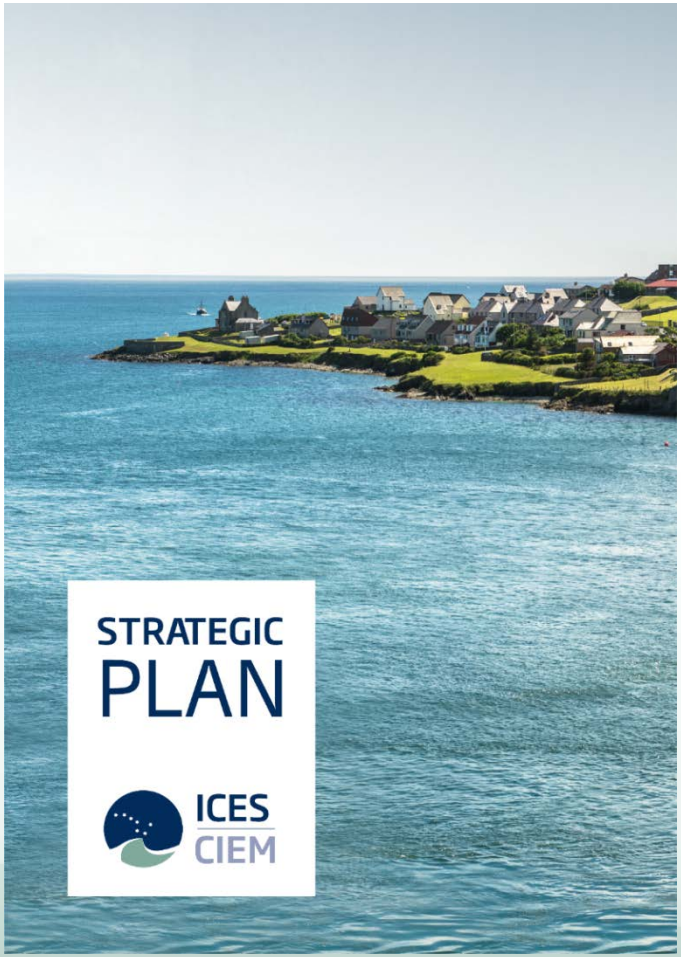

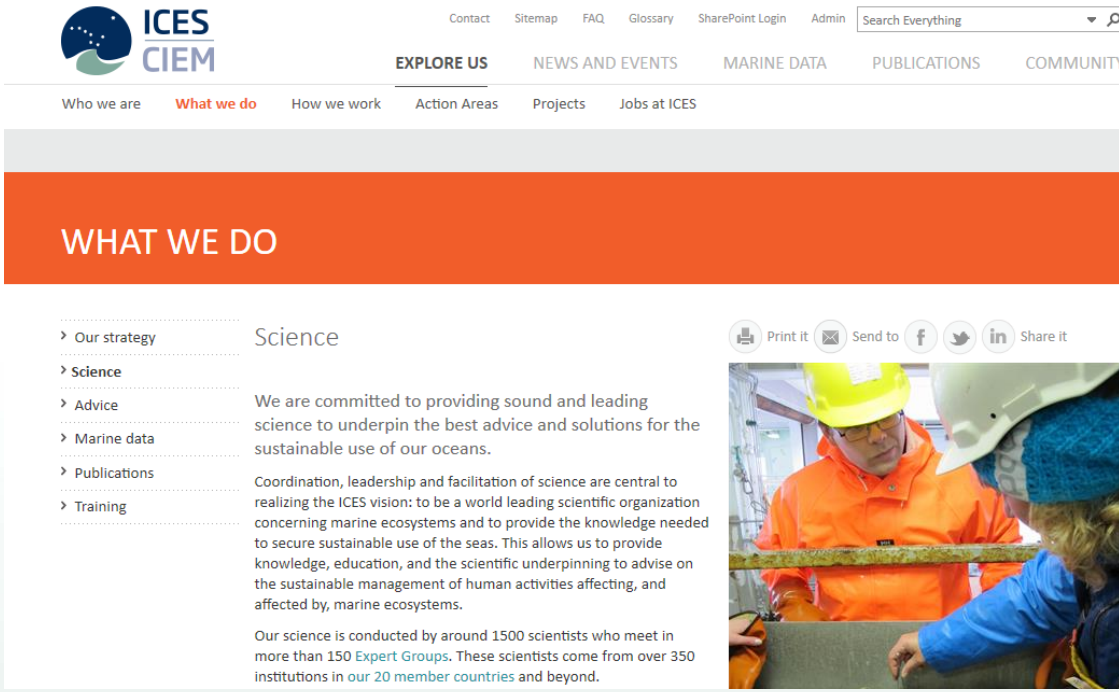

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Current trends in advice requests from ICES

By Els Torreele

1st BICEpS colloquium, Brussels, 14 November 2018

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General structure

Helsinki Commission
Baltic Marine Environment Protection Commission

NASCO

NEAFC

OSPAR COMMISSION
Protecting and conserving the North-East Atlantic and its resources

ICES Member States

ICES advice

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Role ACOM

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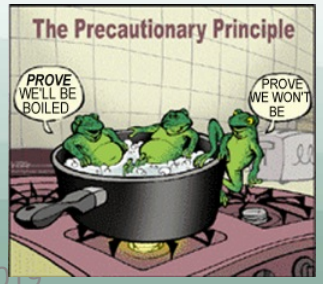
Quality, Transparancy & legitimacy

Translates ICES science into advice

Precautionary approach & ecosystem approach



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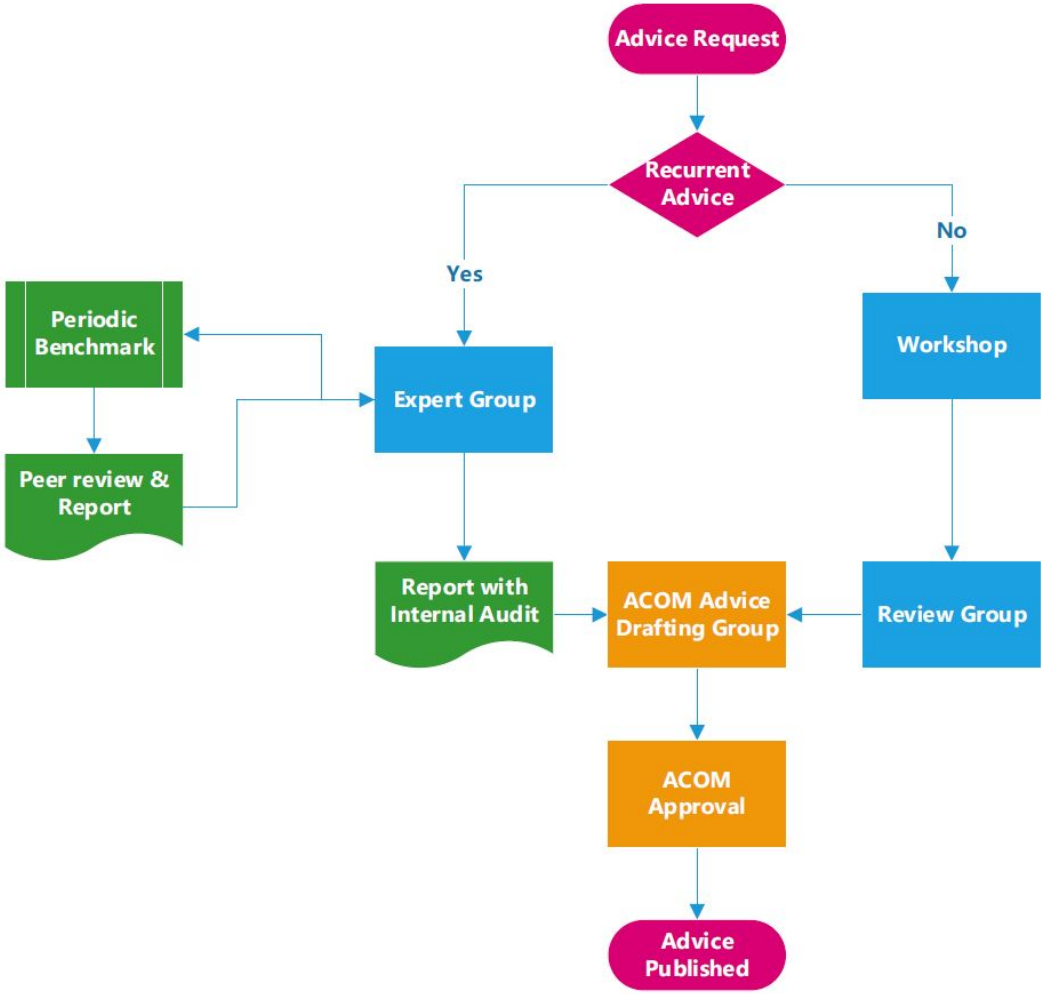
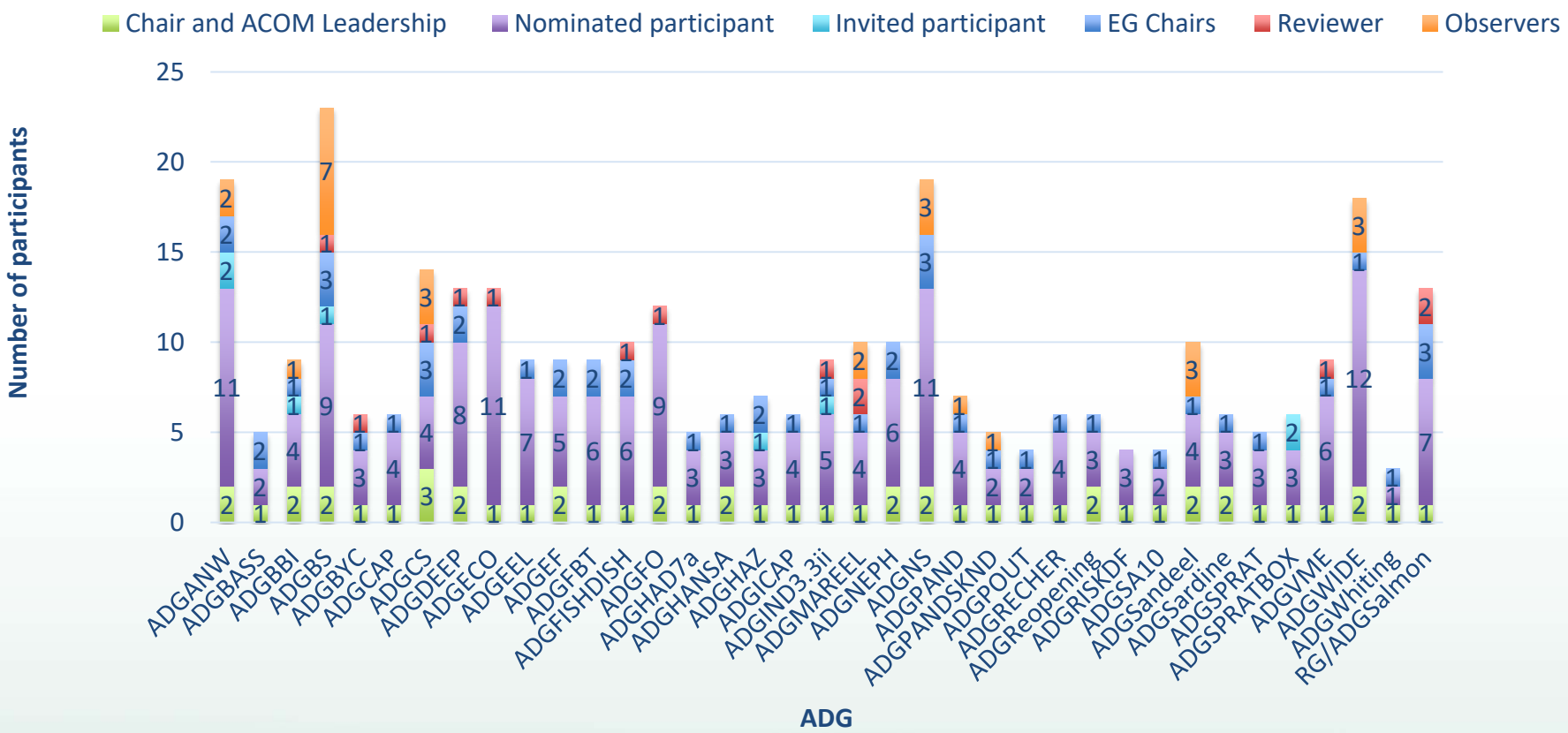
Flow of the Advice



Advice in 2017 - Some numbers…

Advice type/Year	2014	2015	2016	2017
Fishing opportunity	252	225	222	207
Special requests & Other advice	19	14	29	39 + 7
Technical Services	9	7	4	2

ADG partcipation 2017



Especially for non-fisheries ADGs there have been a number of cases, where national nominated members withdrew a few days before the start of the ADG

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ACOM members reactions

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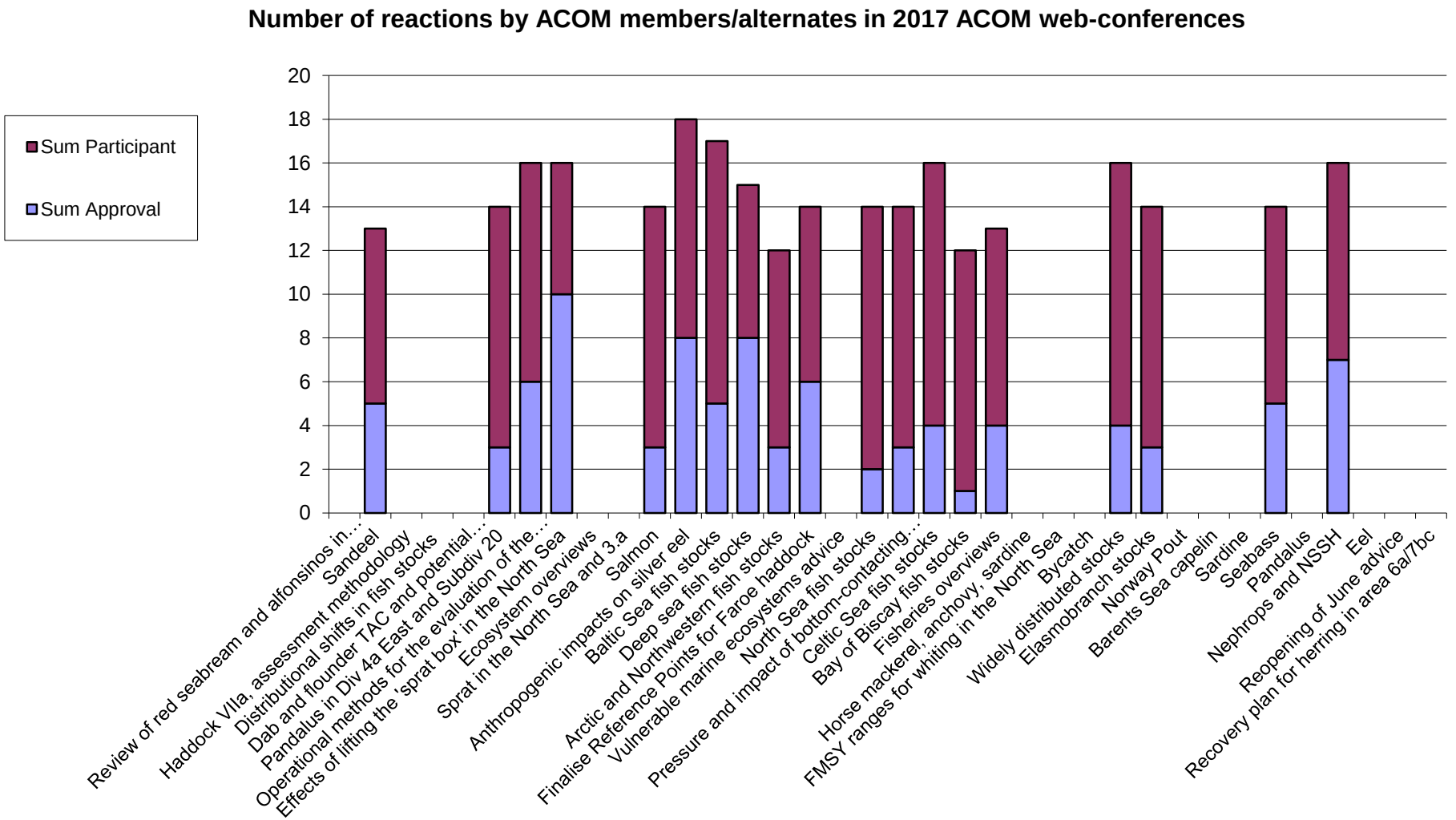

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Changes in SCICOM-ACOM

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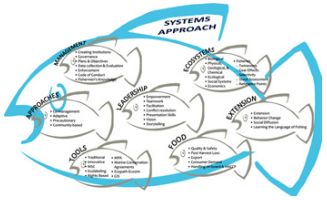
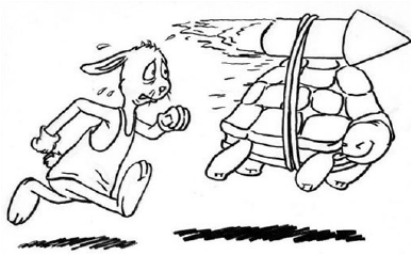
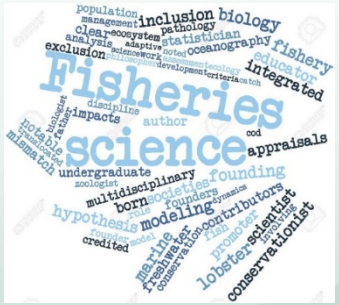




To bring all EGs under the ICES umbrella SG structure will be a necessary contribution to address the issues in relation to providing advice in an increasingly complex arena.



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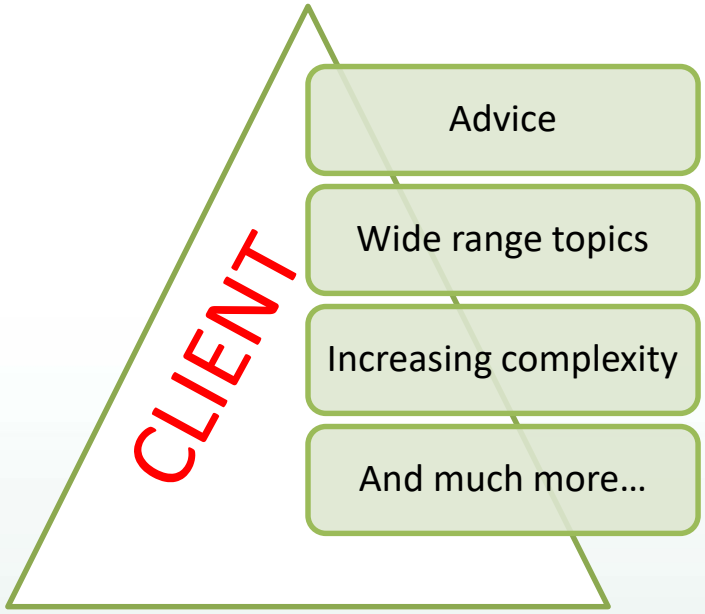
ONE ICES umbrella



Science => full expertise ICES

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Current situation

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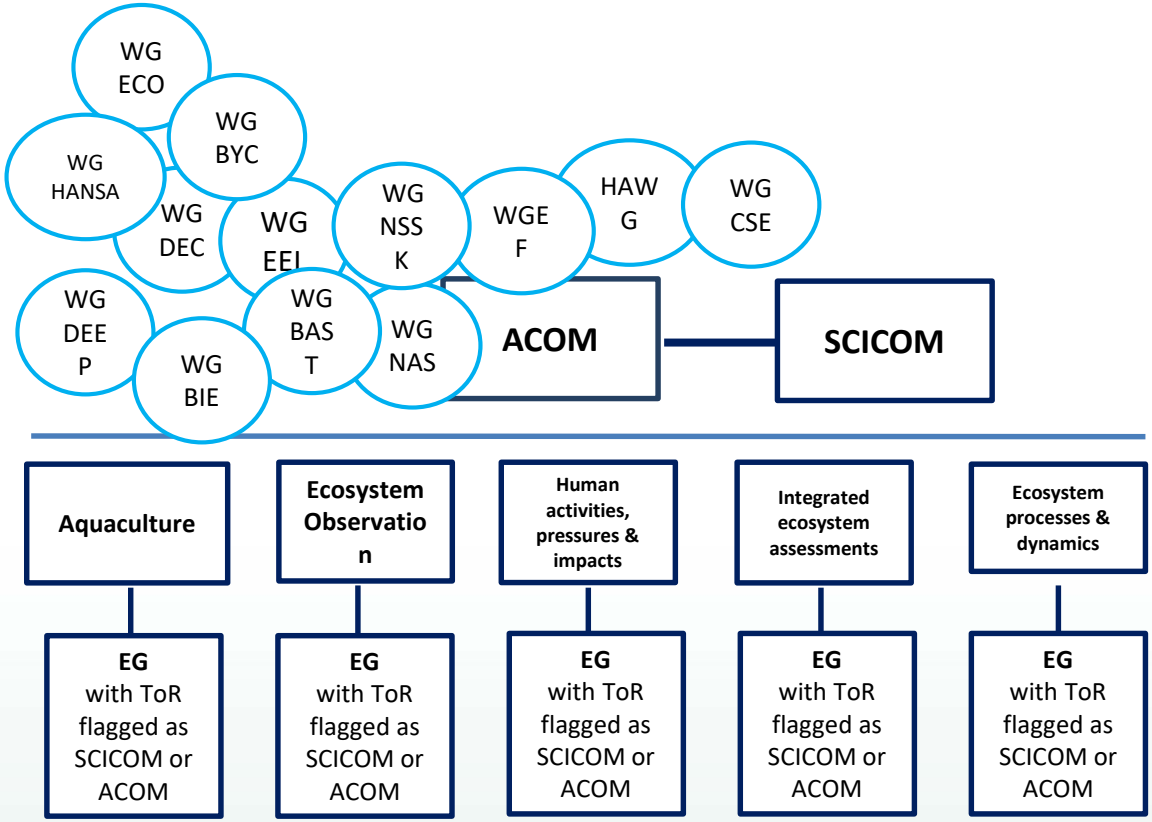

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Current situation weaknesses

The One & Only

Not full spectrum covered

Signal (Fisheries) management advice less priority?

Problematic developing best possible advice

Heavy workload in EGs

ACOM chair = ‘super – coordinator’

Support from science needed

Science not aware of need

Longer term needs…..

Future: advice lagging behind?

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Current situation – weaknesses

Fisheries not in SG structure

WK = immediate need

Disconnect from SCICOM

No show of fisheries in science prioritisations

Research- oriented groups not always keen on advisory tasks

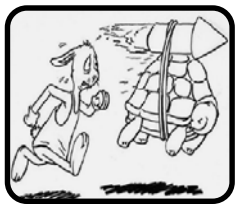
Funding rather to science groups

No option to have new advisory EGs

Capacity & funding

Missing link between science & advice

Full potential support existing Egs not used



Current 5 SGs: benefit from cross-fertilization & other EG Fish & fisheries: running behind novel methods & approaches

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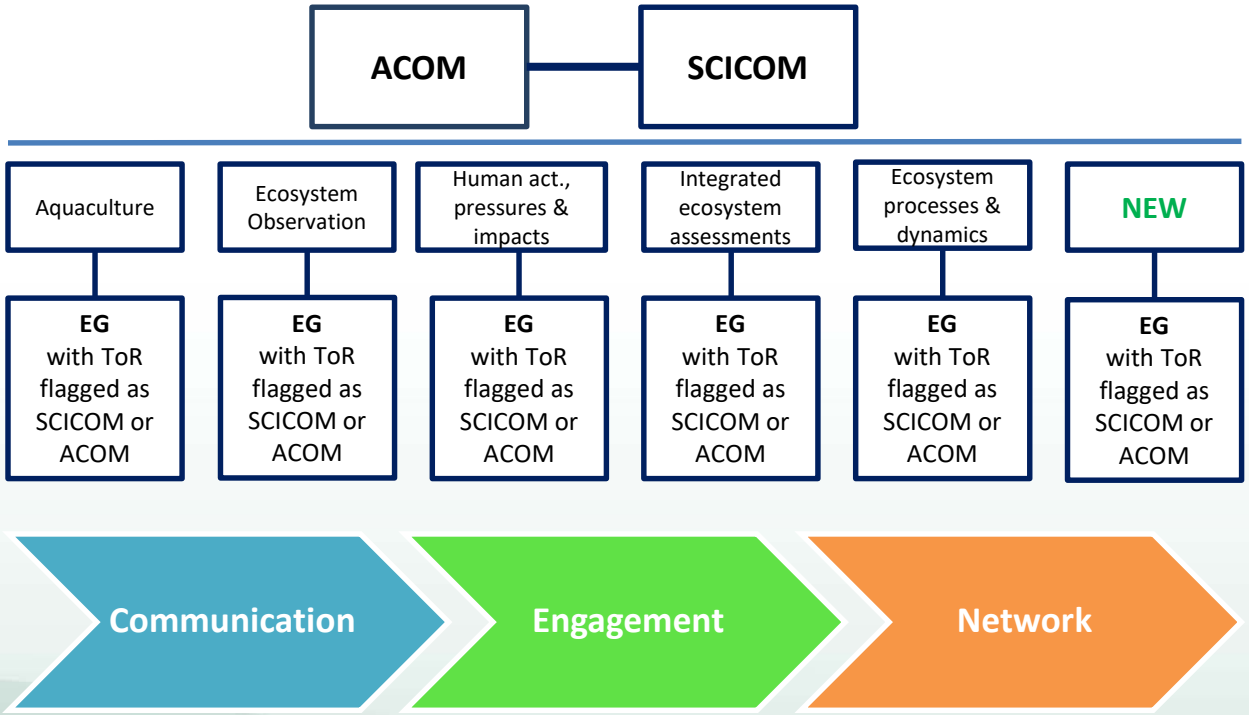
New Structure
=> all EG's one structure



Diversity in Advice

4 May	Advice on North Atlantic salmon	NASCO
29 May	Advice on management strategy evaluation for Norway Pout	EU and Norway
30 May	Advice on ecosystem effects of the pulse trawl	The Netherlands
31 May	Advice on Baltic Sea fish stocks	EU
31 May	Advice on wild salmon rivers	EU
tbc	Advice on re-assessment of a rebuilding plan for herring in area 6a and 7bc	EU
7 June	Advice on deep-water fish stocks	EU, NEAFC
13 June	Advice on Arctic and North-Western fish stocks	EU, NEAFC
13 June	Advice on Icelandic deep-water fish stocks	NEAFC
28 June	Advice on vulnerable Marine Habitats	EU, NEAFC
28 June	Advice on bottom fisheries closures areas	EU
29 June	Advice on Bay of Biscay, Celtic Sea, and North Sea fish stocks	EU and Norway
2 July	Advice on revision of the contribution of TACs to fisheries management and stock conservation for deep-sea stocks	EU
12 July	Advice on MSFD biodiversity of species D1 aggregation	EU

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Questions?

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Thank you

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The Science Committee, a guarantee for science for sustainable seas

By Steven Degraer

Presented by Jan Vanaverbeke

BICEpS colloquium, Brussels, 14 November 2018

ICES and its Scientific Committee

- ICES is an intergovernmental marine science organization,
  - Mission: to advance scientific understanding of marine ecosystems and provide knowledge for the sustainable management of our seas.

- Five ICES work areas
  - Science, advice, data & information, training and communication

- Scientific Committee (SCICOM)
  - Overseeing all aspects of ICES scientific, training and data work

Who is SCICOM?

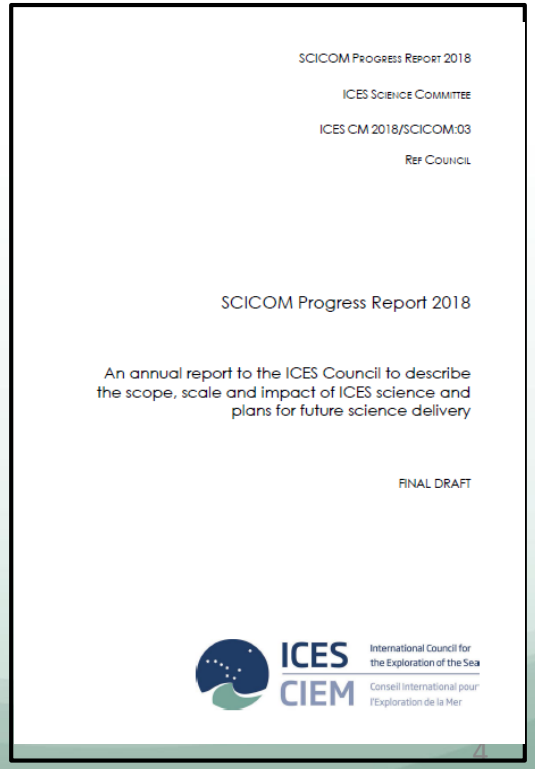
- Composition
  - 20 national delegates to SCICOM
    - Belgium: Steven Degraer, at your service
  - Five Steering Group chairs
  - Three Operational Group chairs
  - Three Strategic Initiative chairs
  - Secretariat support

- Organisation of work
  - Two physical meetings per year
  - At least one teleconference per year

SCICOM and its work

- A selection of tasks
  - Development and implementation of ICES science plan
  - Overseeing Steering Group, Operational Group and Strategic Initiative work
  - Publication of ICES Viewpoints
  - Organisation Annual Science Conference
  - Supporting symposia
  - Managing ICES publications

- Insight into SCICOM's work
  - Yearly progress report (freely downloadable))


SCICOM Progress Report 2018

ICES Science Committee

ICES CM 2018/SCICOM:03

Ref Council

SCICOM Progress Report 2018

An annual report to the ICES Council to describe the scope, scale and impact of ICES science and plans for future science delivery

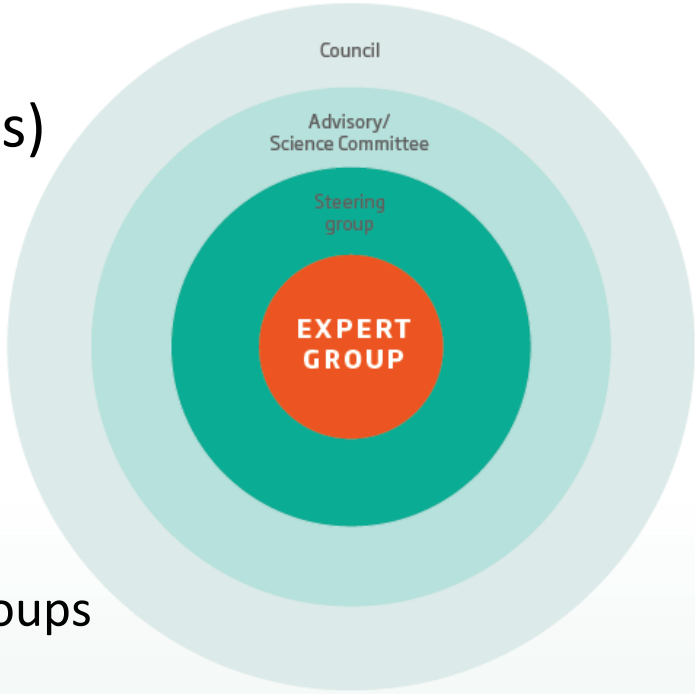
FINAL DRAFT

ICES International Council for the Exploration of the Sea
CIEM Conseil International pour l'Exploration de la Mer

Two *capita selecta…*

- SCICOM, its Steering and Expert Groups
- Towards a new ICES Science Plan

…its Steering and Expert Groups



- ICES = a network of Expert Groups (EGs)
  - Accomplishing most ICES work.
  - SCICOM establishes, dissolves and guides EGs under its wings.

- SCICOM Steering Groups
  - Facilitating interactions with its Expert Groups
  - Guiding and supporting EGs (work plans, interactions with other EGs, ICES priorities and advisory requests).

- Five SCICOM Steering Groups
  - Aquaculture (ASG), Ecosystem Observation (EOSG), Ecosystem Processes and Dynamics (EPDSG), Human Activities, Pressures and Impacts (HAPISG), Integrated Ecosystem Assessments (IEASG)

Towards a new Science Plan

- Ambition
  - To generate ecosystem and sustainability science for the 2020s and beyond with a high and beneficial impact on society
- Ongoing work
  - Setting scientific priorities: science plan
  - Outlining a pathway to achieve them: implementation plan
- Intended outcomes
  - Marine science outputs
  - Engaged and productive scientists
  - Increased visibility of, and access to, ICES science, data and advice
  - Stronger links between science and advice
  - A secure position as a world-class marine science organisation

A preview

1. Ecosystem science

   Understanding of the structure, function and dynamics of marine ecosystems — to develop and vitalize marine science and underpin its applications

2. 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

3. 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

4. Emerging techniques and technologies

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

A preview

5. Seafood production

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

6. 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

7. Sea and society

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

…all ready to accommodate all (Belgian ;-)) marine ecosystem science from 2019 onwards…

Concluding slide

- Questions, suggestions, comments,... always welcome at steven.degraer@naturalsciences.be (Belgian delegate to SCICOM)

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ILVO
Flanders Research Institute for Agriculture, Fisheries and Food

ICES Data and Information

Data centre and Data Information Group (DIG)

By Ruth Lagring (RBINS)

1st BICEpS colloquium, Brussels, 14 November 2018

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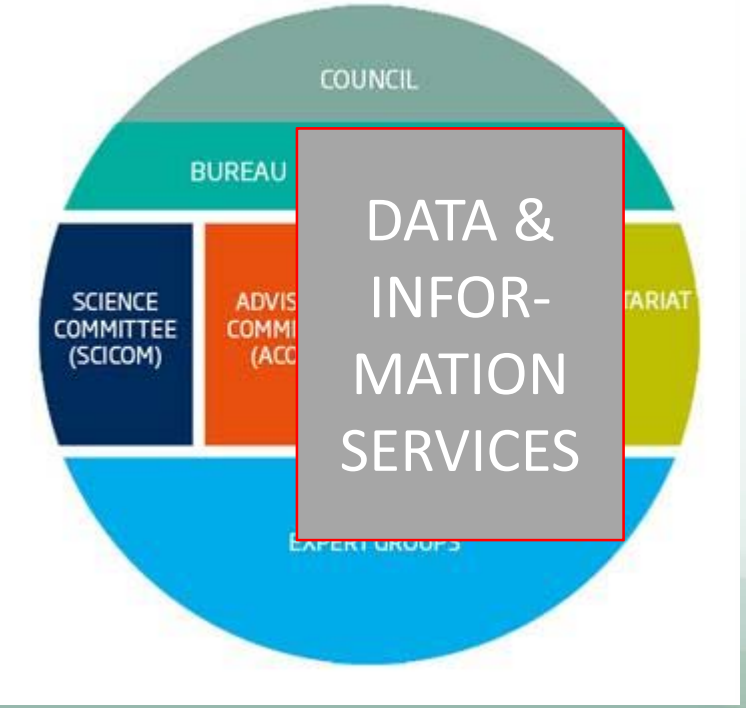
ICES CIEM

- **ICES Data and Information**

ICES Strategy: Linking Science (SCICOM), Advice (ACOM), **Data and Information** and Secretariat.



- Science and management decisions.
- Accumulated **observations** (stored as digital data in databases, repositories)
- Extract **information** and develop **knowledge** on the marine ecosystems.
- Essential to combine these data in different **temporal, spatial, and thematic ways** (ecosystem approach).

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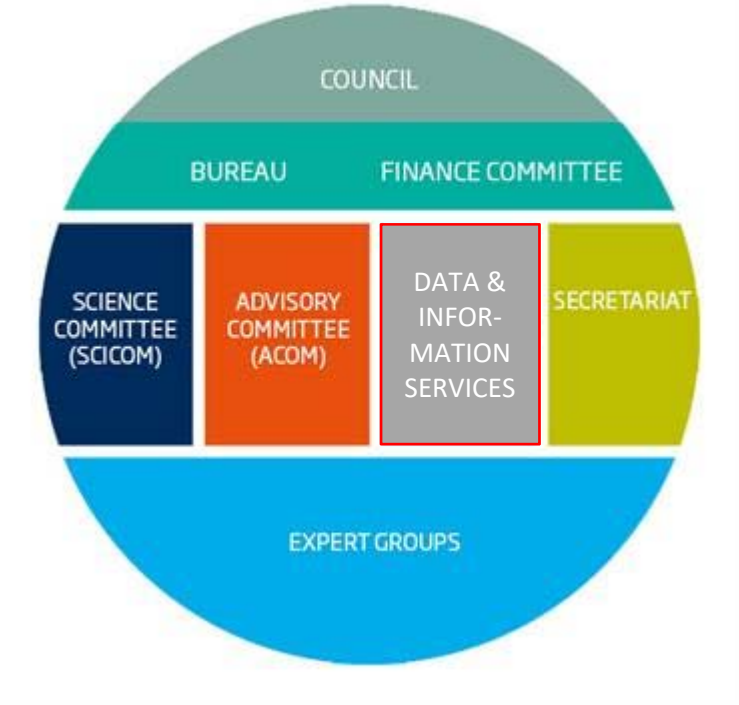
ICES Strategy: Linking Science (SCICOM), Advice (ACOM), **Data and Information** and Secretariat.



ICES requires the **capacity for developing and managing data services** that provide **increasingly complex data and information** in effective and useful ways to the users.

⇩

ICES Data Centre
(head: Neil Holdsworth)

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ICES CIEM

- **ICES Data Centre**

Manages a number of **large marine dataset collections** related to the marine environment.

The **majority** of data – covering the Northeast Atlantic, Baltic Sea, Greenland Sea, and Norwegian Sea – **originate from national institutes** that are part of the ICES network.

The ICES Data Centre provides **marine data services** to ICES member countries, expert groups, world data centres, regional seas conventions (HELCOM and OSPAR), the European Environment Agency (EEA), Eurostat, and various other European projects and biodiversity portals.

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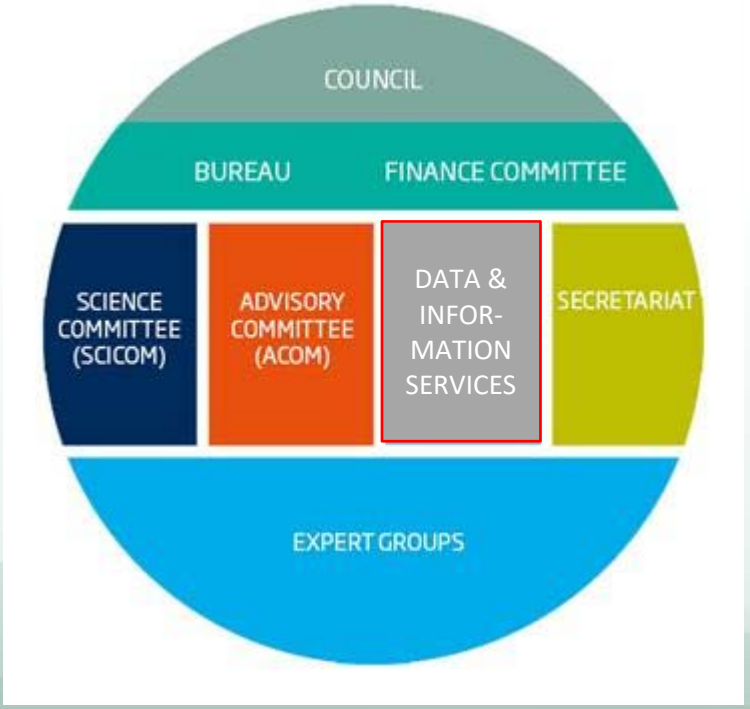
ICES CIEM

- **Data and Information Group (DIG)**



SCICOM Operational group

40 assigned members (i*a.* Ruth Lagring and Wim Allegaert) and 7 chair-invited-members (*ia.* Simon Claus and Peter Pissierssens)

Close interaction with ICES datacentre

Annual plenary meeting takes place in May at the headquarter of ICES.

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ICES CIEM

- **Data and Information Group (DIG): Mission**

To provide ICES with **advice on all aspects of data management** including data policy, data strategy, data quality, technical issues and user-oriented guidance:

(a) Review **priorities** on the ICES Data Centre **action list**;

(b) Provide **guidance and feedback** to the ICES Data Centre;

(c) Advise on **other data regulations** and their impact on ICES Data Strategy, ICES Data Policy;

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ICES CIEM

- **Data and Information Group (DIG): Mission**

To provide ICES with **advice on all aspects of data management** including data policy, data strategy, data quality, technical issues and user-oriented guidance:

d) Propose **ad-hoc groups** (governance, workshops, training, etc.) related to specific topics, and/or datasets, **to facilitate improvements related to data issues** to SCICOM, ACOM, SCICOM SSGs and/or EGs, and review the outcome of those ad-hoc groups.

e) Promote **new technologies and data management infrastructure development** (eg. data citation, training,…)

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MARINE DATA

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EXPLORE US NEWS AND EVENTS MARINE DATA PUBLICATIONS COMMUNITY

- Dataset Collections Data Portals Tools Maps Vocabularies Guidelines and Policy

ICES MARINE DATA

> Upload data
> Download data
> ICES spatial facility
> ICES data policy

STOCK ASSESSMENT GRAPHS
Explore the ICES Stock Assessment Database

BROWSE OUR DATA
The data portal has over 300 million measurements to explore and download

FIND A MAP RESOURCE
Looking for a simple pdf, shape file or a link to a map? Start here

HOW TO USE THE DATA TOOLS
Video guides to accessing, visualizing and downloading data from the ICES Data Portal

LATEST NEWS

06 November 2018
Advancing the uptake of science into advice

02 November 2018
ICES becomes an observer to the United Nations General Assembly

31 October 2018
In memoriam - Georgs Kornilovs

26 October 2018
New research reports in library

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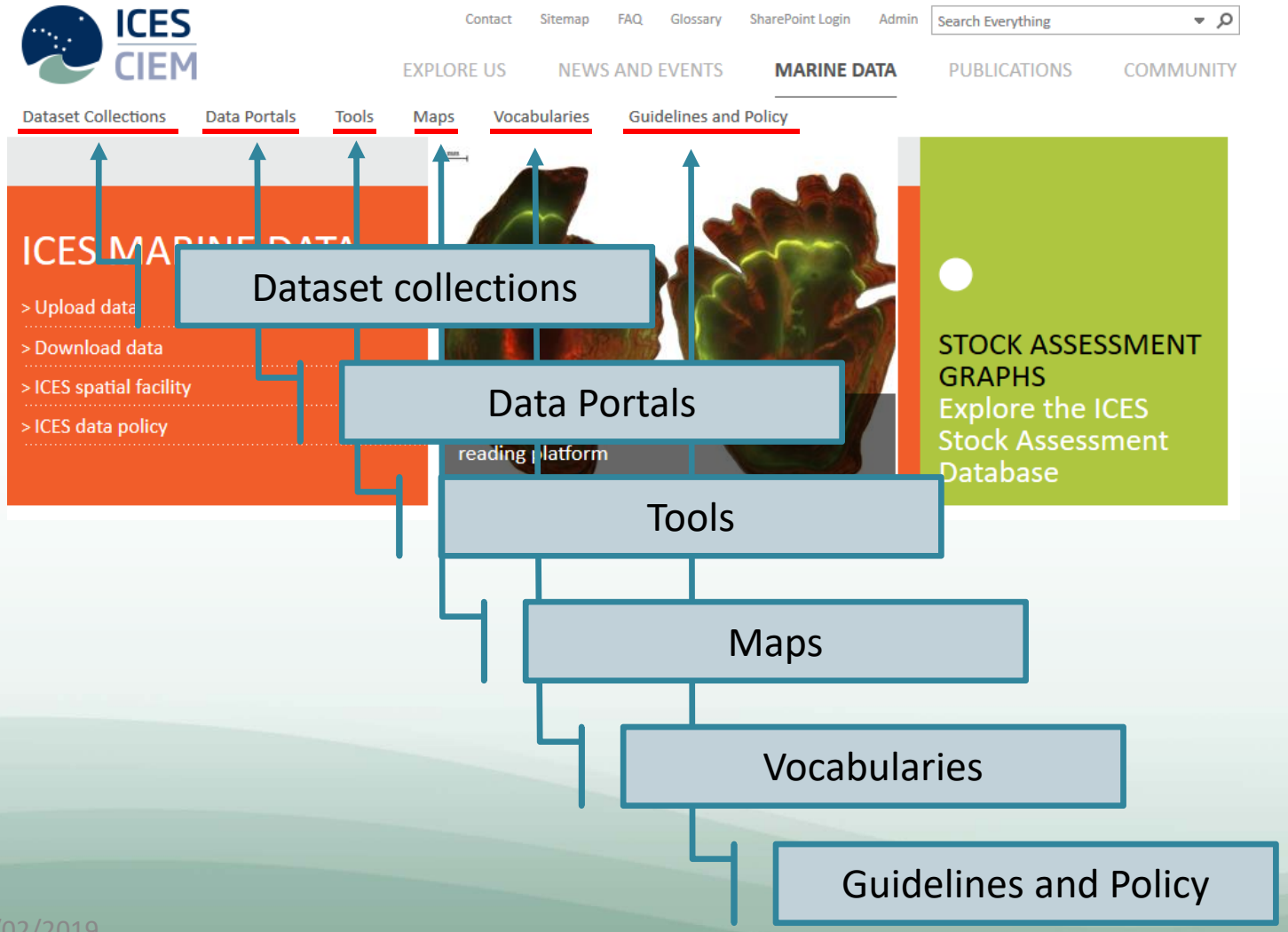
- 

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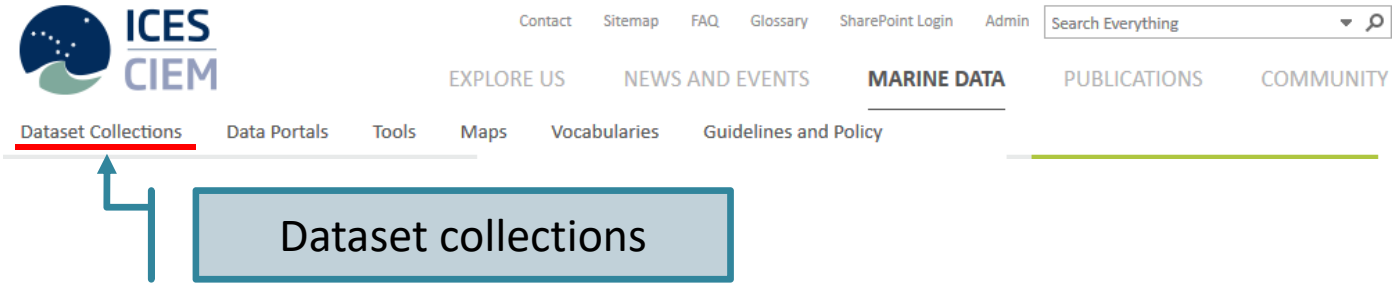

Dataset collections

Dataset	Measurements	No of Years
Biological community	1 983 073	38
Contaminants and biological effects	12 629 656	41
Eggs And Larvae	1 073 423	95
Fish predation (stomach contents)	1 149 608	12
Fish trawl survey	7 686 784	53
Historical datasets	334 837	58
Oceanographic	159 098 461	129
Vulnerable Marine Ecosystems	26 376	44

The data centre manages various large **dataset collections** related to the marine environment, like **Contaminants and Biological Effects, Eggs and Larvae and Fish Trawl Survey**.

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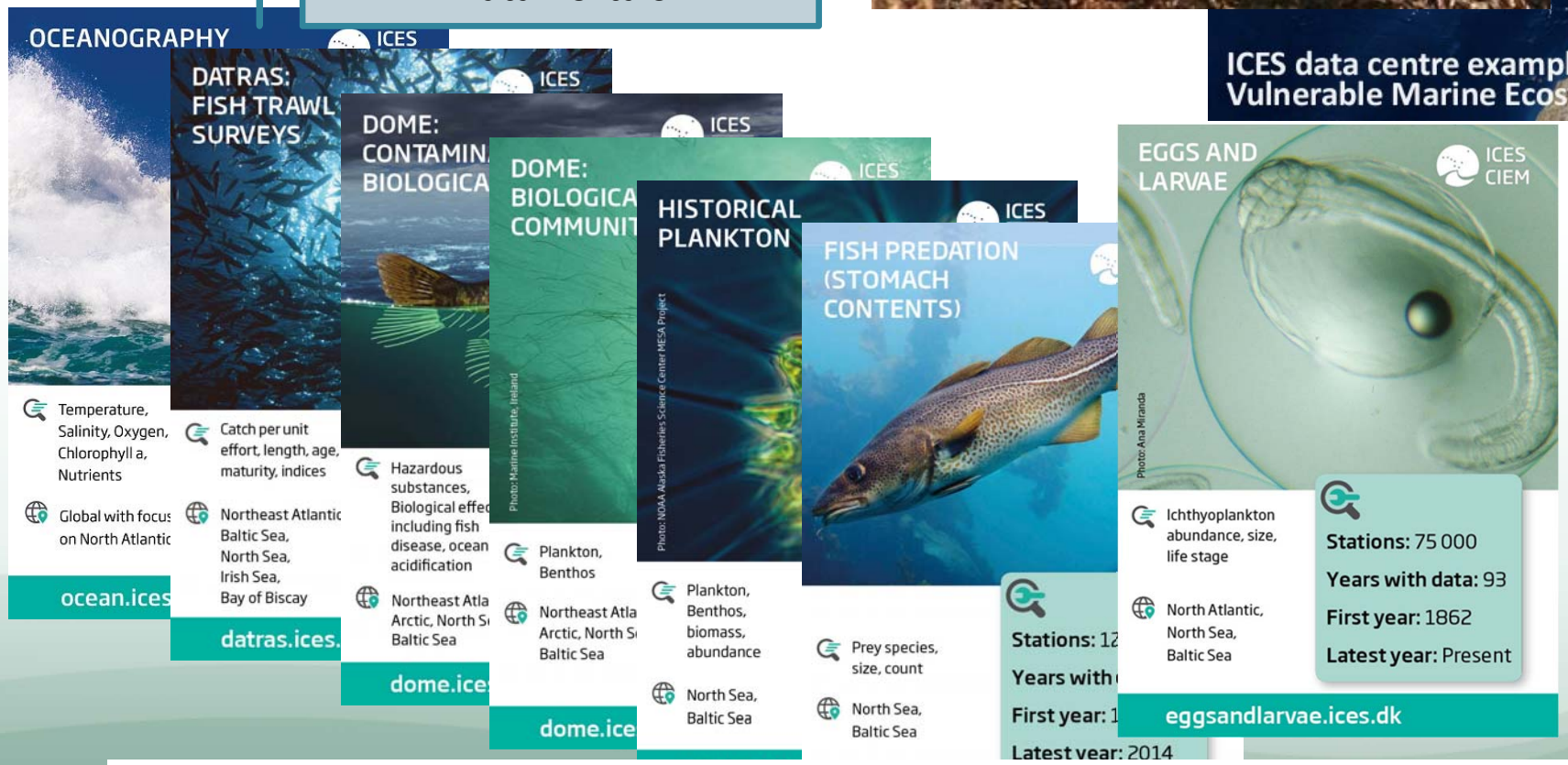
Dataset Collections Data Portals Tools Maps Vocabularies Guidelines and Policy

Data Portals



Via multiple thematic **data portals**, access is provided to this high variety of data.

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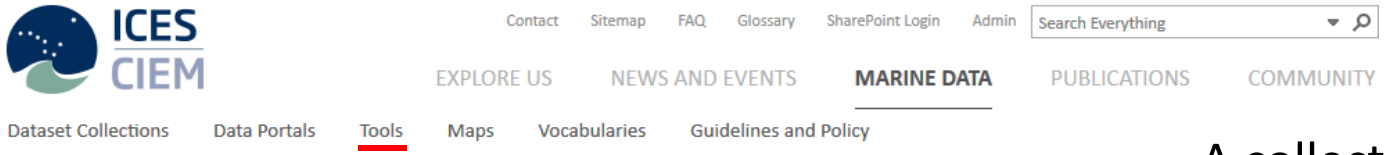
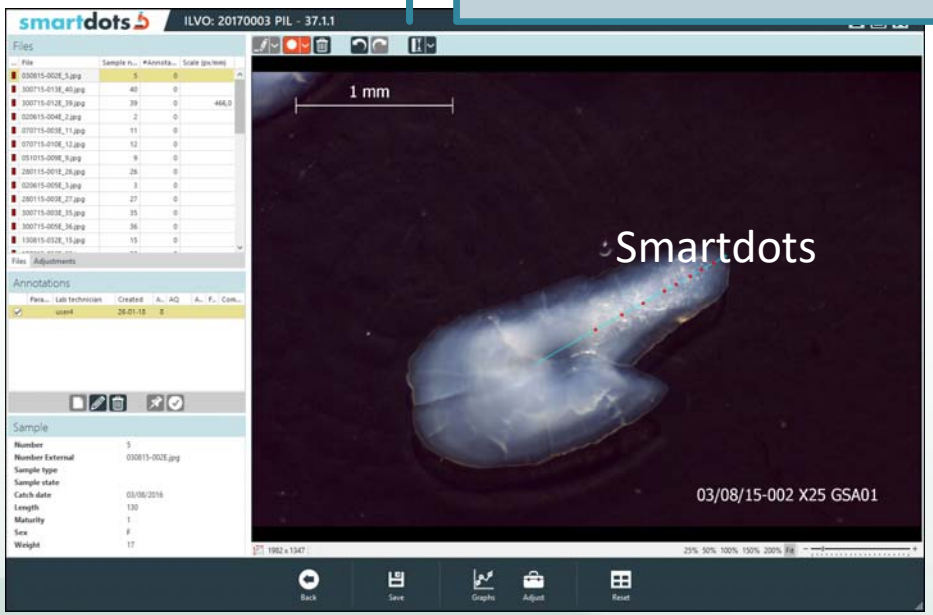
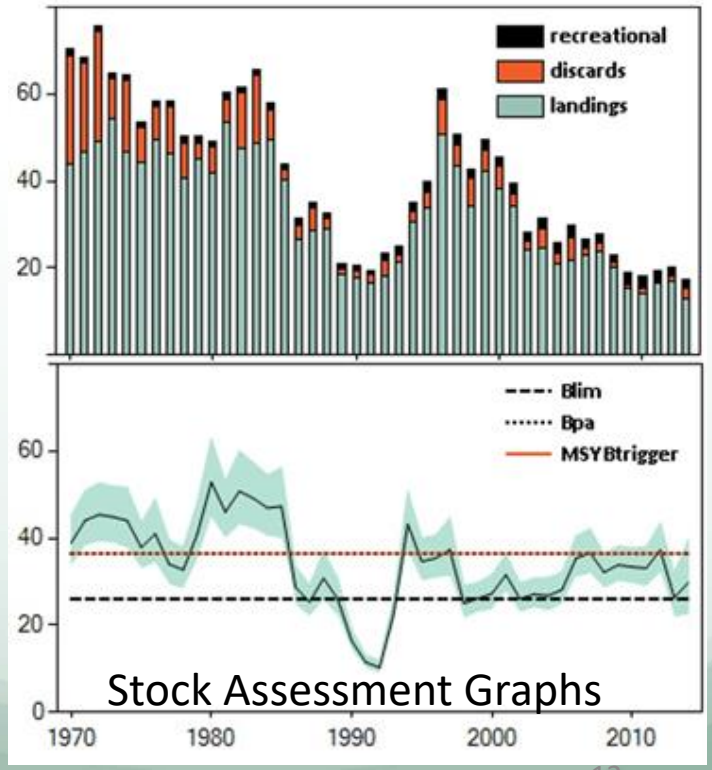


Tools



A collection of applications, software, calculators and dictionaries



Current **tool** developments involve the **'transparent assessment framework' (TAF)** and the **'Regional Database and Estimation System' (RDBES)** increasing the exchange of data across multiple platforms.

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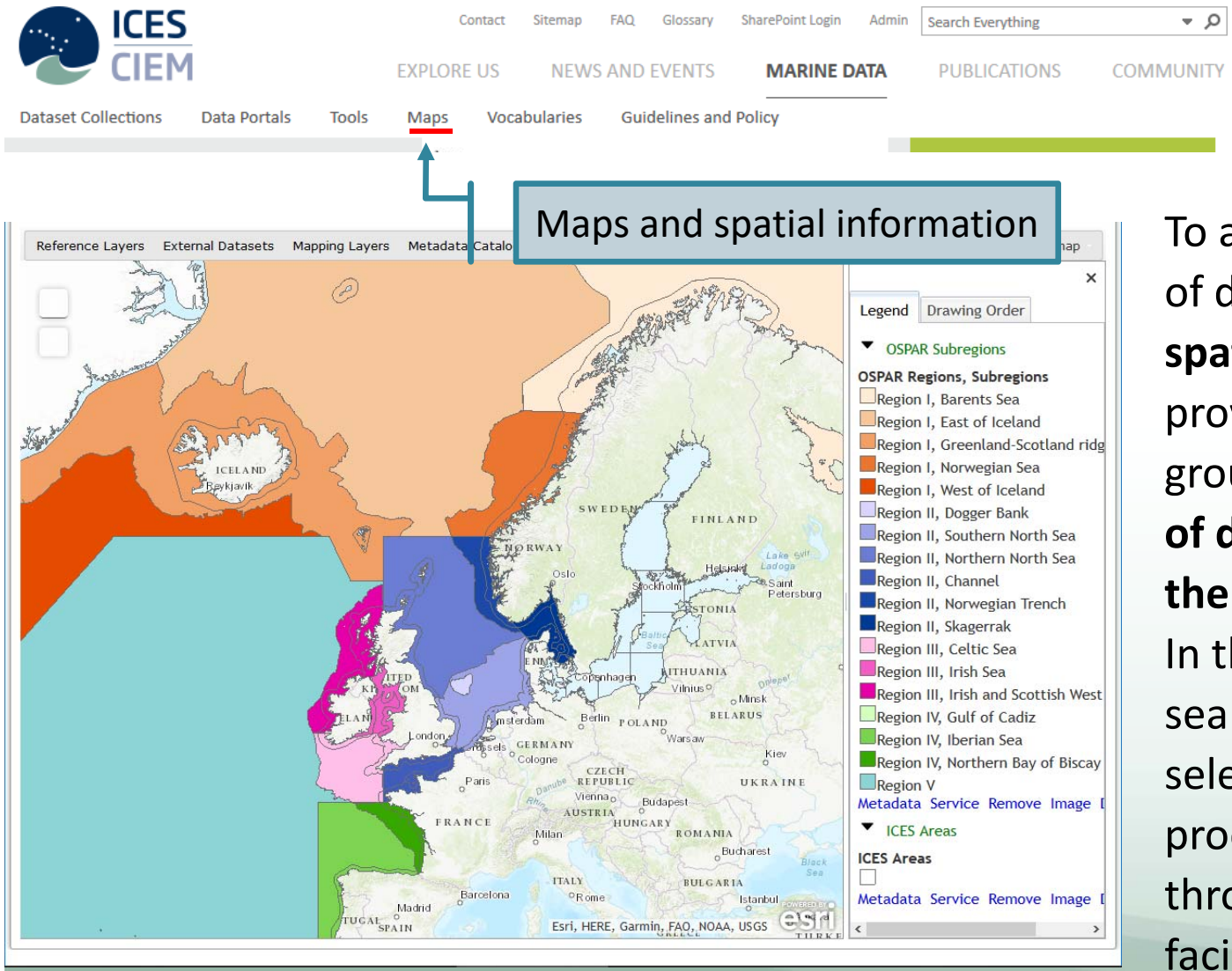

To aid in the organization of data, **maps and spatial layers** are provided to the expert groups for the **planning of data collection and the visualization of data**. In the frame of regional sea conventions, a selection of map products are provided through the spatial facility.

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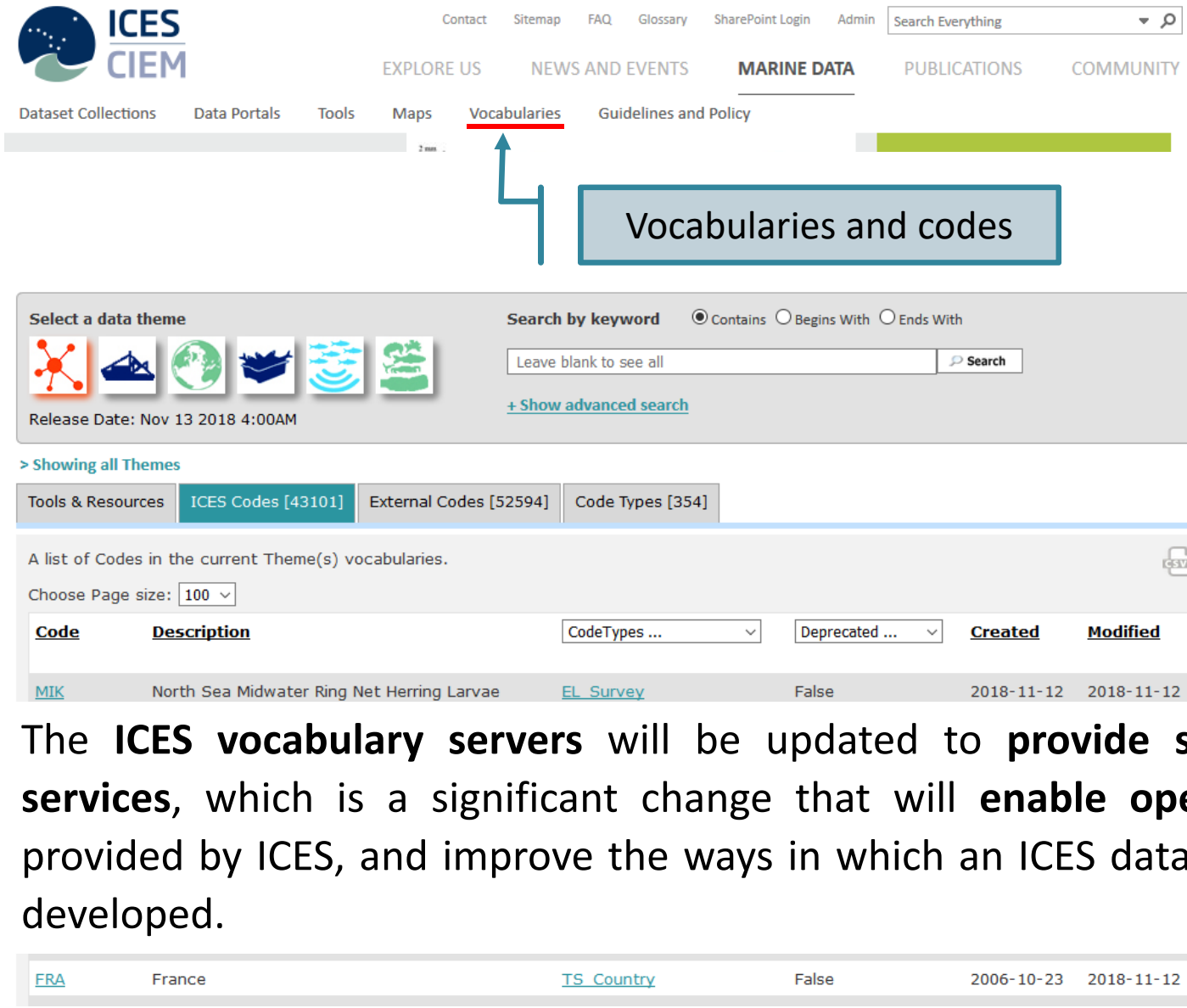

The ICES Vocabulary Server is the **reference codes library** for dataset collections and includes externally referenced controlled lists used by ICES.

The **ICES vocabulary servers** will be updated to **provide semantic linkage and services**, which is a significant change that will **enable open linked data** to be provided by ICES, and improve the ways in which an ICES data portal update will be developed.

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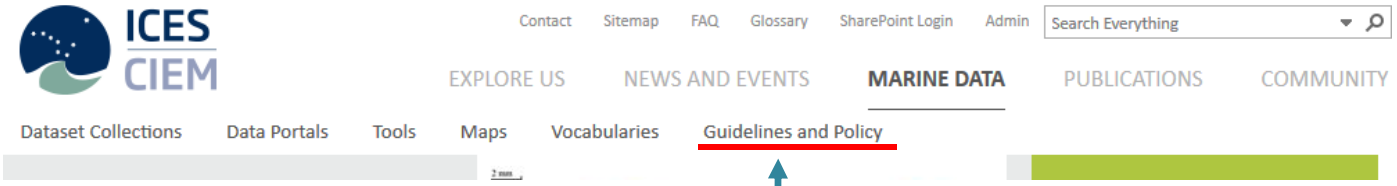

Guidelines and Policy

GUIDELINES

- Requesting data
- Submitting data and meta data
- ICES Data Type Guidelines
- ICES TIMES
- Survey protocols
- OSPAR guidelines
- HELCOM guidelines

POLICIES

- ICES data policy
- ICES project policy
- RDB data policy
- VMS data use

A collection of guides and policies that help to understand **how to work with data, and how ICES receives and outputs data.**

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ICES Metadata

Search over **1018** data sets, services and maps, ...

Search ...

http://gis.ices.dk/geonetwork/srv/eng/catalog.search#/home

International Council for the Exploration of the Sea (ICES) Data Portal

Here you will find data, services and maps and more.

Browse by **topics**

- Oceans 463
- Environment 356
- Biota 337
- Geoscientific information 129
- Boundaries 9

Browse resources

- Dataset 888
- Historical 95
- Service 35

Latest news | Most popular

- BRT carbonate sand model Oslo Fjord, 2011 *Dataset*
- ICES Historical Plankton Dataset *Dataset*
- EUSeaMap2 (2016) Broad-Scale Predictive Habitat Map - Wave exposure index at surface *Dataset*
- EUSeaMap2 (2016) Broad-Scale Predictive Habitat Map - Below halocline probability *Dataset*
- EUSeaMap2 (2016) Broad-Scale Predictive Habitat Map - Confidence in wave exposure index at surface values *Dataset*
- EUSeaMap2 (2016) Broad-Scale Predictive Habitat Map - Confidence in kinetic energy due to waves values *Dataset*

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- **BMDC and ICES Data Centre**

NODC (IODE) and member of DIG (ICES)
Hosts IDOD (Integrated Oceanographic Database)
Reporting of OSPAR monitoring data (DOME)

OSPAR COMMISSION

Protecting and conserving the North-East Atlantic and its resources

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- **VLIZ and ICES Data Centre**

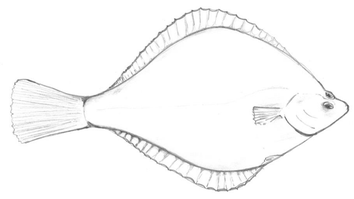
NODC (IODE) and Chair-invited of DIG (ICES)
Coordinator of EMODnet Biology (providing Operational Oceanographic Products and Services (OOPS) to ICES Ecosystem Overviews)
Data manager of WoRMS (taxonomic vocabulary) and EurOBIS, EMODnet Central Portal, Lifewatch Marine, IOC Sealevel Station Monitoring Facility

WoRMS World Register of Marine Species

LifeWatch

EMODnet European Marine Observation and Data Network

ILVO @ ICES CIEM

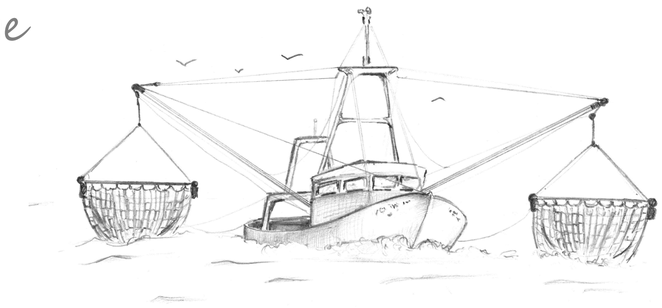


(7) Fisheries and beyond

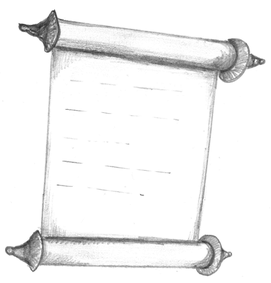
Bart Vanelslander
WGCRAN – WGCSE – WGNSSK
Demersal stocks

Sofie Nimmegeers
PGDATA –WGCATCH – WGCSE – SCRDBES
Demersal stocks

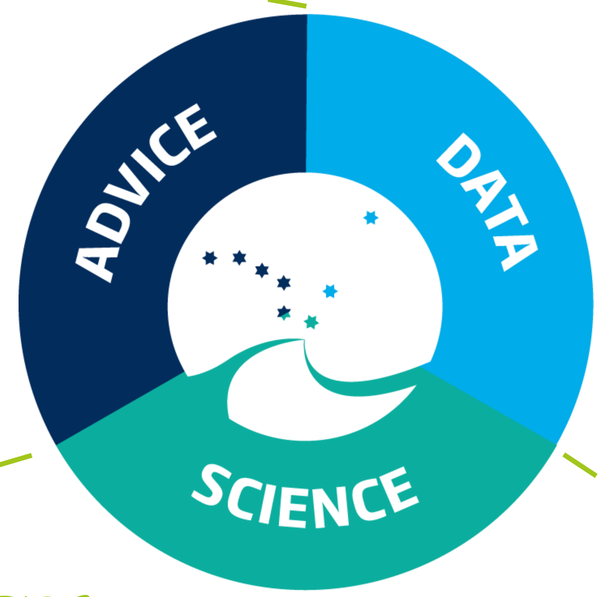
Lies Vansteenbrugge
WGNSSK – WGCRAN – WGBOSV/WGITMO
Demersal stocks



Kevin De Coster
WGBIOP – WKSEATEC
Data & Information



Hans Polet
WGFTB – ADGPulse
ICES Council



Wim Allegaert
DIG – WKSEATEC – DATRAS GG
Data & Information

Els Torreele
WWGBIOP – PGDATA – SCRDBES – WGCHAIRS – ADGEEL – ADGNS
ACOM

Loes Vandecasteele
WGBEAM – WKUSER, WKIrish5
Beam trawl surveys

Sofie Vandemaele
WGCATCH – WGCSE – WKBIOPTIM
Demersal stocks, discards, sampling design

HAPISG
Human Activities, Pressures and Impacts

EPDSG
Ecosystem Processes and Dynamics

Hans Hillewaert
BEWG
Benthos

Annelies De Backer
WGEXT
Sand and gravel extraction

Mattias Van Opstal
WGCRAN
Brown shrimp

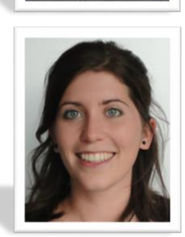
Bavo De Witte
MCWG – WGML
Pollution

Gert Van Hoey
BEWG – WGBIODIV – WGFBIT
Benthos – Fisheries Impact

Kris Hostens
WGFAST – WGMBRED
Human activities

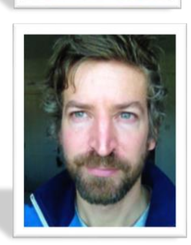
Jochen Depestele
WGECO – WGFTFB – WGMEDS – WGFBIT
Ecosystem effects of fishing

ASG
Aquaculture



Noémi Van Bogaert
WGMEDS – WGEF – ADGEF2
Discard survival

Johan Robbens
WGAGFA – WGBEC – WGML
Contaminants

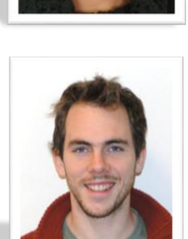


Sebastian Uhlmann
WGMEDS – WGCHAIRS
Survival, Landing Obligation

Ellen Pecceu
WGMPCZM – WKCSMP – WKMSIGD
Marine Spatial Planning Stakeholder envolvement

Klaas Sys
WGECON – WKIrish5 – WGSAM
Fleet dynamics

Karen Bekaert
WGBIOP – WKSEL3 – SmartDots GG
Biological parameters



Maarten Soetaert
WGELECTRA, FTFB
Pulse

Frankwin Van Winsen
WGRFS – WKMLEARN – ADGEF
Recreational fisheries

Heleen Lenoir
WGFTFB – WKMSIGD
Fishing Technology

BICEPS Colloquium 2018

Artwork: Naomi Breine

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ILVO, Flanders' research institute for agriculture, fisheries and food, is an independent scientific institute that performs research and analyses to tackle marine environmental issues and to explore opportunities for the fisheries sector.

ilvo@ilvo.vlaanderen.be
www.ilvo.vlaanderen.be

(8) Flanders Marine Institute (VLIZ) in ICES networks and expert groups: a two-way collaboration

VLIZ

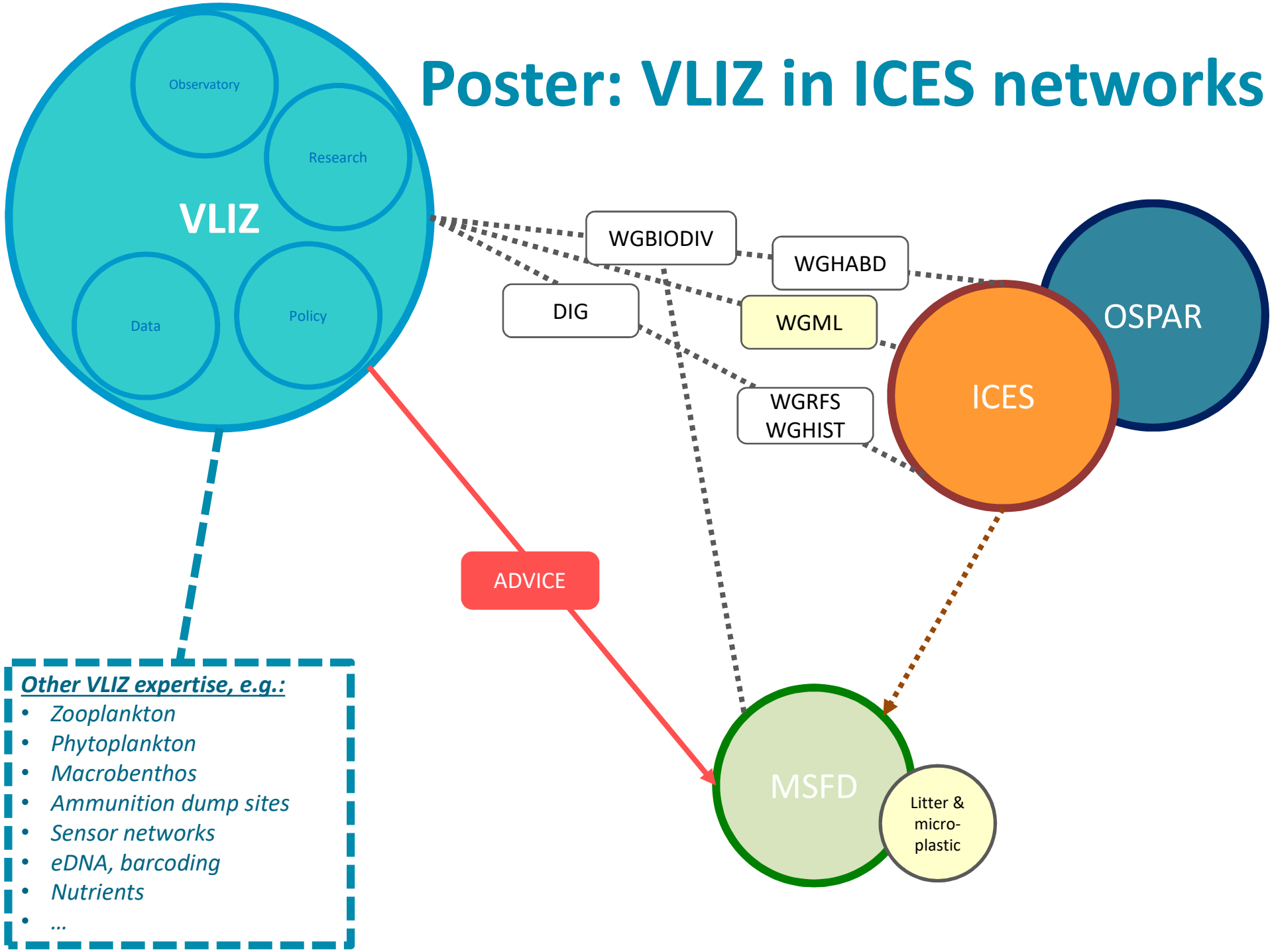
- ❑ strengthens marine knowledge base &excellence in marine research in Flanders;
- ❑ conducts marine research;
- ❑ strong reputation in supporting services;
- ❑ manages infrastructure that supports the operational data exchange between ICES and EMODnet (e.g. DATRAS surveys);
- ❑ participates in the ICES Working Groups:

  - WG Recreational Fisheries Surveys (WGRFS)
  - Data and Information group (DIG)
  - WG on Biodiversity Science (WGBIODIV)
  - WG on Marine Litter (WGML)
  - WG on the History of Fish and Fisheries (WGHIST)
  - WG on Harmful Algal Bloom Dynamics (WGHABD) ~with IOC-UNESCO

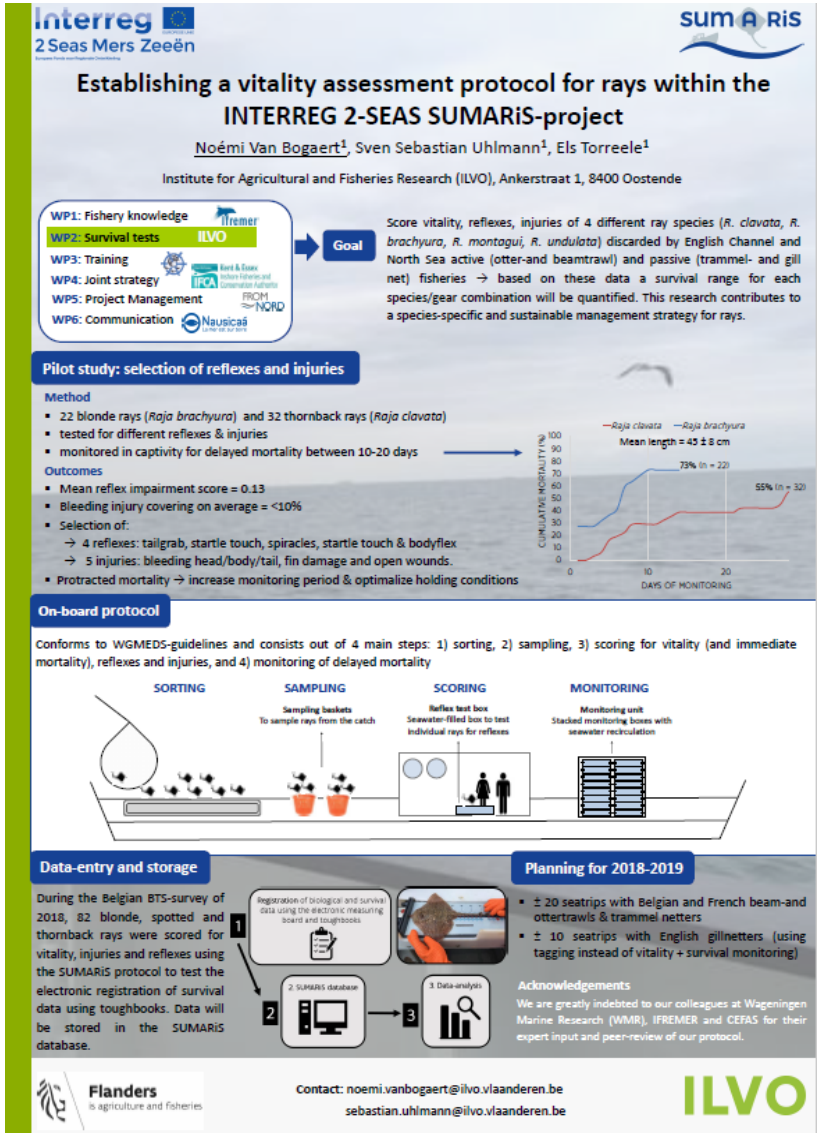
support ecosystem assessments; develop assessment criteria & monitoring guidelines; establish common standards

VLIZ
Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

Poster: VLIZ in ICES networks



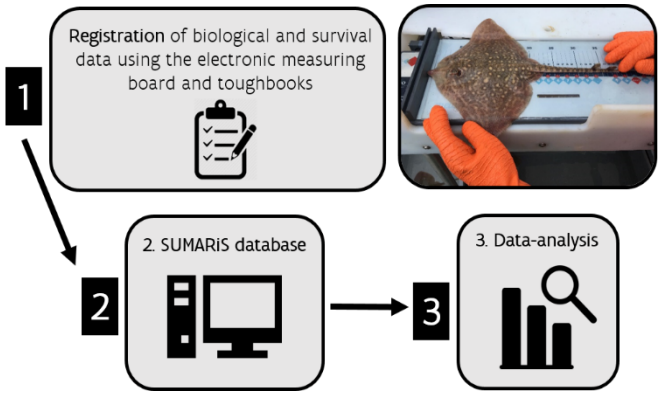
Establishing a vitality assessment protocol for rays within the INTERREG 2-SEAS SUMARiS-project



Interreg 2 Seas Mers Zeeën
European Regional Development Fund

This project has received funding from the Interreg 2 Seas programme 2014-2020 co-funded by the European Regional Development Fund under subsidy contract No 2S03-024.

SUMARiS WP2

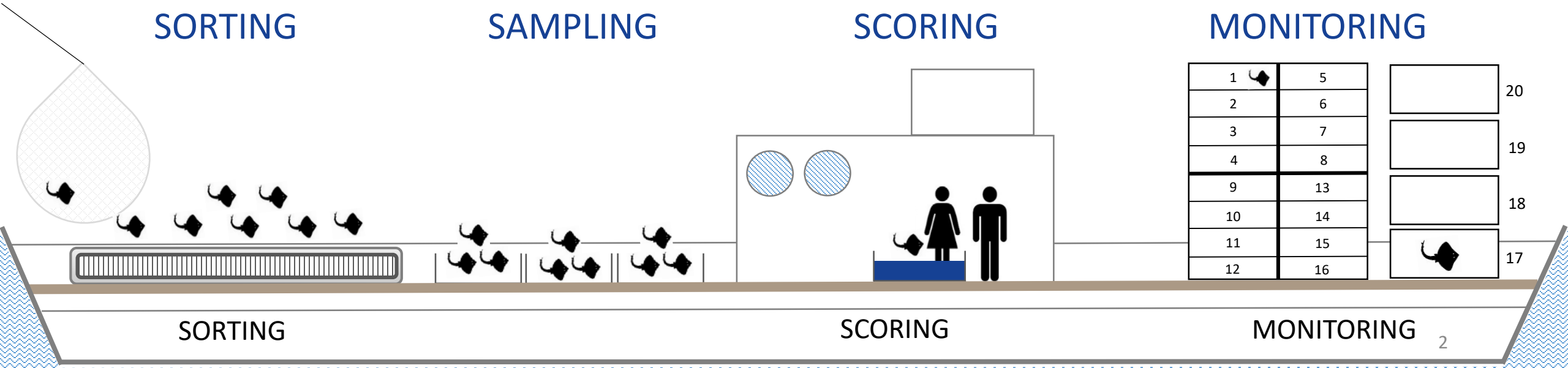


1 SORTING

2 SAMPLING

3 SCORING

4 MONITORING



SmartDots: A flexible open source software tool for age reading of calcified structures of marine species

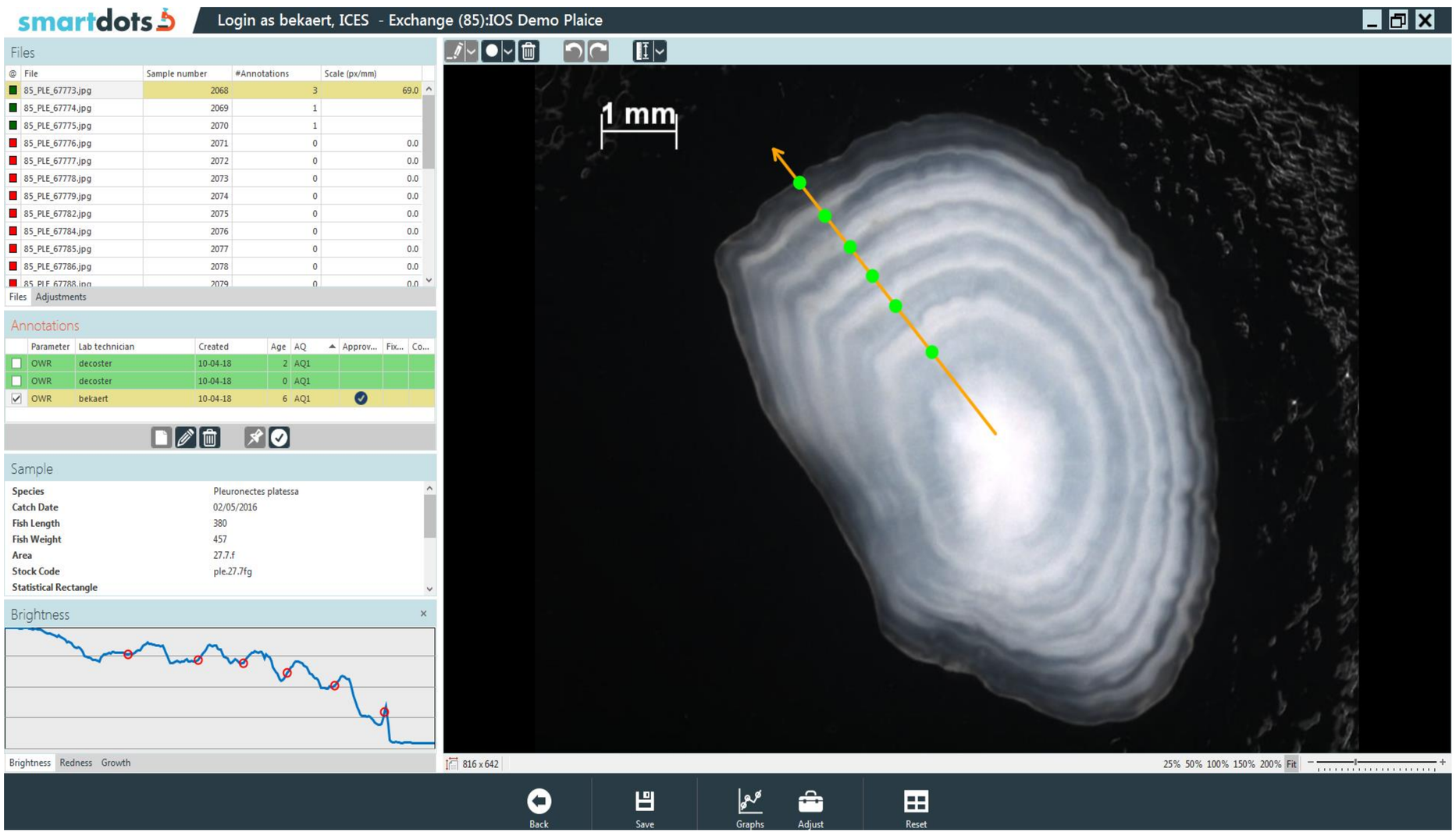
Karen Bekaert[1], Kevin De Coster[1], Wim Allegaert[1], Julie Olivia Davies[2], Line Pinna[2], Carlos pinto[3], Neil Holdsworth[3], Els Torreele[1]
[1] ILVO, Belgium [2]DTU Aqua, Denmark [3]ICES, Denmark

Why develop new age reading software?

- Age is a key parameter in fisheries biology and stock assessment where length-at-age data is used to estimate mortality, recruitment and recommended harvest levels
- Quality of data is of major importance for a correct advisory process
- SmartDots software facilitates age determination, data management, quality control and reporting

Working Group on Biological Parameters (WGBIOP)

- Is devoted to the provision of biological parameters at a stock level
- Is responsible for the organisation of age reading exchanges and workshops on calcified structures of fish
- The objective is to estimate precision and bias in the age estimations from readers of different laboratories, to check that this is still within acceptable levels



Features of SmartDots

- User friendly
- Otolith image selection
- Image adjustment
- Automatic counting of dots
- Different dot shapes and colors
- Easy comparison between annotations of different readers
- Automatic scale detection

Advantages of the SmartDots platform

- Increased efficiency
  - Faster working
  - Easy management of pictures
  - Easy reporting
- Increased quality
  - No more copying mistakes
  - Easy to compare annotations between readers
  - Standardized age data analysis
- Easy organization of international age reading exchanges and workshops

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is agriculture and fisheries

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Poster session

SmartDots: A flexible open source software tool for age reading of calcified structures of marine species

Karen Bekaert[1], Kevin De Coster[1], Wim Allegaert[1], Julie Olivia Davies[2], Line Pinna[2], Carlos pinto[3], Neil Holdsworth[3], Els Torreele[1]

[1] ILVO, Belgium [2]DTU Aqua, Denmark [3]ICES, Denmark

SmartDots: A flexible open source software tool for age reading of calcified structures of marine species

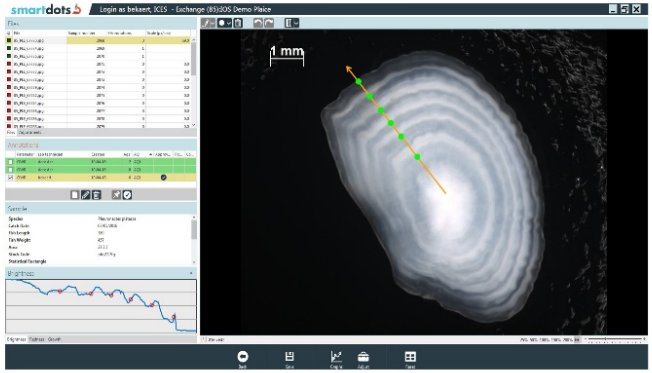
Karen Bekaert[1], Kevin De Coster[1], Wim Allegaert[1], Julie Olivia Davies[2], Line Pinna[2], Carlos pinto[3], Neil Holdsworth[3], Els Torreele[1]
[1] ILVO, Belgium [2]DTU Aqua, Denmark [3]ICES, Denmark

Why develop new age reading software?

- Age is a key parameter in fisheries biology and stock assessment where length-at-age data is used to estimate mortality, recruitment and recommended harvest levels
- Quality of data is of major importance for a correct advisory process
- SmartDots software facilitates age determination, data management, quality control and reporting

Working Group on Biological Parameters (WGBIOP)

- Is devoted to the provision of biological parameters at a stock level
- Is responsible for the organisation of age reading exchanges and workshops on calcified structures of fish
- The objective is to estimate precision and bias in the age estimations from readers of different laboratories, to check that this is still within acceptable levels



Features of SmartDots

- User friendly
- Otolith image selection
- Image adjustment
- Automatic counting of dots
- Different dot shapes and colors
- Easy comparison between annotations of different readers
- Automatic scale detection

Advantages of the SmartDots platform

- Increased efficiency
  - Faster working
  - Easy management of pictures
  - Easy reporting
- Increased quality
  - No more copying mistakes
  - Easy to compare annotations between readers
  - Standardized age data analysis
- Easy organization of international age reading exchanges and workshops

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The SmartDots software was first developed at ILVO for internal use

It facilitates age reading of fish otoliths

SmartDots: A flexible open source software tool for age reading of calcified structures of marine species

Karen Bekaert[1], Kevin De Coster[1], Wim Allegaert[1], Julie Olivia Davies[2], Line Pinna[2], Carlos pinto[3], Neil Holdsworth[3], Els Torreele[1]
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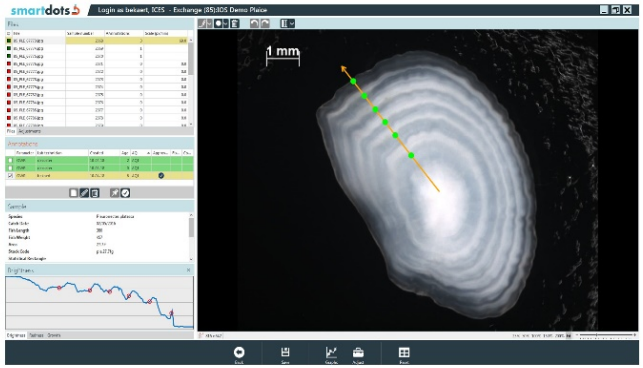

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Integration into a complete software platform for data management by ICES

Conclusion

- Nice example of cooperation between ICES and member states
  - Increased efficiency
  - Increased quality

- Better data leads to a better advisory process

http://smartdots.ices.dk

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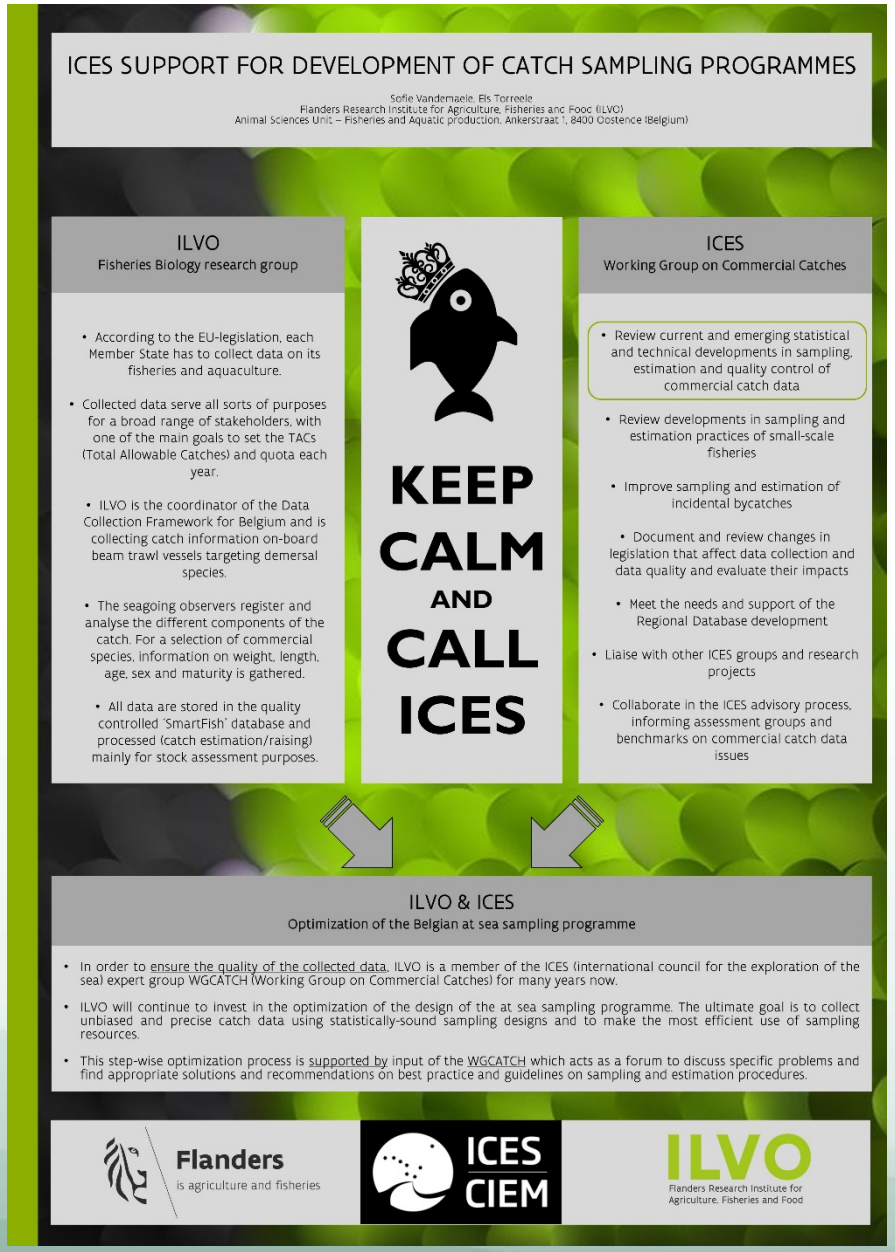
Poster session

ICES SUPPORT FOR DEVELOPMENT OF CATCH SAMPLING PROGRAMMES

Sofie Vandemaele, Els Torreele

Flanders Research Institute for Agriculture, Fisheries and Food (ILVO, Belgium)



ILVO

- DCF Coordinator for Belgium

- Collecting catch information on-board beam trawl vessels:

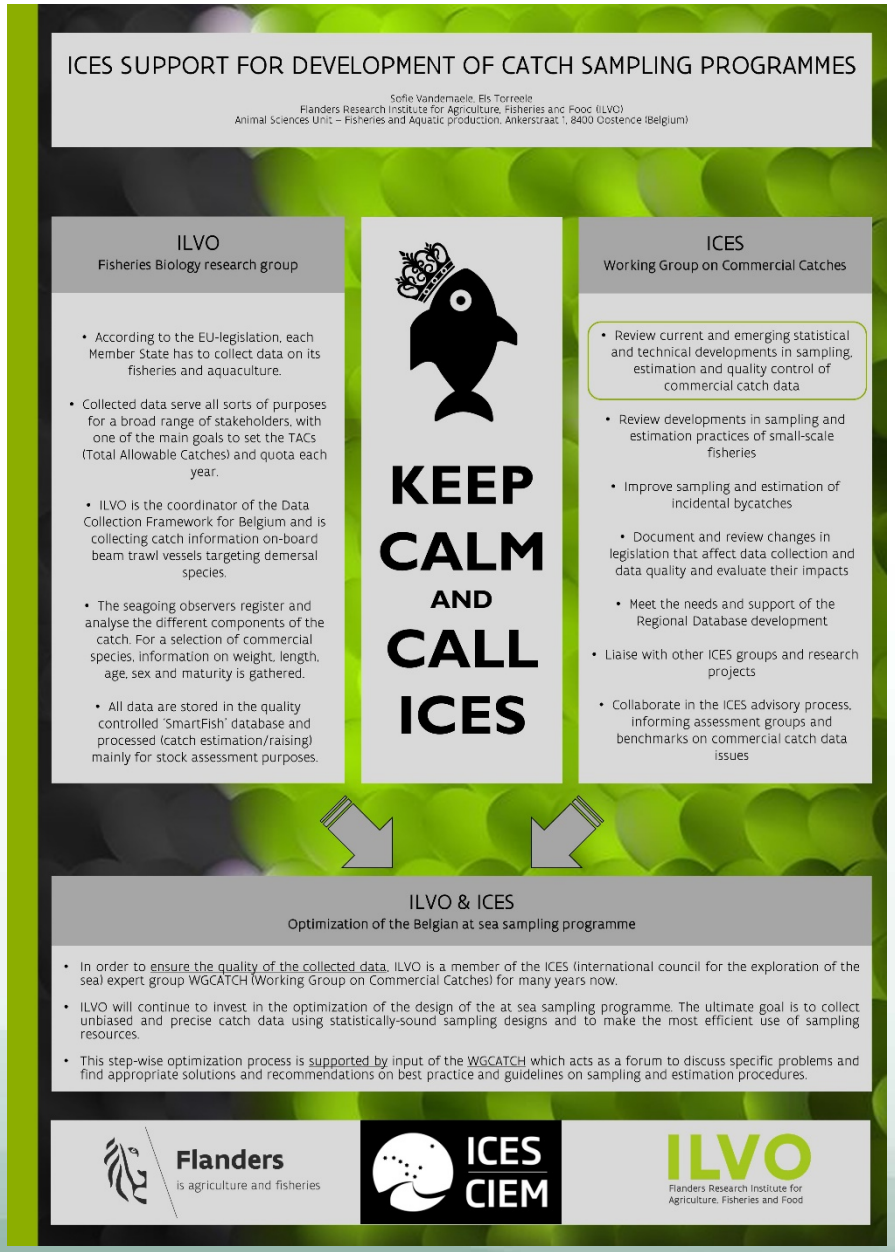
weight

length

age

sex

maturity



ICES WGCATCH

- ILVO is a member of WGCATCH for many years (quality of collected data)

- Review current and emerging statistical and technical developments in sampling, estimation and quality control of commercial catch data

Conclusion

- ILVO invests in the optimization of the design of the at sea sampling programme. The ultimate goal is to collect unbiased and precise catch data.

- This optimization process is supported by input of the ICES WGCATCH which acts as a forum to discuss specific problems and find appropriate solutions and they provide recommendations on best practice and guidelines on sampling and estimation procedures.

- Better data

  → better stock assessments

  → better advisory process (quota)

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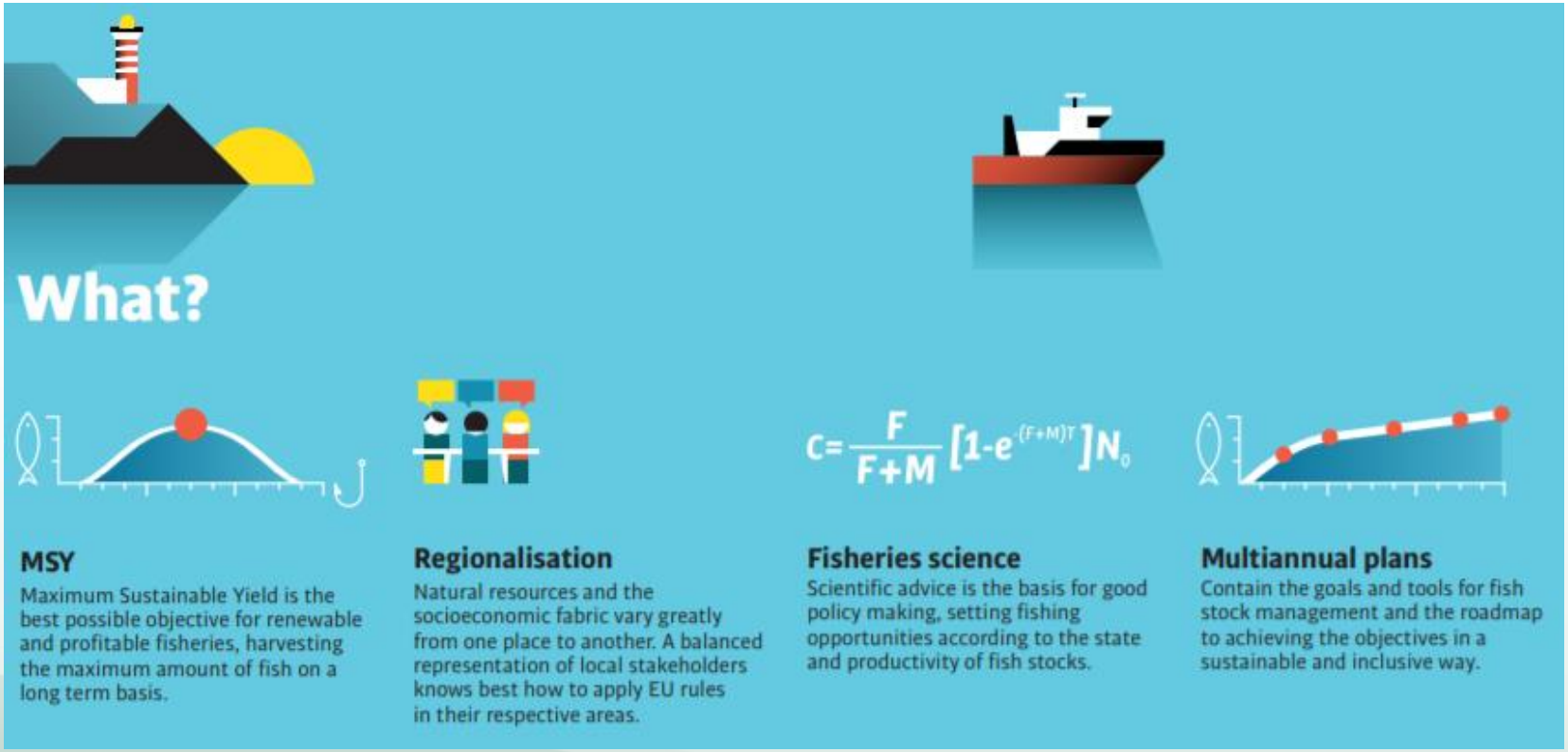
From data to quota: How are the Belgian quota determined?

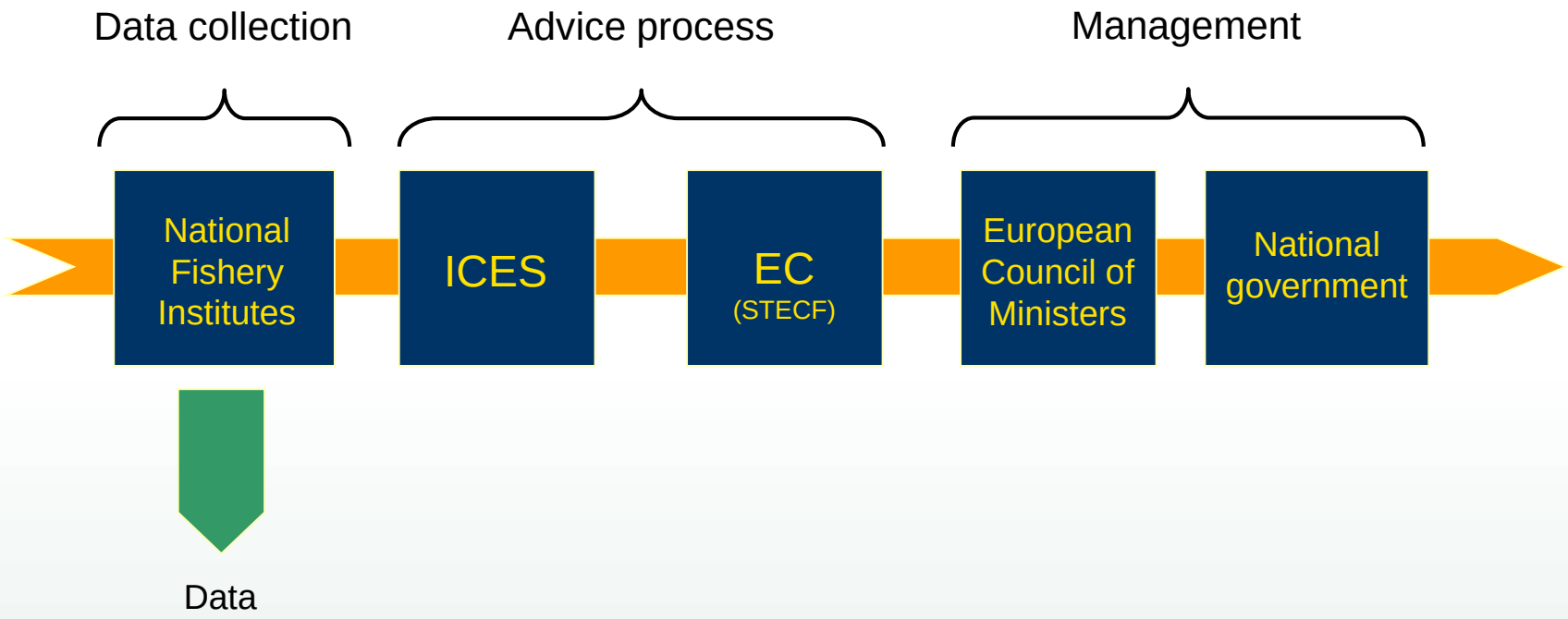
By Lies Vansteenbrugge, Bart Vanelslander, Sofie Nimmegeers

1st BICEpS colloquium, Brussels, 14 November 2018

Common Fisheries Policy



From data to quota

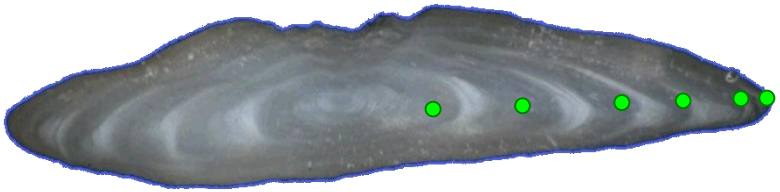


Commercial data

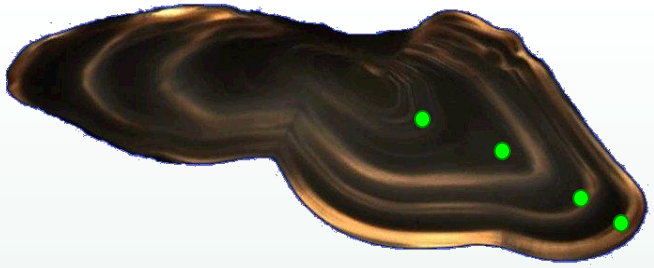
- Belgian beam trawl fleet
- ILVO observers at sea collect information on
  - Catch composition
  - Length, weight, age, sex and maturity




From otoliths to ages



Plaice



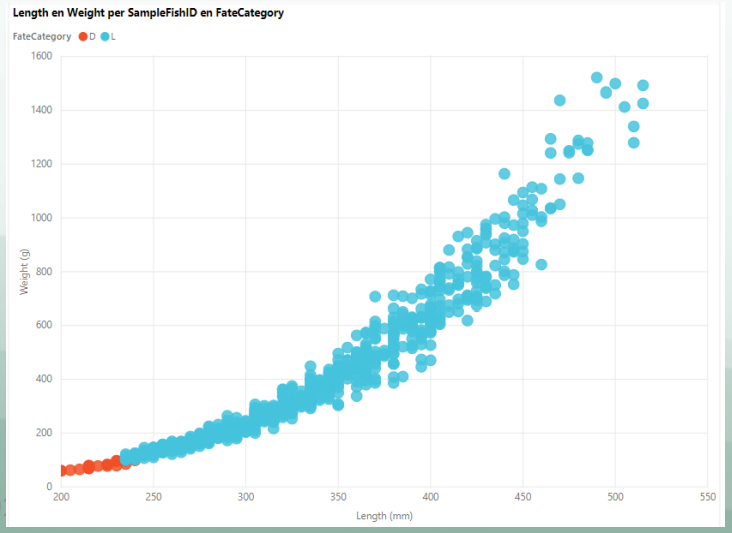
Cod

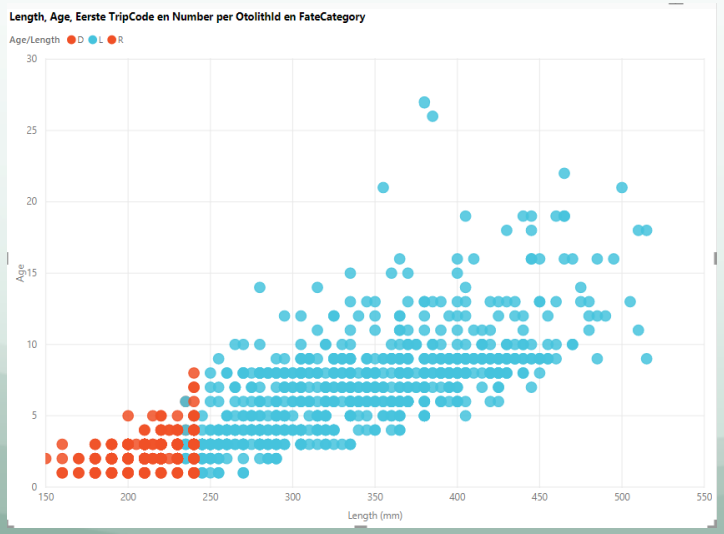
Sole

Data raising

Sampled vessels

Entire fleet





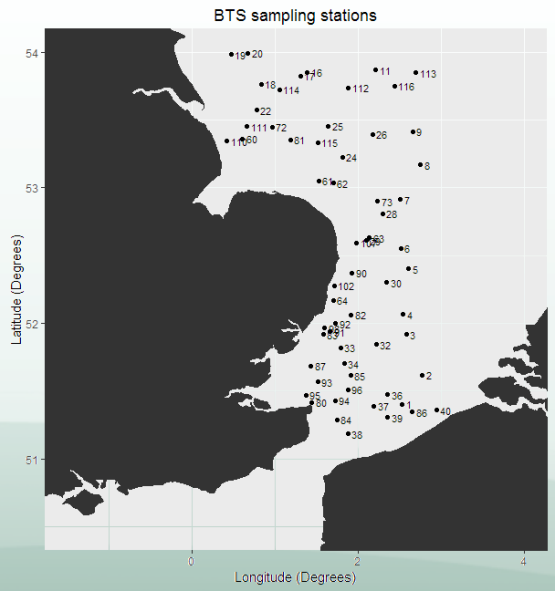
Survey data

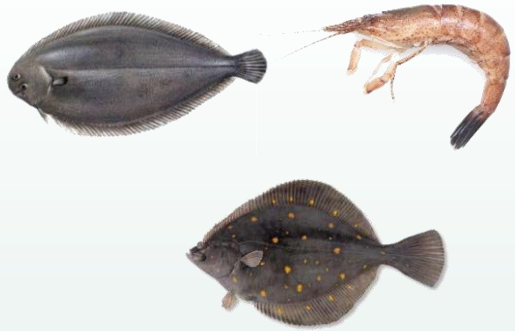
Beam Trawl Survey (BTS)

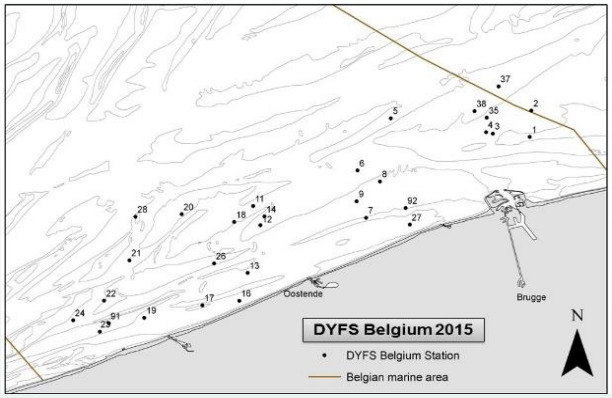
- Southern North Sea
- RV Belgica
- Fish and benthos catch composition

Demersal Young Fish Survey (DYFS)

- Belgian coastal waters
- RV Simon Stevin
- Fish and shrimp catch composition







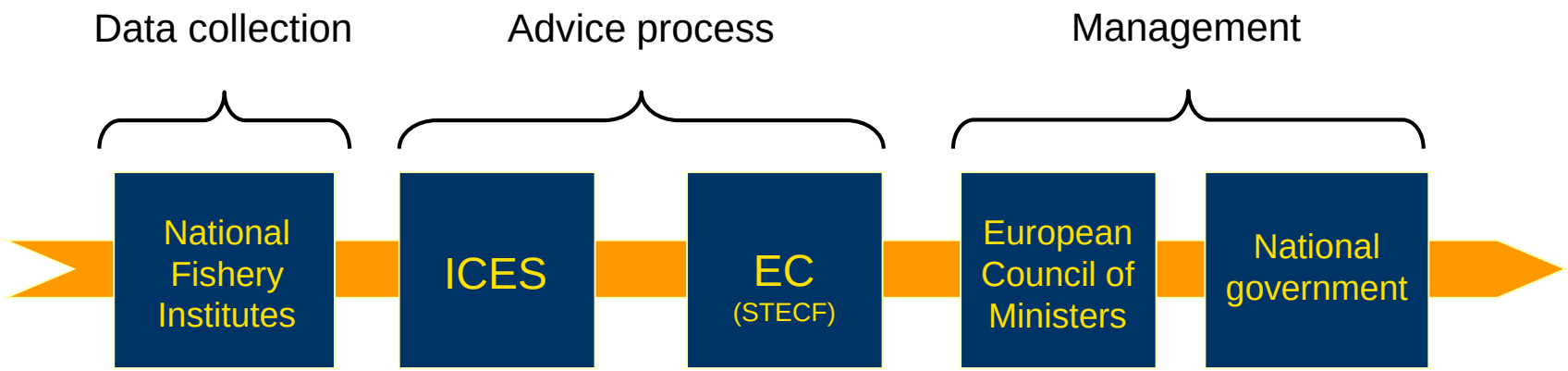
Aim of surveys:

→ Indices of species abundance

→ Number of recruits

Data stored at ICES Datras database

From data to quota



Data

Stock assessment + advice to managers

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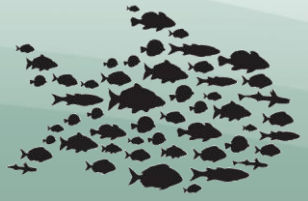
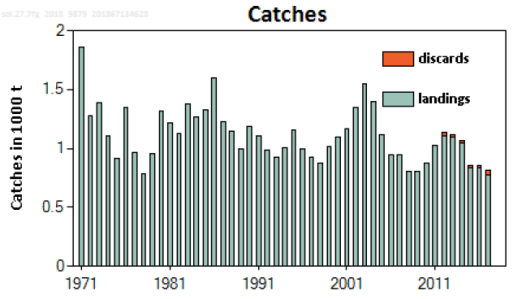


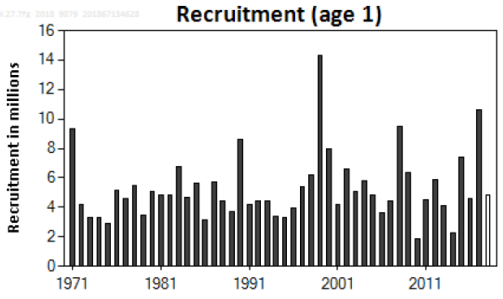
Input to ICES assessment WGs

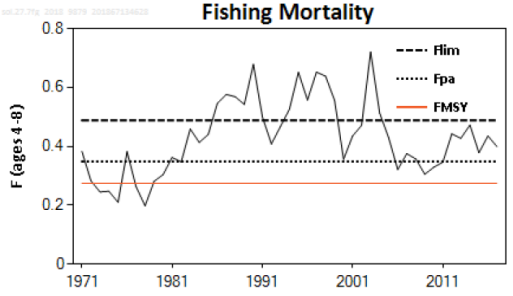
- Commercial data
  - Total wanted and unwanted catches
  - Age distributions
- Survey data
  - Number of recruits
  - Catch per unit of effort

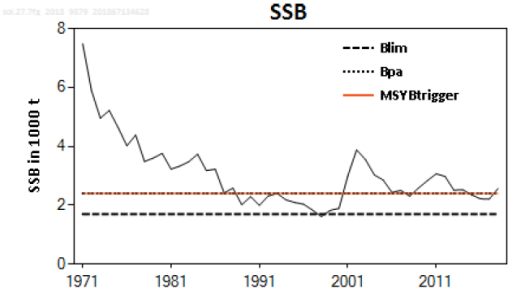
WGNSSK, WGCSE, WGBIE, WGWIDE, WGMIXFISH, WGEF, HAWG, etc.

Assessment and advice by ICES









From data to quota

Data collection

Advice process

Management

National Fishery Institutes

ICES

EC (STECF)

European Council of Ministers

National government

Data

Stock assessment + advice to managers

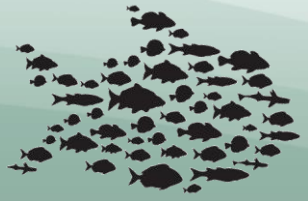
Management proposal

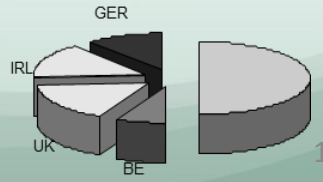
Management regulations

TACs

Management regulations

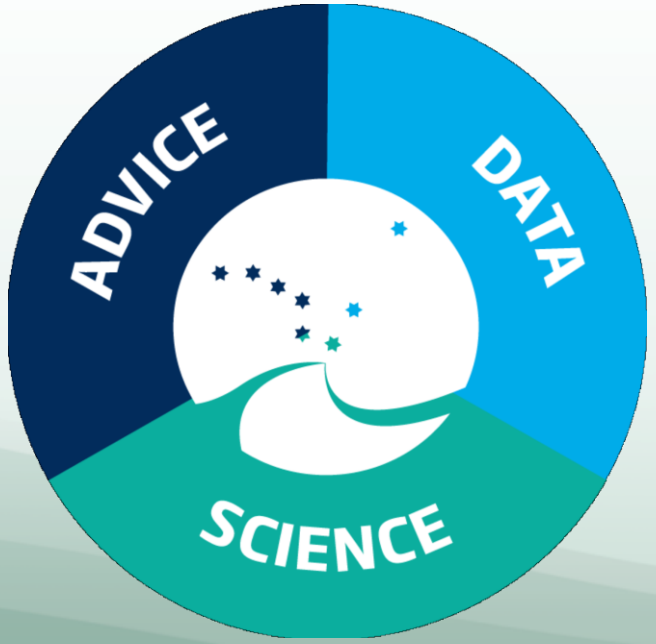
Quota





Concluding slide

- How was your work inspired by ICES?
- How did your work contribute to ICES?
- How the information did contribute to advisory process?



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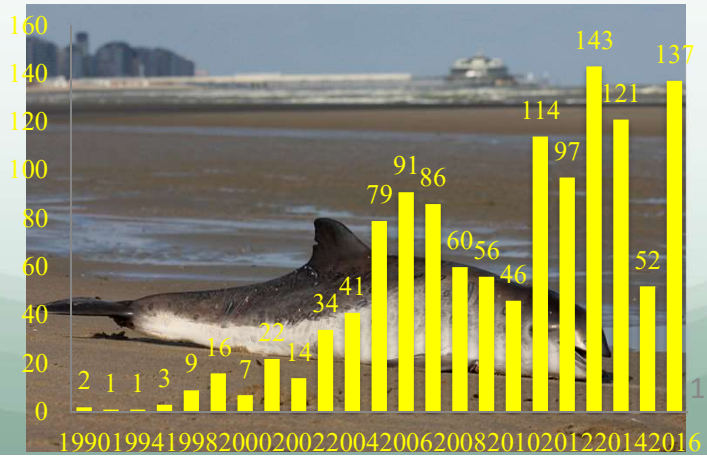
Causes of death of harbour porpoises (*Phocoena phocoena*) found in Belgium between 1990 and 2015

Jauniaux T., Delrez N., Haelters J., Kerckhof F., Coignoul F.

ICES Working Group on Marine Mammal Ecology

(70 members including B. Rumes, J. Haelters and T. Jauniaux for Belgium)



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Material and method

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1. 1161 porpoises stranded between 1990 and 2015 (full/partial necropsy: 806)
2. Present results: 407 porpoises DCC 1-3 (full data set)
3. Identification of relevant lesions and causes of death
4. Samples for histology, microbiology, toxicology, age determination, preys identification, stable isotopes, ...

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Results

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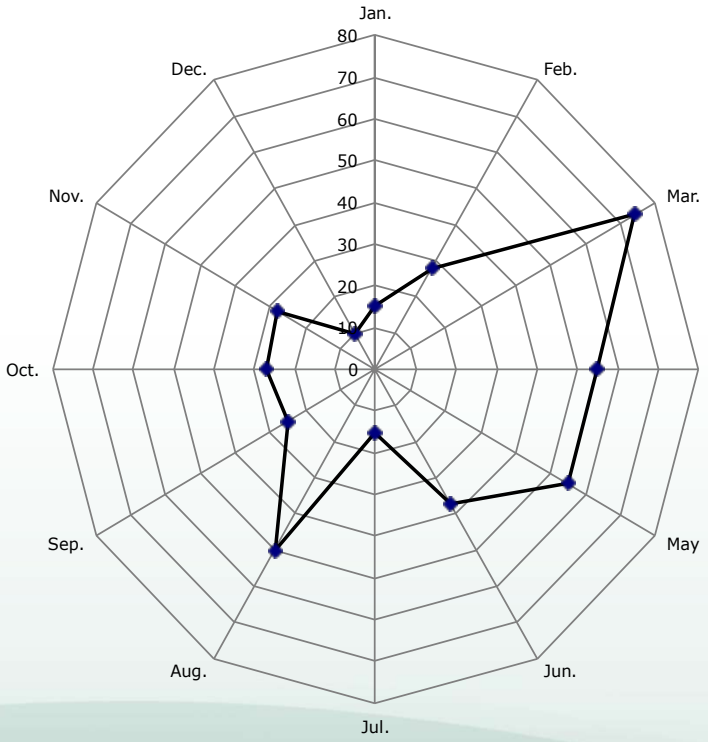
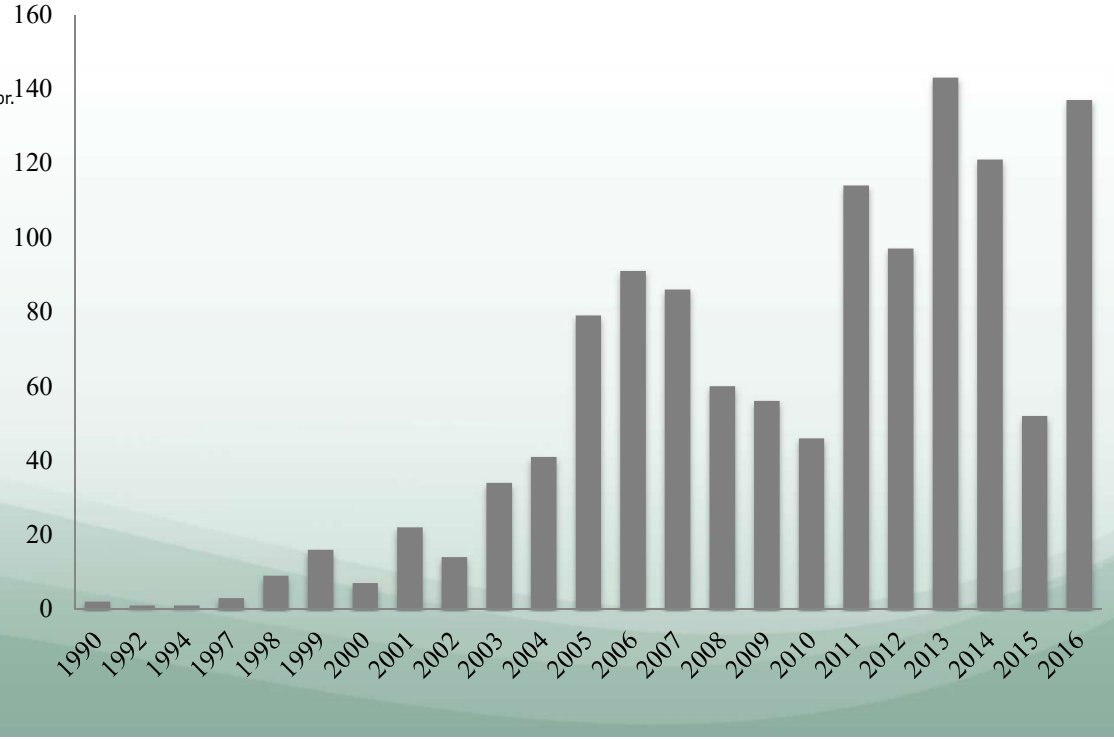
Peak of stranding end winter and summer



Stranding increase



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Results

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Infectious diseases ("natural process")

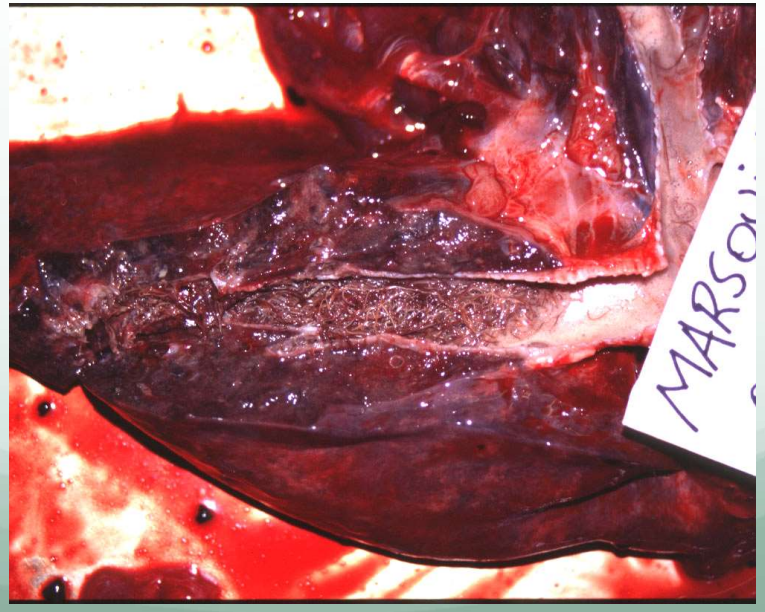
Emaciation (blubber thickness: 12 mm)

Parasitosis

Pneumonia

No evidence of recent feeding

→ 41%



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Results

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Net capture (incidental by-catch)

- External observations : 28% (skin lacerations, net marks, amputation)

- Other observations :
  - subcutaneous hemorrhages
  - lung edema and congestion
  - recent feeding
  - good nutritional status (blubber thickness: 21 mm)

→ 35%

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Results

ICES CIEM

<u>Emaciation alone (starvation: food availability)</u>

No other causes of death (diagnosis by exclusion)

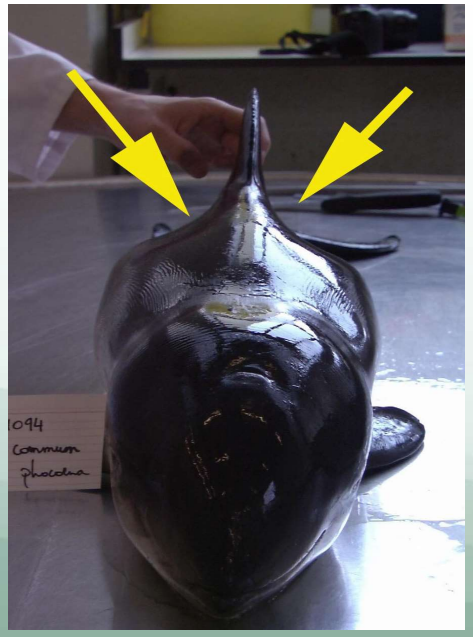
Blubber thickness: 6.8 mm

Severe lung congestion and edema

No evidence of recent feeding

→ 13%

(since 2005)



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Results

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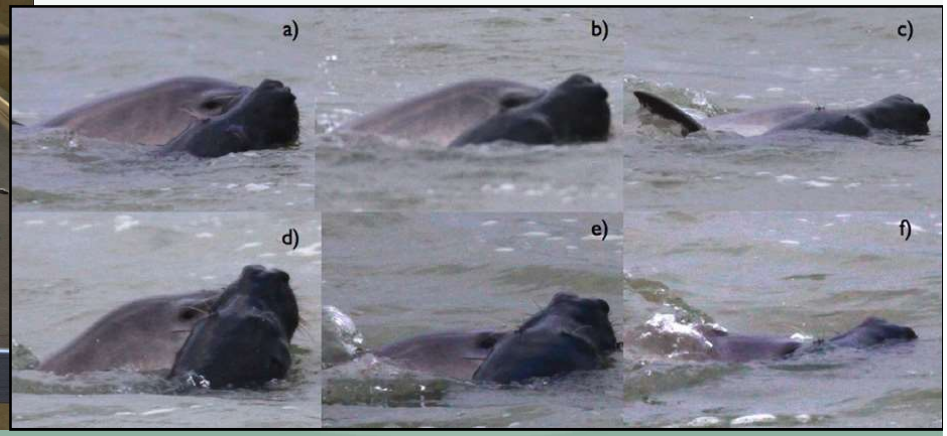
Grey seal predation

Blubber thickness: 22,2 mm
Juveniles
Evidence of recent feeding

→ 8% (since 2011)



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Discussion & Conclusion

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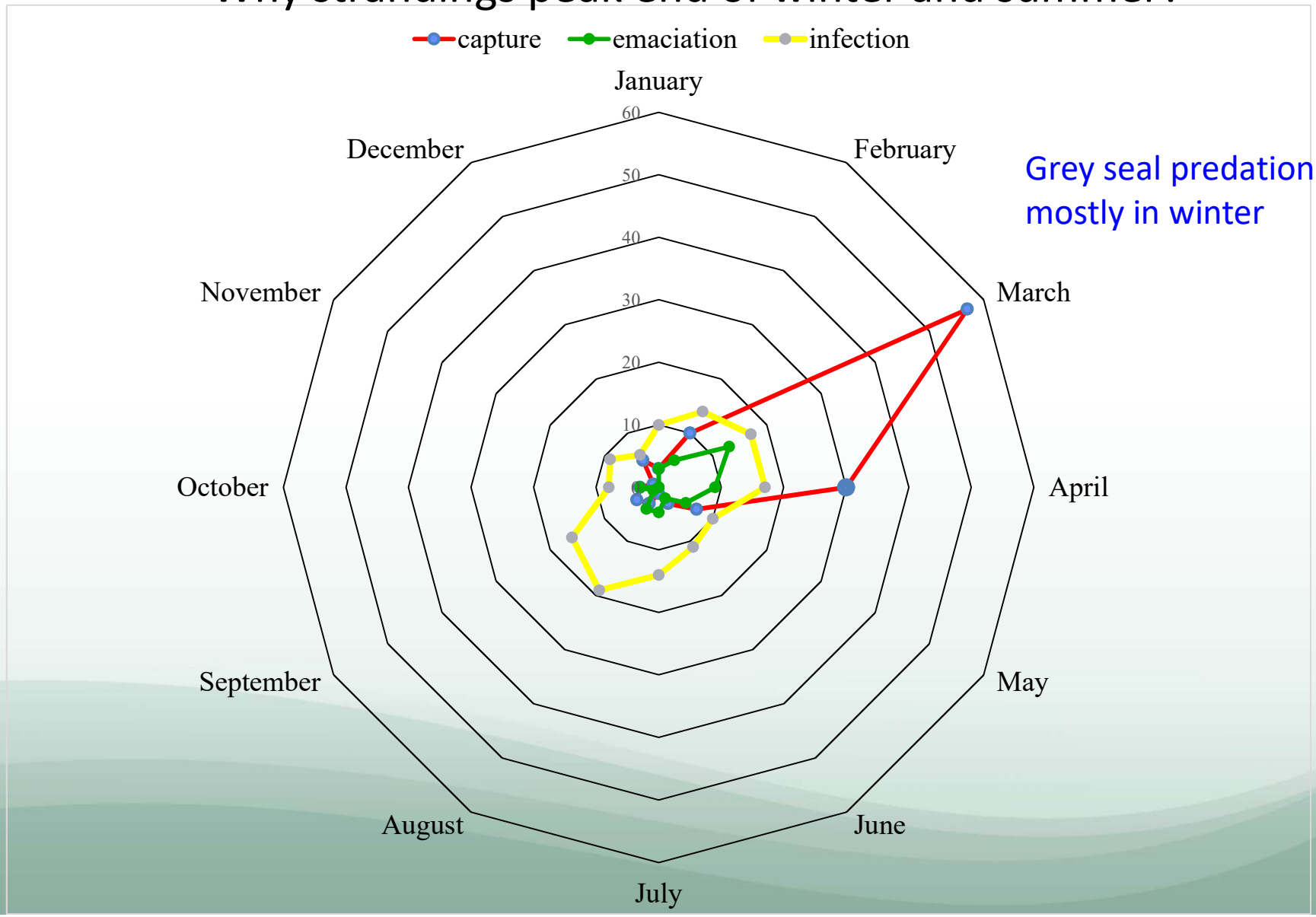
Why strandings peak end of winter and summer?



Grey seal predation mostly in winter

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Discussion & Conclusion

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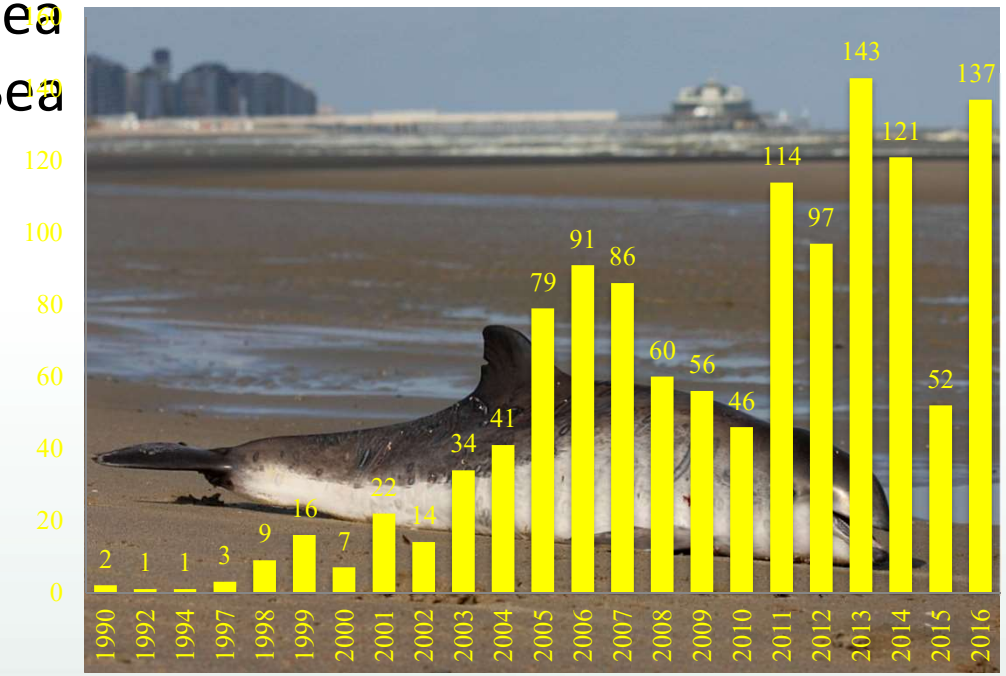
Why such strandings increase?

1. Southern shift of the porpoises population (350.000 porpoises)
SCANS 1 : 1994: northern North Sea
SCANS 2 : 2005: southern North Sea

2. Increase of capture
1990-2000: 20%
2001-2013: 35%



3. Oceanographic (currents)
Predisposition for Belgium

4. New & emerging causes of death
Emaciation
Grey seal predation

Discussion & Conclusion

Contribution to ICES and to advisory process

Presentation of results during the ICES annual Science Conference

Collaboration with RBINS: database www.marinemammals.be (postmortem investigations) and annual reports

Participation at ICES Working Group on Marine Mammal Ecology

Marine mammal health status assessment tool in North Atlantic area (UK, Germany, Netherlands, France)

THANKS

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Introduction to the work of the Ecosystems Processes and Dynamics Steering Group (EPDSG)

By Steven Degraer, Silvana Birchenough, Jan Vanaverbeke

1st BICEpS coS2018

EPDSG area

Insight in drivers and consequences of ecosystem processes and dynamics

Understanding and projecting of reponses of ecosystems to human and environmental pressures

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EPDSG in ICES

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- SCICOM

- guiding and supporting Expert Groups that study the state and resilience of marine ecosystems and food webs, as well as the life histories, diversity and interactions of component biota.
  - Oceanographic characteristics of marine ecosystems and their influences on population, food web and ecosystem dynamics
  - origins and transformations of matter in biogeochemical and production cycles
  - measuring, understanding, reporting and forecasting the dynamics of populations, food webs and ecosystems
  - life histories, diversity and ecology of microbes, phytoplankton, zooplankton, benthic invertebrates, crustaceans and fish
  - ecosystem services
  - ecosystem resilience

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EPDSG – 20 Expert Groups

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EPDSG – other ICES SG

- Joint sessions with HAPISG at ASC
- Dedicated workshops with other SGs on
  - Cumulative effects,
  - Methodological aspects,
  - Structure and functions;
  - Data issues
  - Use of indicators

Concluding slide

- http://www.ices.dk/community/groups/Pages/EPDSG.aspx

- Silvana.birchenough@cefas.co.uk

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Benthic biodiversity and ecosystem functioning research @ UGent Marbiol
the ICES context

By Carl Van Colen

1st BICEpS colloquium, Brussels, 14 November 2018

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Benthos Ecology Working Group

ICES CIEM

- Chair: Dr. Silvana Birchenough
- Yearly meeting, intersessional work
- Provide insights in the field of applied benthic ecology

Group picture Banyuls meeting May 2018

BEWG: Terms of Reference (ToRs)

- Long-term benthic series and climate change
- Species distribution modelling and mapping
- Benthos and legislative drivers
- Benthic biodiversity and ecosystem functioning
- Benthic biodiversity and conservation
- To explore the feasibility to undertake (experimental) studies to test ecologically relevant hypotheses in relation to benthic responses

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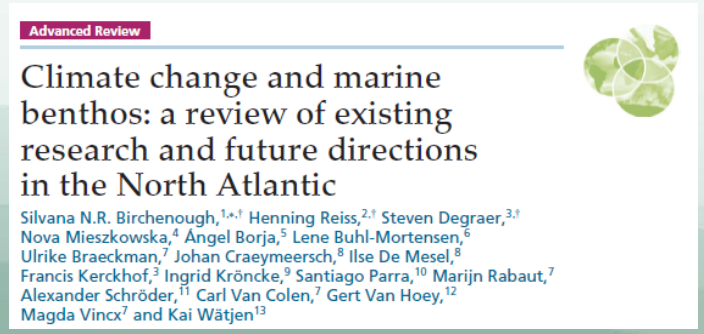
Benthic long-term series and climate change

- Status report on climate change in the North Atlantic
  - Chapter 8: Responses of marine benthos to climate change
    - Oxygen depletion - resilience
    - Biogenic habitat forming species
  - "Twin" research paper


Advanced Review

Climate change and marine benthos: a review of existing research and future directions in the North Atlantic

Silvana N.R. Birchenough, Henning Reiss, Steven Degraer, Nova Mieszkowska, Ángel Borja, Lene Buhl-Mortensen, Ulrike Braeckman, Johan Craeymeersch, Ilse De Mesel, Francis Kerckhof, Ingrid Kröncke, Santiago Parra, Marijn Rabaut, Alexander Schröder, Carl Van Colen, Gert Van Hoey, Magda Vincx and Kai Wätjen

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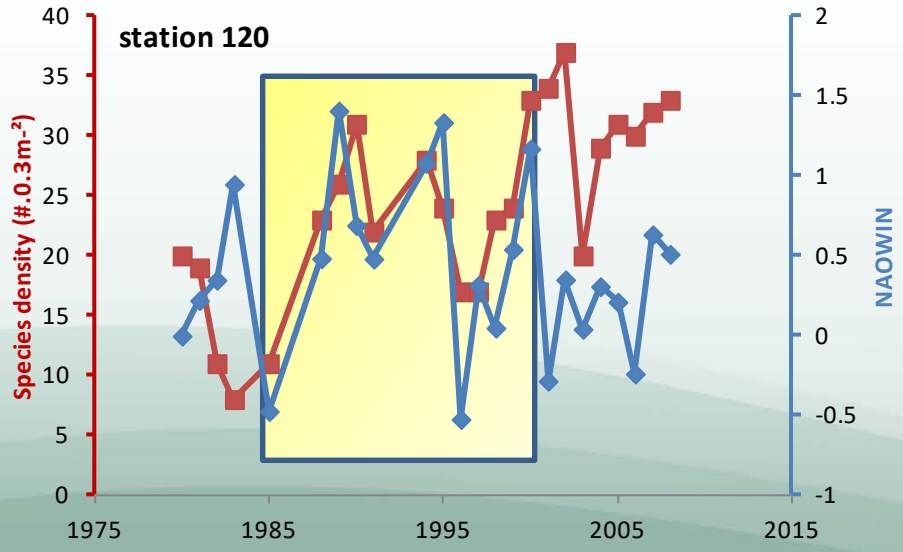
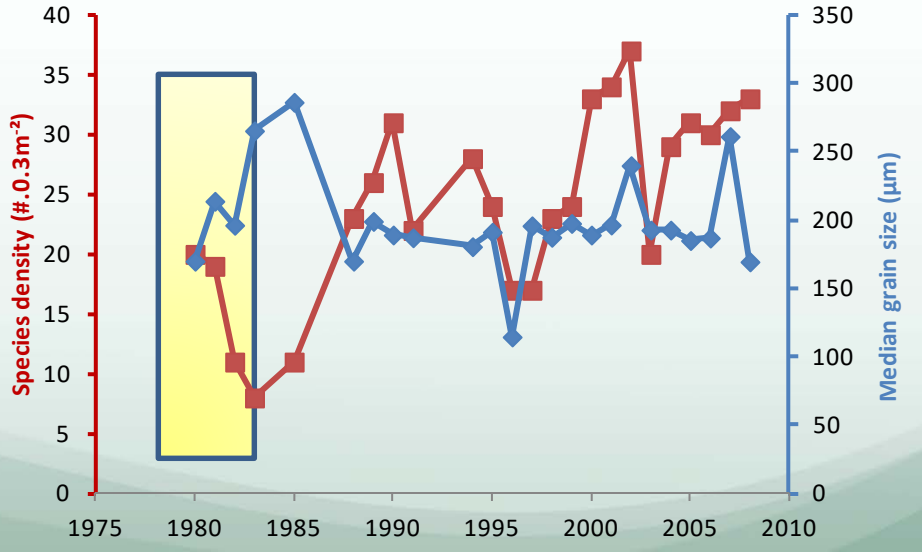
Benthic long-term series and climate change

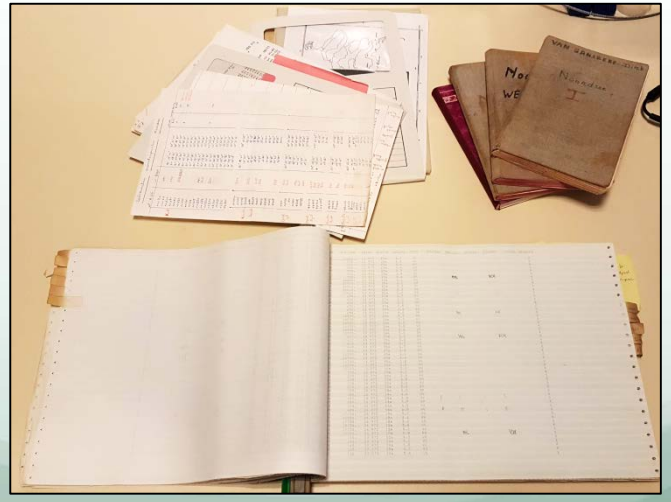
- BEWG initiative on regime shift detection (2010)
  - Marbiol-ILVO dataset: 1979-2008
  - Both local and broad-scale environmental variables correlate to variability in species density
    - NAO winter index
    - Sediment median grain size





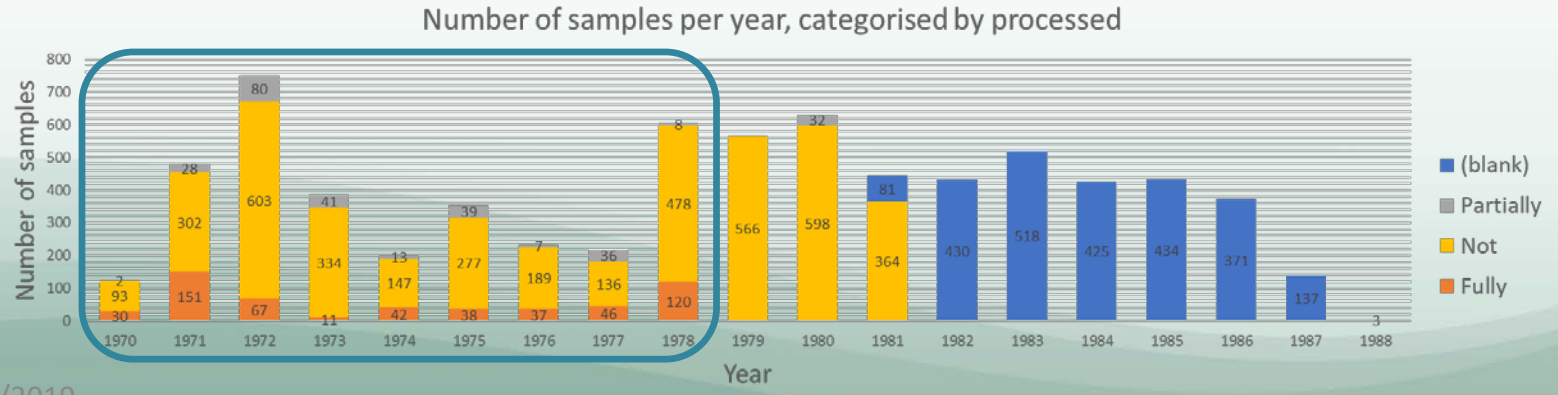
Benthic long-term series and climate change

- Recent sample rescue action @ Marbiol
  - Inventory and database on macrobenthos samples collected in the BPNS 1970-1988
  - 8145 samples, 7 % processed, 86 % Van Veen
  - 413 locations



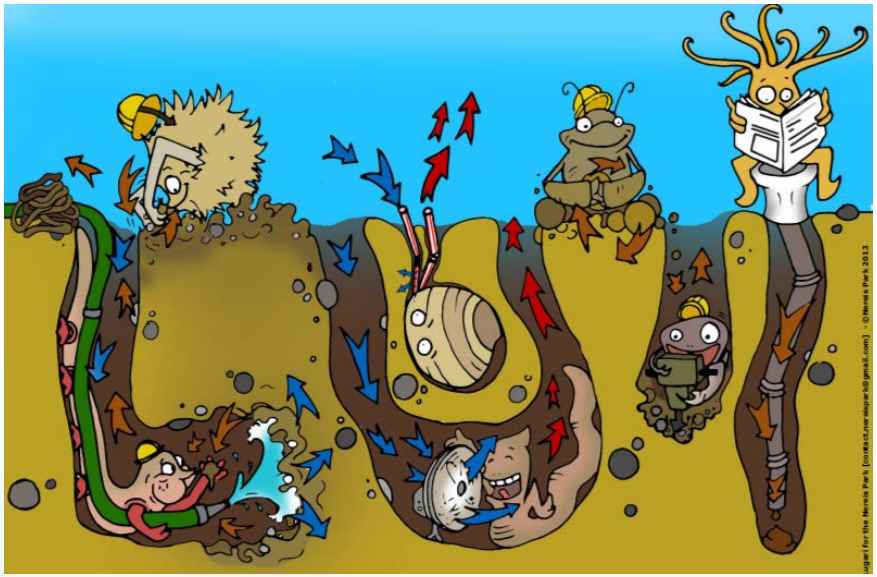
Benthic long-term series and climate change

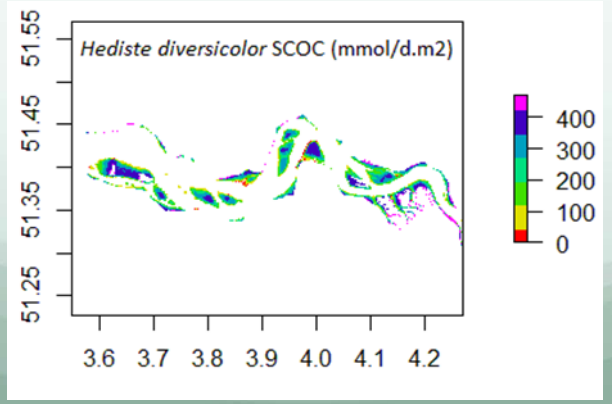
- Recent sample rescue action @ Marbiol
  - Several stations have good time series
  - Often highly replicated samples (n: 5-10)
  - Samples are in good status
  - Opportunity for collaboration within Belgian ICES community

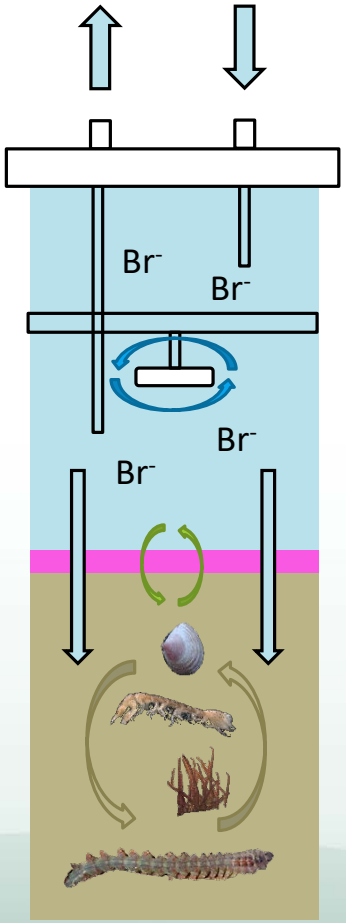


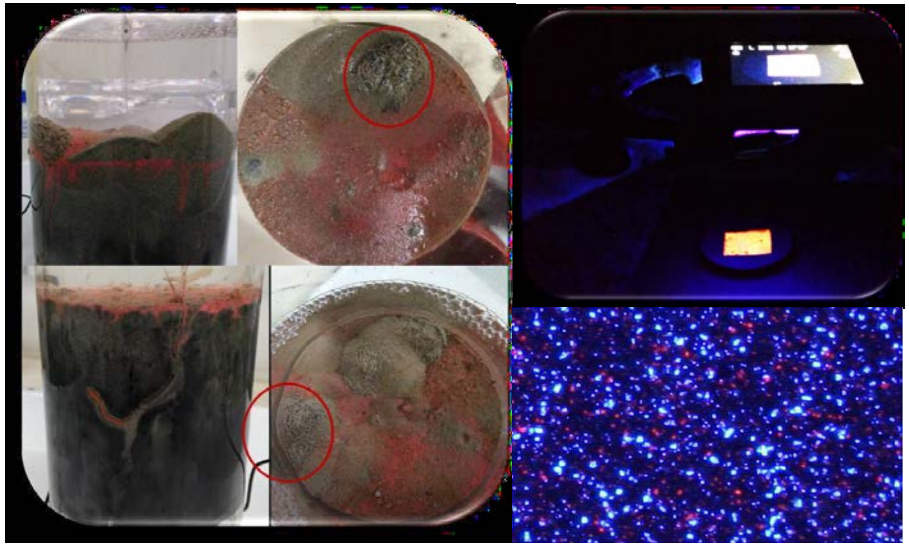
Benthic biodiversity and ecosystem functioning

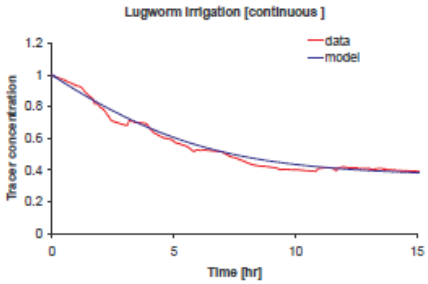
- Biodiversity – ecosystem functioning relationships
  - Natural and anthropogenic environmental gradients
- Implications for:
  - Ecosystem service delivery, e.g. nutrient/biogeochemical cycling
  - Seafloor integrity
- Managerial importance
- Experimental and modelling tools



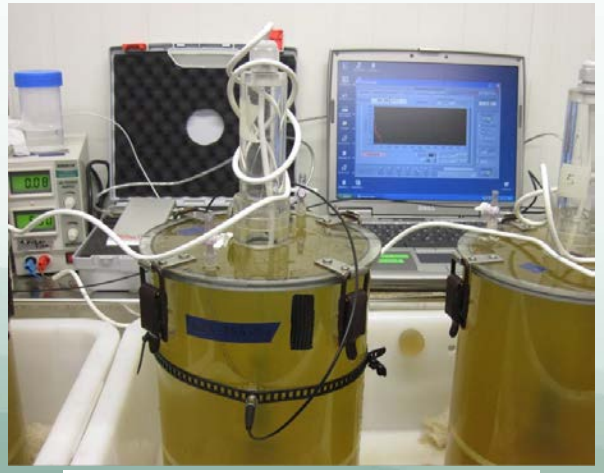




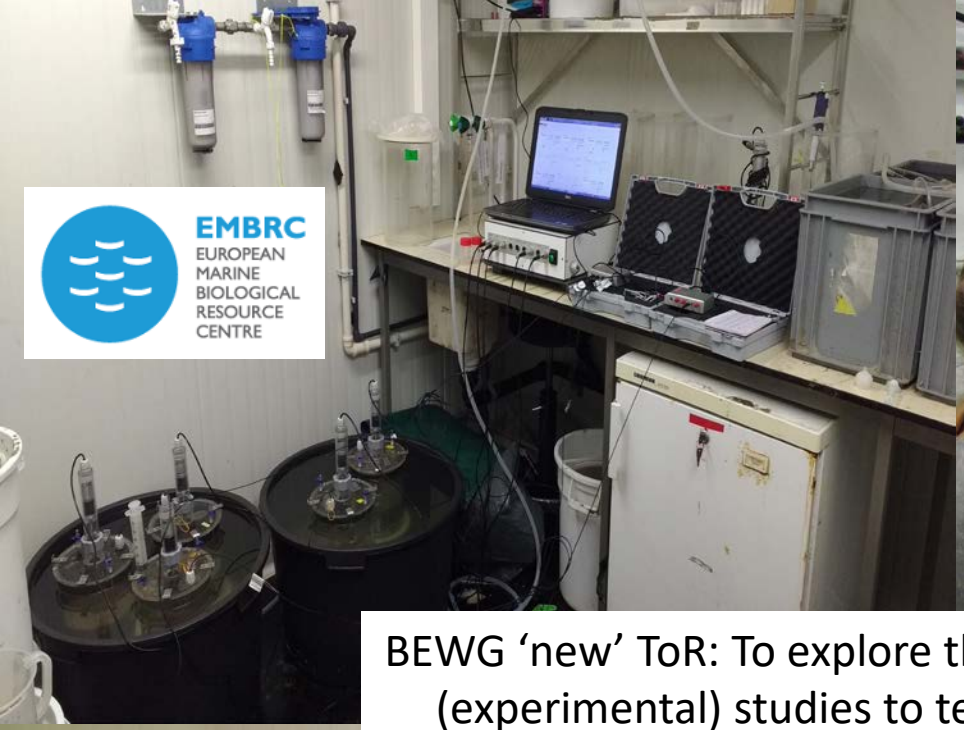




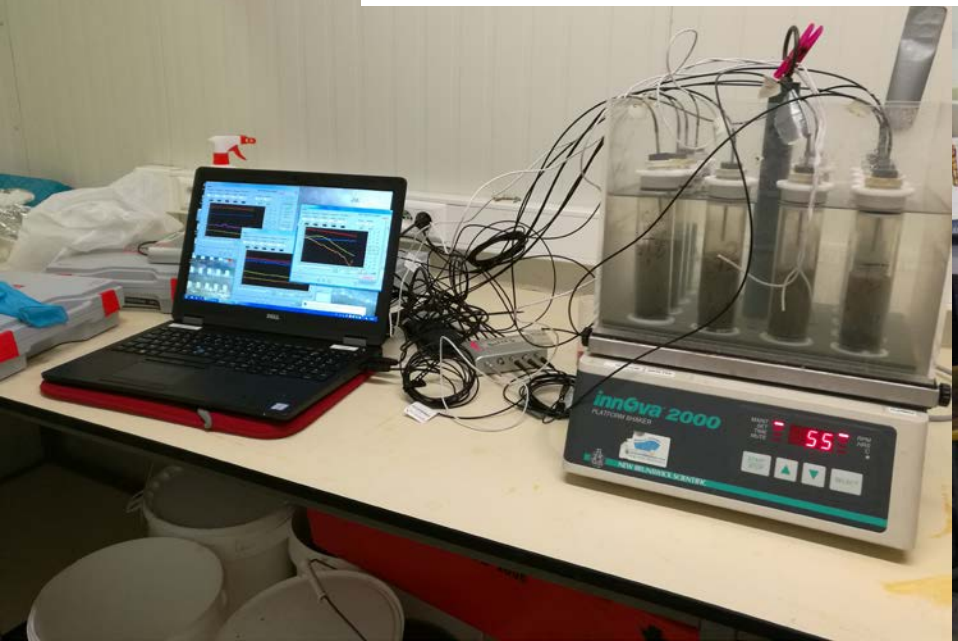
$$\frac{\partial C(z,t)}{\partial t} = D_b \frac{\partial^2 C(z,t)}{\partial^2 z^2} - W\frac{\partial C(z,t)}{\partial z} + K(z,t) - R(z,t)$$



$$CR\left(L\,h^{-1}\ dry\ weight^{-1}\right) = \frac{V^*(\log_e C_1 - \log_e C_2)}{t^* g}$$



BEWG ‘new’ ToR: To explore the feasibility to undertake (experimental) studies to test ecologically relevant hypotheses in relation to benthic responses



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Benthic biodiversity and ecosystem functioning

- ICES expert study group on Climate Related Benthic Processes in the North Sea
  - Compilation of feeding, mobility and sediment reworking traits for the calculation of community bioturbation potential (BPc)
  - Widespread application of the indicator, including BPNS

$$BP_c = \sum_{i=1}^{n} \sqrt{Bi/Ai} \times Ai \times Mi \times Ri$$

Ecology and Evolution
Open Access

A bioturbation classification of European marine infaunal invertebrates

Ana M. Queirós[1], Silvana N. R. Birchenough[2], Julie Bremner[2], Jasmin A. Godbold[3], Ruth E. Parker[2], Alicia Romero-Ramirez[4], Henning Reiss[5,6], Martin Solan[3], Paul J. Somerfield[1], Carl Van Colen[7], Gert Van Hoey[8] & Stephen Widdicombe[1]

Protecting the Commons: the use of Subtidal Ecosystem Engineers in Marine Management

ULRIKE BRAECKMAN[a,*], MARIJN RABAUT[a], JAN VANAVERBEKE[a], STEVEN DEGRAER[b,a] and MAGDA VINCX[a]
[a]Ghent University, Department of Biology, Marine Biology Research Group, Krijgslaan 281/S8, 9000 Ghent, Belgium
[b]Royal Belgian Institute of Natural Sciences, Operational Directorate Nature, Gulledelle 100, 1200 Brussels, Belgium

Table 1. Bioturbation potential allocations for 1033 macrofaunal species. Mi and Ri are the reworking and mobility traits, and Fti is the corresponding sediment reworking functional types.

Scientific Name	Aphia ID	Ri	Mi	Fti	Phylum	Class	Order	Family
Grania	369702	4	3	B	Annelida	Clitellata	Enchytraeida	Caenogastropoda
Tubificoides amplivasatus	137570	4	3	B	Annelida	Clitellata	Haplotaxida	Tubificidae
Tubificoides insularis	137578	4	3	B	Annelida	Clitellata	Haplotaxida	Tubificidae
Tubificoides pseudogaster	137582	4	3	B	Annelida	Clitellata	Haplotaxida	Tubificidae
Oligochaeta	2036	4	3	B	Annelida	Clitellata		
Cossura longocirrata	129984	2	3	S	Annelida	Polychaeta		Cossuridae
Chirimia biceps	130277	3	2	UC/DC	Annelida	Polychaeta		Maldanidae
Clymenura lankesteri	130284	3	1	UC/DC	Annelida	Polychaeta		Maldanidae
Euclymene	129347	3	1	UC/DC	Annelida	Polychaeta		Maldanidae
Lumbriclymene	129350	3	1	UC/DC	Annelida	Polychaeta		Maldanidae
Nicomache	129357	3	1	UC/DC	Annelida	Polychaeta		Maldanidae

Contents lists available at ScienceDirect
Estuarine, Coastal and Shelf Science
journal homepage: www.elsevier.com/locate/ecss

ELSEVIER

Structural and functional diversity of soft-bottom macrobenthic communities in the Southern North Sea

Naomi T. Breine[a,*], Annelies De Backer[a], Carl Van Colen[b], Tom Moens[b], Kris Hostens[a], Gert Van Hoey[a]

Concluding slide

- How was your work inspired by ICES?
  - ToRs ~ Marbiol fundamental research on benthic BDEF
  - Network of experienced benthic ecologists in the ICES region and beyond
- How did your work contribute to ICES?
  - Status report on Climate Change in the North Atlantic
  - Annual BEWG reports, including:
    - Exercises on long-term series and bioturbation (mapping)
    - Presentation of ongoing research @ Marbiol

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Flanders Research Institute for Agriculture, Fisheries and Food

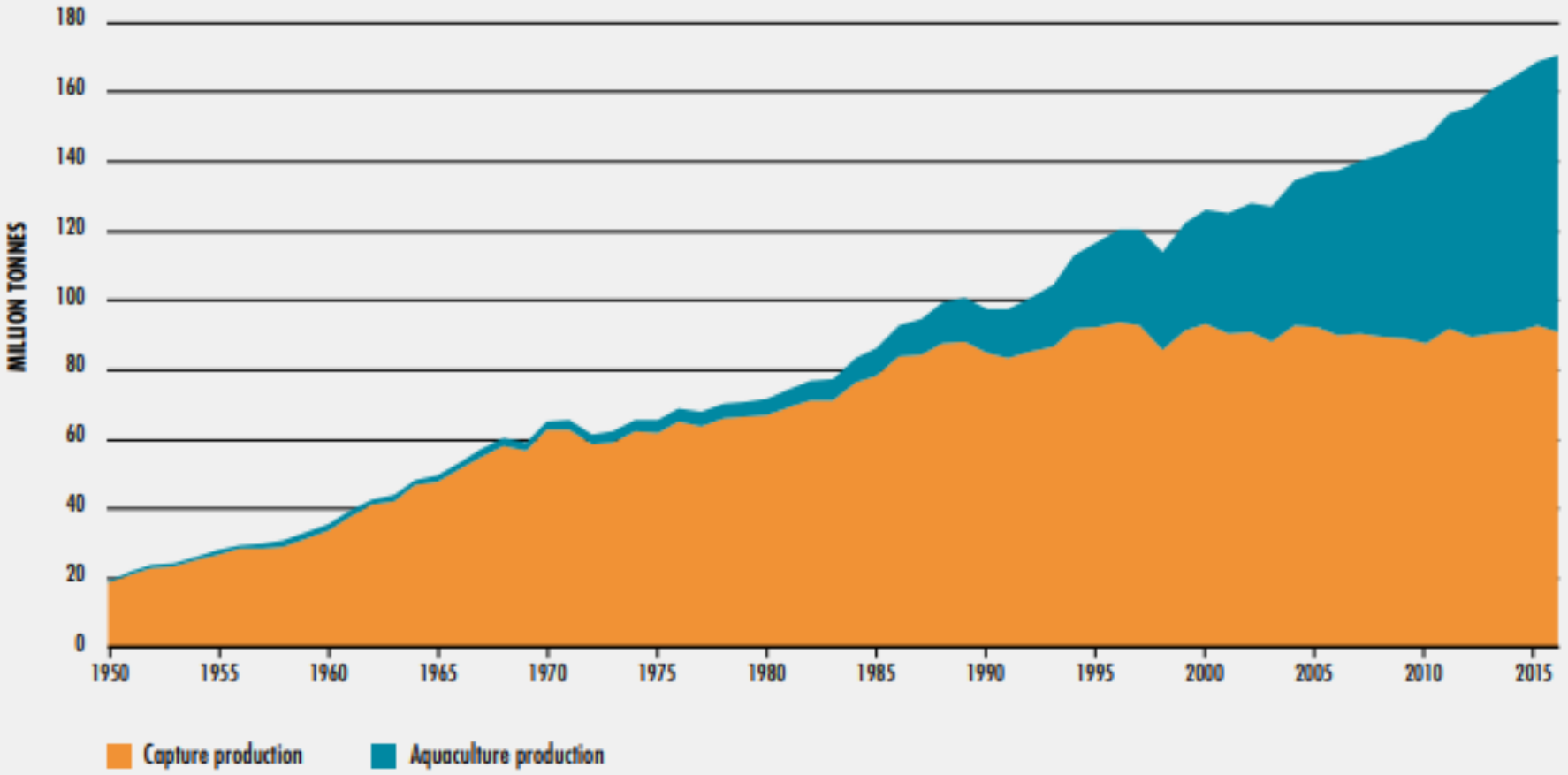
Aquaculture Steering Group (ASG)

By Michael Rust (NOAA) and Steven Degraer (RBINS)

Presented by Kelle Moreau (RBINS)

1st BICEpS colloquium, Brussels, 14 November 2018

WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION



NOTE: Excludes aquatic mammals, crocodiles, alligators and caimans, seaweeds and other aquatic plants

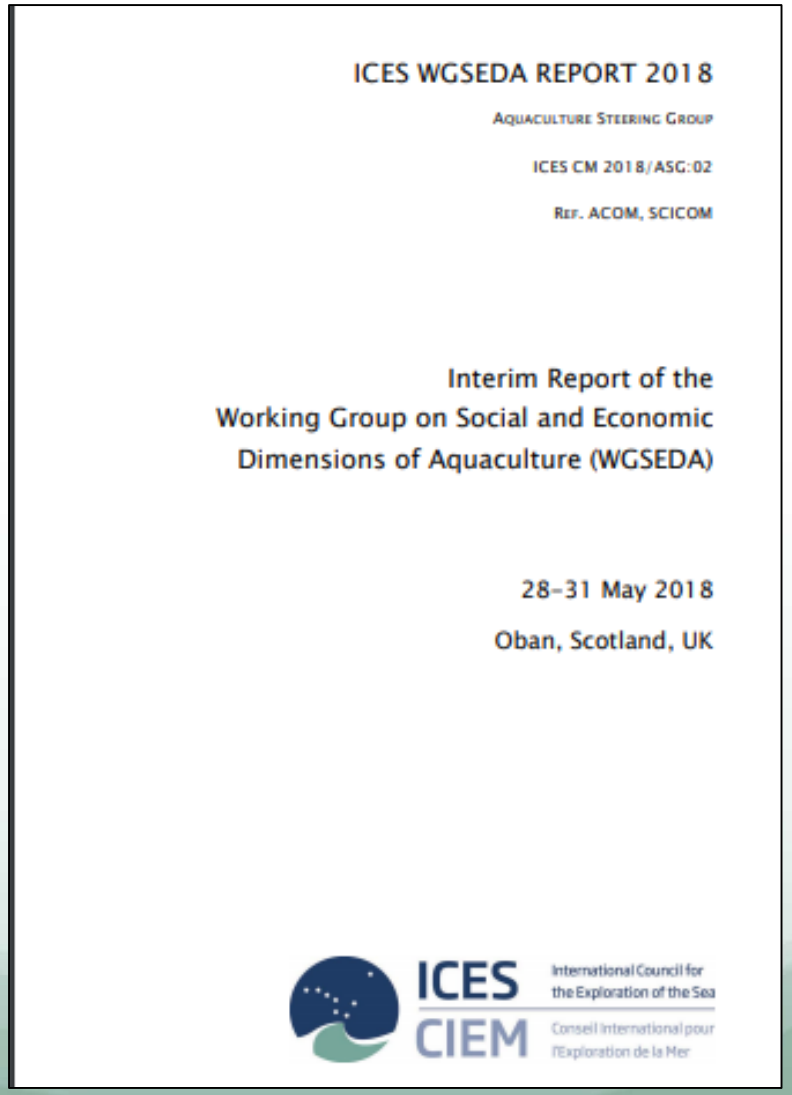
Aquaculture is making an increasing contribution to global fish and shellfish production, and is a growing and visible industry in many ICES countries.

The Aquaculture Steering Group (ASG) is responsible for **guiding and supporting expert groups** that are working on **science and advisory topics** contributing to the **sustainable development of aquaculture**.

ASG currently coordinates 5 WGs (other WGs were dissolved, or are to be constructed).

Working Group on Social and Economic Dimensions of Aquaculture (WGSEDA)

Evaluating the social and economic consequences of aquaculture operations.



ICES WGSEDA REPORT 2018

AQUACULTURE STEERING GROUP

ICES CM 2018/ASG:02

REF. ACOM, SCICOM

Interim Report of the
Working Group on Social and Economic
Dimensions of Aquaculture (WGSEDA)

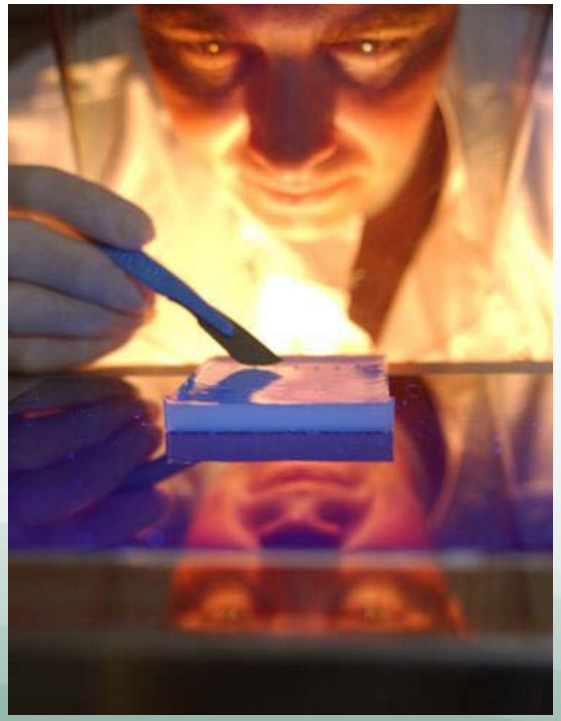
28–31 May 2018

Oban, Scotland, UK

ICES
International Council for the Exploration of the Sea
CIEM
Conseil International pour l'Exploration de la Mer

Working Group on Application of Genetics in Fisheries and Aquaculture (WGAGFA)

Genetics of cultured and wild-caught species.



ICES WGAGFA REPORT 2018

AQUACULTURE STEERING GROUP

ICES CM 2018/ASG:03

REF. ACOM, SCICOM

Interim Report of the Working Group on the Application of Genetics in Fisheries and Aquaculture (WGAGFA)

15–17 May 2018

Brest, France

ICES International Council for the Exploration of the Sea

CIEM Conseil International pour l'Exploration de la Mer

Working Group on Pathology and Diseases of Marine Organisms (WGPDMO)

Types, transmission and prevalence of diseases affecting cultured species and actions that can be taken to address them.

ICES WGPDMO REPORT 2018

AQUACULTURE STEERING GROUP

ICES CM 2018/ASG:01

REF. ACOM, SCICOM

Report of the Working Group on Pathology and Diseases of Marine Organisms (WGPDMO)

13–17 February 2018

Riga, Latvia

ICES International Council for the Exploration of the Sea

CIEM Conseil International pour l'Exploration de la Mer

Working Group on Scenario Planning on Aquaculture (WGSPA)

Carrying capacity and relative efficiencies of alternate aquaculture systems.

Projecting the future development of aquaculture and its implications for the food system and food security.

Working Group on Environmental Interactions of Aquaculture (WGEIA)

Environmental impacts of aquaculture, approaches to monitor and mitigate them and methods of aquaculture risk assessment.

More info

https://www.youtube.com/watch?v=vCez1RF7qco&feature=youtu.be

http://www.ices.dk/community/groups/Pages/ASG.aspx + links

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LBEG BIODIVERSITY AND EVOLUTIONARY GENOMICS

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

Filip Volckaert

Laboratory of Biodiversity and Evolutionary Genomics, Department of Biology, KU Leuven

My involvement in ICES

- Belgian delegate of the ICES WG Application of Genetics in Fisheries and Aquaculture since 1999.
- Volunteer member of ICES WGHIS since 2013
- Occasional attendance of WGIPEM (Haarlem 2013)
- Regular attendance at ICES-ASC with contribution to genetics-oriented sessions (2 as co-organizer)

- The University of Leuven was the home of Pierre-Joseph Van Beneden (first marine station in Oostende) and G. Gilson (joined ICES)

The case of European sea bass

- Zeebaars, loup de mer/bar
- Demersal species
- Distribution range: from the Mediterranean Sea to Eastern Atlantic (Morocco to Norway)
- Extending its range northward in the North East Atlantic

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Sea bass

- Slow growth
- Late maturity (2-4y_M, 4-7y_A)
- Spawning aggregation
- Strong site fidelity
- Stock status poorly known
- Catches not regulated

Vulnerable to exploitation an local depletion

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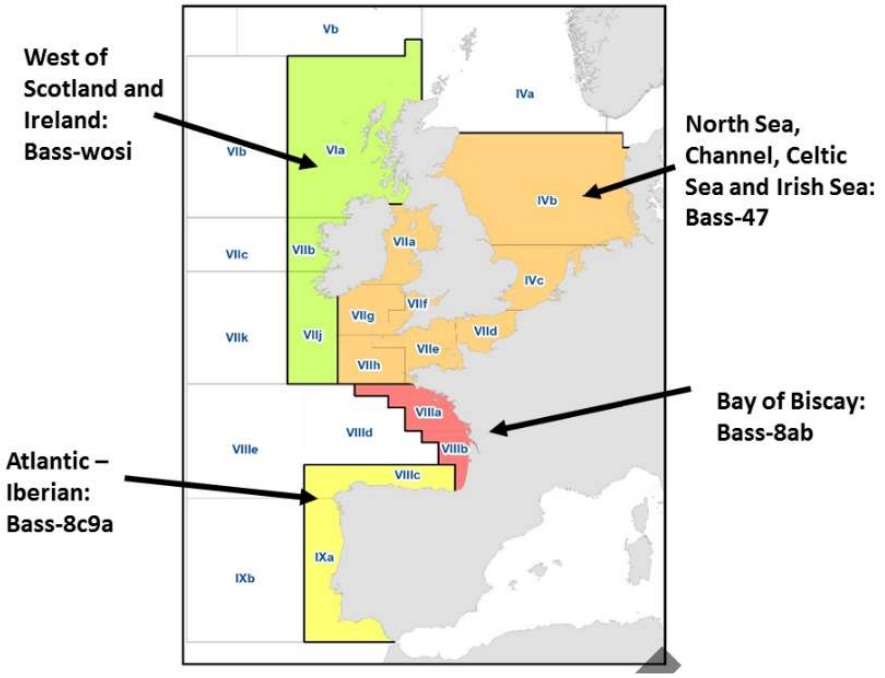
Sea bass

- In the Mediterranean Sea, it is a key species for aquaculture, commercial and recreational fisheries
- In the NE Atlantic, it is also a main target for commercial and recreational fisheries
- In 2016, the total commercial production was over 180 000 tonnes (95% from aquaculture → value ~800 million €) [FAO 2018, FishStat Plus]

Fisheries facts

- 4 stocks
- <9000 tonnes caught
- Fishing moratorium in NE Atlantic Ocean



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Sea bass research at LBEG

BIODIVERSITY AND EVOLUTIONARY GENOMICS

- Molecular markers
- Linkage and Physical map
- Whole genome sequencing
- QTL analysis
- Population genomics

Range-wide population structure of European sea bass *Dicentrarchus labrax*

ERIKA L. SOUCHE[1,2], BART HELLEMANS[1], MASSIMILIANO BABBUCCI[3], EOIN MACAOIDH[4,†], BRUNO GUINAND[5], LUCA BARGELLONI[3], DIMITRY A. CHISTIAKOV[1,6], TOMASO PATARNELLO[3], FRANÇOIS BONHOMME[5], JANN T. MARTINSOHN[4] and FILIP A. M. VOLCKAERT[1,7,*]

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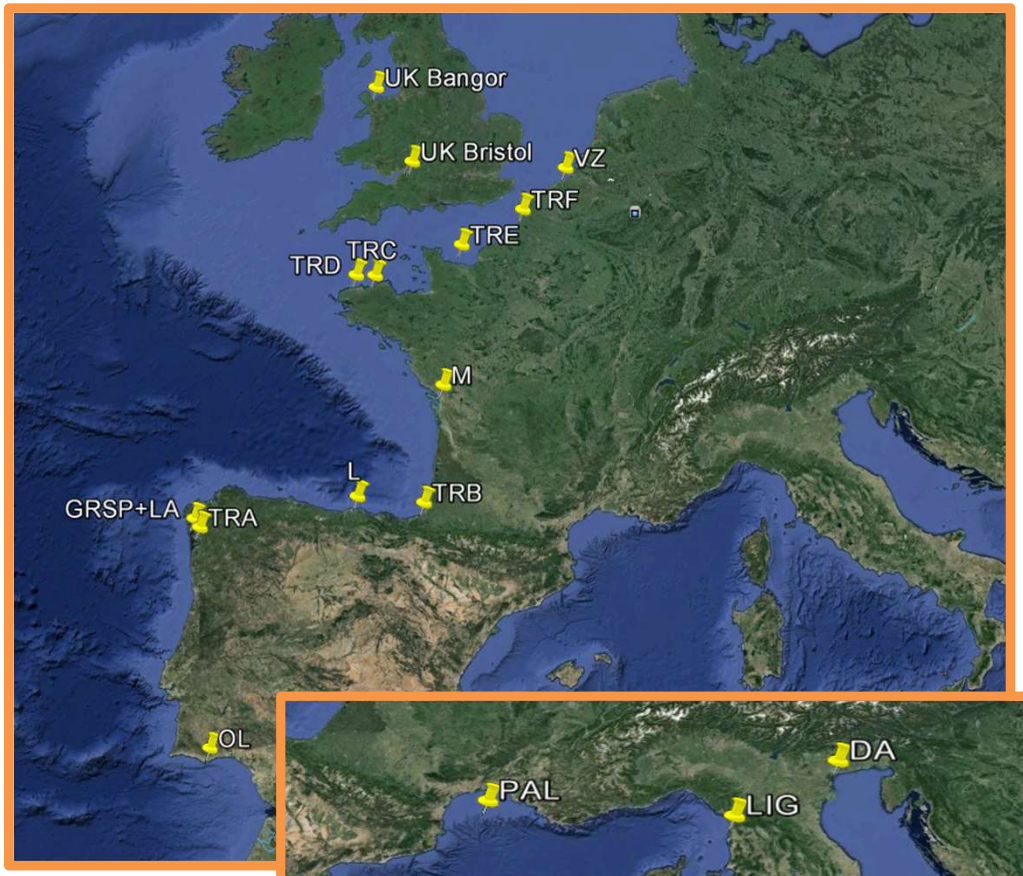
LBEG research - sampling locations

- 52 wild and farmed populations sampled across the species' distribution range
- Mediterranean Sea & Black Sea: 18 wild populations and 17 farms
- Atlantic Ocean: 14 wild populations and 2 farms
- 1939 individuals
- ddRAD sequencing yielded 2549 SNPs


UK Bangor
UK Bristol
VZ
TRF
TRE
TRC
TRD
M
L
TRB
GRSP+LA
TRA
OL


DA
PAL
LIG
LSM
CTY
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AKC
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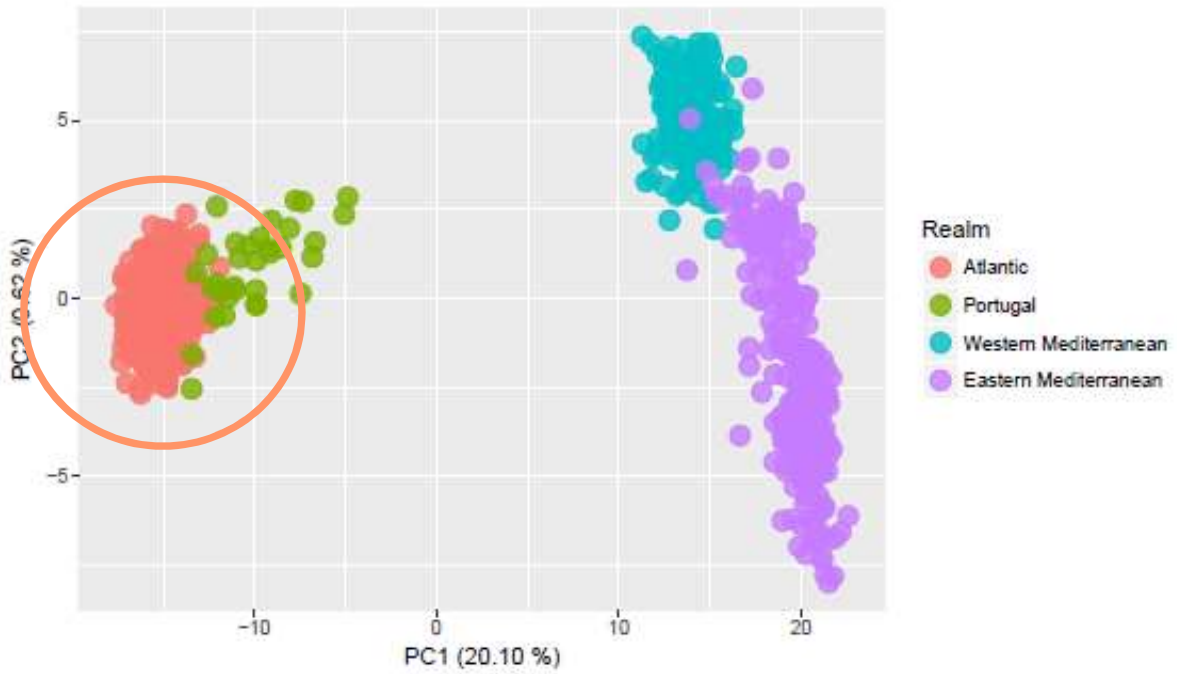
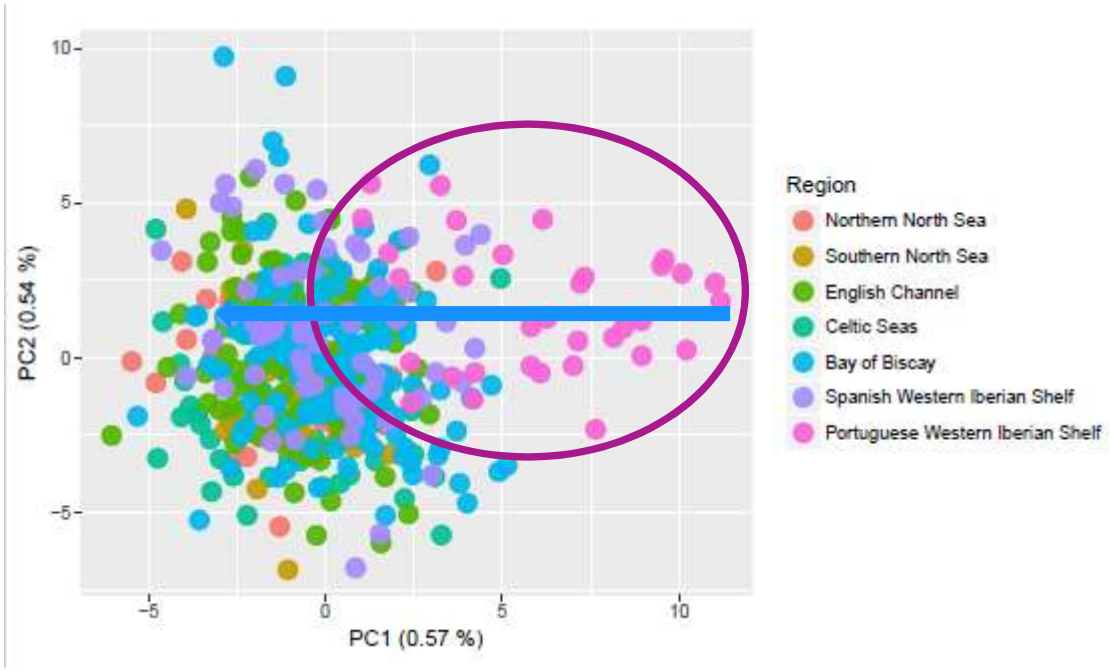
PK
TUW
MES
ISKB

An Atlantic subspecies



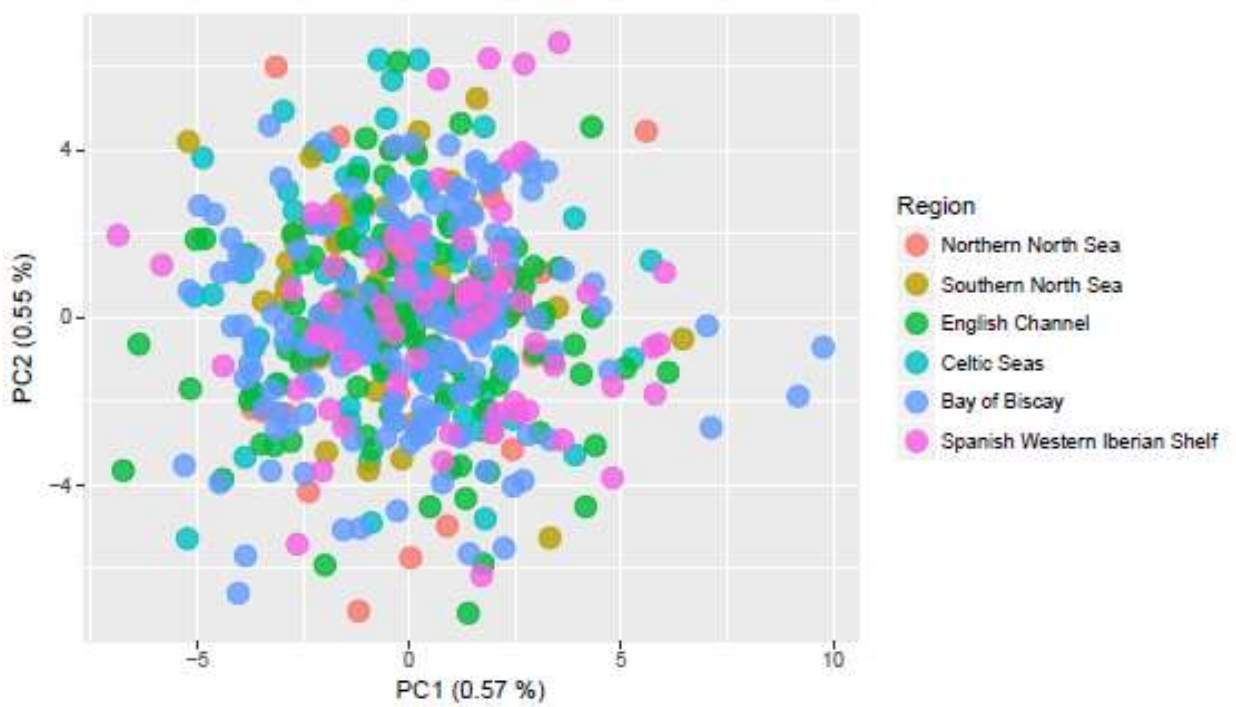
Hillen et al. In review

An Atlantic subspecies with an introgression gradient?



Hillen et al. In review

An Atlantic subspecies with a homogenous population structure?



Hillen et al. In review

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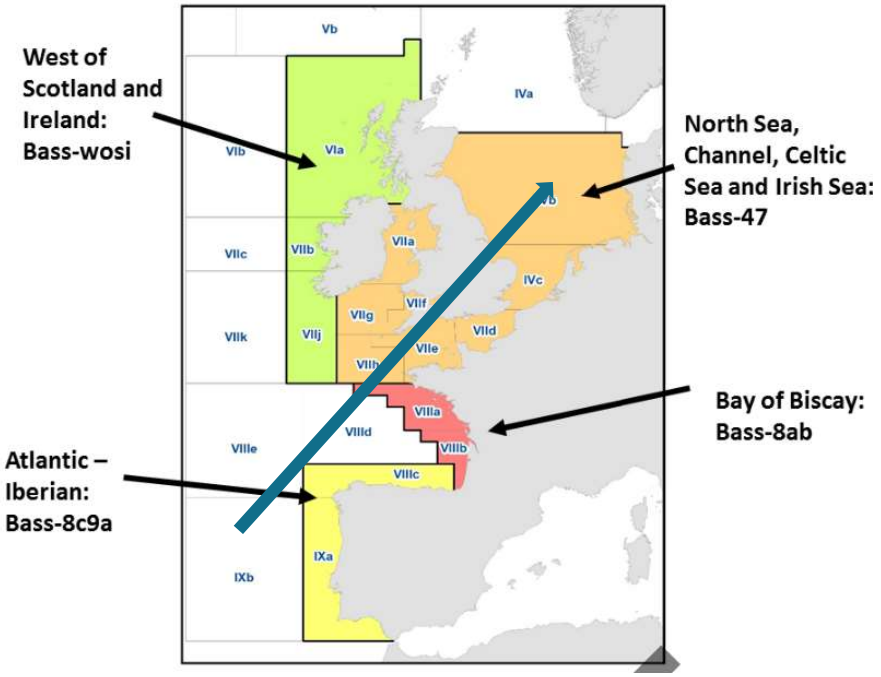
Scientific conclusions

Sea bass populations of the Northeast Atlantic Ocean show:

- Fast northward expansion
- Introgression with Mediterranean subspecies
- Local adaptation : unresolved

→ Matches with ecological and phenotypic evidence

Current ICES management of seabass



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Conclusion of my ICES involvement

- Providing expert advice, e.g. to ICES WKBASS from the EU Aquatrace project.
- Sharing information with managers
- Information source for projects
- Information source for teaching, employment, political developments, …
- Networking

Other marine-oriented research topics at LBEG

- Seascape genomics
- Barcoding
- Biophysical modeling
- Niche modeling

- Flatfish (Northeast Atlantic Ocean)
- Three-spined stickleback (North Sea)
- Polar cod (Arctic Ocean)
- Notothenioid fishes (Southern Ocean)
- Aquaculture of sea bass
- Conservation genetics – MPAs - …

Acknowledgements

LBEG team : Els Cuveliers, Sophie Delerue-Ricard, Eveline Diopere, Gregory Maes, Bart Hellemans, Jasmien Hillen and Maarten Larmuseau

ILVO – Fisheries: Kris Hostens, Johan Robbens and Loes Vandecasteele

Wageningen Marine Research: Adriaan Rijnsdorp

Royal Belgian Institute of Natural Sciences: Léo Barbut and Geneviève Lacroix

Numerous colleagues providing samples

EU project Aquatrace: Einar Nielsen and colleagues

EU project FishPopTrace: Gary Carvalho and colleagues

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Introduction to the work of HAPISG

By Koen Parmentier

1st BICEpS colloquium, Brussels, 14 November 2018

HAPISG

- Human Activities, Pressures and Impacts Steering Group
- Chair: Henn Ojaveer
- Guide and support for Egs
- Emphasis on diversity of pressures affecting marine ecosystems and their impacts

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HAPISG

- Describing and projecting trends in human pressures and impacts on marine ecosystems, including analysis of historical change
- Understanding and quantifying multiple impacts of human activity on populations and ecosystems, and proposing options for mitigation
- Prevalence and effects of contaminants, invasive species, shipping, noise, renewable energy, fishing, climate, acidification and habitat loss

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HAPISG

- Estimating vulnerability of marine ecosystems to pressures and impacts, including risk assessment and identification of limits and thresholds
- Developing indicators of pressure and impact and testing their role in management systems
- Assessing human impacts on ecosystem goods and services and developing approaches to mitigate undesirable impacts

Wrap-up

- Overview of a diverse range of techniques and approaches
- Could stimulate interactions between those groups, too few for the moment
- Interactions mainly through EG members personally

VLIZ contribution to multidisciplinary research on long-term changes in the marine environment

WG - History of Fish and Fisheries

VLIZ

Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

1st BICEpS Colloquium – Brussels, 14 November 2018

ICES CIEM

WG - History of Fish and Fisheries

An inter-disciplinary forum for scientists working on multidecadal to centennial changes in the marine environment;

Ann-Katrien Lescrauwaet

WGHIST Chairs Ruth Thurstan (UK) and Emily Klein (USA), WGHIST members

1st BICEpS Colloquium – Brussels, 14 November 2018

VLIZ

Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

Working Group on the History of Fish & Fisheries (WGHIST)

- Current iteration approved for 2018-2020
- Share ongoing global research
  - *North Atlantic, North Sea, Baltic Sea, South Africa…*
- Discuss and further collaborative work
- Concrete deliverables, e.g. metadata catalogue, published datasets and manuscripts
- Focus from data recovery and digitisation to contribution to current science and management (eg MSFD)

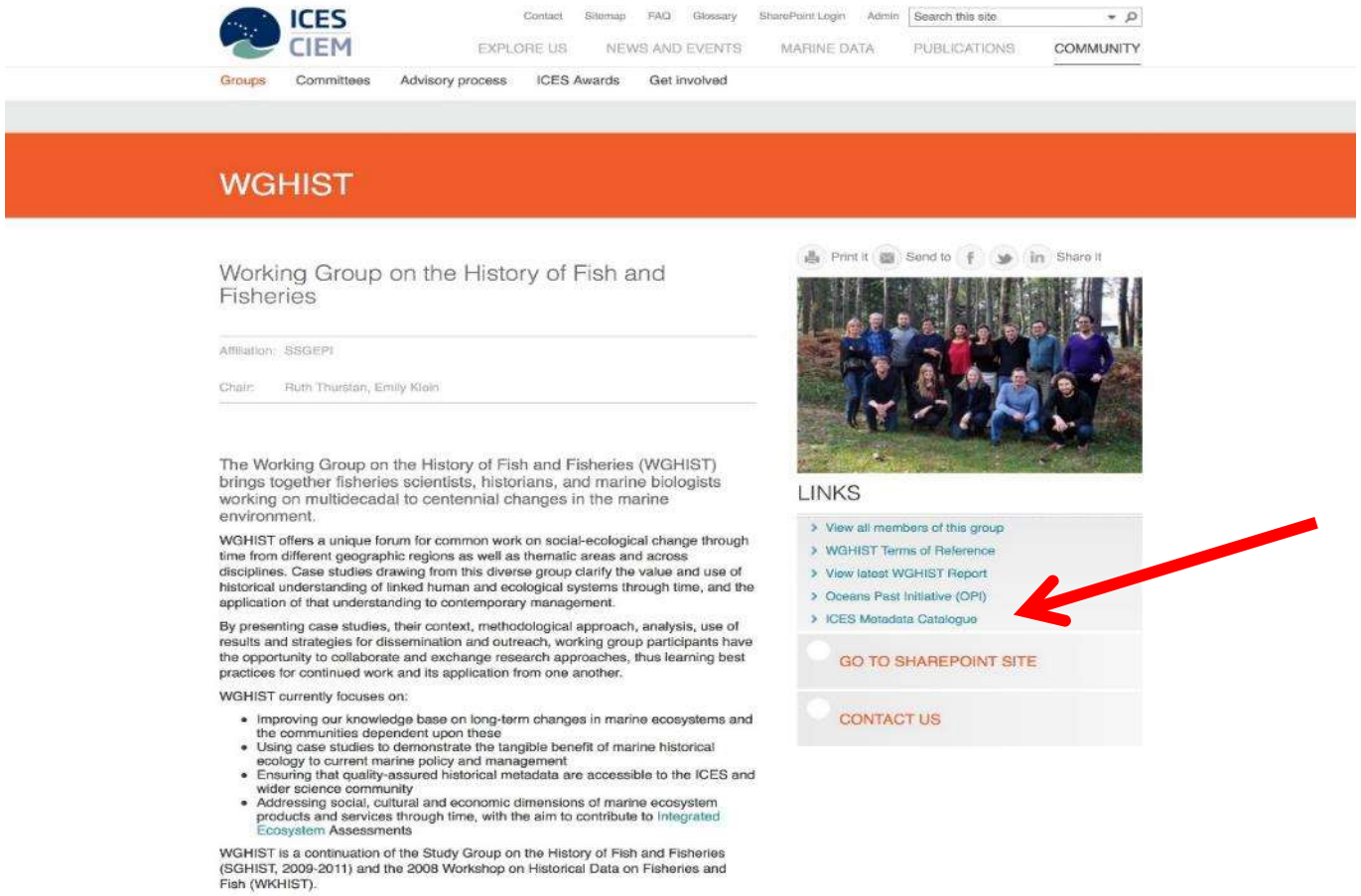
Our current iteration…

"WGHIST 2018–2020 will focus on operationalizing historical data for ***current scientific questions and management needs****. In particular...increasing the visibility and accessibility of* ***historical data*** *to ICES and the wider scientific community, and conducting* ***interdisciplinary research*** *that improves our understanding of change through time and* ***the impacts these changes have had, and continue to have on social-ecological systems****..."*

Our current iteration…

1. Metadata and digital products
2. Contribute to science in ICES and beyond
3. Provide collaborative opportunities

1. Metadata & digital tools



http://www.ices.dk/community/groups/Pages/WGHIST.aspx

1. Metadata & digital tools

Metadata information

Download metadata

Metadata Standard Name	wghist
Long Title / Description	Annual statistics on Swedish fisheries in the Baltic Sea and Kattegat, by county (1914-1970)
Region	Baltic
Record Type	Fisheries statistics (FISKE, Royal Statistics Central Bureau)
Data Source	national libraries
Species or Taxonomic groups	Multispecies
Title species	Multispecies
Aphia_ID according to the World Register of Marine Species 'WoRMS'	
number of species reported	
Type of observation	catch, effort, price
Span of years	1914-1970s

ICES WGHIST

Provided by

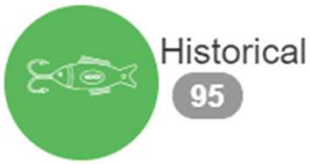
Share on social sites

Rating

Under chairmenship
VLIZ (AK Lescrauwaet)
CEFAS (G. Engelhard)

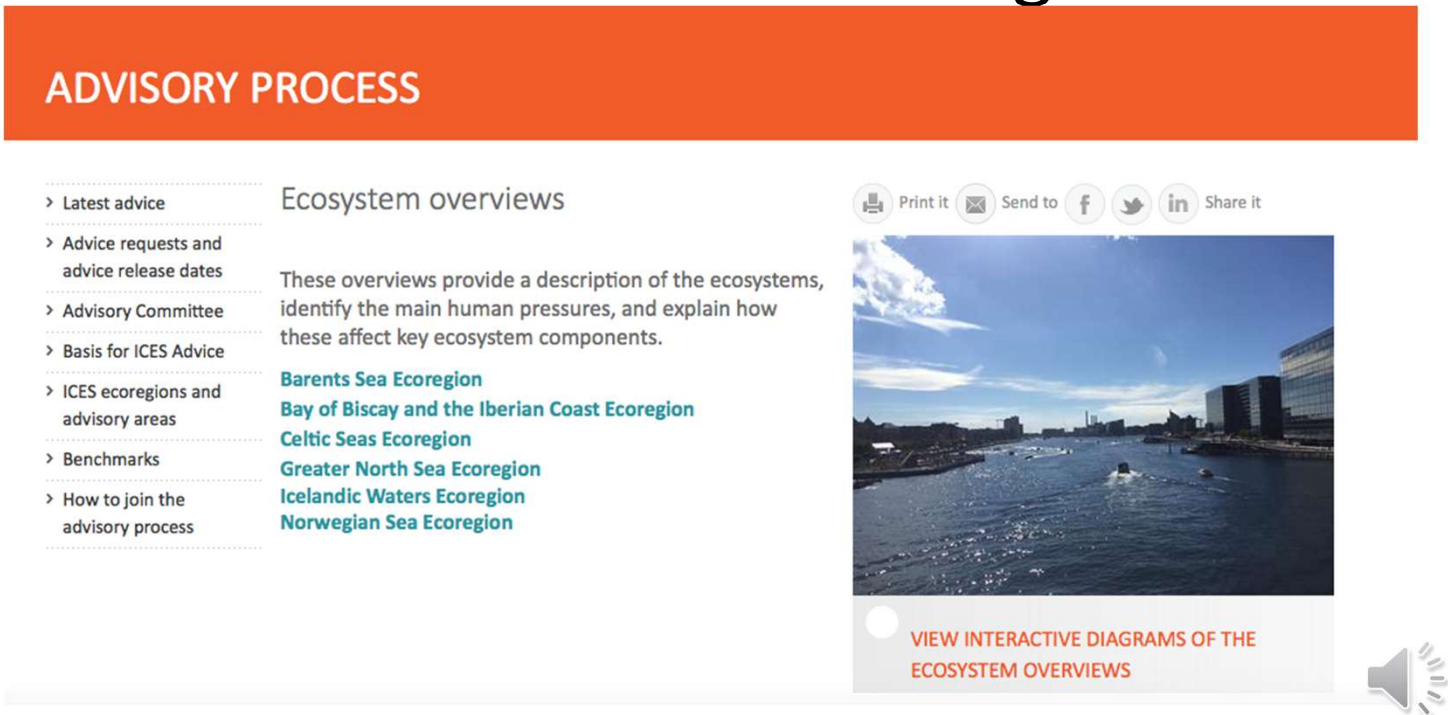
http://gis.ices.dk/geonetwork/srv/eng/catalog.search#/home

Click Historical:



2. Contribute to science

- Integrating historical data into stock assessments and ecosystem overviews
- Provide historical context for existing work



2. Contribute to science

- Integrating historical data into stock assessment
- Provide historical context for existing work
- Development of reports and manuscripts

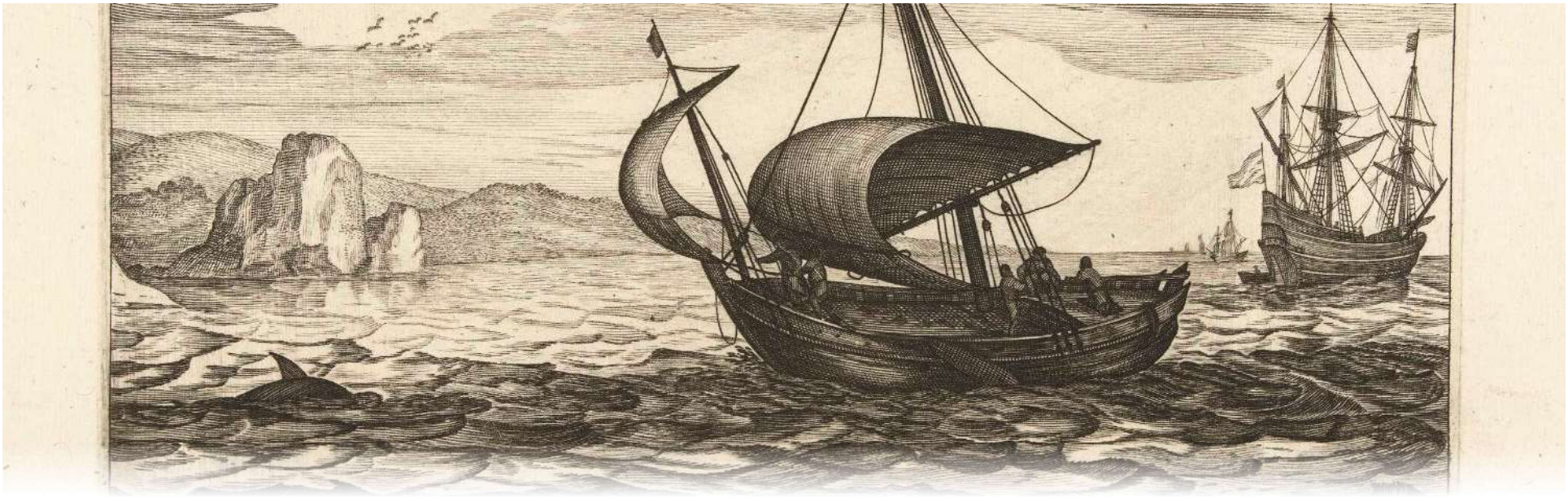
3. Collaborative Opportunities

- Fundamentally cross-disciplinary group
- Via ICES working groups
- Data sharing, products
- Publications (academic and working group reports)

THE MENHADEN FISHERY.

Fishermen signalling to shore crews the approach of a school of fish. (Sect. ..., vol. i, p. 367.)

From sketch by Capt. B. F. Conklin.



Join us!

- All welcome to participate in WGHIST
- Contact the co-chairs:

  Ruth Thurstan: **r.thurstan@exeter.ac.uk** @ruththurstan

  Emily Klein: **emily.klein04@gmail.com** @DrEmilySKlein

We tweet under #WGHIST

WGHIST contribution to ICES

- *Metadata standards*
- *Metadata catalogue (ICES dataportal)*
- *Unlocking Archives, Manuscripts and other historical data & information sources*
- *Dataset publications (DOI)*
- *Innovative methodological approaches*
- *Inter-disciplinary work*
- *Contributions to Ecosystem and fisheries overviews, reviews, assessments*
- *Integrating historical data in assessments, baseline, reference conditions, etc.*

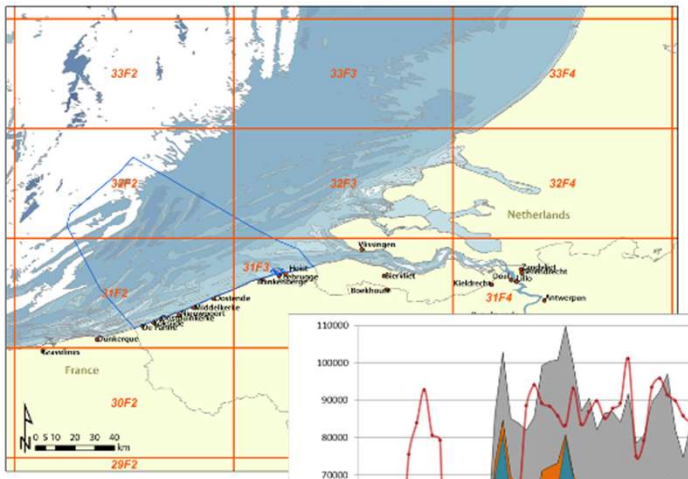
VLIZ

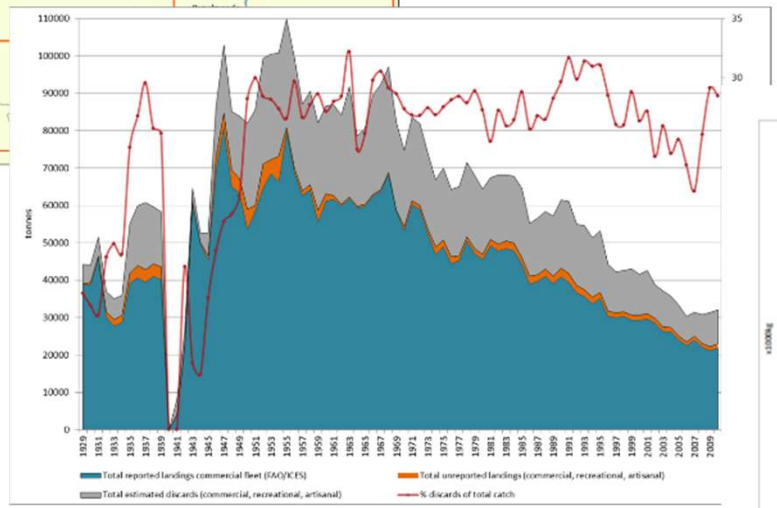
Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

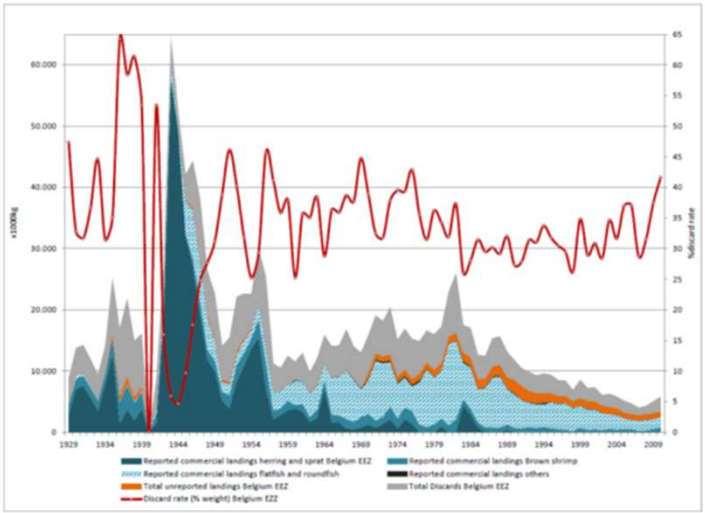
"How did your work contribute to ICES?"

* Belgian Fleet, fishing areas, species, landings, prices, etc. at higher spatial and temporal resolution monitoring

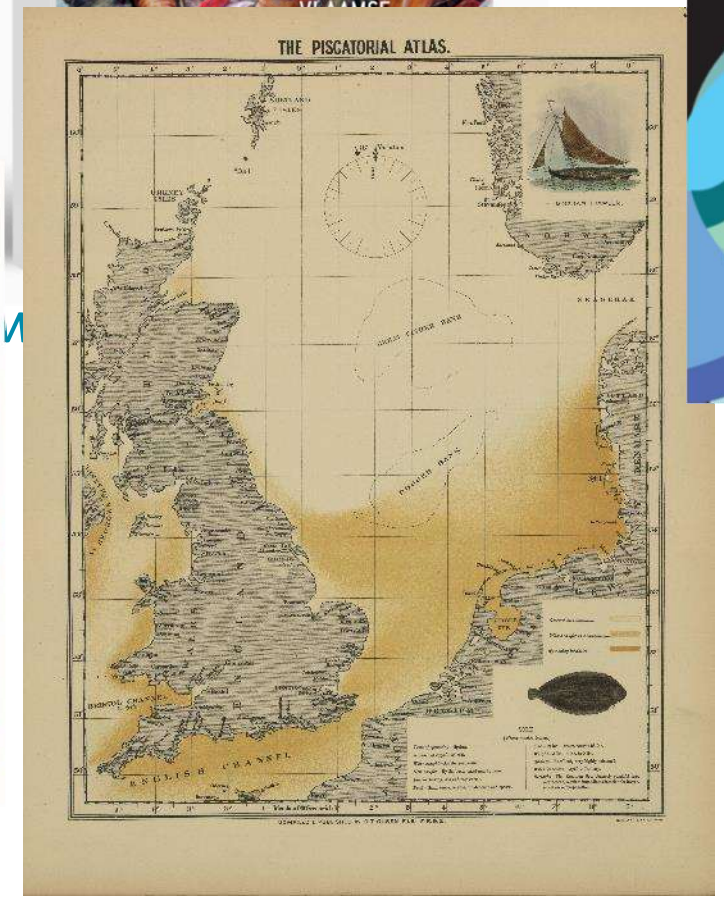
* Shifting baselines: changes in biol parameters
* Technological creep
* legislation, political, socio-economic context
* stock assessments pre-1950

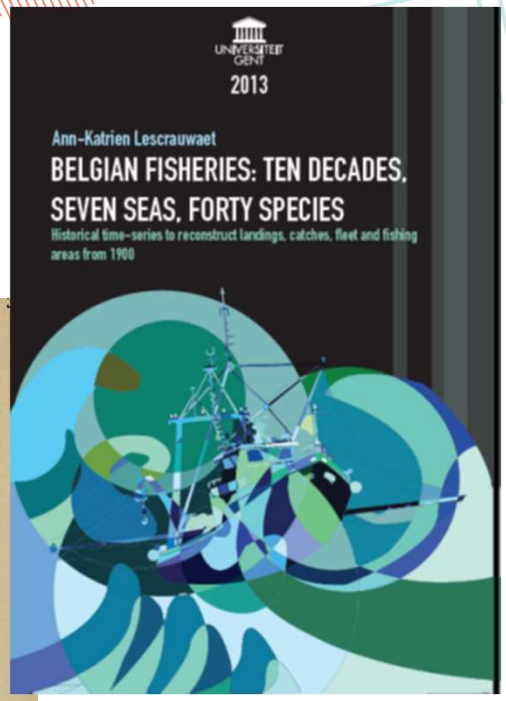






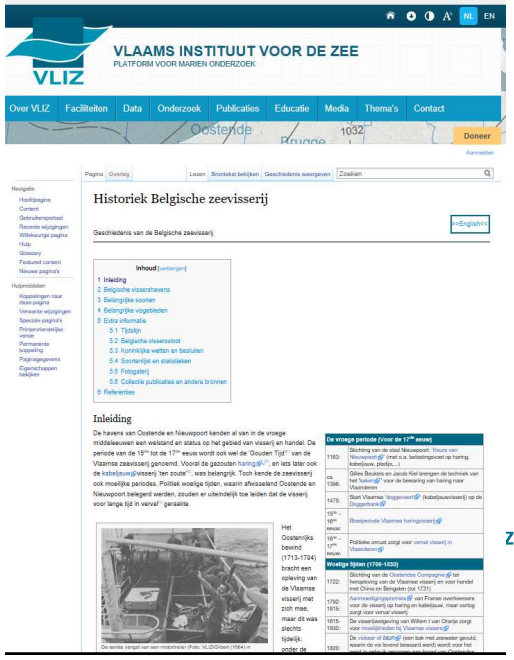
WGHIST-ICES as inspiration

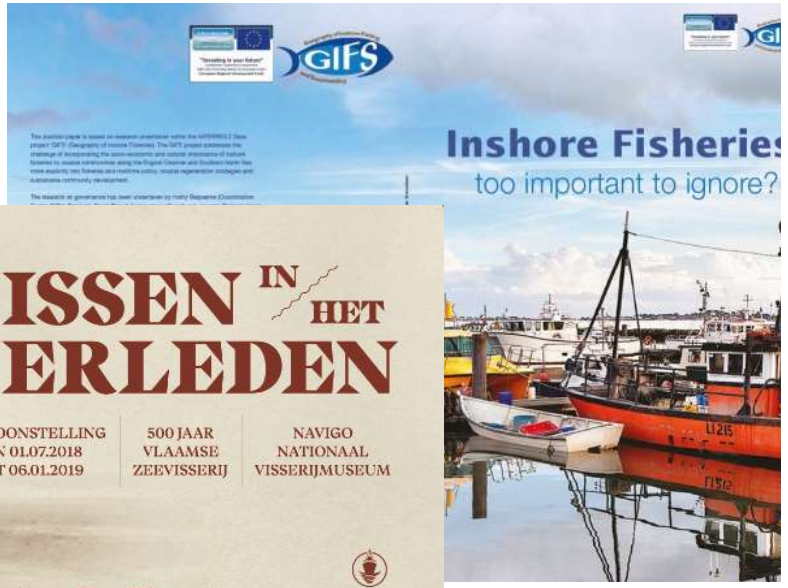




WGHIST contribute to advisory process

- *National Reporting Visserij Rapportage (long-term series)*
- *BE MSFD and MSP processes (spawning areas,..)*
- *Geography of Inshore Fisheries GIFS Policy note on importance of inshore-coastal fisheries*
- *Vissen in het Verleden, interdisciplinary group of experts (Downs herring, shrimp, species and ecosystems)*
- *Press and media: E.g. De Grote Rede, Actualities*
- *Exposition on 500 years of fisheries in Flanders; building maritime identity*





Zee vzw

WGHIST contribute to advisory process

vrt NWS

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HOME NEWS

Michaël Torfs

"Bruges fishermen can continue fishing in British waters after Bre thanks to 1666 Charter"

A privilege issued by King Charles II in 1666 grants 50 Brug fishermen the right to go fishing in British waters "for eternity", i.e. also after the Brexit will have been completed and regulations concerning British waters have been changed. This was suggested by the Flemish PM Geert Bourgeois in the VRT's current affairs programme Terzake.

The British government wants to seize the occasion of the Brexit to reclaim waters for British fishermen. Environment Minister Michael Gove suggested that Britain may extend its waters for fishing, which woul bad news for Flemish fishermen.

However, speaking in Terzake, the Flemish PM Geert Bourgeois (nationali suggested a hypothetical solution: a deal going back to... 1666. It's appare a charter issued by England's King Charles II, in which he grants 50 fisher from Bruges "eternal access" to British waters. Bourgeois unrolled a cop the document in the studio (pictures).

"The British were afraid it would still have legal grounds"

When EU regulations will have been wiped out due to the Brexit, a new leg frame will come into force. The London Convention from 1964 would be a

About the "Privilegie der Visscherie"

The "Privilegie der Visscherie", a king of fisheries privilege, was issued by Charles II of England in October 1666 to express his gratitude towards the city of Bruges, to thank them for their hospitality during his stay there in 1656 to 1659.

questions, suggestions?

WGHIST

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Data Research

Michiel Vandegehuchte: *michiel.vandegehuchte@vliz.be*
Gert Everaert: *gert.everaert@vliz.be*

VLIZ as a knowledge broker for the marine expert

The Story of Marine Litter

Lisa Devriese & Hans Pirlet

VLIZ

Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

1st BICEpS Colloquium – Brussels, 14 November 2018

ICES CIEM

VLIZ mission

→ to strengthen the marine knowledge base in Flanders

VLIZ Policy Information Division

→ knowledge broker

→ coastal and marine professionals, scientists, policymakers, industry as well as experts from the Blue Economy

Seafloor litter & microplastics

Current situation

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Flanders Marine Institute


Scientists discover a dead sperm whale and conduct an autopsy to find the cause of death
facebook.com/OccupyEducated


© CSIRO


Inside the whale's unusually bloated stomach, they find 100 plastic bags
© Pelagos Cetacean Research Institute

Seafloor litter

OSPAR – IA 2017

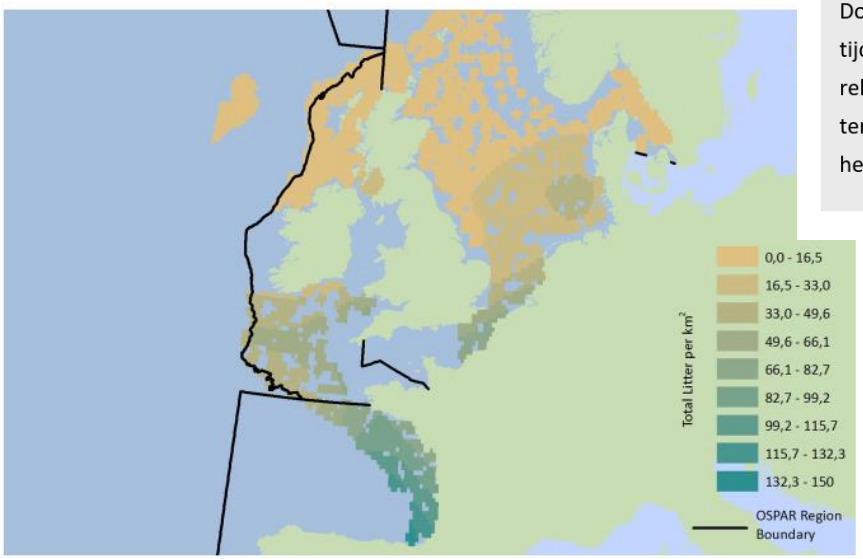


Figure 2: Relative number of litter items per km² seafloor across the Greater North Sea, Celtic Seas and the Eastern Bay of Biscay, based on the number of items caught as by-catch in fisheries trawls.

MSFD D10 - 2018

2.8.2. Afval op de zeebodem

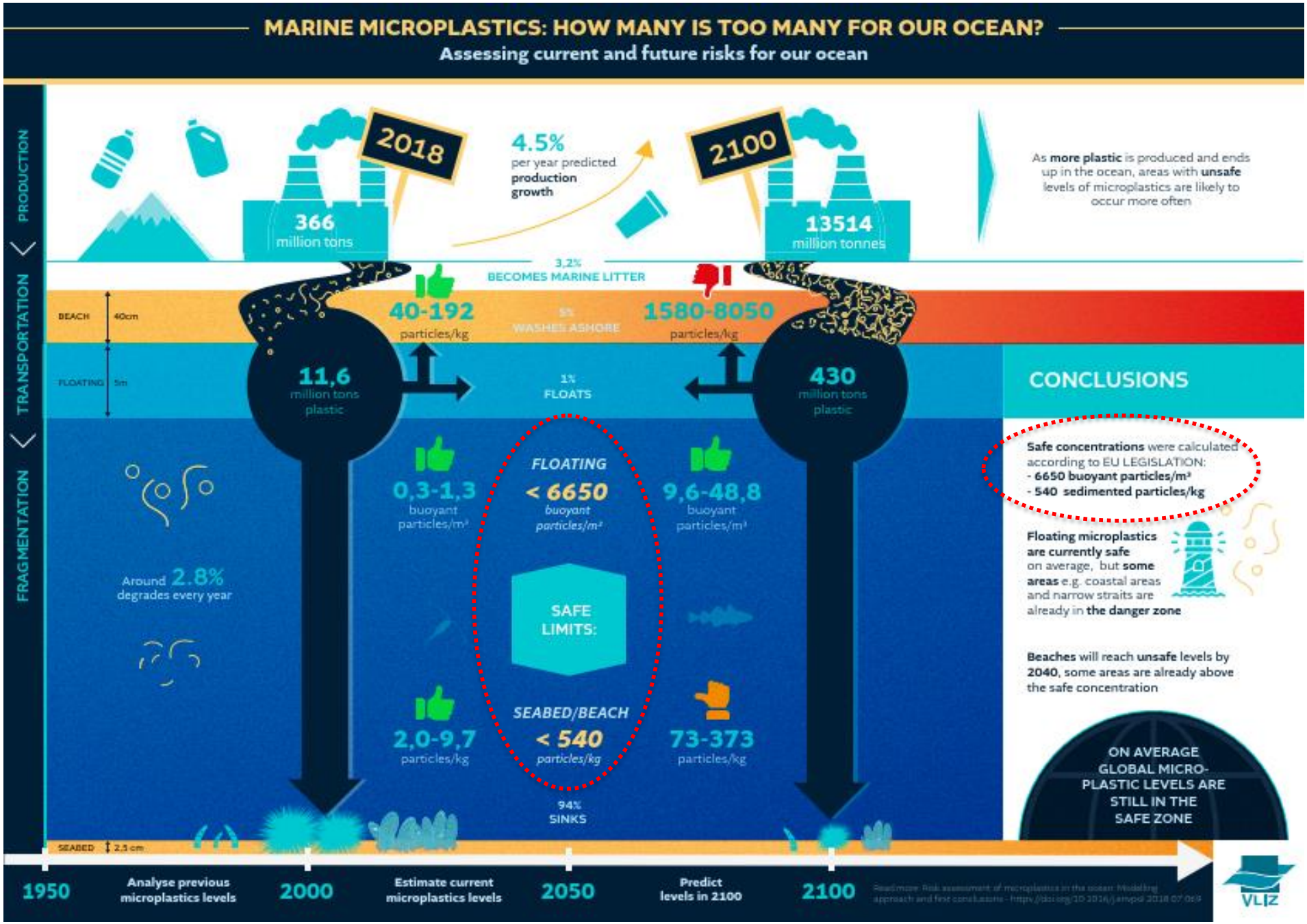
Bavo De Witte, Lisa Devriese, Loes Vandecasteele en Kris Hostens

Door de grote variatie in de aanwezige hoeveelheid afval, zowel in tijd als locatie, en de nog beperkte tijdsperiode van afvalmonitoring, is trendanalyse naar marien afval op de zeebodem op dit moment nog niet relevant. Op basis van BTS-slepen, wordt een gemiddeld relatief aantal afvalitems van 126 ± 67 items/km² teruggevonden op het BDNZ. Uit afvalonderzoek in de kustzone kon afgeleid worden dat meer dan 90% van het afval uit plastic bestaat.

ILVO

126 items/km²

90% plastic



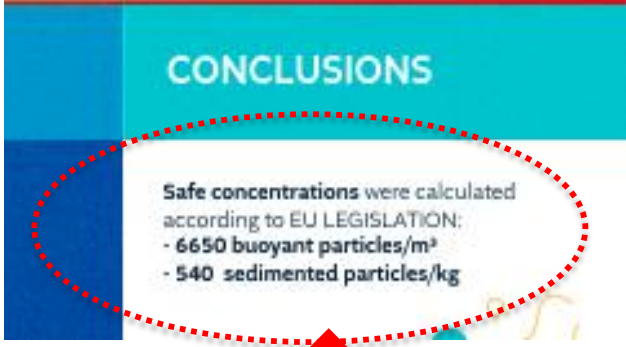
Everaert et al. 2018: http://www.vliz.be/nl/imis?persid=20323

Microplastics

Offshore:
50 – 150 mp/kg d.w. sediment

Coastal:
50 – 330 mp/kg d.w. sediment

Harbour:
> 3100 mp/kg d.w. sediment



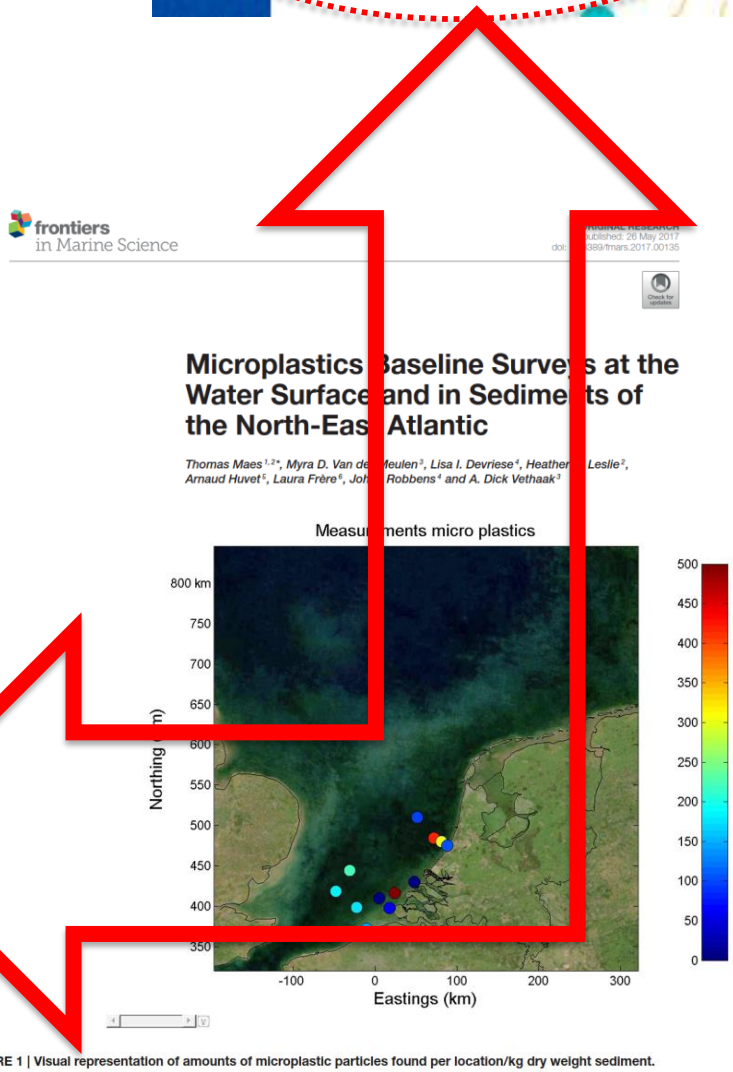


FIGURE 1 | Visual representation of amounts of microplastic particles found per location/kg dry weight sediment.

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Flanders Marine Institute

Seafloor litter & Microplastics

Recommendations

Preparing an extensive long-term monitoring programme (marine & freshwater environment) to identify the sources, the presence, behaviour and effects of (micro)litter.

The development of a risk assessment framework and the necessary techniques / models to quantitatively assess the risks for humans and the environment.

→ **ICES WGML**: expert group on marine litter

→ Focus on: Seafloor litter & Microplastics

ICES CIEM

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Flanders Marine Institute

Source: Devriese L. & Janssen C. 2017
http://www.vliz.be/nl/imis?module=ref&refid=289921

Seafloor litter & microplastics WGML expert group

“How did your work contribute to ICES?”

VLIZ
Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

"How did your work contribute to ICES?"

- Information about the national expertise with regard to seafloor litter and microplastics research & monitoring

***Policy Brief**: Marine Litter & Microplastics in Belgium*

<u>Update</u>: February 2019

***Policy Brief**: Marine Research Landscape*

Expert Guide Marine Research

<u>Update:</u> December 2018

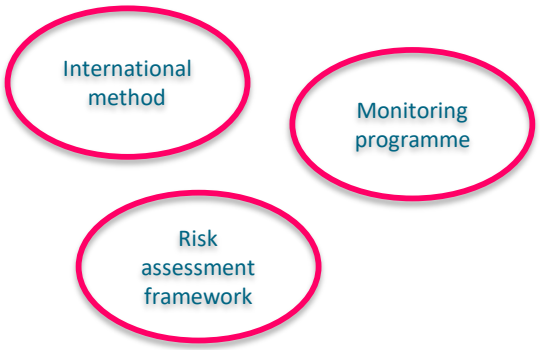
Indicator Report Marine Research and Innovation

<u>Update:</u> December 2018

"How did your work contribute to ICES?"

- Information about the national expertise with regard to seafloor litter and microplastics research & monitoring

- Contribution concerning the identification of the needs for environmental monitoring and research



ICES WGML Report 2018:

Macrolitter and microplastic needs for environmental monitoring and research:

- Gathering international knowledge and developing international methods and technologies to sample, identify and quantify the smallest fraction of microplastics and nanoplastics.
- Preparing an extensive long-term monitoring programme (marine & freshwater environment) to identify the sources, the presence, behaviour and effects of litter and microplastics.
- The development of a risk assessment framework and the necessary techniques / models to quantitatively assess the risks for humans and the environment.
- Linked ecological and socio-economic studies to evaluate the impact of policy measures concerning litter or microplastics.
- Funding to support marine litter monitoring (seafloor, beach, birds etc) and microplastic monitoring (incl. development of harmonized techniques).

"How did your work contribute to ICES?"

Key			
	OSPAR		EU
	GESAMP		Conferences
	Important International Meet-		JPI Oceans

- Ir rd to
  se ring
- C eeds for
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Figure 2. ICES WGML roadmap.

- Based on the initiatives that have been launched at international fora, VLIZ drafted the drivers and important deadlines, as such establishing the ICES WGML roadmap.

Seafloor litter & microplastics WGML expert group

“How was your work inspired by ICES?”

VLIZ
Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

"How was your work inspired by ICES?"

- ICES WGML monitoring guidelines for microplastics are being implemented in marine observations & research

Plankton communities
- *Zooplankton*
- *Phytoplankton*

Seawater
- *Microbial communities*
- *eDNA*
- *Chl a & nutrients*

Macrobenthos communties

"How was your work inspired by ICES?"

- WGML monitoring guidelines and assessment criteria for microplastics are being implemented in the VLIZ routine monitoring

- The ICES data from DOME & DATRAS surveys and the OSPAR (intermediate) assessments are:

1. Referred to in VLIZ products, e.g. Compendium & PIBs

New! 2018

Update 2019

"How was your work inspired by ICES?"

- WGML monitoring guidelines and assessment criteria for microplastics are being implemented in the VLIZ routine monitoring

- The ICES data from DOME & DATRAS surveys and the OSPAR (intermediate) assessments are:

1. referred to in VLIZ products such as the Compendium for Coast and Sea and the national marine litter Policy Brief;
2. Used in discussion platforms and innovation projects with regard to the Blue Economy; e.g.:

"How was your work inspired by ICES?"

- WGML monitoring guidelines and assessment criteria for microplastics are being implemented in the VLIZ routine monitoring

- The ICES data from DOME & DATRAS surveys and the OSPAR (intermediate) assessments are:

1. referred to in VLIZ products such as the Compendium for Coast and Sea and the national marine litter Policy Brief;
2. used in discussion platforms and innovation projects with regard to the Blue Economy;
3. Presented in (national) working groups related to marine litter and microplastics;
4. Consolidated in European policy-oriented projects.

VLIZ

AQUA-LIT

Seafloor litter & microplastics WGML expert group

“How the information did contribute to advisory process?”

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Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

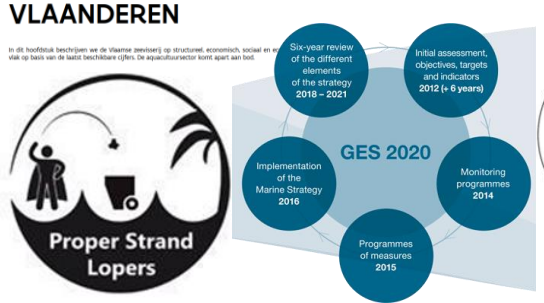
"How the information did contribute to advisory process?"

National level, e.g.:

- *BE MSFD contribution (D10)*
- *VIRA report 2018*
- *Parliamentary questions*
- *Federal action plan on marine litter*
- *Flemish integral action plan on marine litter*
- *National Working Group on marine litter*
- *Action groups (e.g. PSL)*
- *Education programmes*
- *Press and media*
- *De Grote Rede, etc.*
- *…*

DEPARTEMENT
LANDBOUW & VISSERIJ

VISSERIJ IN VLAANDEREN



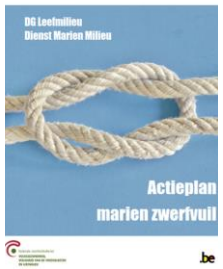
Proper Strand Lopers

Vlaams Parlement

SCHRIFTELIJKE VRAAG

SAMEN MAKEN WE MORGEN MOOIER
OVAM

Vlaamse overheid



Vlaams Integraal Actieplan
Marien Zwerfvuil

TWEEDE DRAFT

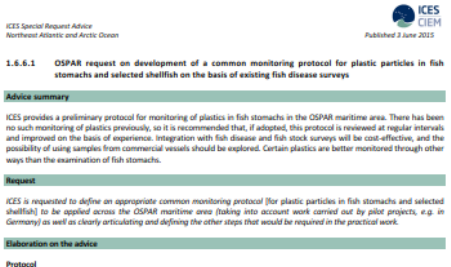
Opgemaakt in navolging van resolutie 866, aangenomen door het Vlaams Parlement op 5 oktober 2016

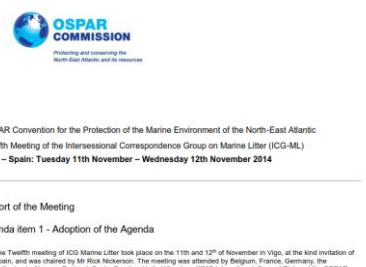
service public fédéral SANTE PUBLIQUE, SECURITE DE LA CHAINE ALIMENTAIRE ET ENVIRONNEMENT
federale overheidsdienst VOLKSGEZONDHEID, VEILIGHEID VAN DE VOEDSELKETEN EN LEEFMILIEU

"How the information did contribute to advisory process?"

ICES advisory process, e.g.:

- *MSFD TG Marine Litter*
- *BE MSFD contribution, e.g. D10*
- *National Working Group on marine litter*
- *ICES Special Request Advice – OSPAR Request*
- *OSPAR ICG-ML*
- *…*



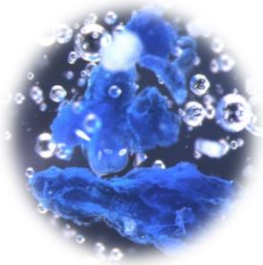


If there are questions, please contact our VLIZ litter team

Communication

Jan Seys: *jan.seys@vliz.be*

Education



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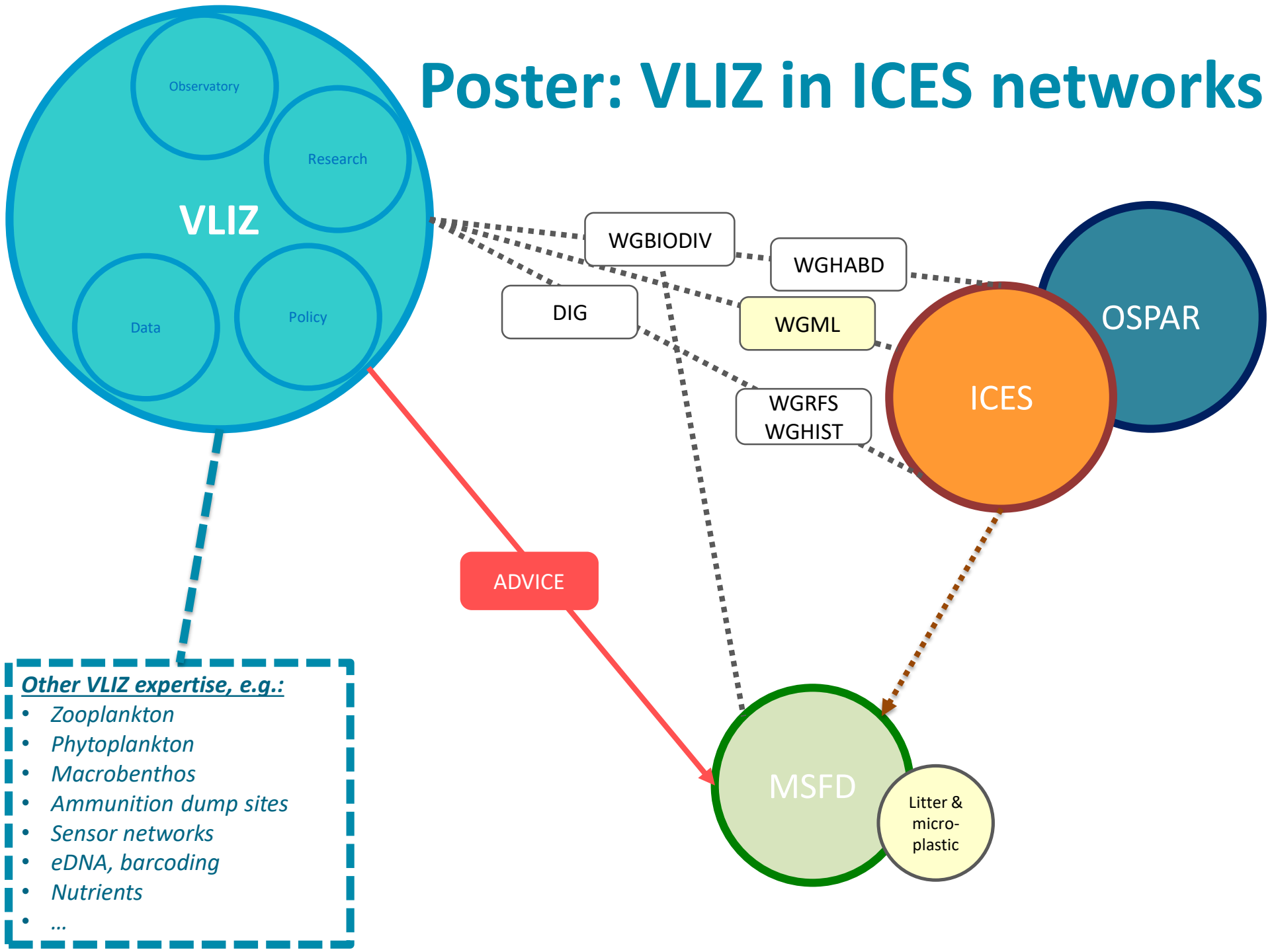
VLIZ

Vlaams Instituut voor de Zee vzw
Flanders Marine Institute

Poster: VLIZ in ICES networks



Friday 7 December 2018
Ostend

Launch of the Compendium for Coast and Sea 2018

follow us

@CompendiumVLIZ

http://www.compendiumcoastandsea.be/en

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ILVO
Flanders Research Institute for Agriculture, Fisheries and Food

Marine Chemistry Working Group

By Koen Parmentier

1st BICEpS colloquium, Brussels, 14 November 2018

MCWG

- Exchange of knowledge on all aspects of Chemistry in the Marine Environment
- Used to have a Chemical Oceanography, Trace Metals and Organic Pollutants subgroup
- Interested in water, biota and sediment
- Happy to accomodate Ocean Acidification study experts

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MCWG

- Impressive State of Service in handling OSPAR requests
- Has been reviewing, amending and developping OSPAR Monitoring Guidelines from sampling to analysis
- At the cradle of QUASIMEME (Quality Assurance of Information in Marine Environmental Monitoring in Europe)

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MCWG

- Presenting information on new contaminants
- Particular interest in the work of the yearly changing host Institute
- Guest speakers presenting local topics
- Suffers from ever shrinking amount of participants
- Participants have less and less time for contributions
- Yearly one-week meetings

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ICES request

ICES
CIEM

- Yearly formal questions to signal or tackle issues with ICES Database
- In 2016 formal ICES request to review substances of emerging concern
- Close collaboration with WGMS
- Overview of groups of potentially problematic substances
- Selected list of individual compounds with information on their use, production and toxicity

Wrap-up

- Collaboration with ICES quite close
- Contacts with members of WGMS, WGBEC, WGML, WGEEL, WGCRAN, WGPME
- Interactions mainly through EG members personally
- Interaction might benefit from ICES stimulus

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Flanders Research Institute for Agriculture, Fisheries and Food

The Working Group on Marine Benthal and Renewable Energy Developments (WGMBRED)

By Jan Vanaverbeke

1st BICEpS colloquium, Brussels, 14 November 2018

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Why?

Europe 2030 Energy Strategy

- 40% cut in greenhouse gass emissions compared to 1990
- At least a 27% share of renewable energy consumption
- At least a 27% energy savings compared with business-as-usual scenario

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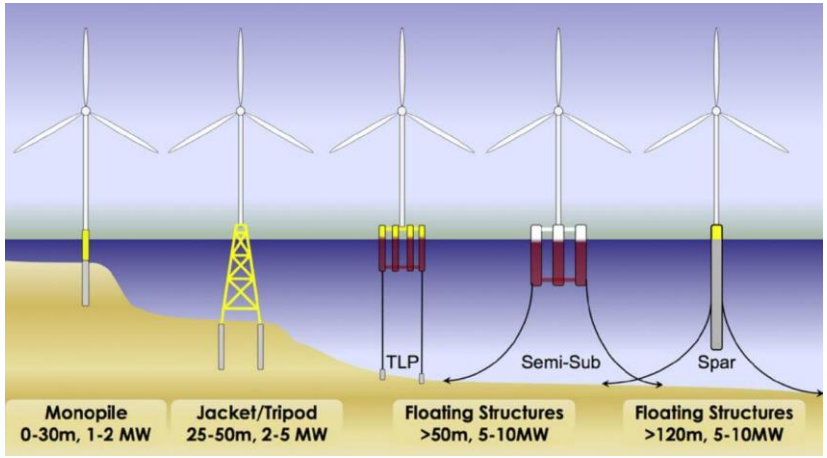
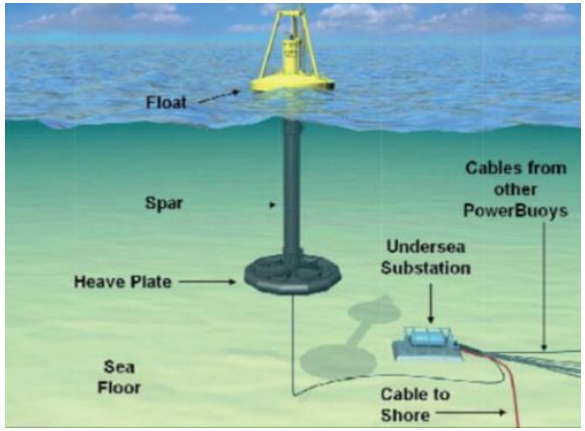
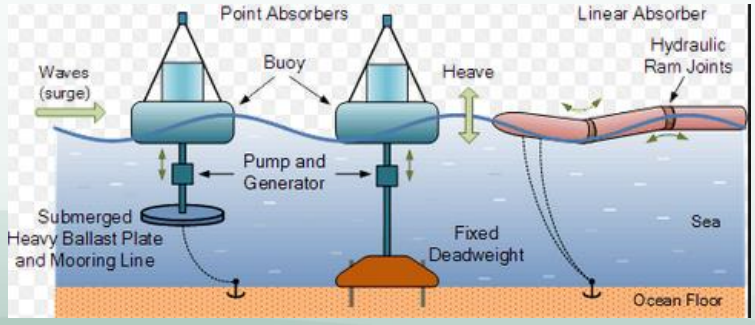
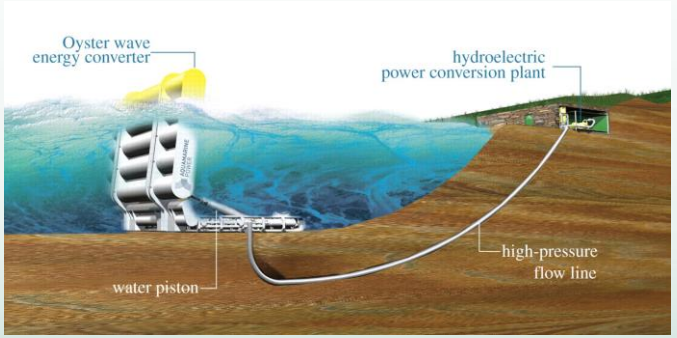
MARINE renewable energy devices









All of these renewable energy devices affect the benthic part of the marine ecosystem

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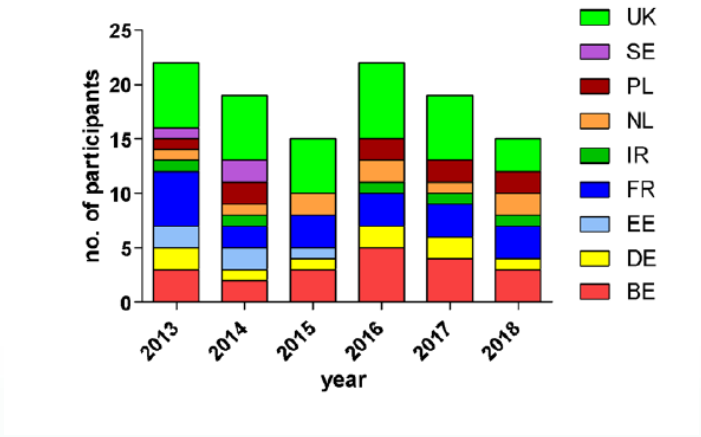
WGMBRED in a nutshell

ICES CIEM

- ICES Workshop 2012
- ICES WGMBRED: 2013 – ongoing
- 34 active experts (and growing)
- 9 countries (and growing)



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WGMBRED – MARECO - UGent

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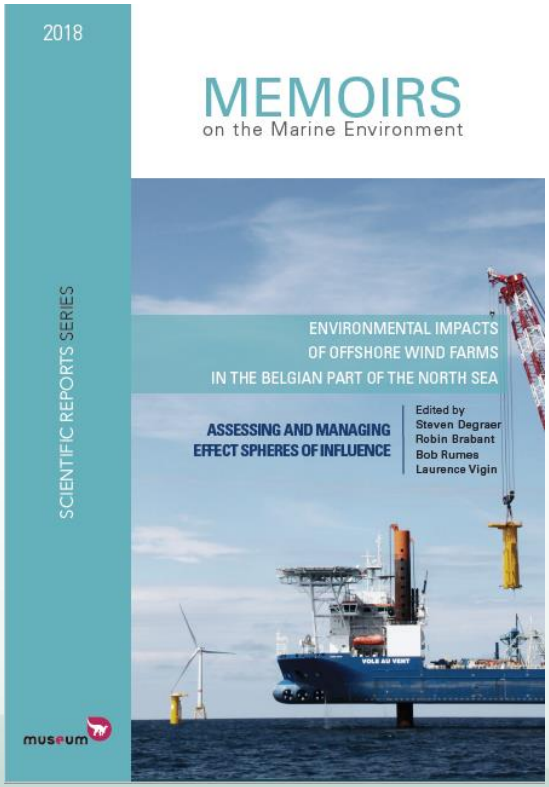

FdCE-II
2016 - 2020

RESEARCH COMMUNICATIONS RESEARCH COMMUNICATIONS

Environmental benefits of leaving offshore infrastructure in the ocean

Ashley M Fowler[1*], Anne-Mette Jørgensen[2], Jon C Svendsen[3], Peter I Macreadie[4], Daniel OB Jones[5], Arjen R Boon[6], David J Booth[1], Robin Brabant[7], Emily Callahan[8], Jeremy T Claisse[9], Thomas G Dahlgren[10,11], Steven Degraer[7], Quenton R Dokken[12], Andrew B Gill[13], David G Johns[14], Robert J Leewis[15], Han J Lindeboom[10,17], Olof Linden[18], Roel May[19], Albertinka J Murk[20], Geir Ottersen[21,22], Donna M Schroeder[23], Sunil M Shastri[24], Jonas Teilmann[25], Victoria Todd[26,27], Gert Van Hoey[28], Jan Vanaverbeke[7], and Joop WP Coolen[19,29]

The removal of thousands of structures associated with oil and gas development from the world's oceans is well underway, yet the environmental impacts of this decommissioning practice remain unknown. Similar impacts will be associated with the eventual removal of offshore wind turbines. We conducted a global survey of environmental experts to guide best decommissioning practices in the North Sea, a region with a substantial removal burden. In contrast to current regulations, 94.7% of experts (36 out of 38) agreed that a more flexible case-by-case approach to decommissioning could benefit the North Sea environment. Partial removal options were considered to deliver better environmental outcomes than complete removal for platforms, but both approaches were equally supported for wind turbines. Key considerations identified for decommissioning were biodiversity enhancement, provision of reef habitat, and protection from bottom trawling, all of which are negatively affected by complete removal. We provide recommendations to guide the revision of offshore decommissioning policy, including a temporary suspension of obligatory removal.

Front Ecol Environ 2018; doi: 10.1002/fee.1827

PERSUADE

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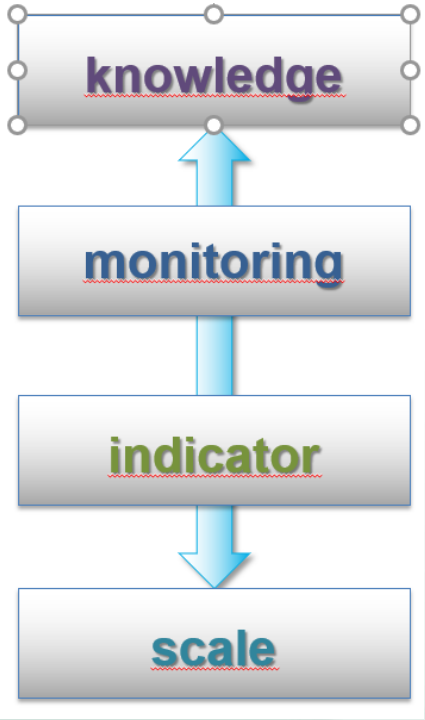
WGMBRED Science



Understand mechanisms behind cause-effect relationships, identification of knowledge gaps, prioritise urgent research

Hypothesis-driven approaches, monitoring efficiency, (data rich – information poor) improvement of monitoring strategies

Relevant indicators to assess ecological processes (biological traits, ecological functions) to determine system changes

Ecological relevant temporal and spatial scales, consequences related to environmental policy and decision-making

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WGMBRED Output

ICES CIEM

Renewable and Sustainable Energy Reviews 74 (2017) 848–859

Contents lists available at ScienceDirect

Renewable and Sustainable Energy Reviews

journal homepage: www.elsevier.com/locate/rser

Turning off the DRIP ('Data-rich, information-poor') – rationalising monitoring with a focus on marine renewable energy developments and the benthos

Thomas A. Wilding[a,*], Andrew B. Gill[b], Arjen Boon[c], Emma Sheehan[d], Jean–Claude Dauvin[e], Jean-Philippe Pezy[e], Francis O'Beirn[f], Urszula Janas[g], Liis Rostin[h], Ilse De Mesel[i]

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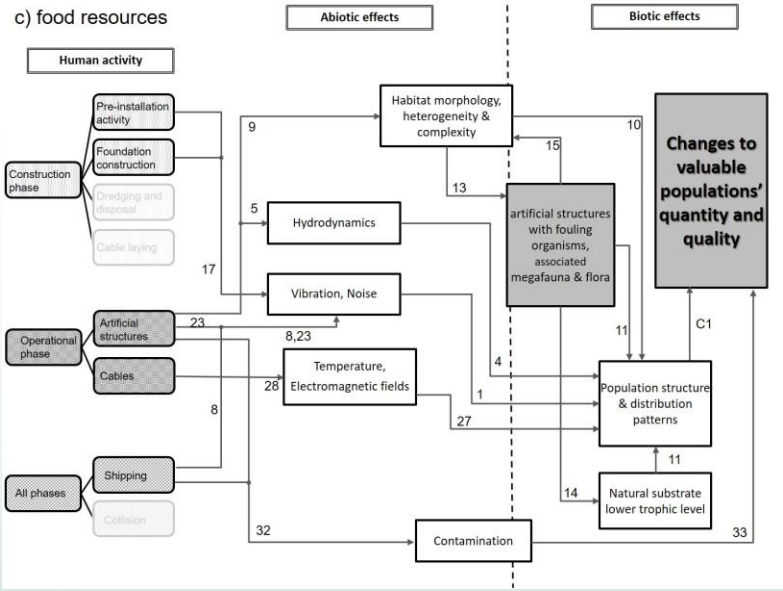
[h] Estonian Marine Institute, University of Tartu, Mäealuse 14, 12618 Tallinn, Estonia
[i] Royal Belgian Institute of Natural Sciences (RBINS), Operational Directorate Natural Environment, Marine Ecology and Management, 3e en 23e Linieregimentsplein, 8400 Oostende, België

Benthic effects of offshore renewables: identification of knowledge gaps and urgently needed research.

Dannheim et al. submitted



WGMBRED Advice

OSPAR request 2019:

« Advice on the current state and knowledge of studies into the deployment and environmental impact of wet renewable technologies and marine energy storage systems »

In cooperation with ICES Working Group on Marine Renewable Energy

WGMBRED Added Value

INSITE

INfluence of man-made Structures In The Ecosystem

UNDerstanding the INfluence of man-made structures on the Ecosystem functions of the North Sea (UNDINE)

Abstract: Offshore man-made structures are rapidly expanding in the North Sea. Whereas artificial structures such as oil and gas rigs and ship wrecks have long been present, this expansion is nowadays mainly due to the construction of offshore wind farms. The introduced hard substrates host a fauna that is fundamentally different from the naturally occurring soft sediments that dominate the North Sea ecosystem. These offshore structures hence induce changes in biodiversity and ecosystem functions. Knowledge on the magnitude of these effects is indispensable to assess the impact at the ecosystem level, but is currently lacking.

Principal Investigator:
Dr Jennifer Dannheim

Organisation:
Alfred Wegener Institute (AWI), Helmholtz Centre for Polar and Marine Research, Germany

UNDINE will evaluate (i) the ecological impact of man-made structures on trophic functioning and (ii) potential changes in connectivity by man-made structures using dispersion models validated by genetic population structure. Trophic functioning and connectivity are considered key issues as man-made structures start proliferating in the marine environment. They necessitate the extrapolation of artificial hard substrate effects from local to regional scales, all of which will be tackled by UNDINE. This research will synthesize and integrate state of the art knowledge to understand ecosystem structure and functioning. This will be useful for a sustainable management of North Sea ecosystems, especially in relation to hard substrate habitats. Additionally, UNDINE will identify knowledge gaps and provide scientific recommendations for future research priorities.

UNDINE will use offshore wind farms and data from other man-made structures in order to understand the ecological impact of man-made structures. Particularly, the high amount of high-quality data from offshore wind farms monitoring programmes will be of use here. UNDINE's approach of combining different datasets will ensure its outcomes to be transferable to a more generic man-made structure effect context.

PERSUADE science contributes to knowledge on the effect of offshore windfarms on ecosystem service provisioning

Last week, 20 European scientists met in a EuroMarine funded workshop, aiming at assessing how the exploitation of offshore wind farms can effect the provisioning of ecosystem services to society. The workshop was co-organised by PERSUADE coordinator Jan Vanaverbeke, PERSUADE scientists Steven Degraer and Helena Voet contributed as well. The expertise gathered in PERSUADE was of high relevance for the succes of the workshop!

Concluding slide

- Inspiring exchange of scientific ideas between WGMBRED members and Belgian marine scientists
- Membership of WGMBRED leads to additional funding for scientific research or workshops
- Cooperation leads to papers that are beyond the capacity of single research teams

ROYAL BELGIAN INSTITUTE OF NATURAL SCIENCES
Operational Directorate Natural Environment

Keeping Blue energy Green:

How ICES helps us keep track of marine renewables

Bob Rumes

1st BICEpS annual colloquium
14th of November 2018
Brussels - Belgium

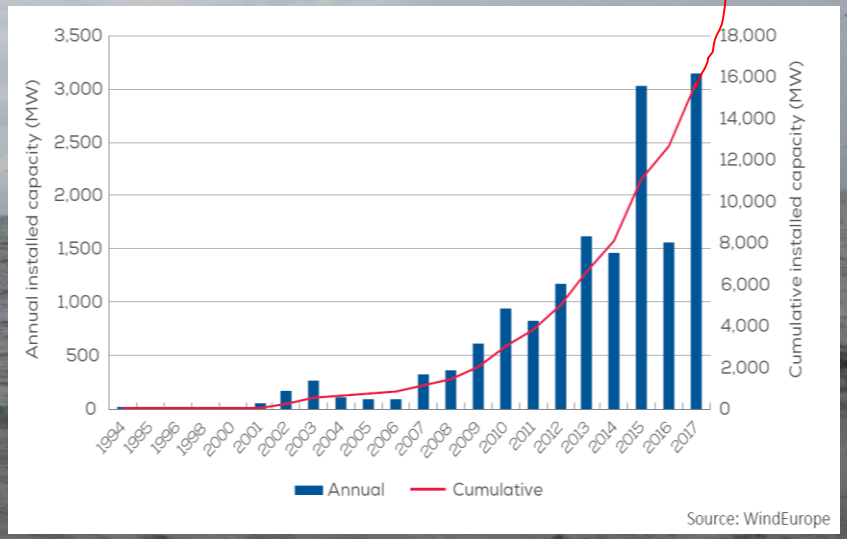
A dire warning

- The impacts of climate change are global in scope and unprecedented in scale.
- Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.
- Many of the adverse impacts of climate change will come at the 1.5°C mark.
- Limiting global warming to 1.5°C would require “rapid and far-reaching” transitions in land, energy, industry, buildings, transport, and cities.
- Global net human-caused emissions of carbon dioxide (CO2) would need to fall by about 45 percent from 2010 levels by 2030, reaching ‘net zero’ around 2050.

IPCC, October 2018

Marine renewables – offshore wind

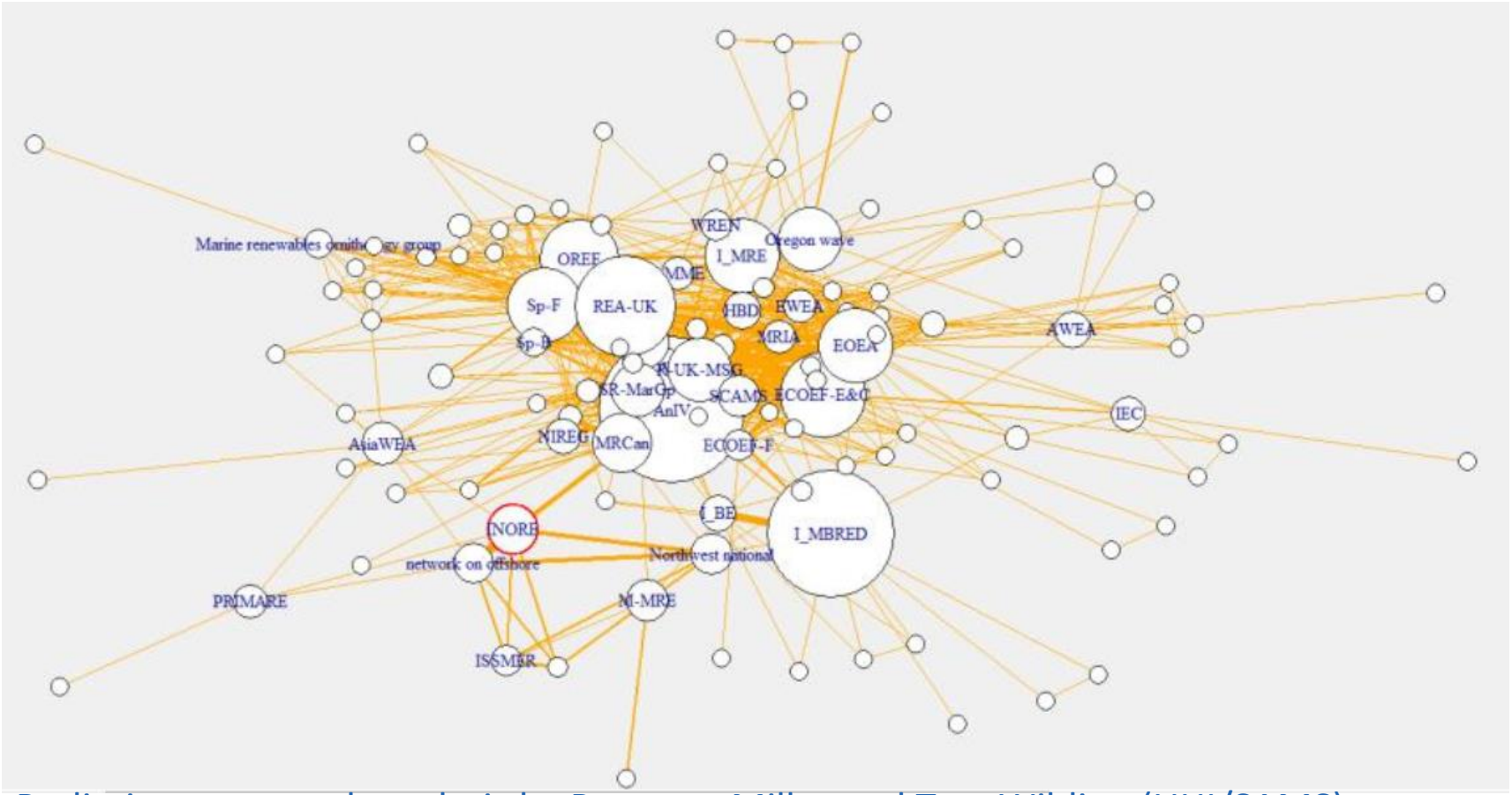
- 25 GW by 2020, 48 GW by 2030 (North Sea)
- 5000-10.000 turbines
- Sizable claim on marine space
- (cumulative) impact on the environment



Marine renewables – 'wet renewables'

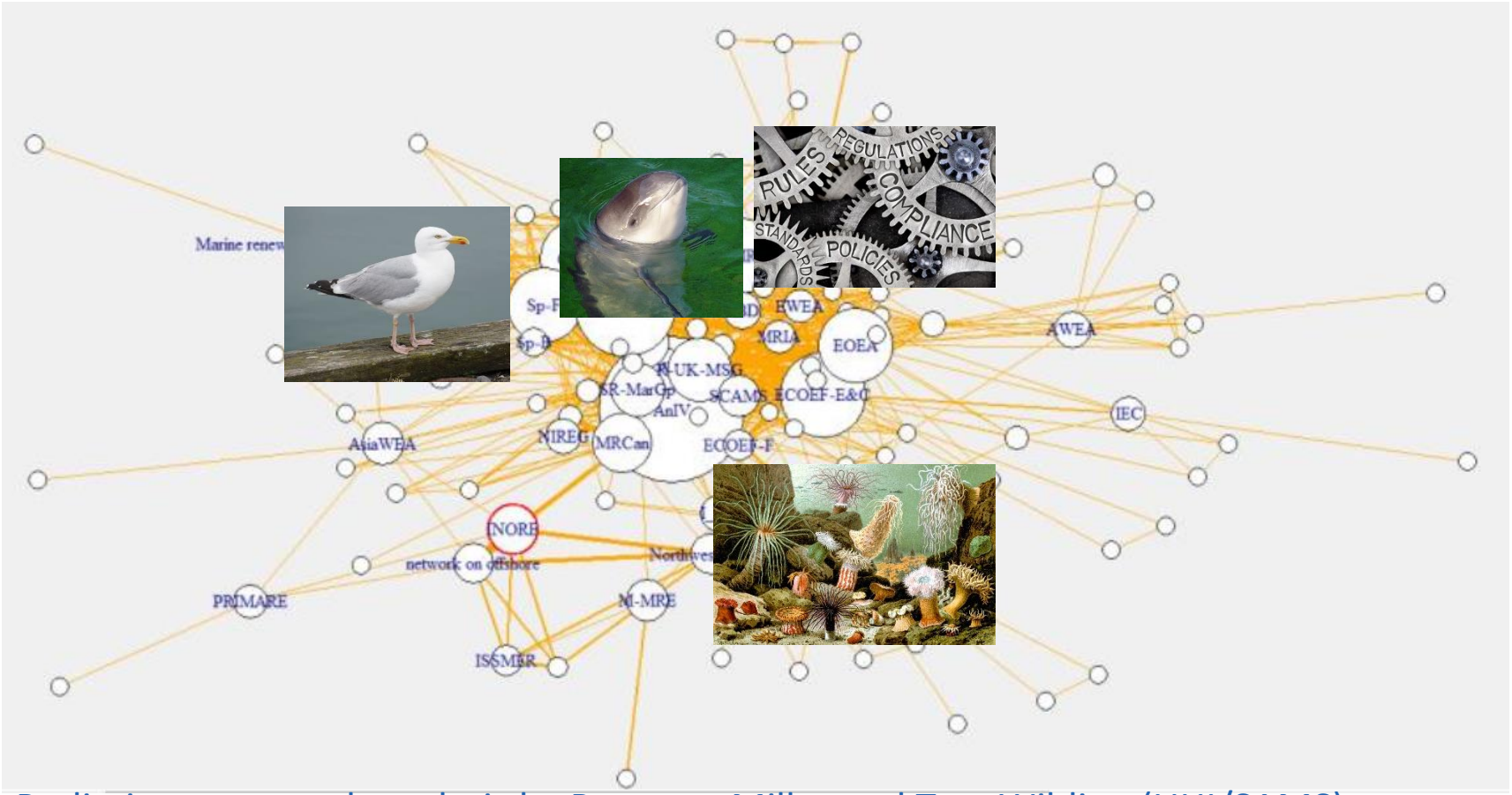
- Tides, waves, (ocean) currents
- Many prototypes, limited industrial projects
- Potential in Be-waters limited (5MW licensed + test)
- Highly dynamic environments

Who cares about environmental impacts of marine renewables?



Preliminary network analysis by Raeanne Miller and Tom Wilding (UHI/SAMS)

Who cares about environmental impacts of marine renewables?



Preliminary network analysis by Raeanne Miller and Tom Wilding (UHI/SAMS)

ICES & Marine renewables

Advisory Committee (ACOM)

- Working Group on Marine Mammal Ecology (WGMME)
- Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD)

Human Activities, Pressures and Impacts Steering Group (HAPSIG)

- Working Group on Marine Renewable Energy (WGMRE)
- Working Group on Marine Benthal and Renewable Energy Developments (WGMBRED)
- Working Group for Marine Planning and Coastal Zone Management (WGMPCZM)
- (Workshop on Co-existence and Synergies in Marine Spatial Planning)

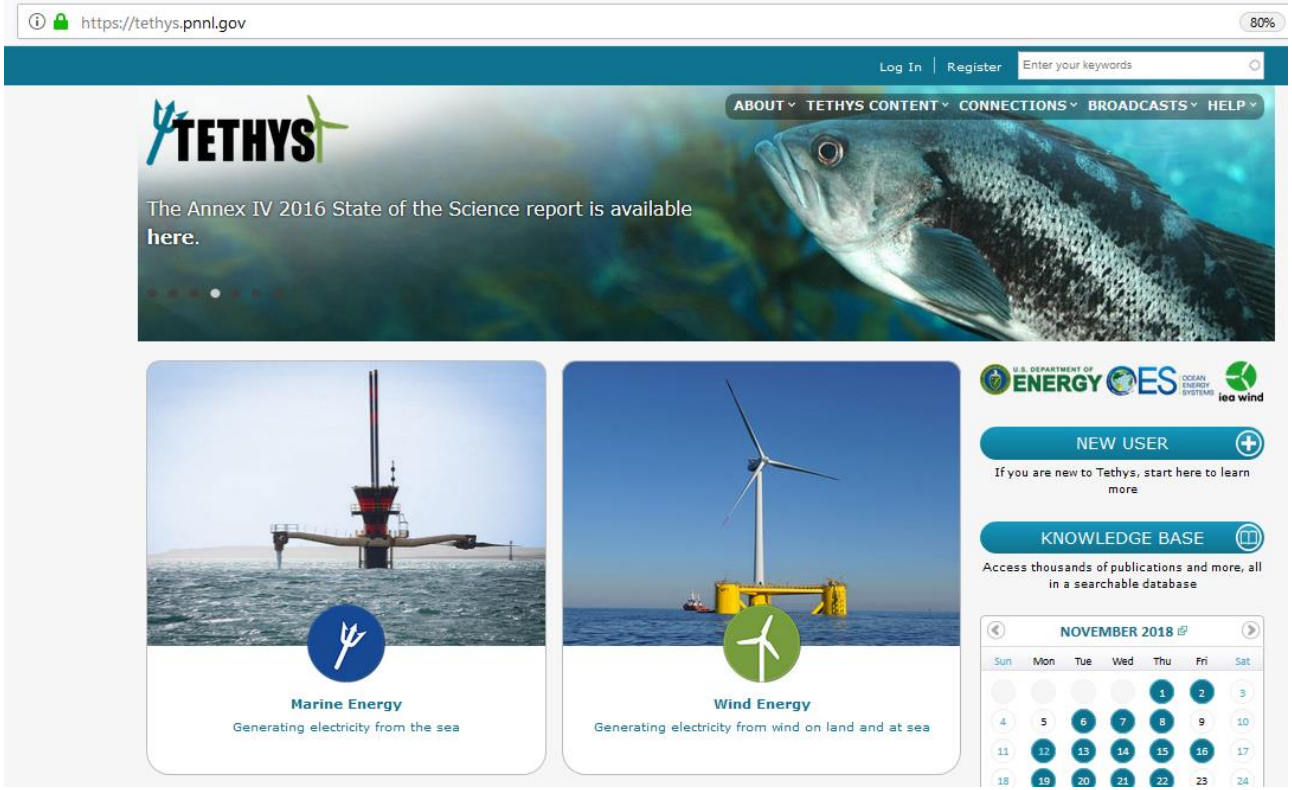
ICES WGMRE

- **Provides information / knowledge exchange**
  - on the state of development of marine renewable energy
  - how knowledge gaps are being addressed (monitoring, research)
  - on the development of consenting procedures
  - on the development of assessment methods (including cumulative effects, in-combination effects of different activities and risk based approaches).

- **Discussion / Analysis**
  - **identifies emerging issues** that will require environmental assessment
  - **provides advice**/applied scientific knowledge to OSPAR relating to management of this increasingly important and rapidly developing set of activities.

- **Aims**
  - regional coherence & optimization of effort

Additional resources – Annex IV/Tethys



Great repository for 'Grey literature' (technical & monitoring reports, policy papers,..)

In conclusion

- **How is your work inspired by ICES?**
- **How did your work contribute to ICES?**

  By learning together (best practices/failures) we are continually improving the management of this new sector (e.g. noise mitigation, monit. strategy).

  Steps are being made towards regional coherence (in licensing, mitigation and monitoring) & optimization of effort (in monitoring and research).

- **How the information did contribute to advisory process?**

  ICES advice to OSPAR on 'wet renewables' being drafted.
  White papers on Adaptive management, individuals to populations, Risk-based environmental management (draft)

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The seafloor ecosystem in an ICES context

By Kris Hostens

Gert Van Hoey, Annelies De Backer, Hans Hillewaert, Ellen Pecceu, Bavo De Witte

1st BICEpS colloquium, Brussels, 14 November 2018

Central question(s)

- How much habitat is needed to preserve proper functioning of the benthic (seafloor) ecosystem ?
- What intensity (e.g. fisheries, aggregate extraction, dredging) is acceptable?

Collaboration needed at regional level
International legislation (MSFD, MSPD)

ICES plays central role :
in development of standardized methods to assess sea floor status
&
to investigate cause-effect relations of human induced changes to the ecosystem

Tackled in several ICES working groups
Attended by several members of ILVO-AMK

ILVO – Aquatic Environment and Quality

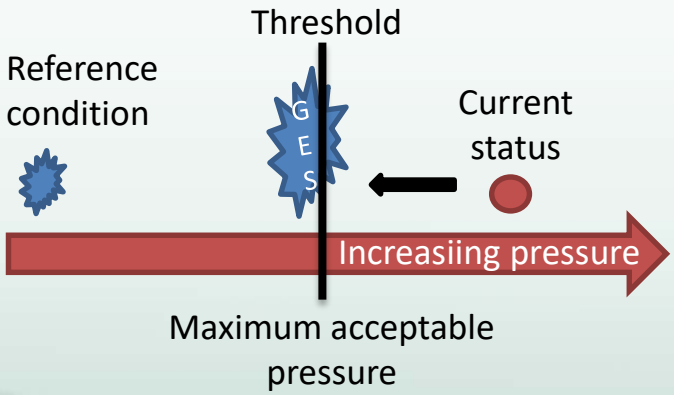
- Longstanding history in **sea floor monitoring**, services & **policy advice** for Belgian part of the North Sea
- Industry & government have monitoring **obligations (EIAs)**

  →**direct, indirect, cumulative** impacts of **all** human activities

  → **ILVO-AMK** involved in impact monitoring for aggregate extraction, dredge deposition, wind energy, (fisheries), coastal defense, land/sea interactions, pollution & nature conservation

- **Biological** & **chemical** quality of the marine environment
- Longterm data (since 1976) → **Reference framework** 'naturalness'

→ **continuity** essential for impact evaluation



WGEXT - effects of marine aggregate extraction

April/May, ca. 15 persons

- Mixed group (scientists, regulators, advisors and industry)
- Delivers **up-to-date figures** on:
  - marine sediment extraction;
  - marine resource & habitat mapping;
  - legislation in the ICES area
- Produces **management** guidelines on marine sediment extraction
- Published Cooperative Research Reports
- Latest ToRs:
  - developing database for extraction data
  - deep-sea mining
  - MSP, MSFD, cumulative impact, mitigation, dredging intensity

- Relates to our impact assessment on aggregate extraction
- Harmonisation of monitoring & assessment
- Focus on novel methods (-omics, SPI)

BEWG - Benthos Ecology

May, 20-30 persons

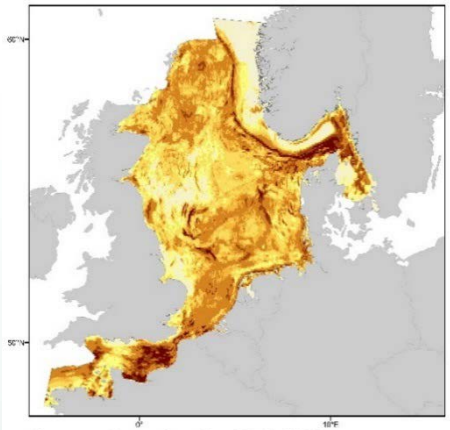
- **International integration** of long-term series and spatial surveys (e.g. NSBP 2000, Rees et al., 2007)
- Publish **advice** on:
  - status assessment (Van Hoey et al., 2010, Zettler et al., 2013);
  - habitat modelling (Reis et al.,2015);
  - climate change and benthos (Birchenough et al., 2015)
- Current TORs:
  - to improve our knowledge on **benthic functioning**
  - to explore links between benthos and **ecosystem services**
  - to optimize benthic **spatial monitoring** designs
  - to model functional properties of the benthic system across areas (BPc, Biological traits,…)

- Relates to our benthic monitoring and environmental impact assessments

WGFBIT - Fisheries benthic impact & trade-offs

1st meeting 12-16 November 2018

- Follow up of ICES WKBENTH (2017)
- To further develop regional framework to assess seafloor status in relation to **bottom gear disturbance**



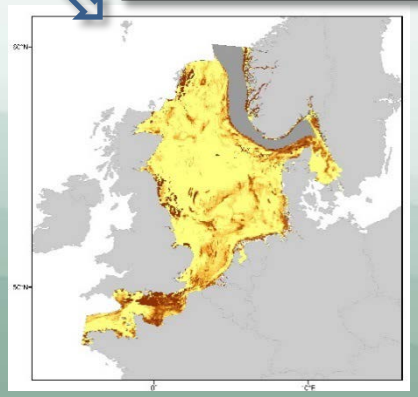
•Belgian Fishery
•Mechanical disturbance different gears? (E.g. penetration, turbidity)

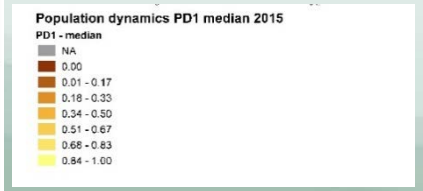
Pressure x Sensitivity = Impact

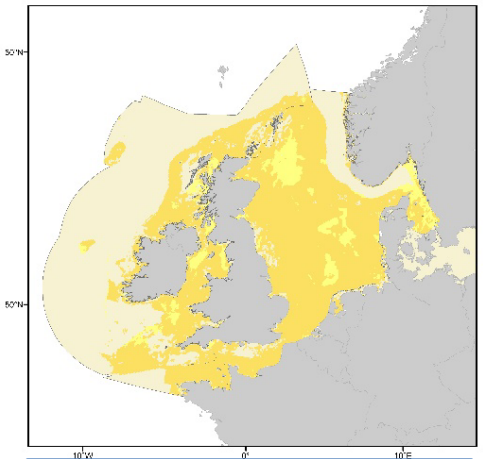
Fishing Pressure Map

Sensitivity Map

Impact Map







Benthic indicators
Bottom sensitivity
Ground thruthing

WGMBRED - Marine Benthal & Renewable Energy Developments

March, 15 persons

- Induced changes in benthic ecosystem in relation to offshore wind energy
- **Cause-effect relationships** on structure and functioning of sea-bottom ecosystem → So-what?
- Indicator development & **ecosystem based management**
- **multiple use** of energy device arrays
- Several papers in prep

- Relates to our impact assessment in soft sediments of windfarms (incl. hardsub introduction and fisheries exclusion effects)
- Benthos is a vital part of our marine ecosystem

WGMPCZM - Marine Planning & Coastal Zone Management

April, 15 persons

- Inter- & **transdisciplinary** group (social and natural sciences as well as administrations)
- Focus on **knowledge gaps** in MSP and risk analysis
- Organising several **workshops & trainings**
  - ICES training course for MSP
  - Workshop on Coexistence and Synergies
  - Workshop on MSP conflicts
  - Workshop on the risk assessments for culturally significant areas,…
- Several **review papers** are planned for 2019 based on the results of the workshops

- Relates to our work and contribution on MSP & delineation of N2000 areas
- impact assessment related to coastal protection, foreshore suppletion + impact of aquaculture / blue biomass

MCWG & WGML - Marine Chemistry & Marine Litter

- Focus on status and fate of **pollutants** (organic substances, trace metals, emerging contaminants)
- chemical oceanography (nutrients and ocean acidification)
- Links to advice for MSFD and WFD
- **Intercallibration** of methodology, data, etc. & Development of monitoring protocols for **OSPAR** (incl. **QUASIMEME** program)
- Close interaction with WGBEC (biological effects of contaminants)

- Relates to our assessments of **chemical pollution and marine litter** in sediment and benthic biota
- micro & nanoplastics research /monitoring

Other WGs in relation to seafloor ecosystem

Remote participation

- WG BIODIV (Biodiversity Science)
- WG FAST (Fisheries Acoustics, Science and Technology)
- WG ECO (Ecosystem Effects of Fishing Activities)
- …
- ADG (advice drafting groups)

The seafloor ecosystem in an ICES context

- How was your work inspired by ICES?
  - ICES network is essential to **exchange knowledge** and ideas to improve our monitoring and research
- How did your work contribute to ICES?
  - Our data is used to investigate research hypotheses on **European scale**
- How did the information contribute to advisory process?
  - Lots of data delivered to ICES for scientific purposes
  - ICES produces advice in a later stage, e.g. through **ADGs**
  - (part of) the data are further re-used by others, e.g. **OSPAR**, etc.
  - As such **no direct contribution** from SCICOM groups to advisory process

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EOSG – Ecosystem Observation Steering Group

By Maarten Soetaert

1st BICEpS colloquium, Brussels, 14 November 2018

EOSG is Ecosystem Observation Steering Group

… the conduit between ICES Science Committee (SCICOM) and the ICES WGs focussing on ecosystem observations

… responsible for guiding and supporting Expert Groups that are meeting immediate data demands in the ICES region

… contributing to the running and further development of effectively co-ordinated, integrated, quality assured and cost-effective monitoring in the ICES region

… 'guided' by SCICOM since they approve its agenda (and that of WGs) by means of the approval of the ToRs

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EOSG core business

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Advising on the

- the design, deployment and efficiency of **gears**
- the design, deployment and efficiency of **sampling methods**
- the use of sampling data for **assessments**

⇨ **Vast majority of EOSG WGs and WKs**

EOSG other topics

Support of egg and larval, acoustic and trawl **surveys** by:

- Evaluating and optimizing survey design
- Design, planning and co-ordination
- Identifying and evaluating new technologies
- Aging and estimating life history parameters

Study & discussion on (technical) innovations:

- WGFAST, FTFBWG, WGISDAA, WGELECTRA, WGISUR

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EOSG covers

19 permanent Working Groups:

- WG BEAM: Beam Trawls Surveys
- WG BIOP: Biological Parameters
- WG CATCH: Commercial Catches
- WG ELECTRA: Electric Trawling
- WG FAST: Fisheries Acoustics, Science & Technology
- WG FTFB: Fishing Technology and Fish Behavour
- WG RFS: Recreational Fisheries Surveys
- ….

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EOSG covers

About 20 workshops yearly:

- WK SEL3: Elasmobranchs maturity
- WK MLEARN: Machine Learning in Marine Science
- WK MSIGD: Methods for Stakeholder Involvement in Gear Development
- ….

Several Planning Groups:

- PG DATA: Data Needs for Assessment & Advice
- ….

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WG ELECTRA – Electric Trawling

By Maarten Soetaert

1st BICEpS colloquium, Brussels, 14 November 2018

WG ELECTRA

"Improving knowledge of the effects of electrical or pulse fishing on the marine environment"

ToRs:

- Produce state-of-the-art review of all relevant studies
- Compare traditional beam trawls or pulse trawls for advisory requirements
- Discuss ongoing research & prioritize knowledge gaps
- Create a platform for supra-national joint research

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WG ELECTRA

< 2018: Mainly Netherlands, Belgium and Germany

also Scotland & France.

2018: + UK and Denmark.

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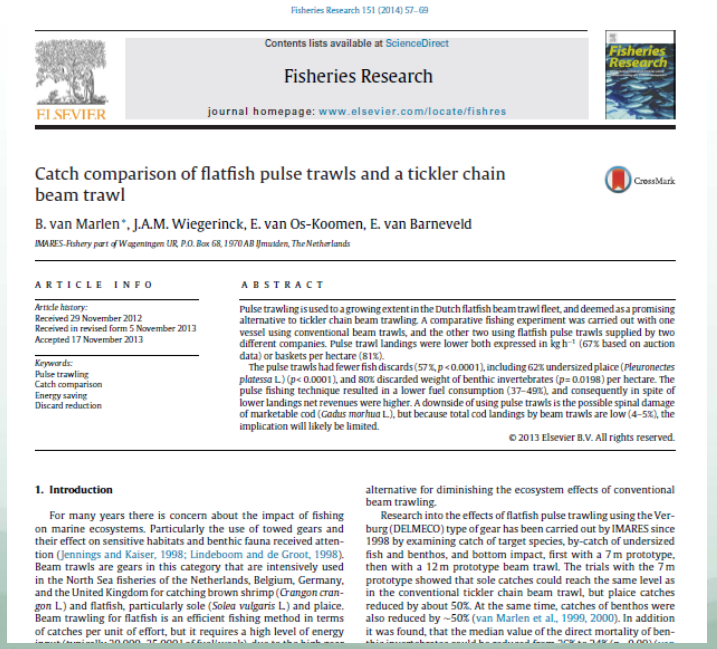
Research

Ongoing studies: updates & discussion

- Fast feedback loop for colleagues
- Finetuning & aligning of experiments


Fisheries Research 151 (2014) 57–69

Contents lists available at ScienceDirect

Fisheries Research

journal homepage: www.elsevier.com/locate/fishres

Catch comparison of flatfish pulse trawls and a tickler chain beam trawl

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ARTICLE INFO

Article history:
Received 29 November 2012
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Keywords:
Pulse trawling
Catch comparison
Energy saving
Discard reduction

ABSTRACT

Pulse trawling is used to a growing extent in the Dutch flatfish beam trawl fleet, and deemed as a promising alternative to tickler chain beam trawling. A comparative fishing experiment was carried out with one vessel using conventional beam trawls, and the other two using flatfish pulse trawls supplied by two different companies. Pulse trawl landings were lower both expressed in kg h^{-1} (67% based on auction data) or baskets per hectare (81%).

The pulse trawls had fewer fish discards (57%, $p < 0.0001$), including 62% undersized plaice (*Pleuronectes platessa* L.) ($p < 0.0001$), and 80% discarded weight of benthic invertebrates ($p = 0.0198$) per hectare. The pulse fishing technique resulted in a lower fuel consumption (37–49%), and consequently in spite of lower landings net revenues were higher. A downside of using pulse trawls is the possible spinal damage of marketable cod (*Gadus morhua* L.), but because total cod landings by beam trawls are low (4–5%), the implication will likely be limited.

1. Introduction

For many years there is concern about the impact of fishing on marine ecosystems. Particularly the use of towed gears and their effect on sensitive habitats and benthic fauna received attention (Jennings and Kaiser, 1998; Lindeboom and de Groot, 1998). Beam trawls are gears in this category that are intensively used in the North Sea fisheries of the Netherlands, Belgium, Germany, and the United Kingdom for catching brown shrimp (*Crangon crangon* L.) and flatfish, particularly sole (*Solea vulgaris* L.) and plaice. Beam trawling for flatfish is an efficient fishing method in terms of catches per unit of effort, but it requires a high level of energy

alternative for diminishing the ecosystem effects of conventional beam trawling.

Research into the effects of flatfish pulse trawling using the Verburg (DELMECO) type of gear has been carried out by IMARES since 1998 by examining catch of target species, by-catch of undersized fish and benthos, and bottom impact, first with a 7 m prototype, then with a 12 m prototype beam trawl. The trials with the 7 m prototype showed that sole catches could reach the same level as in the conventional tickler chain beam trawl, but plaice catches reduced by about 50%. At the same time, catches of benthos were also reduced by ~50% (van Marlen et al., 1999, 2000). In addition it was found, that the median value of the direct mortality of ben-

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Research

Ongoing studies: updates & discussion

- Valuable input from experienced colleagues

  => in particular for PhD's

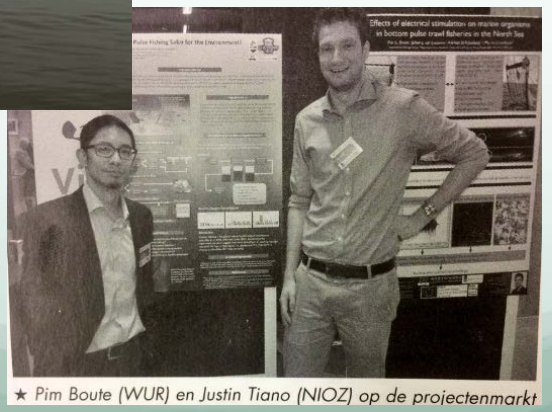

ISSN: (Print) 1942-5120 (Online) Journal homepage: http://www.tandfonline.com/loi/umcf20

Atlantic Cod Show a Highly Variable Sensitivity to Electric-Induced Spinal Injuries

M. Soetaert, D. De Haan, B. Verschueren, A. Decostere, V. Puvanendran, J. Saunders, H. Polet & K. Chiers

To cite this article: M. Soetaert, D. De Haan, B. Verschueren, A. Decostere, V. Puvanendran, J. Saunders, H. Polet & K. Chiers (2016) Atlantic Cod Show a Highly Variable Sensitivity to Electric-Induced Spinal Injuries, Marine and Coastal Fisheries, 8:1, 412-424, DOI: 10.1080/19425120.2016.1180332

To link to this article: http://dx.doi.org/10.1080/19425120.2016.1180332


★ Pim Boute (WUR) en Justin Tiano (NIOZ) op de projectenmarkt

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Research

International collaboration

- Discussion new ideas + collaboration

Universität Rostock Traditio et Innova

Investigation of the reaction
shrimp on pulsed electric fields in order to
optimise Crangon pulse trawls

Untersuchung der Reaktion von Nordseegarnelen auf gepulste elektrische Felder zur Optimierung der Krabbenpulsbaumkurre

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Advice

ICES REPORT WGELECTRA 2018

ICES CM 2018/EOSG: 10

REF ACOM AND SCICOM

Report of the Working Group on Electric Trawling (WGELECTRA)

17 - 19 April 2018

IJmuiden, the Netherlands

Pulse fishing in marine fisheries
Review of the technology, research and research agenda

Last revised and updated by WG Electra in April 2018.

Previous versions published in: \

This overview was initially merged and completed by Maarten Soetaert (2017) based on:

(1) Verschueren, B. and Polet, H. September 2016. Pulse fishing in marine fisheries – Review of the technology, research and research agenda. Institute of Agricultural and Fisheries Research (ILVO) internal document: 70 p.
(2) Rijnsdorp, A., De Haan, D., Smith, S. and Strietman, W. J.. December 2016. Pulse fishing and its effects on the marine ecosystem and fisheries. Wageningen Marine Research (WMR) confidential report C117/16: 32p.
(3) WG Electra, 2017. Final report of the working group on electric trawling. ICES CM 2017/SSGIEOM:20; 40 p.

Personal relevance

- WG Electra was an valuable during my PhD to
  - Acquire details about certain studies
  - Stay up to date of not(yet)-published research
  - Get a regular feed back of experts
- My PhD results broadened the expertise of our group and allowed us to eliminate some knowledge gaps
- My recent review of all studies on electro trawling served as reference document to support our response to the 2018 ICES advice request.
- The WG ELECTRA 2018 report (164p) supplied all the information ICES used to draft their special request advice on ‘The Netherlands request on the comparison of the ecological and environmental effects of pulse trawls and tradetional beam trawls when exploiting the North Sea sole TAC’

How much fish do the Belgian Recreational fishers catch?

ICES WGRFS as learning network and regional coordinator of recreational removals

By Frankwin van Winsen

1st BICEpS colloquium, Brussels, 14 November 2018

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RECREATIEVE ZEEVISSERIJ

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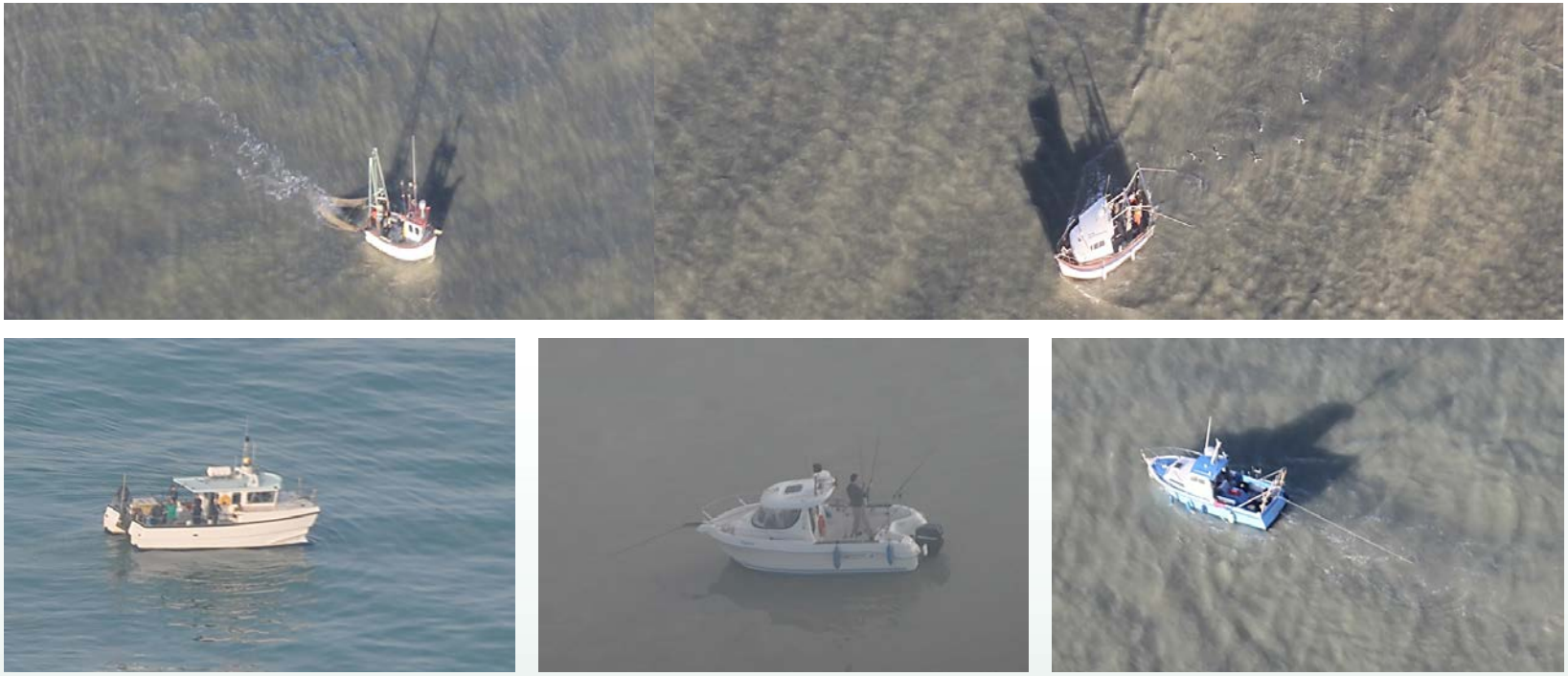




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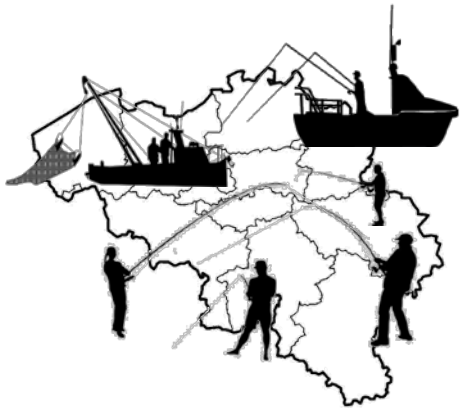
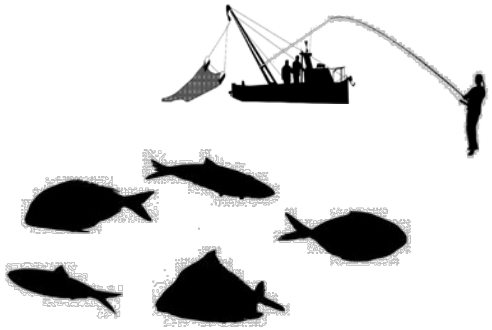


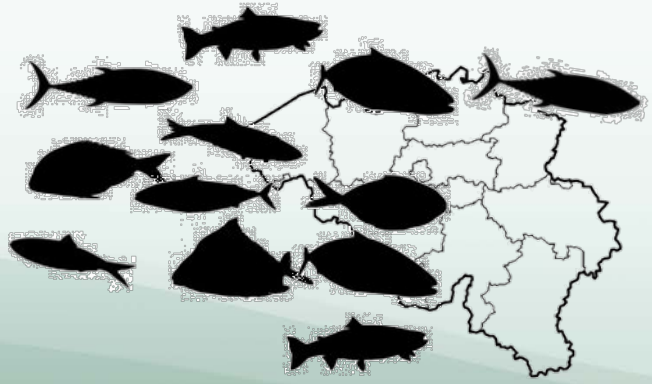
Total Fishermen Population (effort)

X

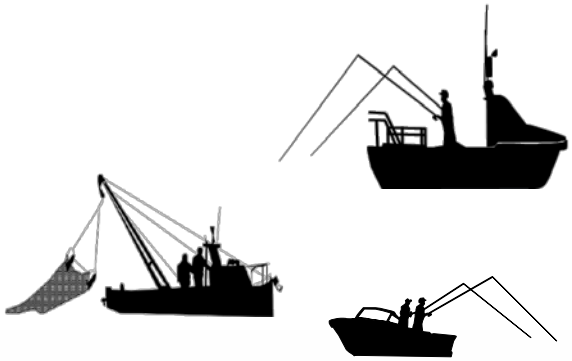


Average Catch (CPUE)

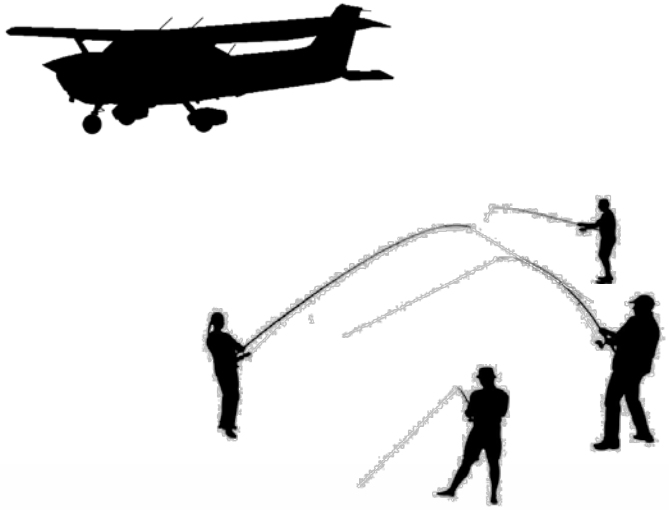
=



Total Belgium Catch



Harbour observation
+ Interviews



Rover Creel Survey:
- Air survey
- Lapse analysis shore
- Interviews

WGRFS

Expertise and Network

Best Practice Guide

QAT

Regional Coordination

Paper

Stock Assessment

RECREATIEVE ZEEVISSERIJ

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Concluding slide

- ICES WGRFS helped with ideas, discussions and QAT when designing the BE RecFish Survey
- Input on recreational removals for all MS (including BE) are collected by WGRFS and serve as input for (future) stock assessments
- Advice for Seabass changed after update on post release mortality of recreational catch

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How much fish do the Belgian Recreational fishers catch?

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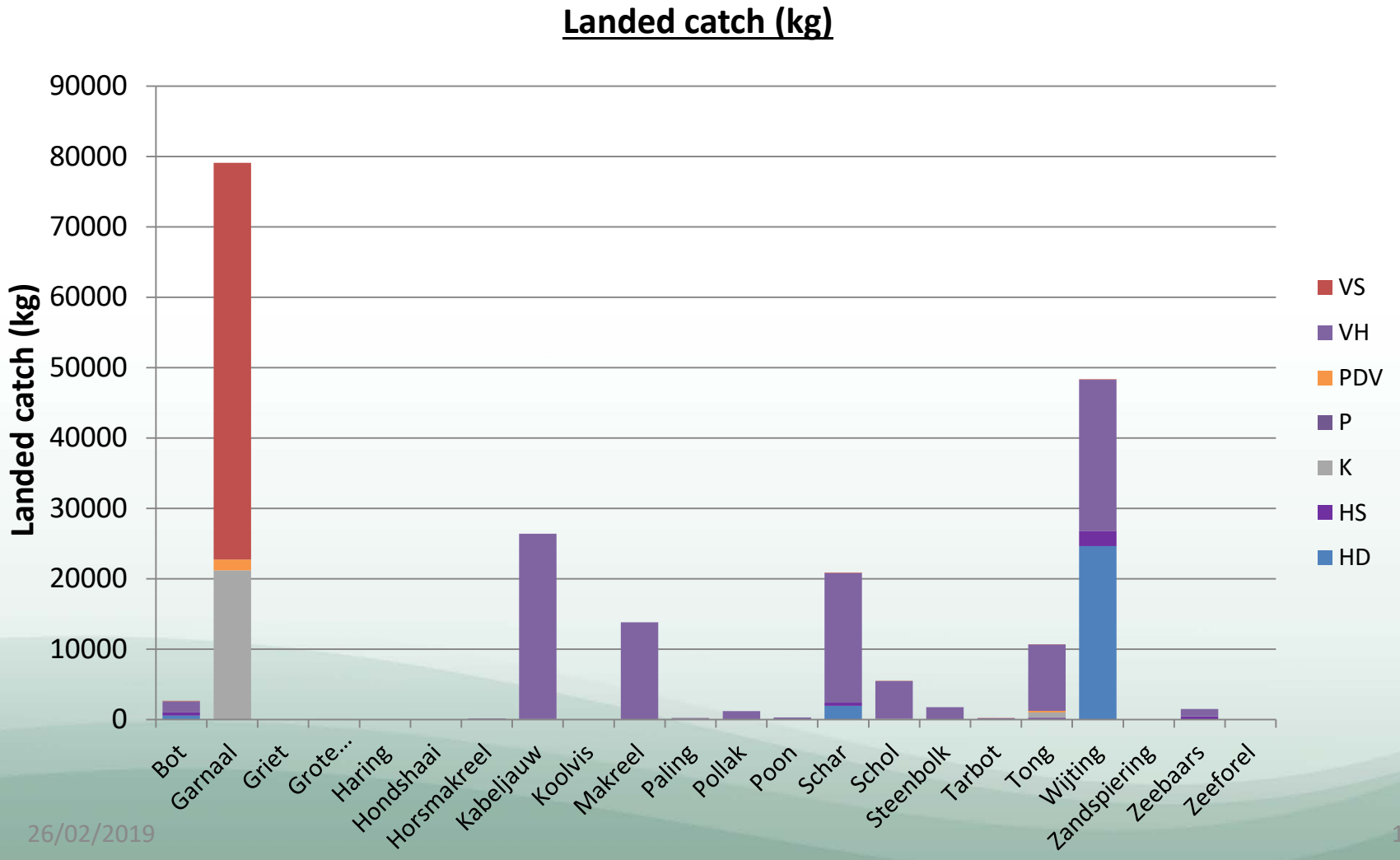

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ILVO
Flanders Research Institute for Agriculture, Fisheries and Food

IEASG - Integrated Ecosystem Assessments Steering Group

Geneviève Lacroix, Léo Barbut

1st BICEpS colloquium, Brussels, 14 November 2018

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IEASG

ICES CIEM

Integrated Ecosystem Assessments (**IEASG**) synthesise and evaluate information on physical, chemical, ecological, human and environmental process affecting ecosystems. Chair: Mette Skern-Mauritzen (IMR, NO)

This Steering Group is responsible for guiding and supporting Expert Groups that develop ecosystem modelling and assessment methods, contribute to state of the environment reporting and underpin guidance on meeting ecological, social and economic objectives.

Expert groups: WGCOMEDA, WGEAWESS, WGIAB, WGIBAR, WGICA, WGIMM, WGINOR, WGINOSE, WGIPEM, WGLMEBP, WGMARS, WGNARS, WGSOCIAL, WKs...

Topics covered include:

- Development of integrated ecosystem assessments
(Arctic, Baltic, Barents, Celtic, North, northwest Atlantic and Norwegian seas)
- Comparative analyses of marine ecosystems
- Ecosystem modelling
- Methods and application of ecosystem-based management and risk assessment
- Linking ecological, economic and social models and analyses to understand interactions and trade-offs between management objectives
- Defining data needs to support integrated ecosystem assessment
- Development of integrated advice to support ecosystem-based management

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WGIPEM

Currently ~ 85 members

ICES CIEM

Formerly WGPBI (**Working Group on Physical-Biological Interactions**)
+ some members of WGOOFE
+ representatives of WGOH, WGSAM, HAWG, WGIAB, WGINOSE

ICES **Working Group on Integrated, Physical-biological and Ecosystem Modelling** (WGIPEM) advances the state-of-the-art in coupled physical-biological and ecosystem modelling worldwide.

WGIPEM

2012

Myron Peck
Miguel Bernal

Myron Peck
Rubao Ji

Morgane Travers-Trolet
Marc Hufnagl

Morgane Travers-Trolet
Marie Maar

Marie Maar
Solfrid Hjølloe

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ToRs 2016-2018

WGIPEM ICES CIEM

- **a: Reliability of Multispecies and Ecosystem models to allow for a strategic advice within EBM** *(bench-marking, model stress tests, validation, sensitivity testing approaches, inter-model comparisons, trade-offs between management options)*
- **b: Identify ways to make the best use of models and outputs for management purposes**. *(interface for the public and scientific community, workshops or conference sessions…)*
- **c: Identify gaps in knowledge that need to be closed and spot emerging fields** *(e.g. spatial dimension, human behavior, zooplankton representation, physiology…)*
- **d: Discuss and provide basis for setting up future scenarios of anthropogenic pressure and climate variability.**
- **e: Behaviour of species and man / evolution and adaptation**
- **f: Bottom up and top down controls within foodwebs**
- **g: Habitat connectivity to support and advice spatial management plans.**
- **h: Key physiological processes and mortality sources to understand recruitment dynamics, life cycle dynamics and population drivers.**

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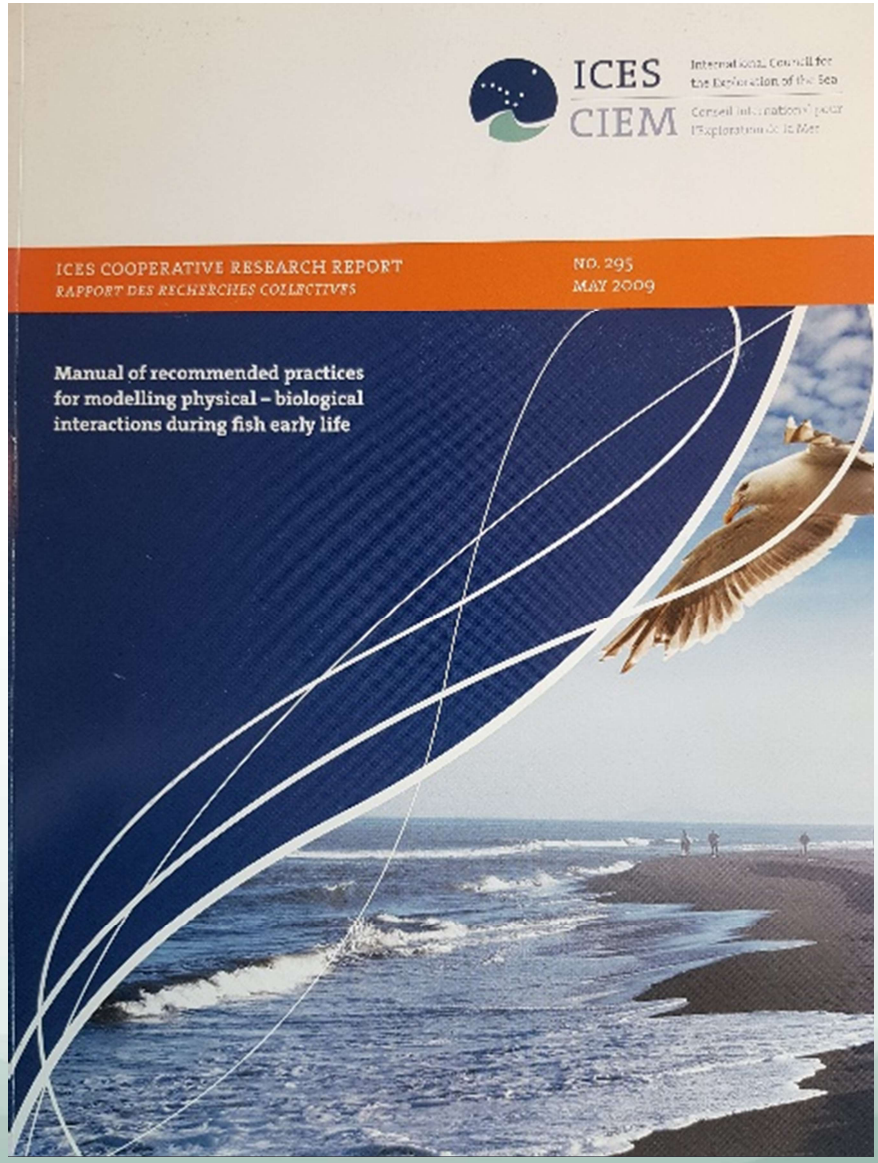
Selected achievements

WGIPEM ICES CIEM

- **Joint publications in which RBINS is involved:**

ICES CRR
Manual of Recommended Practices for Modelling Physical – Biological Interactions during Fish Early Life



- **Lacroix G.**, McCloghrie P., Huret M., North E.W., 2009. Hydrodynamic models. In Manual of Recommended Practices for Modelling Physical – Biological Interactions during Fish Early Life, pp. 3 – 8. Ed. by E. W. North, A. Gallego, and P. Petitgas. *ICES Cooperative Research Report* No. 295. 111 pp.

- Paris C.B., Irisson J-O., **Lacroix G.**, Fiksen O., Leis J.M., Mullon C., 2009. Application 2: Connectivity. In Manual of Recommended Practices for Modelling Physical – Biological Interactions during Fish Early Life, pp. 3 – 8. Ed. by E. W. North, A. Gallego, and P. Petitgas. *ICES Cooperative Research Report* No. 295. 111 pp.

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Selected achievements

WGIPEM ICES CIEM

- **Joint publications in which RBINS is involved:**

Journal of Sea Research 127 (2017) 133–149

Contents lists available at ScienceDirect

Journal of Sea Research

journal homepage: www.elsevier.com/locate/seares

LARVAE&CO model

Variation that can be expected when using particle tracking models in connectivity studies

Marc Hufnagl[a,*], Mark Payne[b], Geneviève Lacroix[c], Loes J. Bolle[d], Ute Daewel[e,o], Mark Dickey-Collas[b,f], Theo Gerkema[g], Martin Huret[h], Frank Janssen[i], Markus Kreus[a], Johannes Pätsch[j], Thomas Pohlmann[j], Piet Ruardij[g], Corinna Schrum[j,o,k], Morten D. Skogen[l], Meinard C.H. Tiessen[g], Pierre Petitgas[h,m], Jan K.L. van Beek[n], Henk W. van der Veer[g], Ulrich Callies[o]

[a] Institute for Hydrobiology and Fisheries Science, Center for Earth System Research and Sustainability (CEN), University of Hamburg, Olbersweg 24, D-22767 Hamburg, Germany
[b] DTU-Aqua, Technical University of Denmark, Charlottenlund Slot, Jægersborg Allé 1, 2920 Charlottenlund, Denmark
[c] Royal Belgian Institute of Natural Sciences (RBINS), Operational Directorate Natural Environment (formerly MUMM), Gulledelle 100, B-1200 Brussels, Belgium
[d] Wageningen Marine Research (formerly IMARES), Institute for Marine Resources & Ecosystem Studies, PO Box 68, 1970 AB Umuiden, The Netherlands
[e] Nansen Environmental and Remote Sensing Center, Hjort Centre for Marine Ecosystem Dynamics, Thormøhlensgate 47, 5006 Bergen, Norway
[f] International Council for the Exploration of the Sea, H. C. Andersens Boulevard 44-46, DK-1553 Copenhagen V, Denmark
[g] Royal Netherlands Institute for Sea Research, Department of Coastal Systems, Utrecht University, PO Box 59, 1790 AB Den Burg Texel, The Netherlands
[h] IFREMER, Centre de Brest, RBE, STH/LBH, BP 70, 29280 Plouzané, France
[i] Bundesamt für Seeschifffahrt und Hydrographie (BSH), Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany
[j] Institute of Oceanography, Hamburg University, Bundesstr. 53, 20146 Hamburg, Germany
[k] Geophysical Institute, University of Bergen, Allégaten 70, 5007 Bergen, Norway
[l] Institute of Marine Research, Pb 1870 Nordnes, N-5817 Bergen, Norway
[m] IFREMER, RBE/EMH, Rue de l'Ile d'Yeu, BP 21105, 44311 Nantes Cedex 03, France
[n] Deltares, PO Box177, 2600 MH Delft, The Netherlands
[o] Helmholtz-Zentrum Geesthacht, Institute of Coastal Research, Max-Planck-Str. 1, 21502 Geesthacht, Germany

Assess uncertainties around particle tracking models

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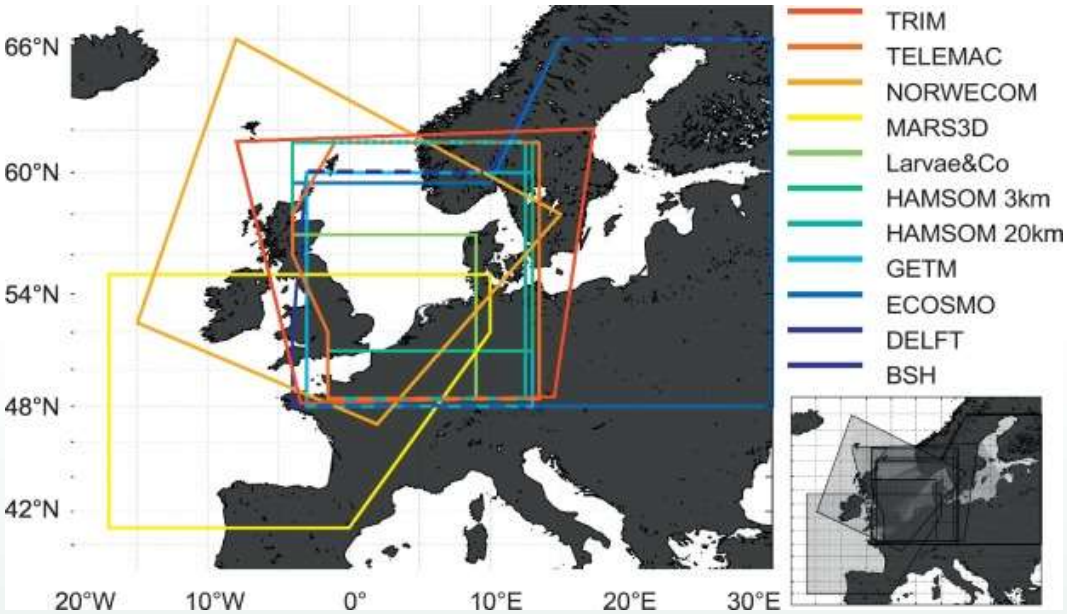
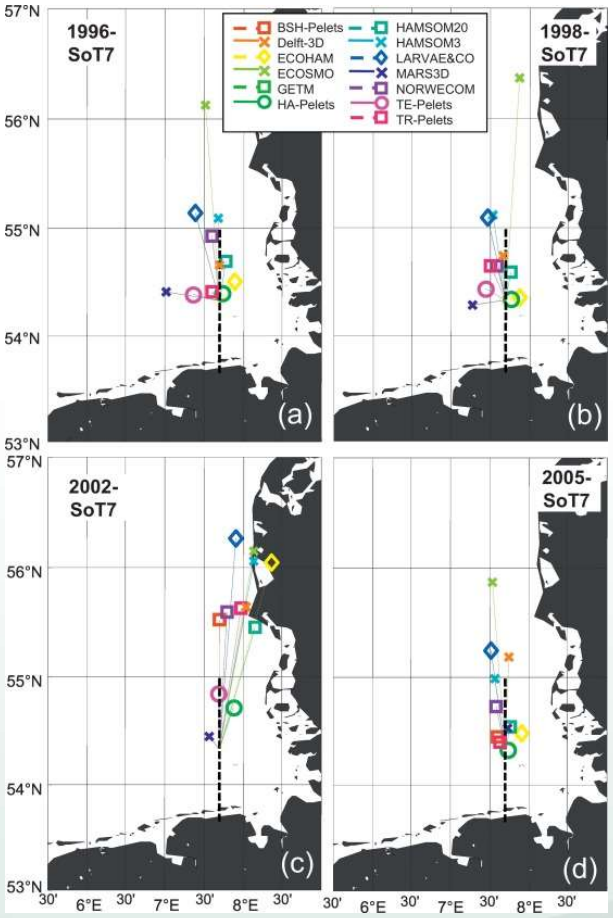
Selected achievements

WGIPEM ICES CIEM

- **Joint publications in which RBINS is involved: Variation that can be expected when using particles tracking models in connectivity studies.**





Recommendation to use a multi-model approach when is possible.

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Selected achievements

WGIPEM ICES CIEM

- **Joint publications in which RBINS is involved:**

Ecological Modelling 376 (2018) 54–67

Contents lists available at ScienceDirect

Ecological Modelling

journal homepage: www.elsevier.com/locate/ecolmodel

Responses of summer phytoplankton biomass to changes in top-down forcing: Insights from comparative modelling

Marie Maar[a,*], Momme Butenschön[b,o], Ute Daewel[c], Anja Eggert[d], Wei Fan[e], Solfrid S. Hjøllo[f], Marc Hufnagl[g], Martin Huret[h], Rubao Ji[i], Geneviève Lacroix[j], Myron A. Peck[g], Hagen Radtke[d], Sévrine Sailley[b], Matteo Sinerchia[k], Morten D. Skogen[f], Morgane Travers-Trolet[l], Tineke A. Troost[m], Karen van de Wolfshaar[n]

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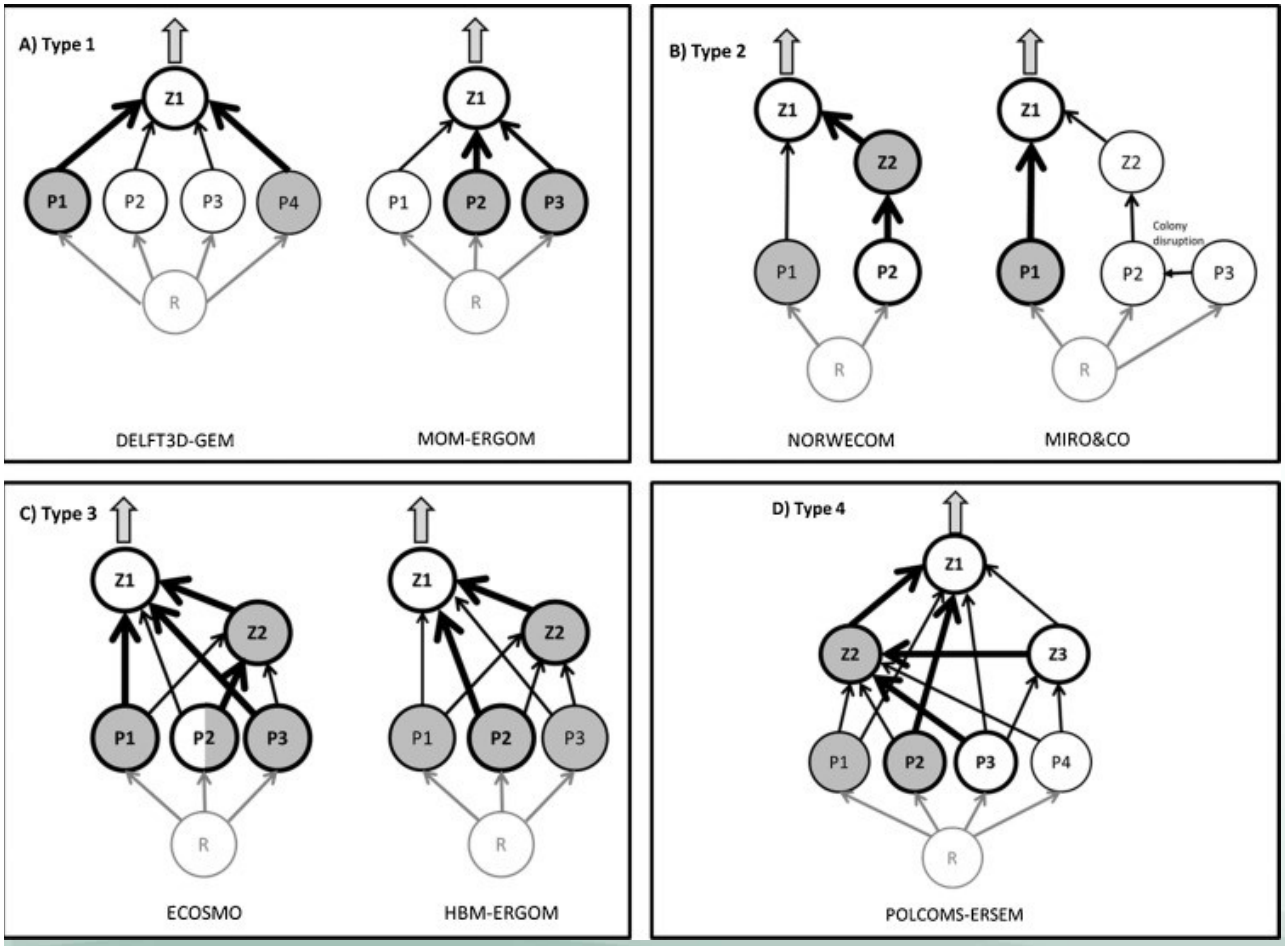
[b] Plymouth Marine Laboratory, PL1 3DH Plymouth, UK
[c] Helmholtz Zentrum Geesthacht, Institute of Coastal Research, 21502 Geesthacht, Germany
[d] Leibniz Institute for Baltic Sea Research Warnemünde (IOW), 18119 Rostock, Germany
[e] Ocean College, Zhejiang University, Zhejiang 316021, China
[f] Inst. of Marine Research, N-5817 Bergen, Norway
[g] Institute of Hydrobiology and Fisheries Science, University of Hamburg, 22767 Hamburg, Germany
[h] IFREMER, Centre de Brest, STH/LBH, France
[i] Woods Hole Oceanographic Institution, Woods Hole, MA, 02543, United States
[j] Royal Belgian Institute of Natural Sciences, B-1200 Brussels, Belgium
[k] Institute for the Coastal Marine Environment-IAMC-CNR, 09170 Torregrande, Oristano, Italy
[l] Ifremer, Centre Manche-Mer du Nord, 62321 Boulogne sur Mer, France
[m] Deltares, Boussinesqweg 1, 2629 HV Delft, The Netherlands
[n] Wageningen Marine Research, 1976 CP IJmuiden, The Netherlands
[o] Euro-Mediterranean Center on Climate Change (CMCC), 40127 Bologna, BO, Italy

MIRO&Co model

Context of krill fishery

Selected achievements

- **Responses of summer phytoplankton biomass to changes in top-down forcing: Insights from comparative modelling**



What is the responses of summer phytoplankton biomass to changes in top-down forcing?

Responses varied depending on the food web structure and trophic coupling represented in the models.

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Selected achievements

WGIPEM ICES CIEM

- **ASC theme sessions in which RBINS was involved**

ASC2010 (Nantes, France). **Oceanography and ecology of HABs: physical/biological interactions, climate change, and other current issues**.
Conveners: Donald M. Anderson, Geneviève Lacroix and Patrick Gentien†.

ASC2012 (Bergen, Norway). **Bridging the distance – Understanding habitat (and life stage) connectivity.**
Conveners: Marc Hufnagl, Geneviève Lacroix and Filip Volckaert

- **Workshops (RBINS participation)**

Workshop on **Future Directions in Modelling Physical-Biological Interactions** (**WKFDPBI**), 7-9 March 2004, Barcelona, Spain

Workshop on **Advancements in Modelling Physical-Biological Interactions in Fish early-life history: recommended practices and future directions** (**WKAMF**), 3-5 April 2006, Nantes, France

Workshop on **understanding and quantifying mortality in pelagic, early life stages of marine organisms: experiments, observations and models** (**WKMOR**), 22-24 March 2010, Aberdeen, Scotland

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WGIPEM ICES CIEM

Oral presentations/posters

8 ICES ASC
2 ICES WKs
7 WGIPEM meetings

Lacroix G., Lancelot C., Ruddick K., Spitz H., Gypens N., 2004. Using the 3D Coupled Physical-Biological Model MIRO&CO-3D to Assess Diatom-*Phaeocystis* Colony Blooms in the Southern Bight of the North Sea and the Response to Short-Term Climatic Changes. Workshop on Future Directions in Modelling Physical-Biological Interactions (**WKFDPBI**), March 2004, Barcelona, Spain

Lacroix G., Lancelot C., Ruddick K., Spitz Y., Gypens N. 2004. Modelling the respective impacts of the Rhine, Meuse and Seine on the availability of nutrients in Belgian waters (Southern North Sea) using the 3D coupled physical-biological model MIRO&CO-3D. ICES **ASC2004**, Sep. 2004, Vigo, Spain

Lacroix G., Ruddick K., Lancelot C., 2009. Spatial and interannual variability of primary production (*Phaeocystis* vs diatoms) in the Southern North Sea. ICES **WGPBI-WGHABD** joint day, April 2009, Huelva, Spain

Lacroix G., Volckaert. F., 2010. Sensitivity of the dispersal of sole larvae to hydrodynamics, vertical migration and mortality in the Southern North Sea: a modelling study. Workshop on understanding and quantifying mortality in pelagic, early life stages of marine organisms: experiments, observations and models (**WKMOR**). March 2010, Aberdeen, Scotland,

Lacroix G., Volckaert. F., 2010. Spatially-explicit model of sole larvae in the Southern North Sea: sensitivity of the dispersal to hydrodynamics/environment variability and biological parameters. ICES **ASC2010**, September 2010, Nantes, France. [Poster]

Lacroix G., Volckaert F., 2011. Disentangling the effect of biology/hydrodynamics/environment variability on the connectivity of sole larvae in the North Sea. ICES **WGPBI**, April 2011, San Sébastian, Spain.

Lacroix G., Bolle L., Maes G., Volckaert F., 2012. Impact of vertical migration and settling delay on short-term dispersal dynamics of early life stages of sole (*Solea solea*). ICES **WGIPEM**, March 2012, Copenhagen, Denmark.

Lacroix G., Maes G., Bolle L., Volckaert F., 2012. Connectivity of early life stages: are the connections between spawning grounds and nurseries of sole recurrent or exceptional? A modelling study. **ASC2012**, September 2012, Bergen, Norway.

Bolle et al. (19 **co-authors**), 2012. Adressing the variability of drift models: The North Sea Model Intercomparison Project. **ASC2012**, September 2012, Bergen, Norway.

Lacroix G., Maes G., Bolle L., Volckaert F.A.M., 2012. How is the connectivity of sole larvae affected by wind and temperature changes in the Southern North Sea? A modelling approach. **ASC2012**, September 2012, Bergen, Norway. [Poster]

Lacroix G., Van der Zande D., Maes G.E., Volckaert F.A.M. Impact of projected wind and temperature changes on larval recruitment of sole in the Southern North Sea. **ASC2013**, September 2013, Reykjavik, Island.

Lacroix G., Van der Zande D., **Barbut L.**, Volckaert F.A.M., 2015. "Impact of climate change on sole larval recruitment in the North Sea and match-mismatch between larvae and phytoplankton". ICES **WGIPEM**, March 2015, Plymouth, UK.

Delerue-Ricard S., **Barbut L.**, Coscia I., **Lacroix G.**, Vanden Bavière A., Robbens J., Volckaert F.A.M. Where are sole larvae and juveniles arriving at the Belgium coast coming from? **ASC2015**, September 2015, Copenhagen, Denmark.

Lacroix G., Groot Crego C., **Barbut L.**, Delerue-Ricard S., Vanden Bavière A., Coscia I., Robbens J., Volckaert F.A.M. How is connectivity of flatfish impacted by reproductive strategy? ICES **WGIPEM**, June 2016, Brest, France.

Lacroix G., Barbut L., Vastenhoud B., **Kerckhof F., Vigin, L., Degraer S., De Mesel I**. Do man-made structures impact the connectivity patterns of hard substrate species in the North Sea? **ASC2017**, September 2017, Fort Lauderdale, Florida.

Lacroix G., Barbut L., Volckaert F.A.M. Impact of climate change on connectivity and larval recruitment of sole in the North Sea. ICES **WGIPEM**, April 2018, Copenhagen, Denmark.

Lacroix G., Kerckhof F., Barbut L., Vigin L., Degraer S., De Mesel I. Do man-made structures impact the connectivity patterns of hard substrate species in the North Sea? ICES **WGIPEM**, April 2018, Copenhagen, Denmark.

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Flanders Research Institute for Agriculture, Fisheries and Food

How larval traits of six flatfish species impact population connectivity?

Barbut Léo, Groot Crego Clara, Sophie Delerue-Ricard, Sara Vandamme, Volckaert Filip A.M, Lacroix Geneviève

1st BICEpS colloquium, Brussels, 14 November 2018

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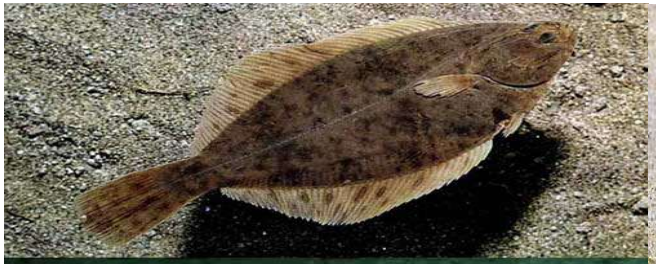
Flatfish in the North Sea

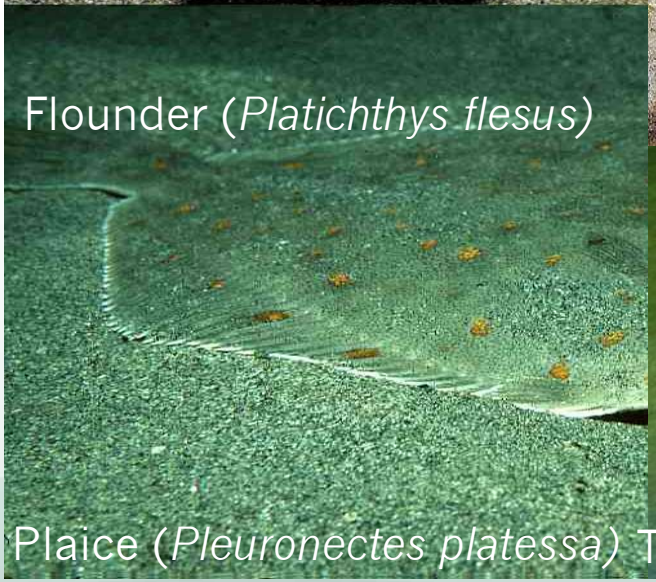
Tasty, high economic value, high fishing pressure and a strong interannual variability…



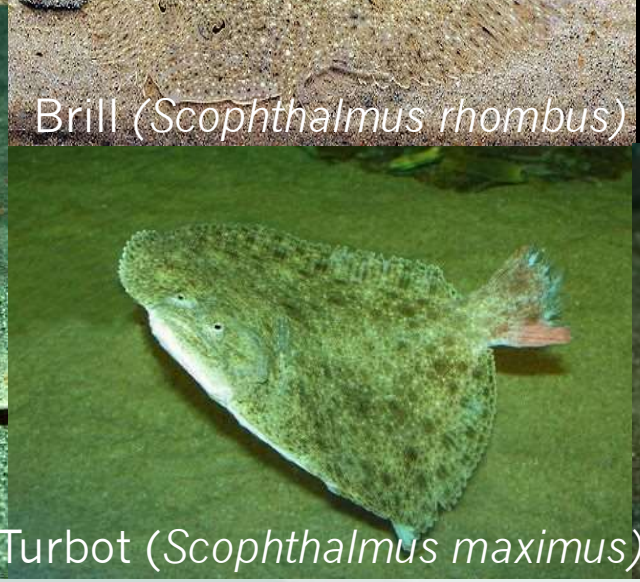
Flounder (*Platichthys flesus*)

Brill (*Scophthalmus rhombus*)

Dab (*Limanda limanda*)



Plaice (*Pleuronectes platessa*)



Turbot (*Scophthalmus maximus*)

Sole (*Solea solea*)

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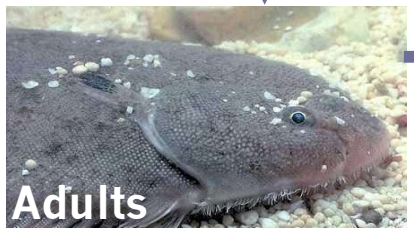
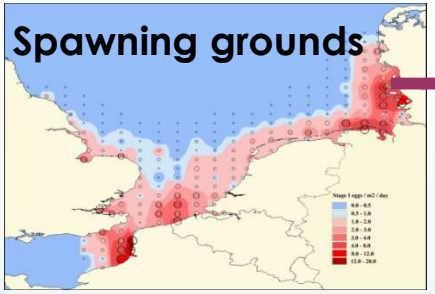
The life cycle of flatfish

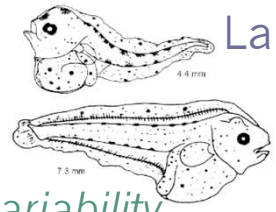
Strength of age class: Planktonic phase and early demersal juvenile phase





Spawnin
g

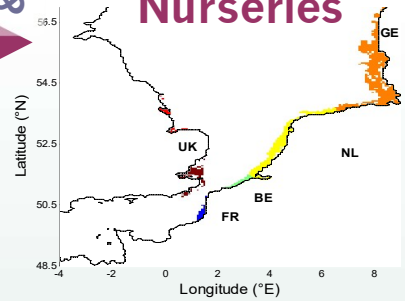
Eggs → Larvae



Pelagic phase
Main recruitment variability

Metamorphosis & settlement

Nurseries



Hydrodynamics — Environment — Behaviour — Physiology

⇒ **Long pelagic larval stage**

⇒ **Recruitment constrained by access to nurseries**

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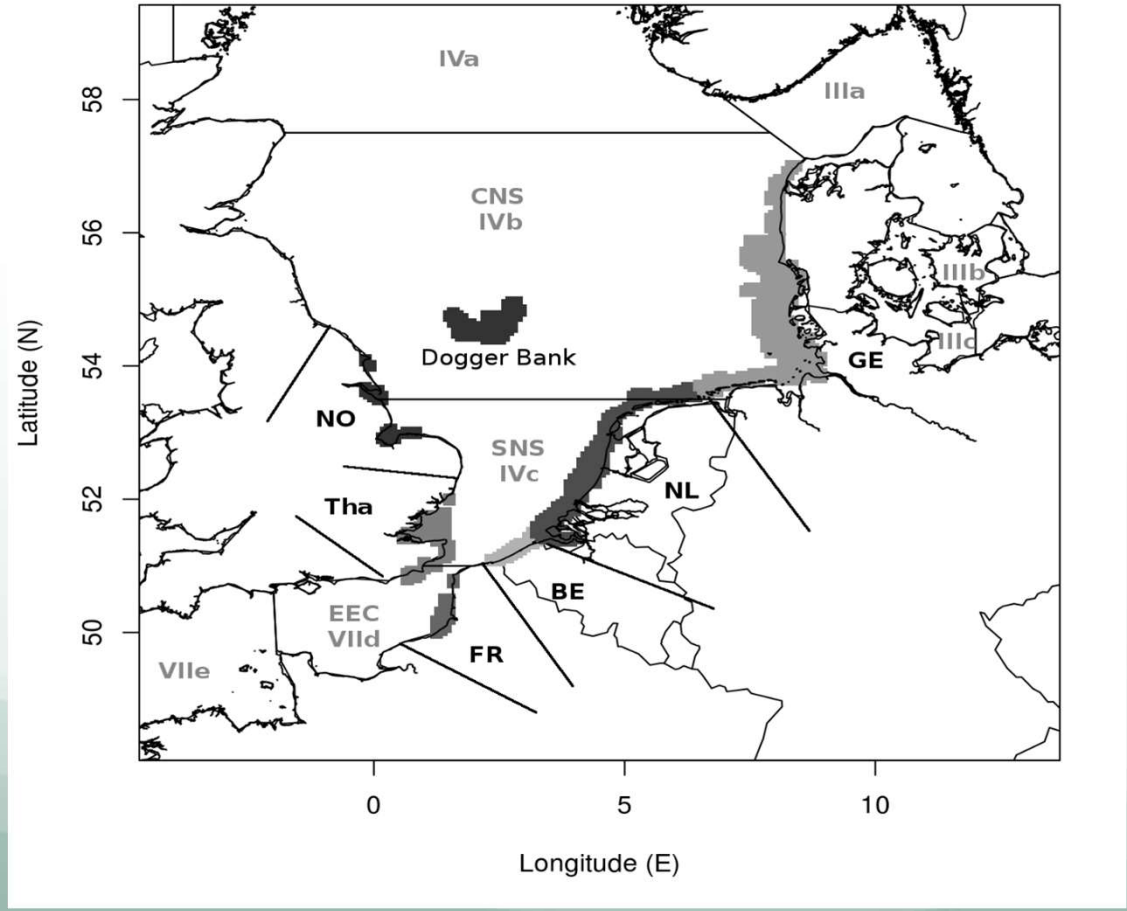
Needs of fisheries Management:

❖How many stocks are there and which kind of connectivity?



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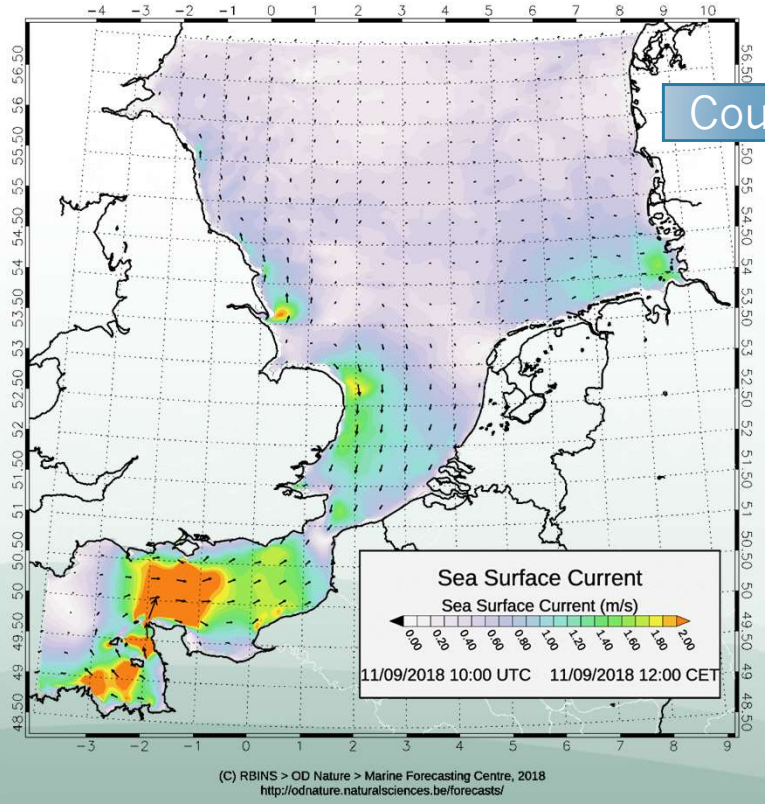
Larval transport model

Simulation: 2011

3D hydrodynamic model (COHERENS)

- Resolution: ~ 5 km, 20 vertical layers
- Input: Meteo, river flows and boundary conditions from a continental shelf model
- Output: Currents, diffusion, salinity, temperature...

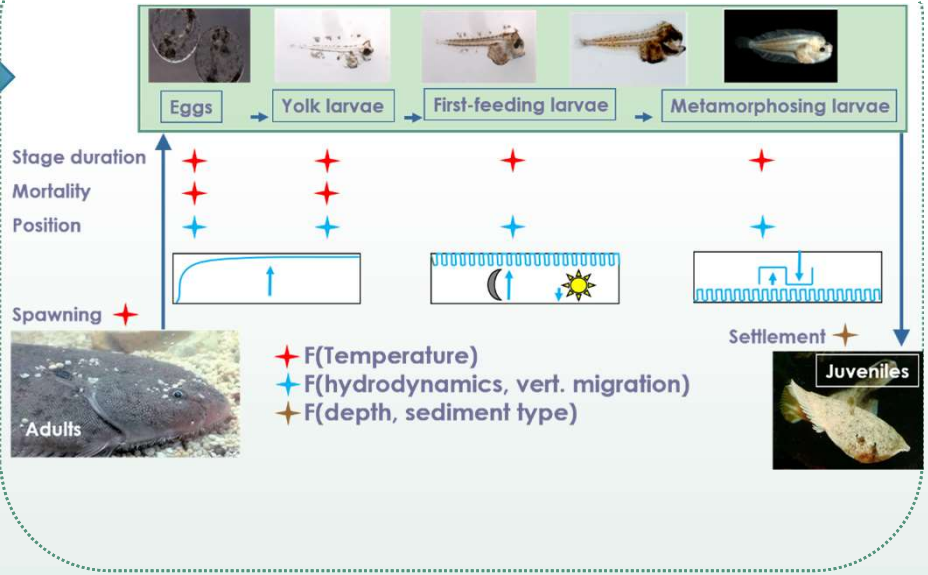


Coupling

Online particle tracking module

Individual-Based Model adapted from Lacroix et al. 2013

→ advection, diffusion, vertical migration of larvae



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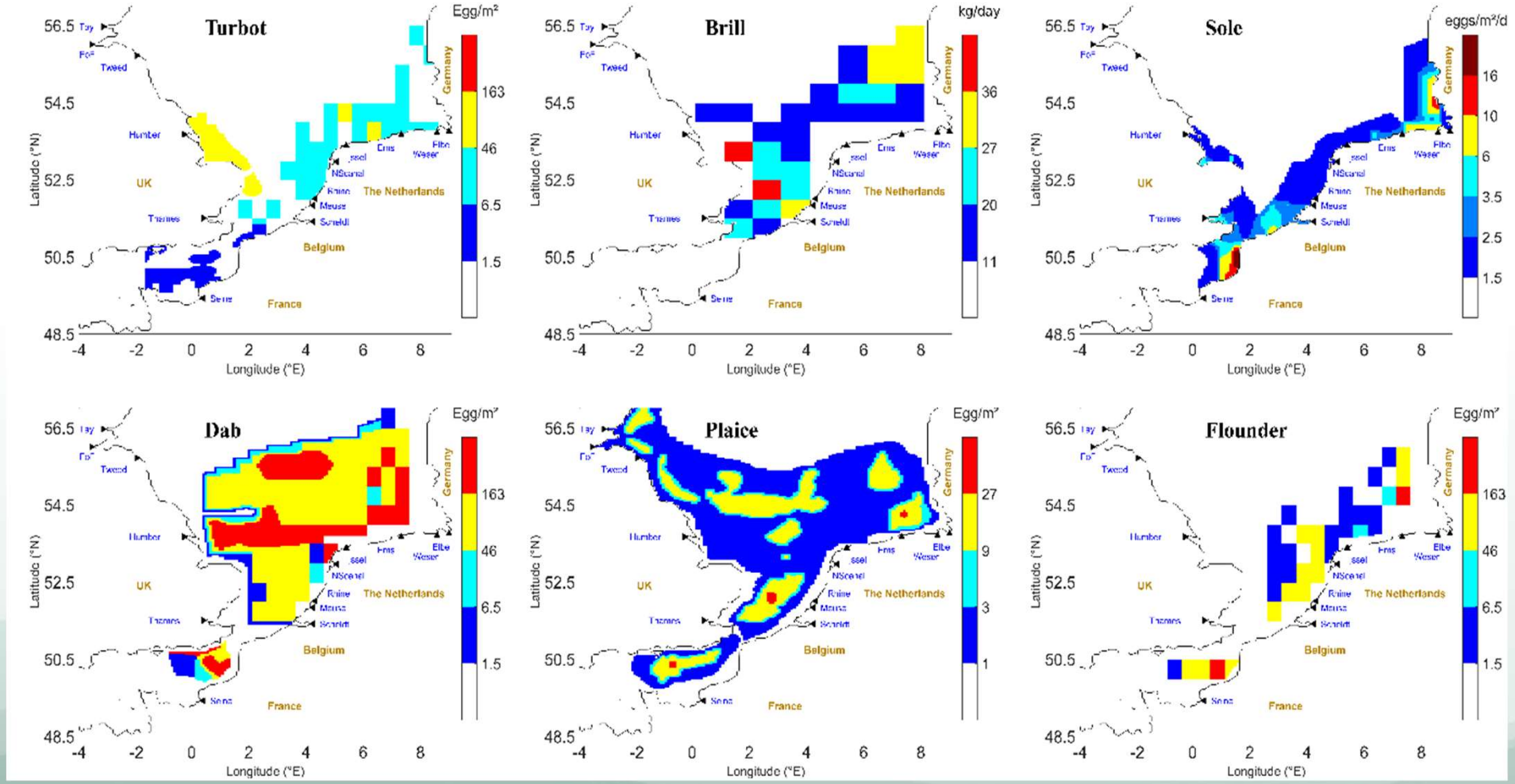
Life history traits of flatfish: Spawning grounds



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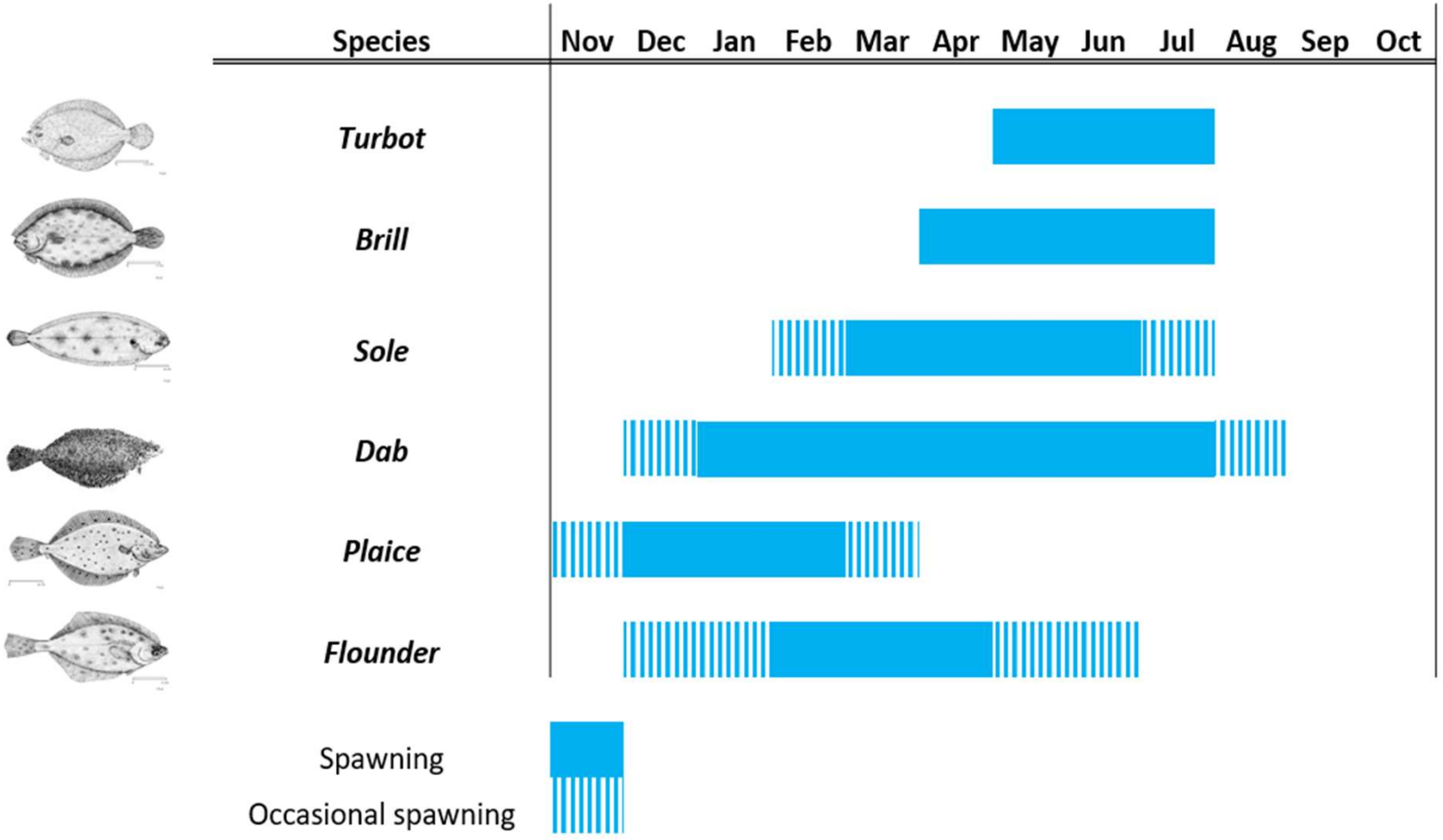
Life history traits of flatfish: spawning period



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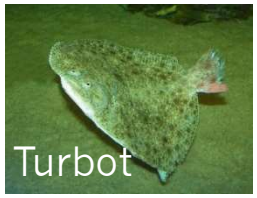
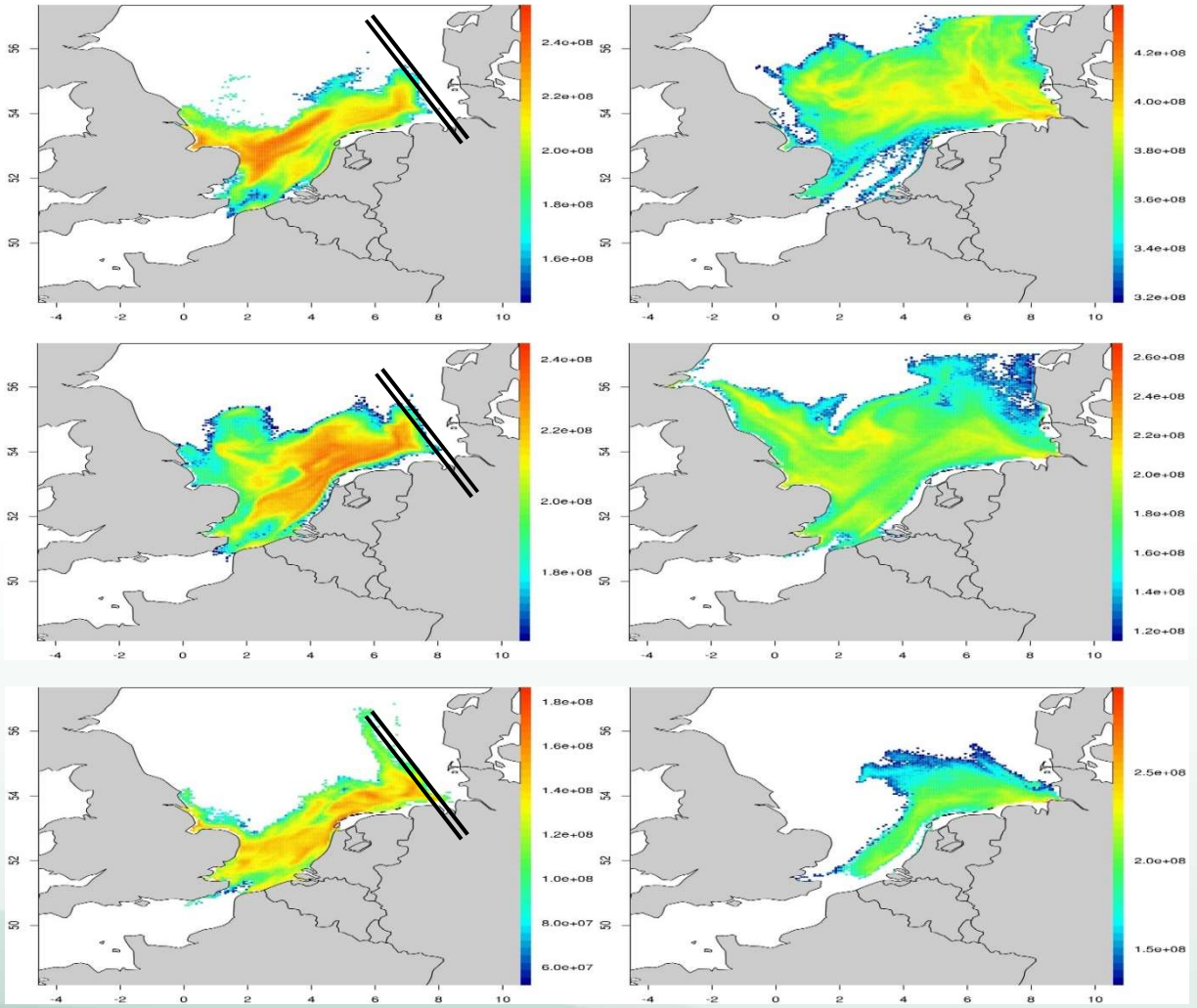
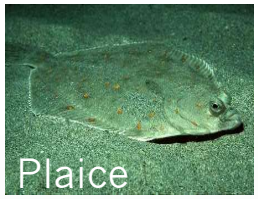
Dispersal maps







Final dispersal pattern for eggs spawned in Southern North Sea in 1998

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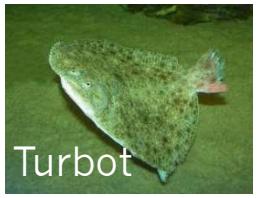
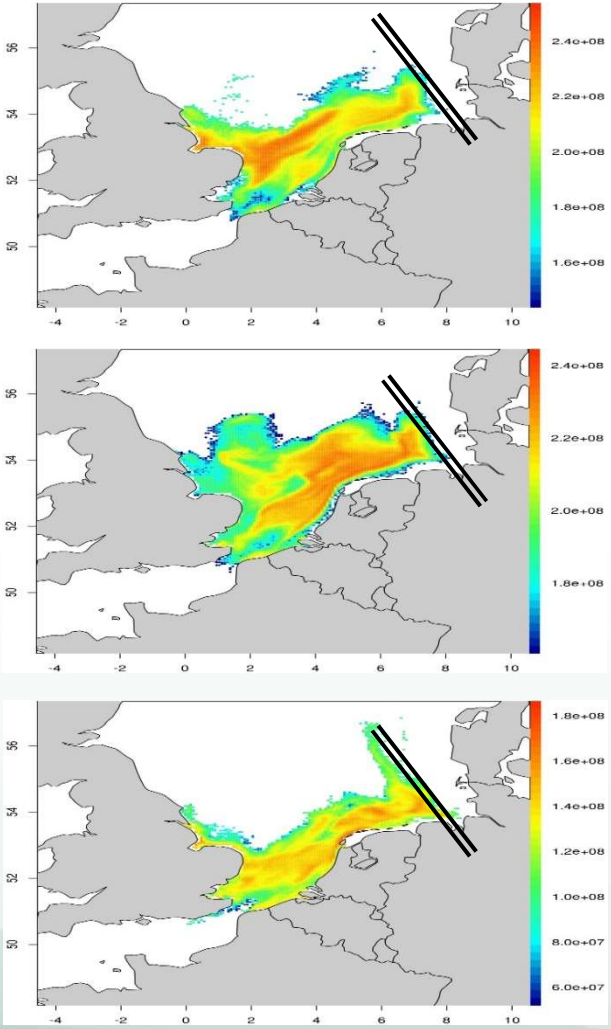
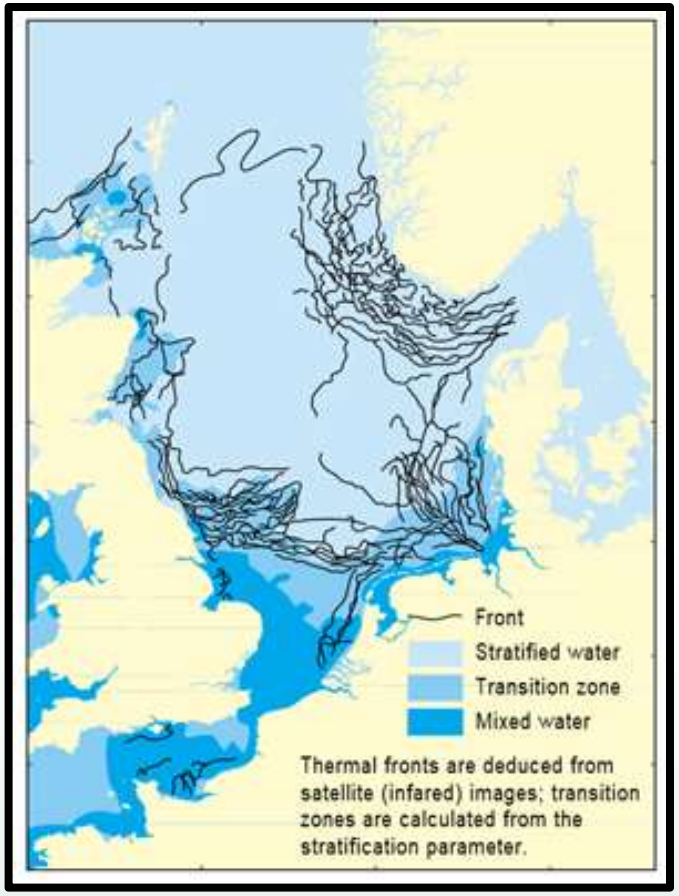
Dispersal maps







(OSPAR QSR, 2000)

Final dispersal pattern for eggs spawned in Southern North Sea in 1998

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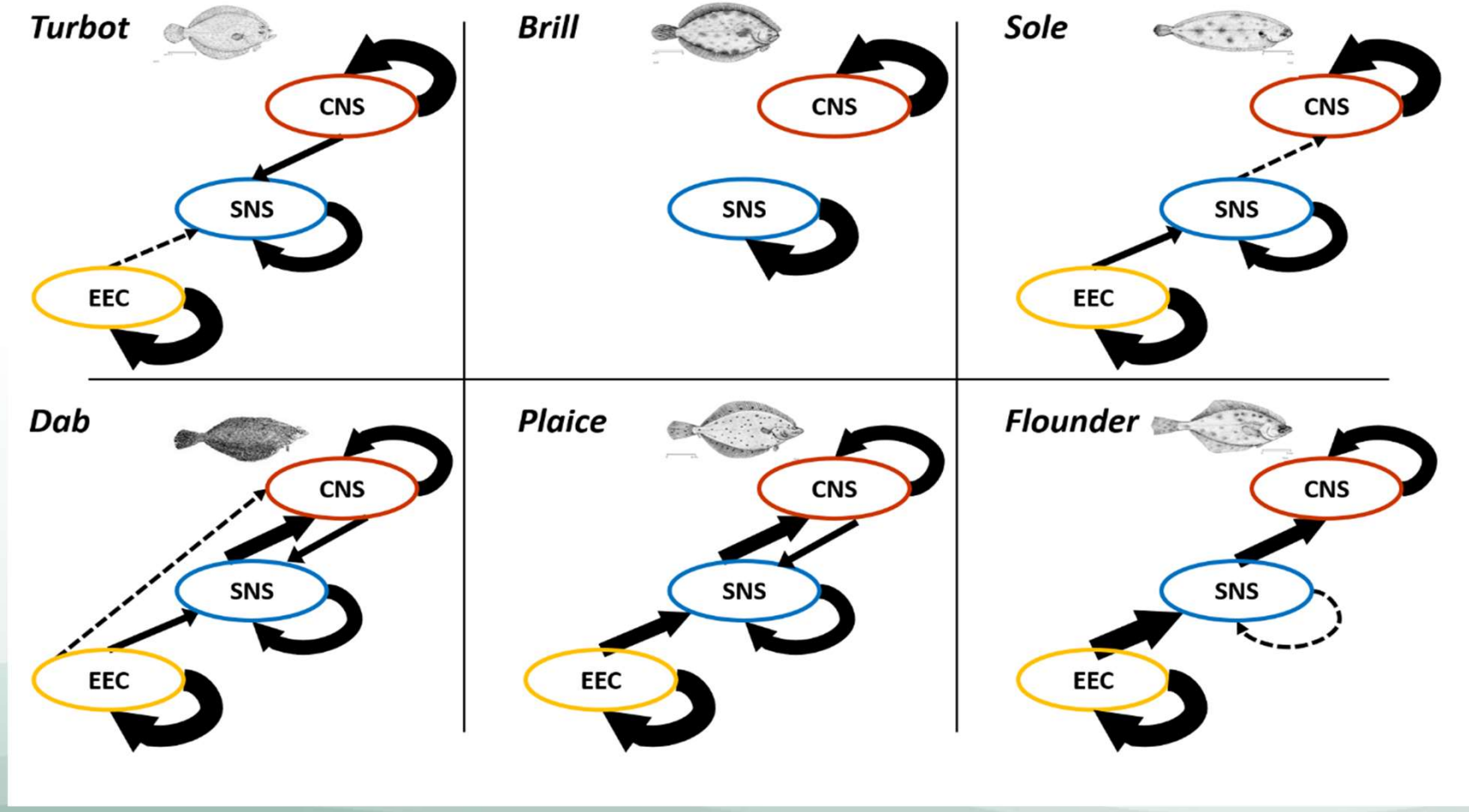
Connectivity pattern across the North Sea



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Conclusion/Discussion

- Dispersal follows the general circulation from South to North
- Two groups present different connectivity among ICES divisions:
  - Turbot, brill and sole: spring-summer "coastal" spawning, short PLD
  - Dab, plaice and flounder: winter "offshore" spawning, long PLD
- Coherent with genetic population structure
- WGIPEM an interesting place exchange about models and hypothesis

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B-FishConnect

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For more information, please refer to the BICEpS report 2018

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