



Winter survey 2020 R/V Johan Hjort

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17/09/2020

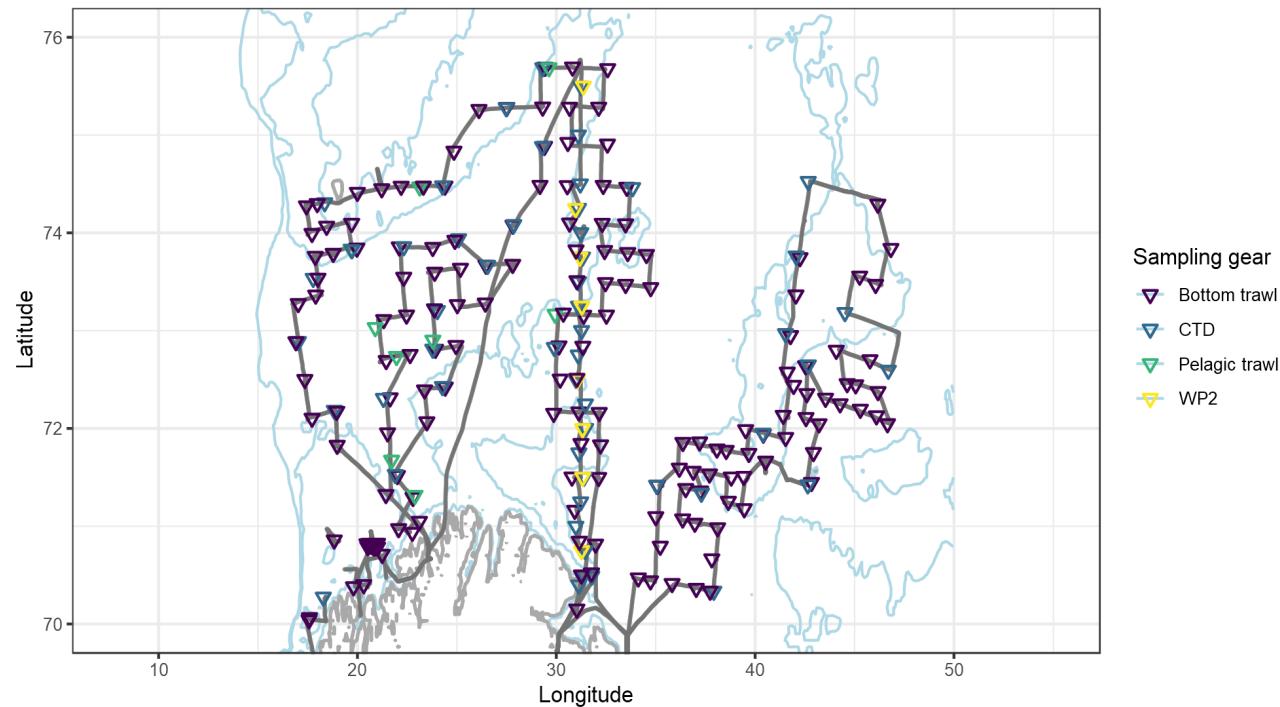
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Cruise tracks and stations

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

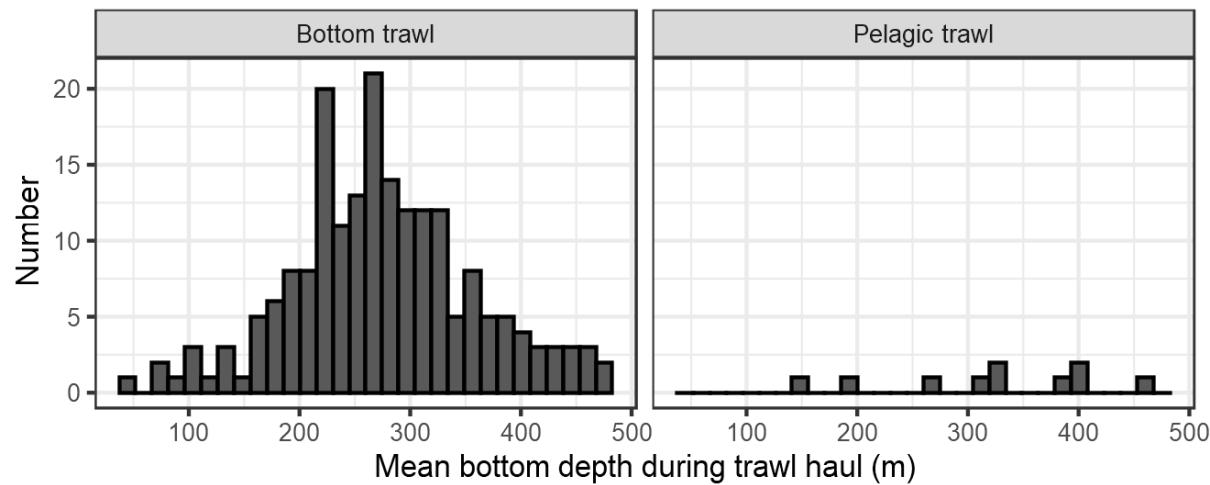


Sampling depth for trawl hauls

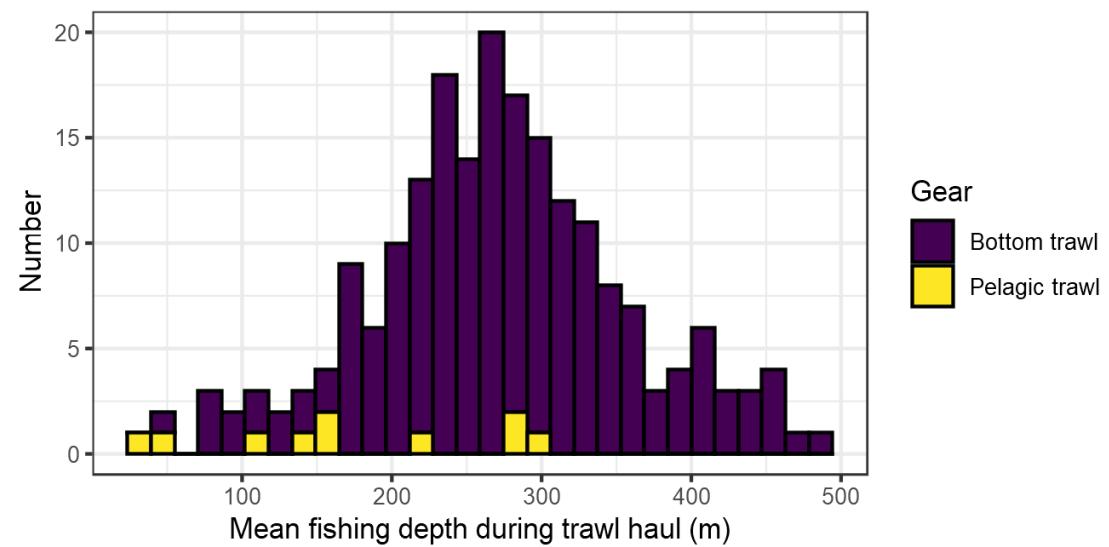
181 trawl hauls were taken during the survey, of which 171 were bottom trawl, and 10 pelagic trawl. The trawl hauls covered a total distance of 312.9 km (169 nmi).

The sampling stations were located in areas with bottom depths from 48.7 m to 479.3 m, and the fishing depth varied from 25.7 m to 480.7 m.

Mean bottom depth during trawl hauls



Mean fishing depth during trawl hauls

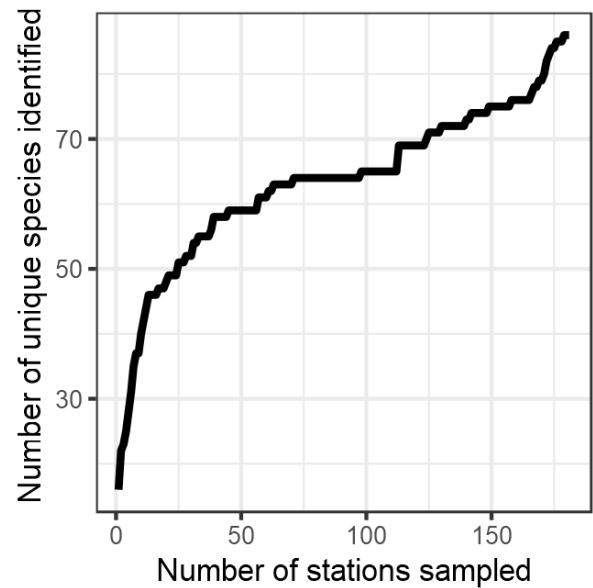


Catch rates - biomass and number per nautical mile trawled for species registered in Sea2Data

Species diversity

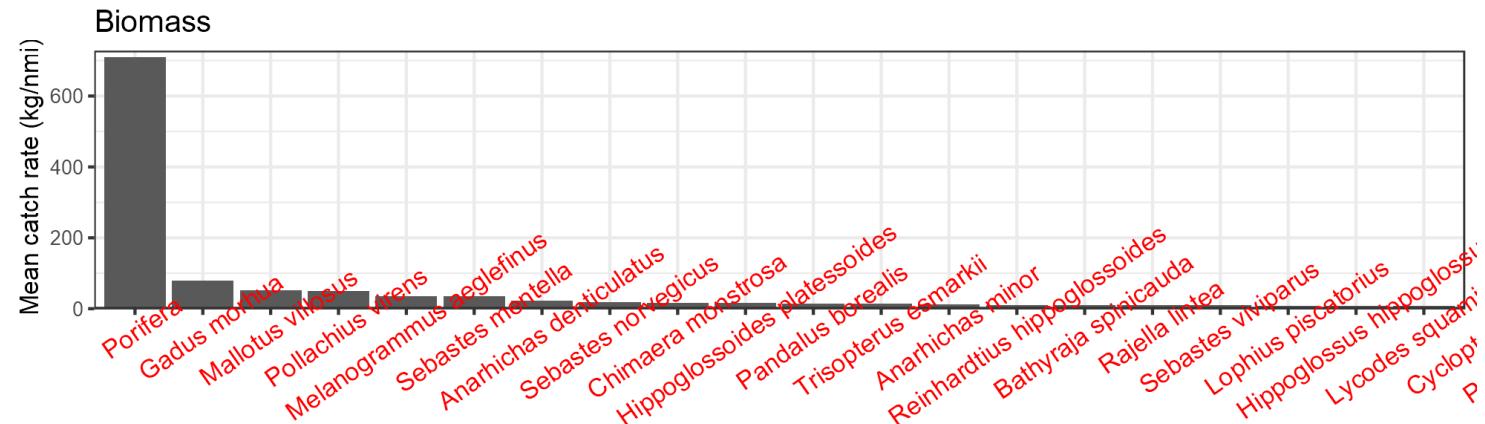
A total of 86 species were registered in Sea2Data during the survey.

Number of species identified versus the number of stations sampled

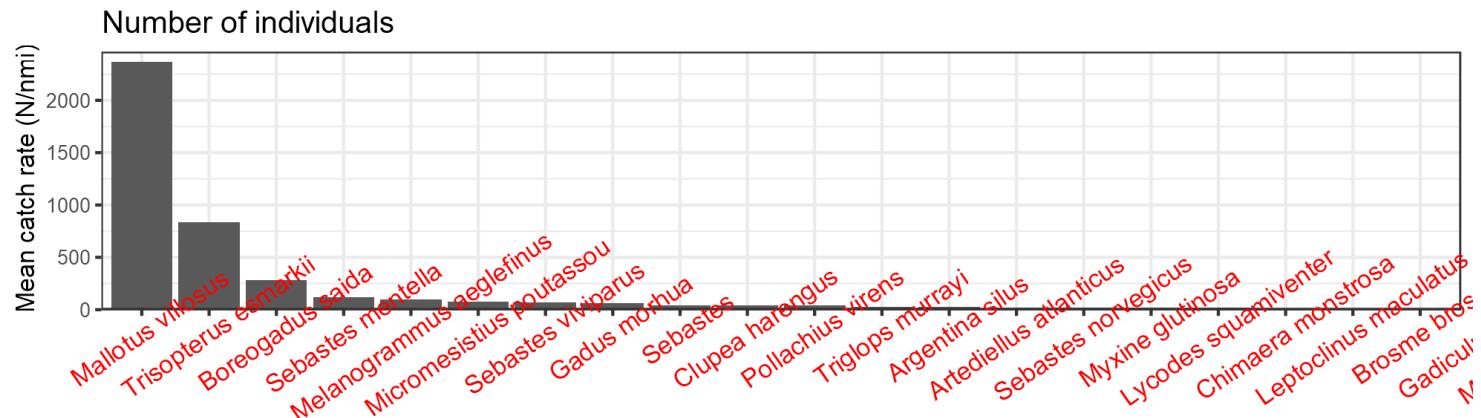
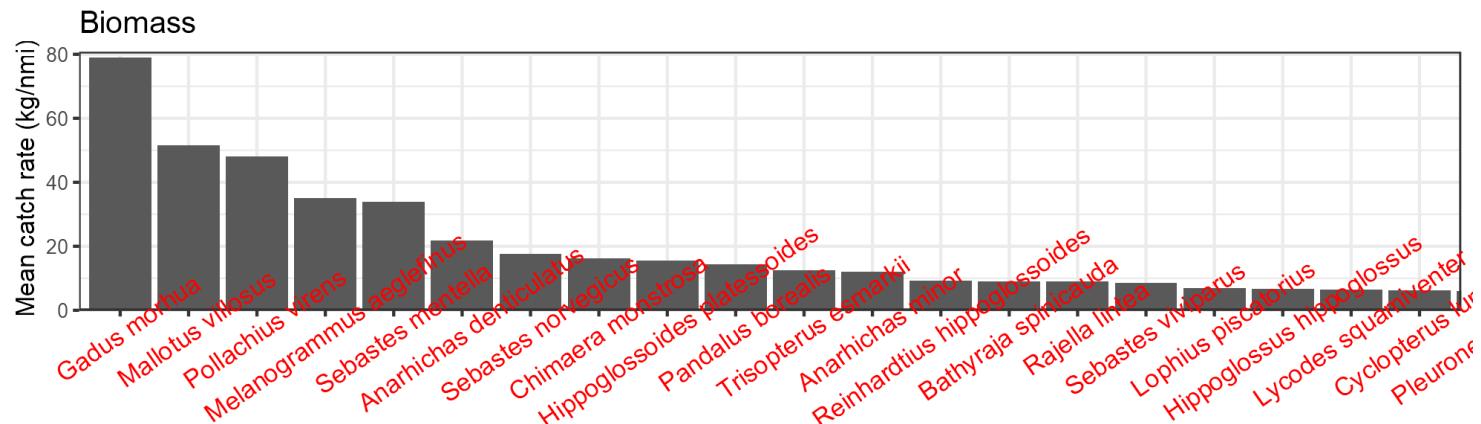


Average catch rate by species for the 20 species with highest catch rates

Bottom trawl

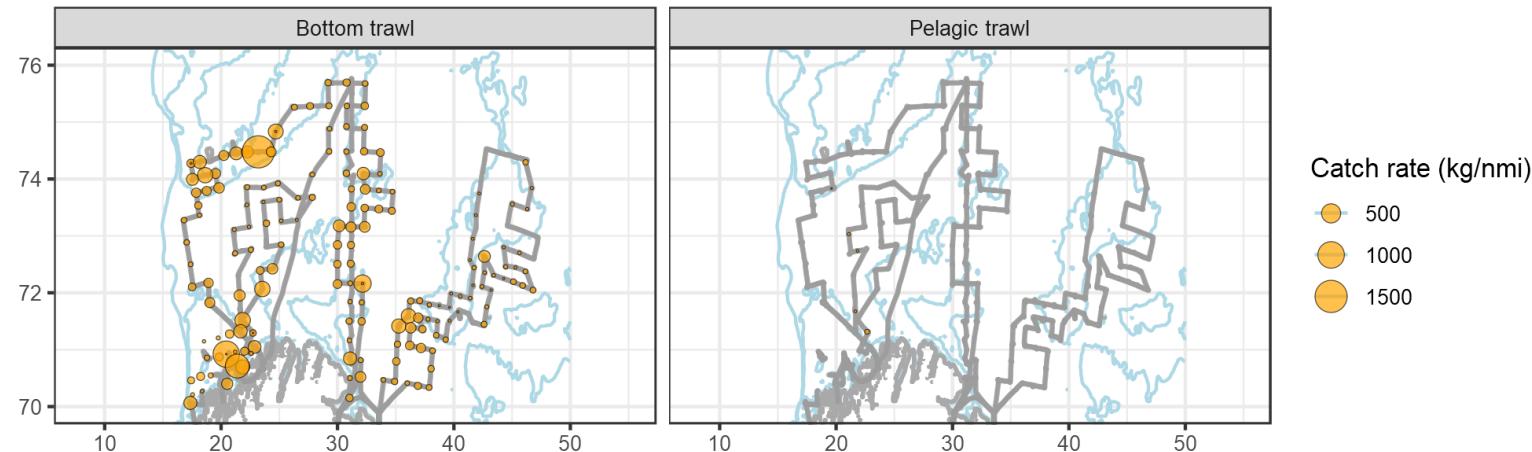


Bottom trawl excluding sponges

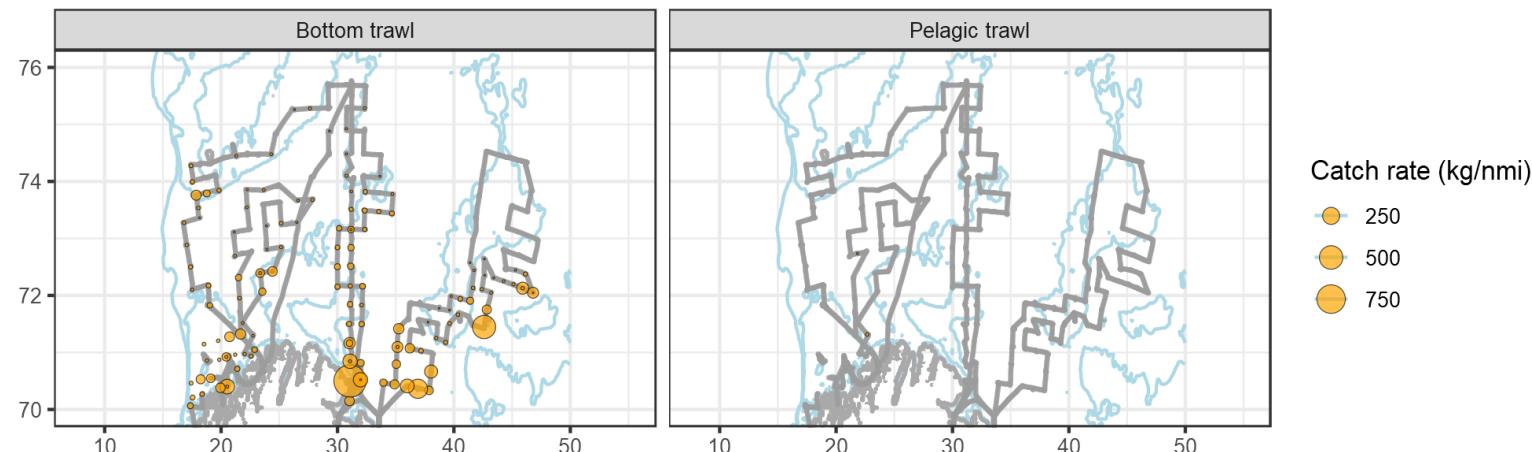


Spatial variation in catches of common species

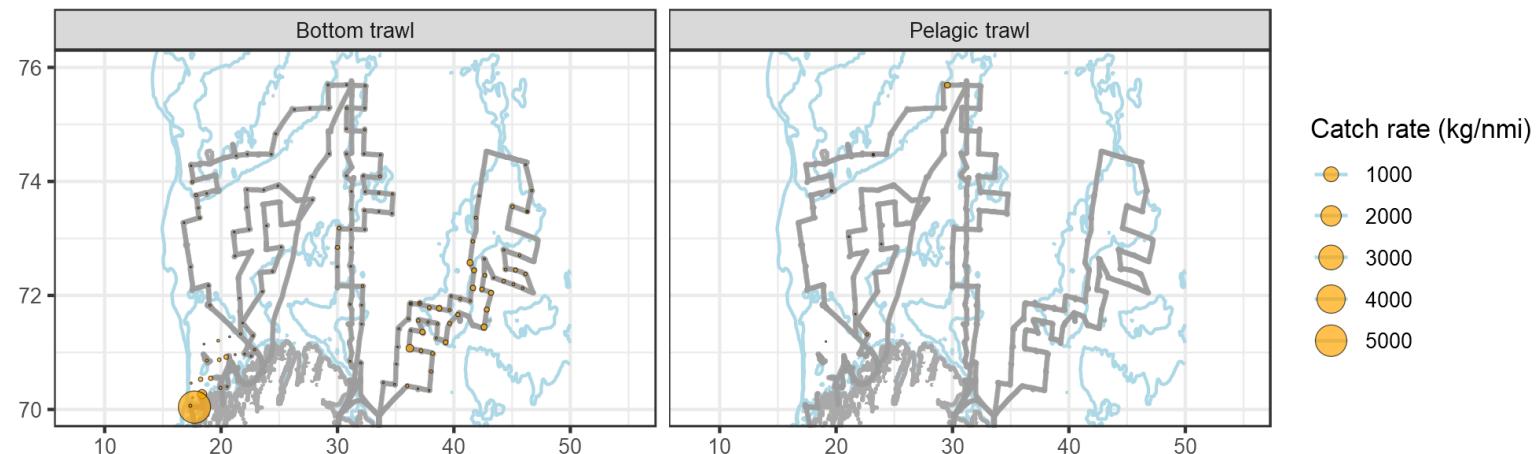
Catch rate (biomass) | 2020 | *Gadus morhua*



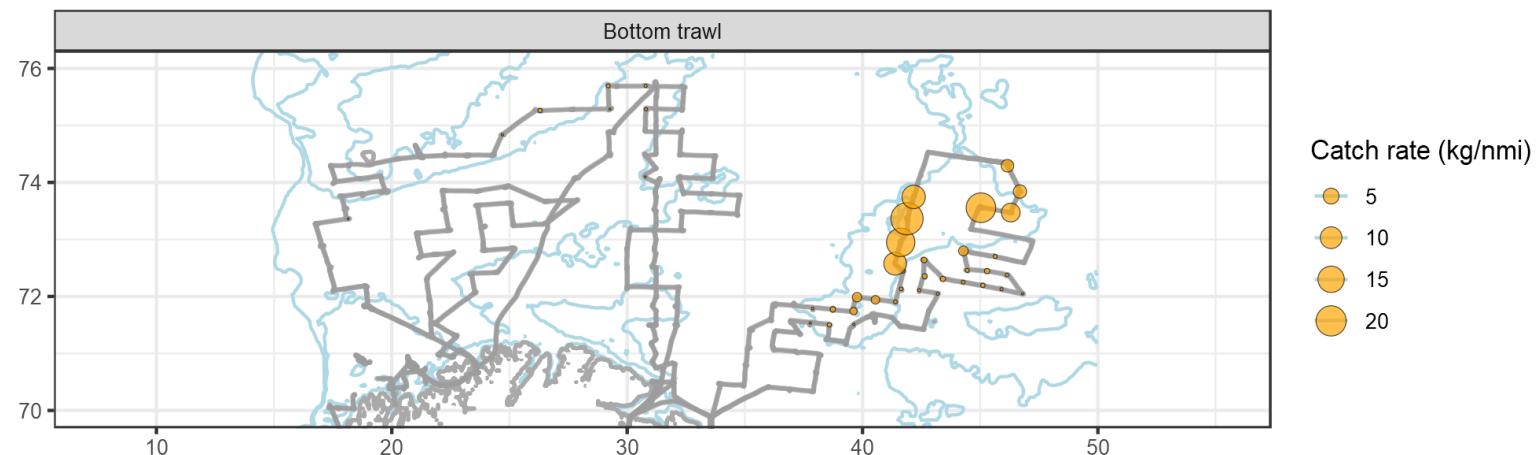
Catch rate (biomass) | 2020 | *Melanogrammus aeglefinus*



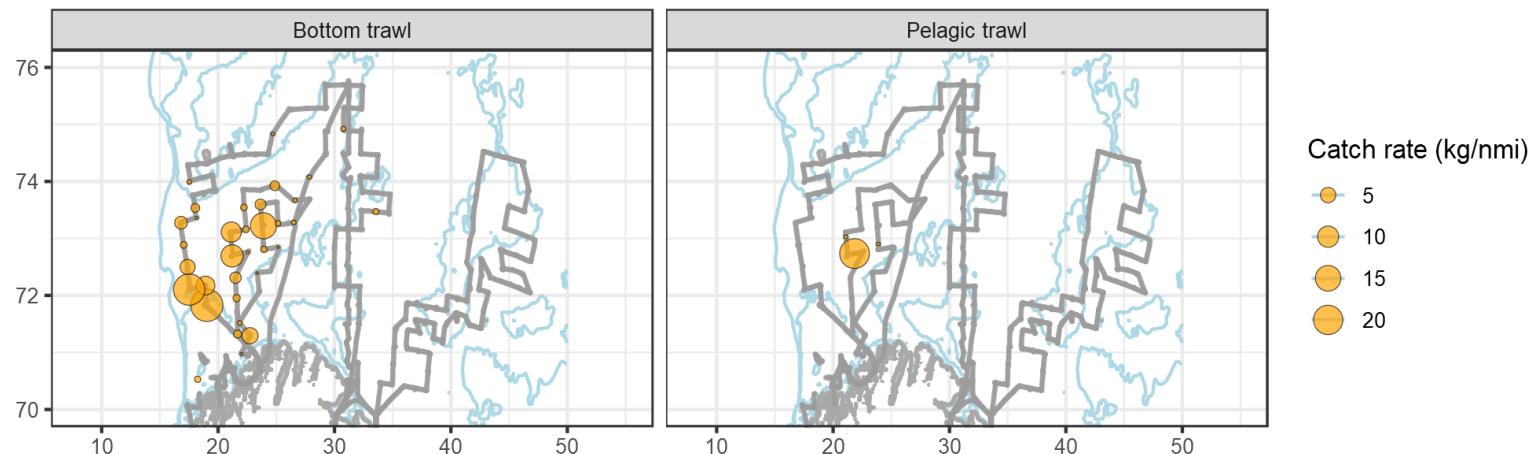
Catch rate (biomass) | 2020 | *Mallotus villosus*



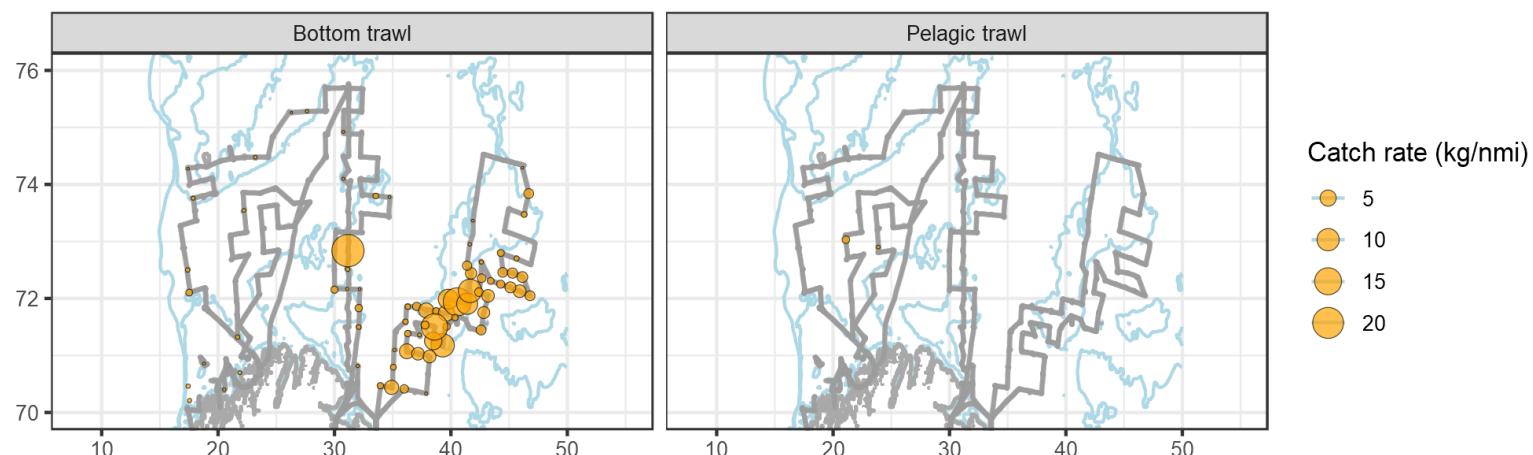
Catch rate (biomass) | 2020 | *Boreogadus saida*



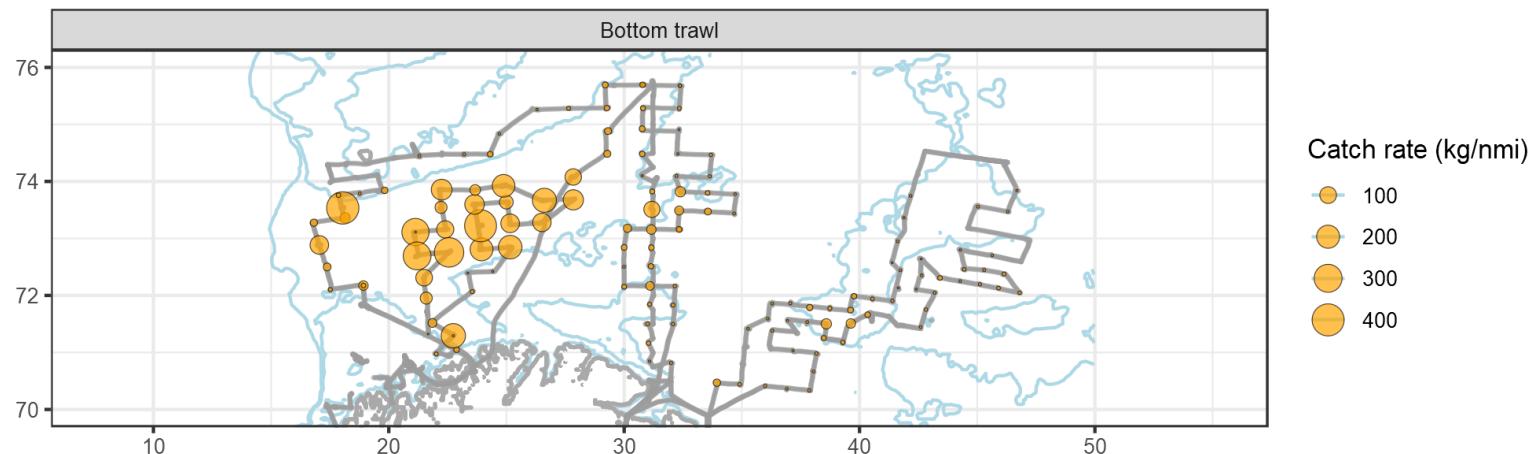
Catch rate (biomass) | 2020 | *Micromesistius poutassou*



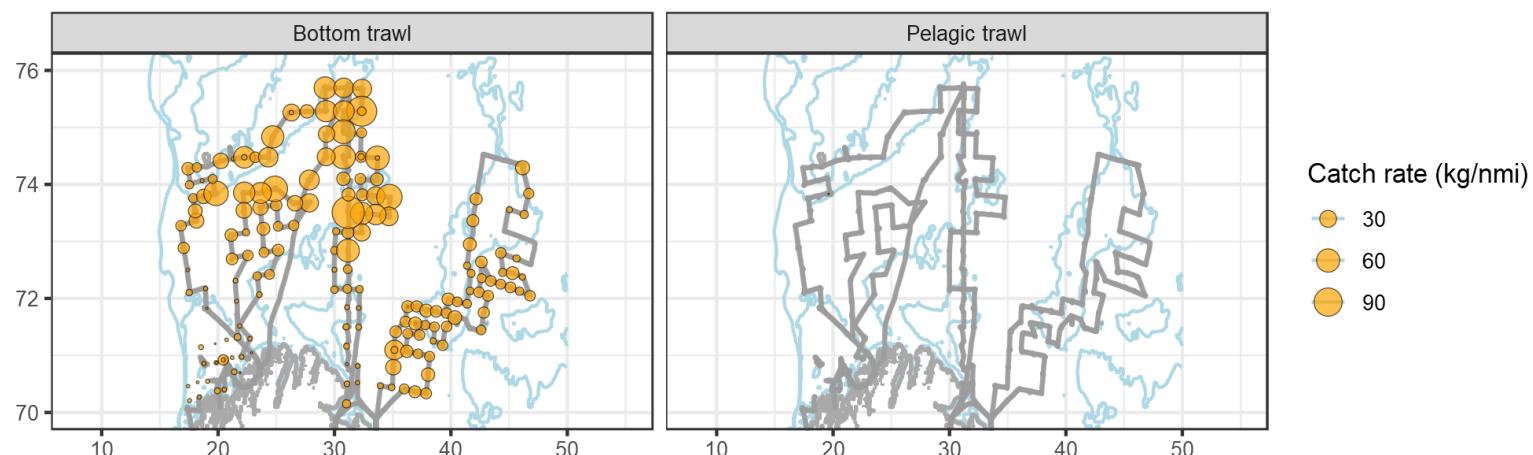
Catch rate (biomass) | 2020 | *Clupea harengus*



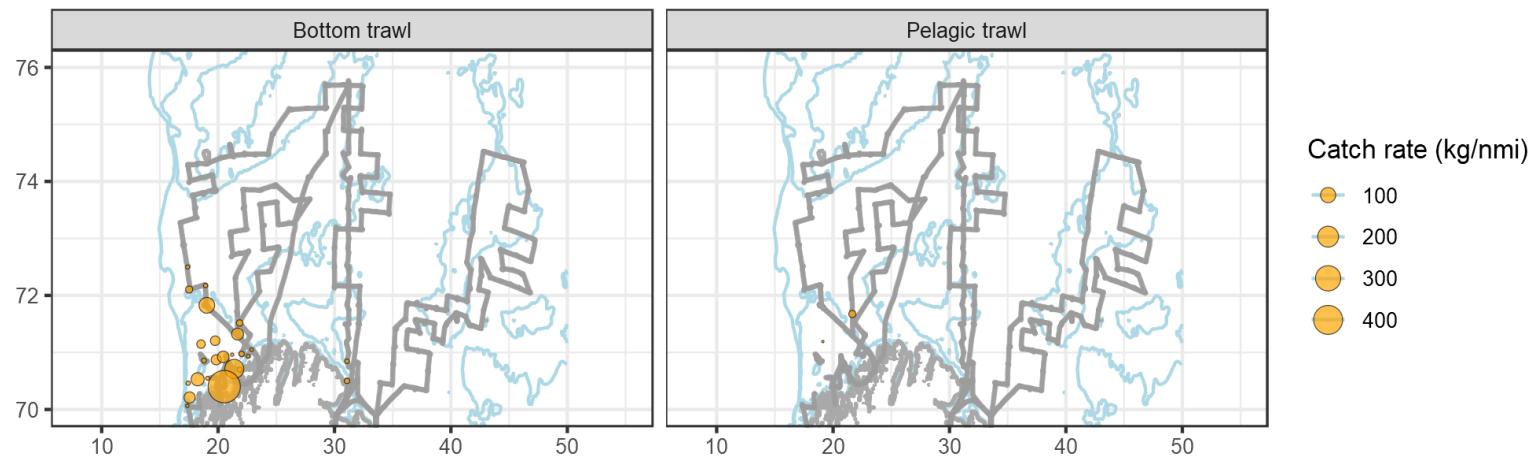
Catch rate (biomass) | 2020 | *Sebastes mentella*



Catch rate (biomass) | 2020 | *Hippoglossoides platessoides*

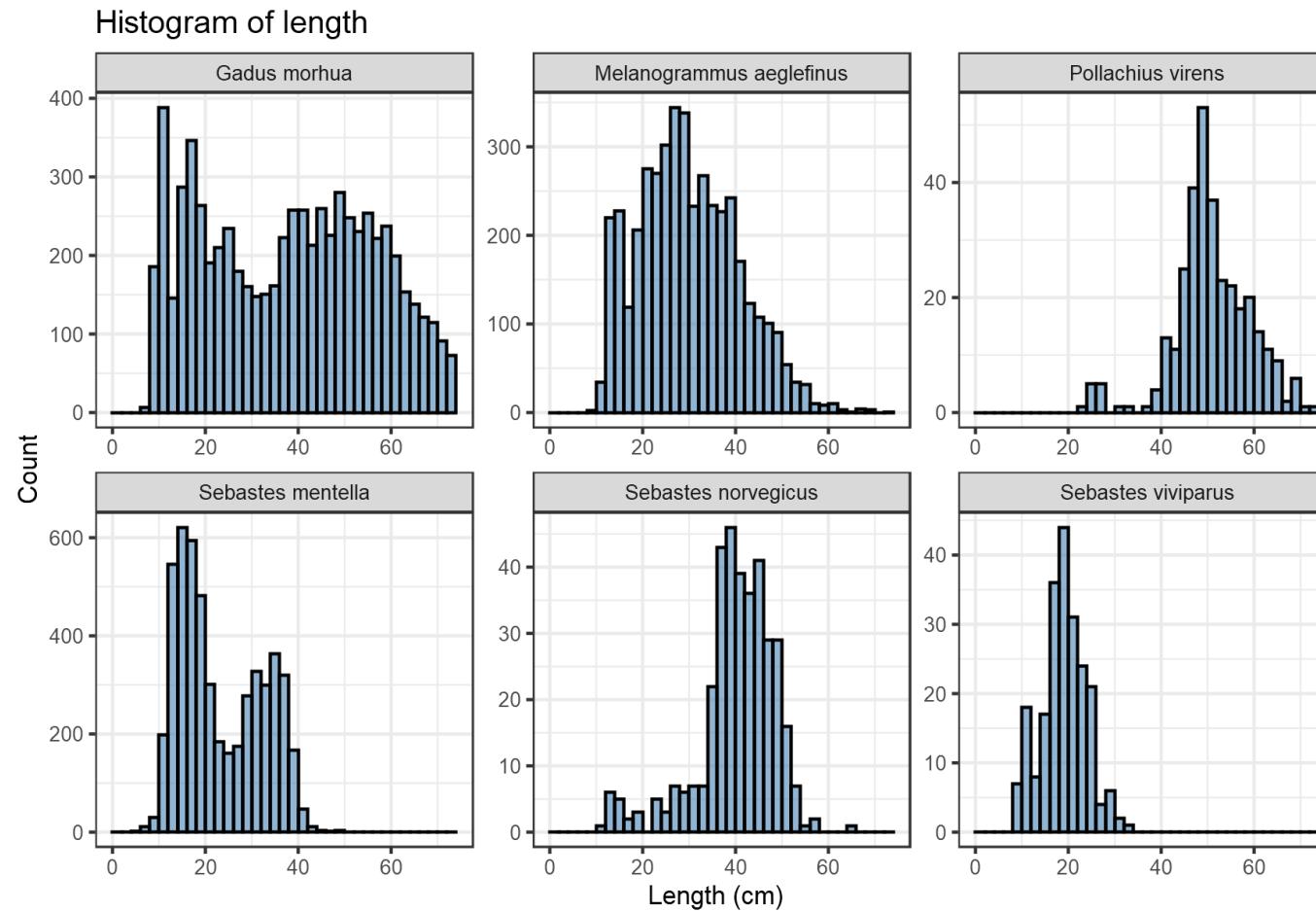


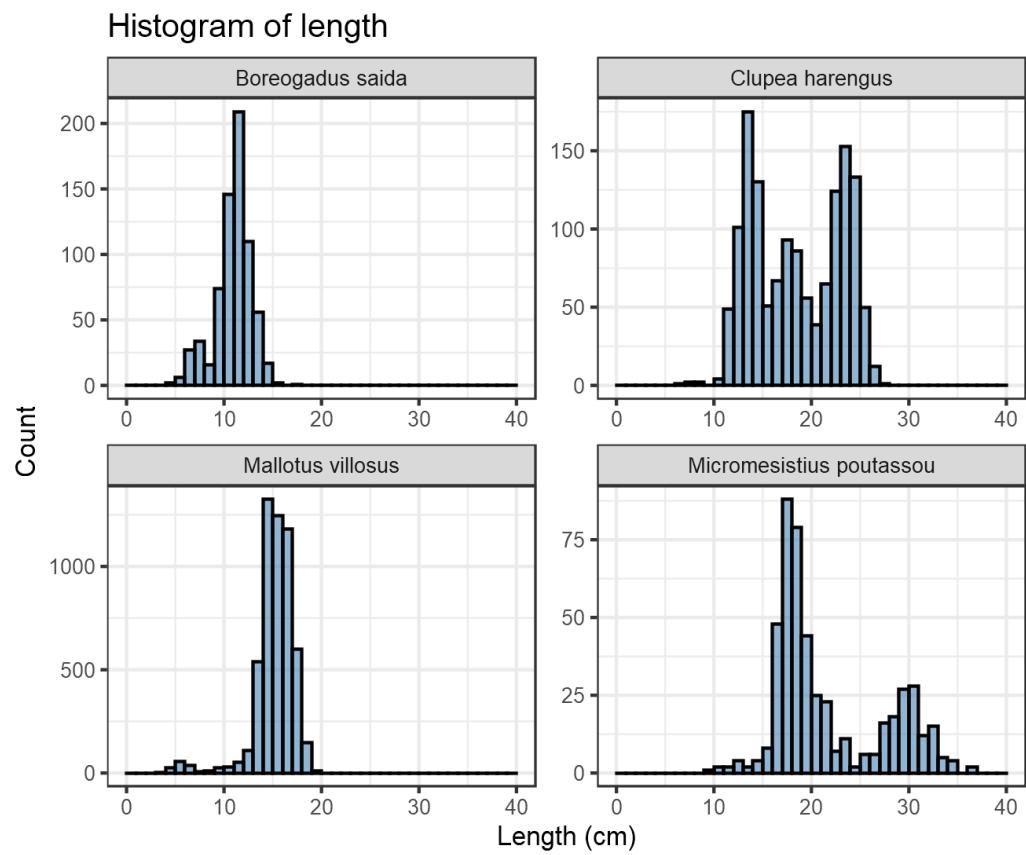
Catch rate (biomass) | 2020 | *Pollachius virens*



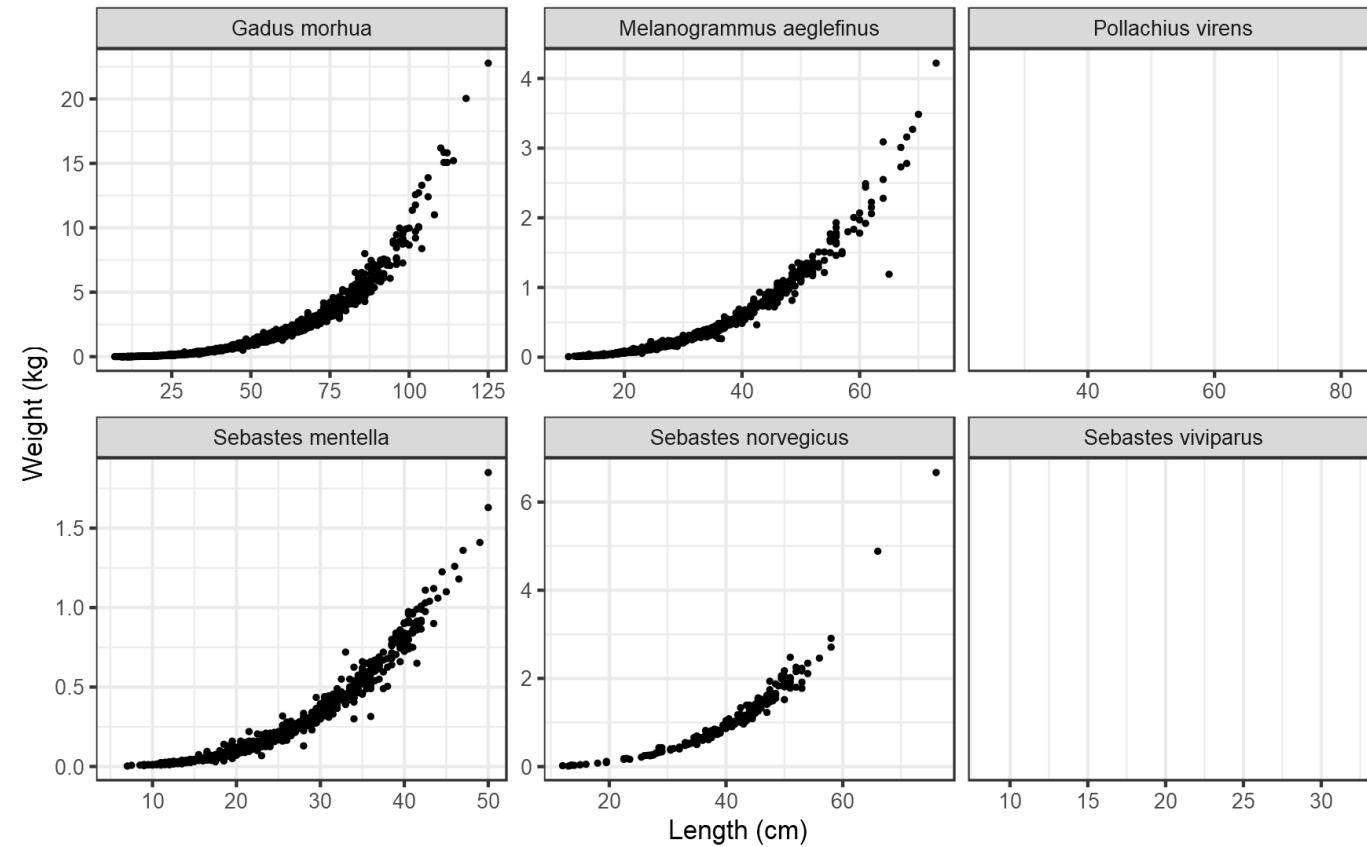
Length distributions

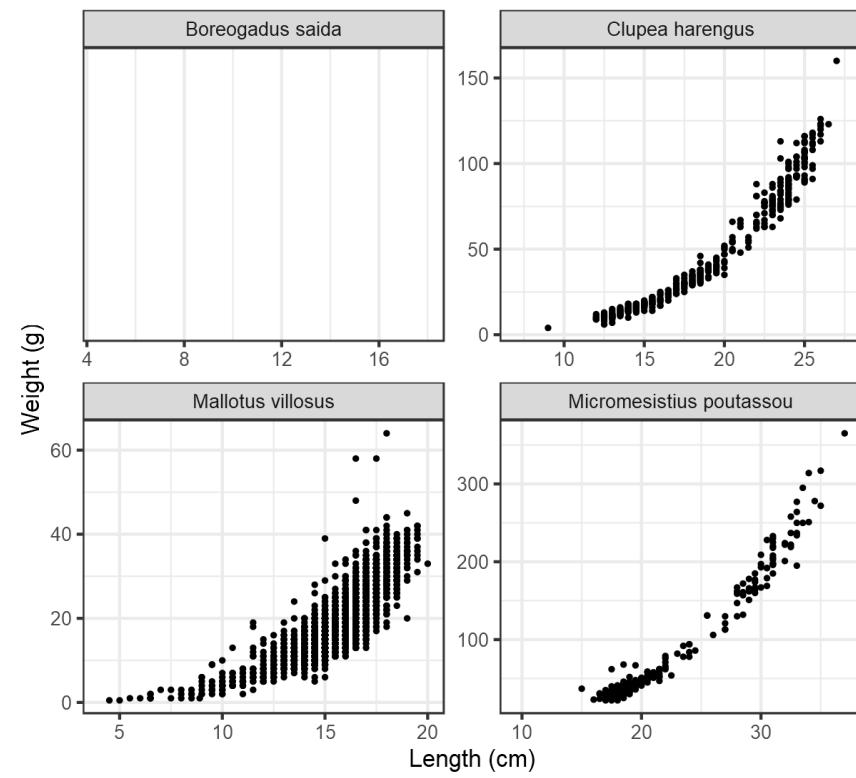
The following figures shows the length distribution of individuals sampled during the survey.



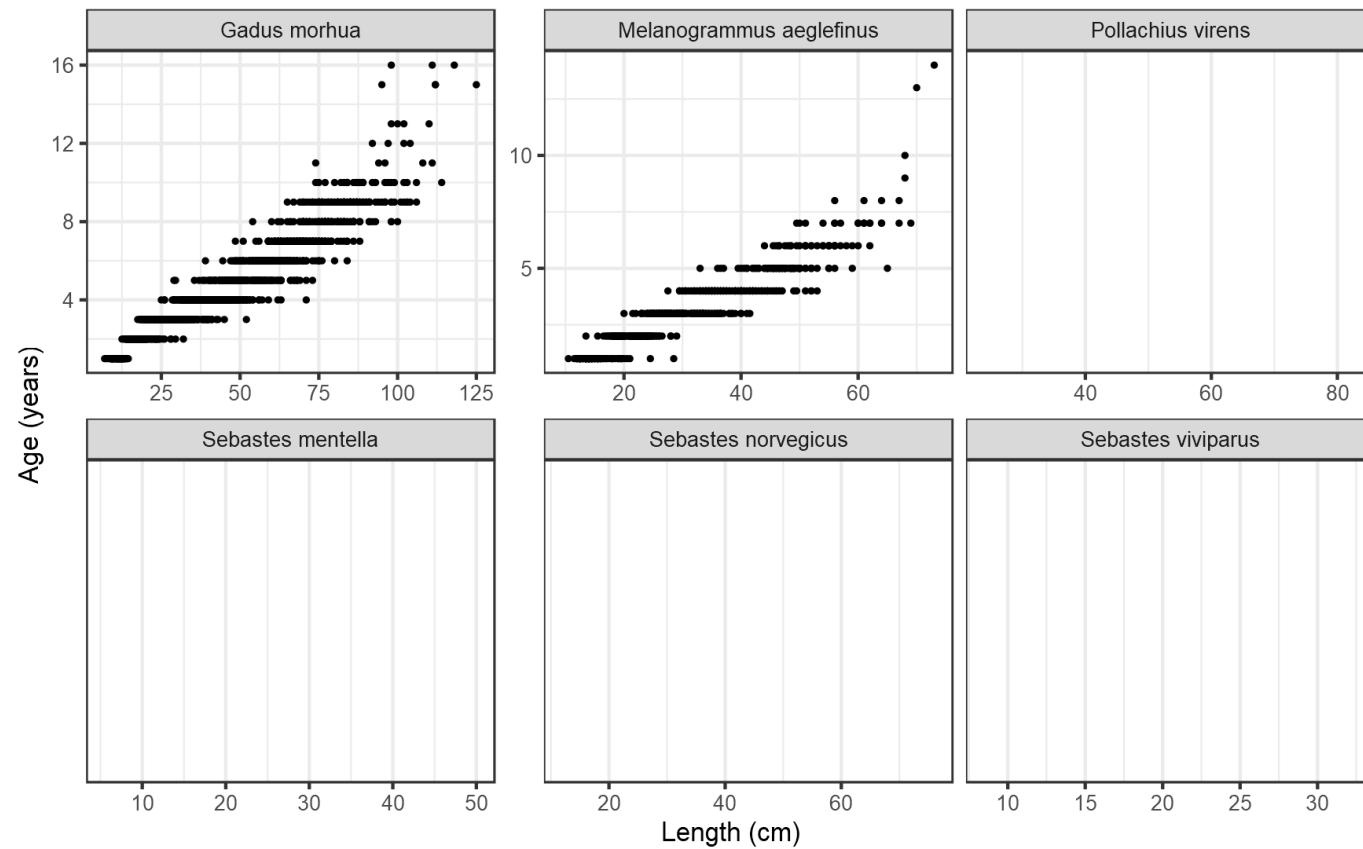


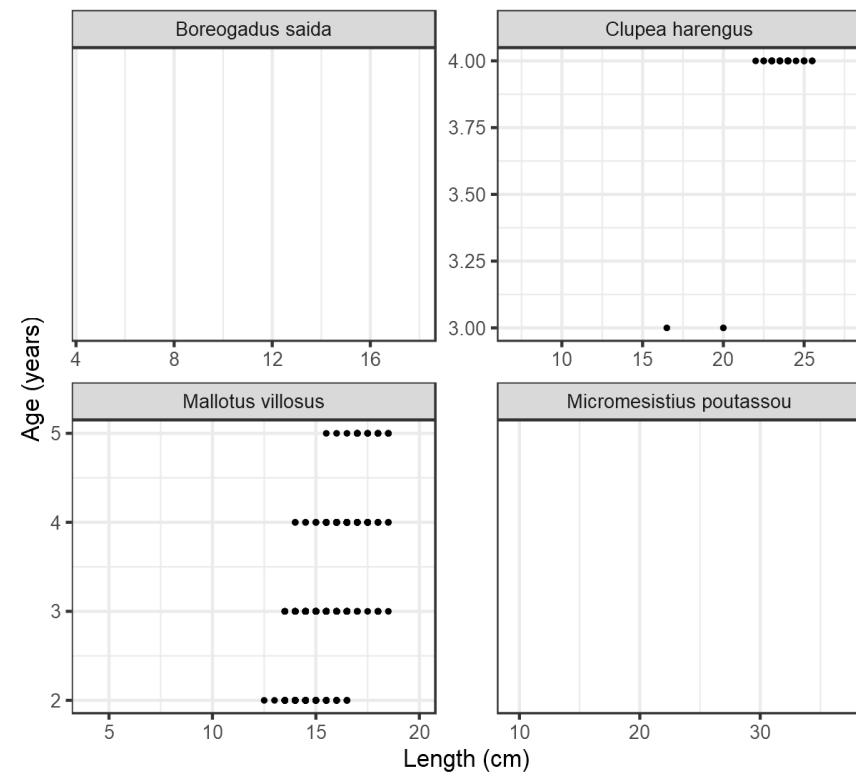
Length-weight relationships



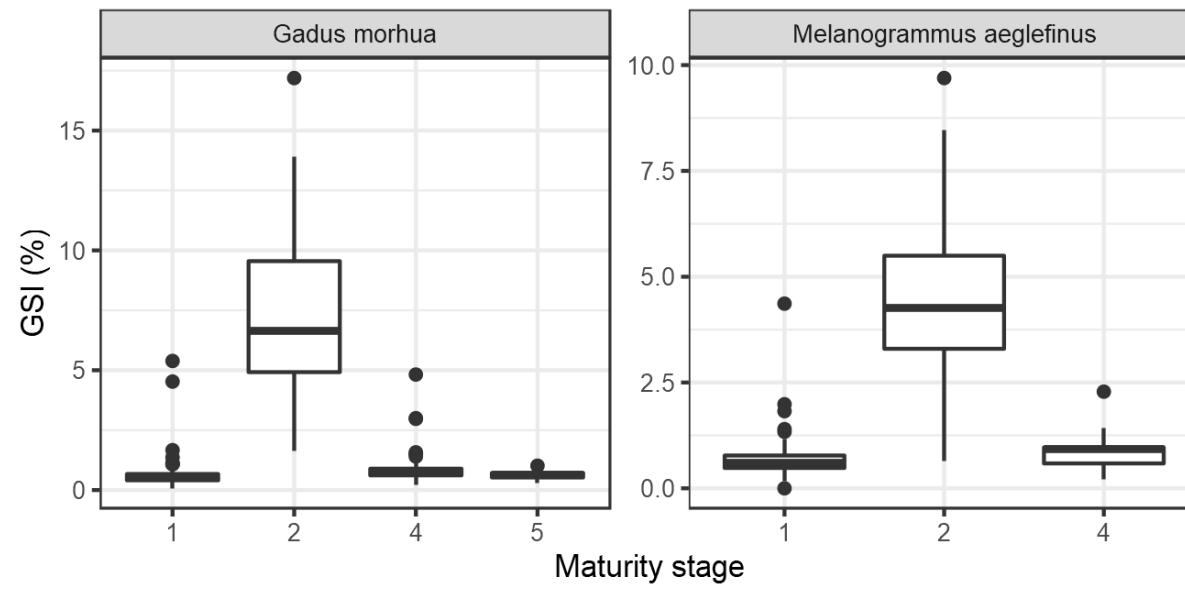


Length-age relationships



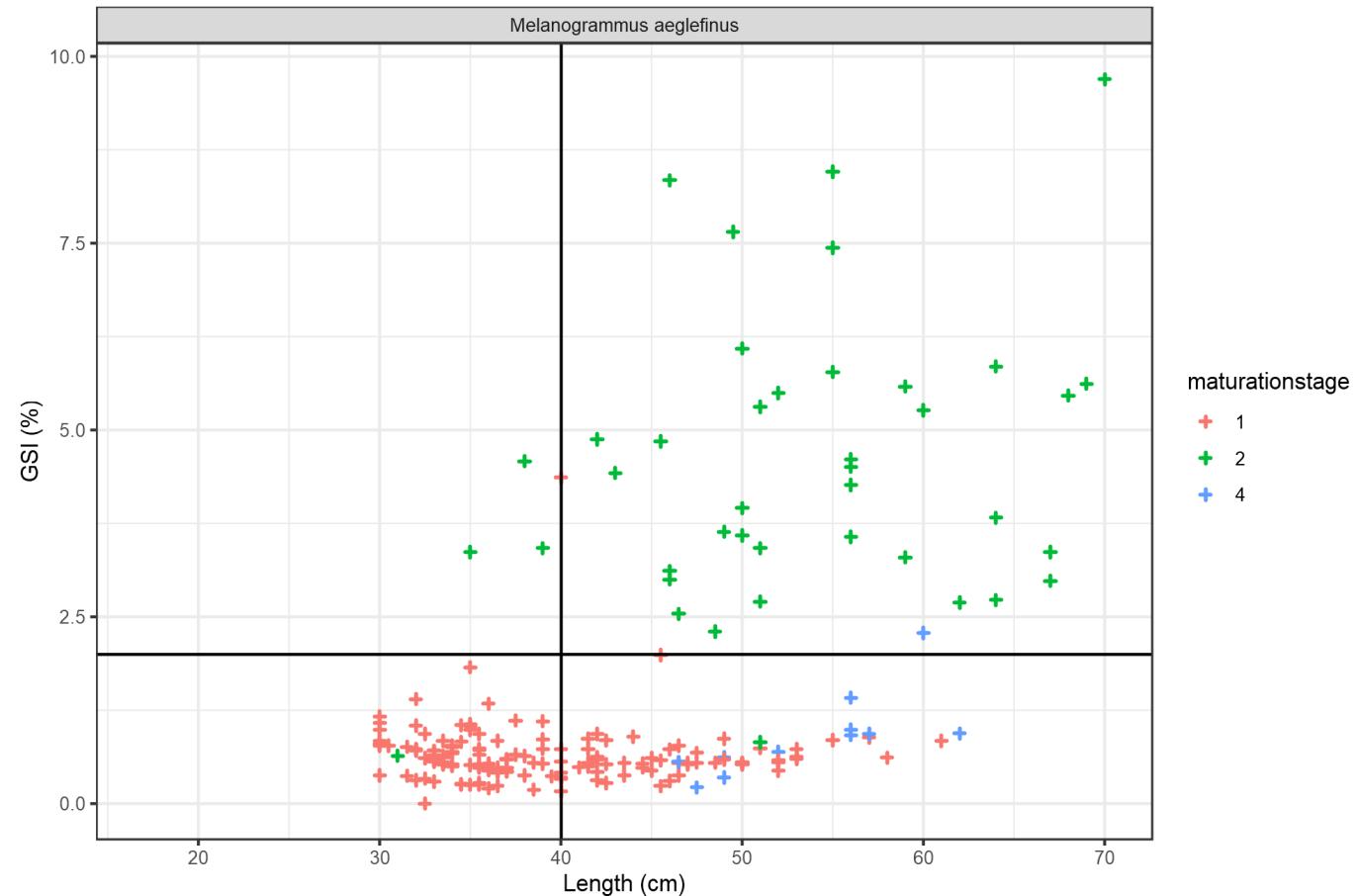


GSI versus maturity stage of female cod and haddock



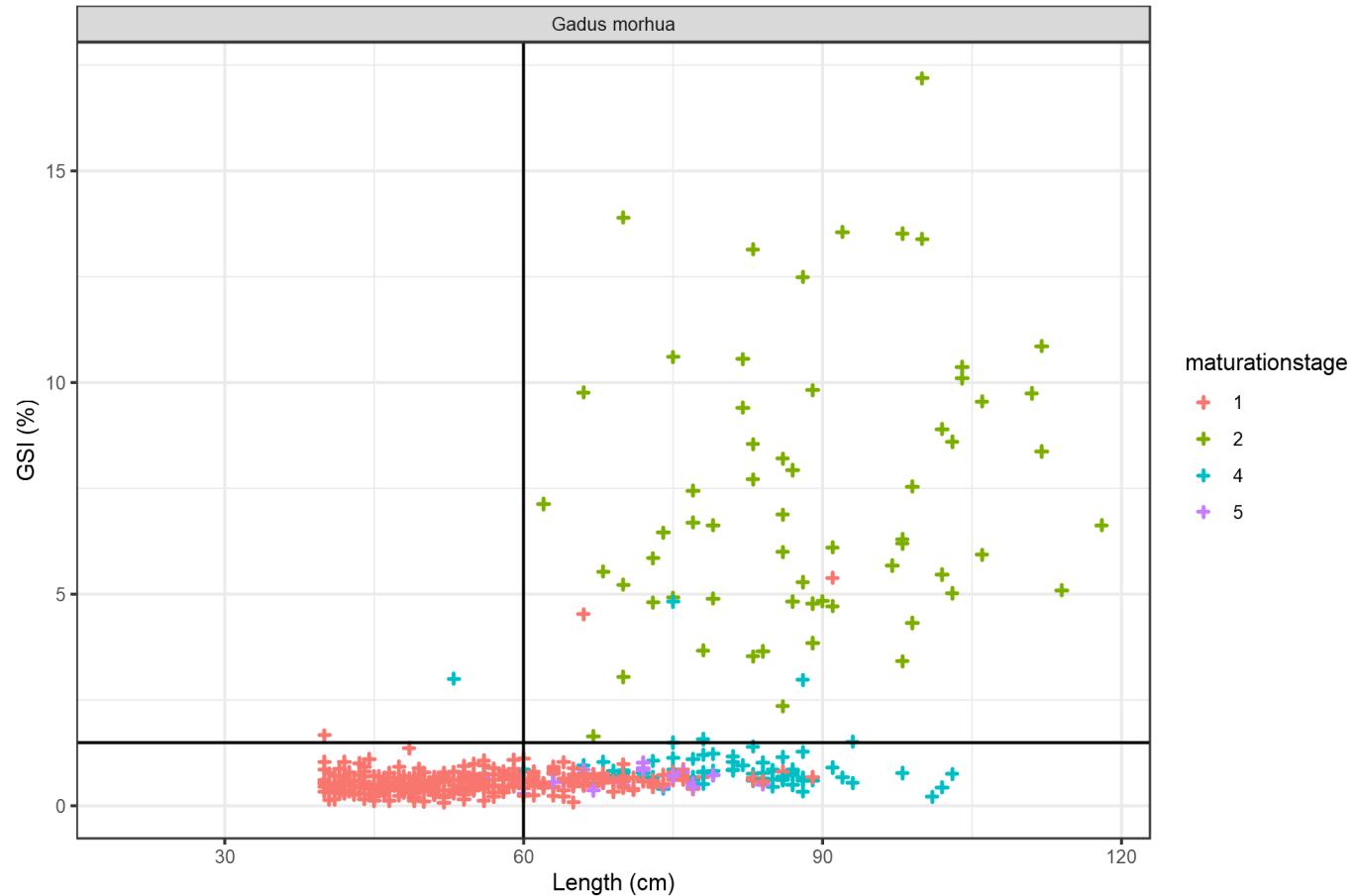
GSI versus length and maturity stage for female haddock

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).



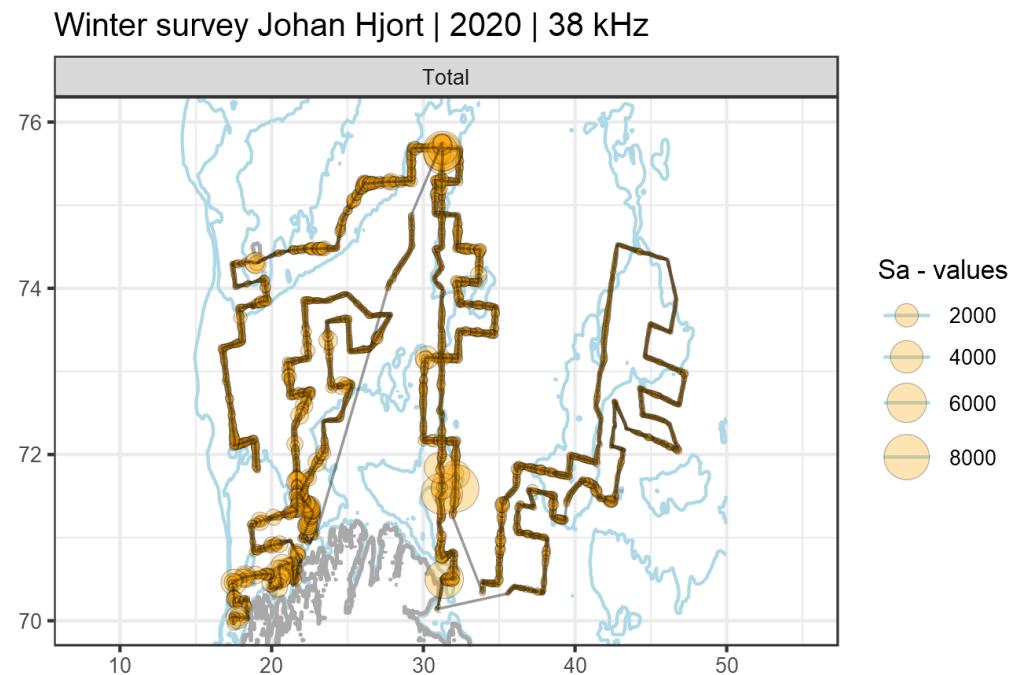
Acoustic registrations

A total of 7217.244 km (3897 nmi) of acoustic transects were scrutinized.

Example echograms

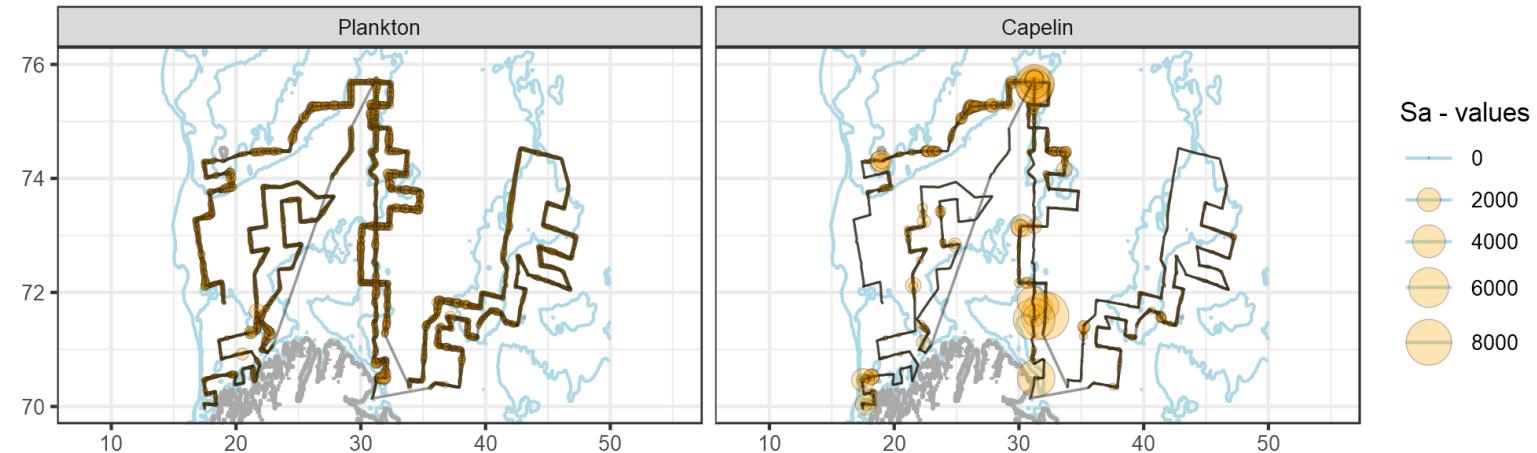
Depth-integrated acoustic backscatter

Total backscatter



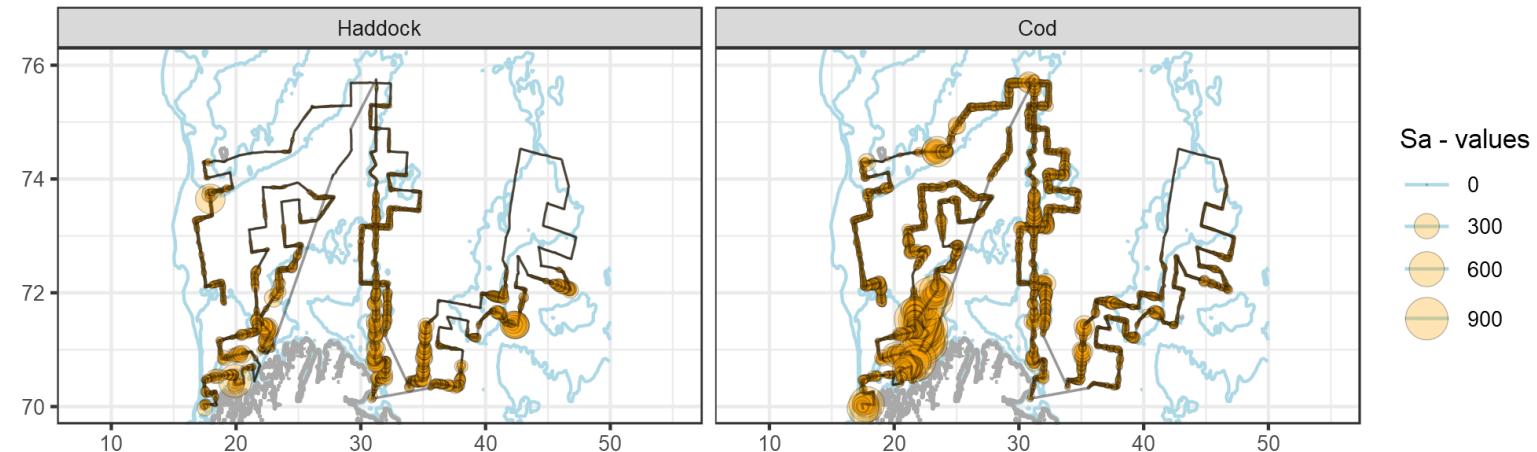
Pelagic species

Winter survey Johan Hjort | 2020 | 38 kHz



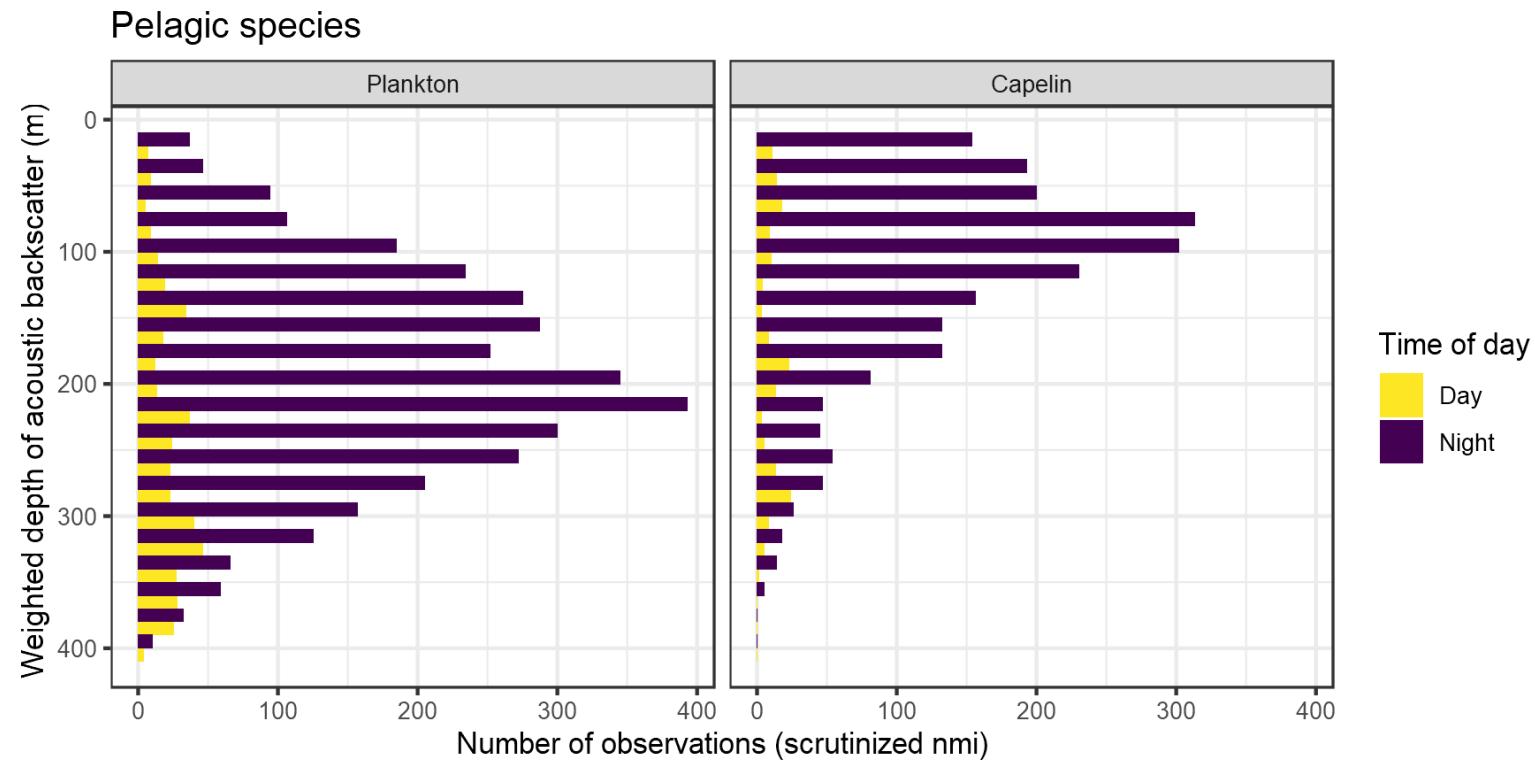
Demersal species

Winter survey Johan Hjort | 2020 | 38 kHz

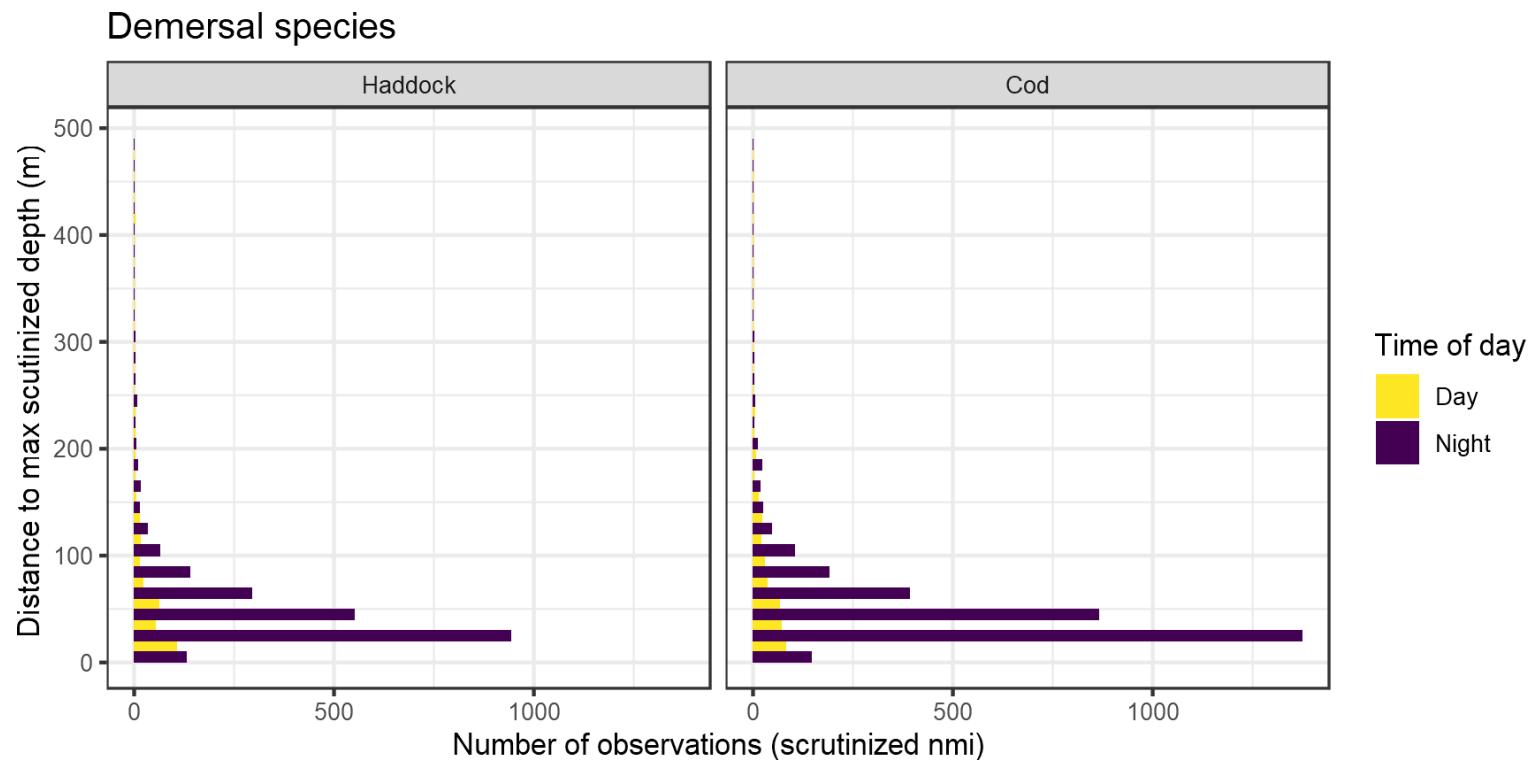


Acoustic backscatter in depth channels

Distance from the surface to weighted depth of acoustic registrations



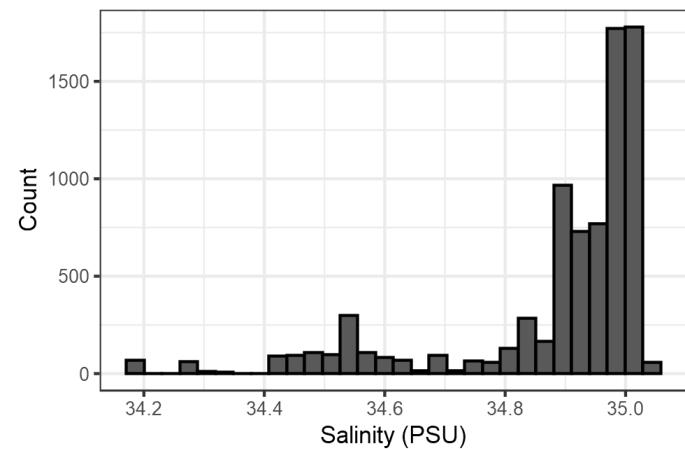
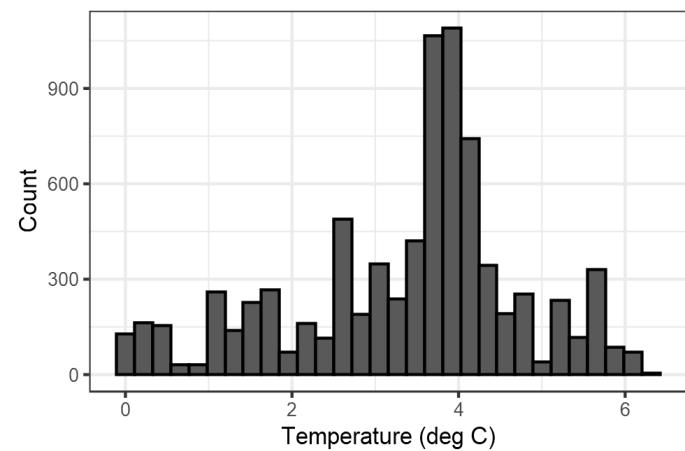
Distance from the seafloor (or max scrutinized depth) to weighted depth of acoustic registrations



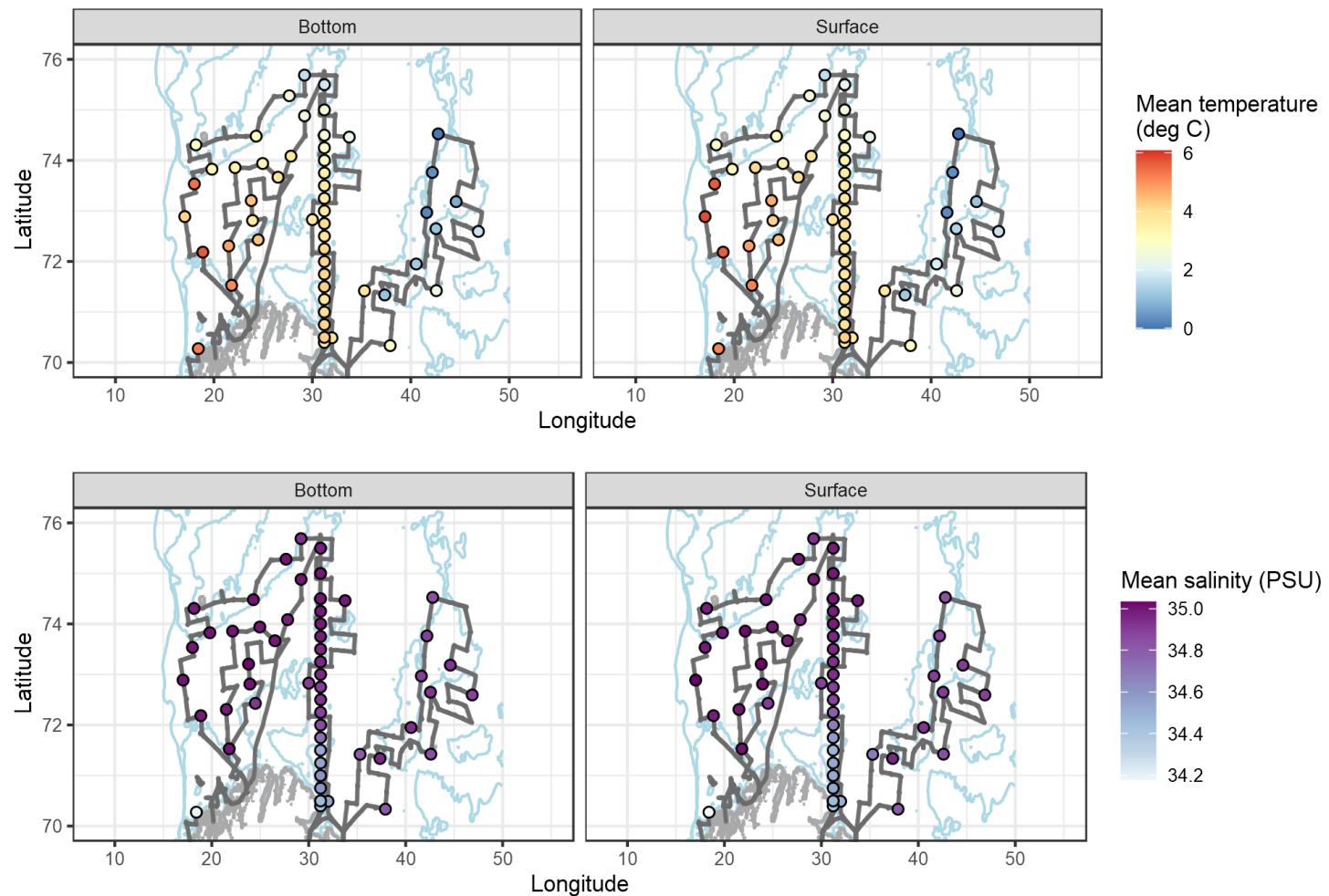
CTD

Summary of measurements

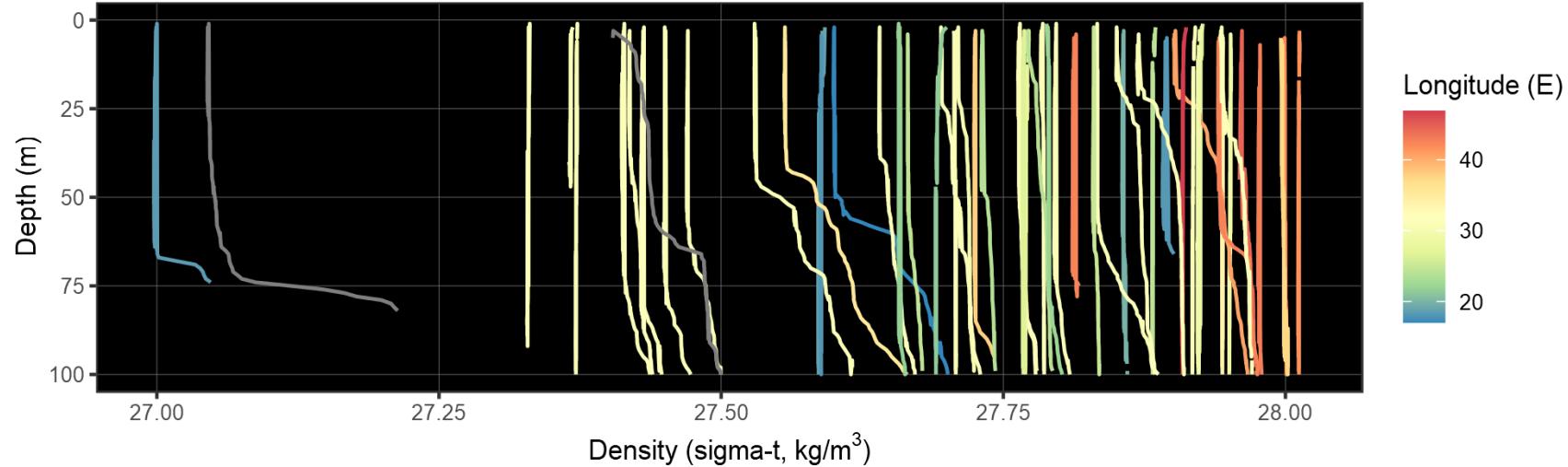
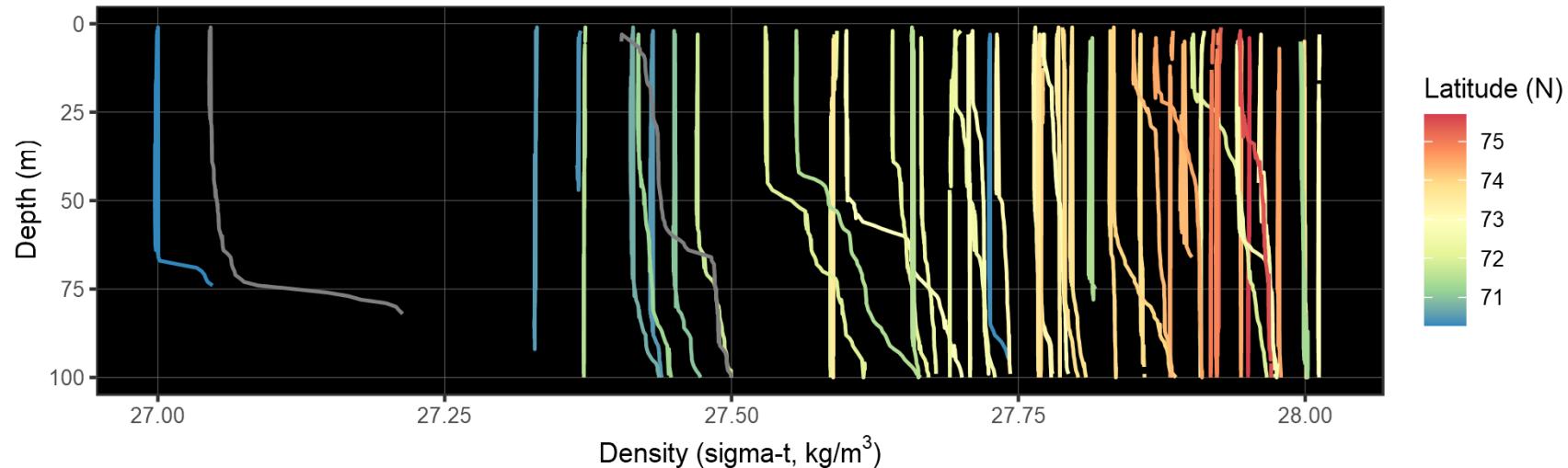
55 CTD casts were done during the survey, covering a total depth of 8 km.



Variation in temperature and salinity with bathymetry and geographical location



Density in the water column



Light in the water column

