

QSR fish, fisheries and the Swimway strategy

Tønder, 9 May 2017

Ingrid Tulp, Paddy Walker & Andreas Dänhardt



On behalf of

Authors QSR Chapters:

- **Fish** - Ingrid Tulp, Loes Bolle, Andreas Dänhardt, Pepijn de Vries, Holger Haslob, Niels Jepsen, Jörg Scholle, Henk van der Veer,
- **Fisheries** - Julia Baer, Aad Smaal, Karin van der Reijden, Georg Nehls

Swimway team:

Christian Abel, Harald Asmus, Loes Bolle, Kerry Brink, Wilco de Bruijne, Martha Buitenkamp, Andreas Dänhardt, Holger Haslob, Niels Jepsen, Henrik Pind G Jørgensen, Sascha Klöpper, Klaus Koßmagk-Stephan, Anne Sell, Ingrid Tulp, Ralf Vorberg, Paddy Walker, Erwin Winter



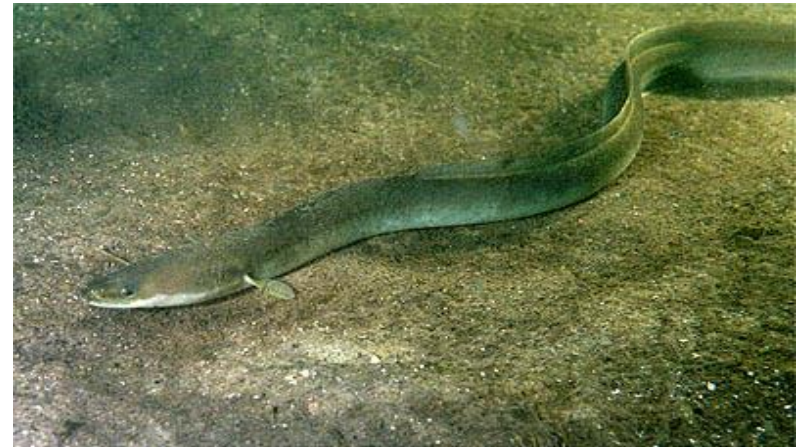
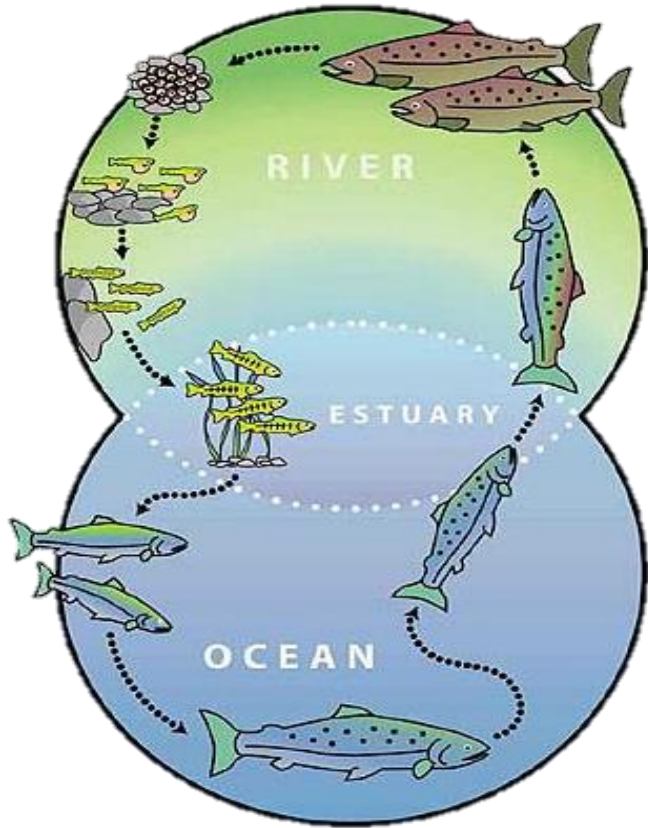
Wadden Sea: fish nursery, marine juveniles species



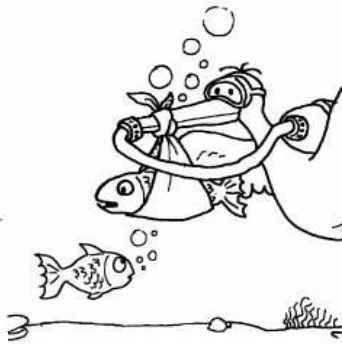
Resident species: closed life cycle within Wadden Sea



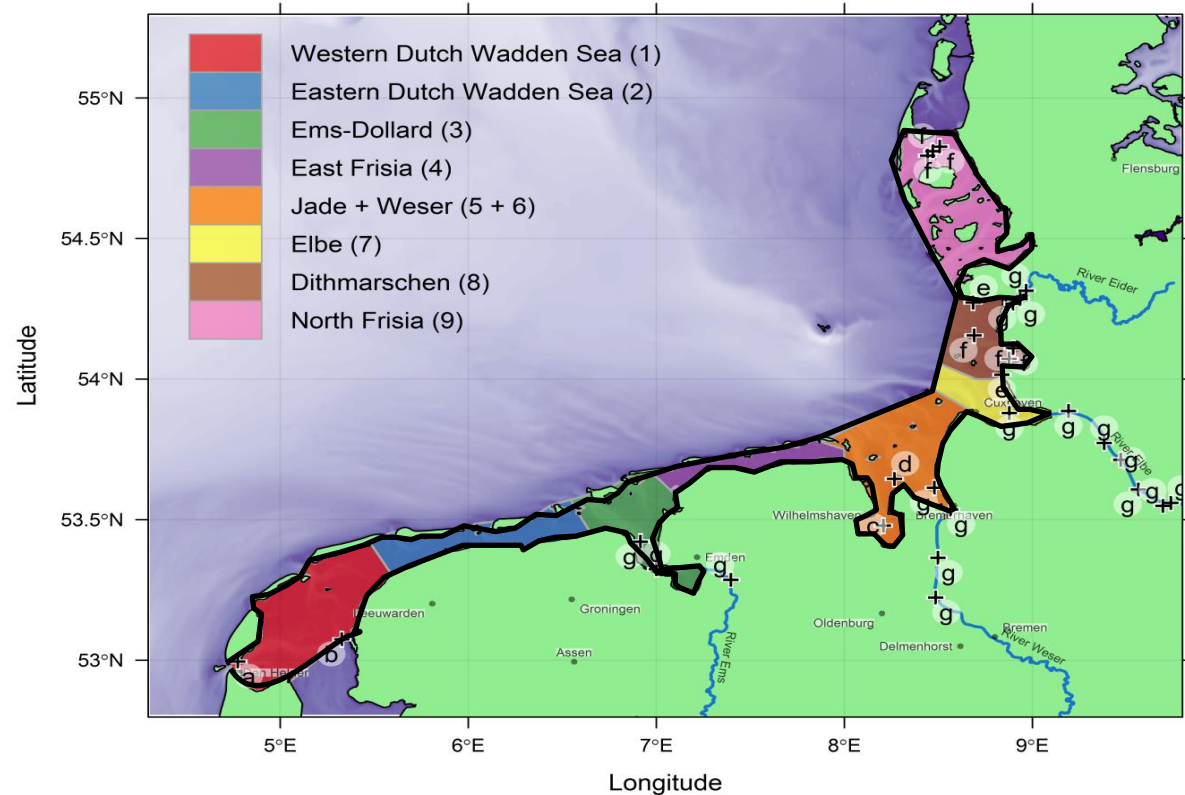
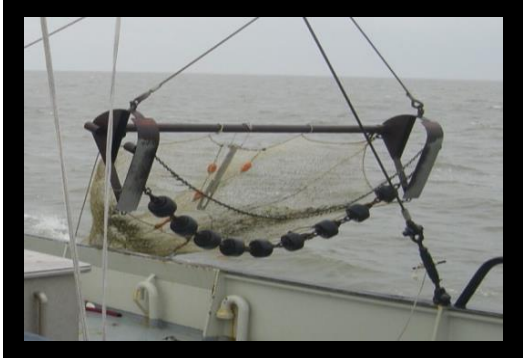
Migratory species: inhabit Wadden Sea temporarily



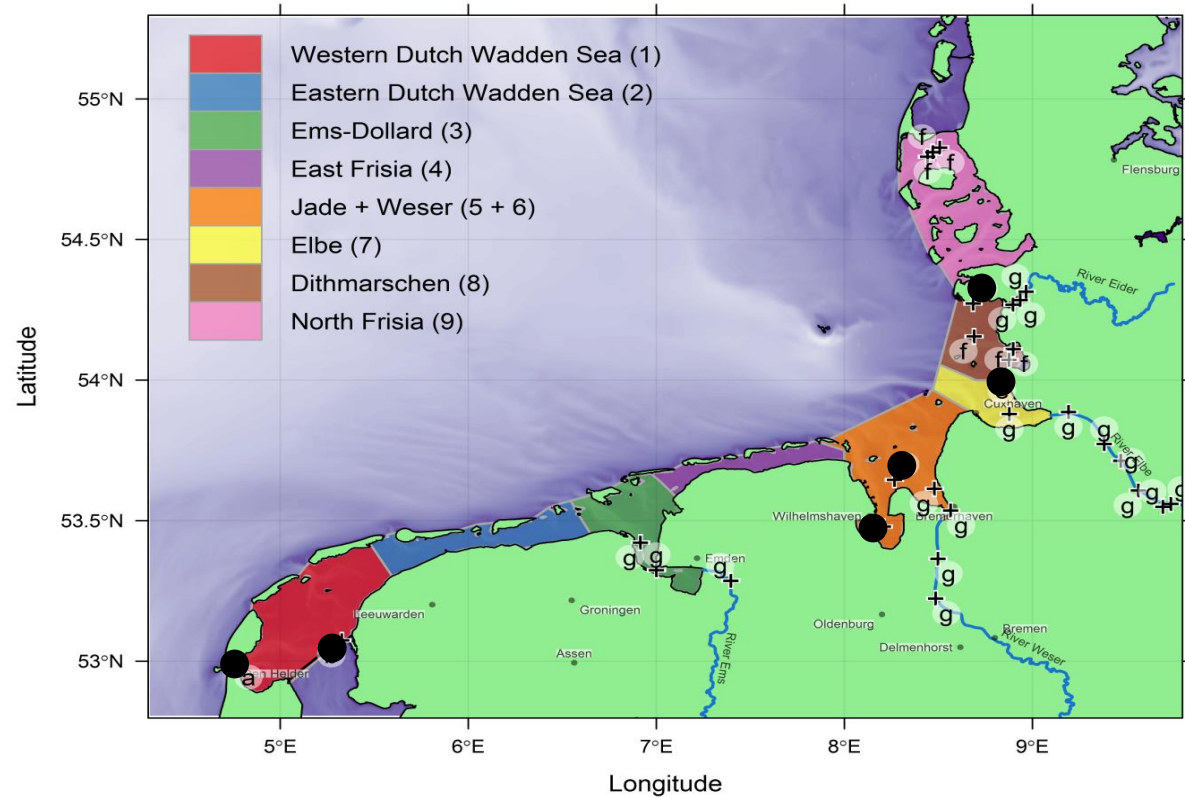
QSR trends: Marine juveniles, residents and migratory species



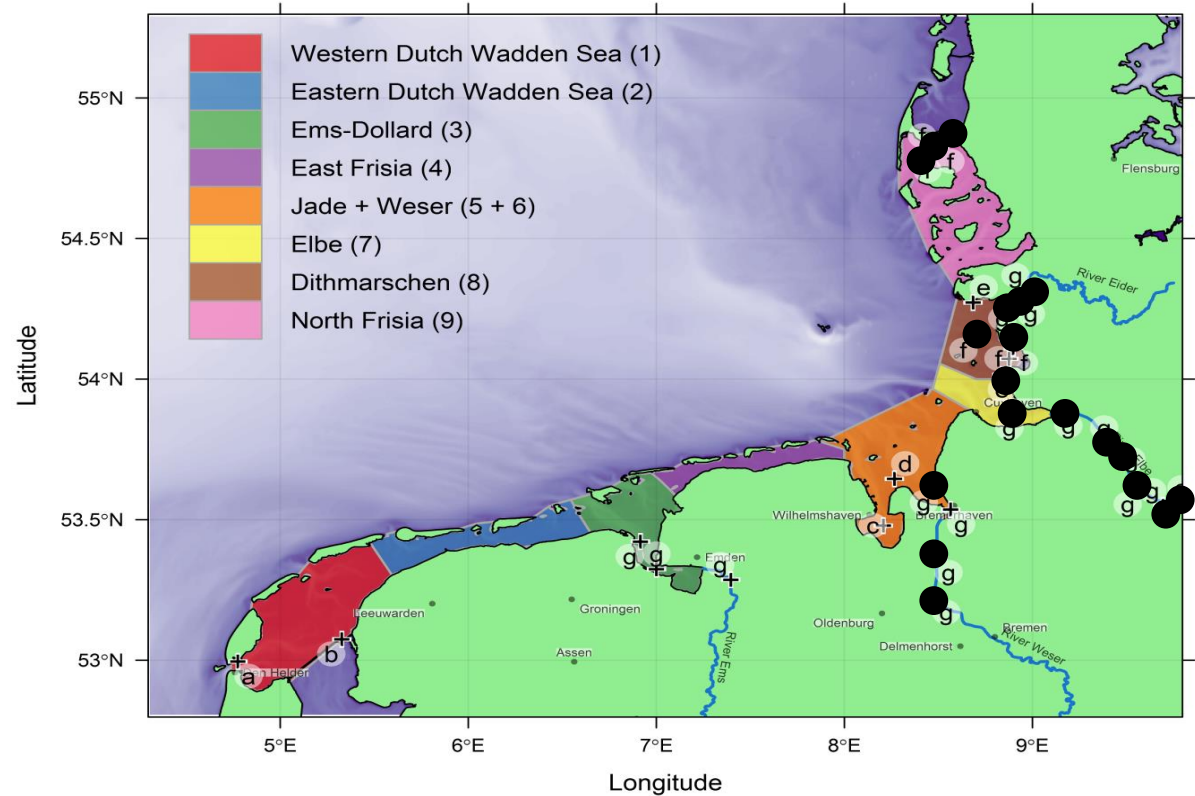
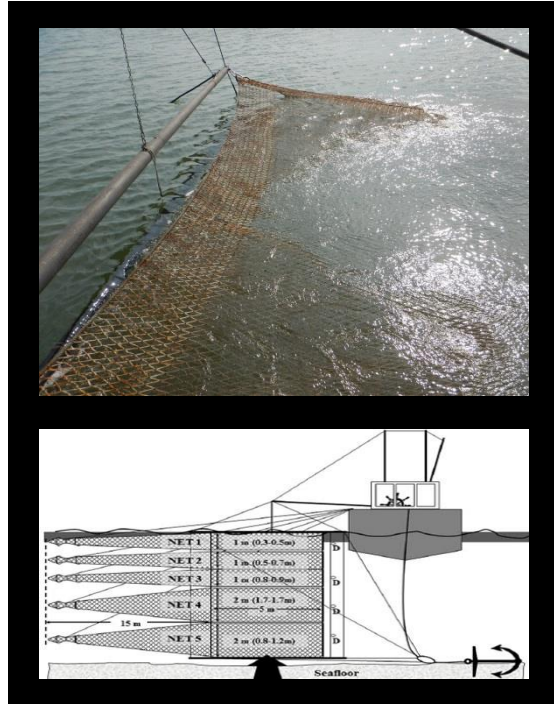
QSR data sources: gear for bottom fish



QSR data sources: gear for pelagic fish: fyke

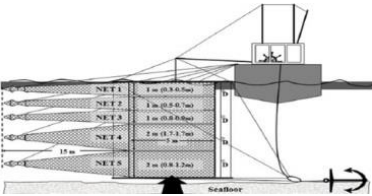
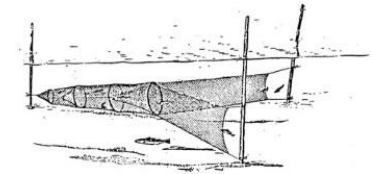
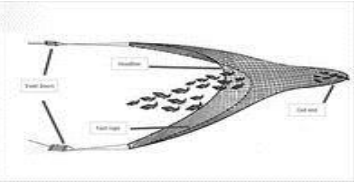


QSR data sources: gear for pelagic fish: stownet



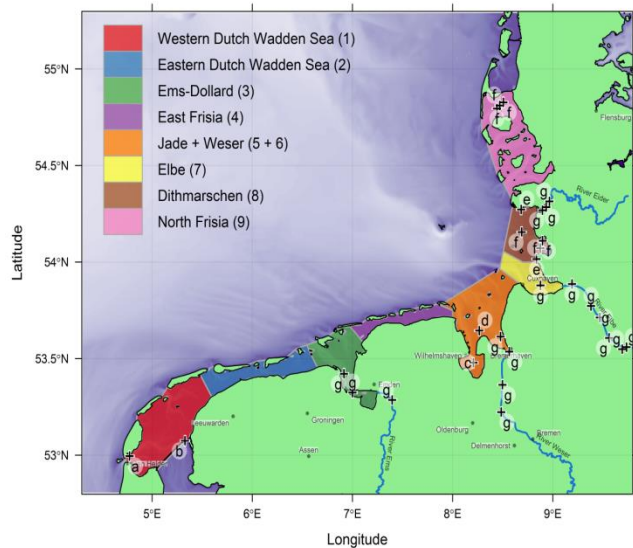
standardised trend analysis QSR

Monitoring programme	Sampling period	Sampling areas	Years
DFS	Sep	Dutch Wadden Sea	1970 - 2015
DYFS	Sep-Oct	German Wadden Sea	1979 - 2015
AWI	Mar, Jul	East Frisia	1993 - 2007
NIOZ	Mar-Jun, Sep-Oct	Dutch Wadden Sea	1960 - 2015
WMR	Apr-Jun, Sep-Nov	Dutch Wadden Sea	2000 - 2015
oyster reefs	May, Jun, Sep	Jade	2014
salt marshes	monthly	Dithmarschen	2015 - 2016
Schleswig-Holstein	Aug	Dithmarschen, N Frisia	1991 - 2015
Jade	Apr-Aug	Jade	2005 - 2015
German estuaries	May, Sep-Oct	Ems	2009 - 2015
Danish rivers	by species	Danish rivers	1975 - 2015

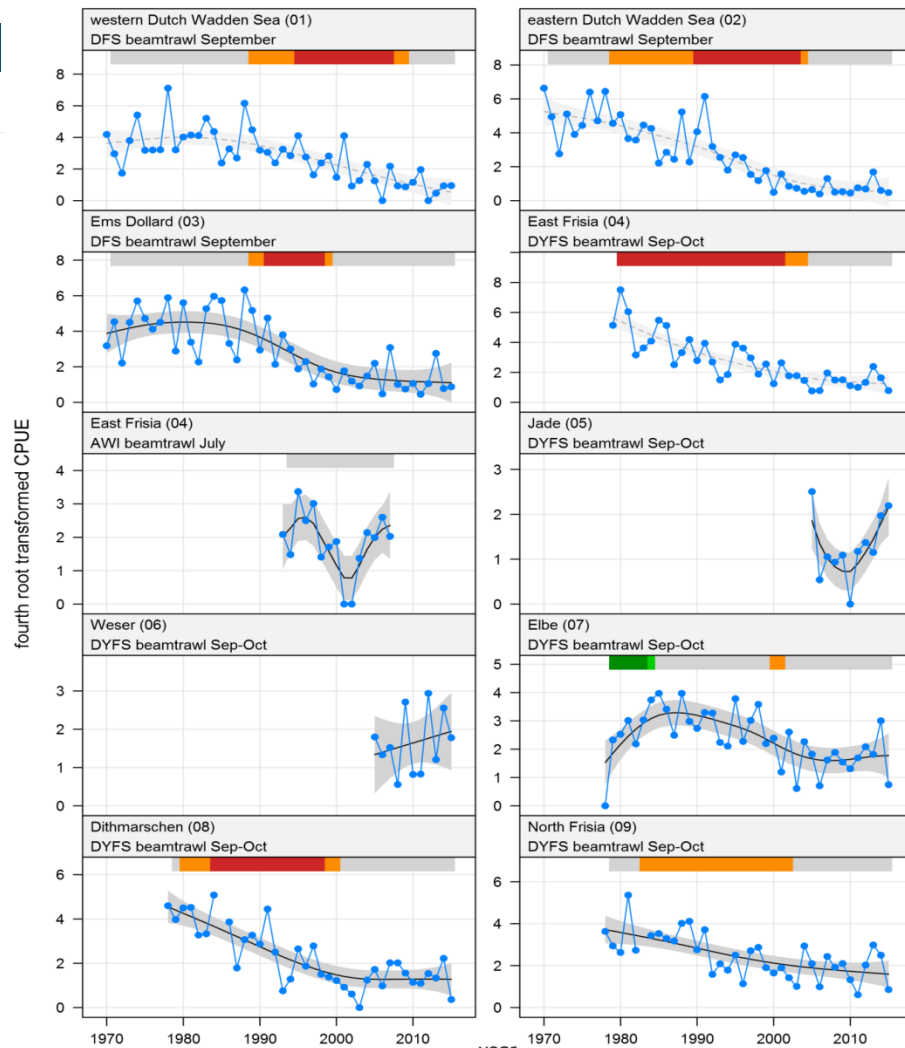


mark-recapture

QSR: example beam trawl

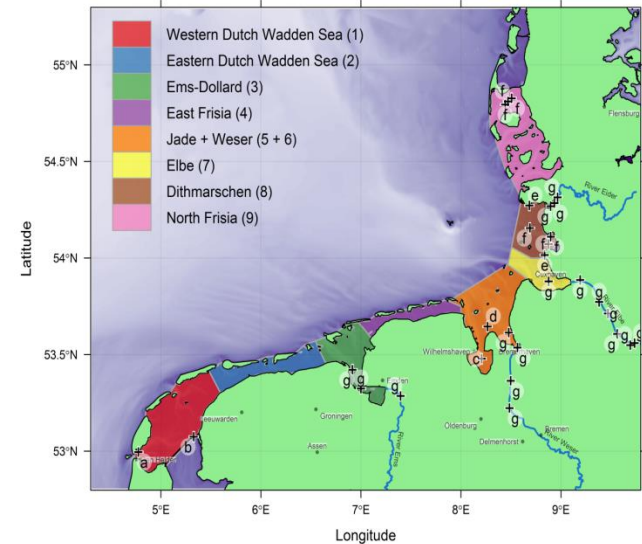
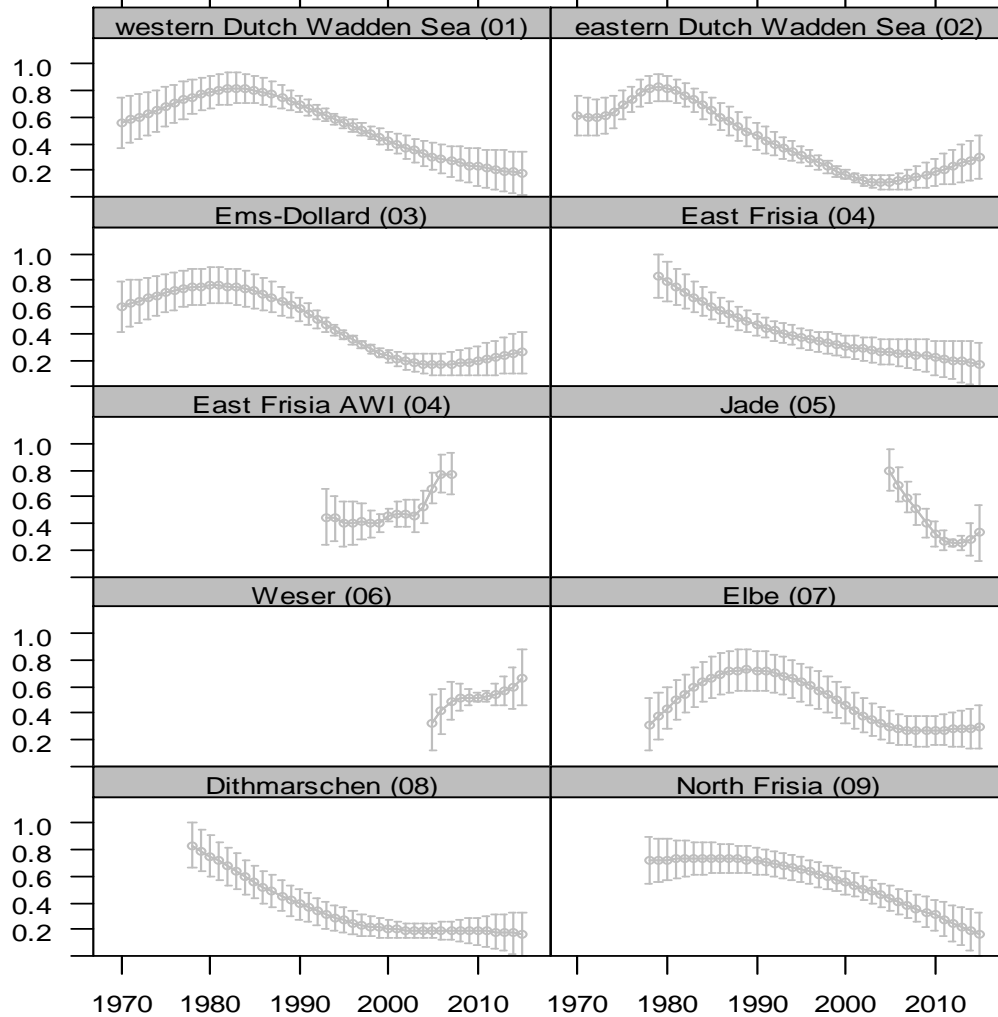


Limanda limanda (dab)

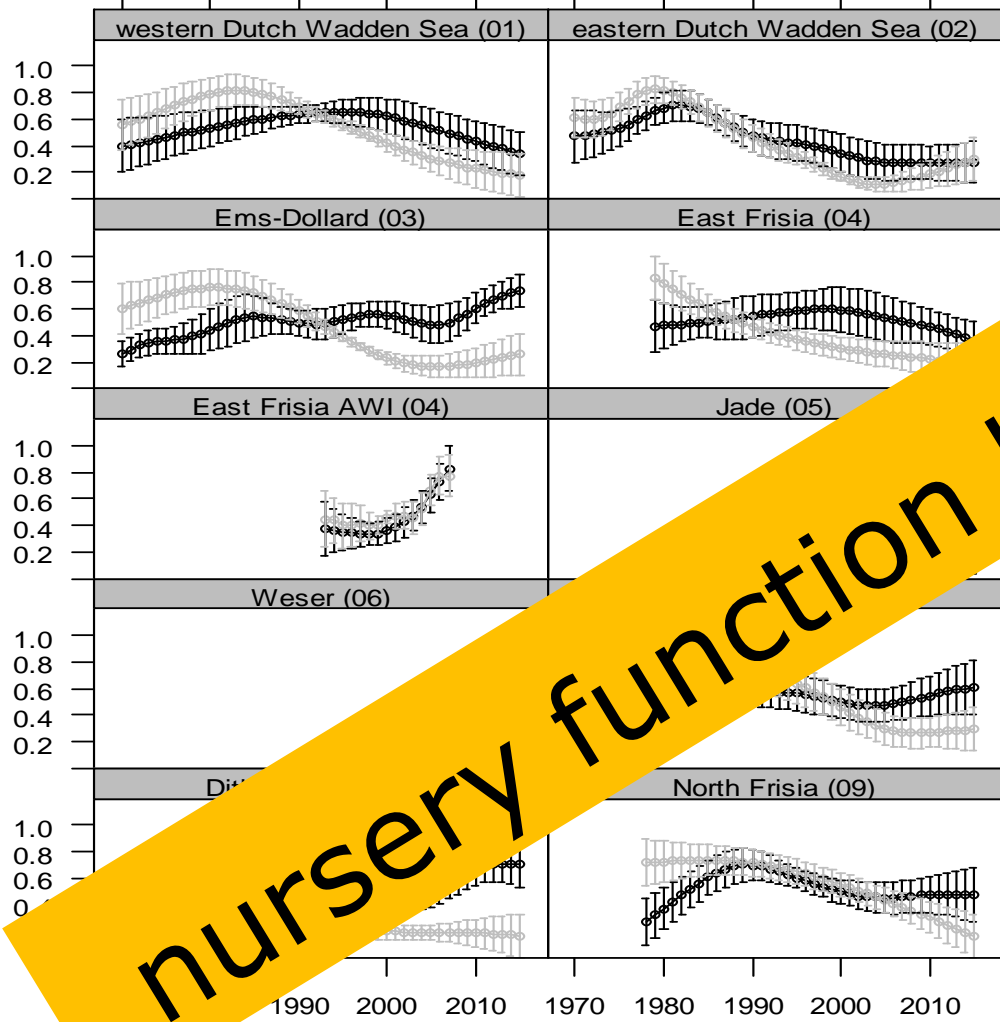


marine juveniles

mean normalised trend

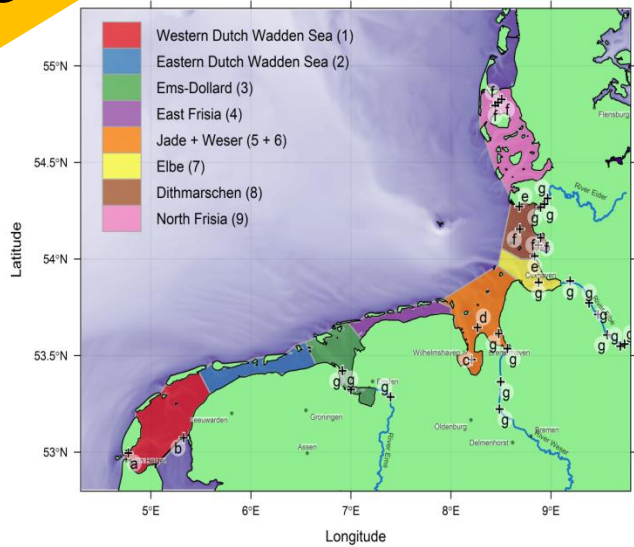


mean normalised trend

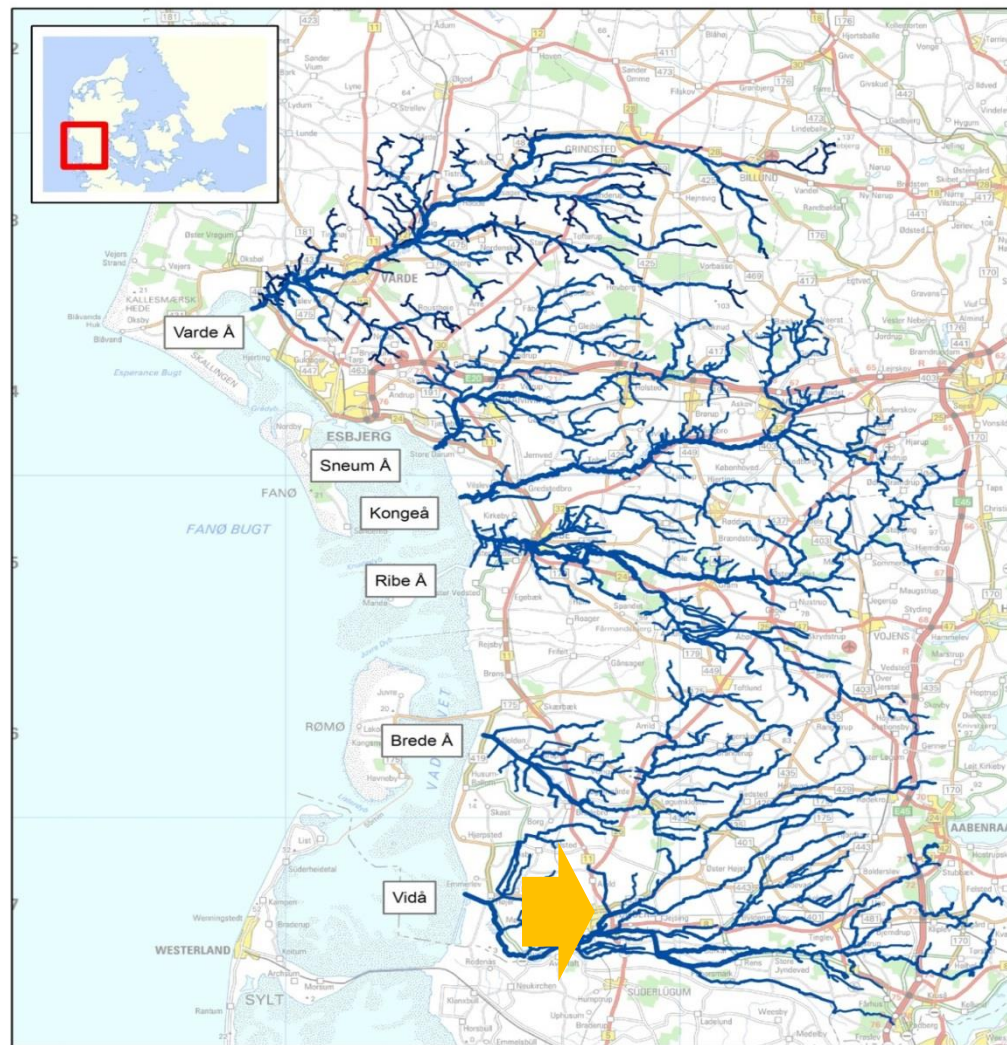


marine
juvenile

nursery function has changed



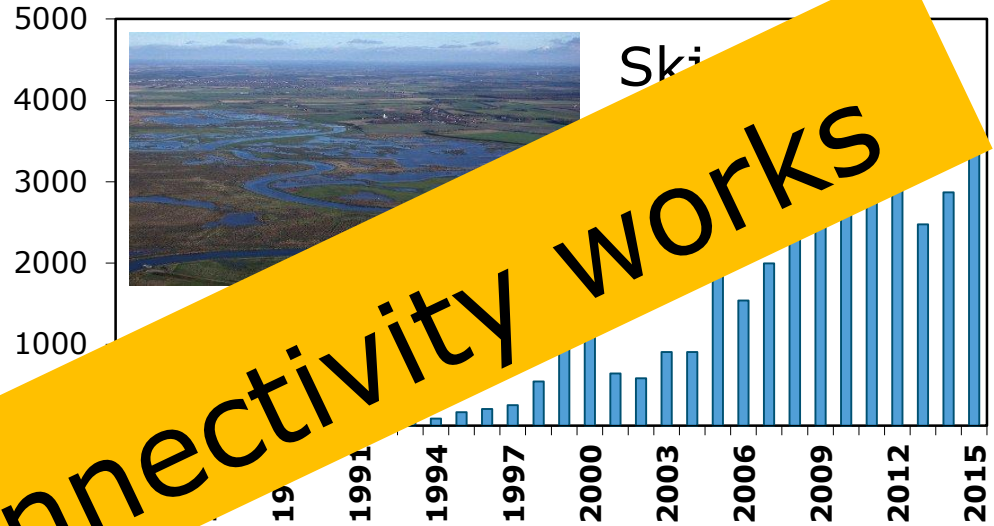
Migratory fish Danish rivers: salmon & houting





Salmon

- + removal dams
- + habitat restoration
- + restocking

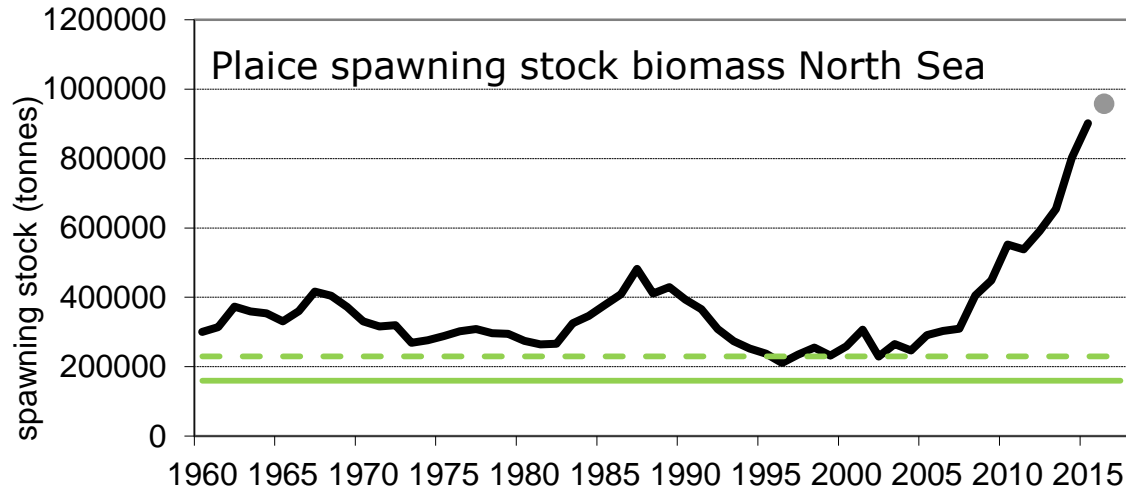


Houting

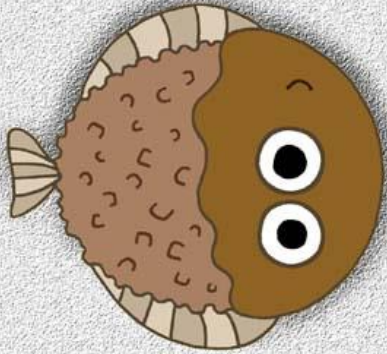
- + restocking 1987 – 1992
- only population (ca 1000) left in Vida Å
- increased cormorant predation: changed behaviour

Why has nursery function changed?

- Climate change?
- De-eutrophication?
- Fisheries?
- Habitat change?

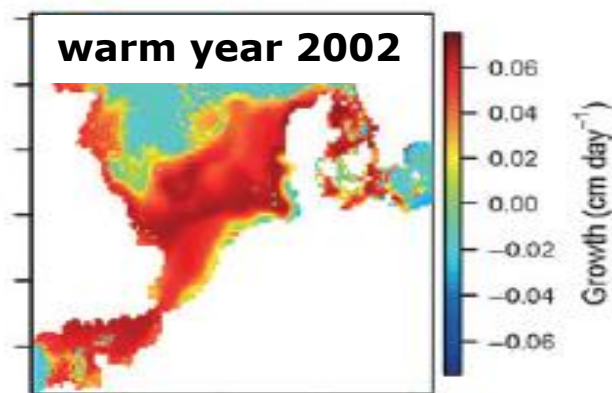
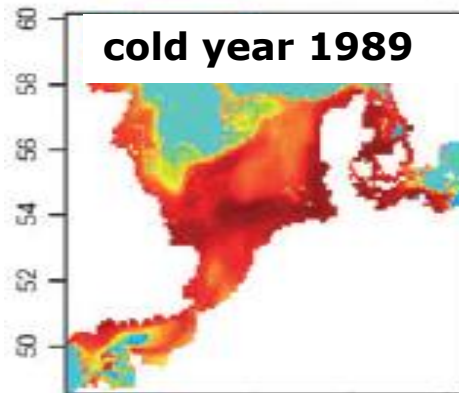


Wadden Sea too warm to grow well?



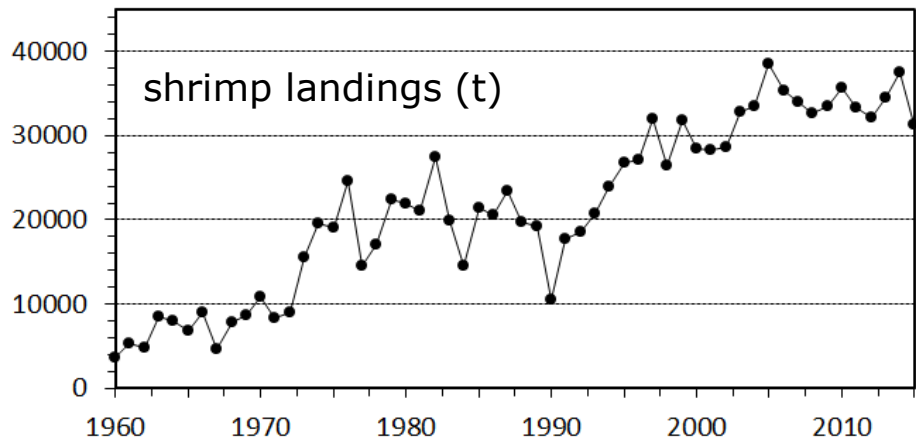
spring

summer



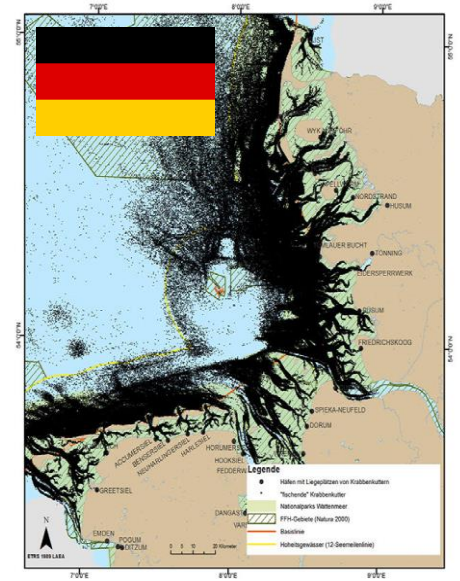
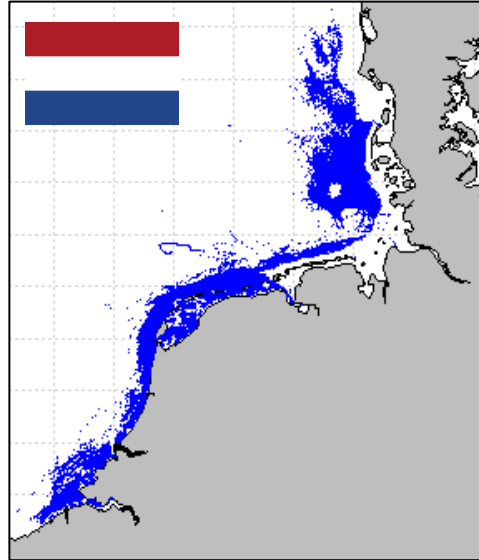
Growth (cm day⁻¹)

Wadden Sea fisheries



Bycatch shrimp fisheries

Reduction spawning stock plaice
12-17% (van der Hammen *et al.* 2015)



German and Dutch
fisheries in process to gain
MSC (Marine Stewardship
Council)

QSR Fish recommendations for research

- From monitoring to **mechanistic understanding**
- Wadden Sea as one step in the whole **life cycle**
- **Food web** perspective: predator-prey relationships
- Species-habitat relationships: **habitat** quantity and quality
- **Other habitats** than monitored areas: salt marsh, mussel bed
- **Connectivity**: at large (migrations) and small (habitat mosaic) scales
- **Ecophysiology**: optimal and critical ranges
- Role of **pelagic** species

Wadden Sea QSR Fish targets-reformulated

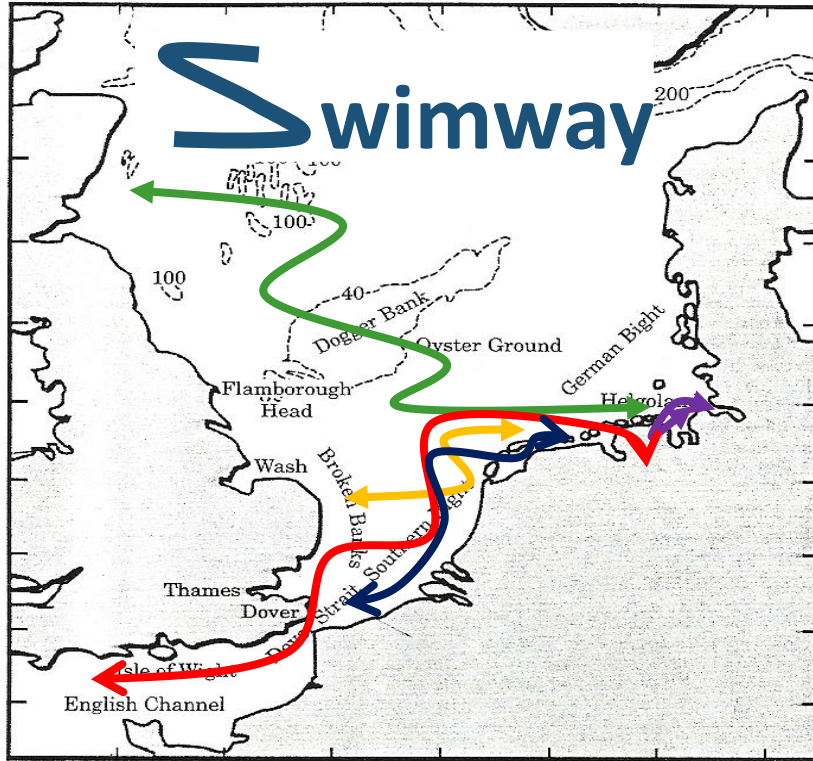
Overall target:

There should be no human-induced bottlenecks in the Wadden Sea for fish populations or their ecosystem functions

Maintain or improve:

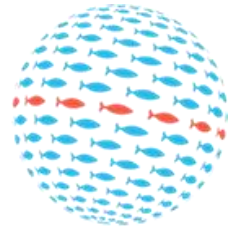
- robust and **viable populations** of estuarine resident fish species
- **nursery function** of the Wadden Sea and estuaries
- quality and quantity of typical Wadden Sea **habitats**
- **passage ways** for fish migrating between the Wadden Sea and inland waters
- conservation of **endangered fish species**

Swimway approach to implementation of targets



- All species utilising the Wadden Sea
- Focus on life-cycle and identify bottlenecks
- Build on existing work and inspire project development and cooperation

SWIMWAY
wadden sea



↔ Diadromous ↔ Juvenile migrants ↗ Seasonal migrants ↘ Advantitious ↖ Residents

Swimway Programme

Background

- Trilateral Ministers Conference Declaration 2014 – Tønder
- Wadden Sea Board: further implement fish targets
- 3 prior meetings in Hamburg (2015-2017)

Aims

- Address Trilateral Fish Targets
- In 2017-2018 develop trilaterally supported programme for 2018-2024
- Present at Wadden Sea Ministers Conference 2018



Trilateral programme focus

Stakeholder involvement

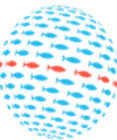
Communication and awareness



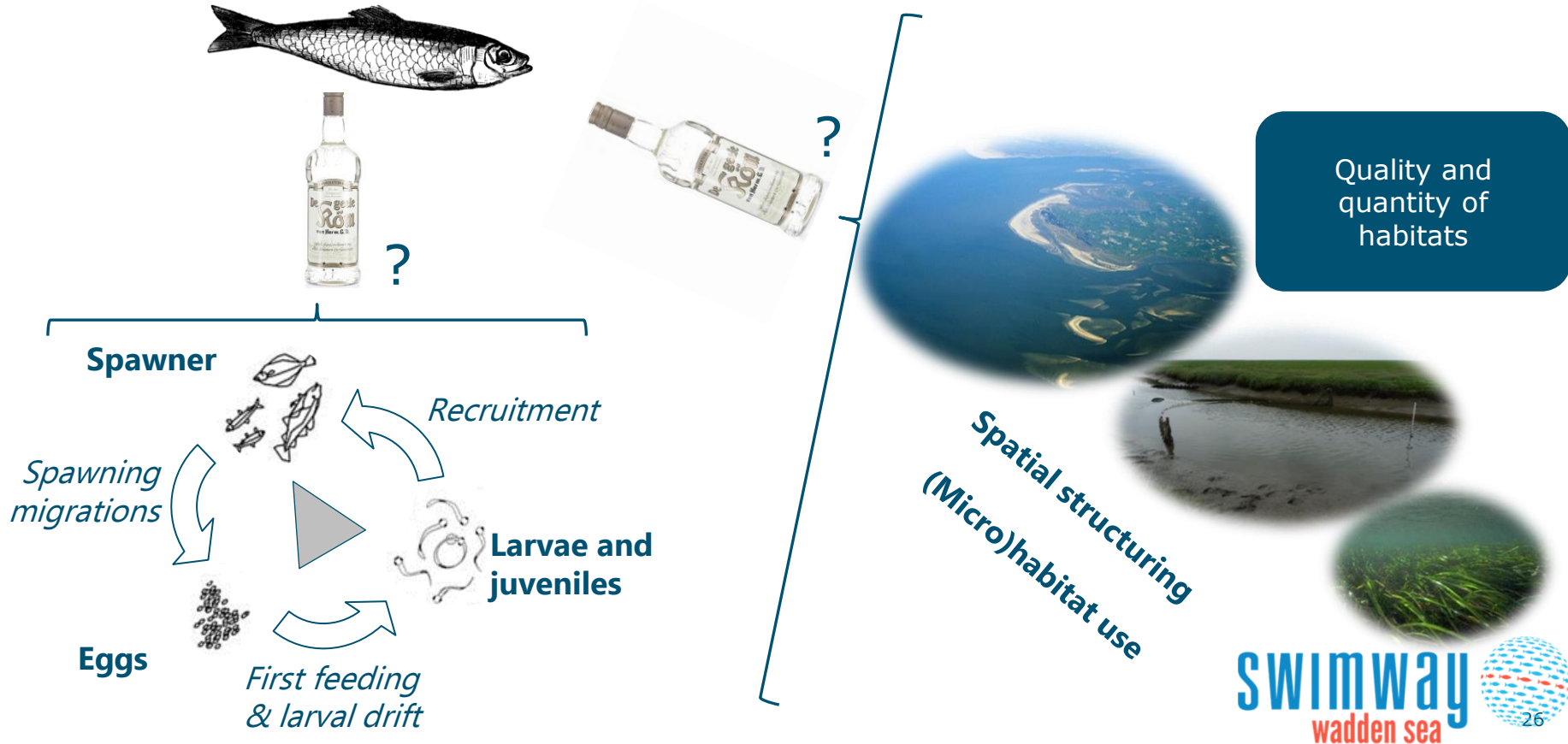
Showcases



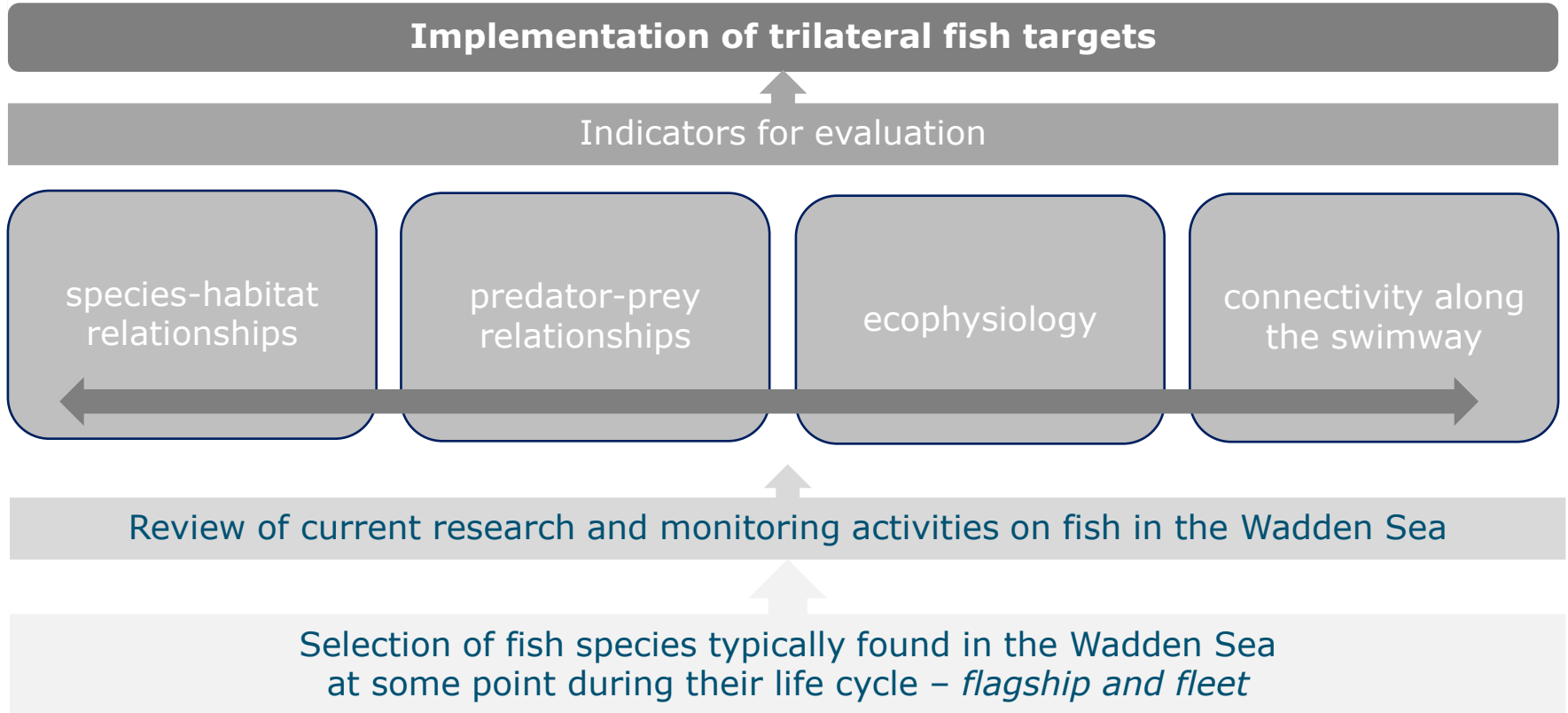
swimway
wadden sea



Bottlenecks along swimways: a matter of scale

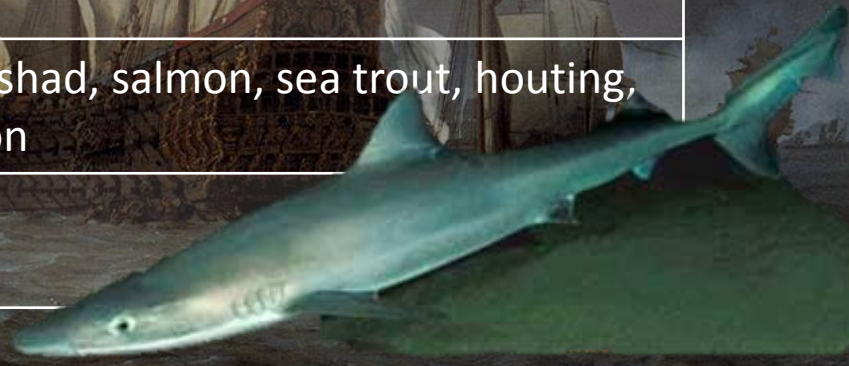


Research and monitoring



Fish lifestyles - Flagship and fleet species

Lifestyle	Flagship	Fleet
Pelagic marine juveniles	Herring	Sprat, sandeel, anchovy, horse mackerel
Demersal marine juveniles	Plaice	Sole, dab
Wadden Sea residents	Eelpout or gobies	Eelpout, sea snail, rock gunnel
Diadromous species	Smelt	Twait shad, salmon, sea trout, houting, sturgeon
Marine adventitious	Sharks	Rays ..



Process

Trilateral Coordination Team



Wadden Sea Board & Trilateral Group on Management and Monitoring

Swimway time line

2017 Elaboration of proposal with coordination team and working groups

Stakeholder involvement

Meeting second half of 2017

2018 Getting support

Signing declaration

May 2018

2018-2024 Implementation of programme

Thank you for
your attention!

SWIMWAY
wadden sea

