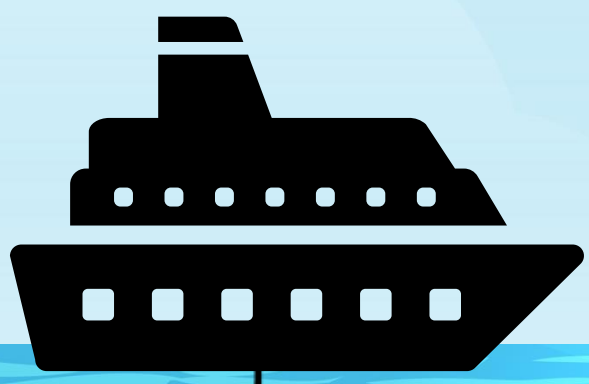


# The Transparent Traveler

## Gelatinous zooplankton in the Norwegian sea and the Sognefjord

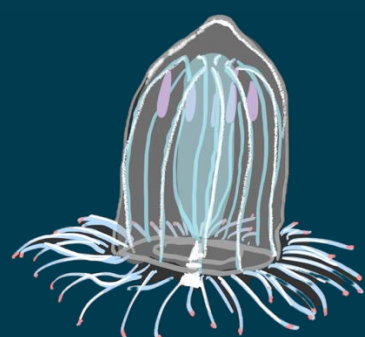


### Introduction

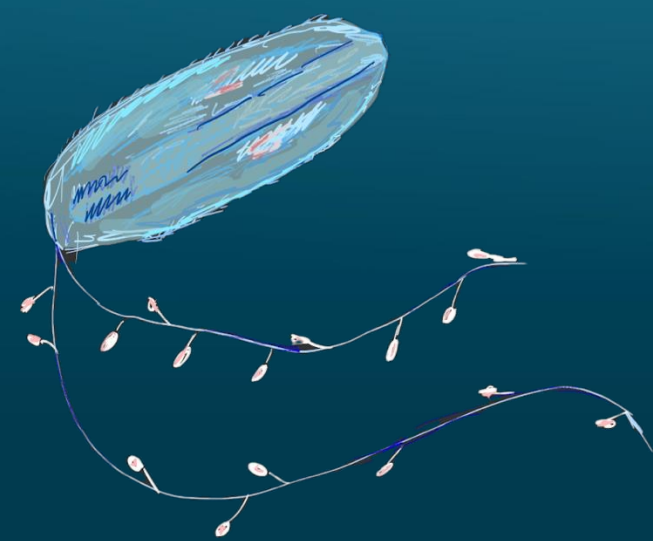
University of Bergen has for several years cooperated with OceanX for providing research on life in the ocean. In the period 30<sup>th</sup> July to 7<sup>th</sup> August 2023 the **Manet Team** from the department of **Natural History** at the **University Museum** undertook an expedition with **OceanX** to map out biodiversity of gelatinous zooplankton in the **Norwegian sea** and in the **Sognefjord**. Both morphological and molecular data were collected as part of an **integrative taxonomy** approach, for **mapping** out the **different species** of jellies. One of the approaches involved collecting optical data by performing **vertical transects** with an **ROV**. The bigger goal of this study is to provide an understanding of the species present in Norwegian marine environments and the roles they play in the marine ecosystems, which is essential for improving **marine protection and conservation**— an issue that must be addressed to move towards a sustainable planet. As part of this study, I have analysed ROV footage that constitutes a valuable **starting point** and a complementary set of evidence to be used in **further research** on the diversity of gelatinous zooplankton in the area.

### Material and methods

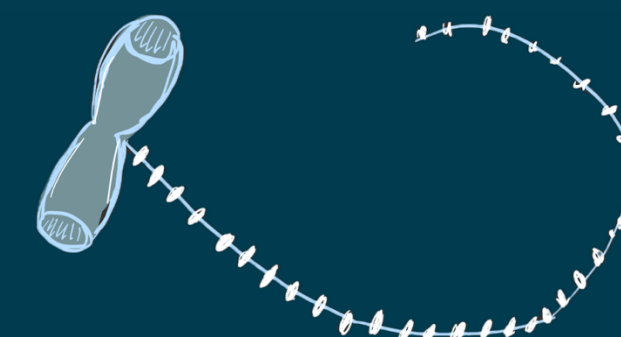
The data analysed were collected on a **ROV** at OceanX expedition in 2023 (Magugliani, n.d.). Videos from the ROV transects were first converted into mp4 format in VLC, and afterwards put into web-based software for image and video annotation “Bielefeld Image Graphical Labeller and Explorer” or «**Biigle**» (Langenkämper et al., 2017). Annotation were made on **five descent dives**, and **four ascent dives**. The results were downloaded from Biigle, and put into an excel file together with the manually draw out depth of every annotation. These were further put into **R-studio** for visualization by using packages readxl, here, tidyverse and ggplot2.



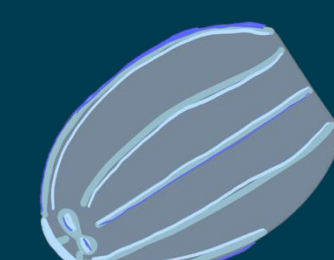
*Anglantha digitale* (Hydromedusa)



*Euplokamis* (Cydippid, Ctenophore)



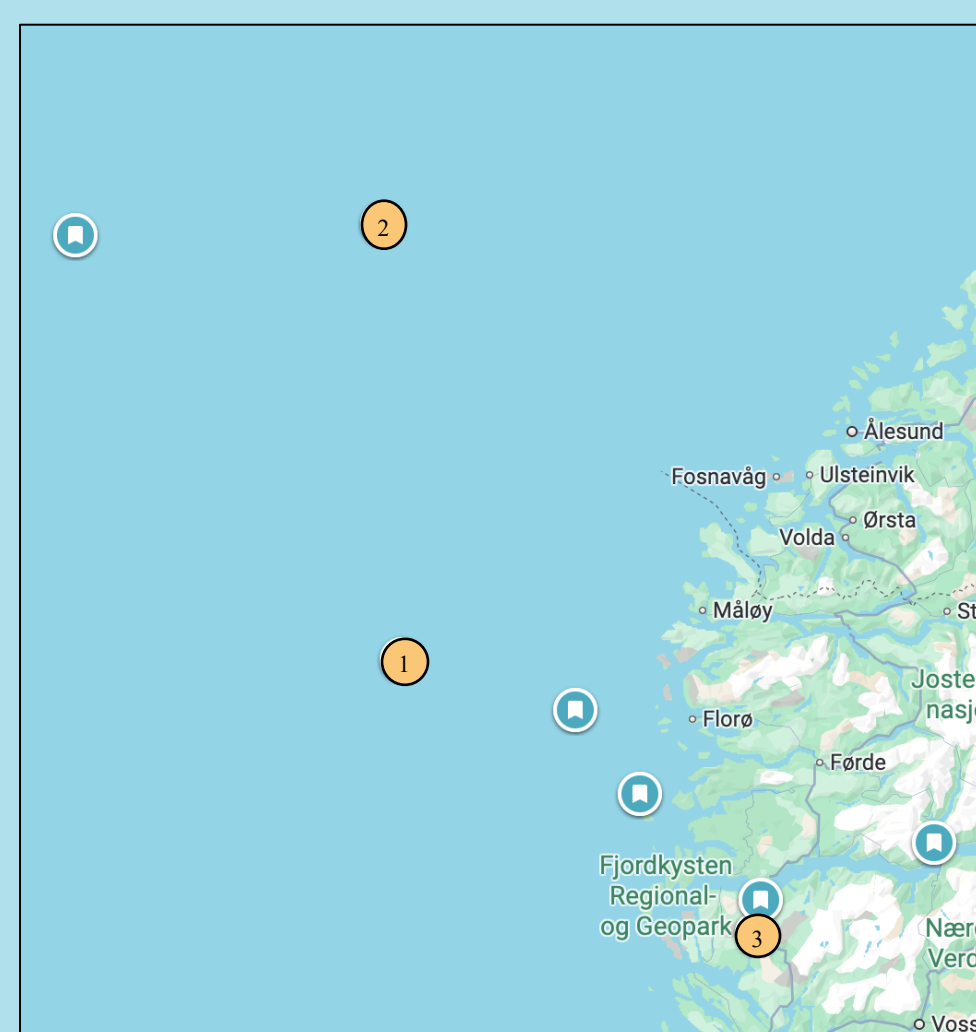
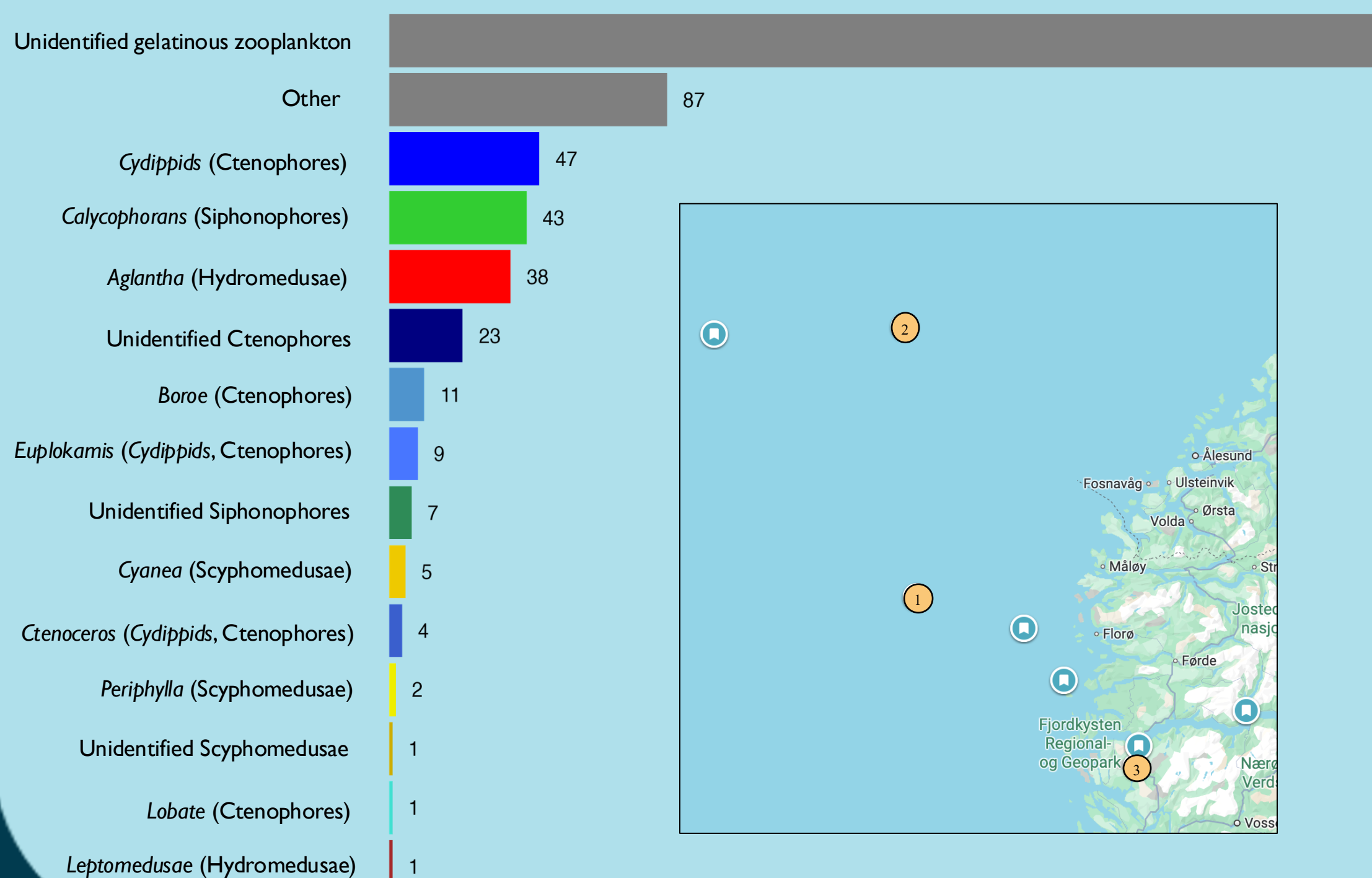
*Calyphoran* (Siphonophore)



*Beroe* (Ctenophore)

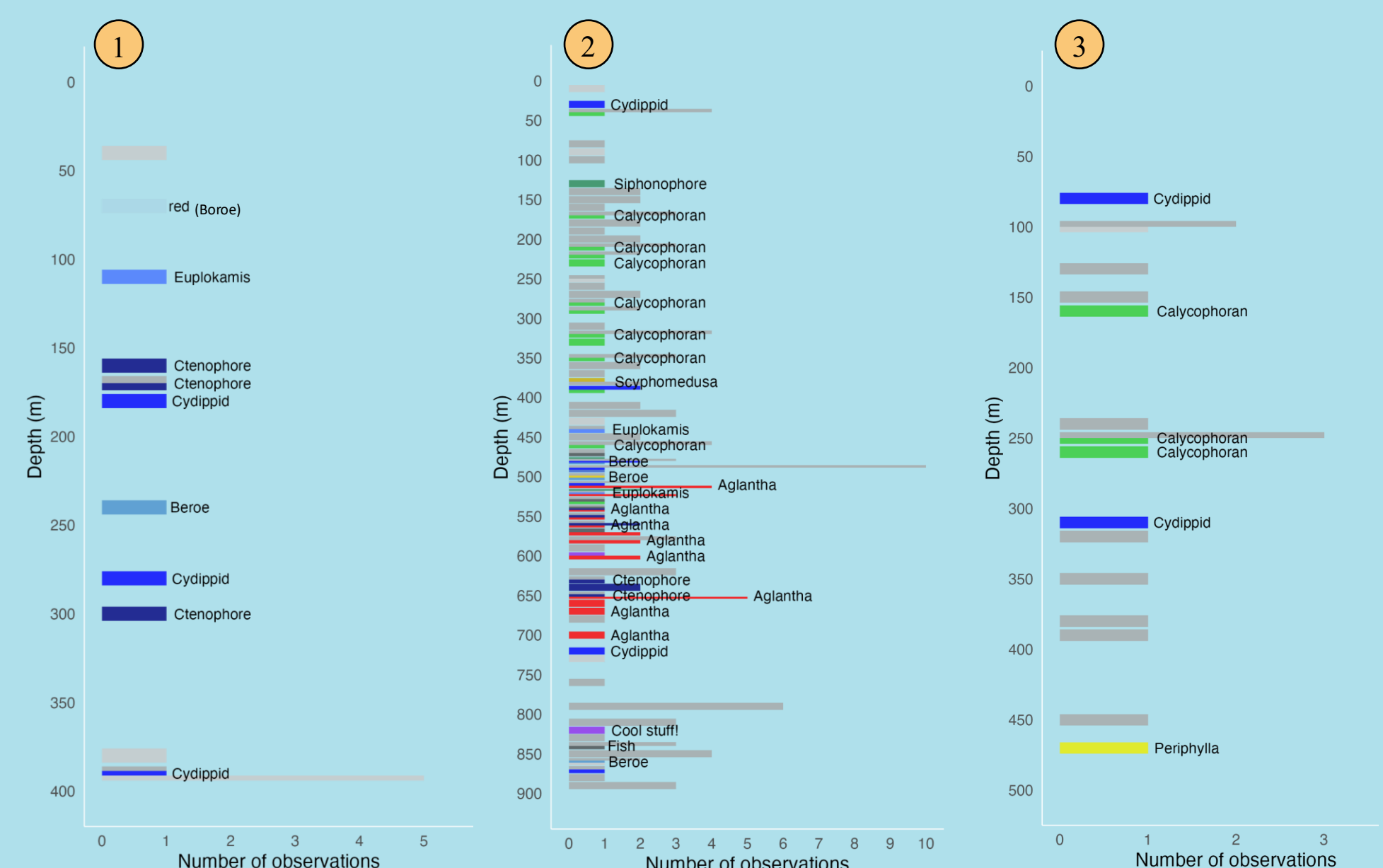
### Main findings

Total observations of jellies



Four main colour categories:

**Blue** are **Ctenophores** (comb jellies), **red** are **Hydromedusae** (small jellies), **yellow** are **Scyphomedusae** (large jellies), **green** are **Siphonophores** (colonial jellies). Additionally different shade of grey includes “unidentified gelatinous zooplankton” and “other”. Below are results of three out of nine dives. Dive 1 is descent, and dives 2 and 3 are ascents.



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### References:

Langenkämper, D., Zurowietz, M., Schoening, T., & Nattkemper, T.W. (2017). BIIGLE 2.0—Browsing and Annotating Large Marine Image Collections. *Frontiers in Marine Science*, 4. <https://doi.org/10.3389/fmars.2017.00083>

Magugliani, A. (n.d.). Toktrapport OXR20230730 RIV OceanXplorer Bergen - Bergen 30 juli – 7 august 2023.

### Acknowledgements:

I thank the Manet Team from the Department of Natural History at the University Museum of Bergen for training.

