

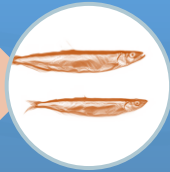
The influence of vertical movement and physiology on capelin target strength



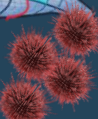
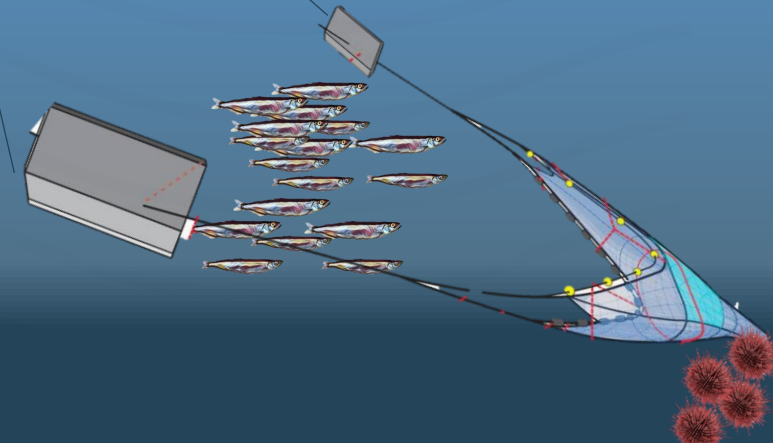
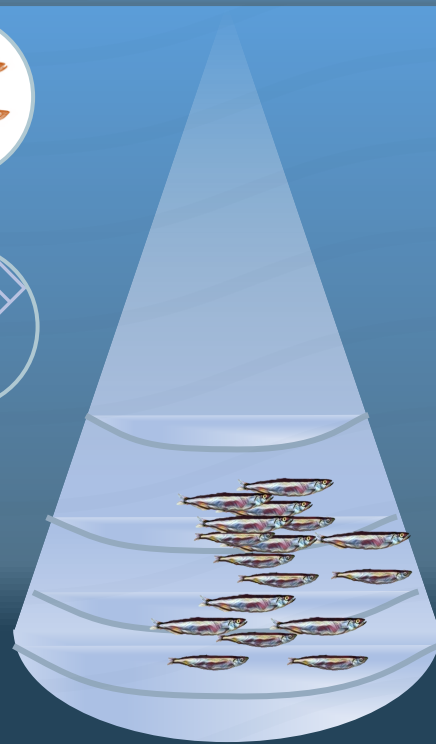
Teresa Silva,
Sigurður Þór Jónsson, Birkir Bárðarson, Warsha Singh



The biomass of capelin is measured using echosounders.

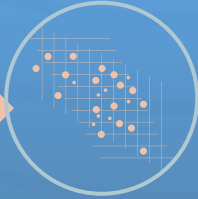


Target strength (TS) - length relationship is the scaling factor to convert acoustics backscatter to biomass.

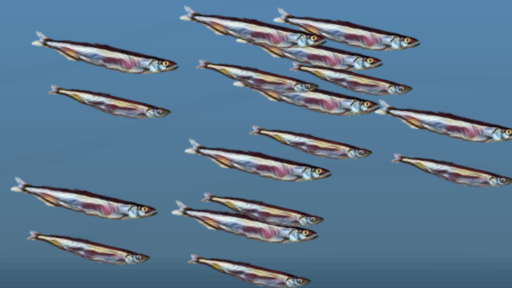




Target strength (TS) is the strength of echoes returned from individual fish



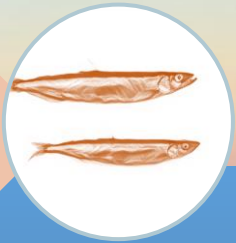
Fish length, weight, body condition, swimbladder size, tilt, gonad status and fat index, can affect the TS and consequently the estimation of fish biomass



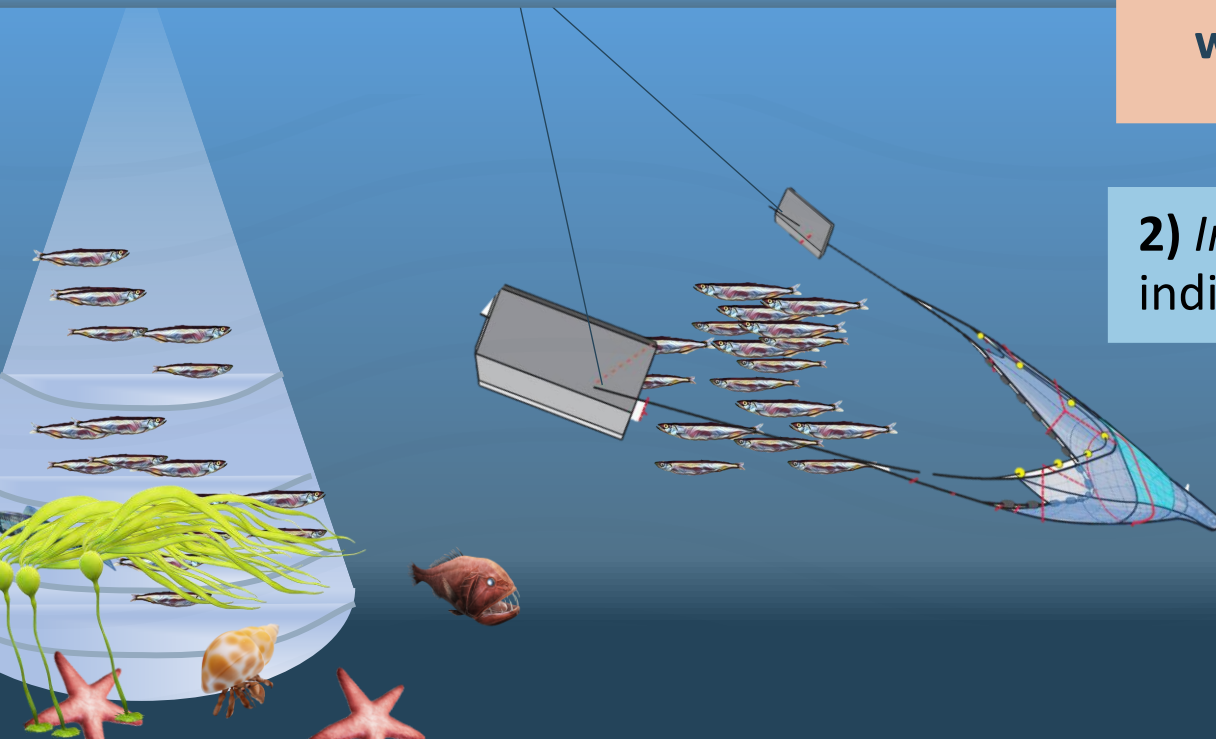
Aims

1) To evaluate the vertical movement and physiological properties of capelin schools

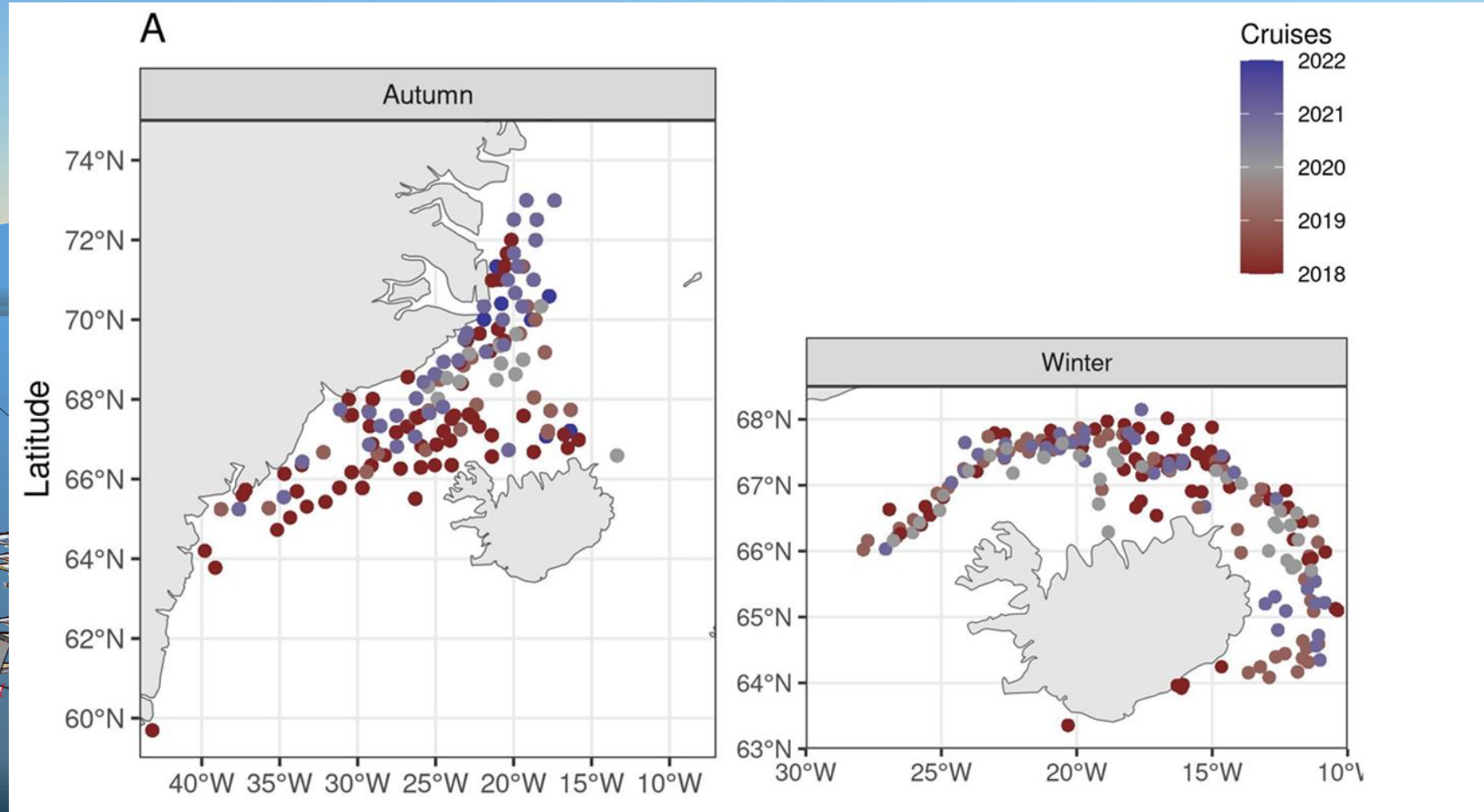
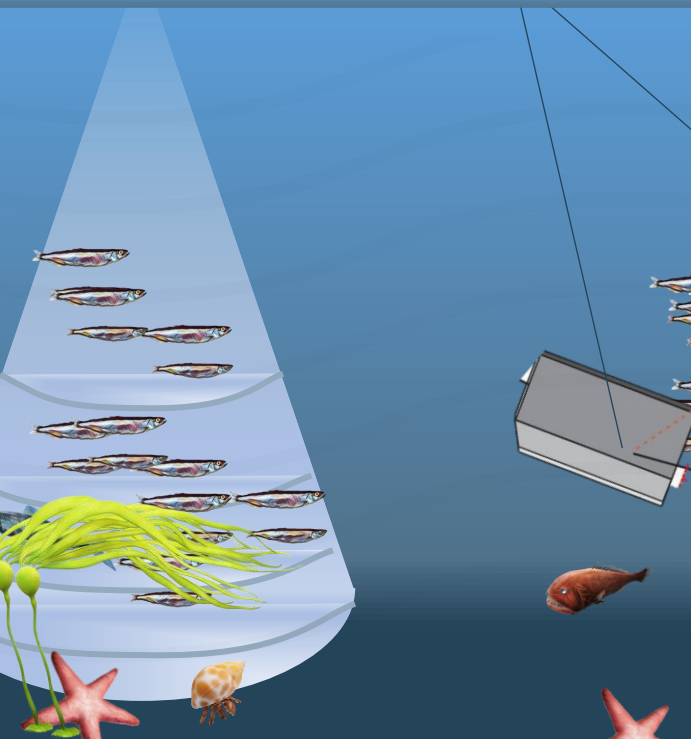
- to **depth** and seasonal differences (**autumn** and **winter**).



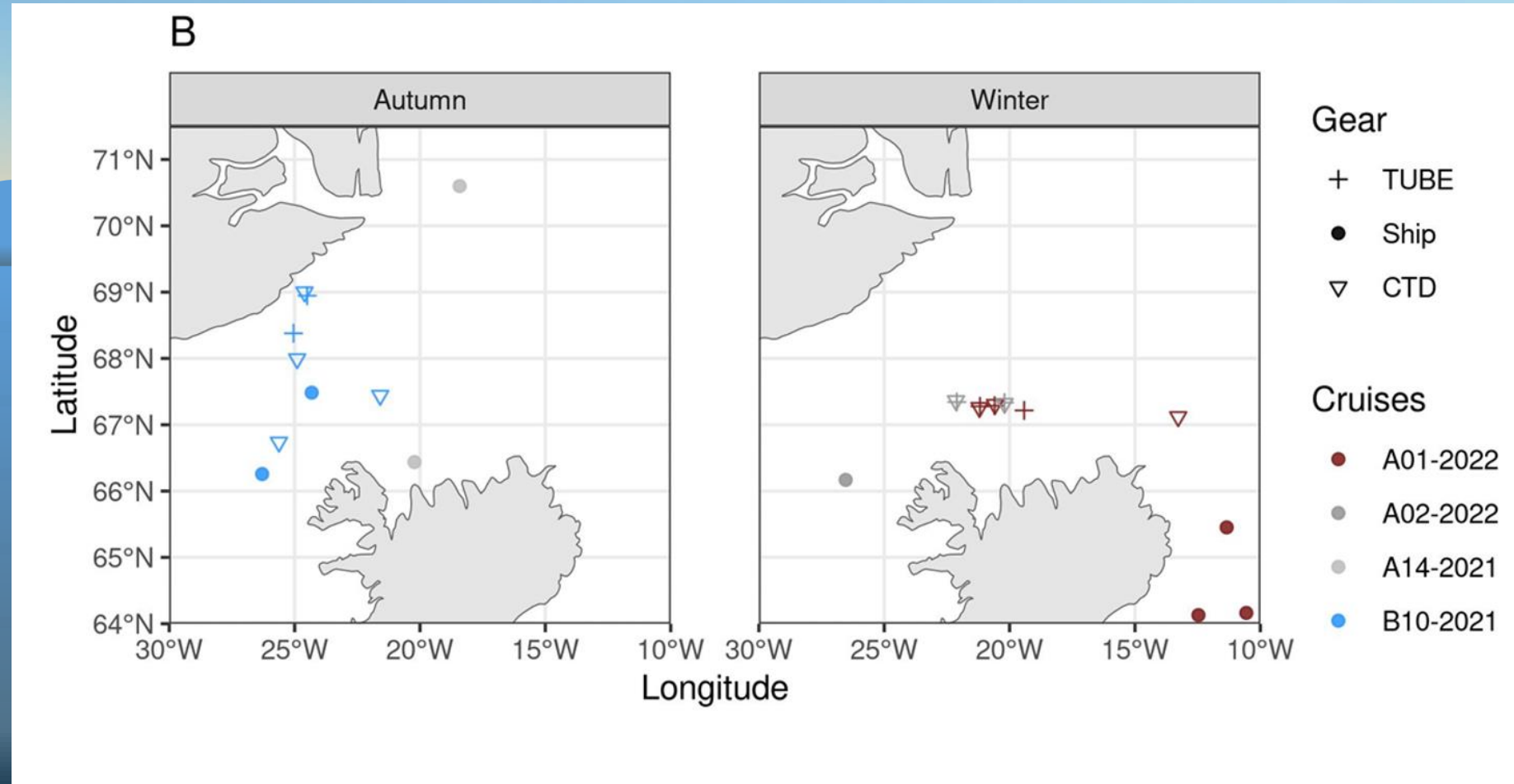
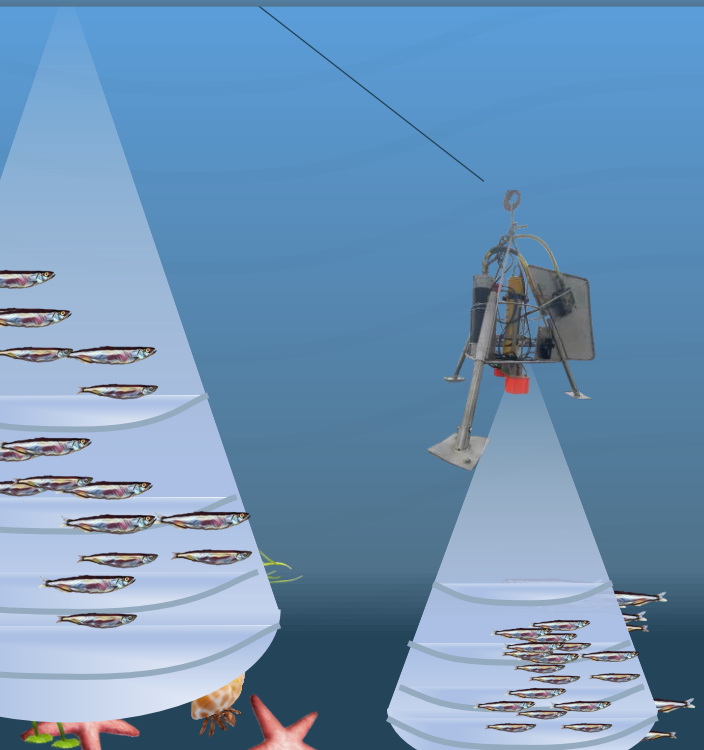
2) *In situ* Target Strength measurements of individual capelin at different depths.



Sampling



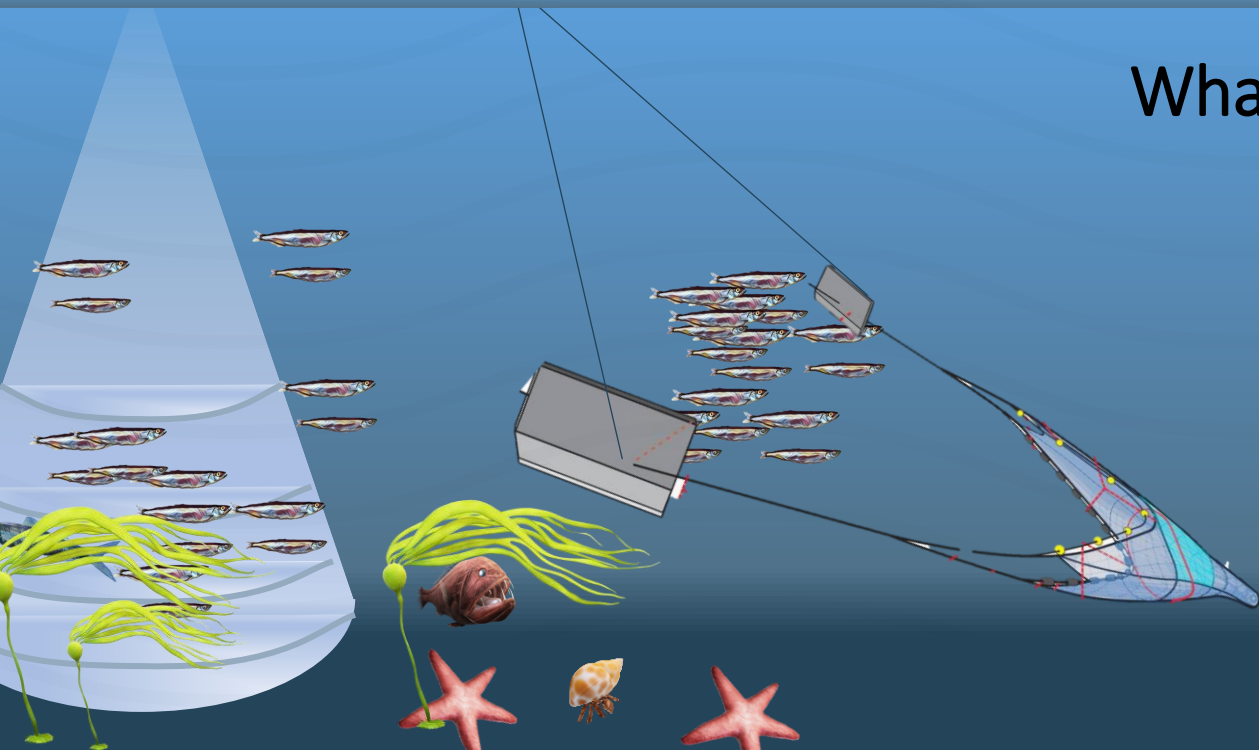
Sampling



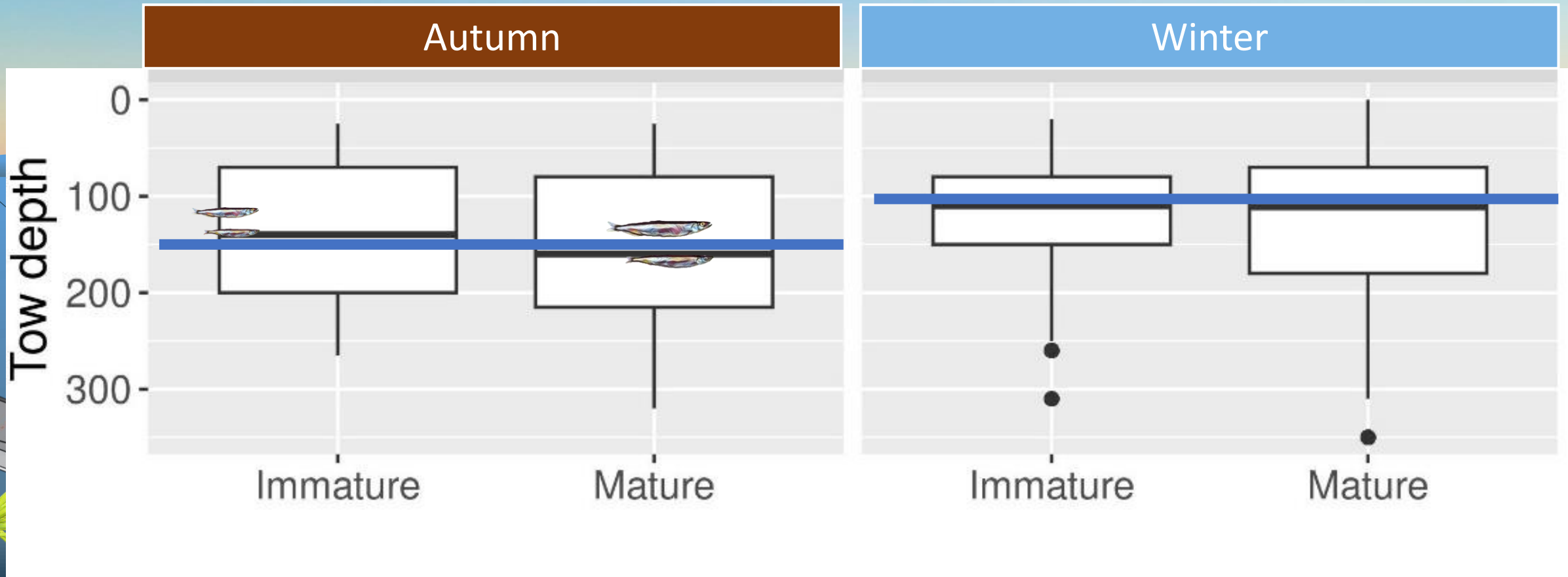
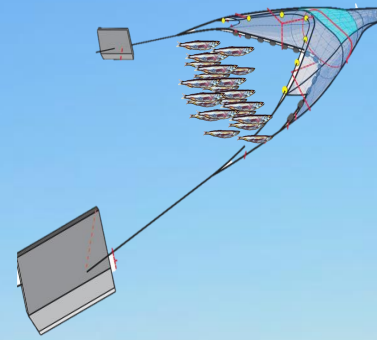
Results

1) vertical movement and physiological properties of capelin schools with respect to **depth** and seasonal differences (**autumn** and **winter**).

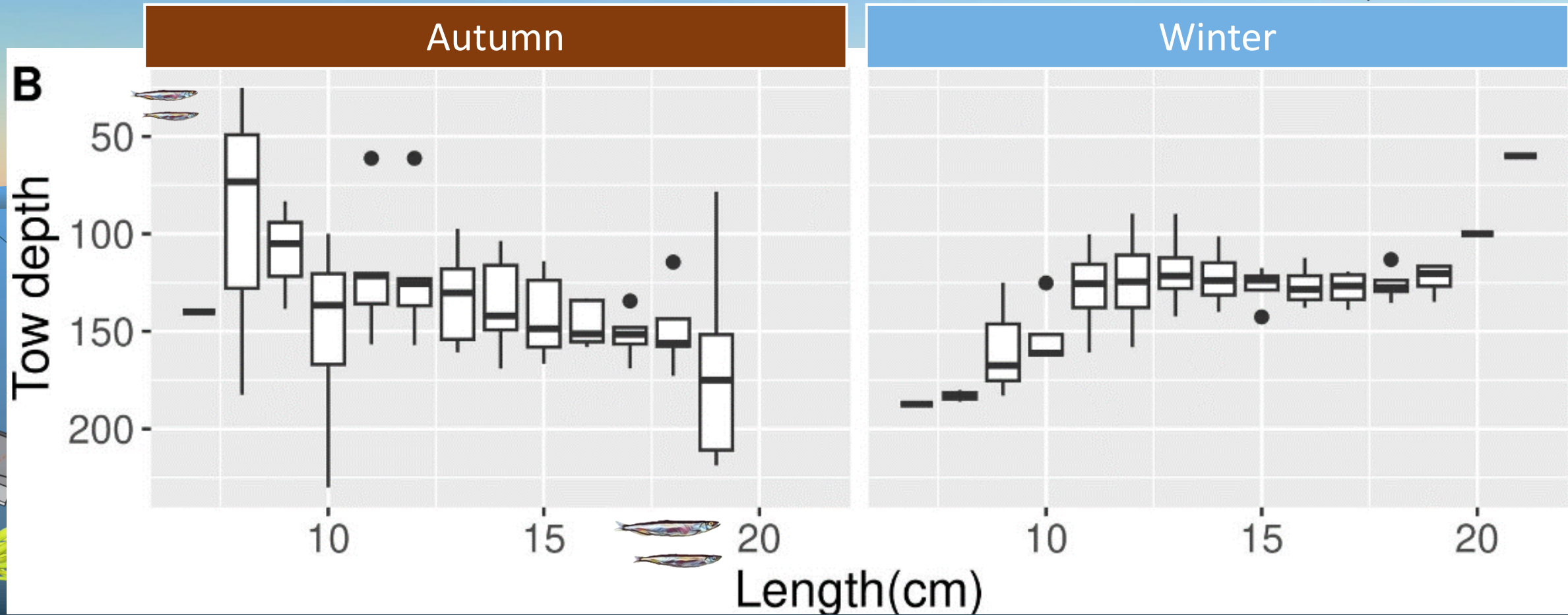
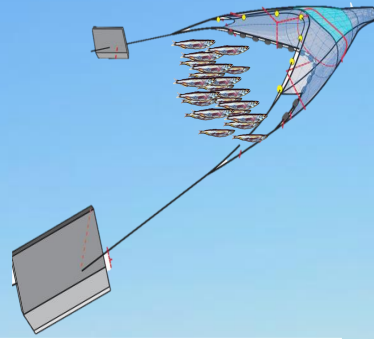
What does trawl and acoustic data tell us?



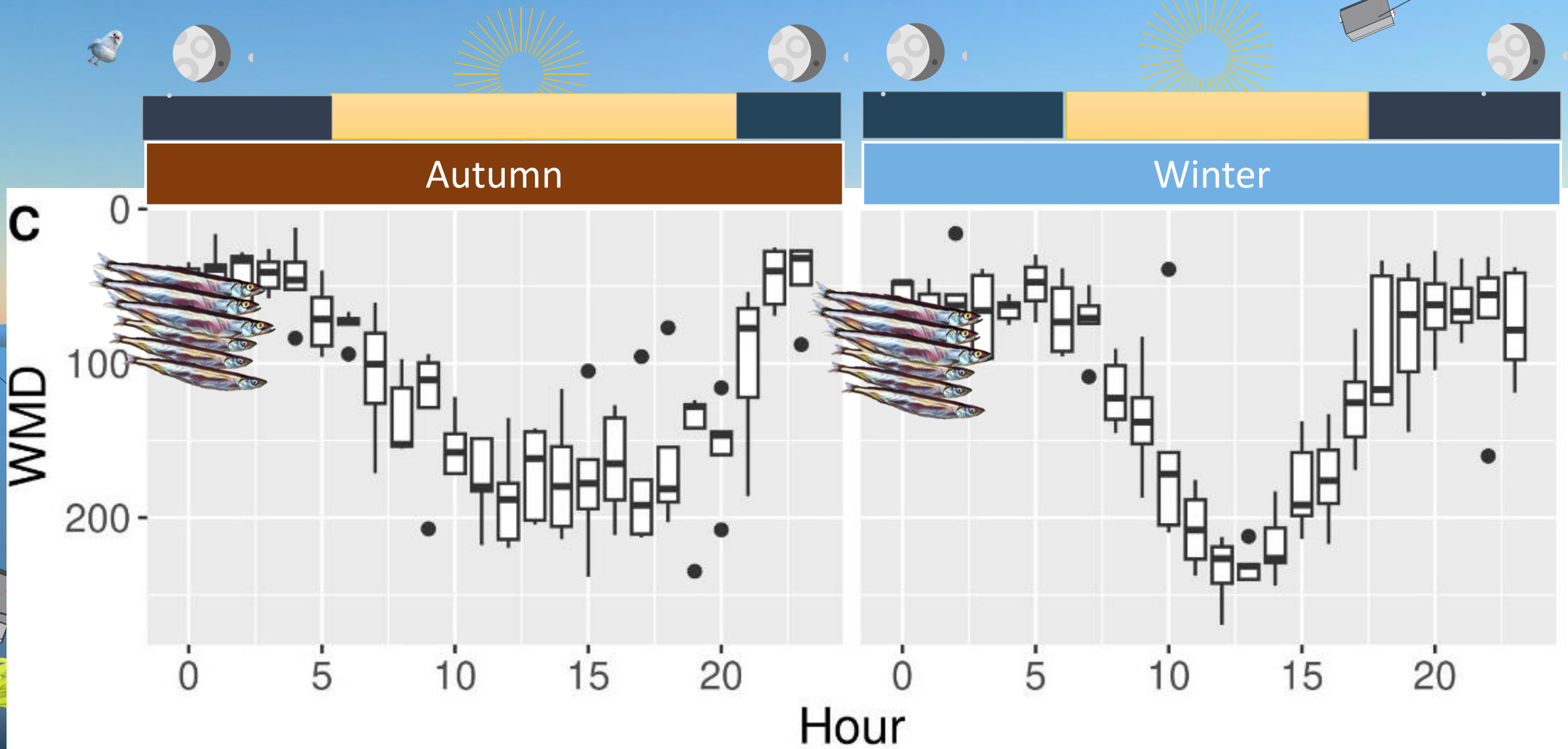
Depth distribution of immature and mature capelin



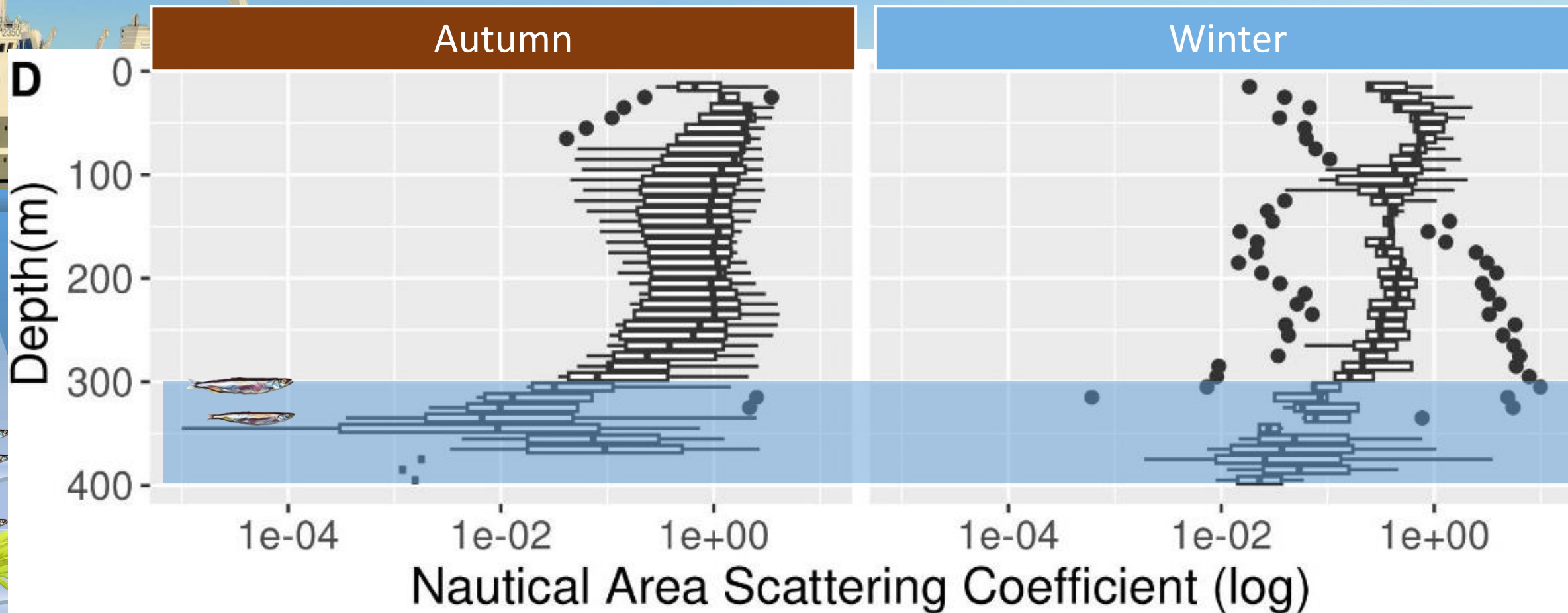
Variability of size of capelin with depth



Diel vertical movement of capelin

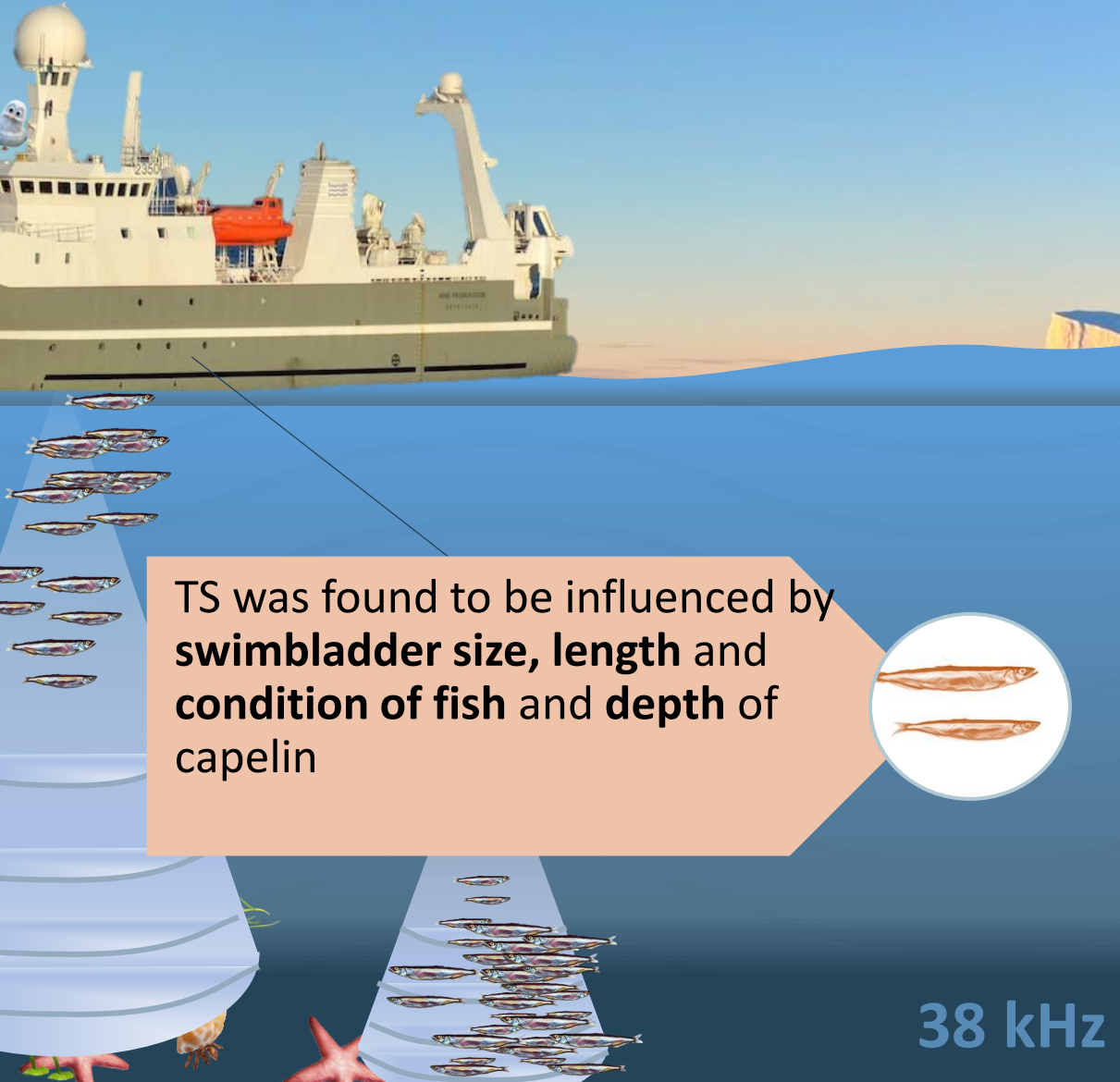


Depth variability of capelin acoustic values

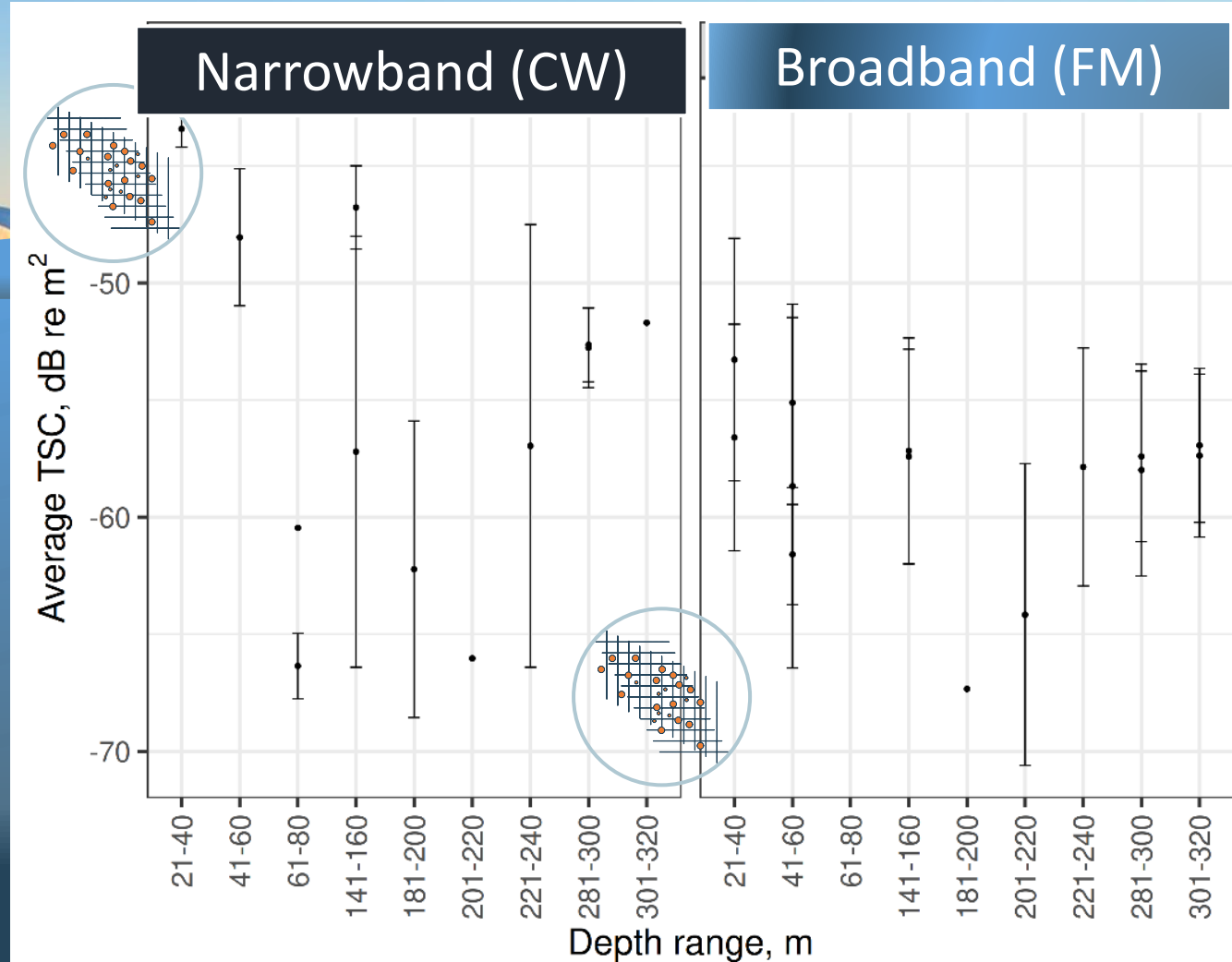


RESULTS:

2) In situ target strength of capelin at depth



38 kHz



Conclusions



Autumn

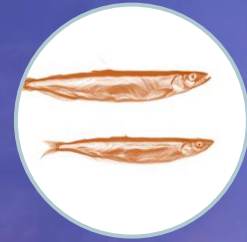
Deeper vertical movement



Winter

Shallower distribution

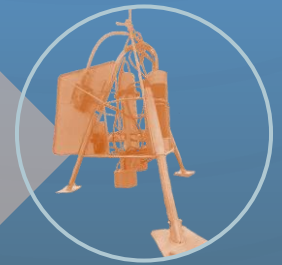
Capelin performs diurnal vertical migration



Seasonal variability



Target strength (TS) decreased with depth
Length, swimbladder size and condition of fish were found to influence the TS of capelin.



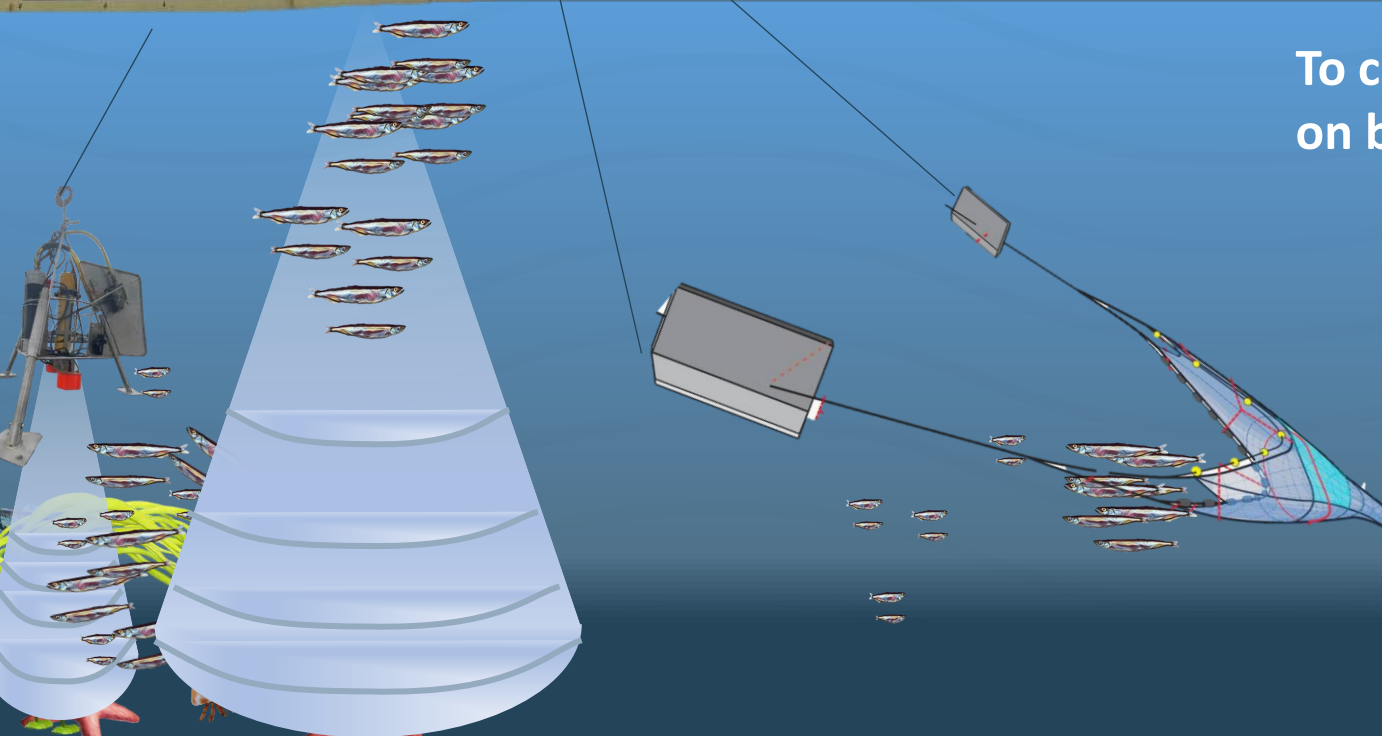
Acknowledge



Co-authors:

Sigurður Þ. Jónsson, Birkir
Bárðarson and Warsha Singh

Special thanks to **Arnpór B. Kristjansson** and **Björn Sigurðarson** for the development of the submersible echosounder



To crew that assisted with the sampling
on board the research vessels!

