



Fine-scale information on discard occurrence and catch composition by coupling EM and sea-packing commercial fishery data

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Publication date:
2018

Document Version
Publisher's PDF, also known as Version of record

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Citation (APA):
Schreiber Plet-Hansen, K., Nielsen, J. R., & Ulrich, C. (2018). Fine-scale information on discard occurrence and catch composition by coupling EM and sea-packing commercial fishery data. Paper presented at ICES Annual Science Conference 2018, Hamburg, Germany.

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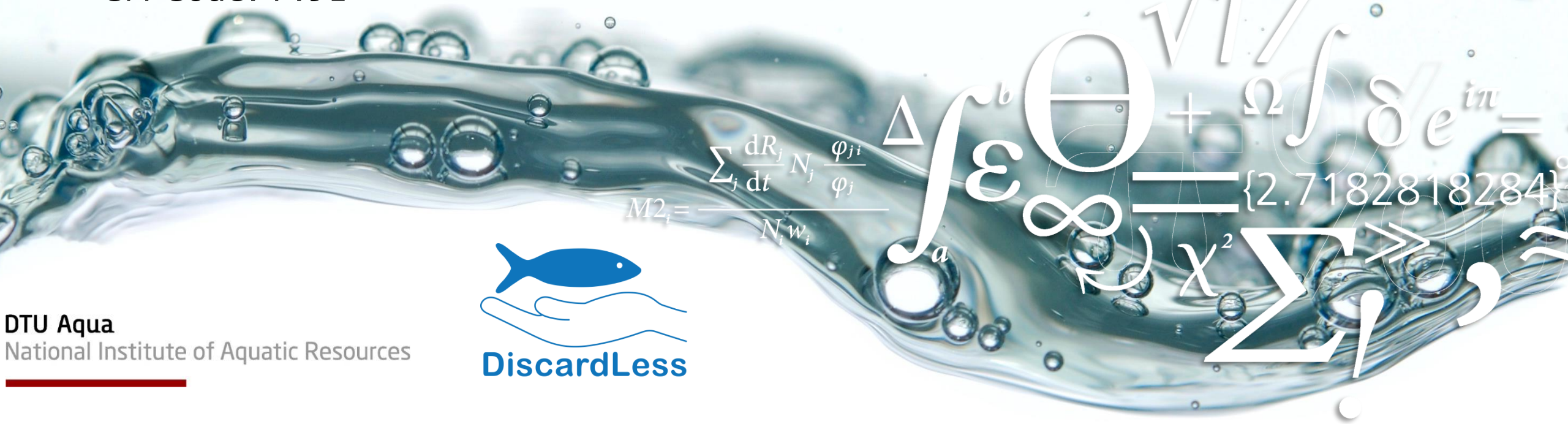
The project is funded by the European Maritime and Fisheries Fund and The Danish Fisheries Agency



Fine-scale information on discard occurrence and catch composition by coupling EM and sea-packing commercial fishery data

Kristian S. Plet-Hansen, J. Rasmus Nielsen, Clara Ulrich

CM Code: P:91



$$M2_i = \frac{\sum_j \frac{dR_j}{dt} N_j \frac{\varphi_{ji}}{\varphi_j}}{N_i w_i}$$

$$\int_a^b \epsilon \Theta + \Omega \int \delta e^{i\pi} = \{2.7182818284\}$$

$$\chi^2 \Sigma \gg \approx$$



Agenda

1: Electronic Monitoring data

2: Sea-packing/Grading machine data

3: Combination





The Danish Cod Catch Quota Management trial



- From 2010-2016
- Voluntary. Cod quota increase (+30%) and derogation from days at-sea regulations as incentive
- Cod discards allowed but deducted from quota
- EM with Video as verification of self-reported discards
- As a minimum, 10% of all hauls had to be audited by video observers

References:

Ulrich *et al.* (2015), DOI:
10.1093/icesjms/fsv028

Bergsson & Plet-Hansen (2016),
DOI: 10.13140/RG.2.2.13561.67683

Bergsson *et al.* (2017), DOI:
10.13140/RG.2.2.23628.00645



DTU Aqua
National Institute of Aquatic Resources



**Ministry of Environment
and Food of Denmark**
The Danish Agrifish Agency



The Danish Cod Catch Quota Management trial



Audit, last analysis tool

Raw video footage



Data

Picture of every discard with:

- ID-marker
- Time stamp
- Length measurement
- Weight estimate
- Haul, start/stop time
- Haul, start/stop position
- ID link to eLog



9i76_POK_48.68
cm_1.05_03-09-
2016 144941
Cam1

Sea-packing with grading machines

Reduce handling
Improve quality

**Packing landings at-sea
by species AND
commercial size class**

At the haul level



The SIF database

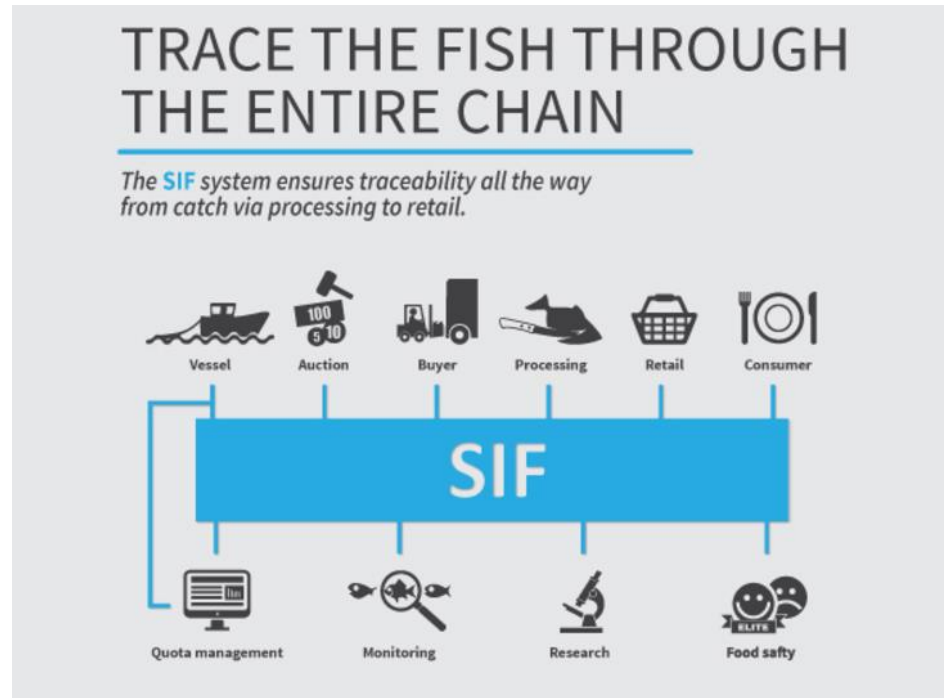
EU traceability
regulations

**Online collection of
sea-packing data
INCLUDING time and
position of haul**

At the haul level

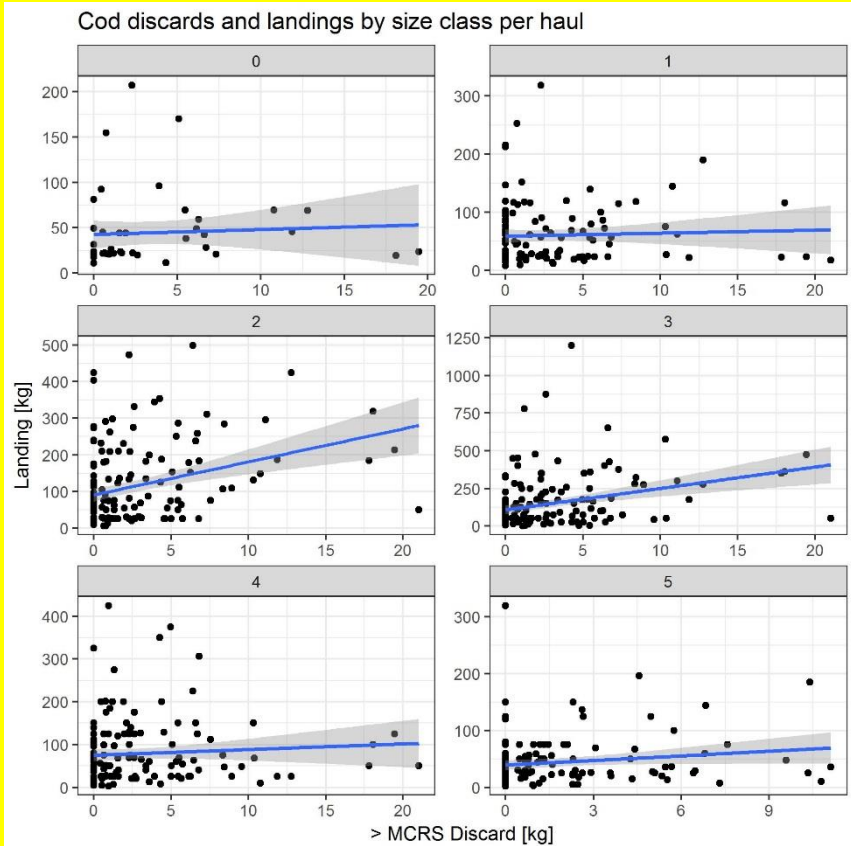
Reference:

Plet-Hansen *et al.* (2018), Aquatic Living Resources (forthcoming)



Combination, ongoing examinations

1)

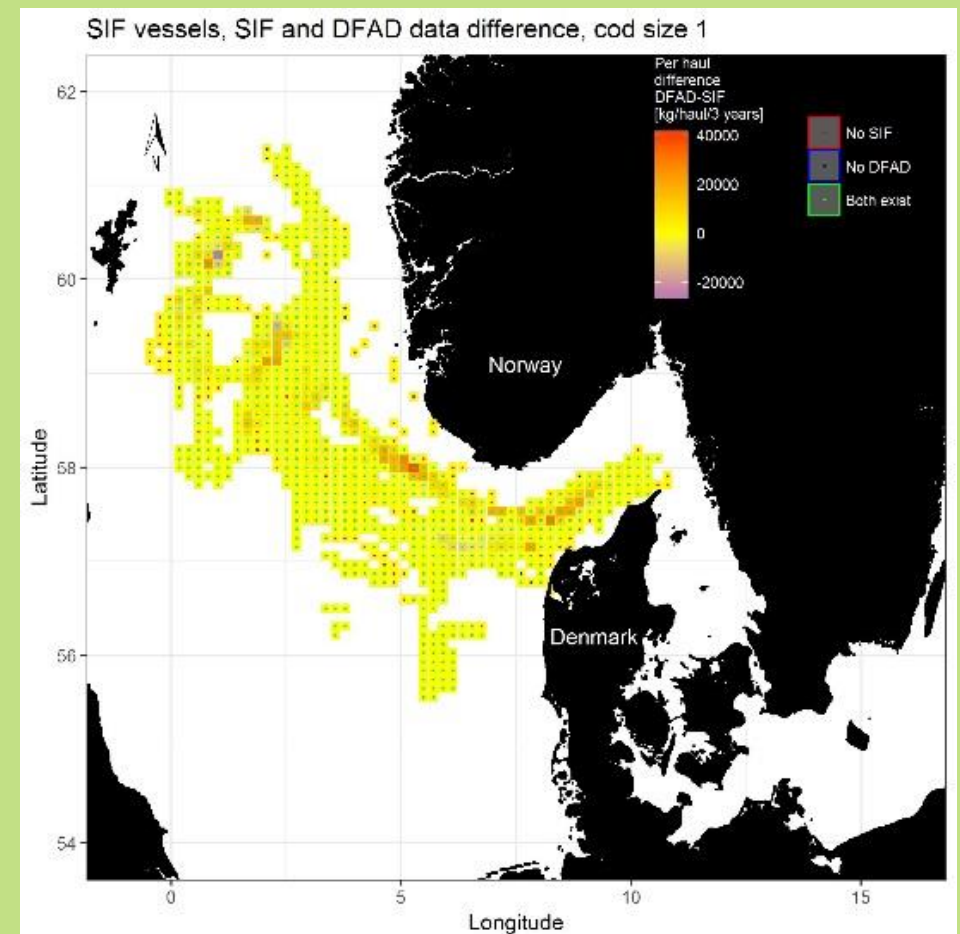


1) Discards compared to size class landings at the haul level

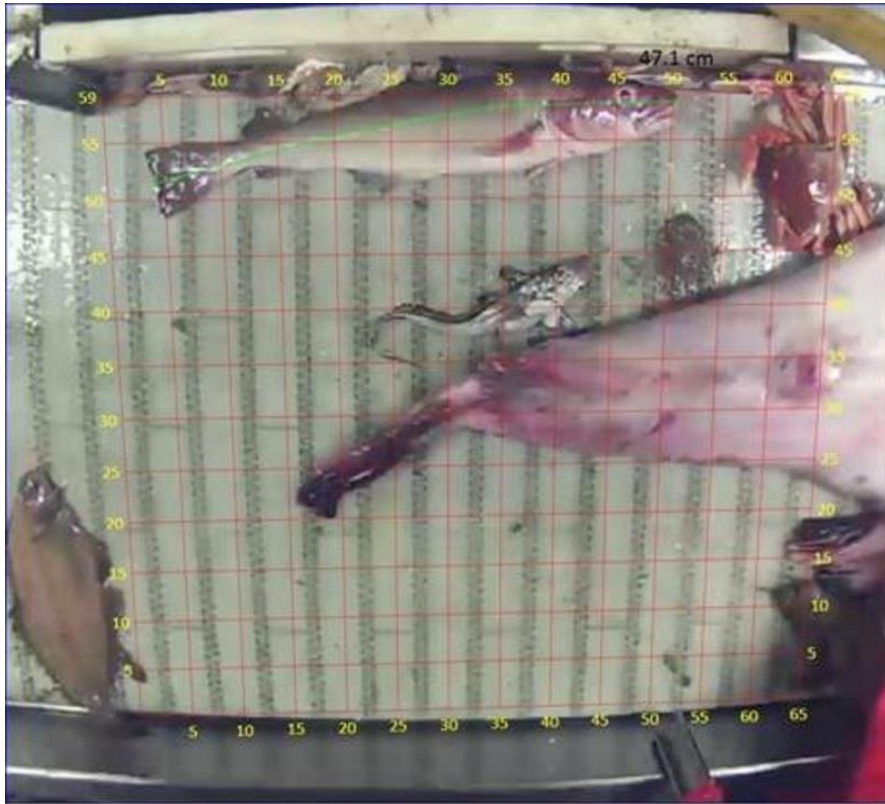
2) Difference between redistribution of trip level size composition compared to haul level size composition

3) ...

2)



3) Temporal and spatial size composition of catch



Discards

+

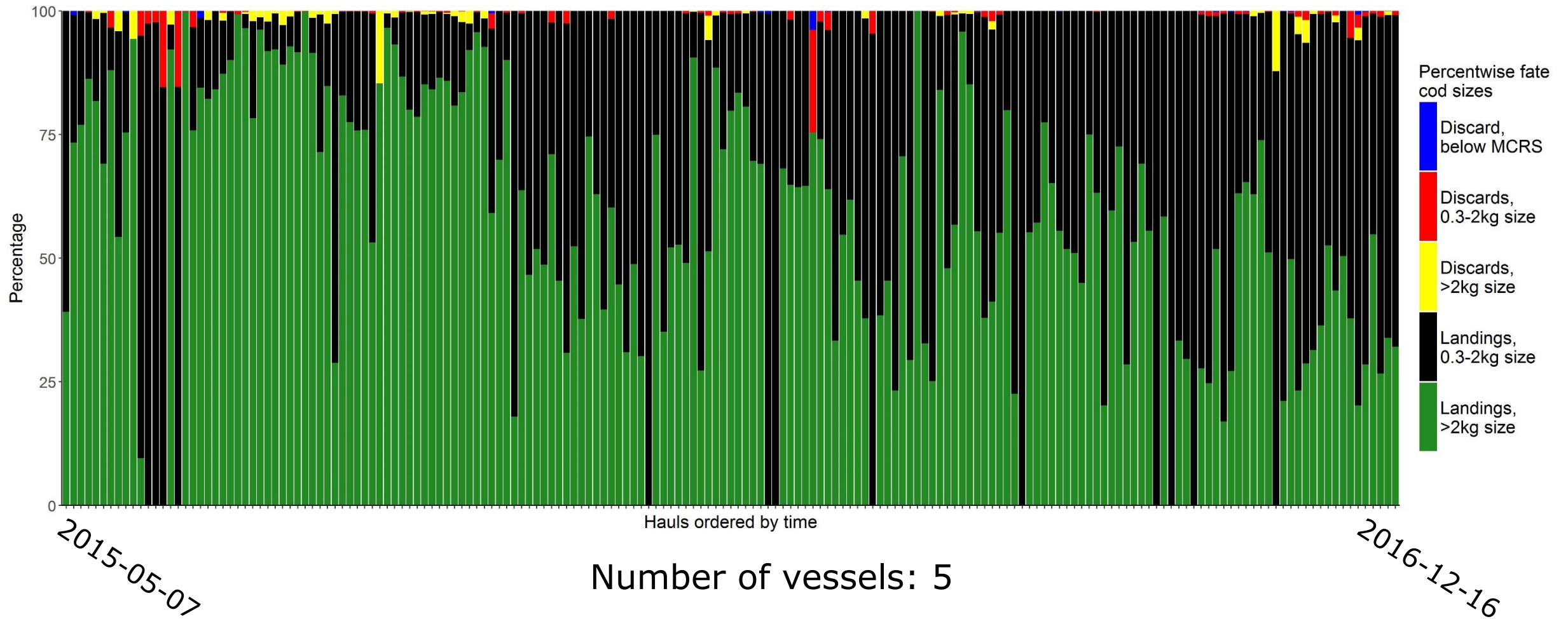


Size graded landings

= ?



Temporal size, catch at haul, Atlantic cod



Spatial size distribution, catch of Atlantic cod

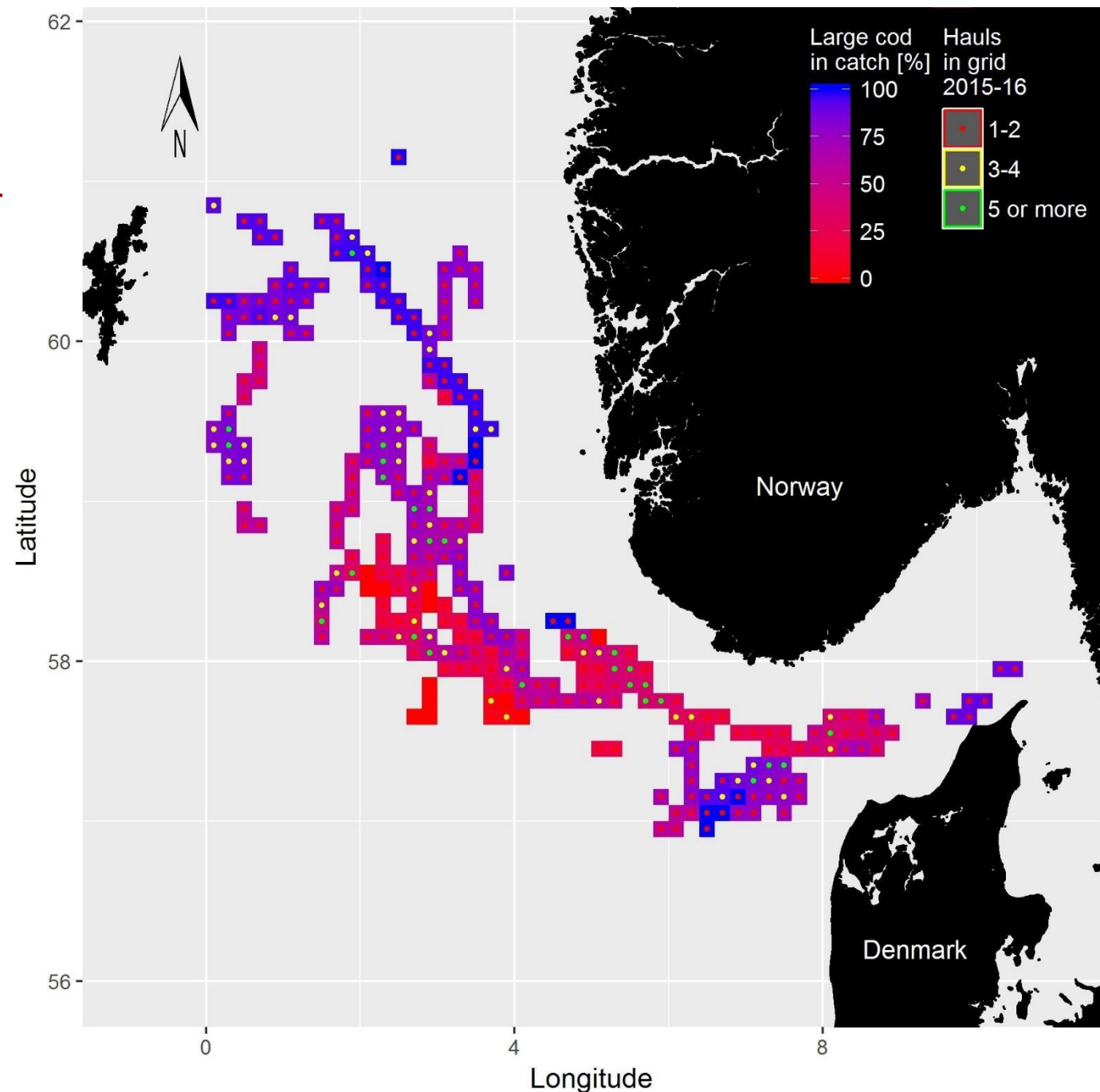
Number of vessels: 5

Large cod:

Size class 0,1,2 & 3
(≥ 2 kg/fish)

Small cod:

Size class 4,5
& undersized (discards)
(< 2 kg/fish)



Spatial size distribution, catch of hake

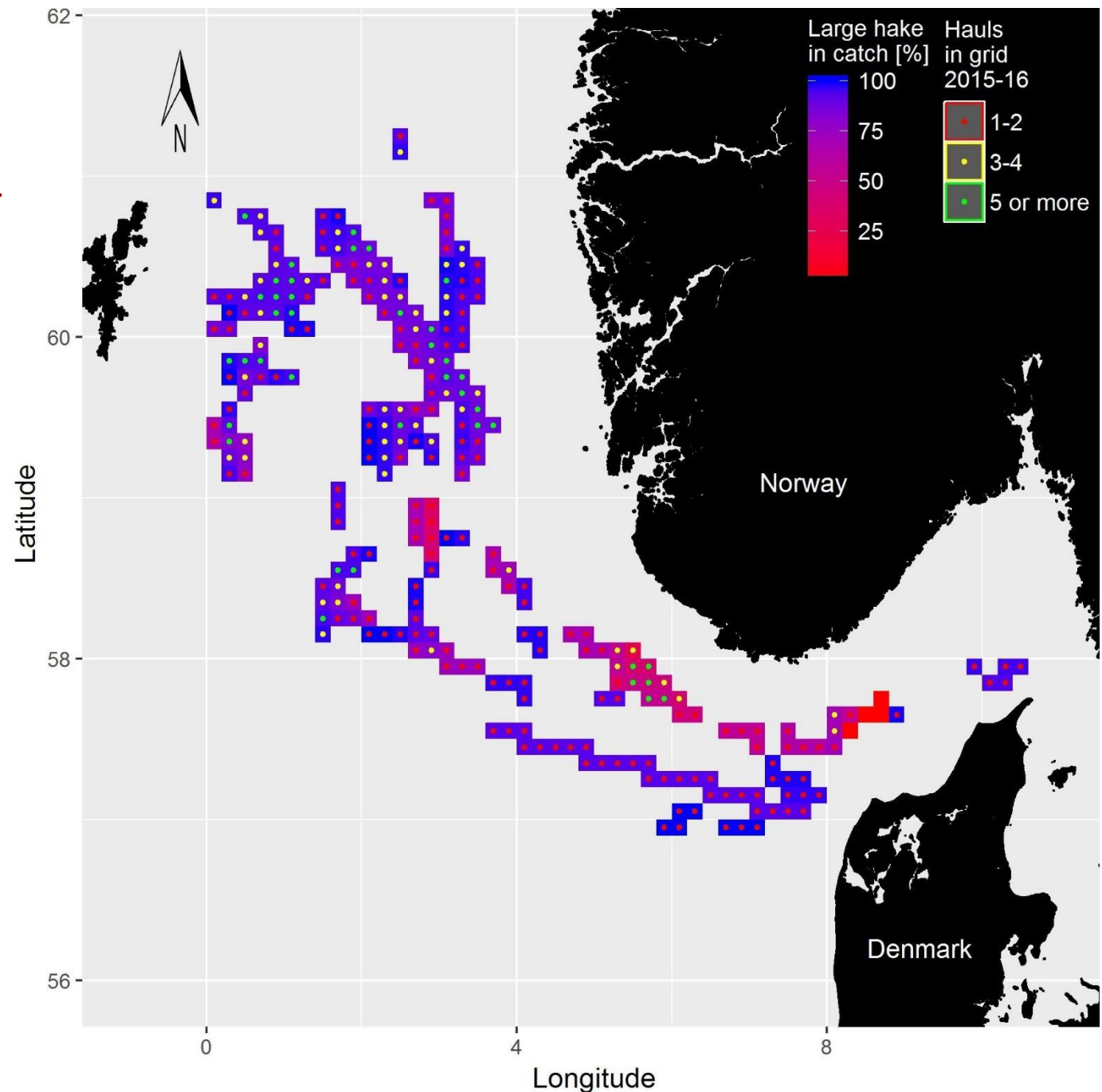
Number of vessels: 5

Large hake:

Size class 0, 1 & 2
(≥ 1.2 kg/fish)

Small hake:

Size class 3, 4 & undersized (discards)
(< 1.2 kg/fish)



Spatial size distribution, catch of Atlantic cod, SIF+EM

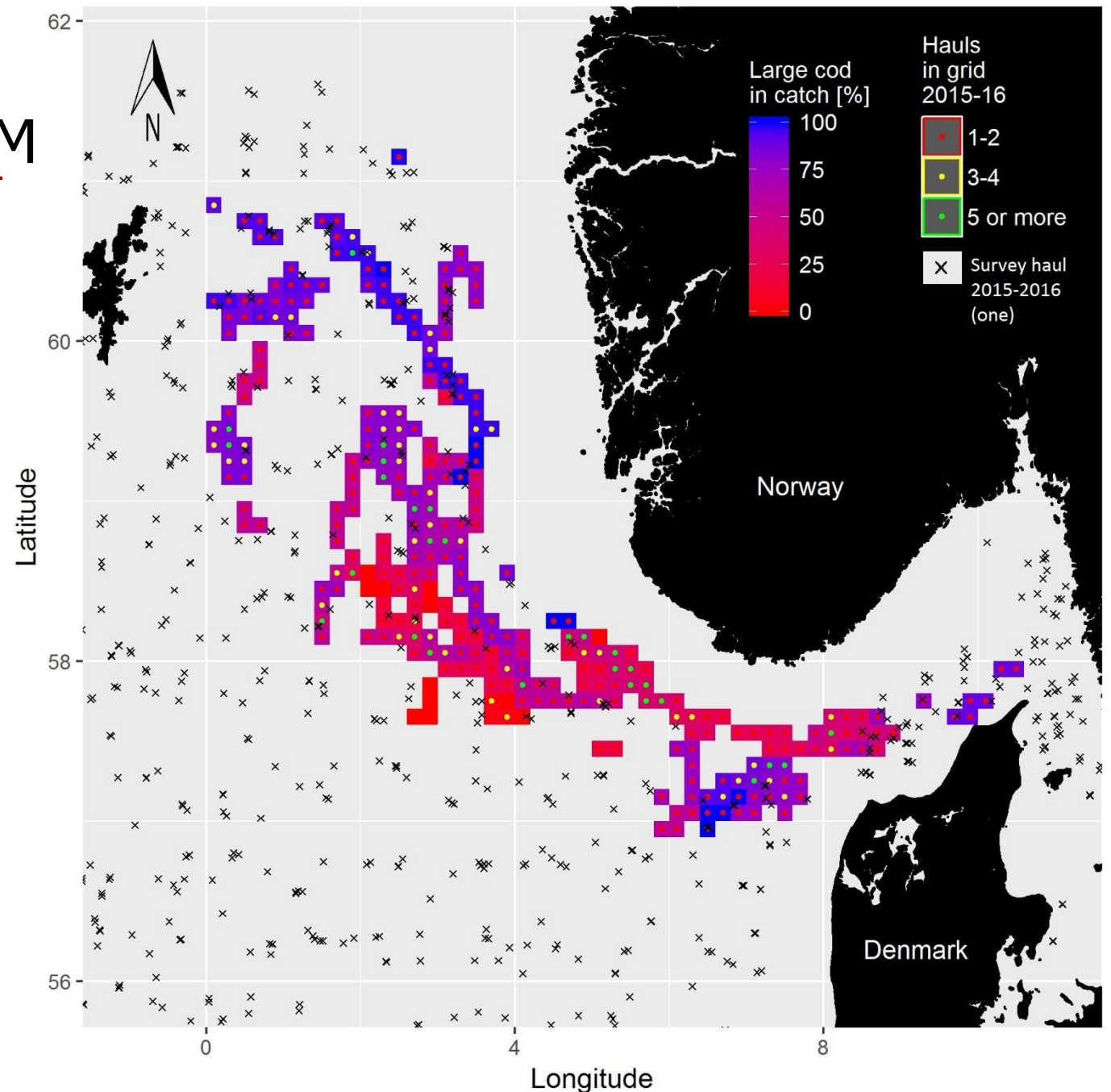
SIF+EM and Survey

Large cod:

Size class 0,1,2 & 3
(≥ 2 kg/fish)

Small cod:

Size class 4,5 &
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(< 2 kg/fish)



Spatial size distribution, catch of Atlantic cod, SIF+EM

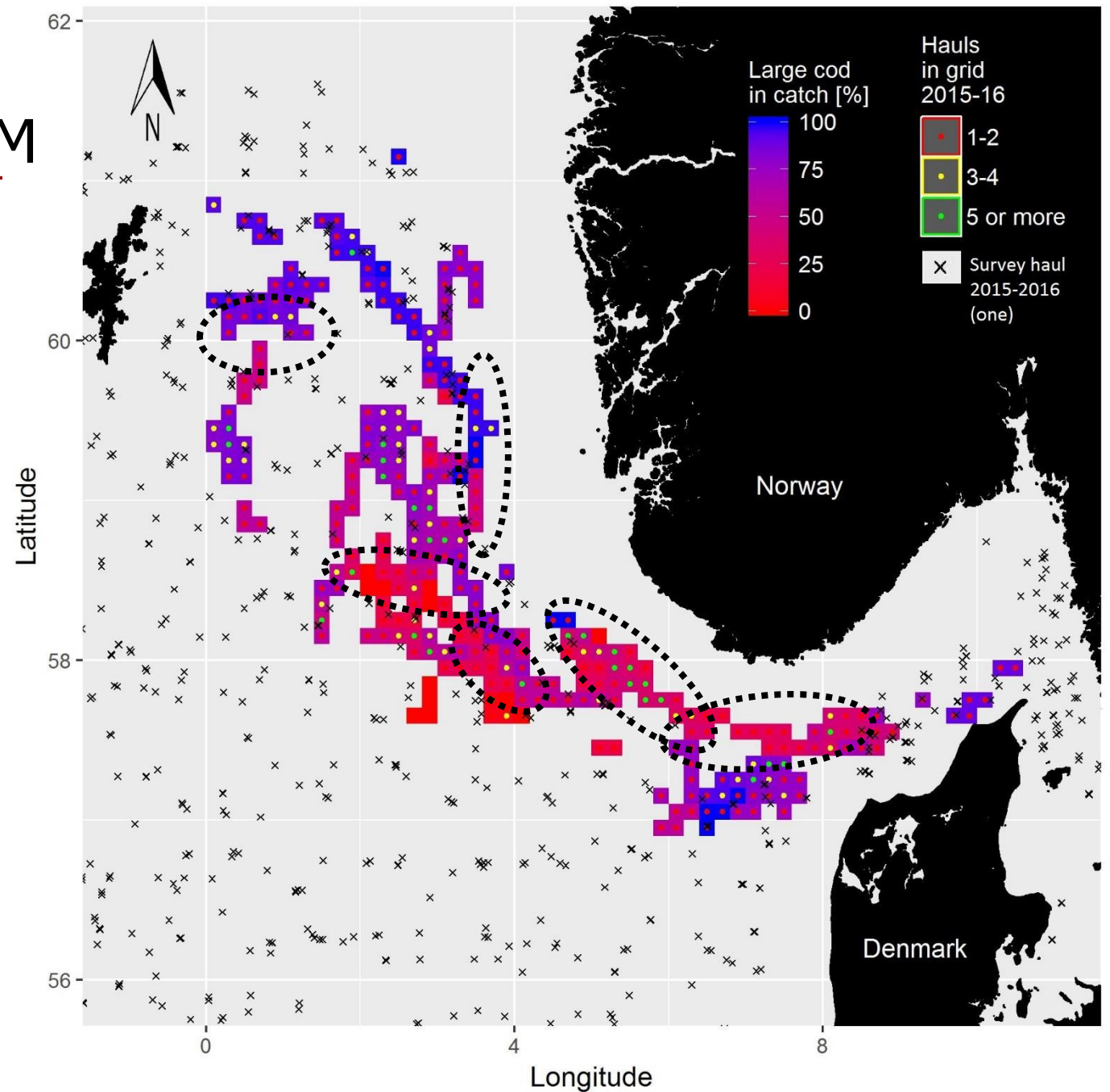
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(≥ 2 kg/fish)

Small cod:

Size class 4,5 &
undersized (discards)
(< 2 kg/fish)



Thank you for your attention

Questions?

