SEAwise UPDATE

at NWWAC meeting, 2 July 2024

SEAwise has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000318

Project itself

Progress

Next step?

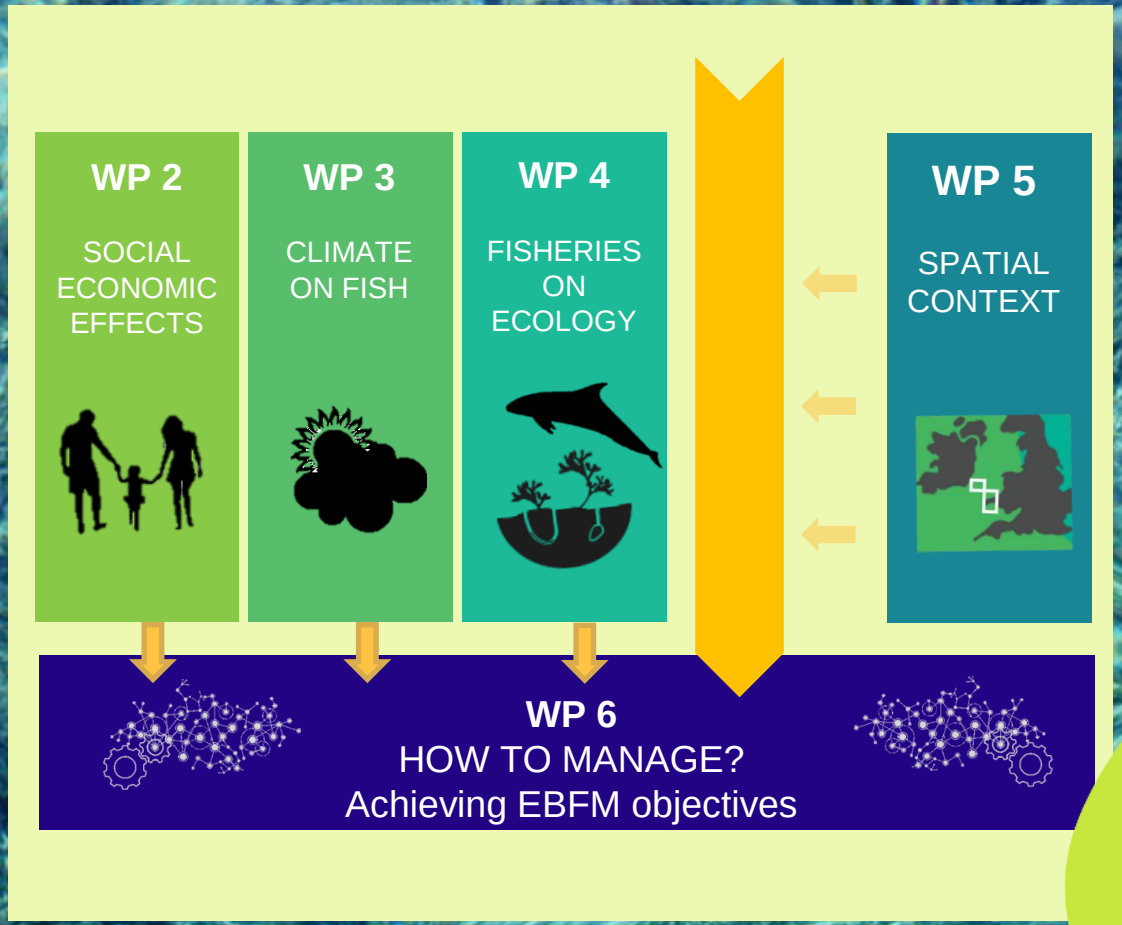
OBJECTIVE

Towards effective implementation of Ecosystem Based Fisheries Management (EBFM)

4 key challenges

Oct 2021 – 2022 – 2023 – July 2024

=> Oct 2025



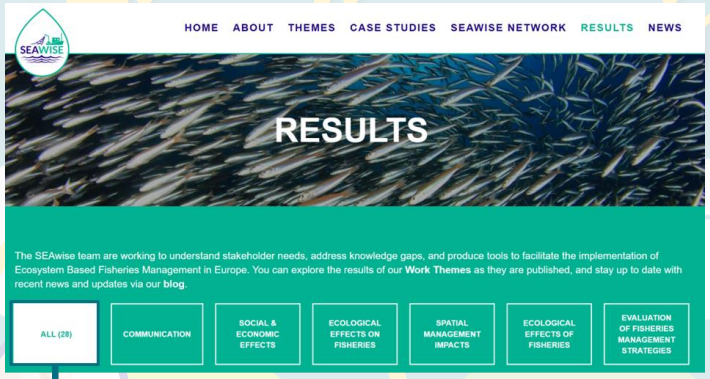
1. Lack of clear and widely accepted priorities

2. Gaps in existing knowledge

3. Lack of accurate and adaptive methods

4. Lack of end-user driven advice

https://seawiseproject.org/seawise-results/



~30 Deliverable reports

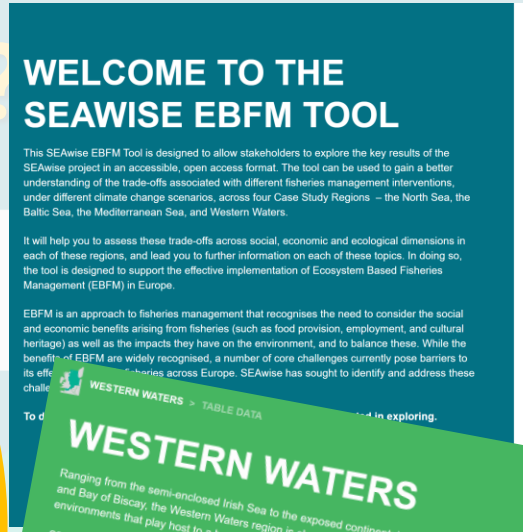
Scoping workshop: Priorities

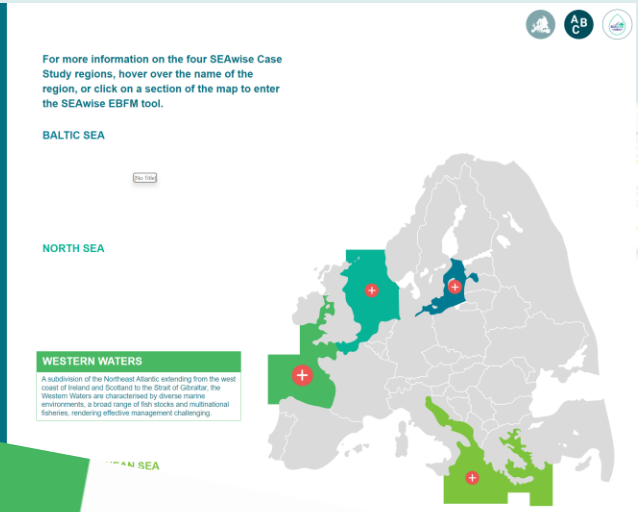
Update Knowledge & methods

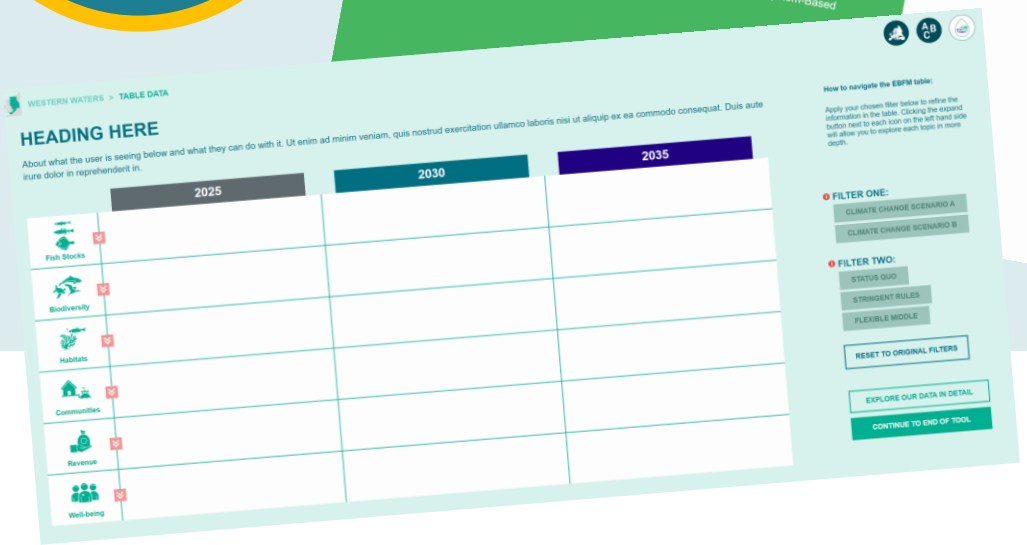
EBFM tool

Spring 2023

Co-design workshop





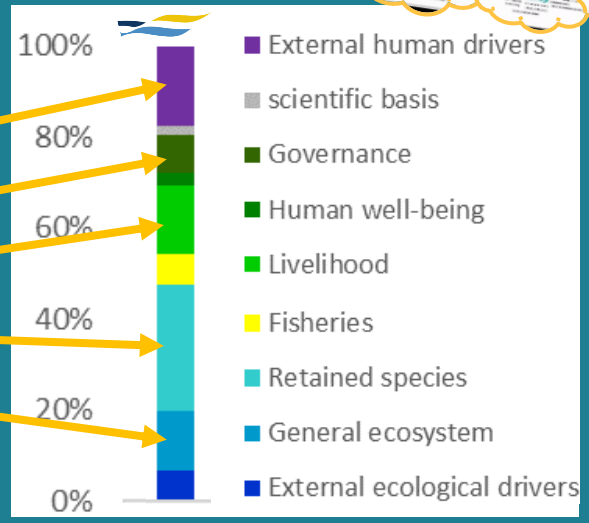


PROTOTYPE:
https://seawiseproject.org/tool/

Timeline on interactions?

Autumn 2021 | Autumn 2021-Spring 2023 | Spring 2023 | Spring 2023-Autumn 2024

Priorities → *Update Knowledge & methods* → **Co-design workshop** → *Update Knowledge & methods*



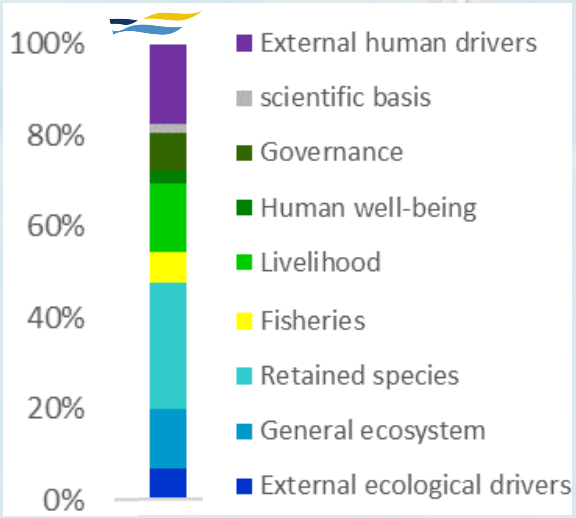
Autumn 2024-Spring 2025 | Spring 2025 | Summer 2025 | Autumn 2025

Review workshop → *Update Knowledge & methods* → **Synthesis workshop** *Advice demo* → *SEAwise legacy*

Project itself

SEAWISE

Progress

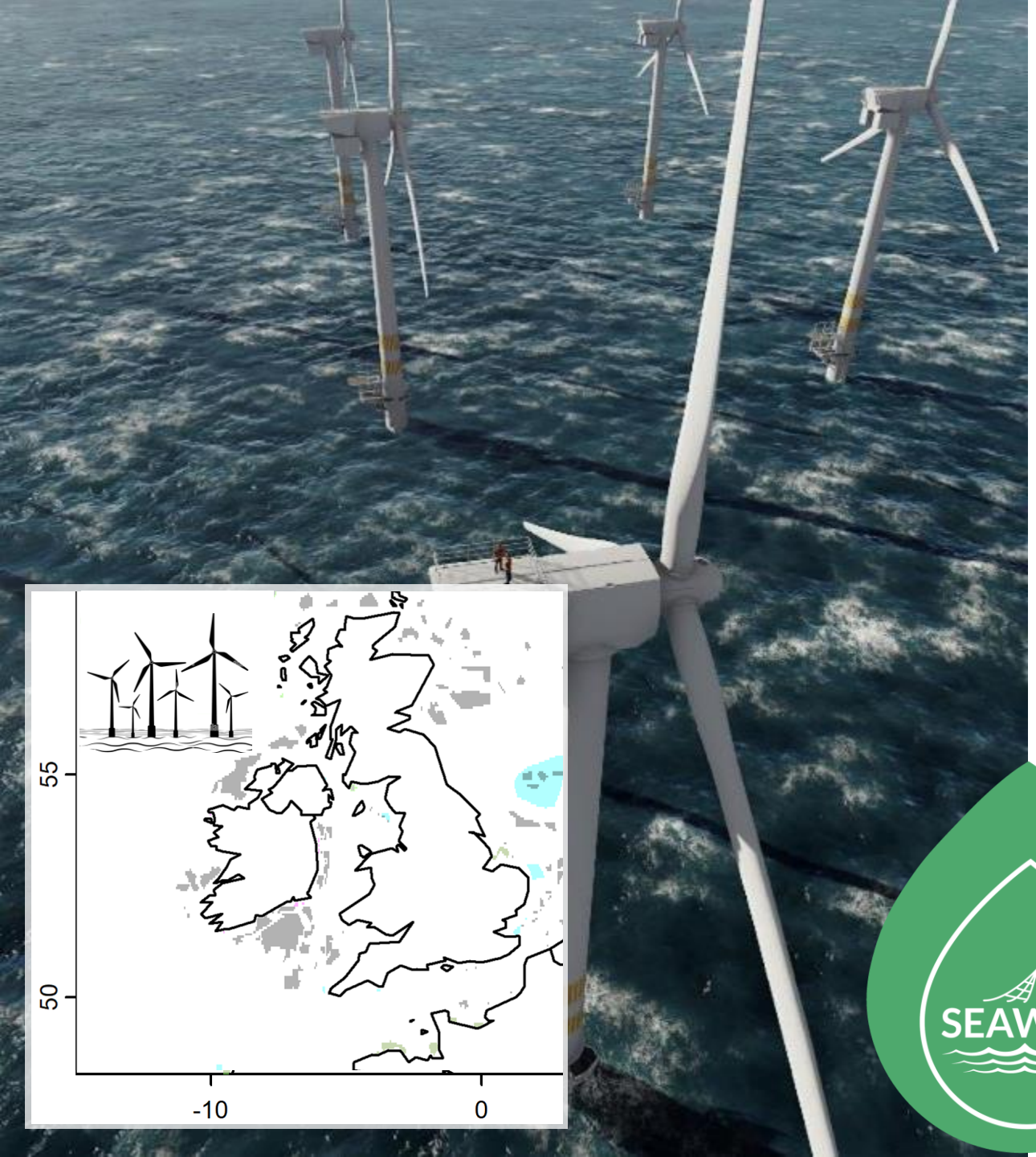


Next steps?

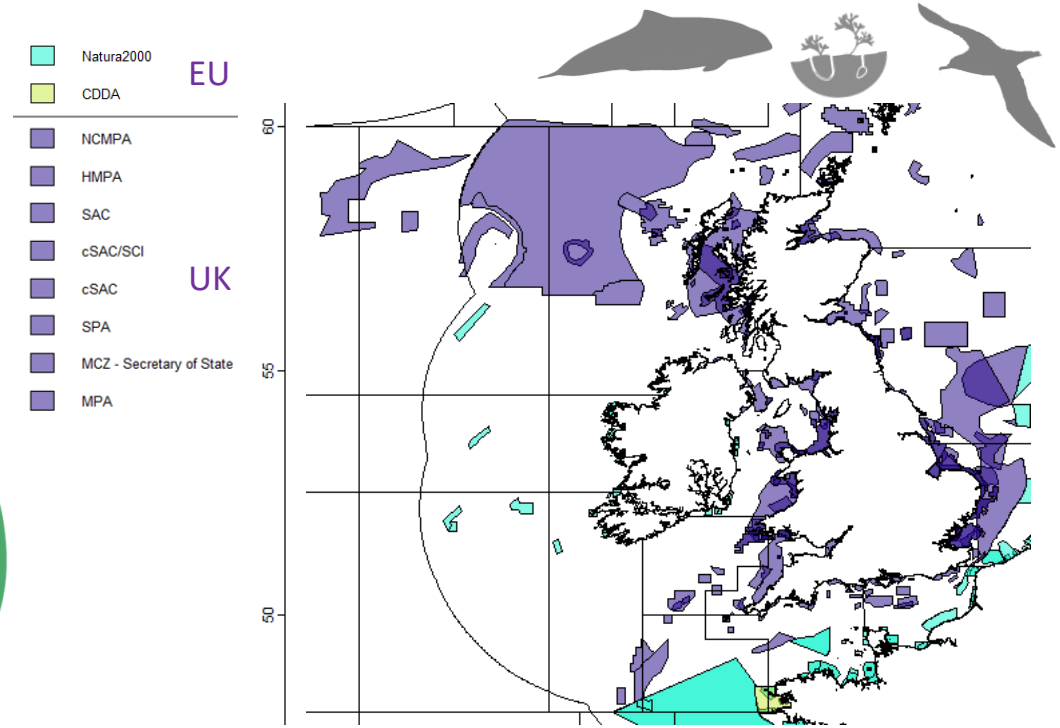
EXTERNAL HUMAN DRIVERS

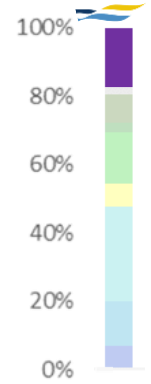
⇒ **Fishing grounds lost to ORE + MPA**

Biggest issue = **lack of information**

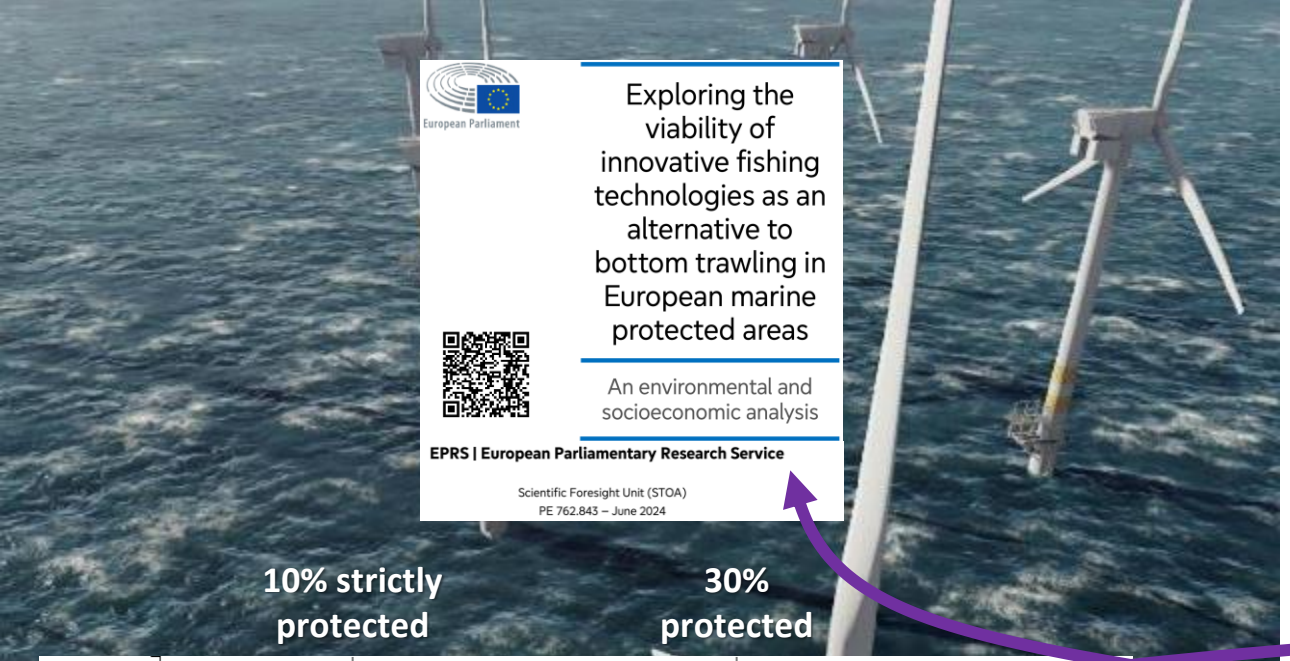


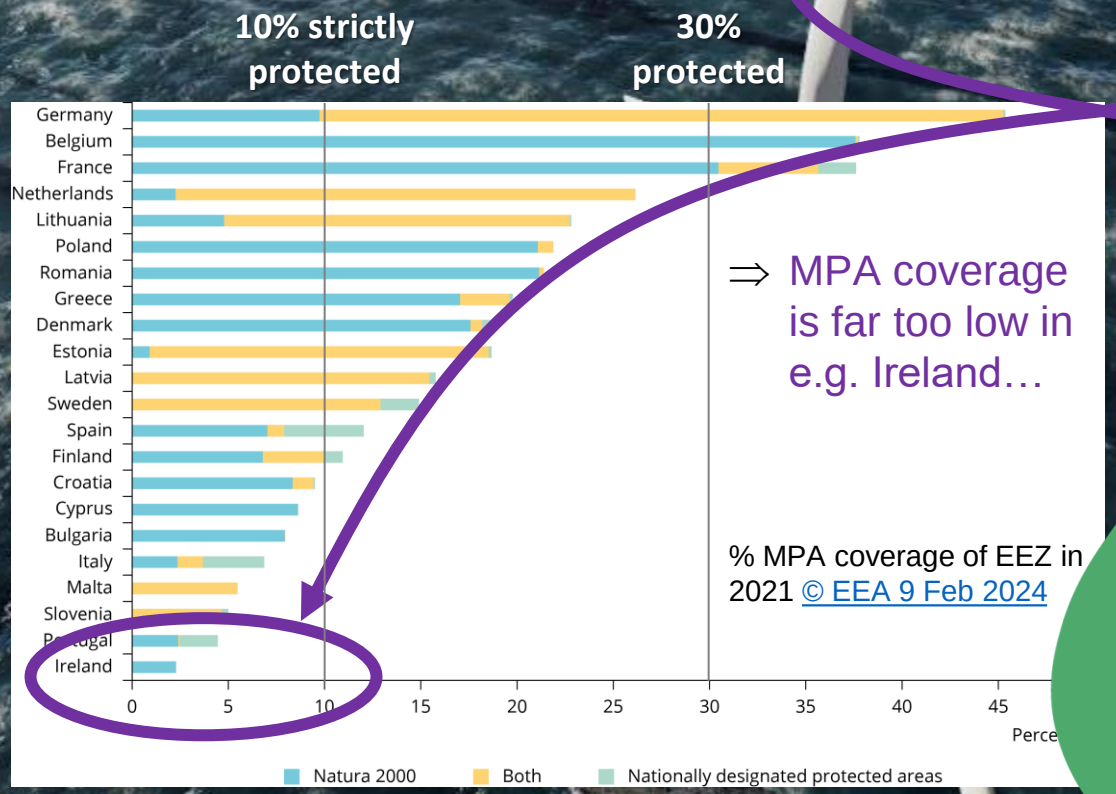
SEAWISE





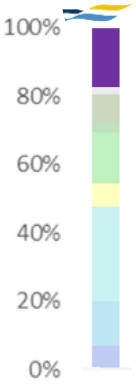
EXTERNAL HUMAN DRIVERS





⇒ MPA coverage is far too low in e.g. Ireland…

% MPA coverage of EEZ in 2021 © EEA 9 Feb 2024



⇒ **Fishing grounds lost to ORE + MPA**

Biggest issue = **lack of information**

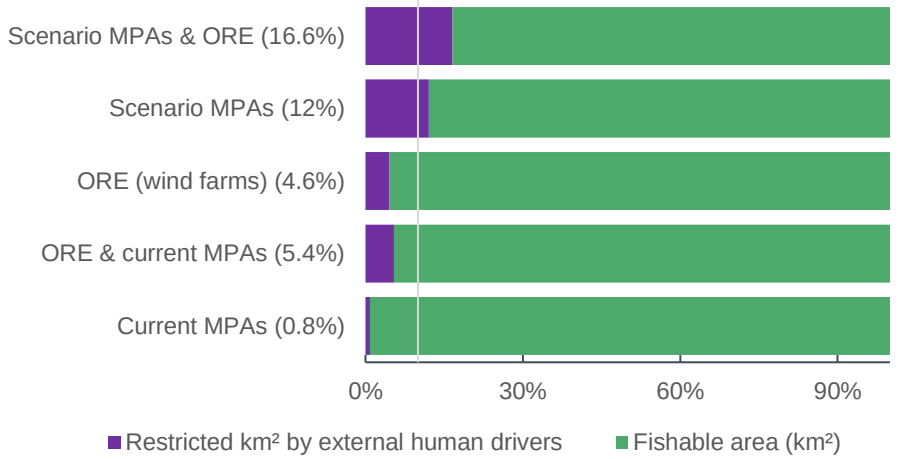
Plausible **scenarios**

- Current MPA restrictions
- Future MPA restrictions using conservative scenarios e.g. trawling affects seabed, longlines affect birds

More restrictions are plausible.

Uptake of SEAwise results

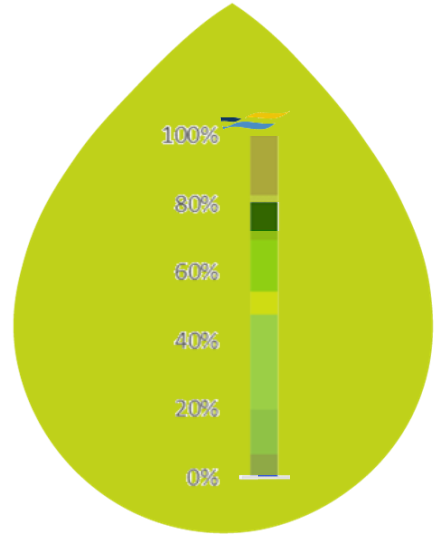
% lost fishing grounds in the Celtic Seas



⇒ More details: Bastardie et al 2023 (p 32)

GOVERNANCE: generic + case specific

Online survey



SURVEY ON EFFECTIVENESS OF EU REGIONAL FISHERIES MANAGEMENT

SEAWISE

Are you working within EU Regional Fisheries Management? If so, we would like to hear from you!

Objective: to better understand how people/organisations within fisheries relate, interact & work with each other across national boundaries - at the level of the regional seas - in Europe to deliver successful fisheries management.

Find out more at:
www.bit.ly/SEAwise-survey

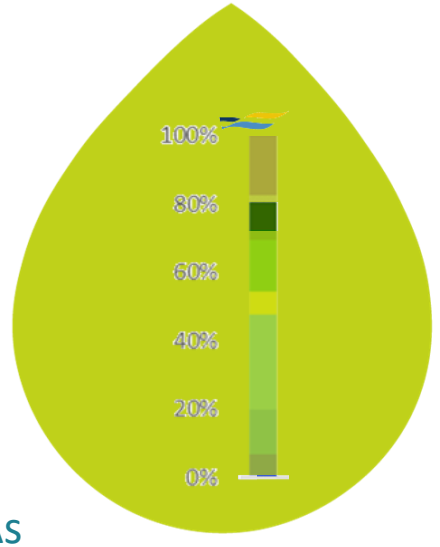
This survey is being administered by the Centre for Blue Governance (CBG) at Aalborg University (AAU), one of the 24 partners in the EU-funded SEAwise project

SEAwise has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000318

GOVERNANCE: generic + case specific

Online survey

In-depth interviews



Cases => fisheries restriction in MPAs
under 10% highly and 30% protection regimes

- ✓ FR MPA in Bay of Biscay
- ✓ DK MPA in North Sea: Gule Rev and Jyske Rev
- ✓ BE MPA in North Sea: Vlaamse Banken

LIVELIHOOD

Social objectives of CFP not operationalized

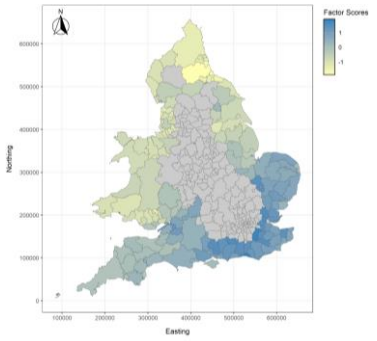
Incremental steps

Case demonstrations & uptake

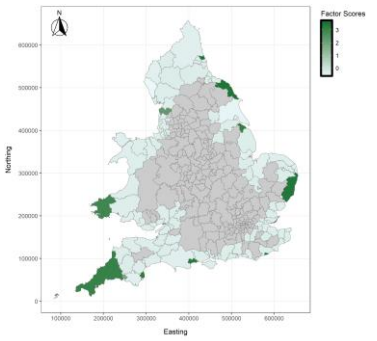
Linking fishing fleets to community profiles, e.g. 3 community profiles in France -> STECF

Mapping social engagement and reliance of English and Welsh districts on fisheries

Employment opportunity

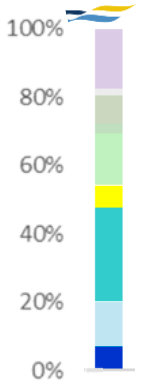


Fishing engagement



⇒ More details:
SEAwise Deliverable report 2.6 (forthcoming)

RETAINED SPECIES, FISHERIES & EXTERNAL ECOLOGICAL DRIVERS



Recruitment (T3.2)

\+

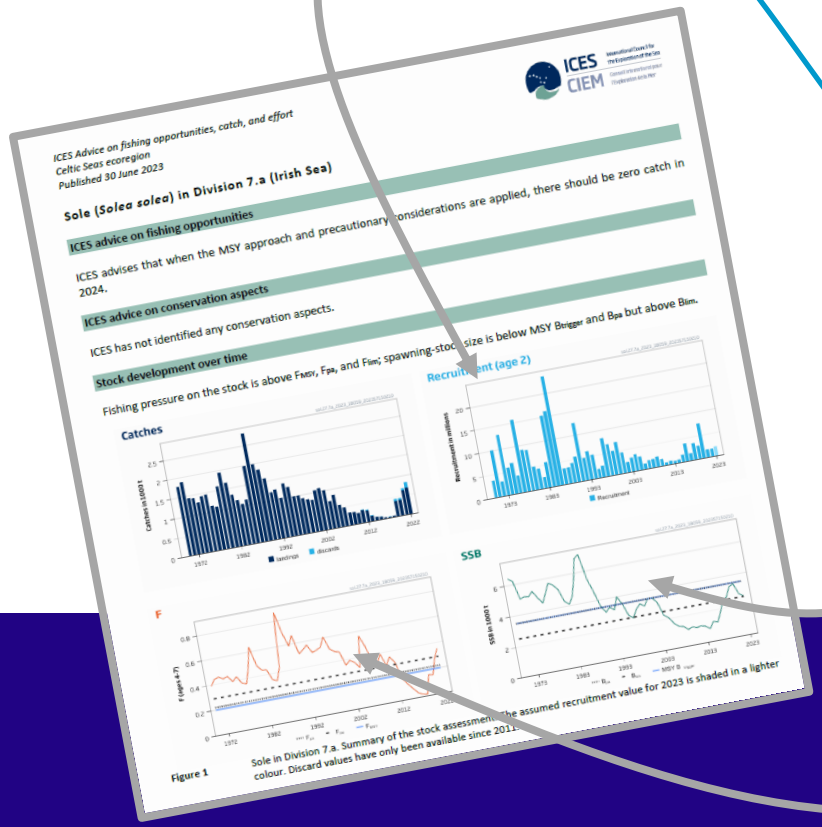
Growth (T3.3)

Fish stock (SSB)

Natural mortality (T3.4)

\-

Fishing mortality



Melià et al 2024

Ibaibarriaga et al 2024

Neuenfeldt et al (forthcoming)

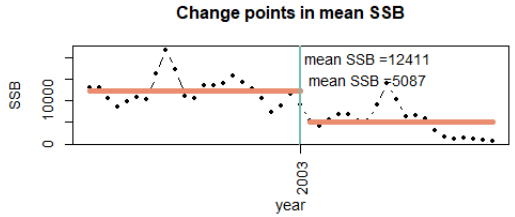
https://seawiseproject.org/seawise-results/

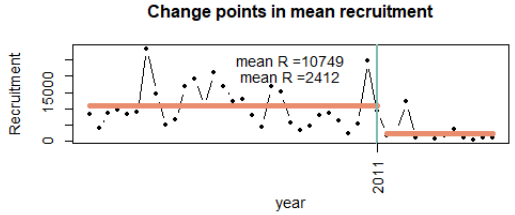
SEAWISE

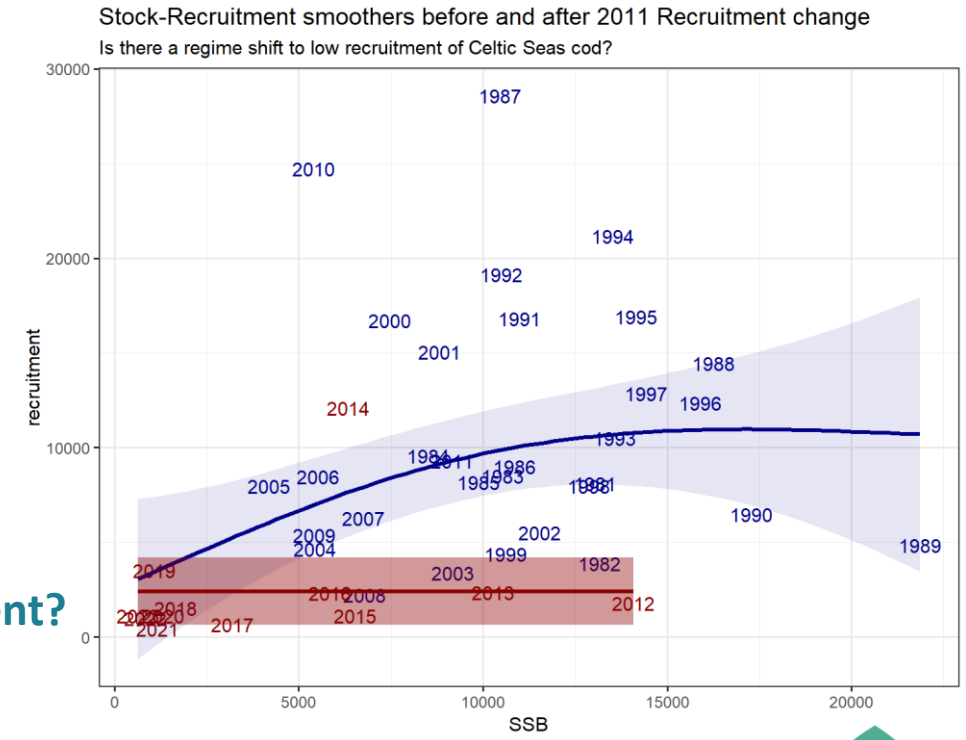
RETAINED SPECIES, FISHERIES & EXTERNAL ECOLOGICAL DRIVERS

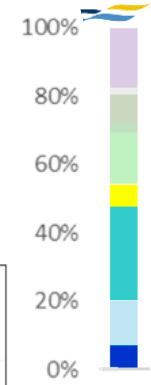
EXAMPLES

Recruitment









frontiers | Frontiers in Marine Science

Can regime shifts in reproduction be explained by changing climate and food availability?

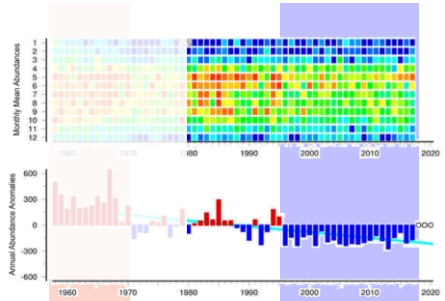
Maria Tirronen[1*†], Jochen Depestele[2†] and Anna Kuparinen[1]

[1]Department of Biological and Environmental Science, University of Jyväskylä, Jyväskylä, Finland, [2]Fisheries and Aquatic Production, Flanders Research Institute for Agriculture, Fisheries and Food (ILVO), Oostende, Belgium

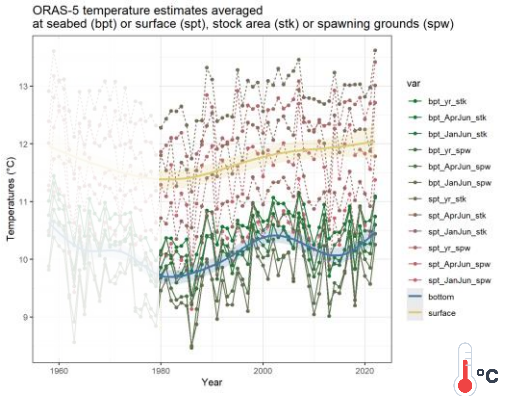
Climate effects on Celtic Sea recruitment?

⇒ Zooplankton & Temp. changes

⇒ Biological data = shorter time series



Total *small-copepods* (≤ 2 mm) from CPR standard areas C4, D4, and C3 to create a "Celtic Seas" average for the region. Upper panel: matrix of monthly mean (total copepod) abundances over time. Bottom panel: annual anomalies of total copepod abundance (#/m3) have exhibited a significant interannual decrease since 1958 ($p < 0.01$).



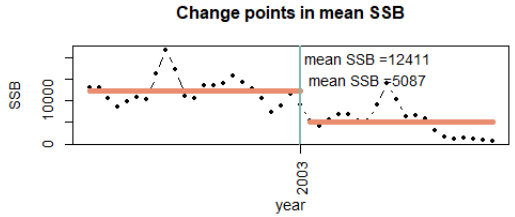
Melià et al 2024

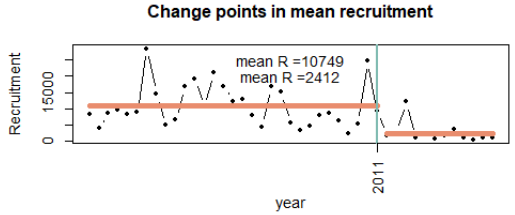
https://seawiseproject.org/seawise-results/

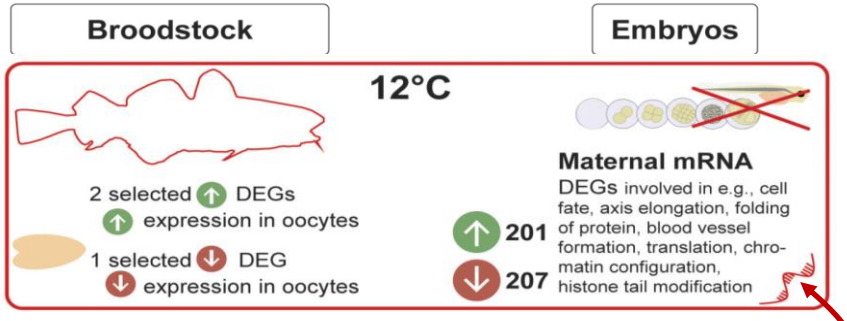
SEAWISE

RETAINED SPECIES, FISHERIES & EXTERNAL ECOLOGICAL DRIVERS

Recruitment

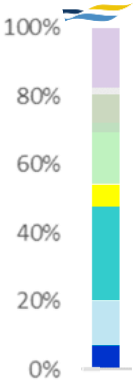






No embryos > 12°C

Skjaerven et al 2024



Natural Mortality

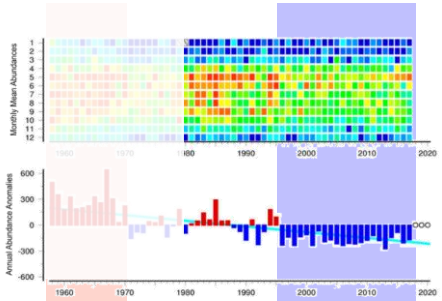
Presentation by
Pierre-Yves Hernvann

⇒ Correlative relationships

Climate effects on Celtic Sea recruitment?

⇒ Zooplankton & Temp. changes

⇒ Biological data = shorter time series



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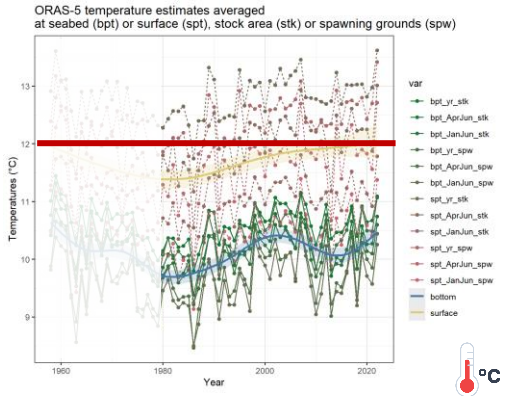


NORTH WESTERN WATERS ADVISORY COUNCIL

NWWAC webinar on climate change impacts on cod in the Celtic Sea

Wednesday, 12 June 2024

WP 6
HOW TO MANAGE?

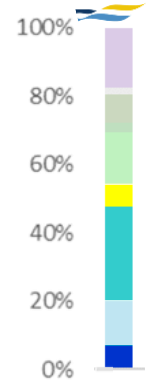
Melià et al 2024

https://seawiseproject.org/seawise-results/

Neuenfeldt et al (forthcoming)

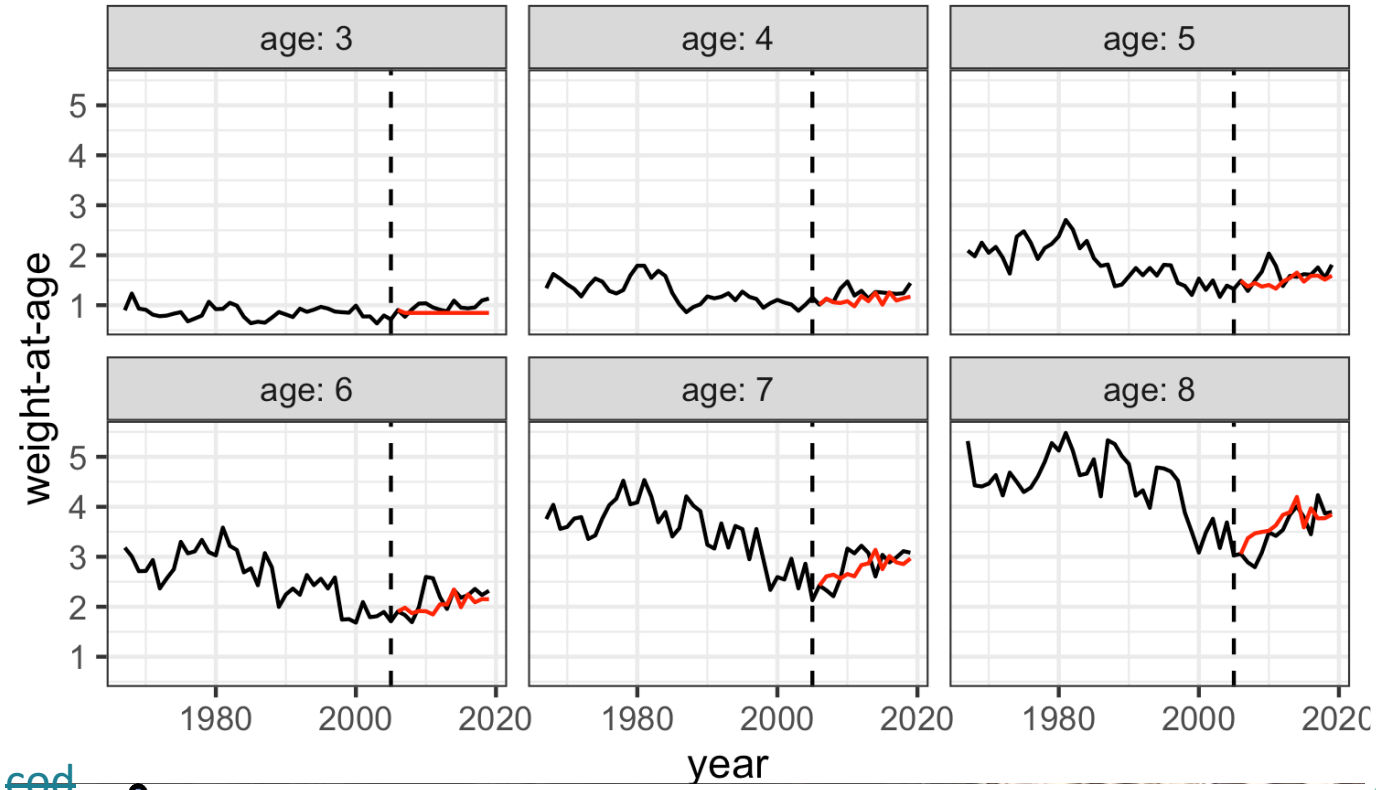
SEAWISE

RETAINED SPECIES, FISHERIES & EXTERNAL ECOLOGICAL DRIVERS



EXAMPLES

Growth



Can we go beyond analytics?

⇒ Can we forecast growth?

⇒ Stock with forecast potential:

- CS: had, meg, sol7e, whg, ~~sol7fg~~, ~~cod~~
- IrS: cod, had, sol, whg, ~~ple~~

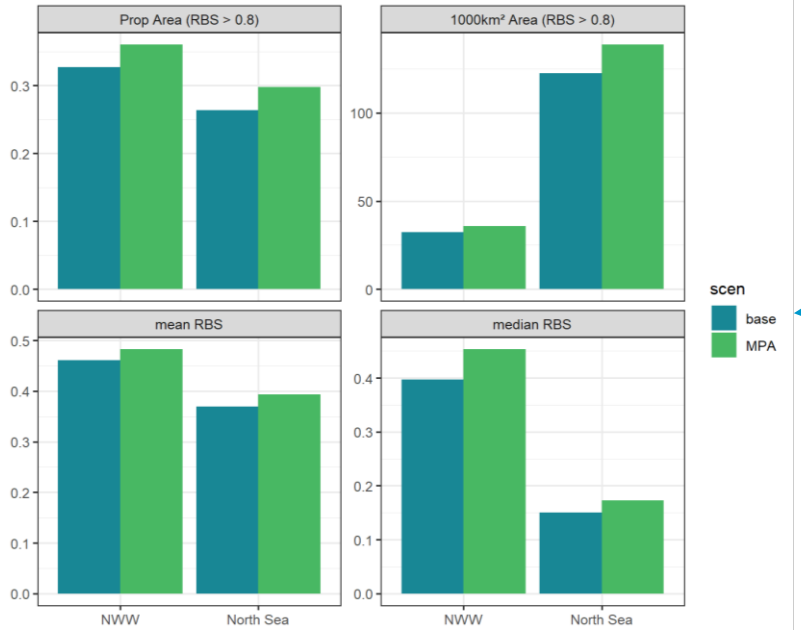
[Ibaibarriaga et al 2024]

https://seawiseproject.org/seawise-results/

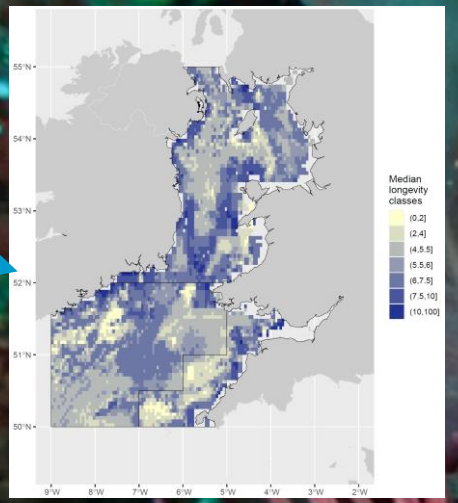
SEAWISE

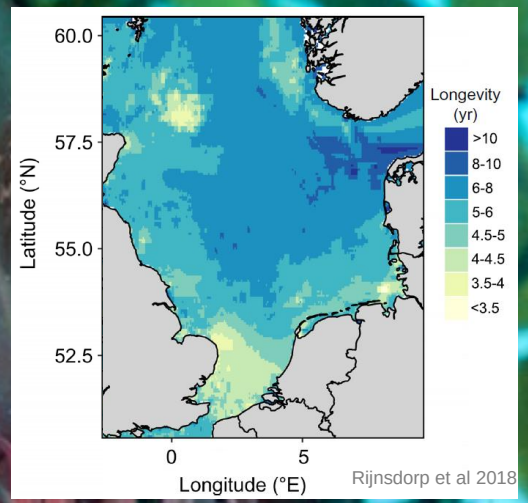
GENERAL/BENTHIC ECOSYSTEM

Sensitivity maps of macrofauna + epifauna

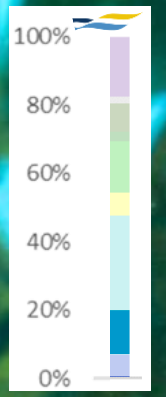


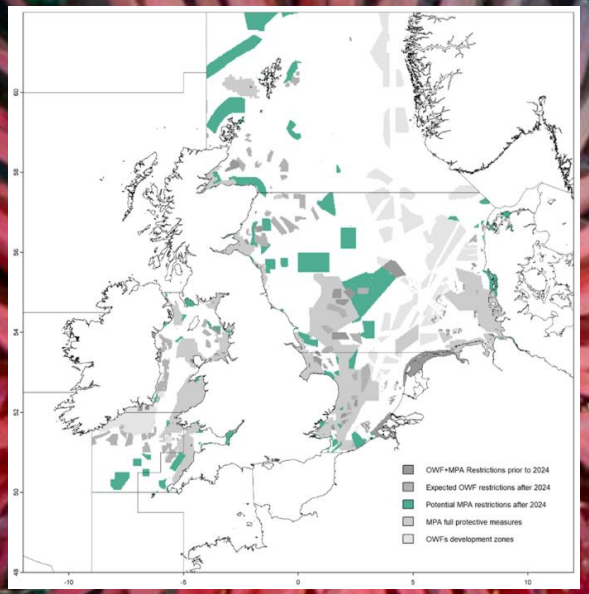
macrofauna

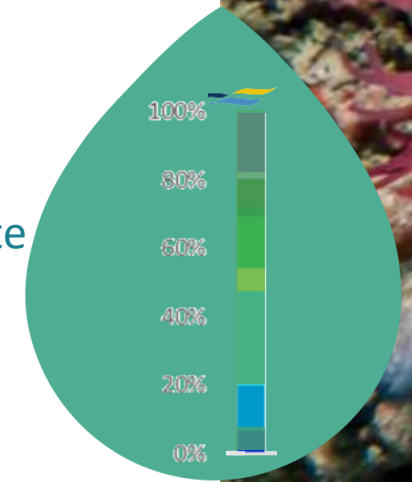




Rijnsdorp et al 2018





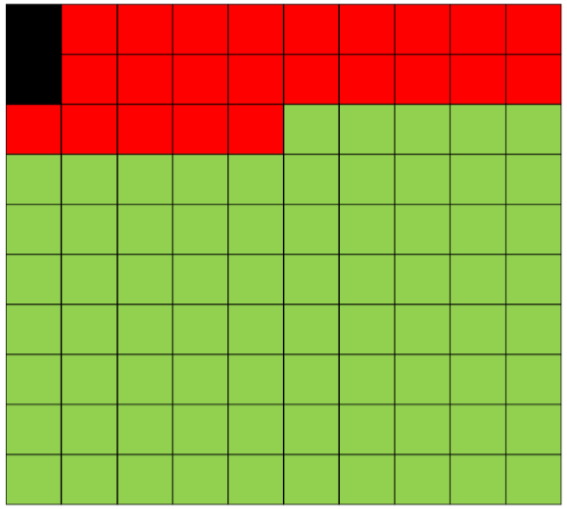


BEFORE and **AFTER** MPA scenario:

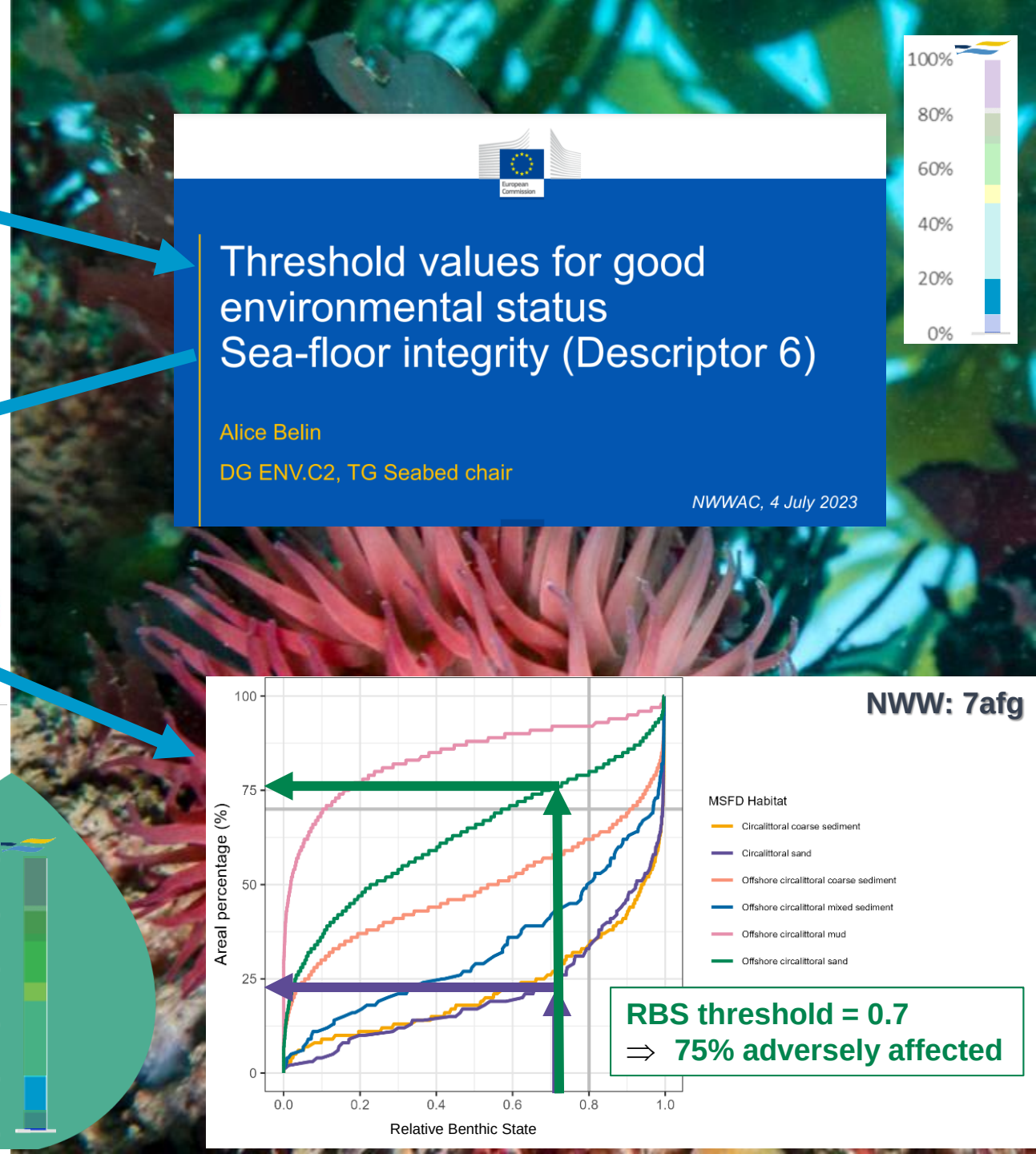
- Regional scale: modest changes in benthic state
- Local scale: Good state within MPA

GENERAL/BENTHIC ECOSYSTEM

Good Environmental State for MSFD D6



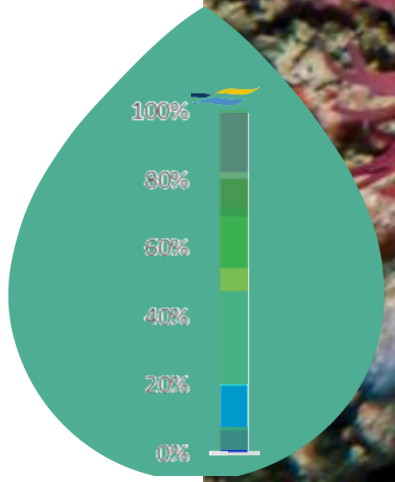
D6C4: Extent of loss (2%)
D6C5: Extent adversely affected (23%)
D6C5: Extent not adversely affected (i.e. in good quality/condition) (75%)



With RBS < 0.7

- Two habitats are OK: 23% adversely affected
- Other habitats not OK: substantial effort reductions or displacements required for regional improvements (e.g. 75% of Offshore circalittoral sand is adversely affected)

⇒ The selection of the RBS threshold will be impactful
⇒ The choice of the indicator is to be discussed



RBS threshold = 0.7
⇒ 75% adversely affected

Project itself

Progress

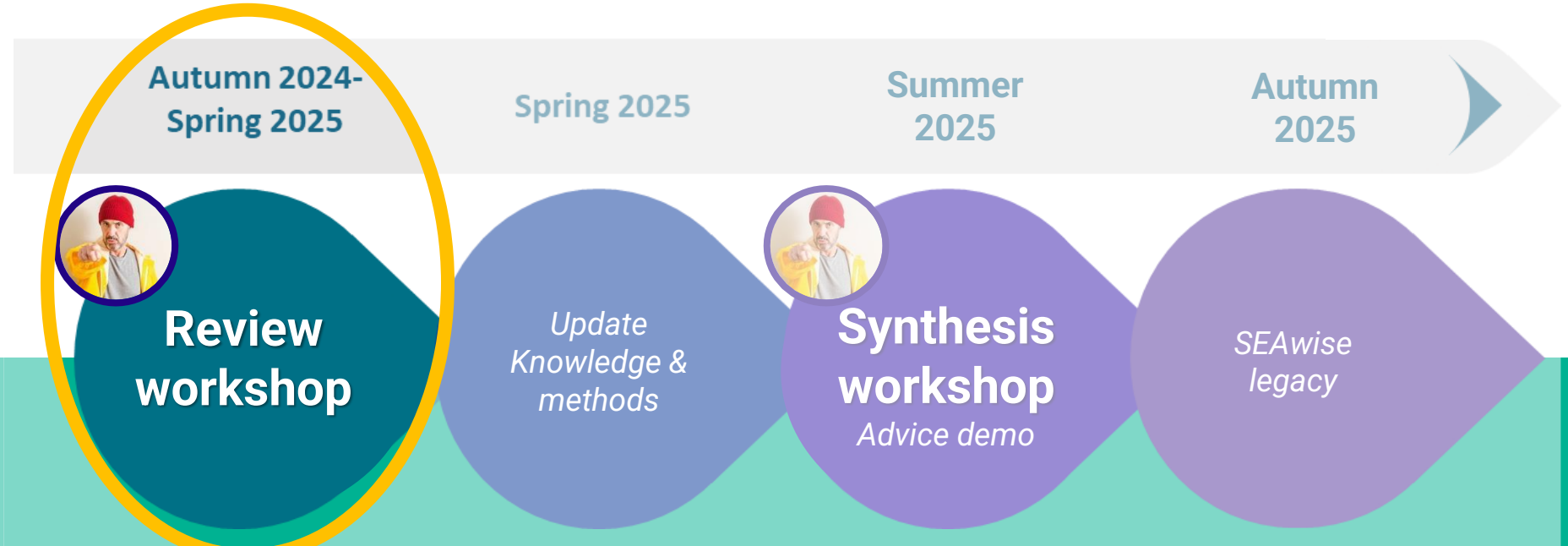
Next step?

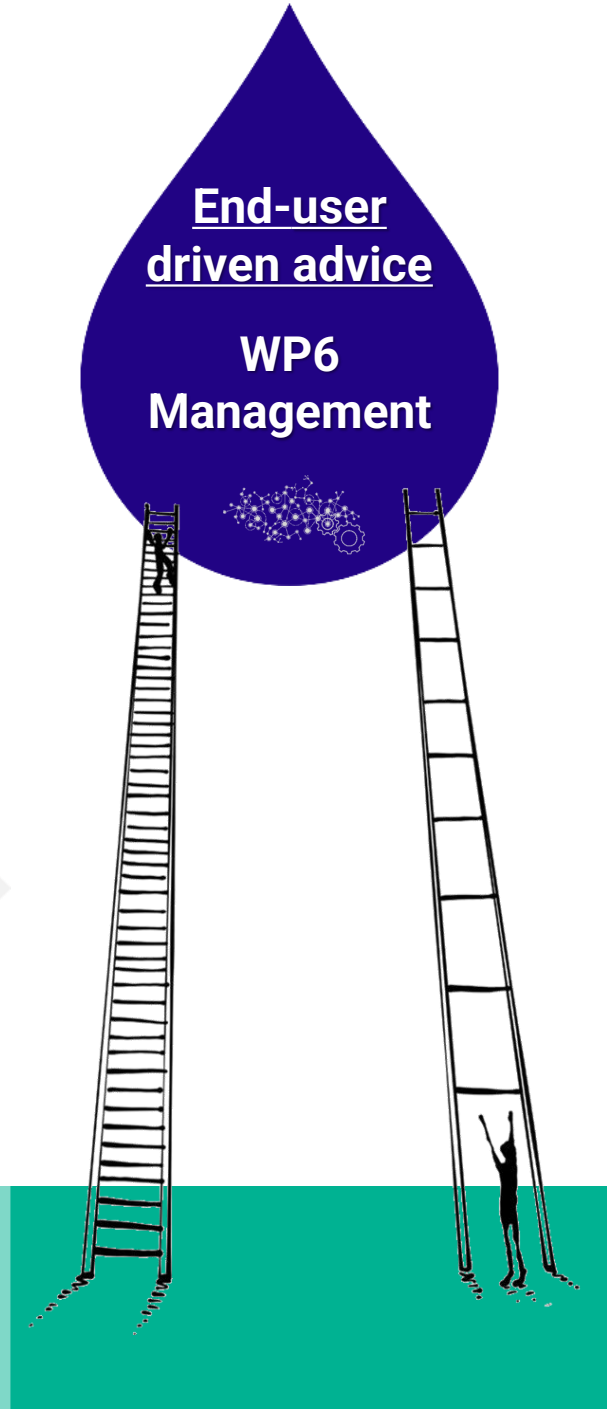
Next step ?

Request for participating in the **review workshop** in March 2025

Modelled scenarios of fisheries management

- Climate change effects on commercial fish stocks: RCP4.5, RCP8.5
- Mixed fisheries using F_{msy} , F_{msy} ranges , …





Thanks for listening

Jochen Depestele et al.

SEAWISE

AZTI MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

UBO Université de Bretagne Occidentale

Cefas

Foras na Mara Marine Institute

cepesca Confederación Española de Pesca

University of St Andrews

ILVO

University of Strathclyde Glasgow

L'INSTITUT agro Rennes-Angers Pôle halieutique, mer, littoral

Ifremer

WW team

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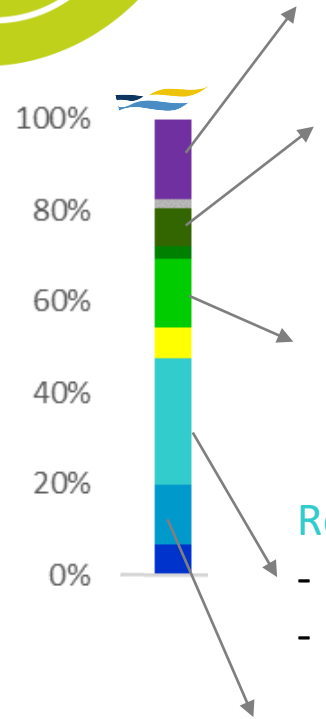
TAKE HOME MESSAGES

https://seawiseproject.org/seawise-results/

External human drivers
Scenarios of lost fishing grounds due to ORE + MPA



Governance
Generic survey + case-specific interviews

Livelihood demo's
- Linking fleets to communities
- Indicators for social vulnerability + reliance on fisheries

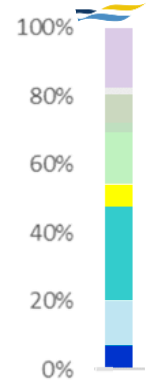
Retained species, fisheries & ecological drivers
- Recruitment, growth and natural mortality
- From analytics to forecast potential

General ecosystem:
- MPAs have little effect on regional benthic state
- MSFD D6 thresholds for RBS will be impactful

APPENDICES

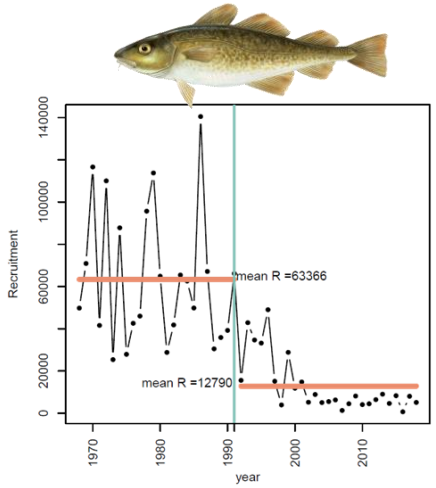
SEAwise has received funding from the European Union's Horizon 2020
research and innovation programme under grant agreement No 101000318

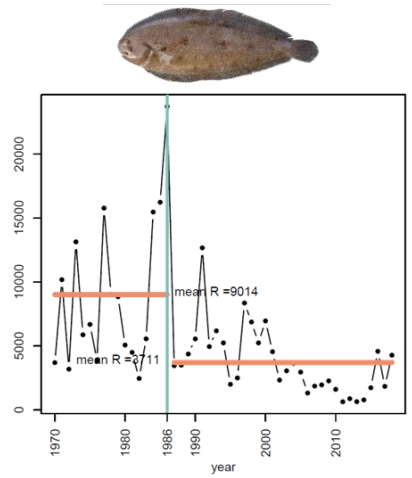
RETAINED SPECIES, FISHERIES & EXTERNAL ECOLOGICAL DRIVERS

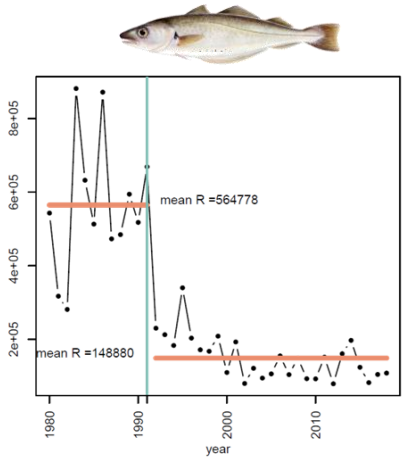


EXAMPLES

Recruitment

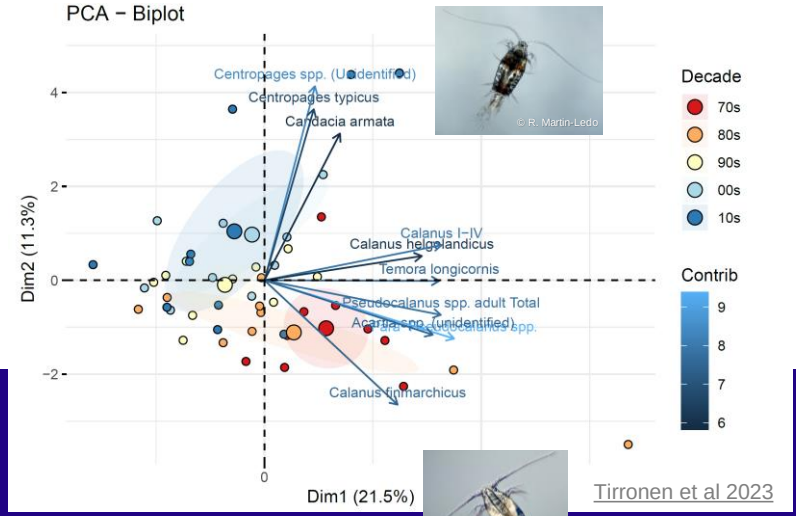






Regime shift in Irish Sea recruitment ?

⇒ Cod likely coupled to temperature
and zooplankton, more so than whiting or sole



Tirronen et al 2023

[Melià et al 2024]

https://seawiseproject.org/seawise-results/

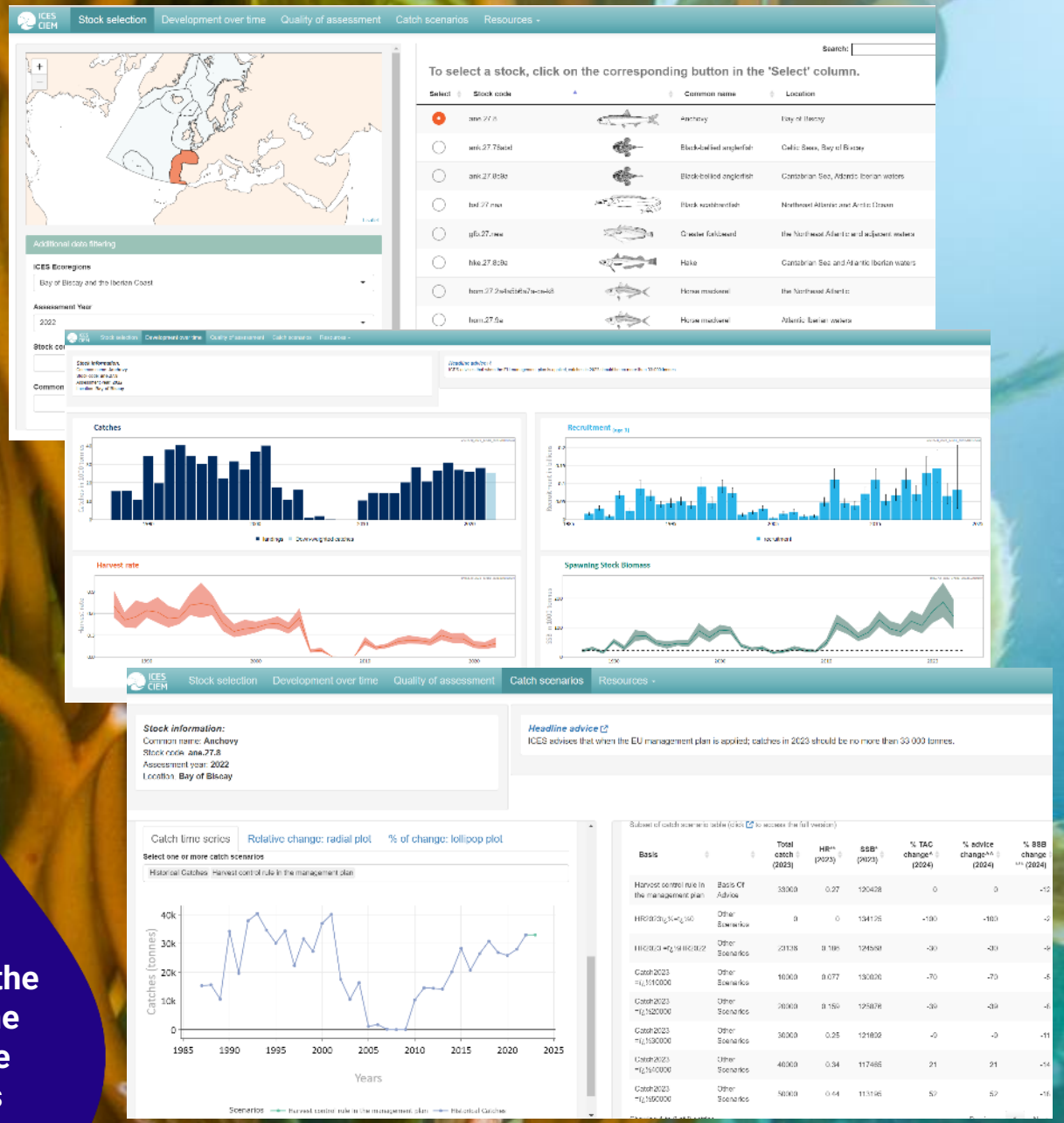
Co-design workshop

Disseminate enhanced knowledge through

SEAwise EBFM TOOL
&
ICES Shiny app

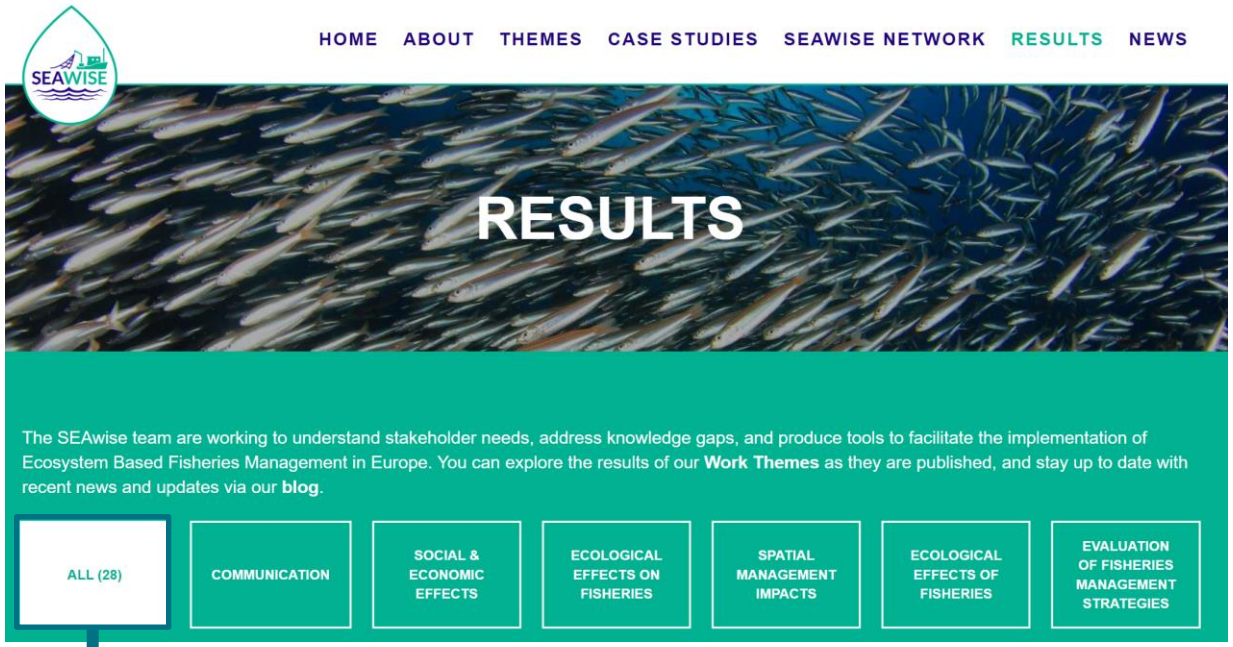
Conventional uptake of scientific progress

1. **Building upon past projects for consistency in research**
2. **Direct exchange between ongoing projects**
3. **Scientific scrutiny through ICES WGs & advisory process**
4. **Ensuring the use of the SEAwise outputs**



https://ices-taf.shinyapps.io/online-single-stock-advice/

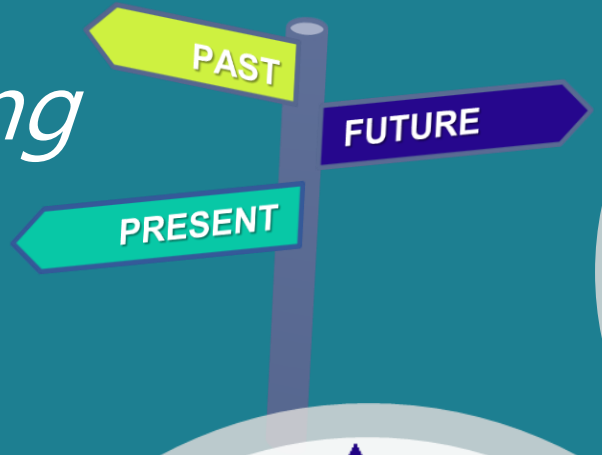
https://seawiseproject.org/seawise-results/



~30 Deliverable reports

IT'S TIME TO GET SEAWISE.

Thanks for listening



WP5 Spatial management impacts

WP2 Social and economic effects of and on fishing

WP4 Ecological effects of fisheries

WP3 Ecological effects on fisheries yield

WP6 Evaluation of management strategies

Jochen Depestele et al.

SEAwise update

2 July 2024

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www.seawiseproject.org

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