



Winter survey 2019 R/V Johan Hjort

Report generated by: Johanna Fall

17/01/2020

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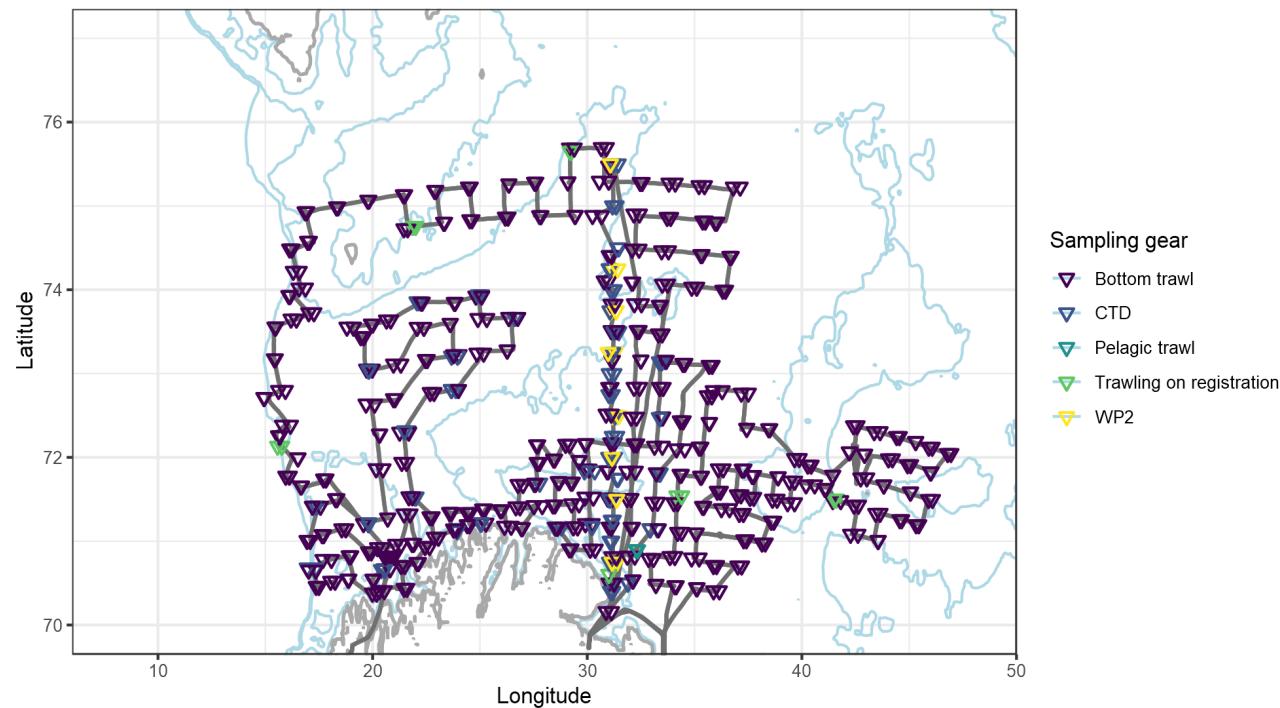
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Cruise tracks and stations

Cruise tracks from the position log with points indicating start positions for different sampling gear. The points are jittered slightly for better visual representation:

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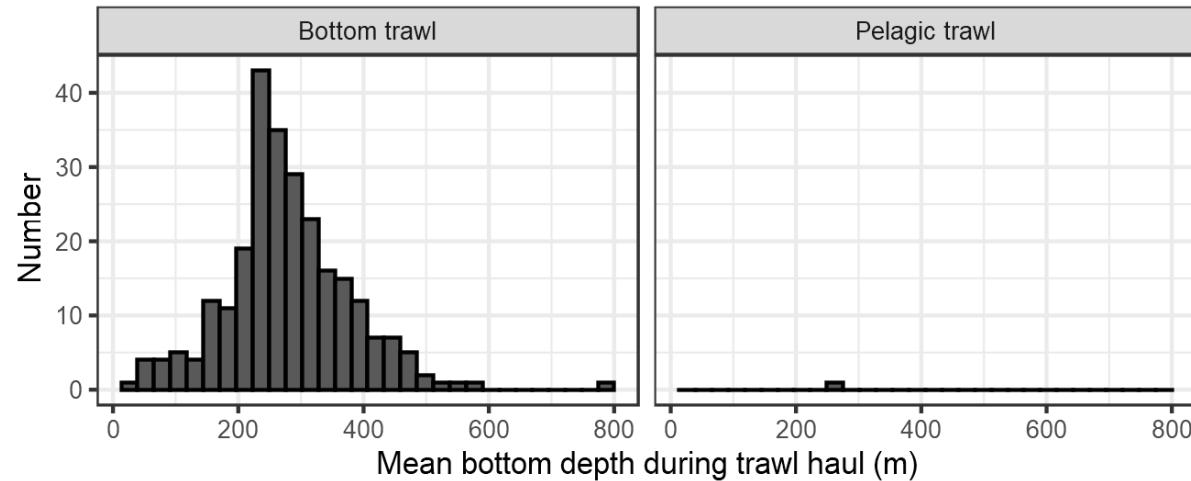


Sampling depth for trawl hauls

245 trawl hauls were taken during the survey, of which 244 were bottom trawl, and 1 pelagic trawl. The trawl hauls covered a total distance of 390.2 km (210.7 nmi).

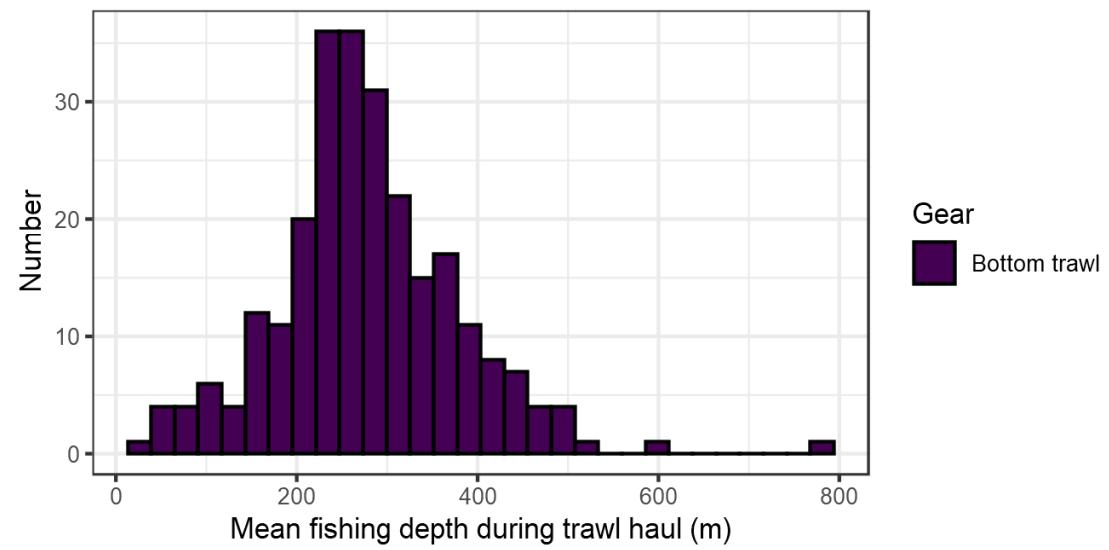
The sampling stations were located in areas with bottom depths from 36.5 m to 797.4 m, and the fishing depth varied from 36.6 m to 791.4 m.

Mean bottom depth during trawl hauls



Mean fishing depth during trawl hauls (excluding pelagic hauls)

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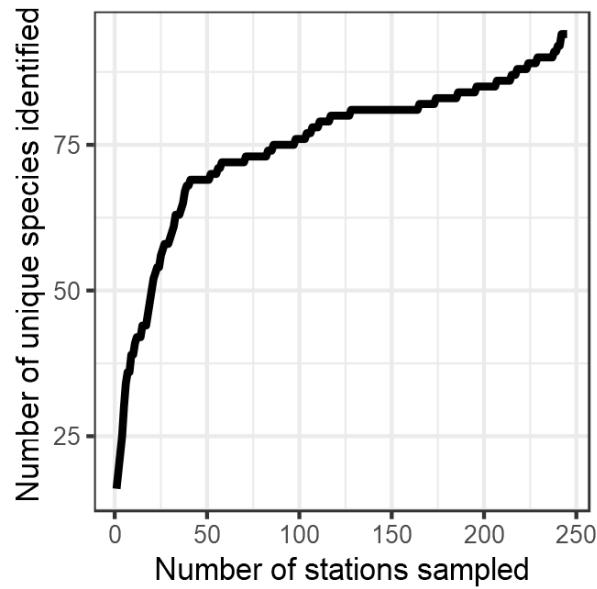


Catch rates - biomass and number per nautical mile trawled for species registered in Sea2Data

Species diversity

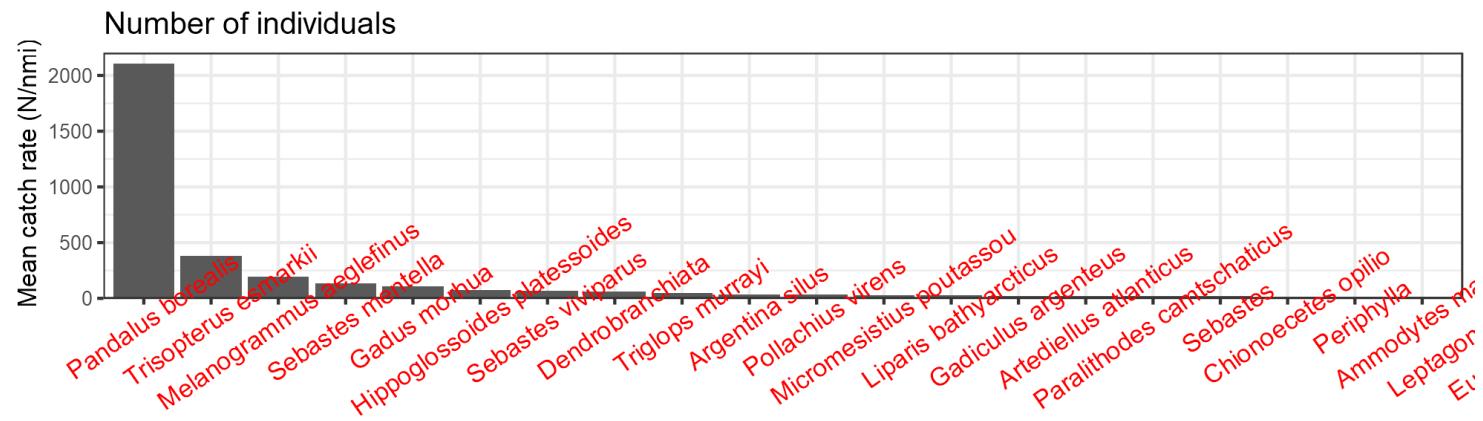
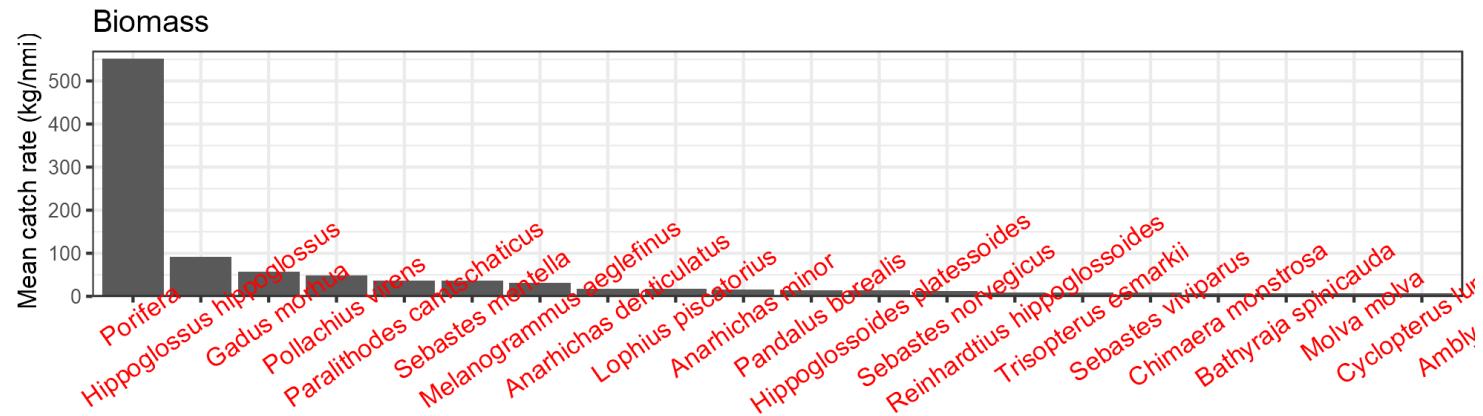
A total of 94 species were registered in Sea2Data during the survey.

Number of species identified versus the number of stations sampled

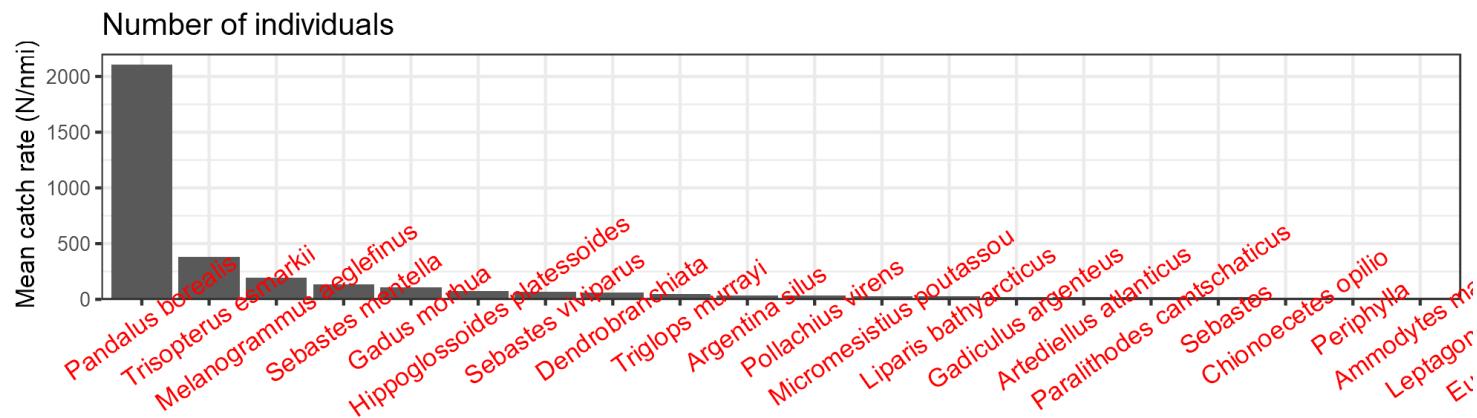
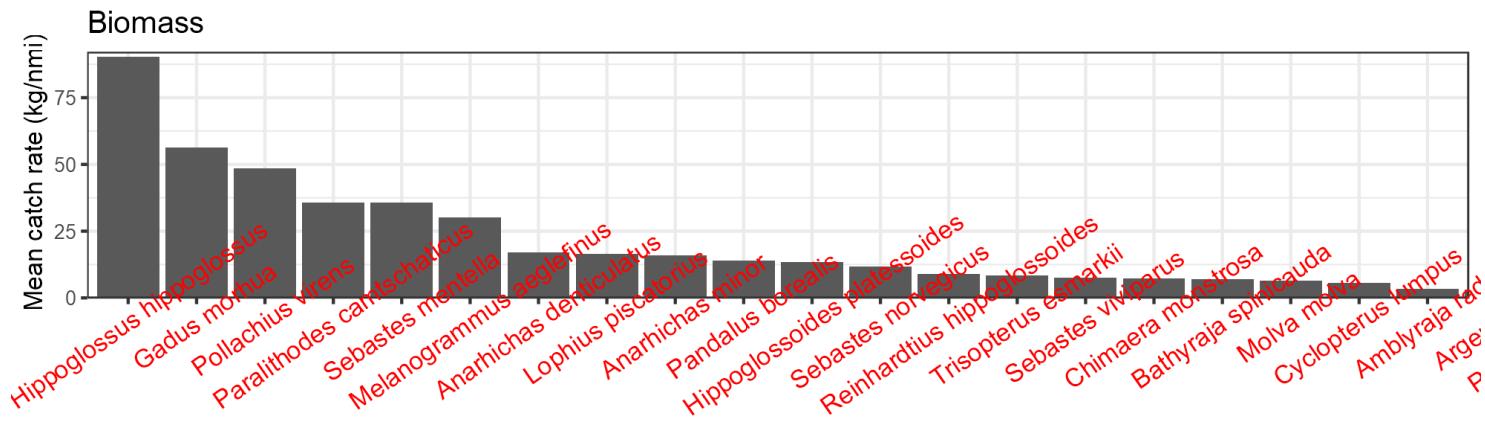


Average catch rate by species for the 20 species with highest catch rates

Bottom trawl



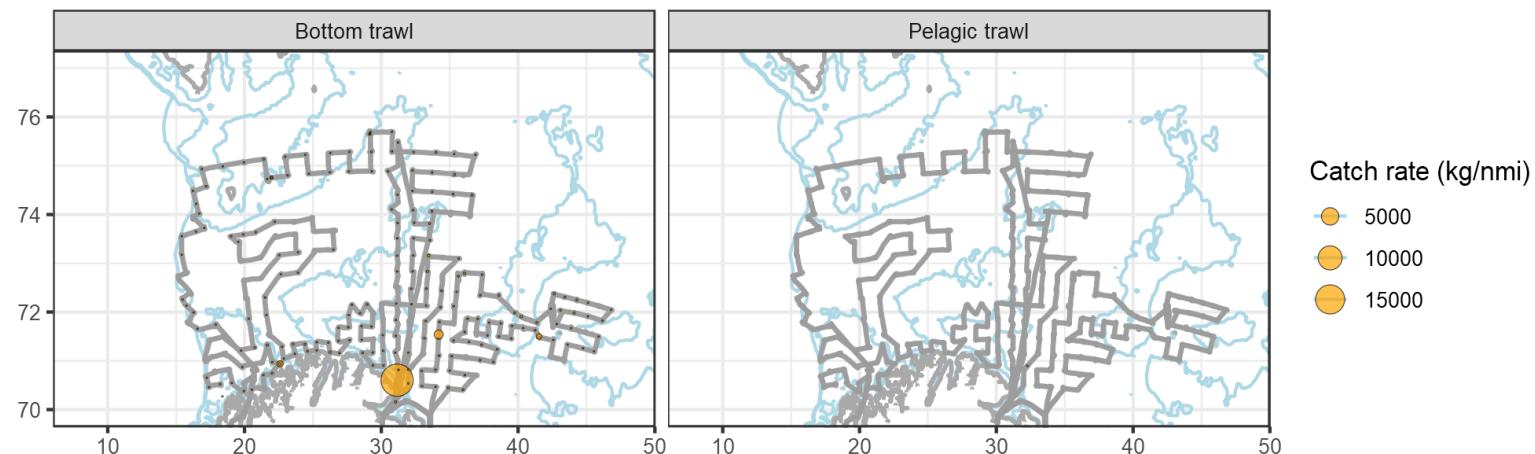
Bottom trawl excluding sponges



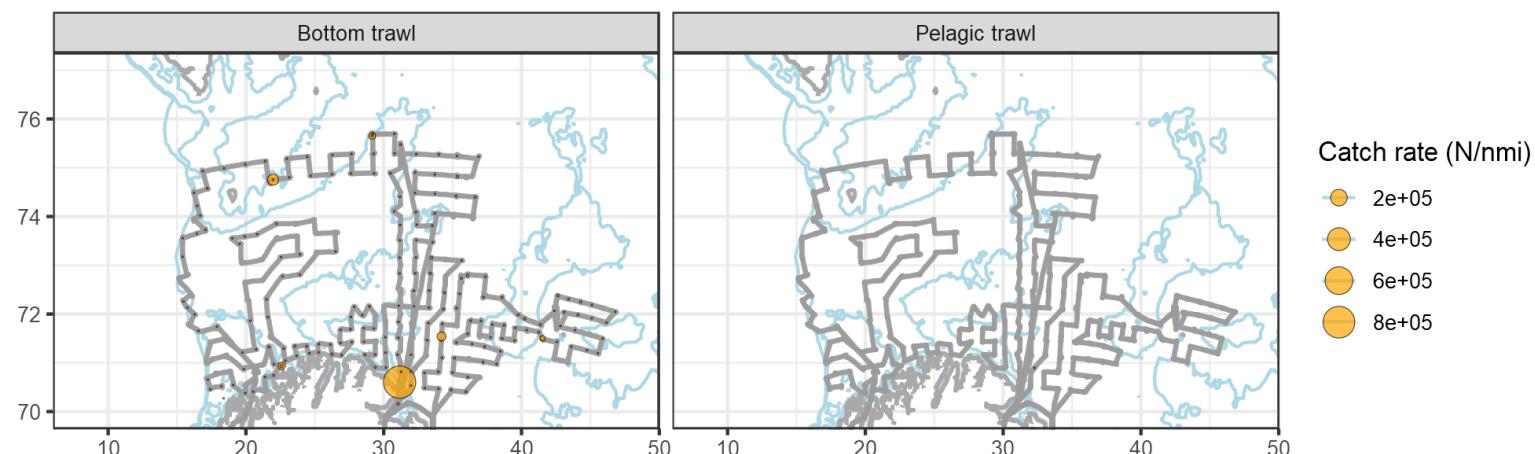
Spatial variation in catches of common species

Capelin

Biomass | 2019 | *Mallotus villosus*

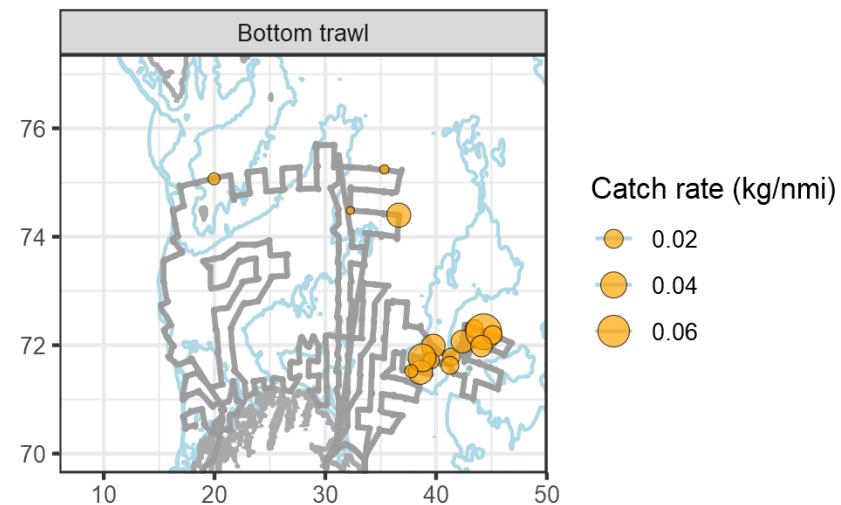


Number of individuals | 2019 | *Mallotus villosus*

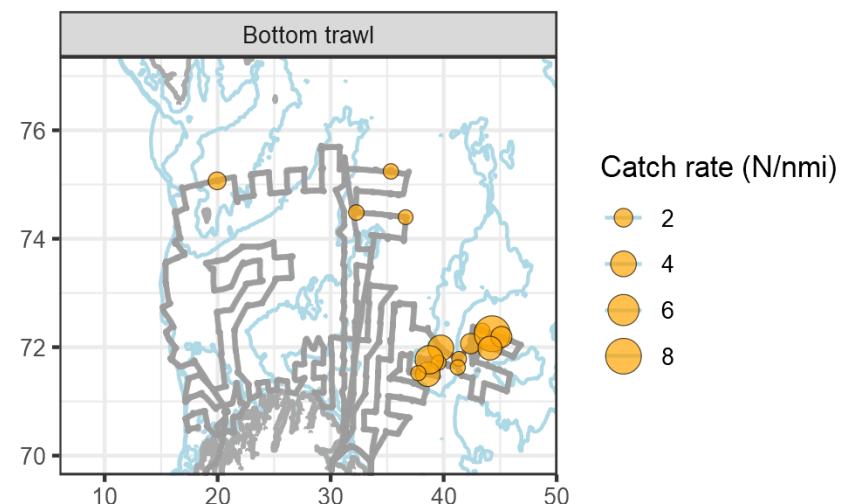


Polar cod

Biomass | 2019 | *Boreogadus saida*

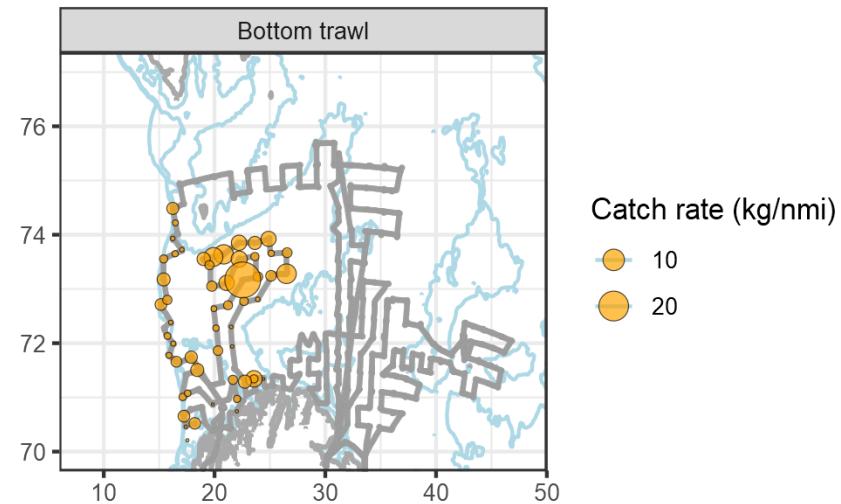


Number of individuals | 2019 | *Boreogadus saida*

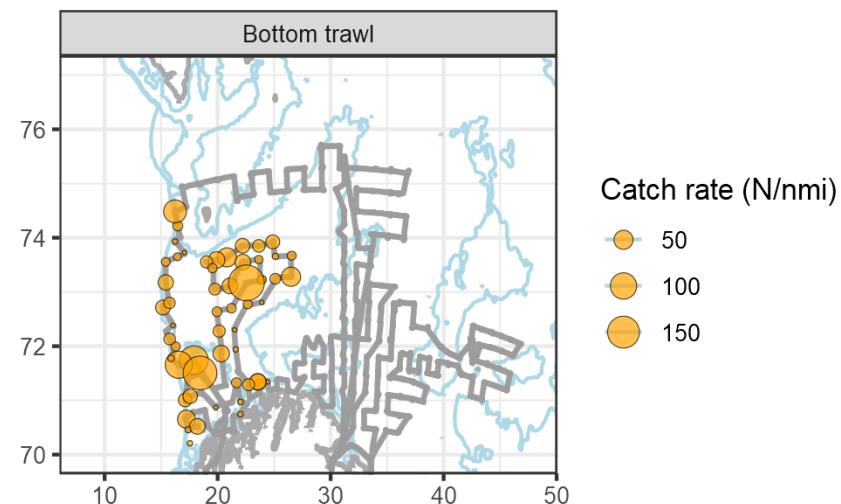


Blue whiting

Biomass | 2019 | *Micromesistius poutassou*

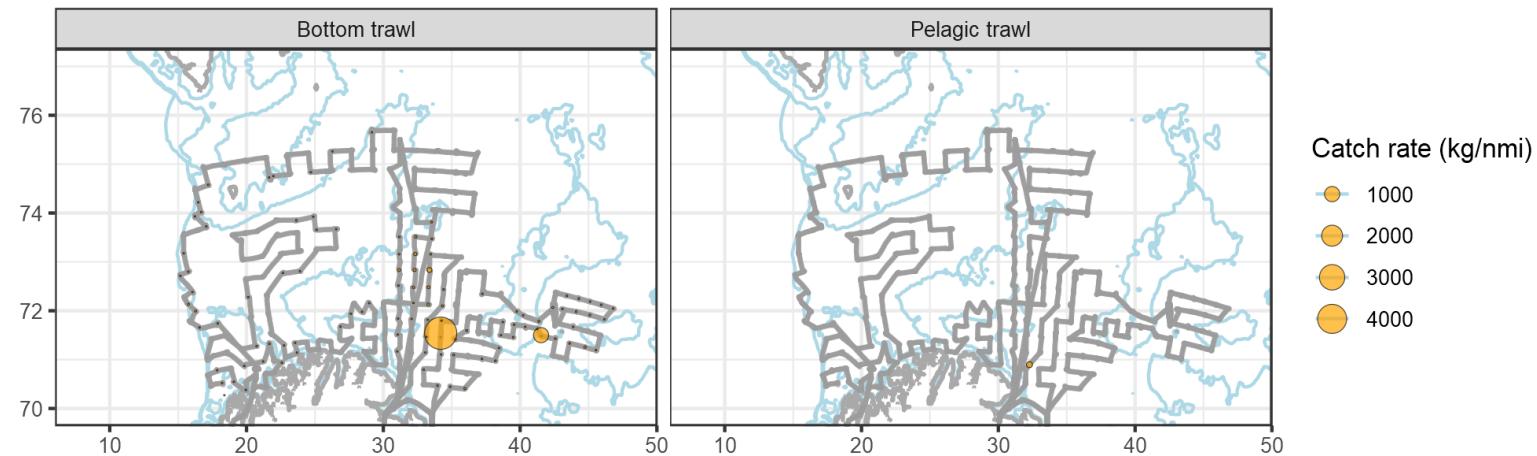


Number of individuals | 2019 | *Micromesistius poutassou*

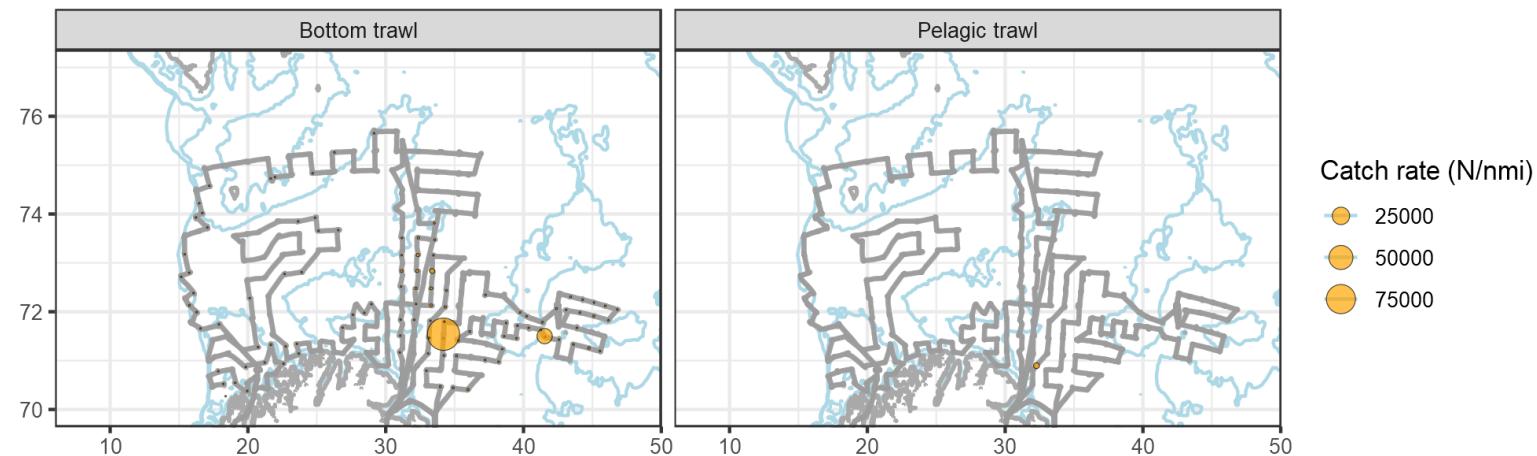


Herring

Biomass | 2019 | *Clupea harengus*

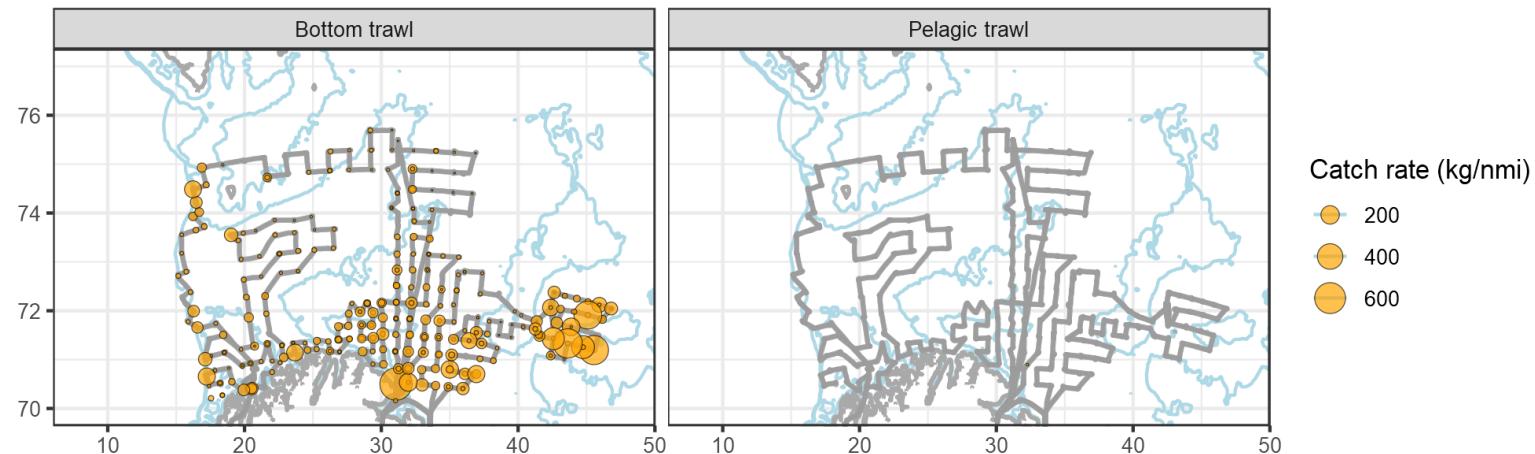


Number of individuals | 2019 | *Clupea harengus*

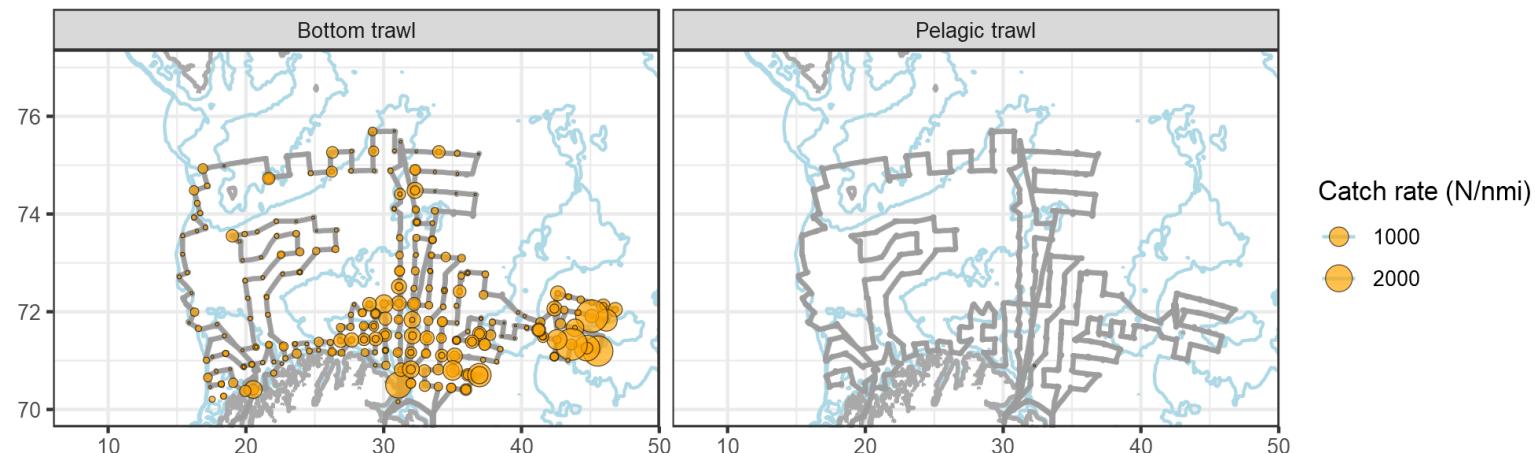


Haddock

Biomass | 2019 | *Melanogrammus aeglefinus*

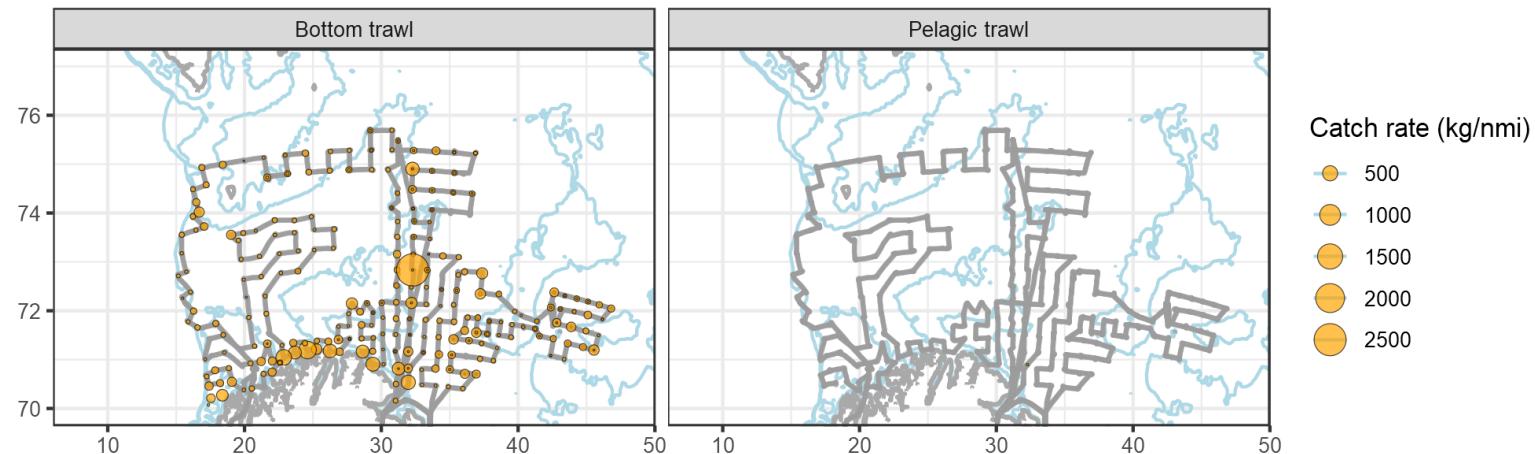


Number of individuals | 2019 | *Melanogrammus aeglefinus*

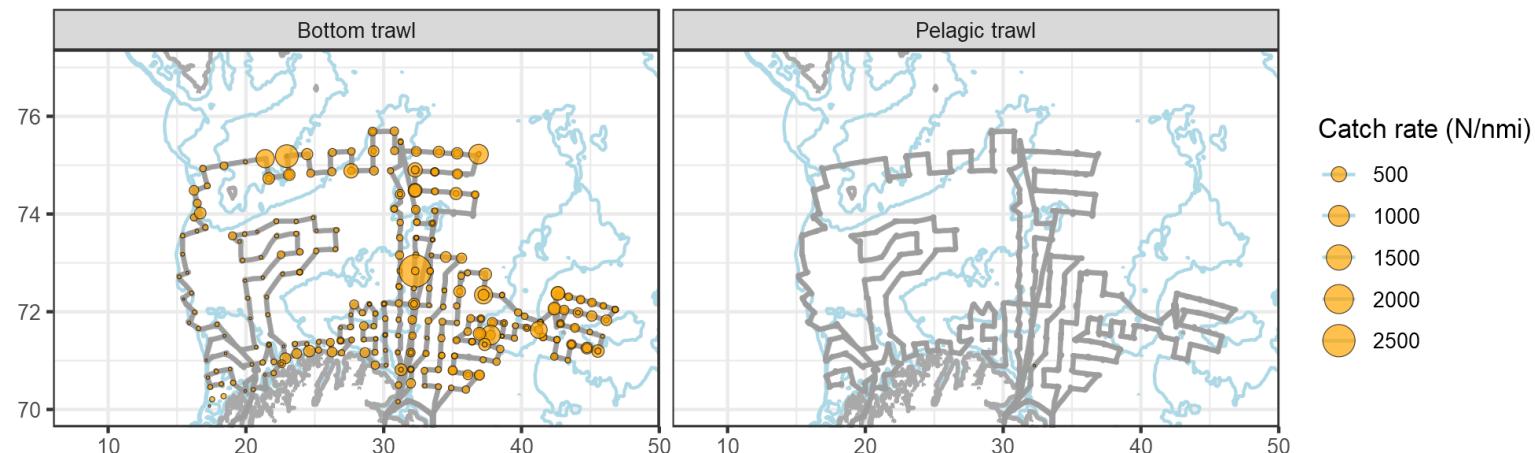


Cod

Biomass | 2019 | *Gadus morhua*

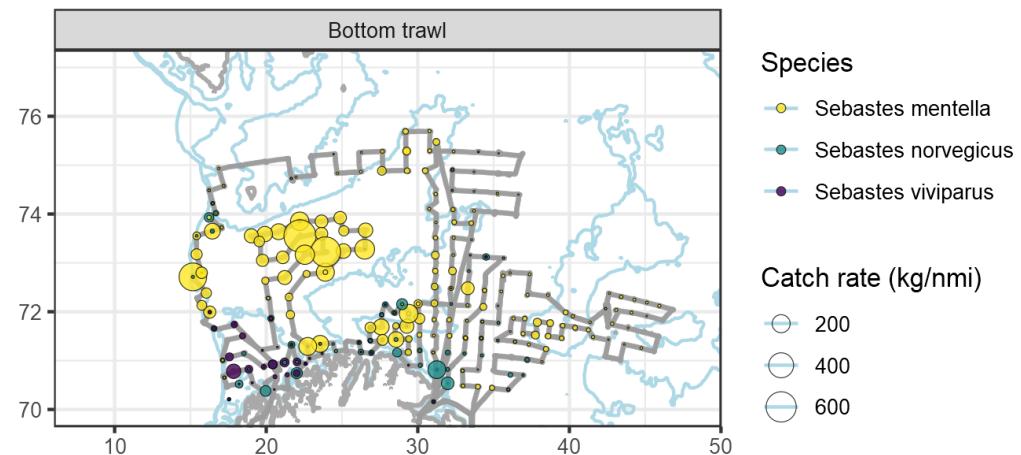


Number of individuals | 2019 | *Gadus morhua*

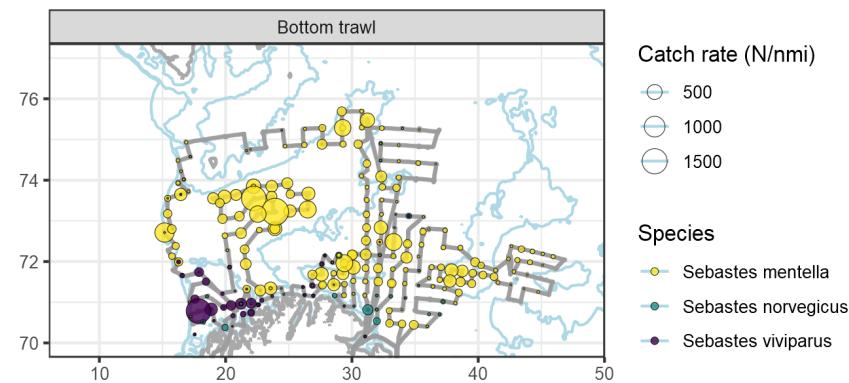


Redfish

Biomass | 2019 | Redfish species



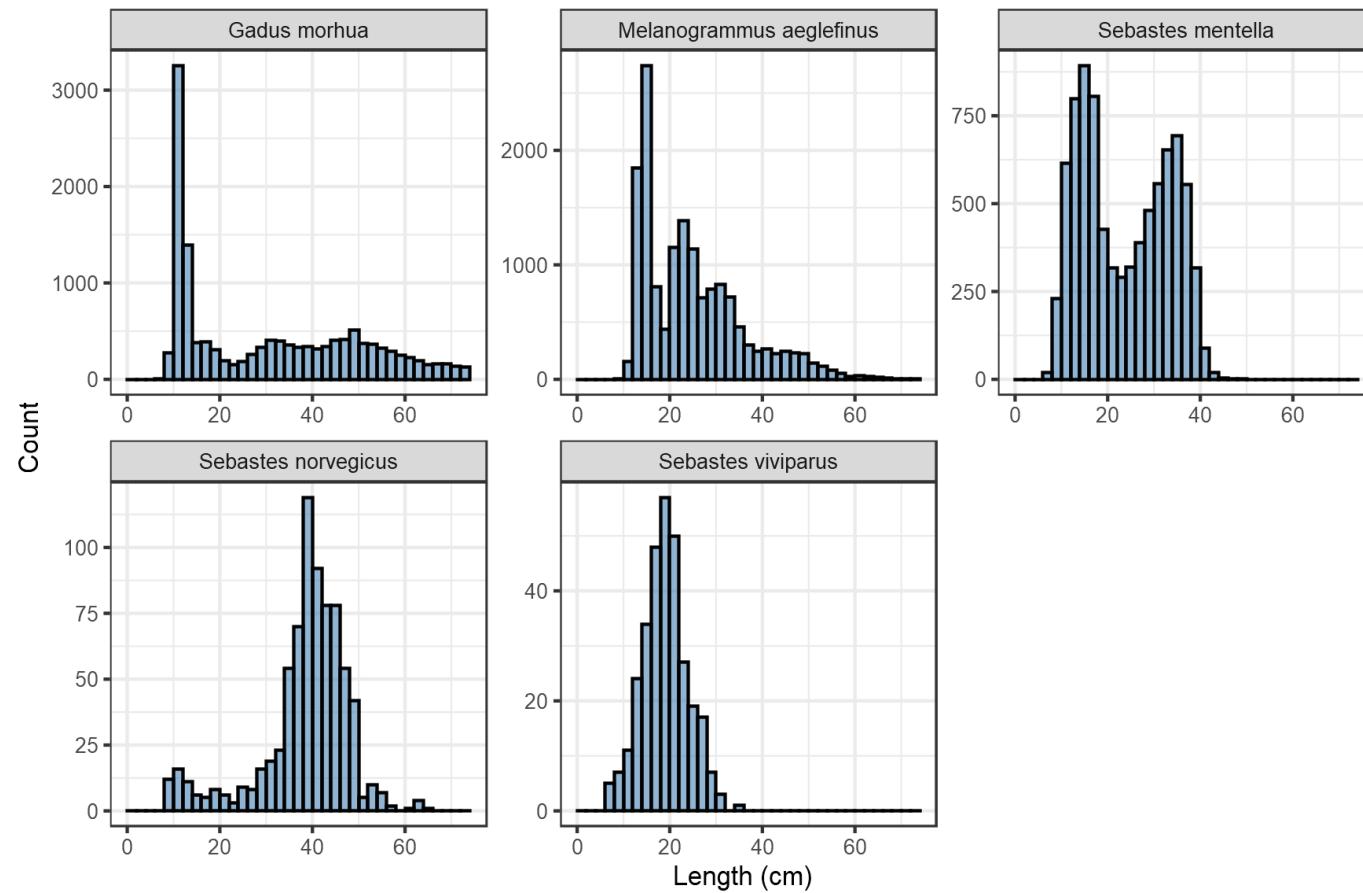
Number of individuals | 2019 | Redfish species

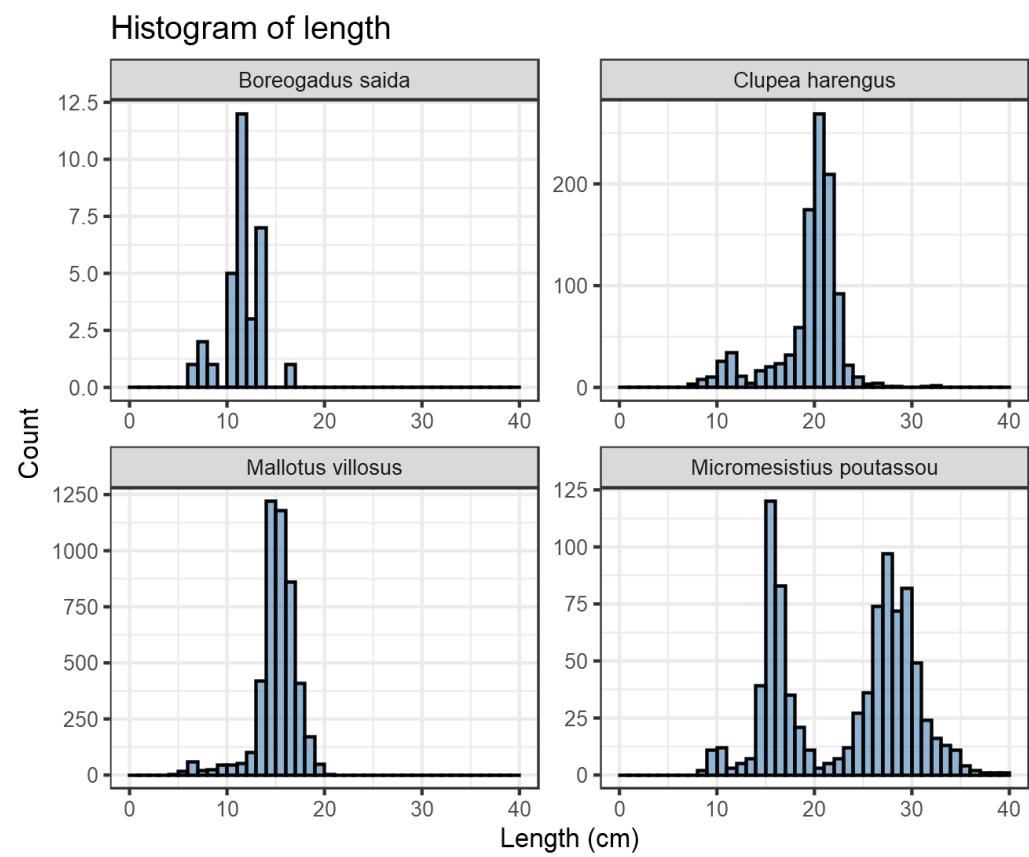


Length distributions

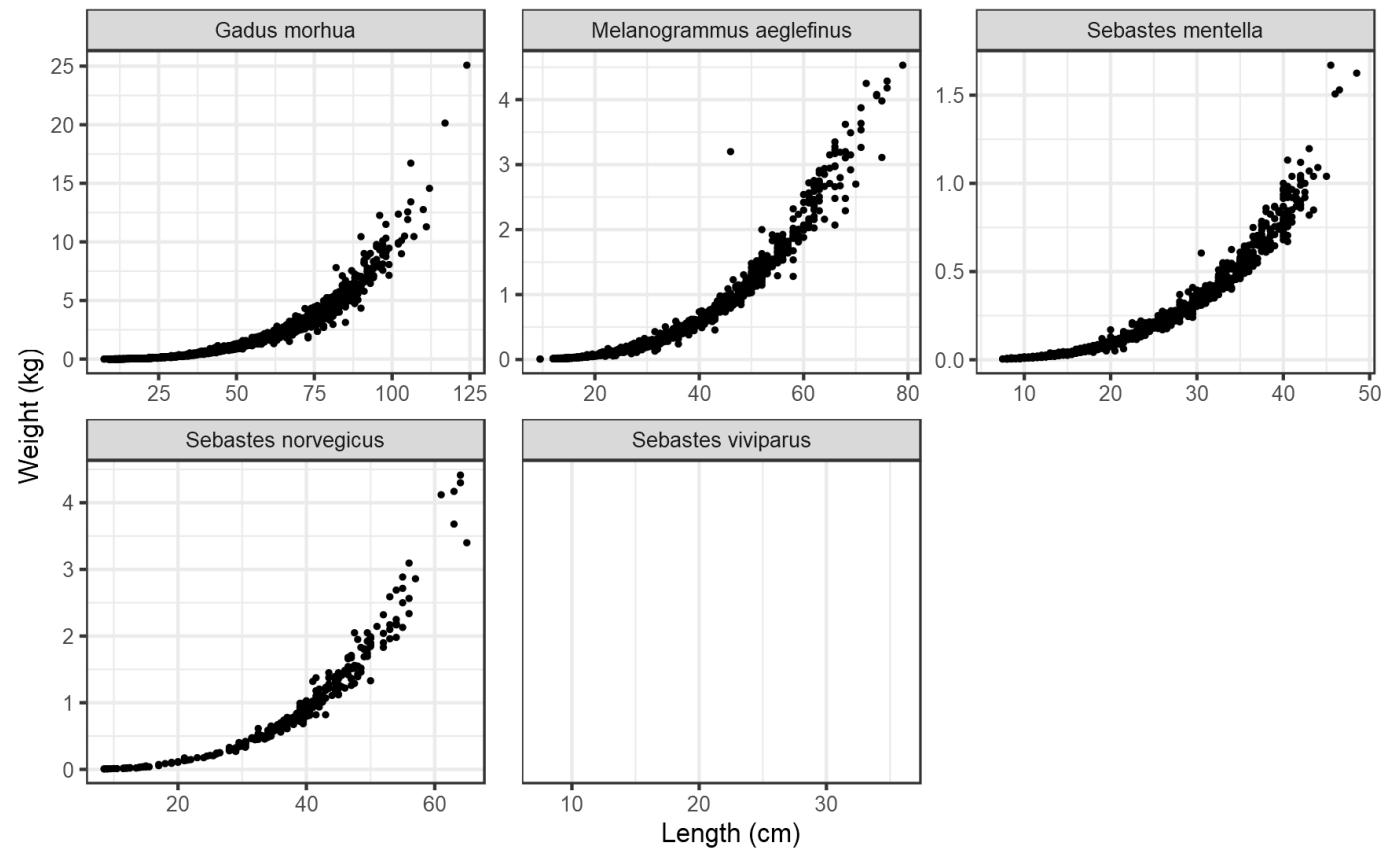
The following figures shows the length distribution of individuals sampled during the survey.

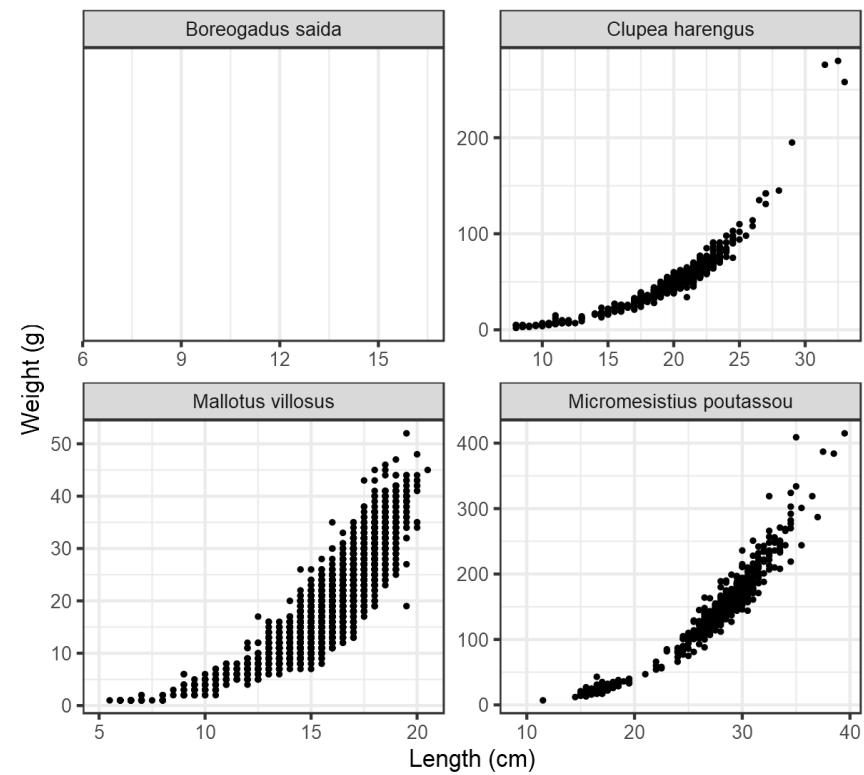
Histogram of length



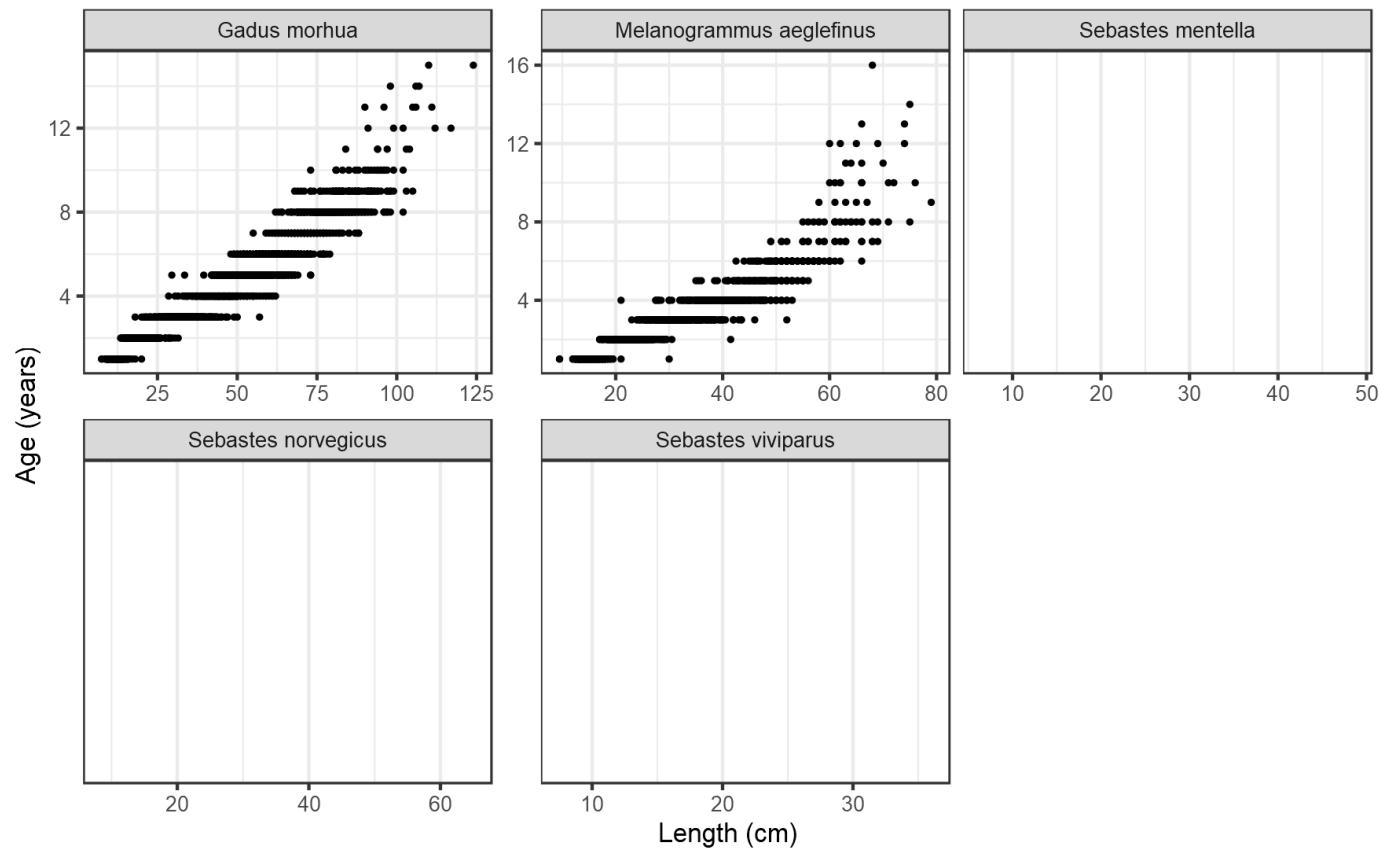


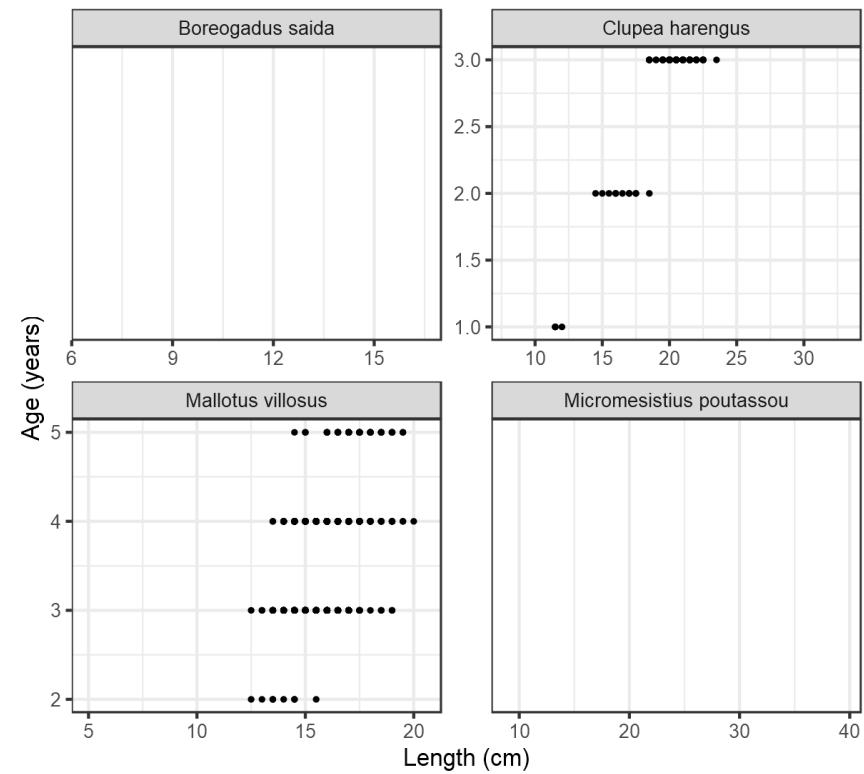
Length-weight relationships



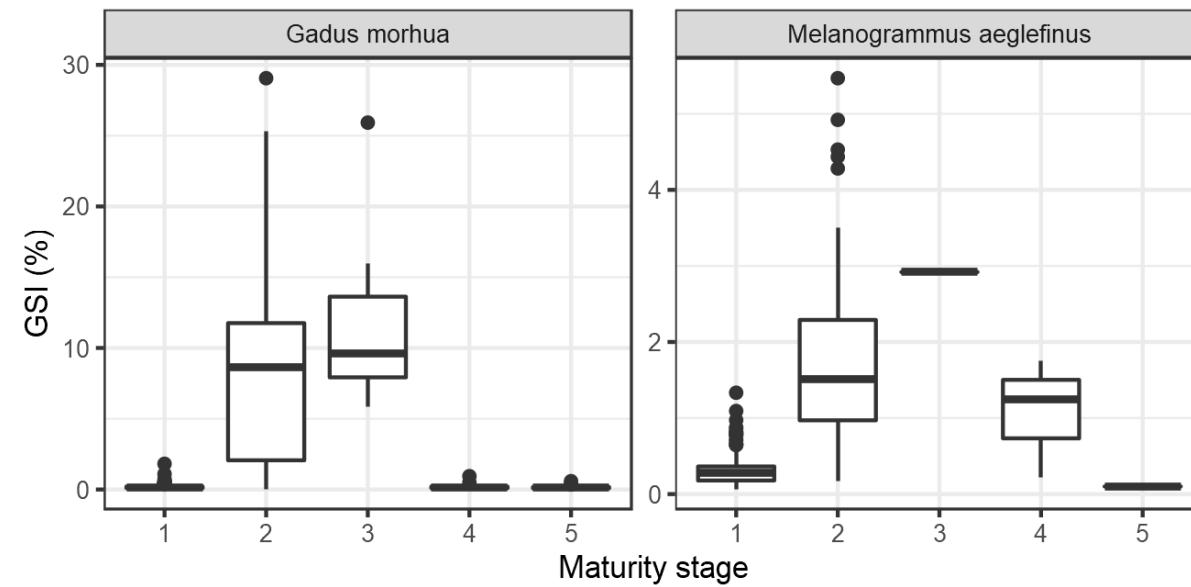


Length-age relationships



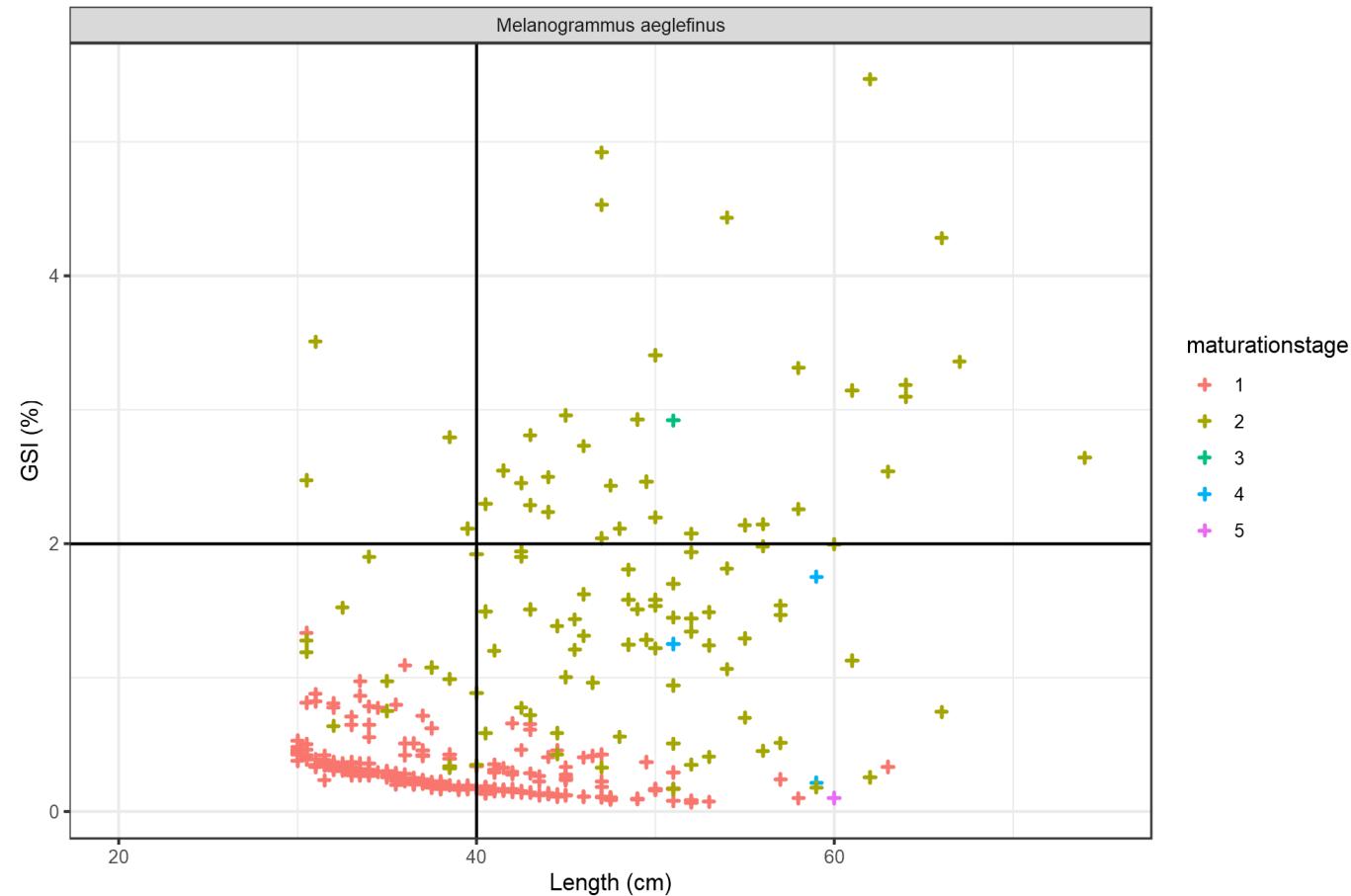


GSI versus maturity stage of female cod and haddock



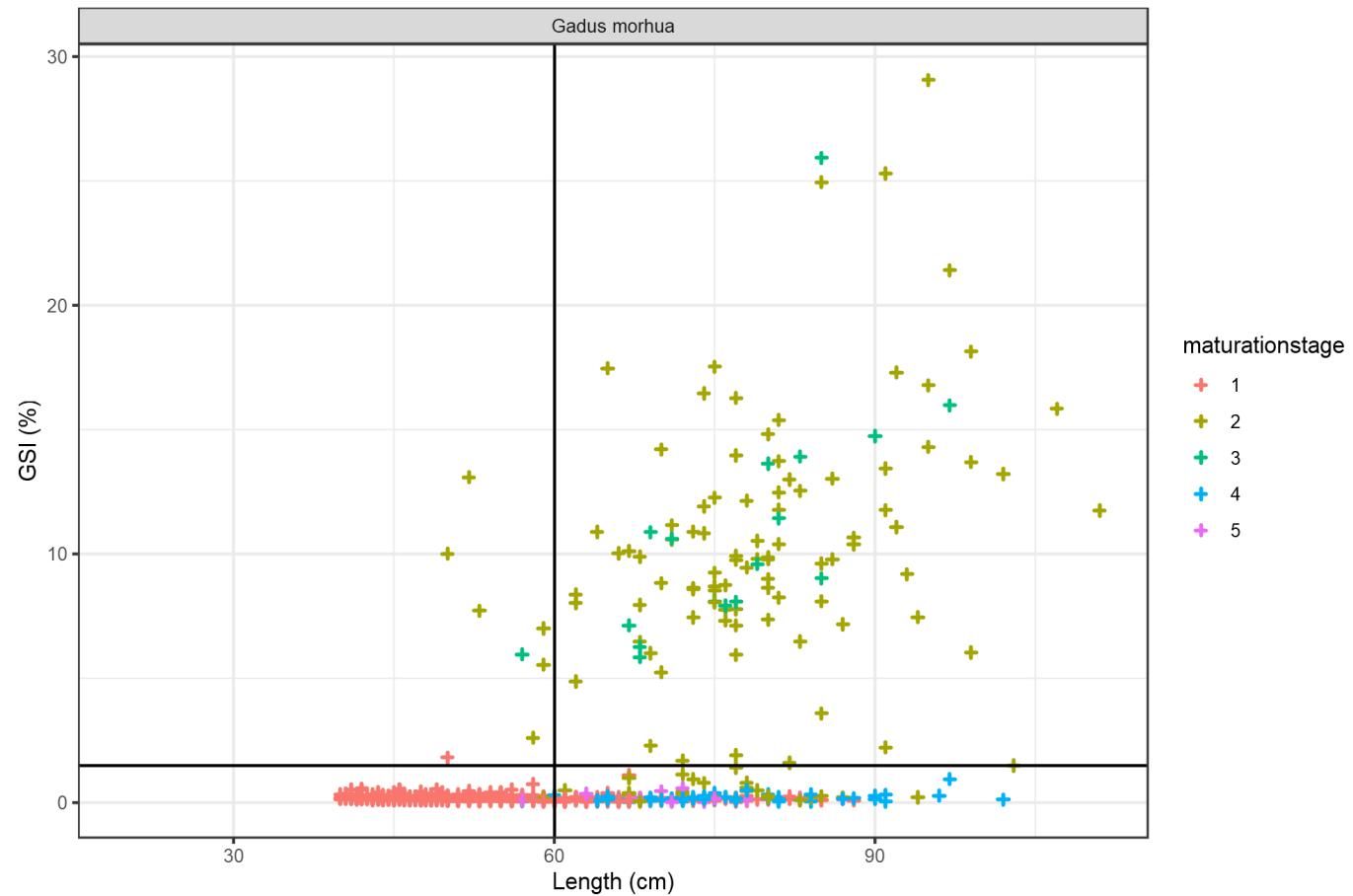
GSI versus length and maturity stage for female haddock

The vertical line represents the size (40 cm) over which gonad samples should be taken if GSI < 2 % (horizontal line).



GSI versus length and maturity stage for female cod

The vertical line represents the size (60 cm) over which most females with GSI > 1.5 % (horizontal line) are maturing (Skjæraasen et al. 2012).



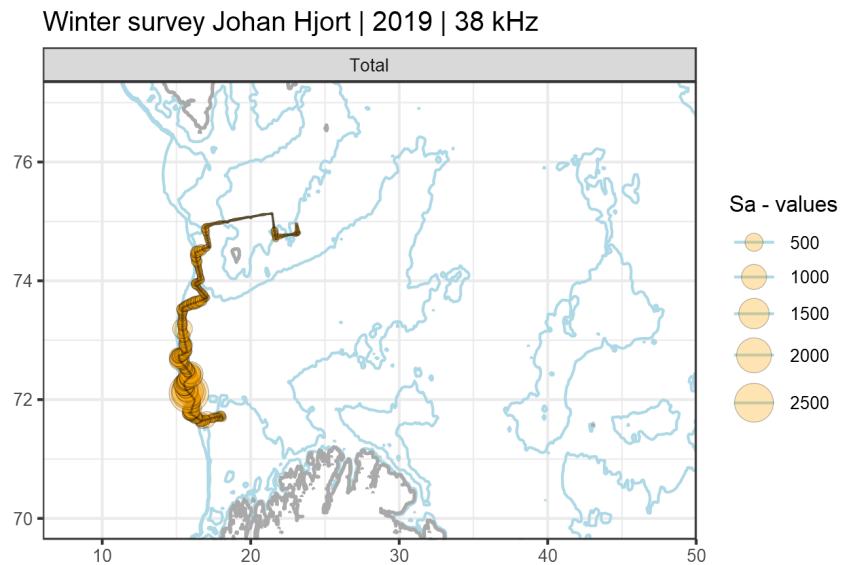
Acoustic registrations

A total of 833.4 km (450 nmi) of acoustic transects were scrutinized.

Example echograms

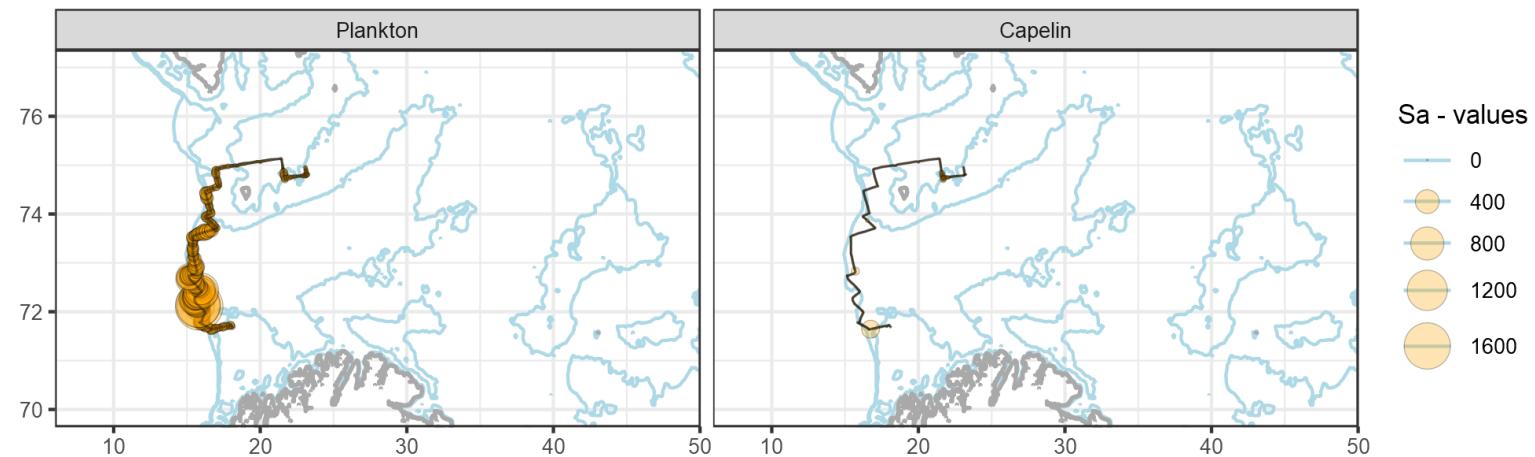
Depth-integrated acoustic backscatter

Total backscatter



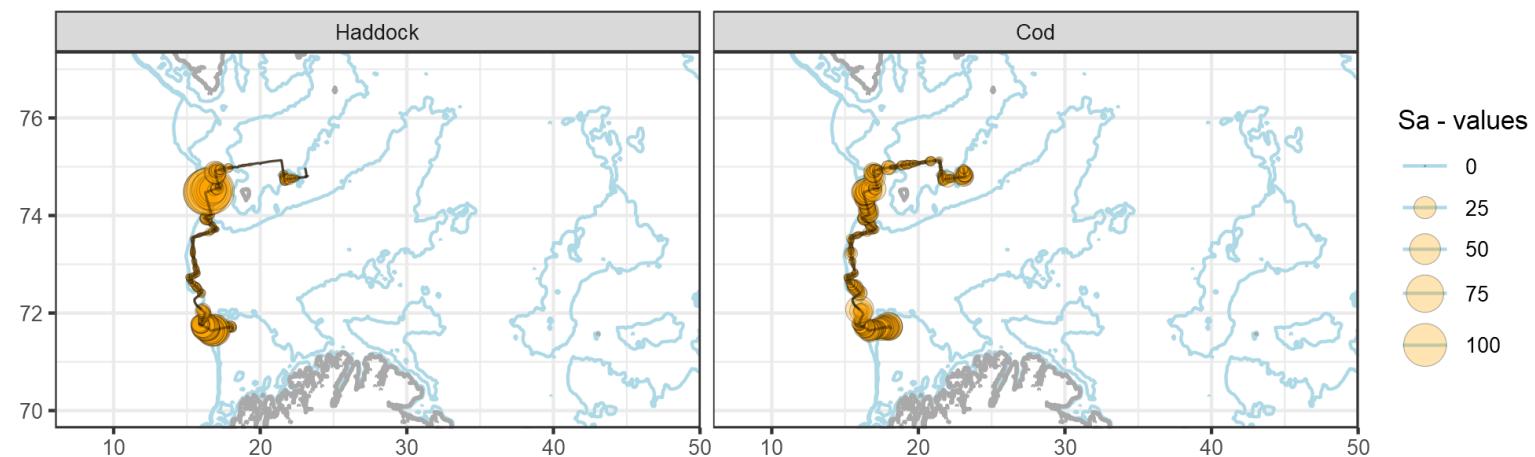
Pelagic species

Winter survey Johan Hjort | 2019 | 38 kHz



Demersal species

Winter survey Johan Hjort | 2019 | 38 kHz



Acoustic backscatter in depth channels

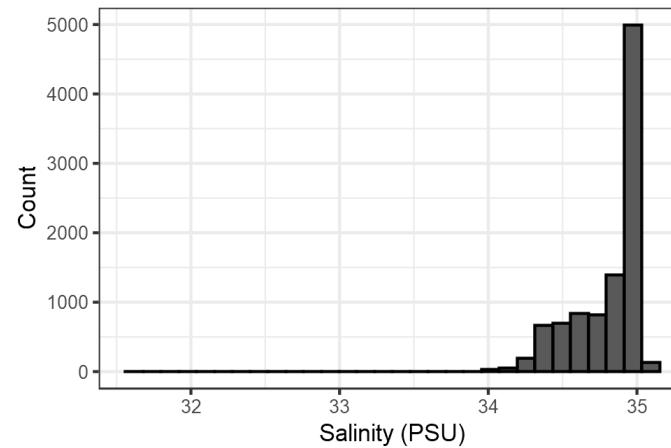
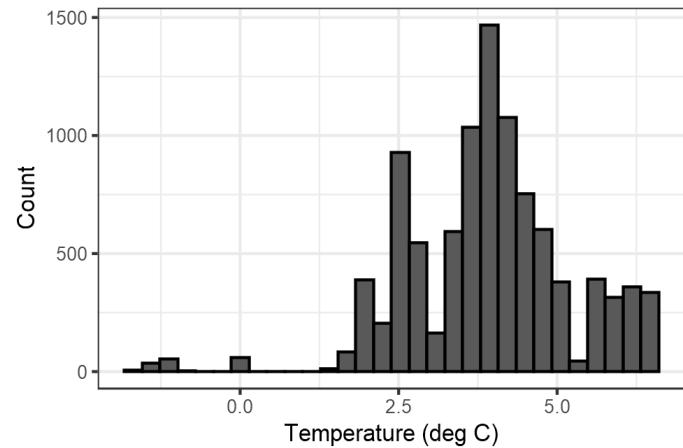
Distance from the surface to weighted depth of acoustic registrations

Distance from the seafloor (or max scrutinized depth) to weighted depth of acoustic registrations

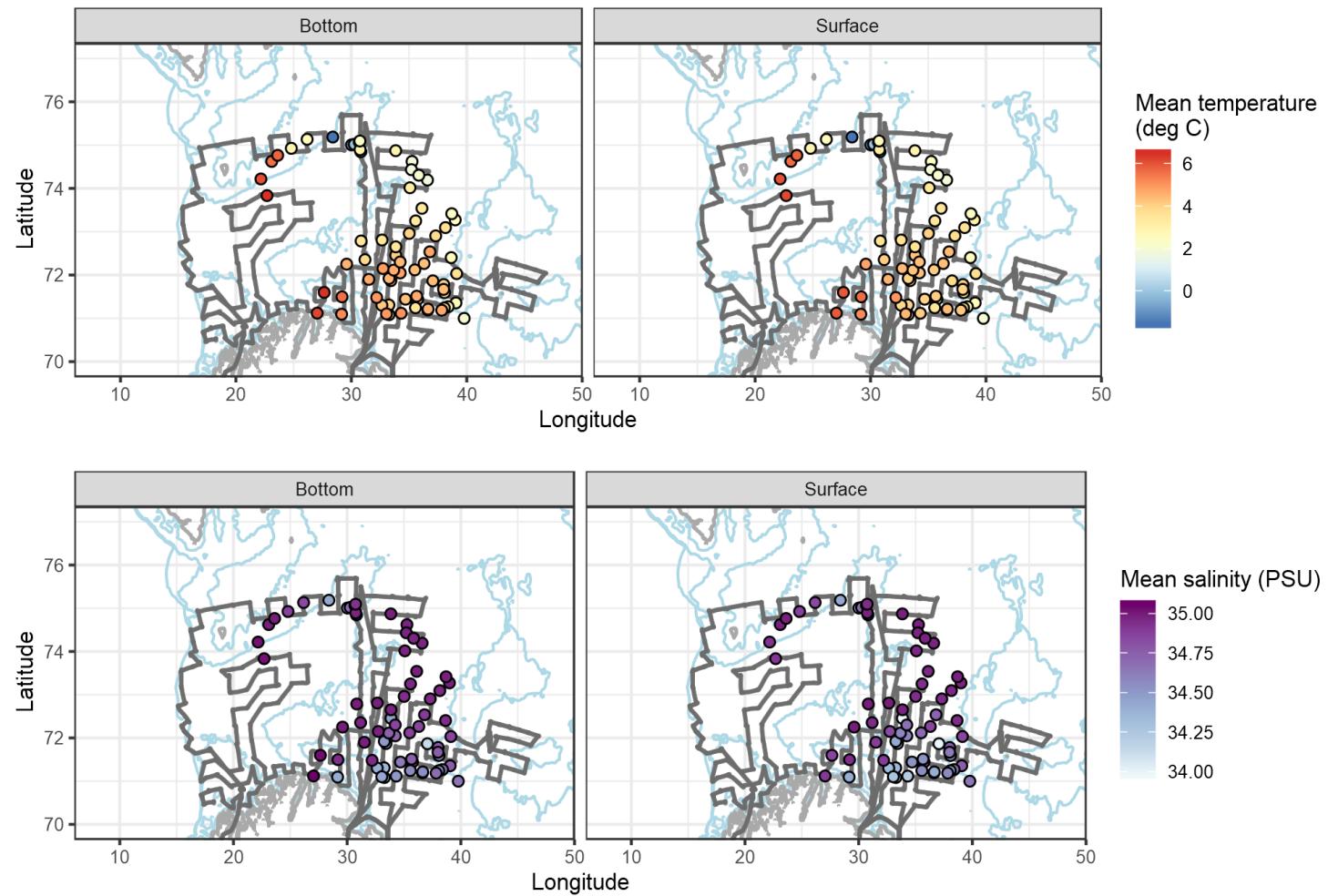
CTD

Summary of measurements

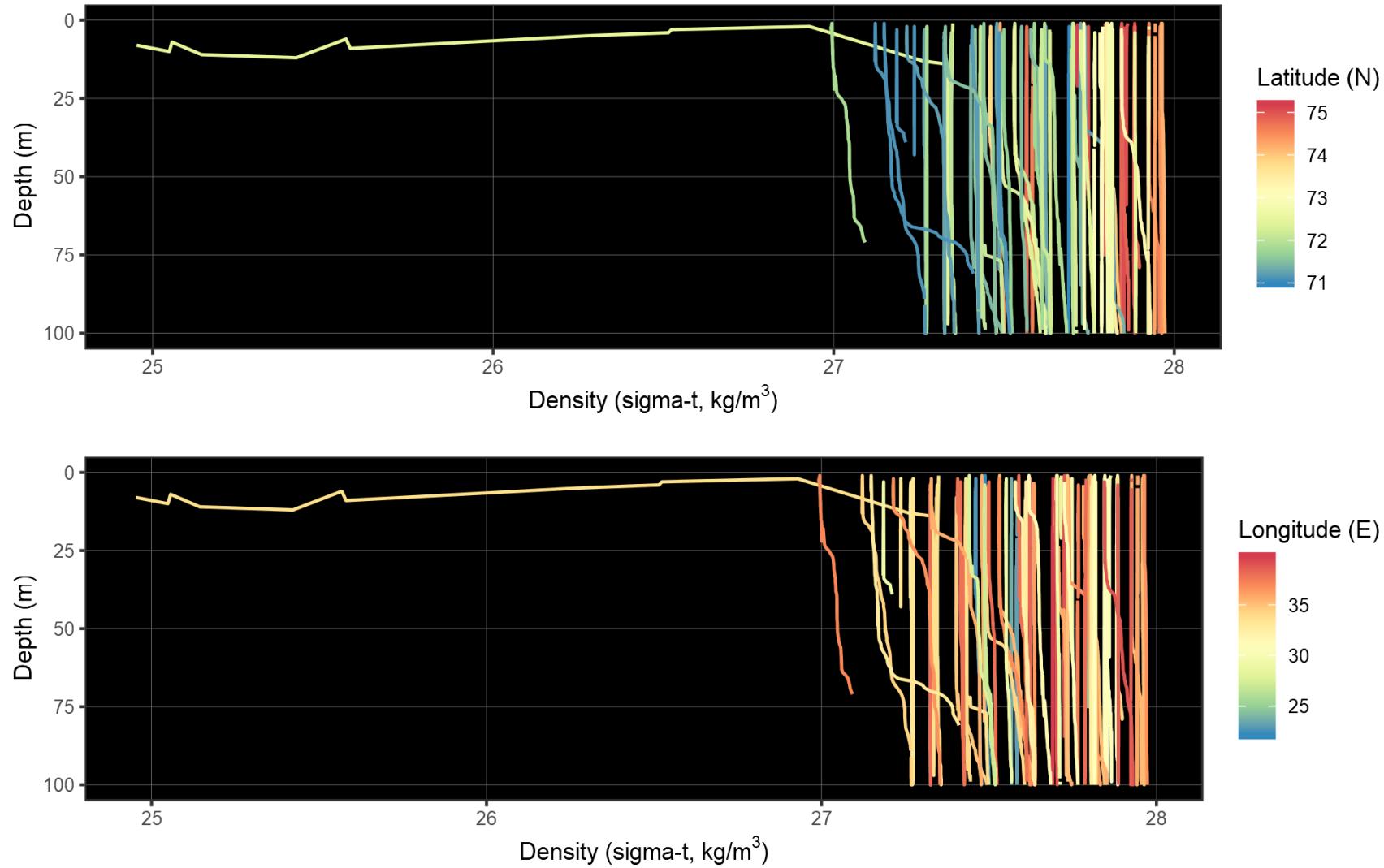
71 CTD casts were done during the survey, covering a total depth of 9.8 km.



Variation in temperature and salinity with bathymetry and geographical location



Density in the water column



Light in the water column

