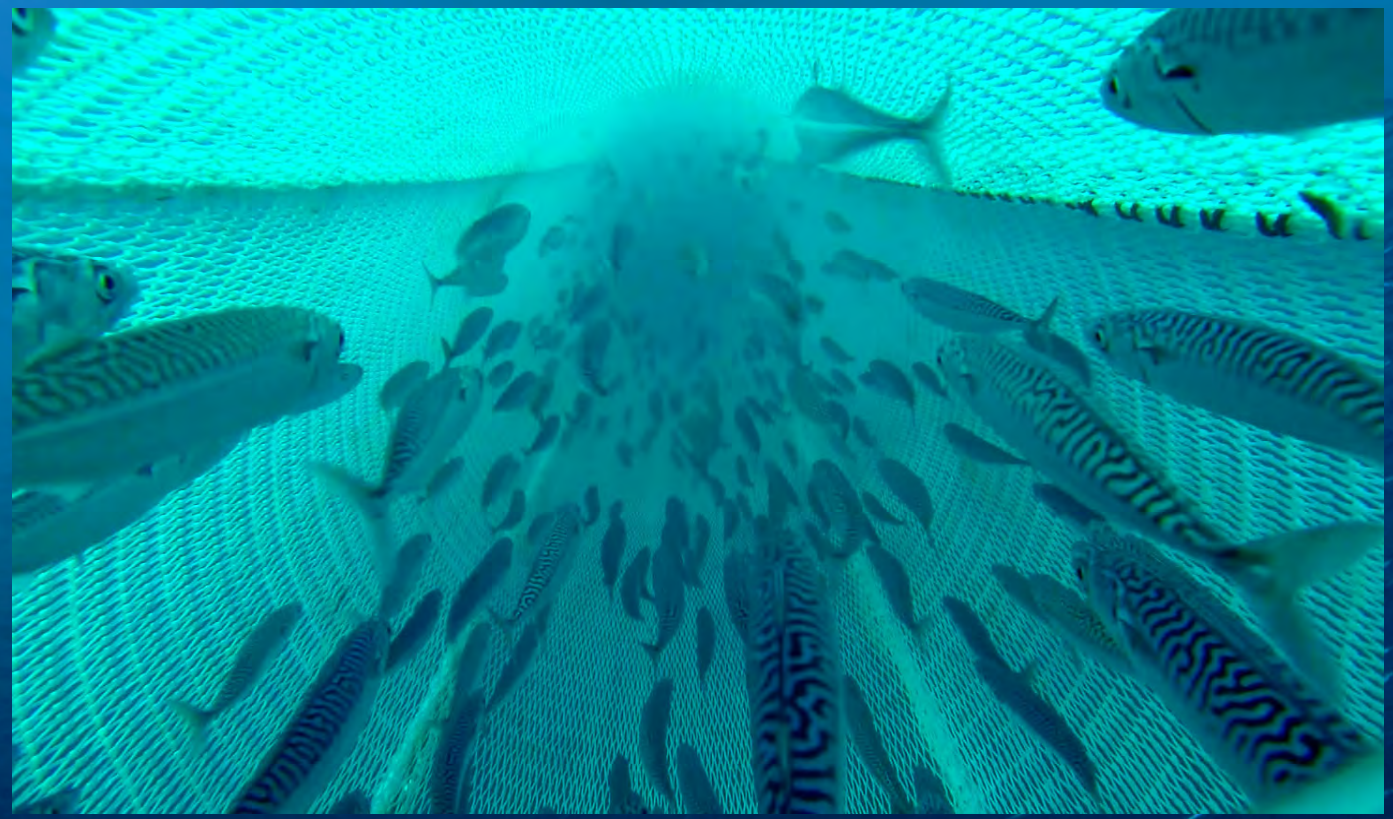
IESSNS – International ecosystem survey in the Northeast Atlantic

Kjell Rong Utne, Anna Olafsdottir, Jan Arge Jacobsen, Teunis Jansen, Kai Wieland, Leif Nøttestad



IESSNS

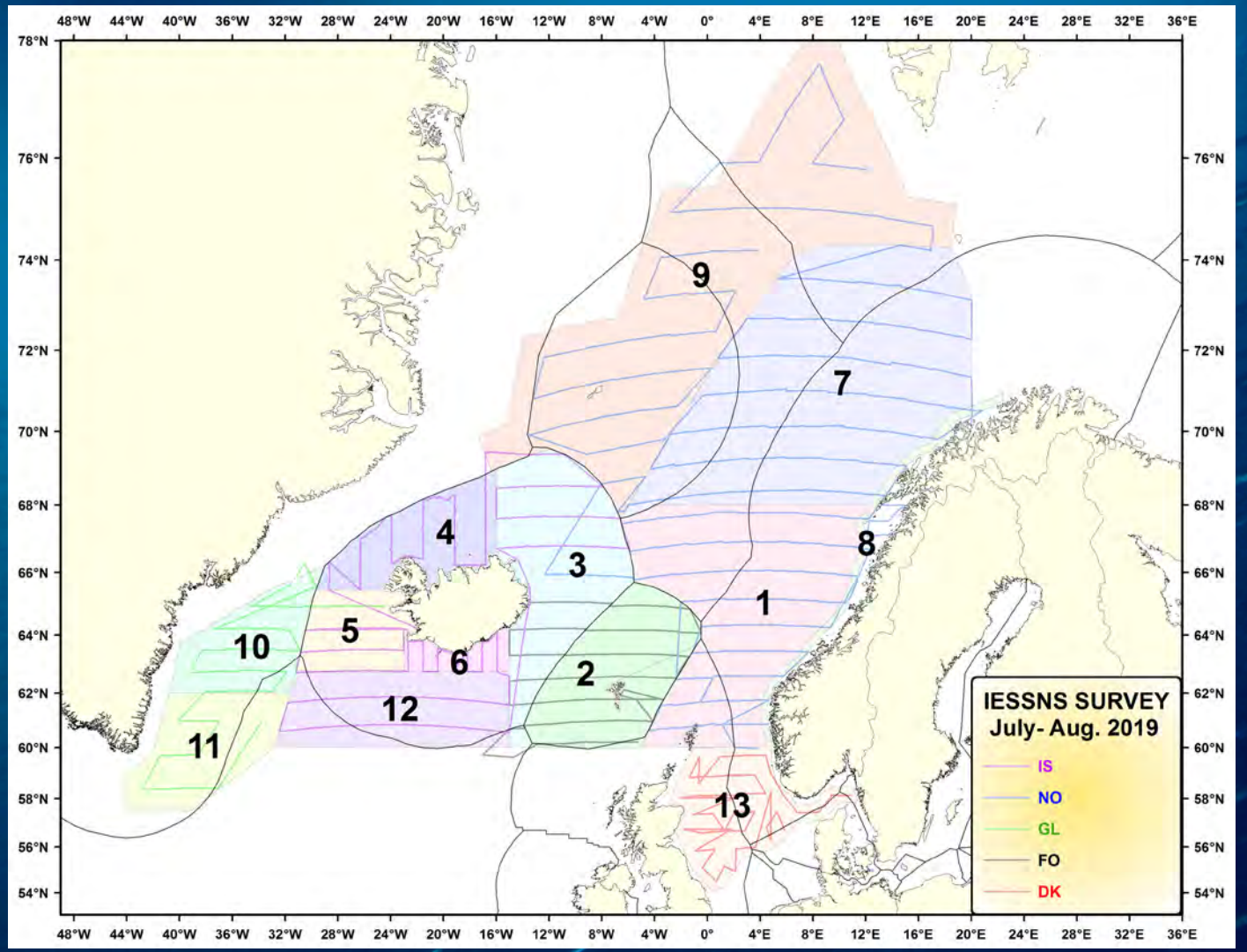
When: July/aug 2007/2010 – 2019 (ongoing)

Main objective:

- **Mackerel**
- Herring
- Blue whiting (pollock)

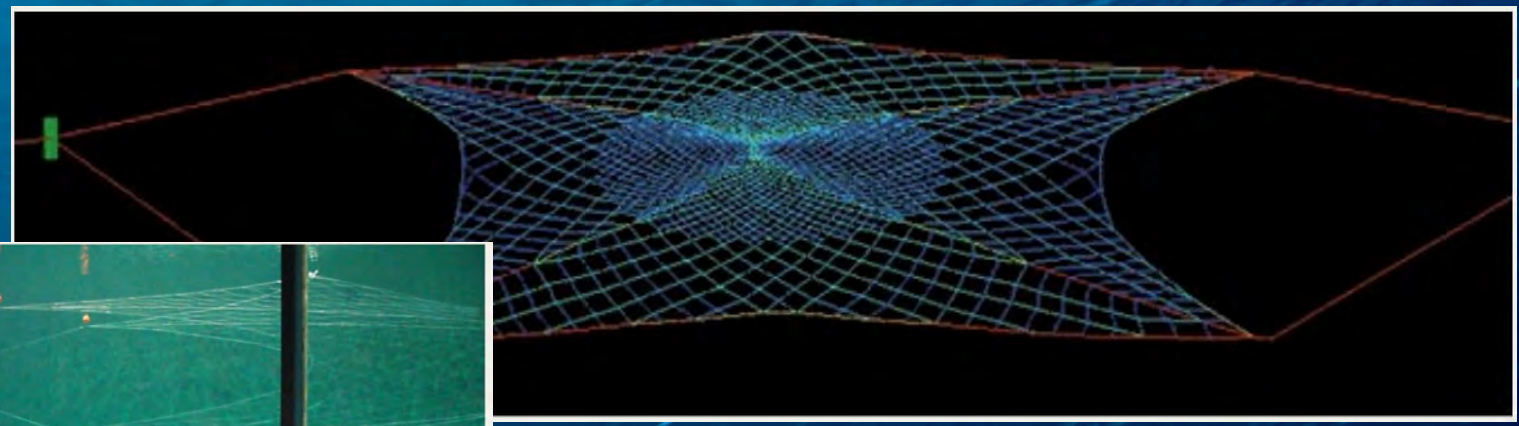
Secondary objective

- Salmon
- Plankton
- Oceanography
- Marine mammals
- Other fish



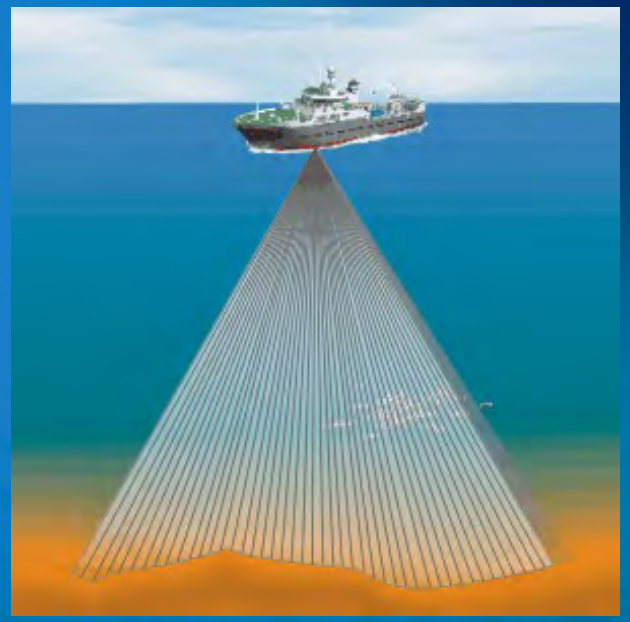
Primary gear: Multpelt 832 (Multipurpose pelagic ecosystem pelagic trawl)

Horizontal opening	**65-70 m**
Vertical opening	**30-35 m**
Speed	**4.5-5 knots**
Depth	**0-400 m**
Time	**30 minutes**

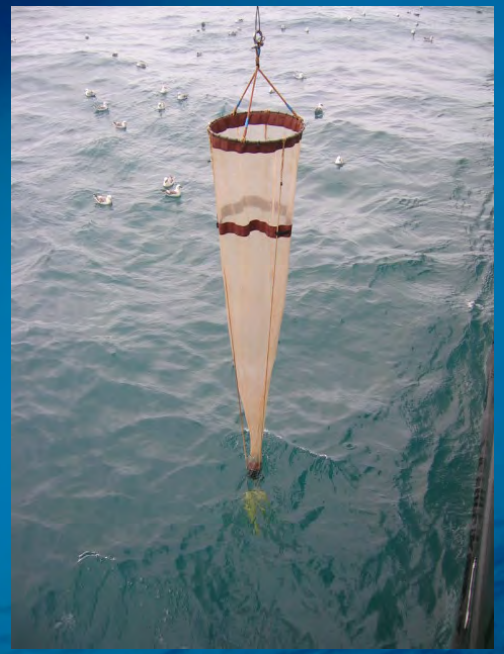


Other gear:

Echo Sounders



Plankton nets



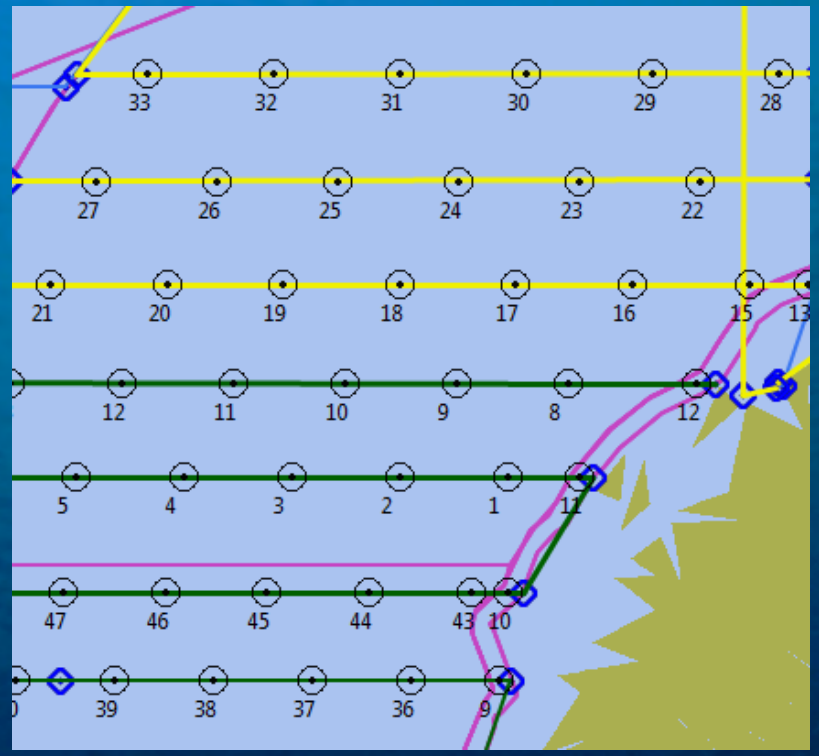
CTD

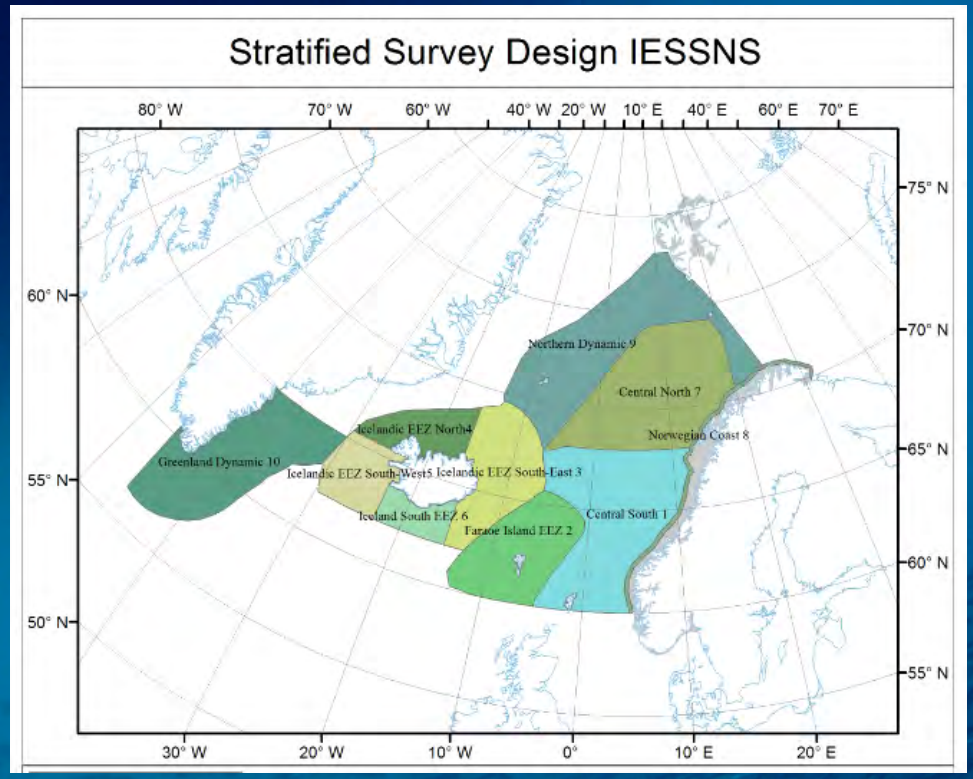
Observations

Strata and stations

Each station:

- Pelagic trawl
- CTD
- WP2





For each stratum:

Equal distance to all surrounding stations and random starting point

Acoustic transects with equal distance between transects (within stratum)

Research vessels and chartered fishing vessels are applied

Arni Fridriksson, Iceland

Vendla, Norway

Multi-year contracts with commercial vessels

- Experienced crew
- Stability

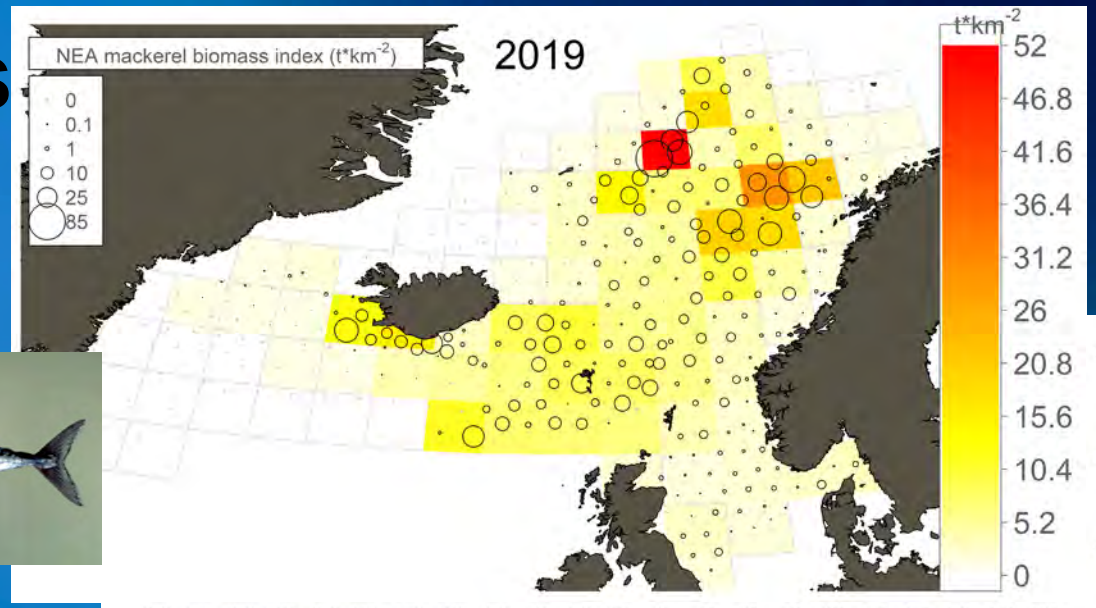
Storing data (common Database)

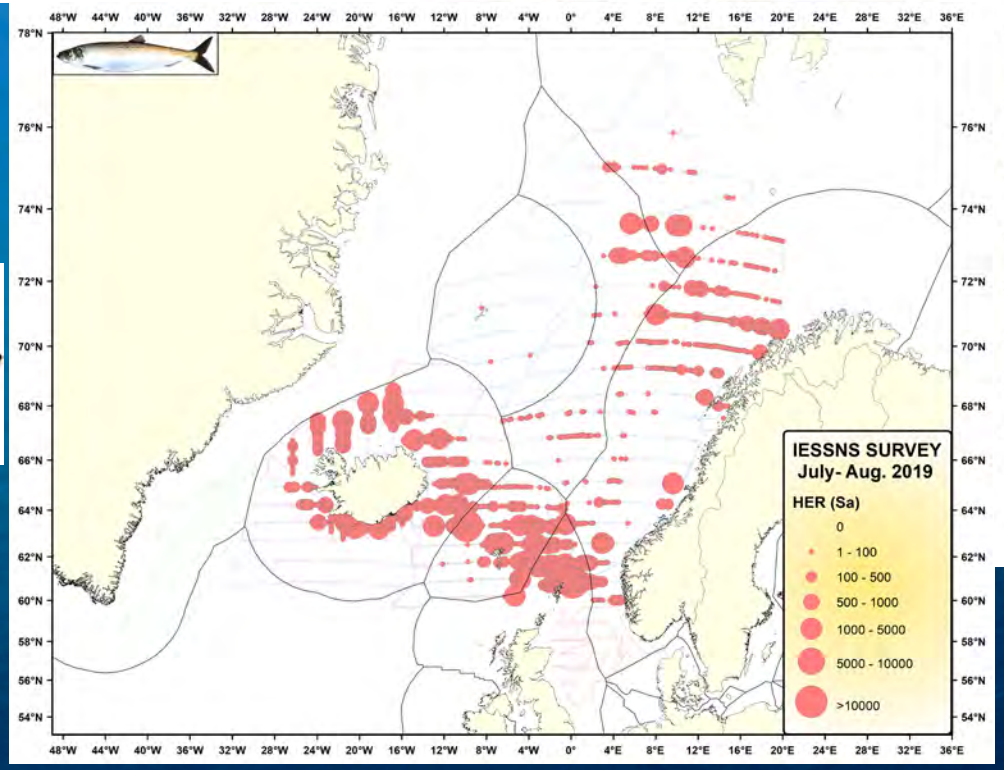
- Scrutinized acoustic data, 1 nmi
- Oceanographic data, 1 m
- All fish sampled data

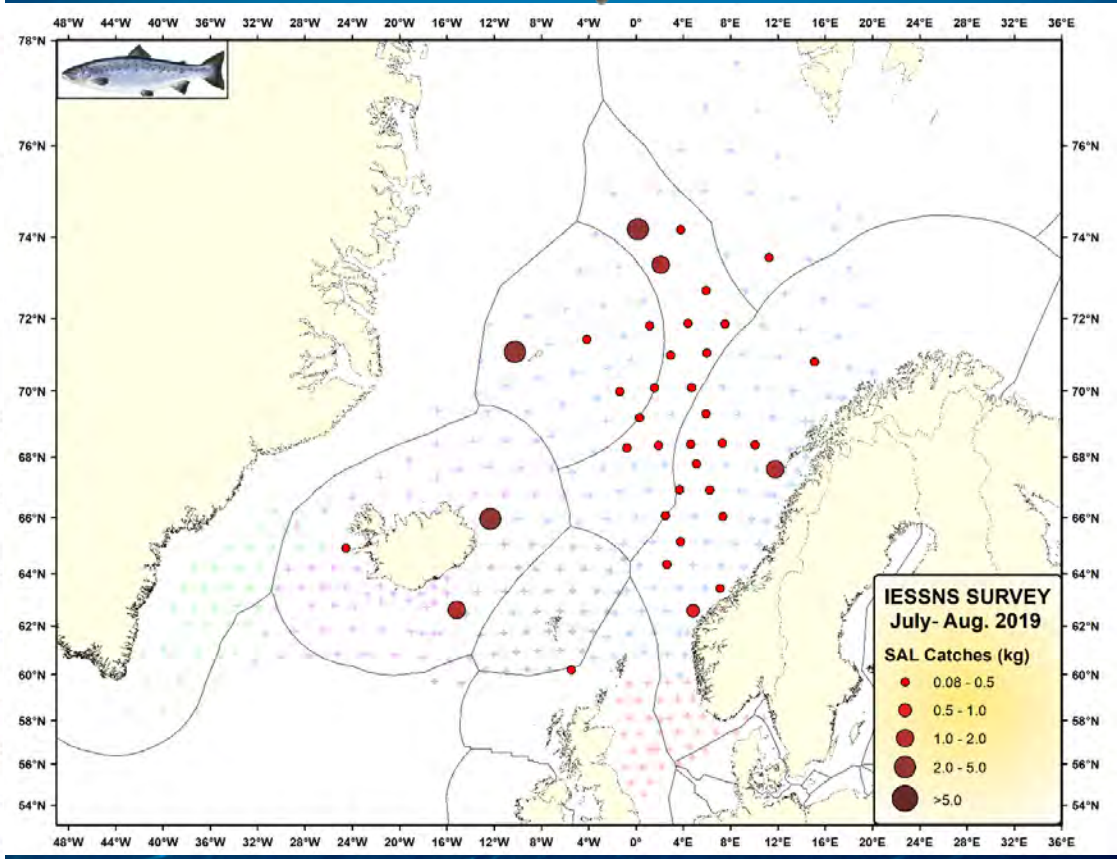
- Raw data stored at national databases

- Time should be dedicated to check data and analyses (multiple people)

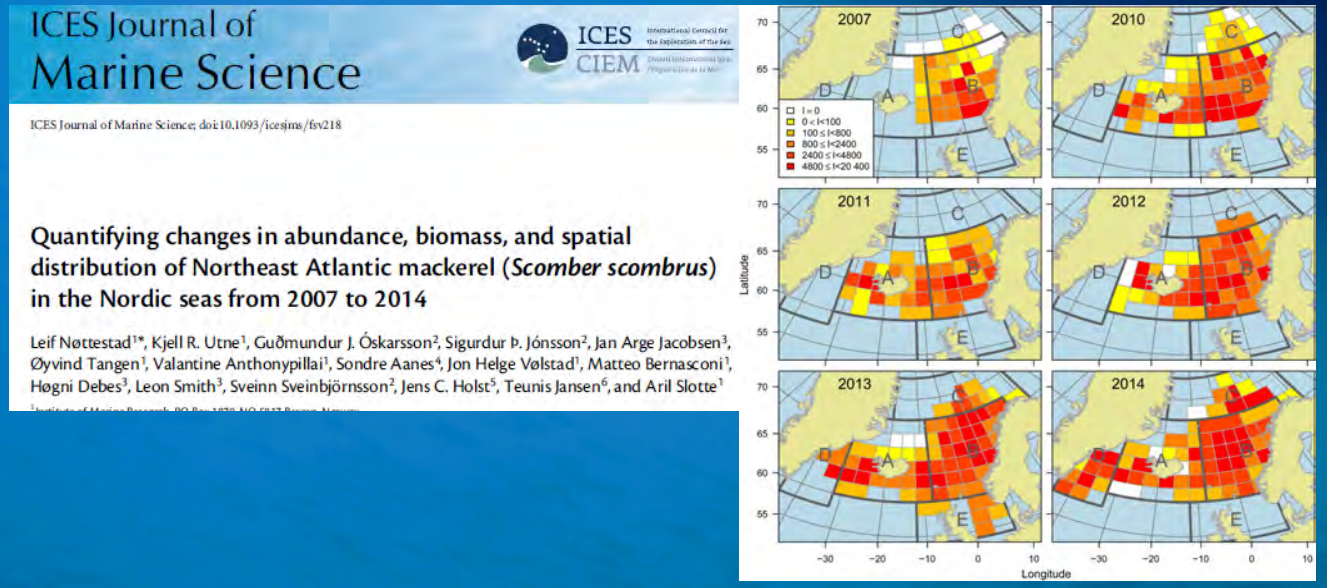
Results


NEA mackerel biomass index (t*km-2)
0
0.1
1
10
25
85
2019
t*km-2
52
46.8
41.6
36.4
31.2
26
20.8
15.6
10.4
5.2
0


IESSNS SURVEY
July- Aug. 2019
HER (Sa)
0
1 - 100
100 - 500
500 - 1000
1000 - 5000
5000 - 10000
>10000


IESSNS SURVEY
July- Aug. 2019
SAL Catches (kg)
0.08 - 0.5
0.5 - 1.0
1.0 - 2.0
2.0 - 5.0
>5.0

Paper describing geographic distribution and stock expansion



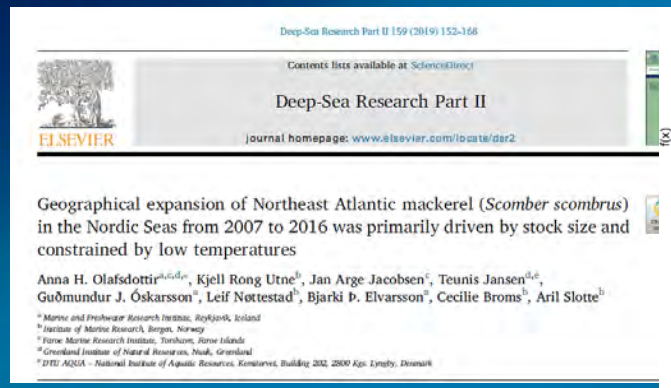
ICES Journal of Marine Science

ICES Journal of Marine Science; doi:10.1093/icesjms/fsv218

Quantifying changes in abundance, biomass, and spatial distribution of Northeast Atlantic mackerel (*Scomber scombrus*) in the Nordic seas from 2007 to 2014

Leif Nøttestad[1]*, Kjell R. Utne[1], Guðmundur J. Óskarsson[2], Sigurdur Þ. Jónsson[2], Jan Arge Jacobsen[3], Øyvind Tangen[1], Valantine Anthonypillai[1], Sondre Aanes[4], Jon Helge Vølstad[1], Matteo Bernasconi[1], Høgni Debes[3], Leon Smith[3], Sveinn Sveinbjörnsson[2], Jens C. Holst[5], Teunis Jansen[6], and Aril Slotte[1]

Paper addressing the mechanisms behind the expansion



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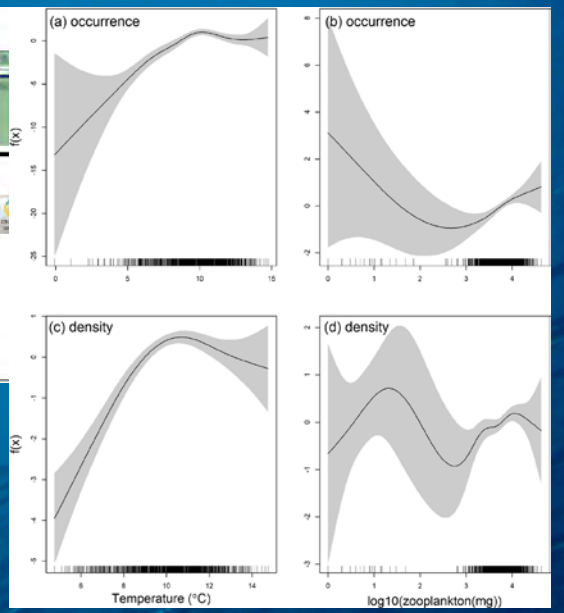
journal homepage: www.elsevier.com/locate/dsr2

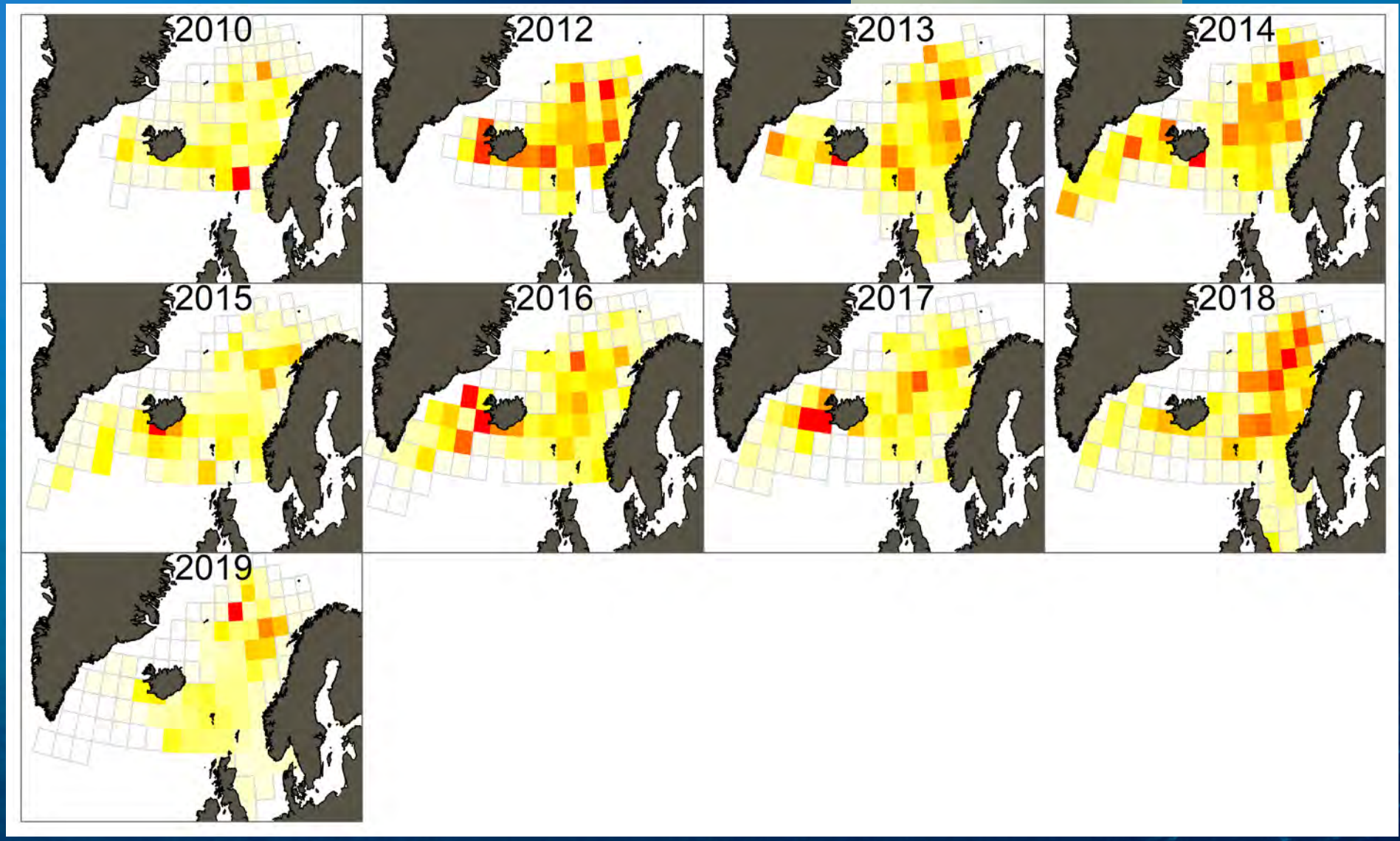
Geographical expansion of Northeast Atlantic mackerel (*Scomber scombrus*) in the Nordic Seas from 2007 to 2016 was primarily driven by stock size and constrained by low temperatures

Anna H. Olafsdottir[a,c,d,e], Kjell Rong Utne[b], Jan Arge Jacobsen[c], Teunis Jansen[d,e], Guðmundur J. Óskarsson[a], Leif Nøttestad[b], Bjarki Þ. Elvarsson[a], Cecilie Broms[b], Aril Slotte[b]

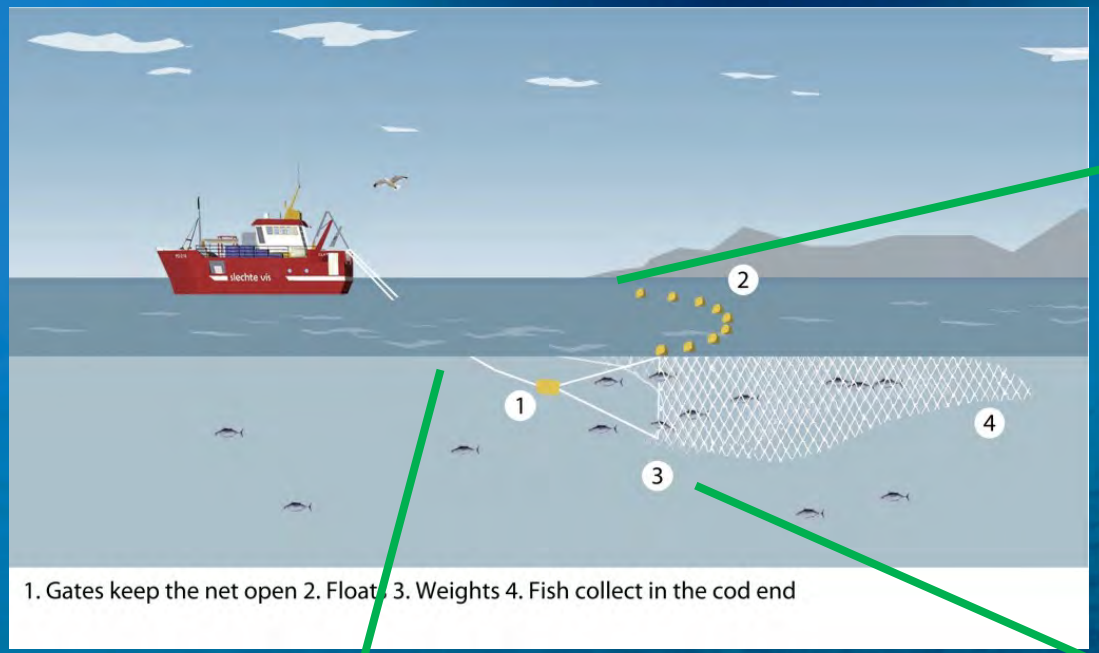


+ other publications on:
marine mammals, sonar studies, feeding interactions, etc

Critic against the survey – survey coverage



Critic against the survey – Catchability



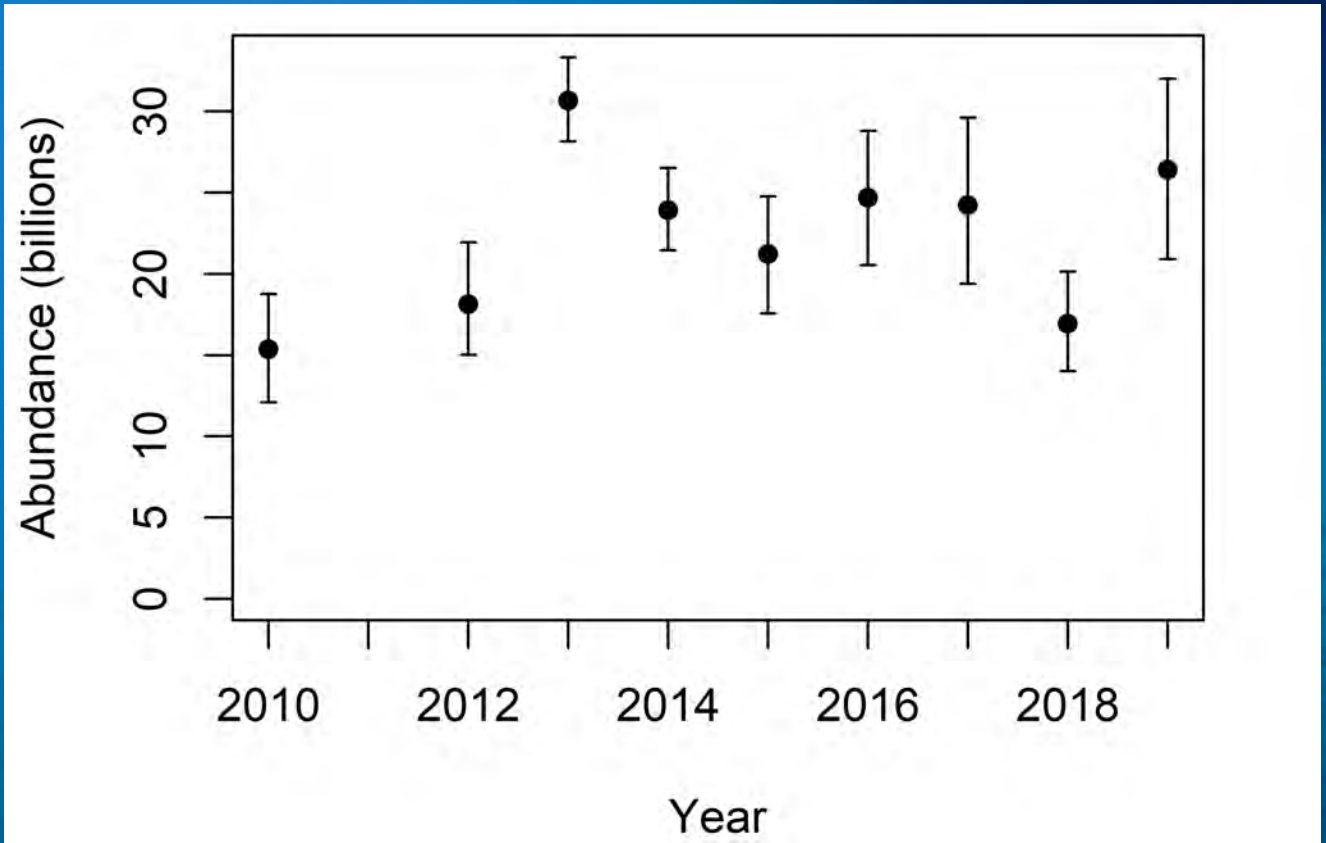
1. Gates keep the net open 2. Float 3. Weights 4. Fish collect in the cod end

Herding or horizontal avoidance?

Avoidance below the trawl

Effective trawling time

Survey index in assessment



Occasional year effect

-Changing spatial distribution?

-Changing catchability?

A challenge for the assessment

- Added correlation structure

Suggestions:

- Plan for all target species from the start
- Standardize all equipment
- Quality ensuring data
- WP2 – Cheap and quick sampling
  More beneficial to apply a plankton trawl?
- Gopro cameras in the trawl – cheap and efficient
- Use the opportunity for public outreach