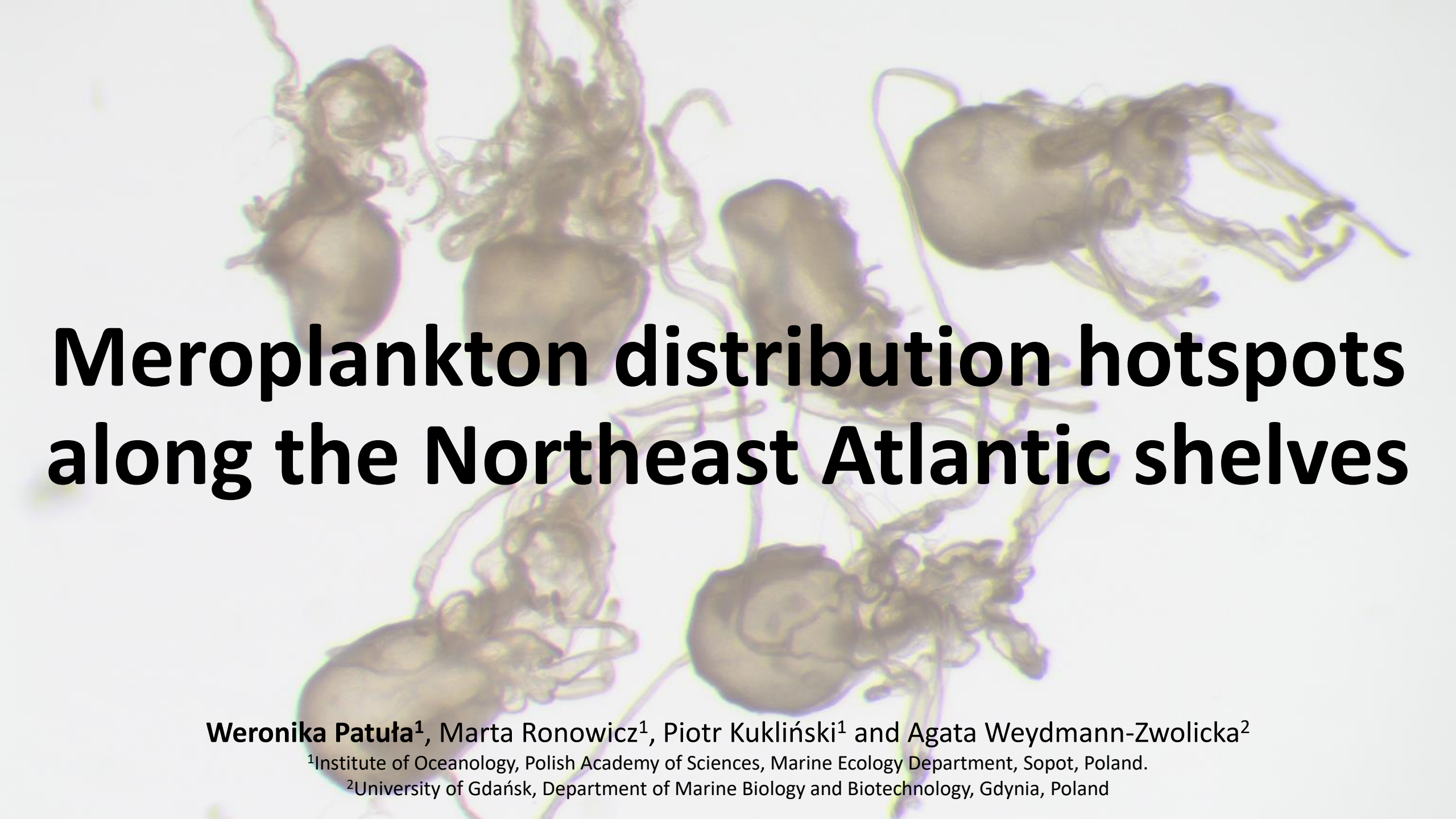
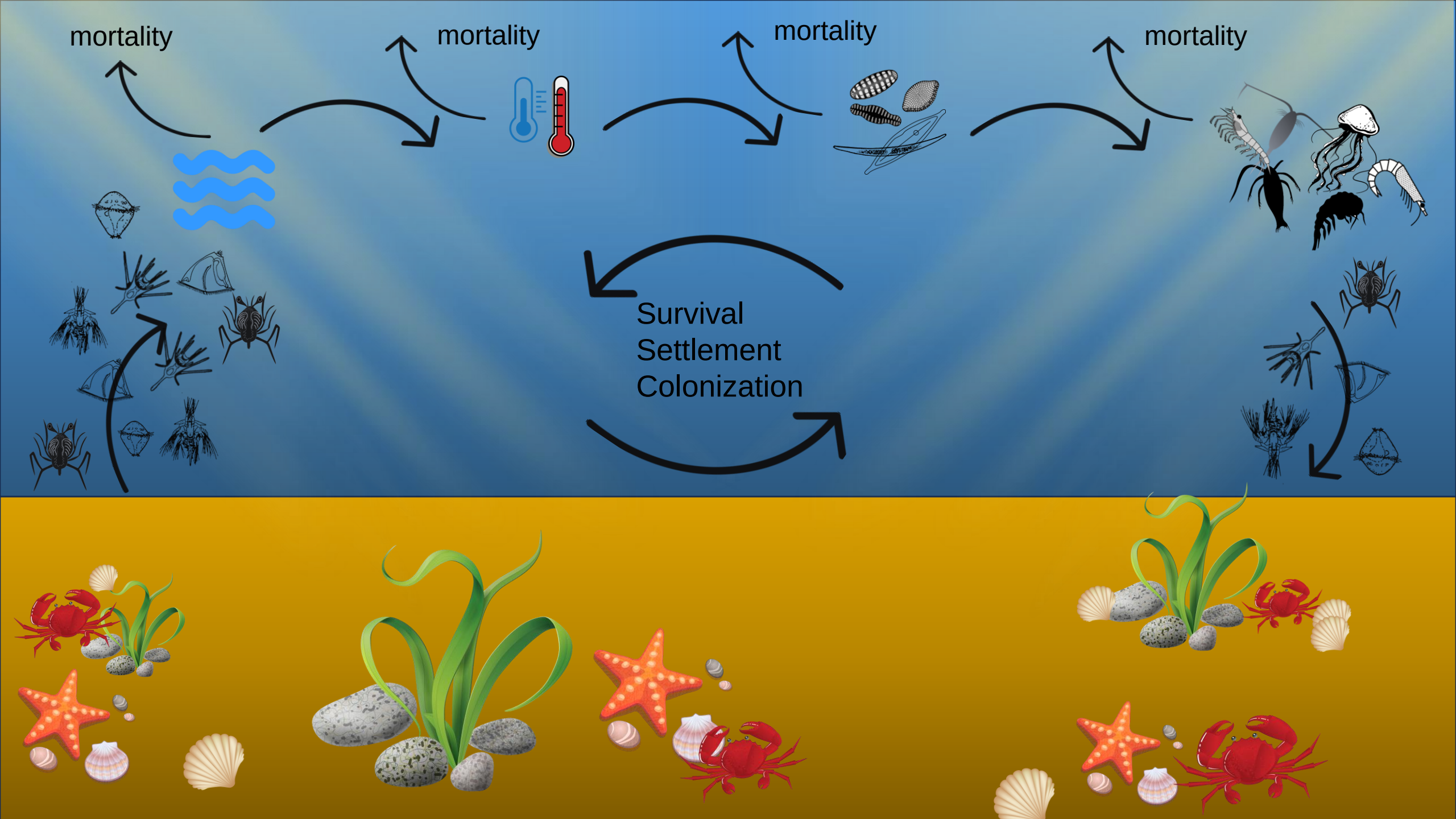


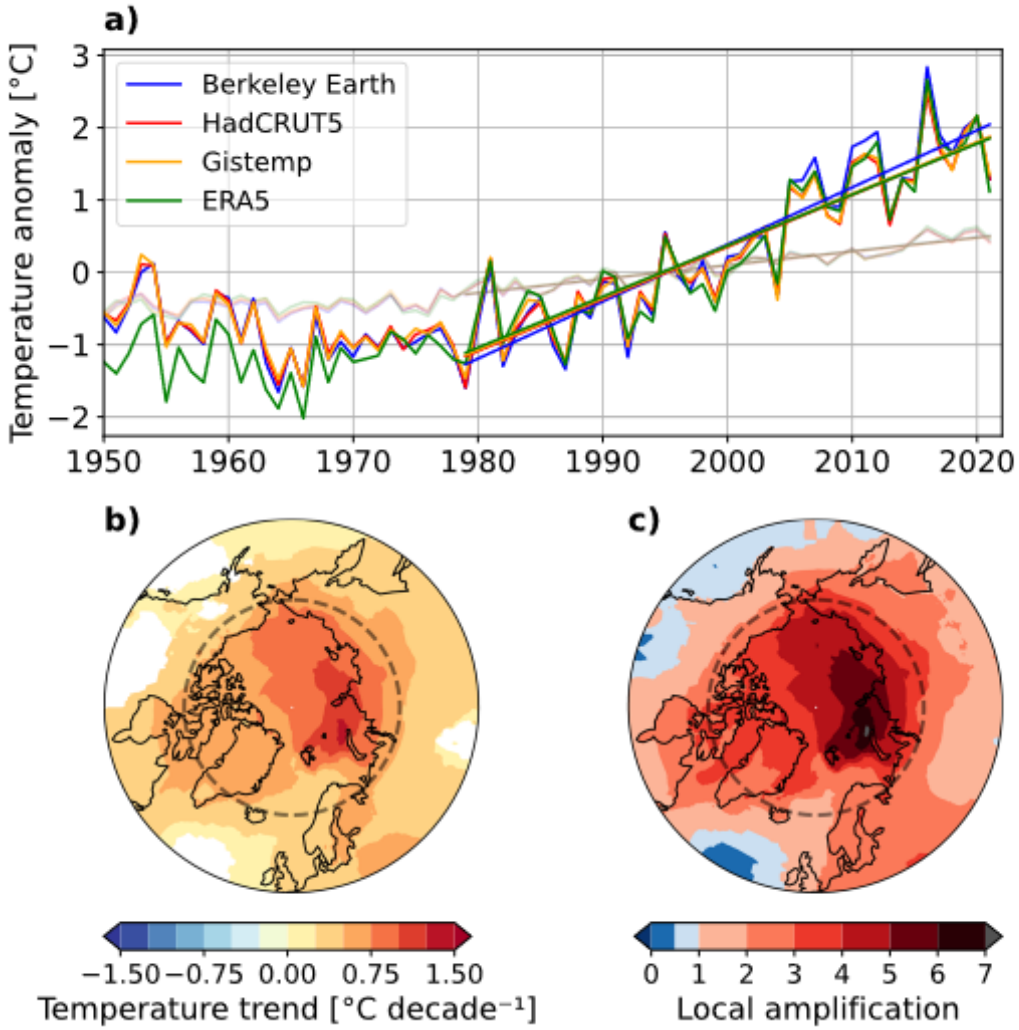
Meroplankton distribution hotspots along the Northeast Atlantic shelves

Weronika Patuła[1], Marta Ronowicz[1], Piotr Kukliński[1] and Agata Weydmann-Zwolicka[2]

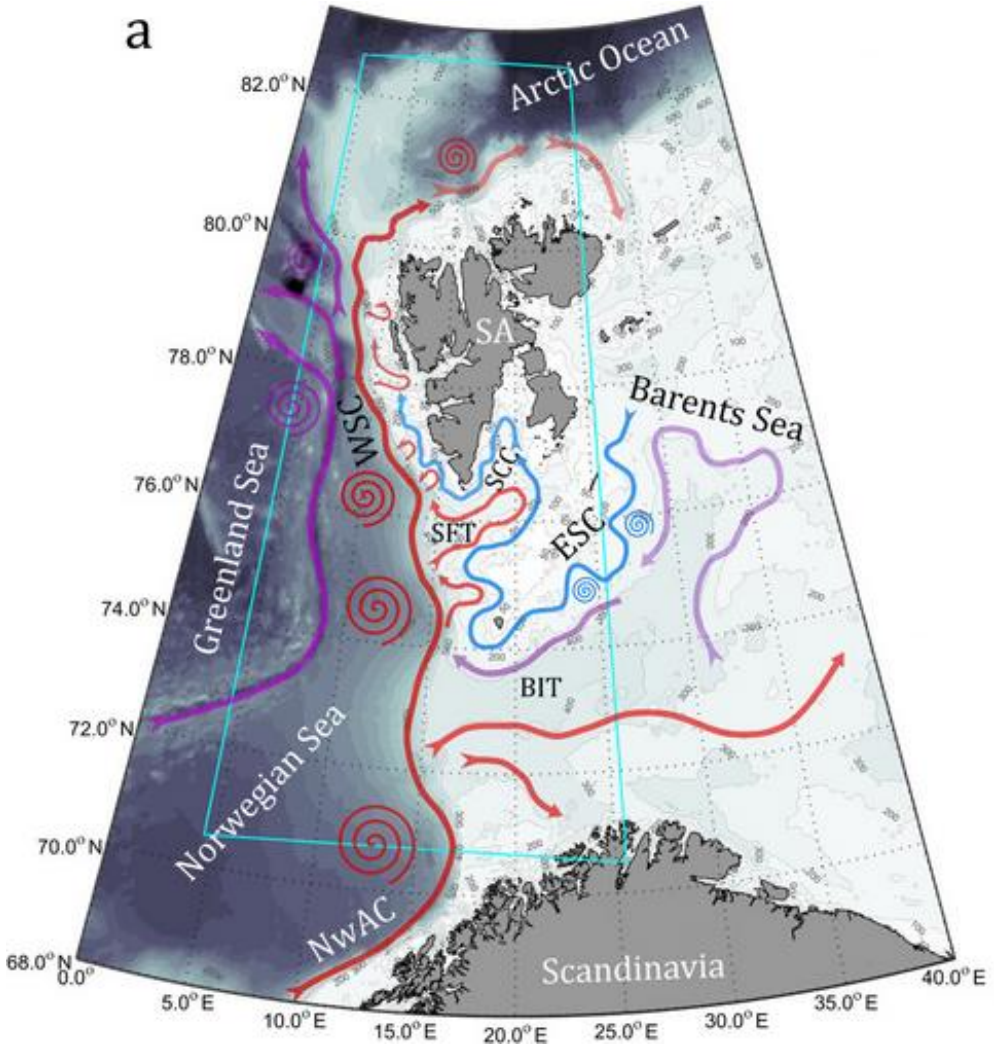
[1]Institute of Oceanology, Polish Academy of Sciences, Marine Ecology Department, Sopot, Poland.

[2]University of Gdańsk, Department of Marine Biology and Biotechnology, Gdynia, Poland

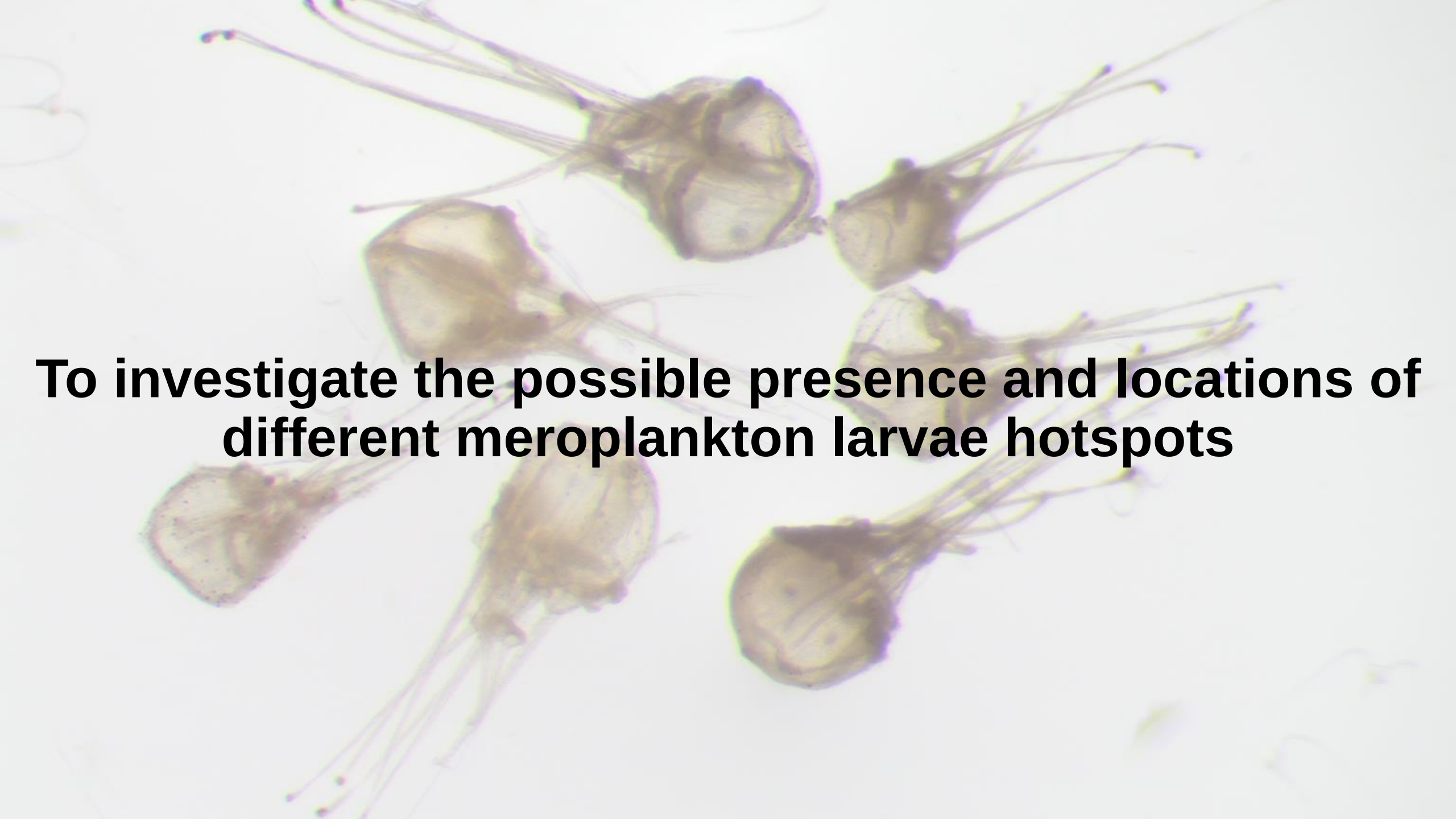

mortality
mortality
mortality
mortality
Survival
Settlement
Colonization



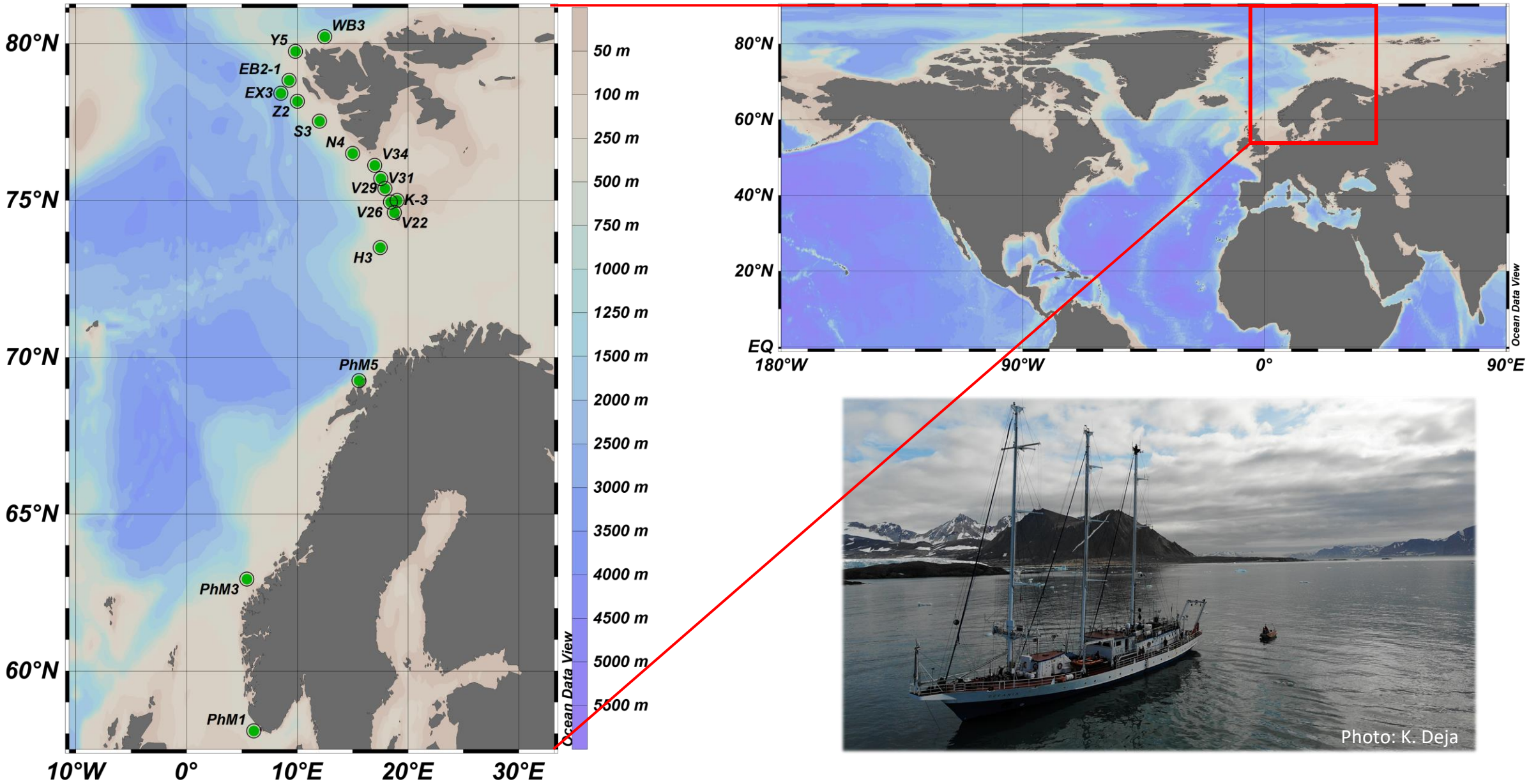
Annual mean temperaturę evolution in the Arctic: a) anomalies b) trend (period 1979 – 2021) c) local amplification ratio (period 1979 – 2021 (Rantanen et al., 2022)

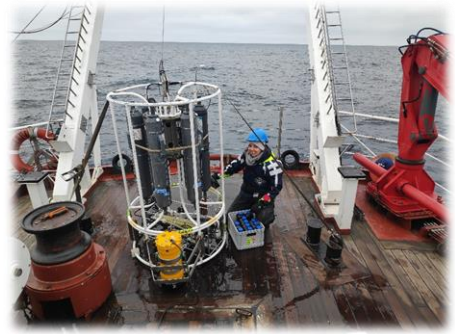


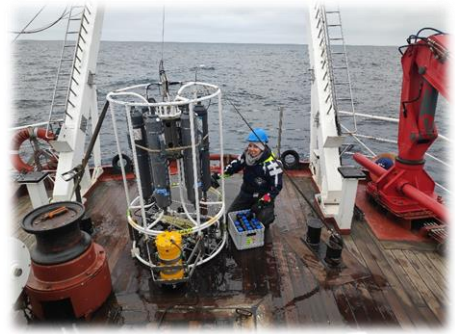
Map of the ocean circulation in the European Arctic (Goszczko et al., 2018)

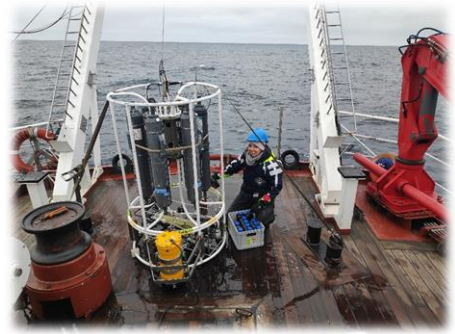


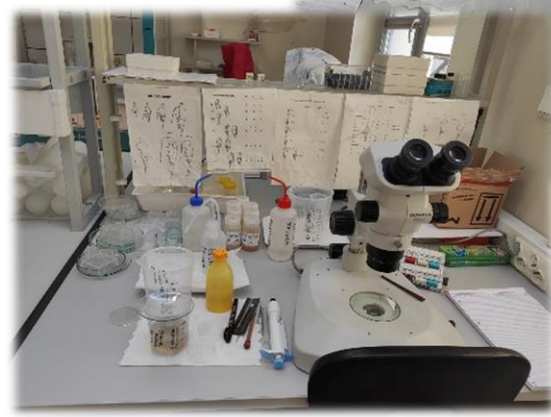
To investigate the possible presence and locations of different meroplankton larvae hotspots


80°N
75°N
70°N
65°N
60°N
10°W
0°
10°E
20°E
30°E
WB3
Y5
EB2-1
EX3
Z2
S3
N4
V34
V31
V29
K-3
V26
V22
H3
PhM5
PhM3
PhM1
50 m
100 m
250 m
500 m
750 m
1000 m
1250 m
1500 m
2000 m
2500 m
3000 m
3500 m
4000 m
4500 m
5000 m
5500 m
Ocean Data View
80°N
60°N
40°N
20°N
EQ
180°W
90°W
0°
90°E
Ocean Data View
Photo: K. Deja





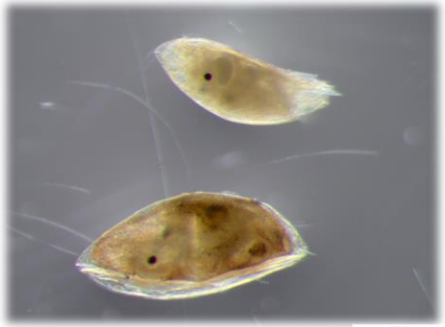




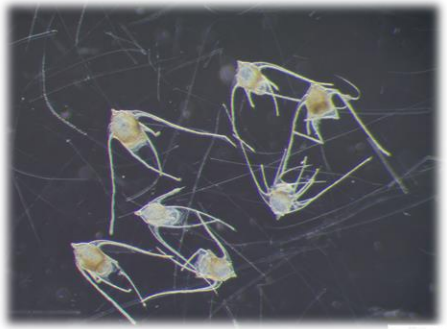
The examples of different larvae morphotypes

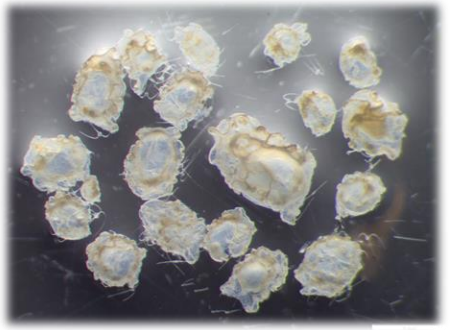
Bryozoa larvae

Cirripedia larvae

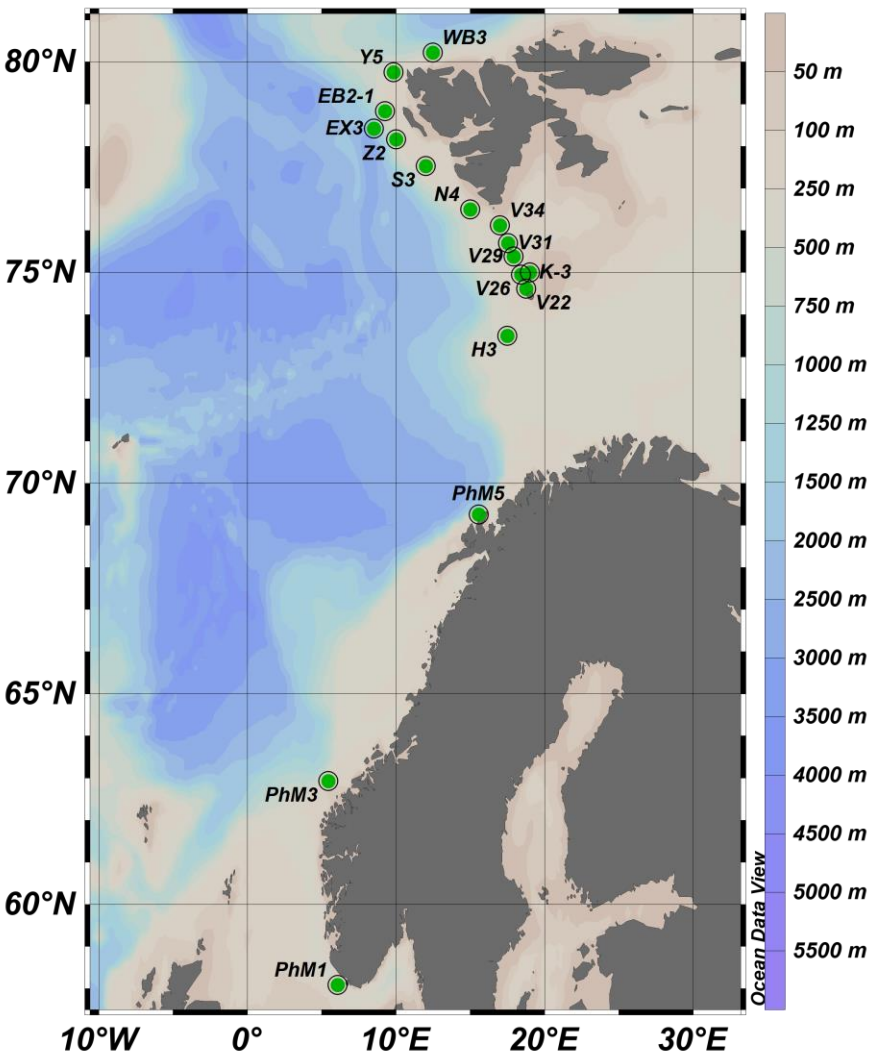


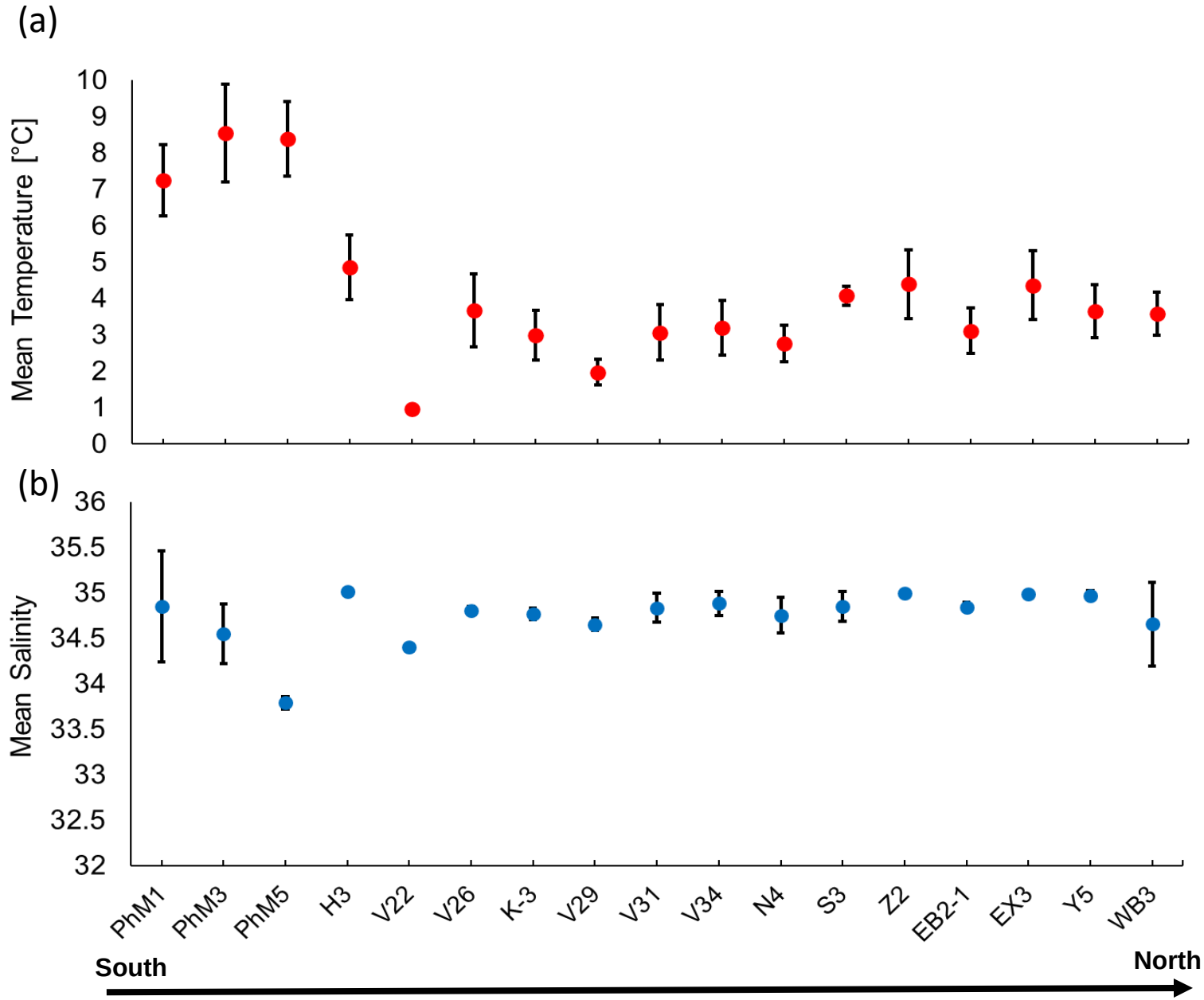
Echinodermata larvae



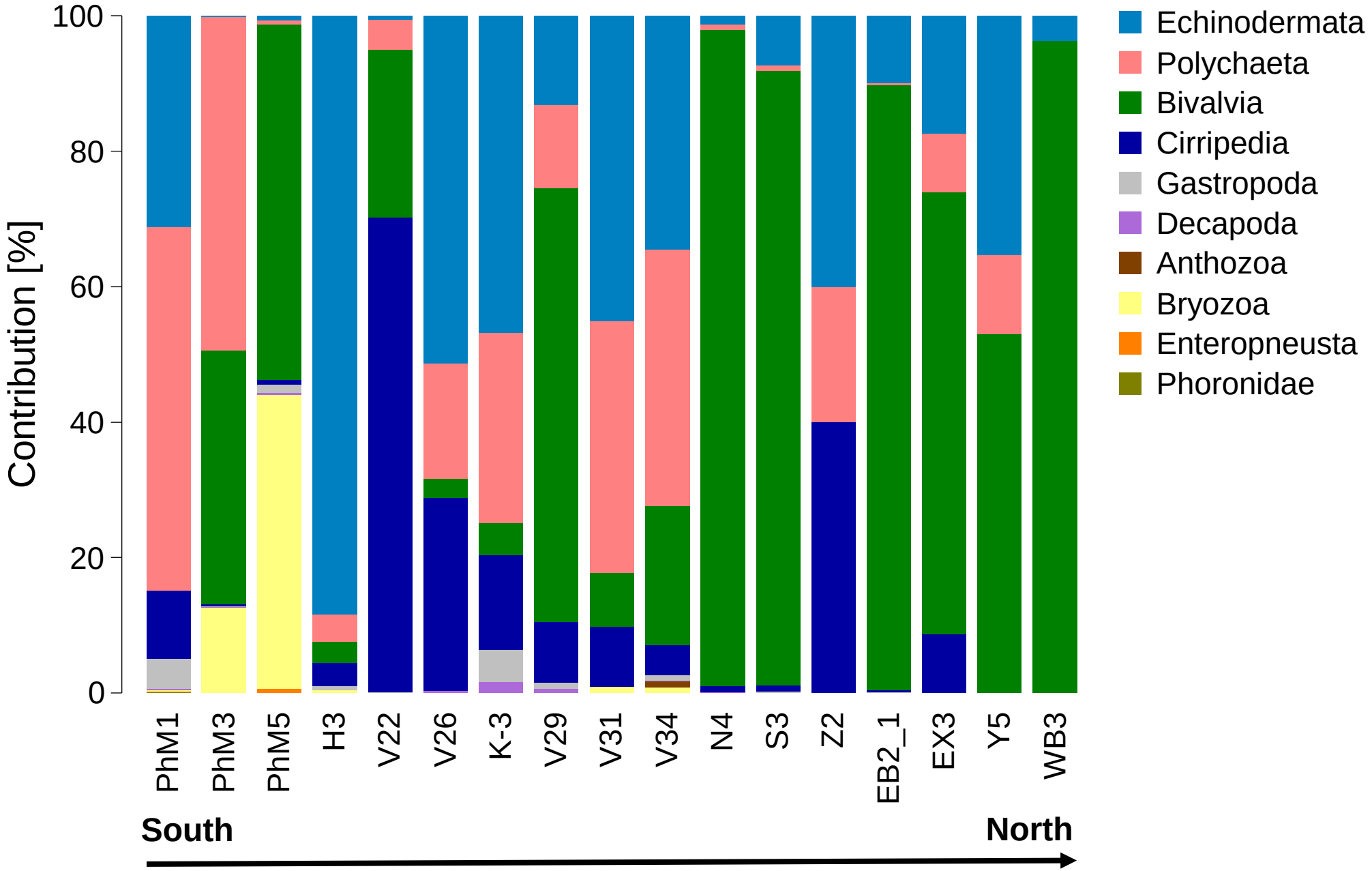


Polychaeta larvae

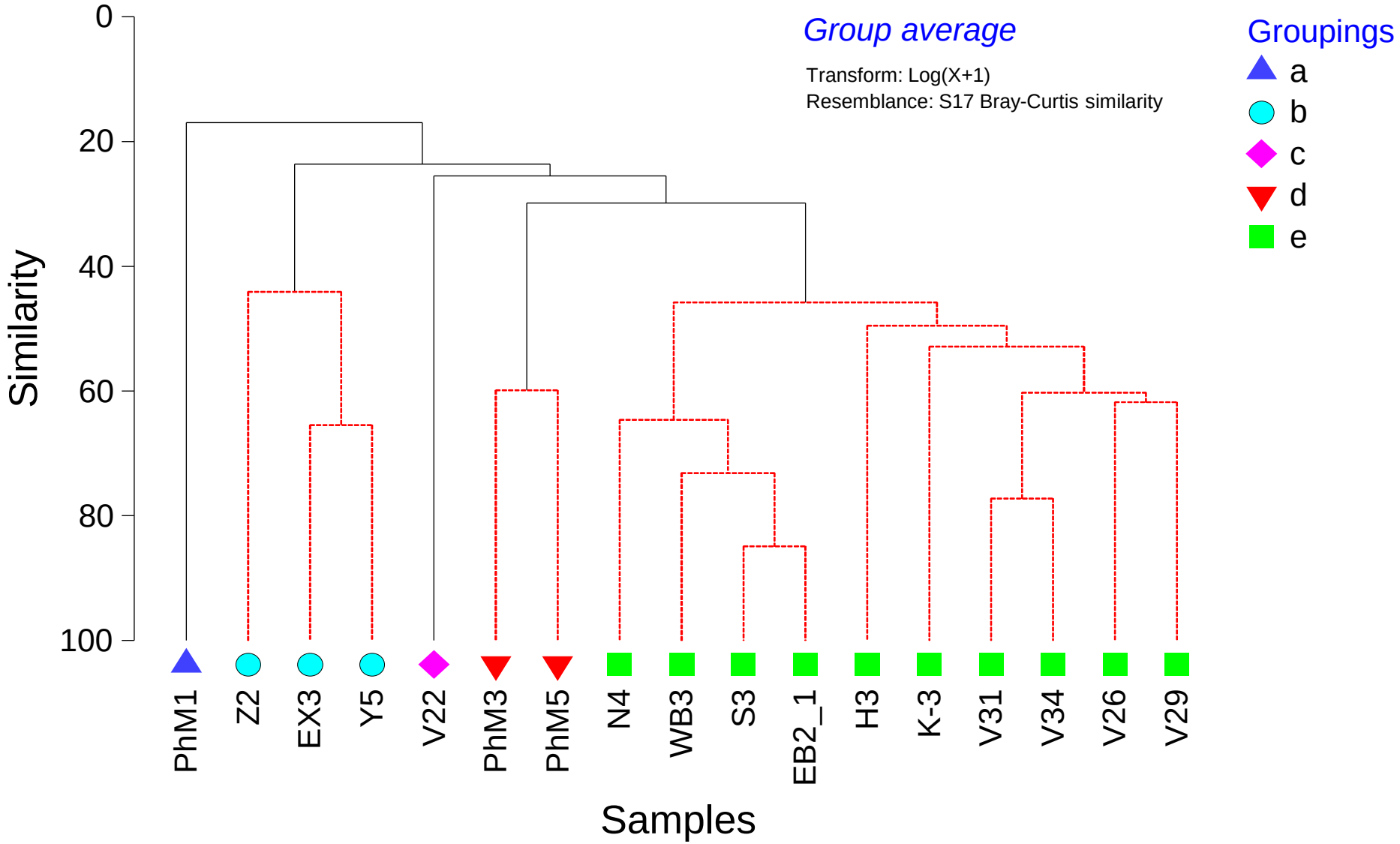




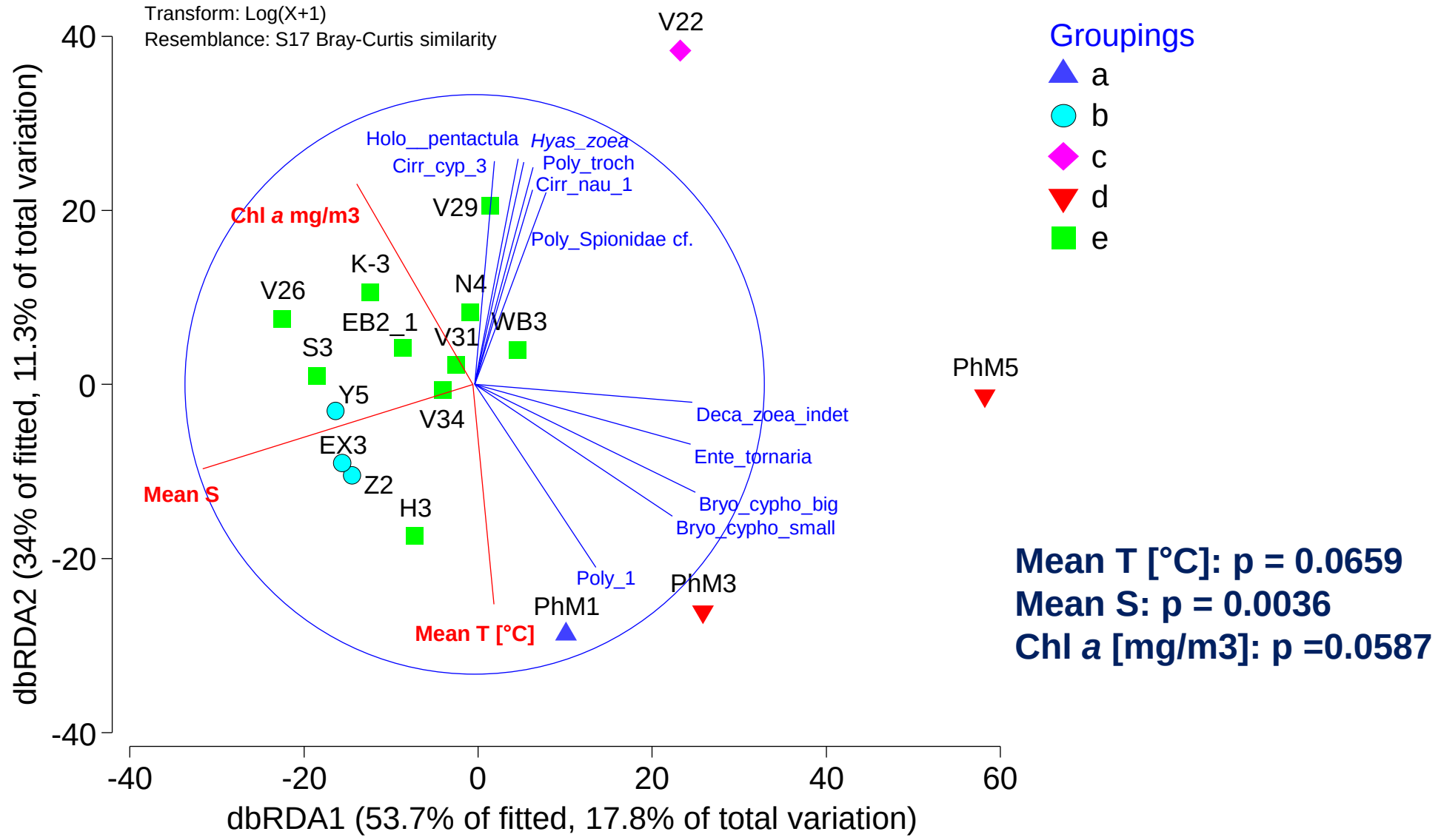
Mean temperature (a) and salinity (b) fluctuations with SD in the water column at the sampling sites along NE Atlantic shelf



Contribution of meroplankton groups at the sampling sites along NE Atlantic shelf

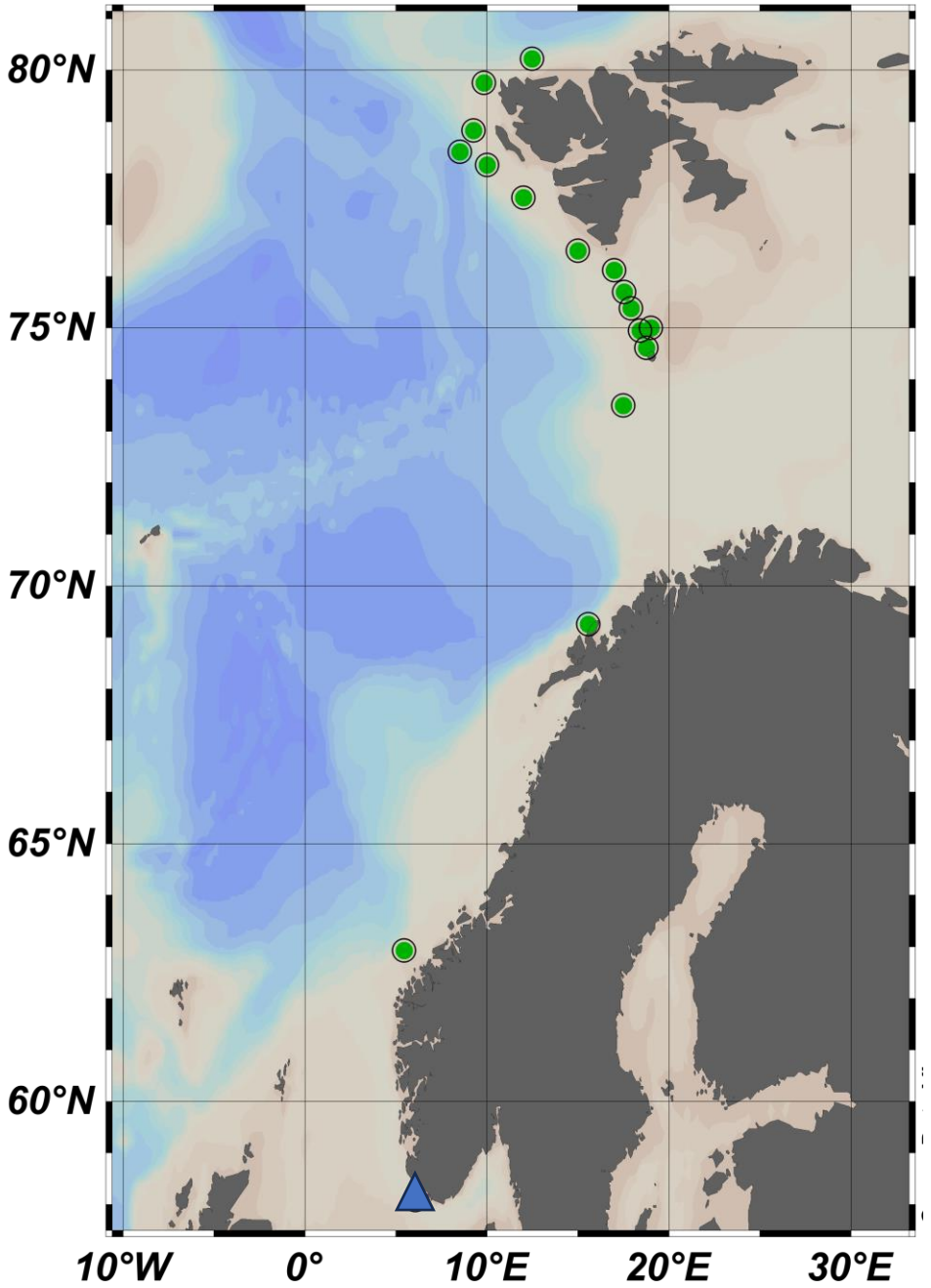


Bray-Curtis similarity cluster analysis on the basis of meroplankton morphotype structure and abundance at the sampling sites along NE Atlantic shelf

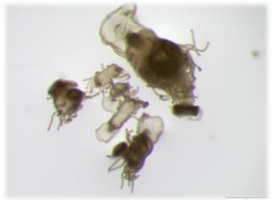
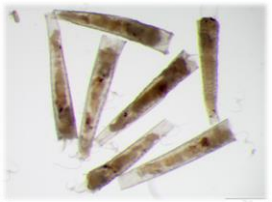


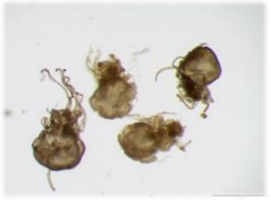
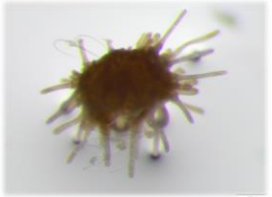
The ordination of samples with environmental variables and zooplankton taxa based on dbRDA

▲ T ~ 7°C S ~ 34,8 Chl *a* ~ 0.004 [mg m^{-3}]

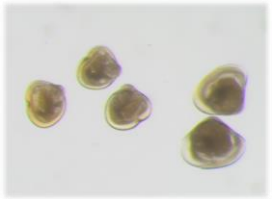
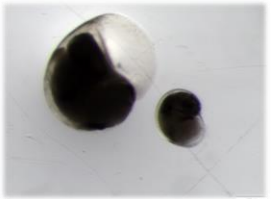


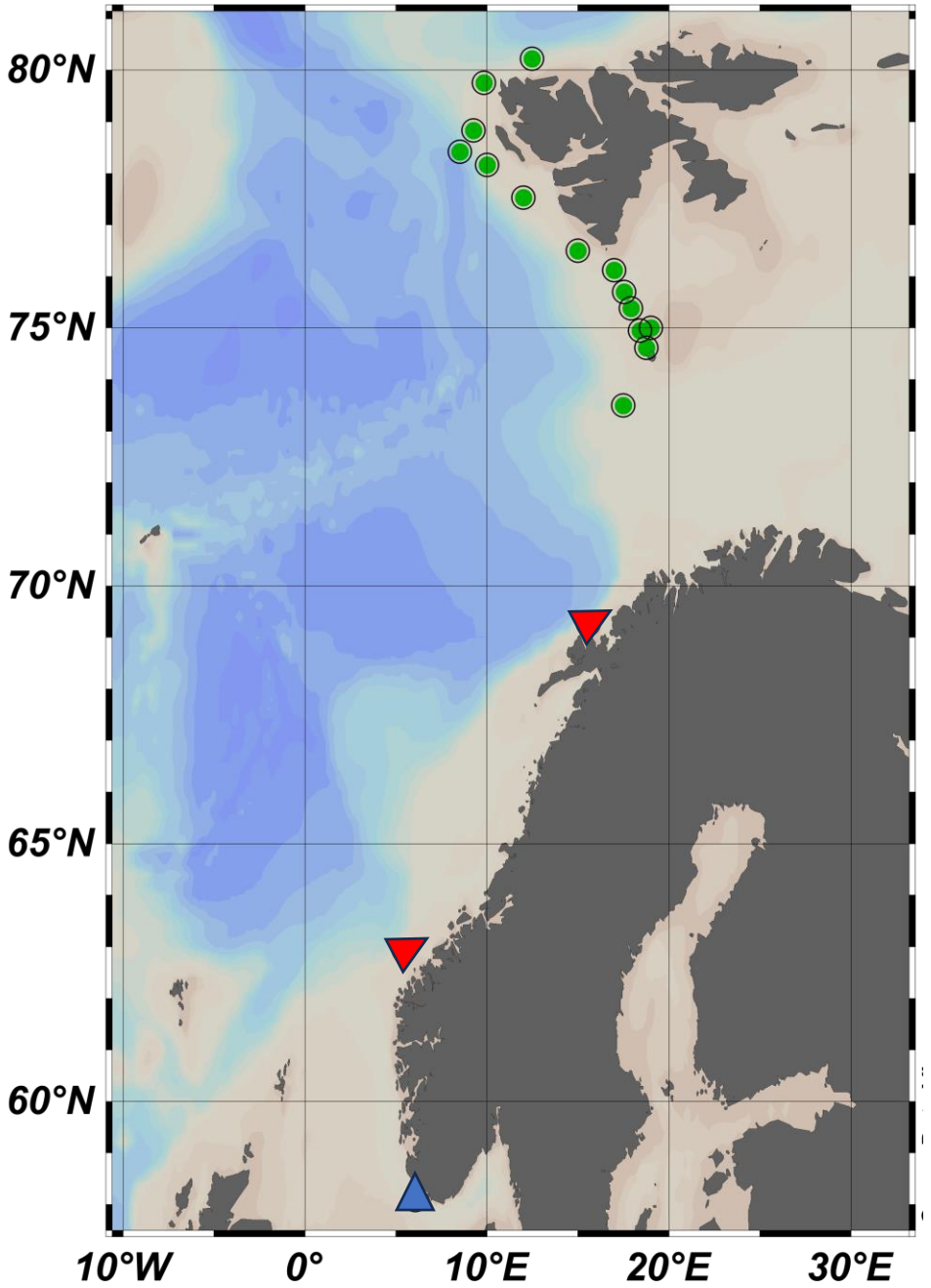
▲ T ~ 7°C S ~ 34,8 Chl *a* ~ 0.004 [mg m^{-3}]

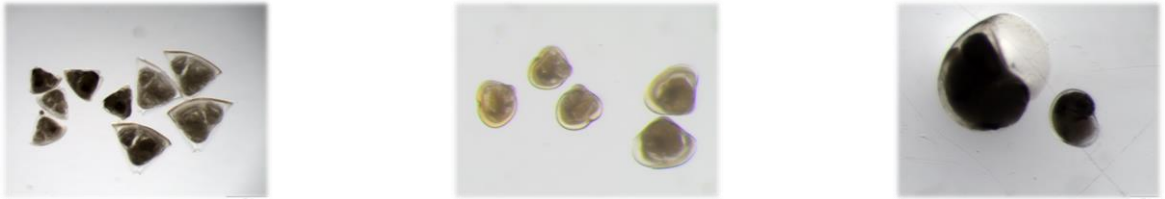
▼ T ~ 8.5°C S ~ 33.8 – 34.4 Chl *a* ~ 0.007/0.22 [mg m^{-3}]

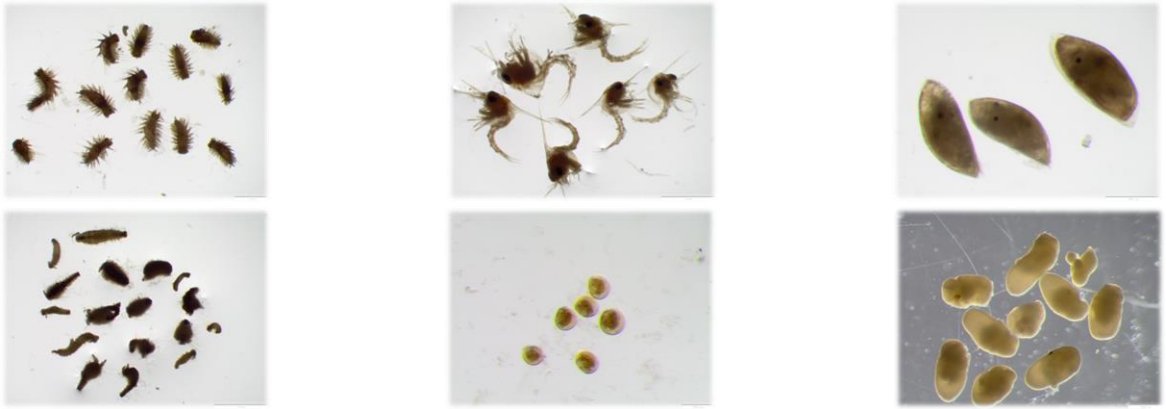


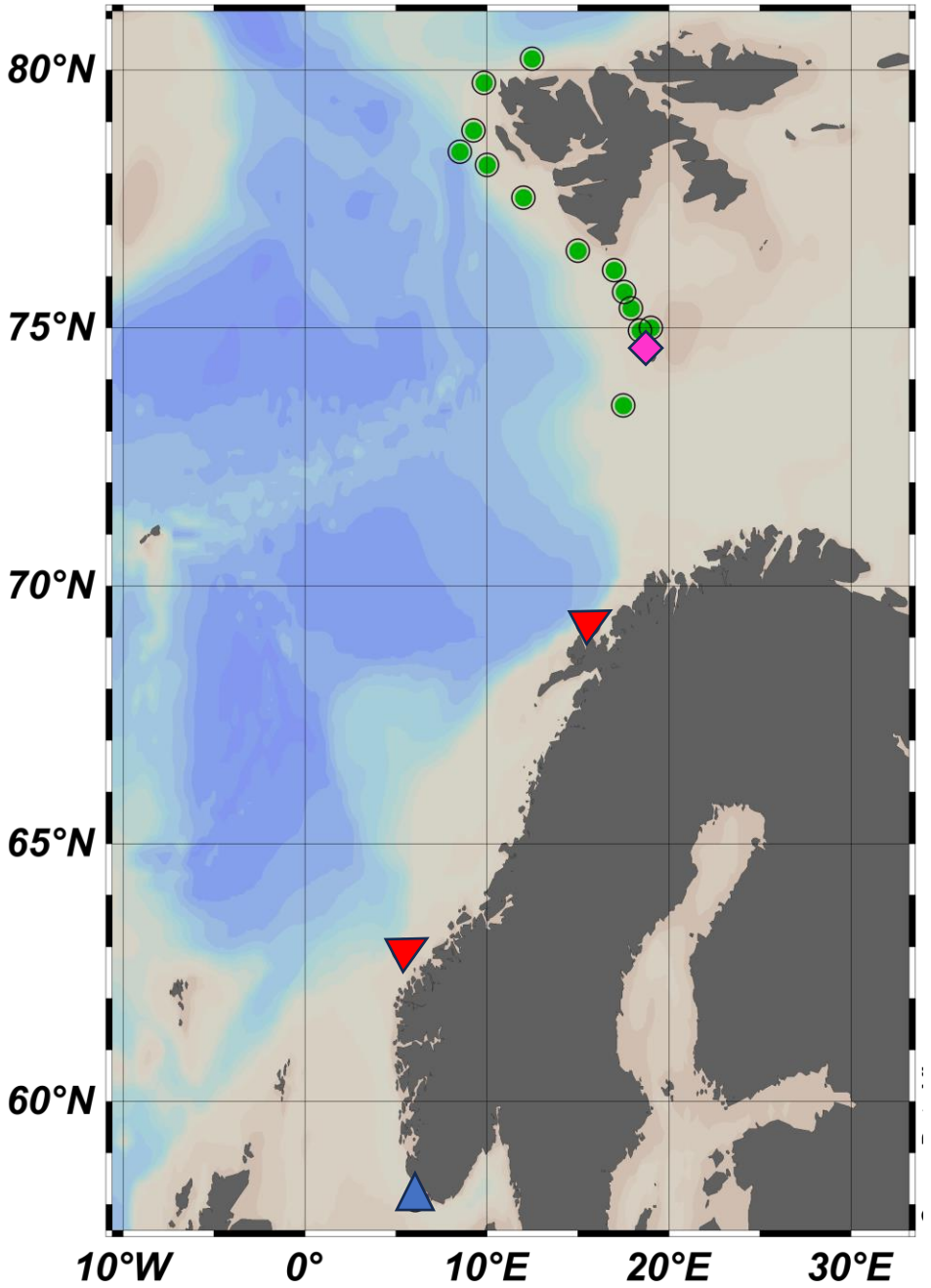
▲ T ~ 7°C S ~ 34,8 Chl *a* ~ 0.004 [mg m⁻³]

▼ T ~ 8.5°C S ~ 33.8 – 34.4 Chl *a* ~ 0.007/0.22 [mg m⁻³]

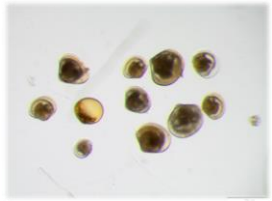


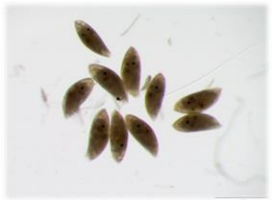
◆ T ~ 1°C S ~ 34.4 Chl *a* ~ 1.5 [mg m⁻³]

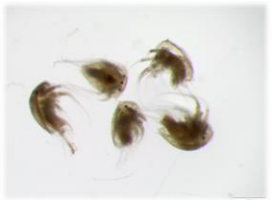


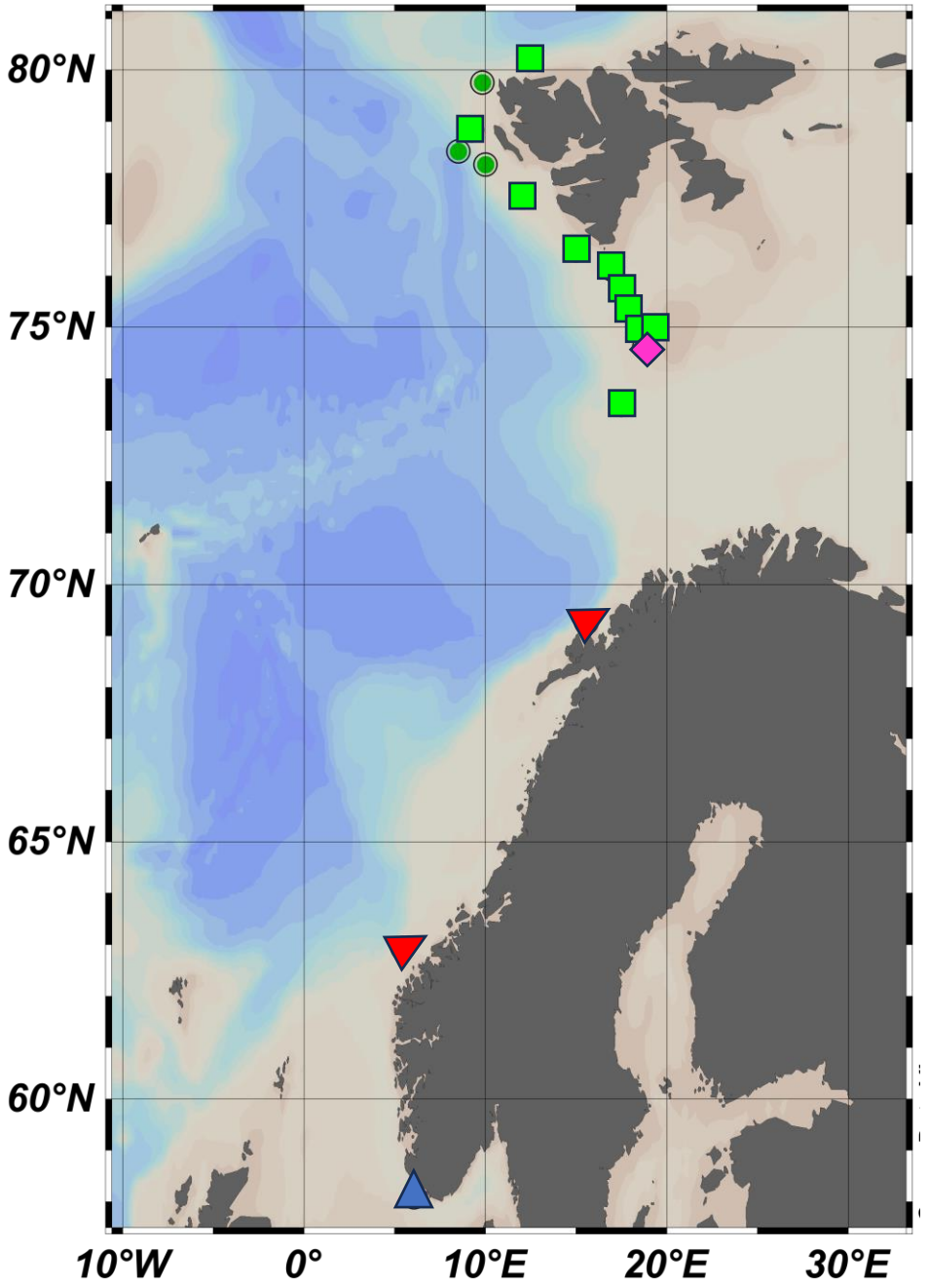


T ~ 2 – 4.8°C S ~ 34.6 - 35 Chl *a* ~ 0.05 – 1.5 [mg m^{-3}]

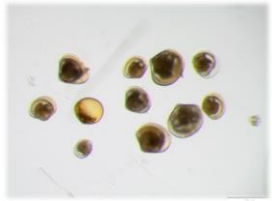


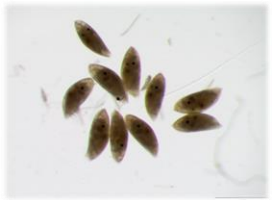
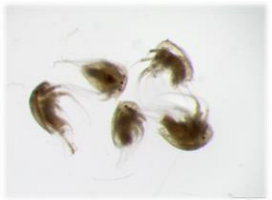




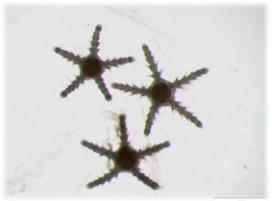
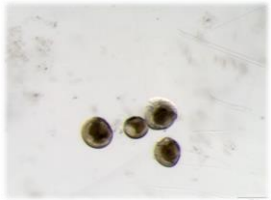


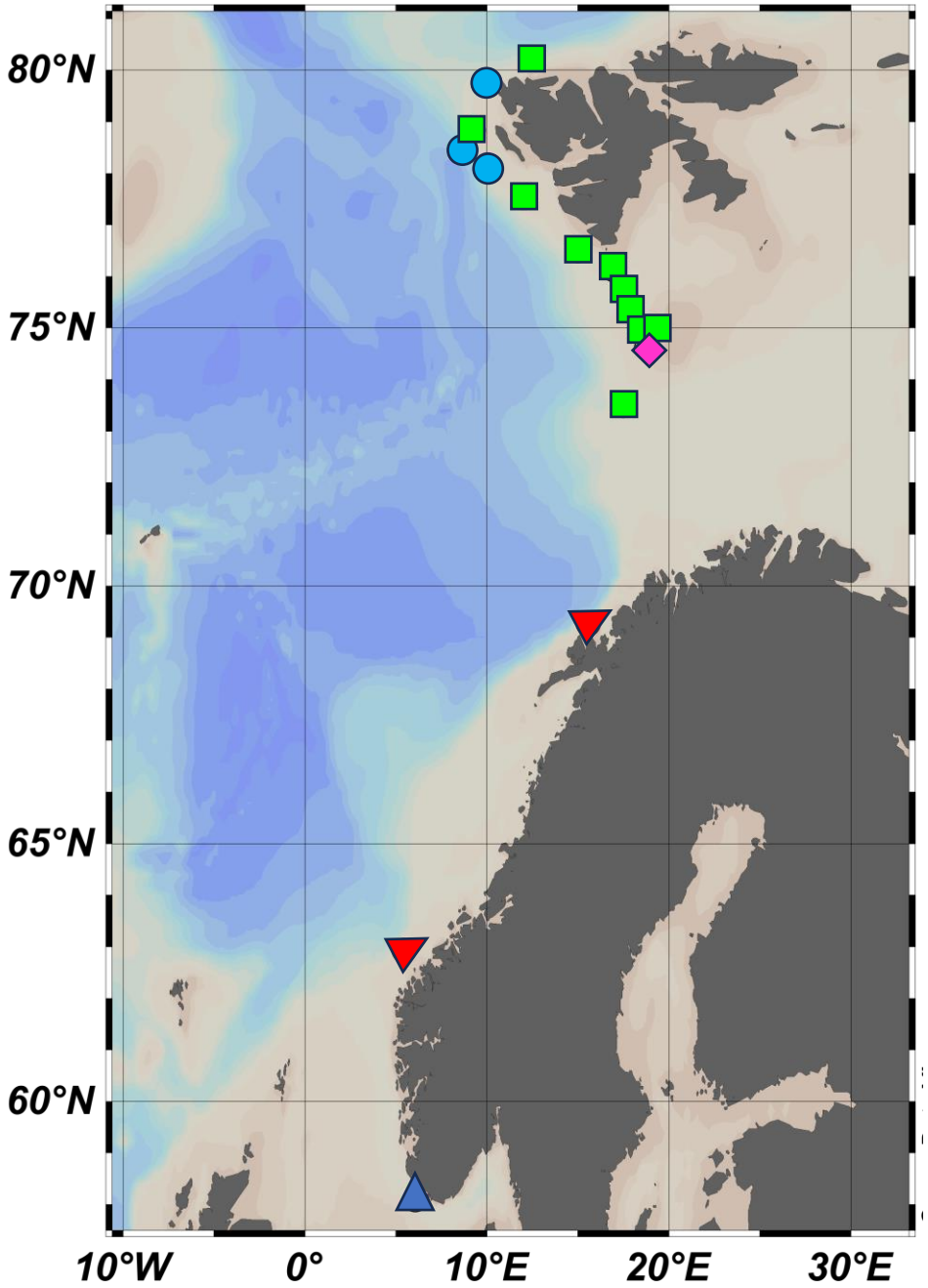
T ~ 2 – 4.8°C S ~ 34.6 - 35 Chl *a* ~ 0.05 – 1.5 [mg m^{-3}]



T ~ 3.65-4.4°C S ~ 35 Chl *a* ~ 0.2 – 0.4 [mg m^{-3}]



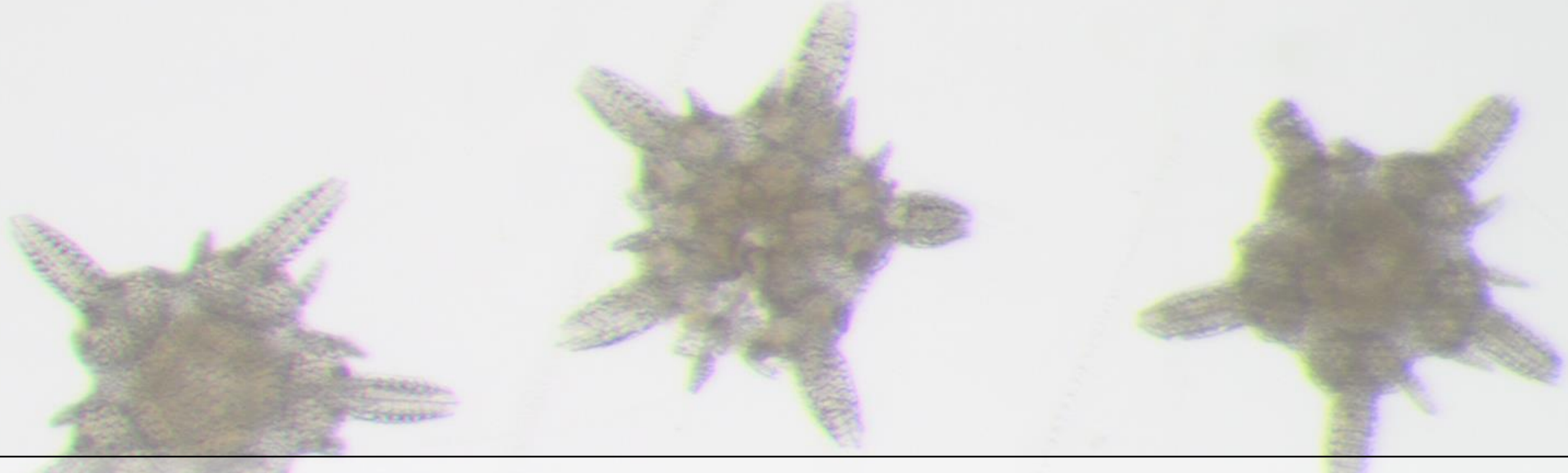
Take home message and future perspectives

Meroplanktonic larvae distribution and probable survival are affected by environmental conditions

Possibly the usage of distribution of different types of larvae in climate change predictions

Complementary techniques in meroplankton examination are needed to understand their role in the ecosystem

Thank You for Your Attention



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Email: wpatula@iopan.pl