How do demersal fish communities differ in the North and Norwegian Sea?

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Salvanes, 2018)

Background information

Our group focused on demersal fish communities and what environmental drivers lead to the distribution patterns that we see in the North and Norwegian Sea. The research was done on a community basis – instead of a single species one – with a focus on diversity and abundance of the species in the communities.

As a part of BIO325 Ocean Science cruise in October 2022 we sampled fjords and North Sea habitats (see map) for a week. Demersal fish stocks in the North and Norwegian Sea are of high commercial value for the fishery industry in Norway and thus also well-researched fish stocks. Well known species include cod, haddock, saithe, coastal cod, whiting, plaice (IMR).



Methods and materials

- Bottom trawling and pelagic hauls in the ...
 - Norwegian
 Trench





- North Sea Plateau
- Møre Plateau
- Faroe Trench
- Coastal fjords



- Evaluation of catch (count, length, weight etc.)
- Data analysis in R was done for the community catch data for the current and all the previous years (2019-2022)
 - Species Diversity Indices
 - Non-Metric Multi-Dimensional Scaling (NMDS) Method for analyzing the demersal fish communities



Results and discussion

- We conclude that the most diverse and abundant communities were found at the Faroe Trench and the Møre Plateau, as a result of the large range of habitats that were sampled in these regions (plateau, trench slopes and in some cases deep-sea habitats) (see figure a).
- Shannon Diversity Index (H) is highest at the Faroe Trench and Møre Plateau (H = 0.98 and H = 0.99 respectively).
 - The North Sea Plateau has the highest species richness (S = 19.1), but the lowest Shannon Index (H = 0.7), indicating that its community is dominated by a few, abundant species.



- NMDS plots explain the community structure by calculating how dissimilar they are (see figure a, b, c).
 - The data points most far from each other are least similar to each other.
 - The changes over the x-axis seem to be more driven by the range of depth and temperature while the differences along the y-axis seems to be more due to the different locations.



References:

IMR. Demersal fish. Institute of Marine Research. Retrieved 07.11.2022 from
 <u>https://www.hi.no/en/hi/forskning/research-groups-1/demersal-fish</u>
 Salvanes, A. G. V. (2018). Marine Ecological Field Methods. Wiley Online Library.
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