

Demersal Fish Survey (DFS)

Netherlands Institute for Fisheries Research (RIVO)



Institute for Marine Resources and Ecosystem Studies
(IMARES)



Part of international (young fish) survey

■ Countries

- Netherlands (DFS)
- Germany (DYFS)
- Belgium (DYFS)
- UK (YFS)

■ ICES working groups

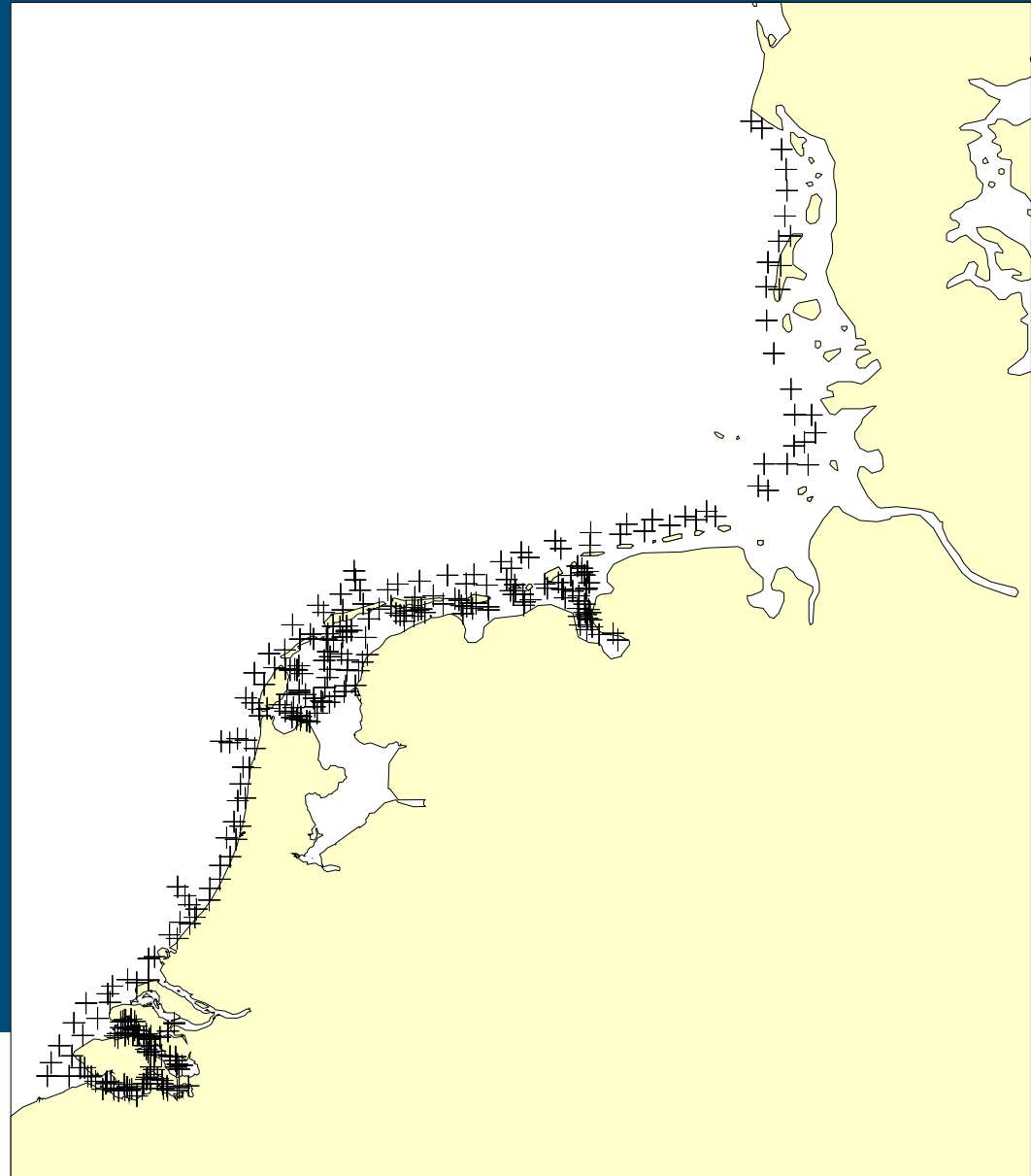
- WGNSSK (stock assessment plaice and sole)
- WGcran (stock assessment brown shrimp)
- WGbeam (coordination)

■ Funding NL

- Ministry of Agriculture, Nature and Food Quality (EU data collection regulation)

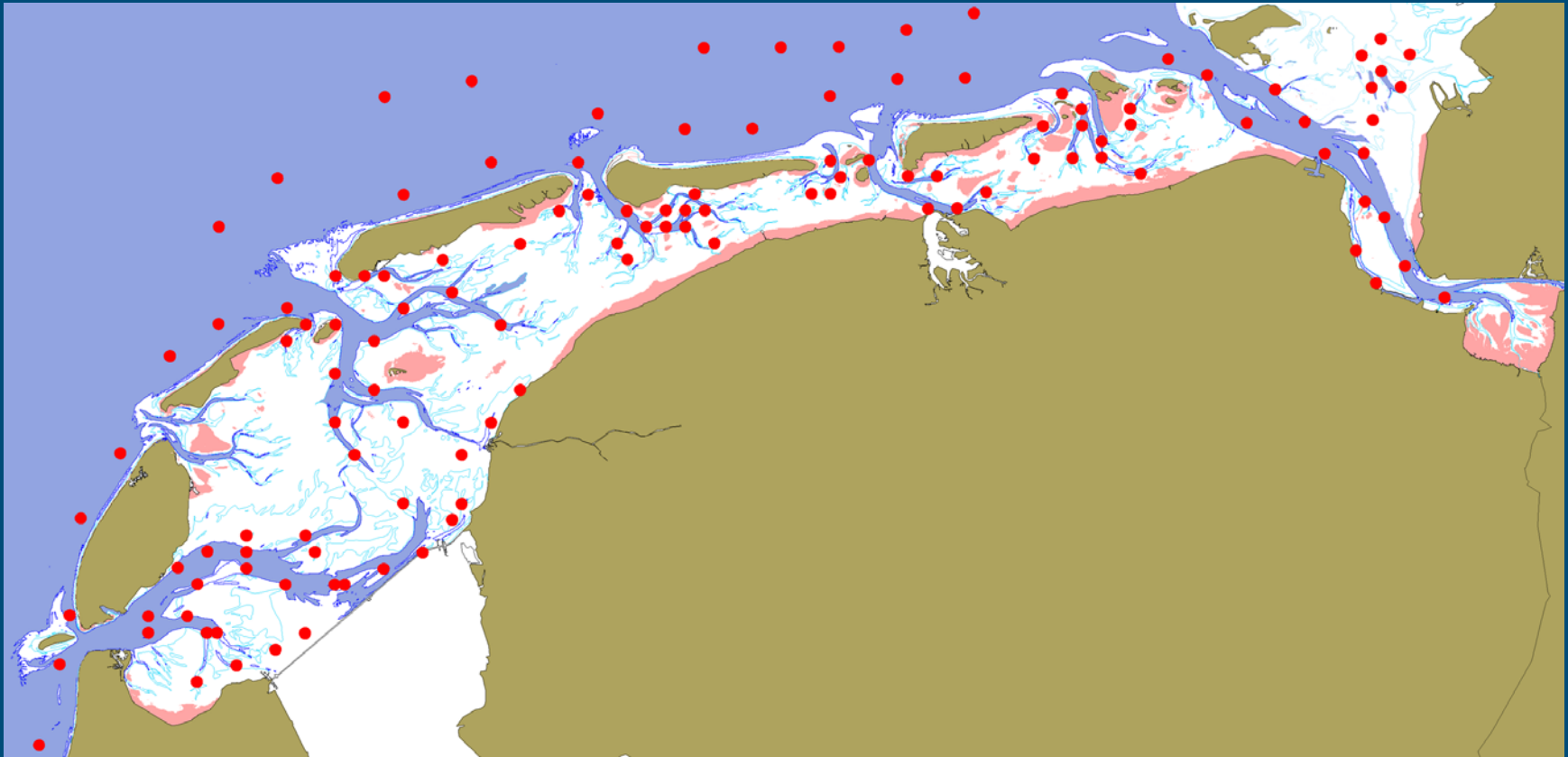
Spatial coverage

- Coastal waters
± 110 hauls
- Scheldt estuary
± 80 hauls
- Wadden Sea
± 120 hauls



Spatial coverage – Wadden Sea & Eems-Dollard

- Tidal channels & gullies deeper than 2m



Temporal coverage

Annual survey

- Sep - Oct (1970 – present)
- Apr - May (1970 – 1986)
- Aim: fixed sampling period
- Note: annual variations in seasonal patterns
Example: plaice settlement Balgzand
Data from Henk van der Veer (NIOZ)

Details gear & fishing

- 3 m beam trawl
- one tickler chain
- bobbin rope
- mesh size net: 35 mm
- mesh size cod-end: 20mm
- fishing speed: 2-3 knots
- haul duration: 15 min
- data-log CTD



Catches

Wadden Sea



Coastal waters



Data collected

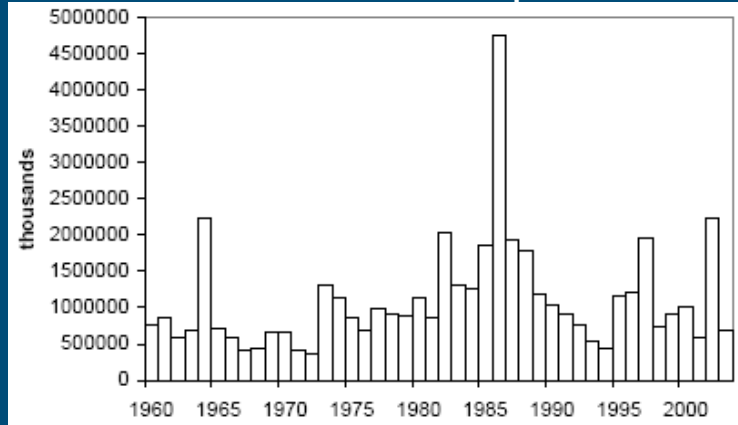
- Quantity
 - all fish & epibenthos species
- LF distribution
 - all fish species & *C. crangon*
- Age, weight and sex (length stratified subsample)
 - 6 flatfish species
- Environmental data
 - position, depth, tidal phase, temperature, salinity, turbidity, wind

Analyses

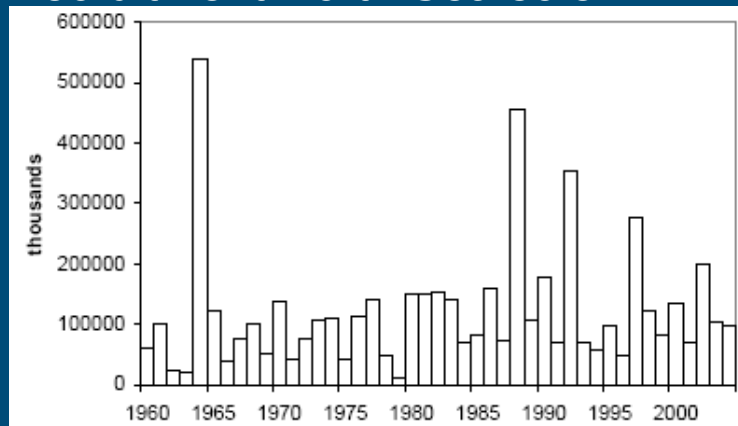
- Annually for ICES WG's
 - abundance indices plaice and sole by age
 - abundance indices C. crangon
- Contract related:
 - f.e. QSR analyses

Results (examples)

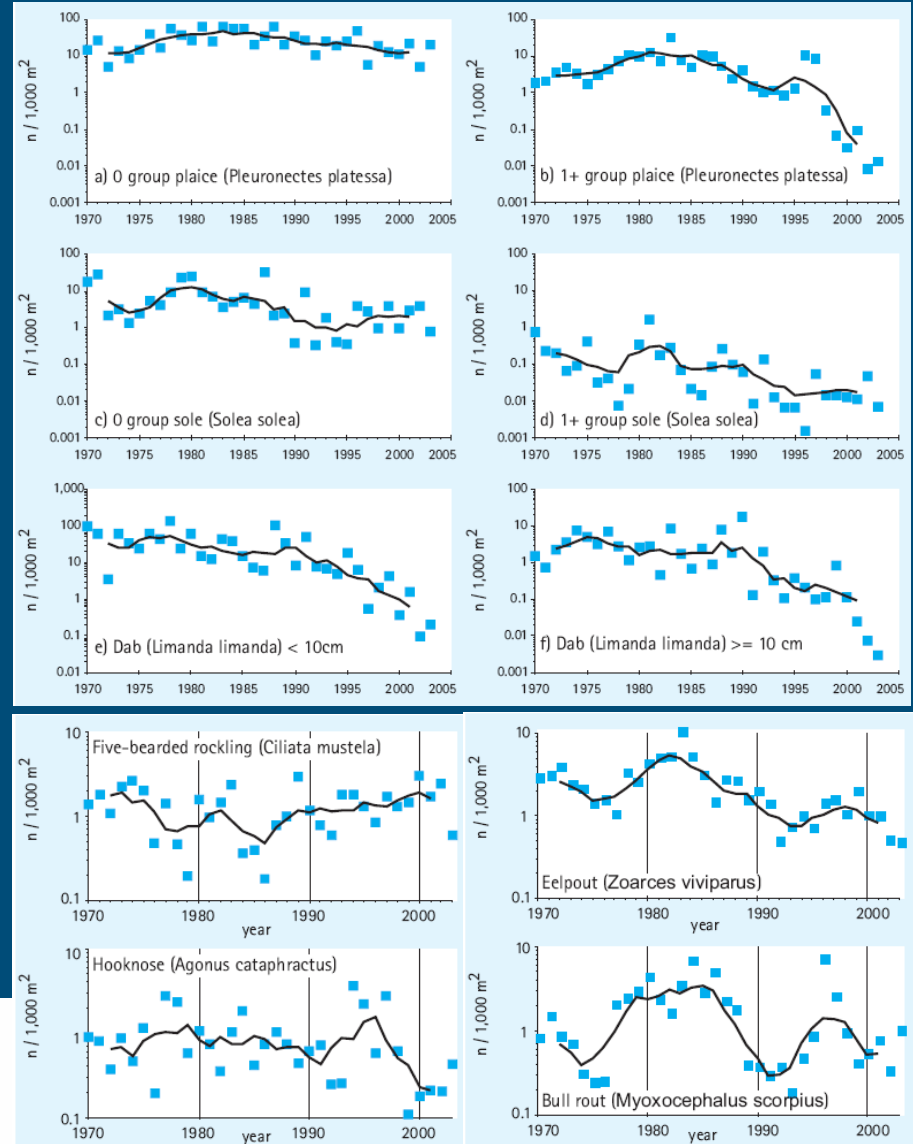
Recruitment North Sea plaice



Recruitment North Sea sole



Long-term trends in abundance (QSR)



Evaluation monitoring

■ Strengths

- Long time series (36 years)
- Geographic coverage (large area)
- Optimal gear for demersal fish species

■ Weaknesses

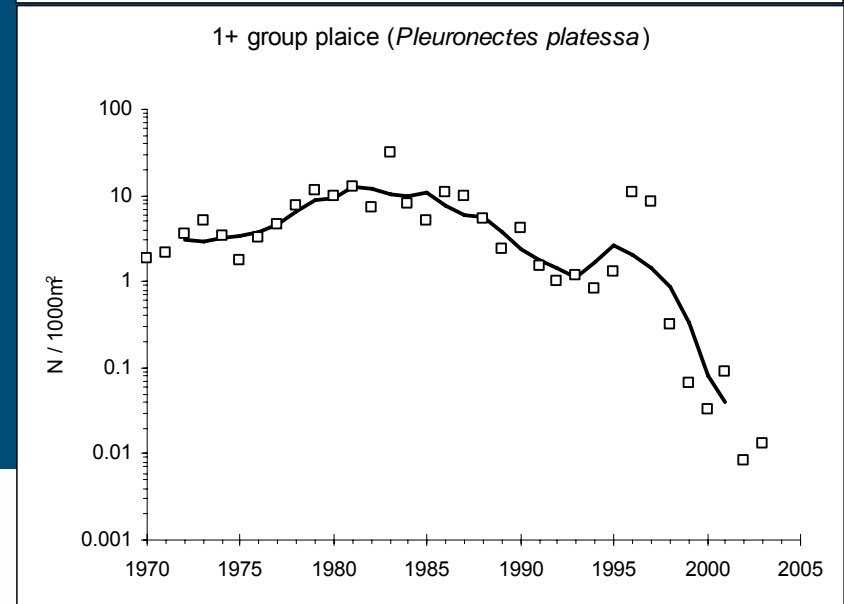
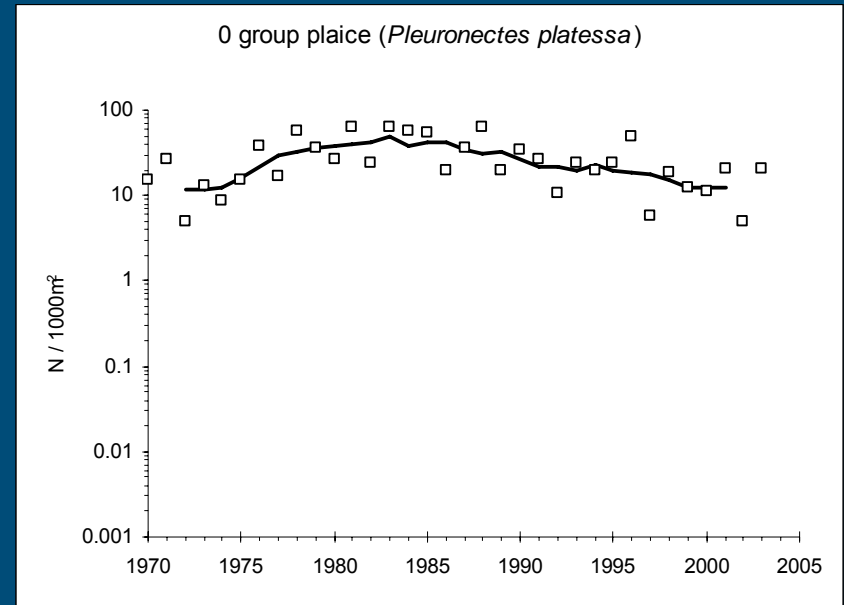
- Tidal flats not sampled
- Gear not suitable for pelagic species
- Only 1 sampling period per year

Evaluation science

Monitoring in Wadden Sea is important, but

- further (fundamental) research is urgently required.
- a wider perspective is often needed.

Case study plaice



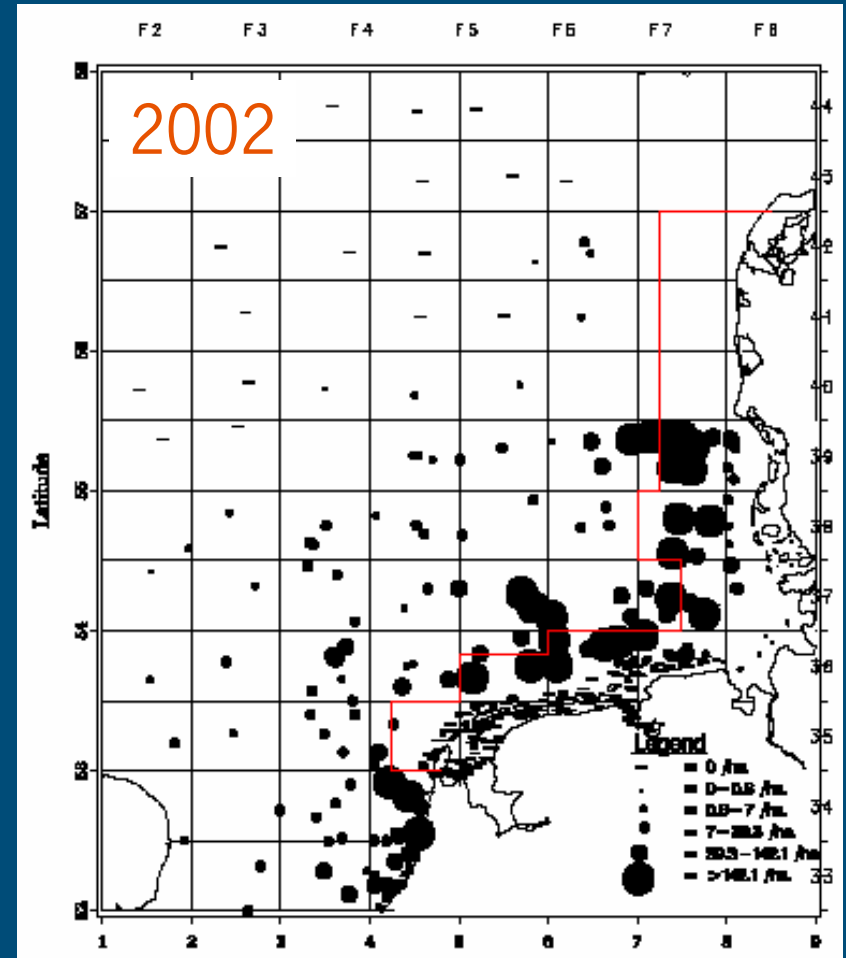
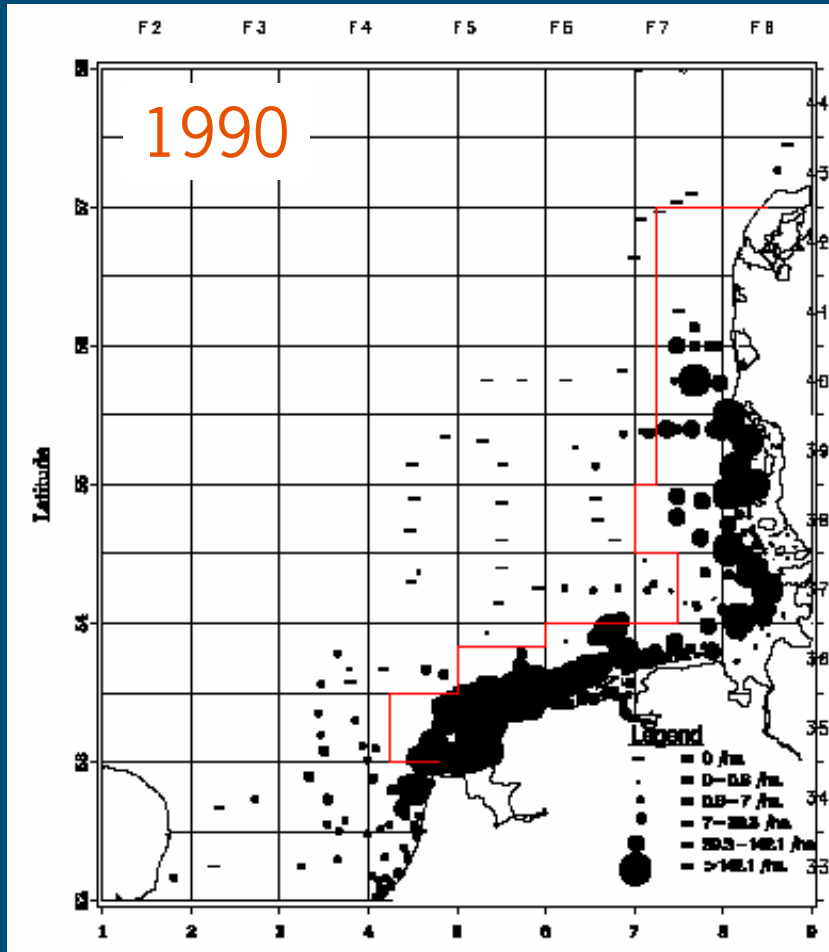
Change in abundance or in distribution?

Analyses survey data outside of Wadden Sea



- DFS coastal areas
- Sole Net Survey (SNS)
- Beam Trawl Survey (BTS)

Distribution 1 group plaice further offshore



Hypotheses

- Temperature rise
- Decline in nutrients => decline carrying capacity ?
- Change in food availability (species composition)
- Higher predation pressure in Wadden Sea (cormorant)
- Lower predation pressure outside Wadden Sea (fish)
- Visibility increased => lower catch efficiency
- Discard mortality shrimp fishery => no statistics for WS
- Spawning stocks at critical level => impaired recruitment ?

Evaluation - science

Monitoring in Wadden Sea is important, but

- further (fundamental) research is urgently required:
 - biological processes and environmental factors responsible for observed changes in abundance and distribution
- a wider perspective is often needed:
 - patterns observed within the Wadden Sea often cannot be interpreted without examining patterns outside the Wadden Sea

What are the questions we want to answer?