A background image showing several marine pelagic protists, likely dinoflagellates, with their characteristic apertures and internal structures visible under a microscope.

# Marine pelagic protists revealed by metabarcoding



Karoline Saubrekka

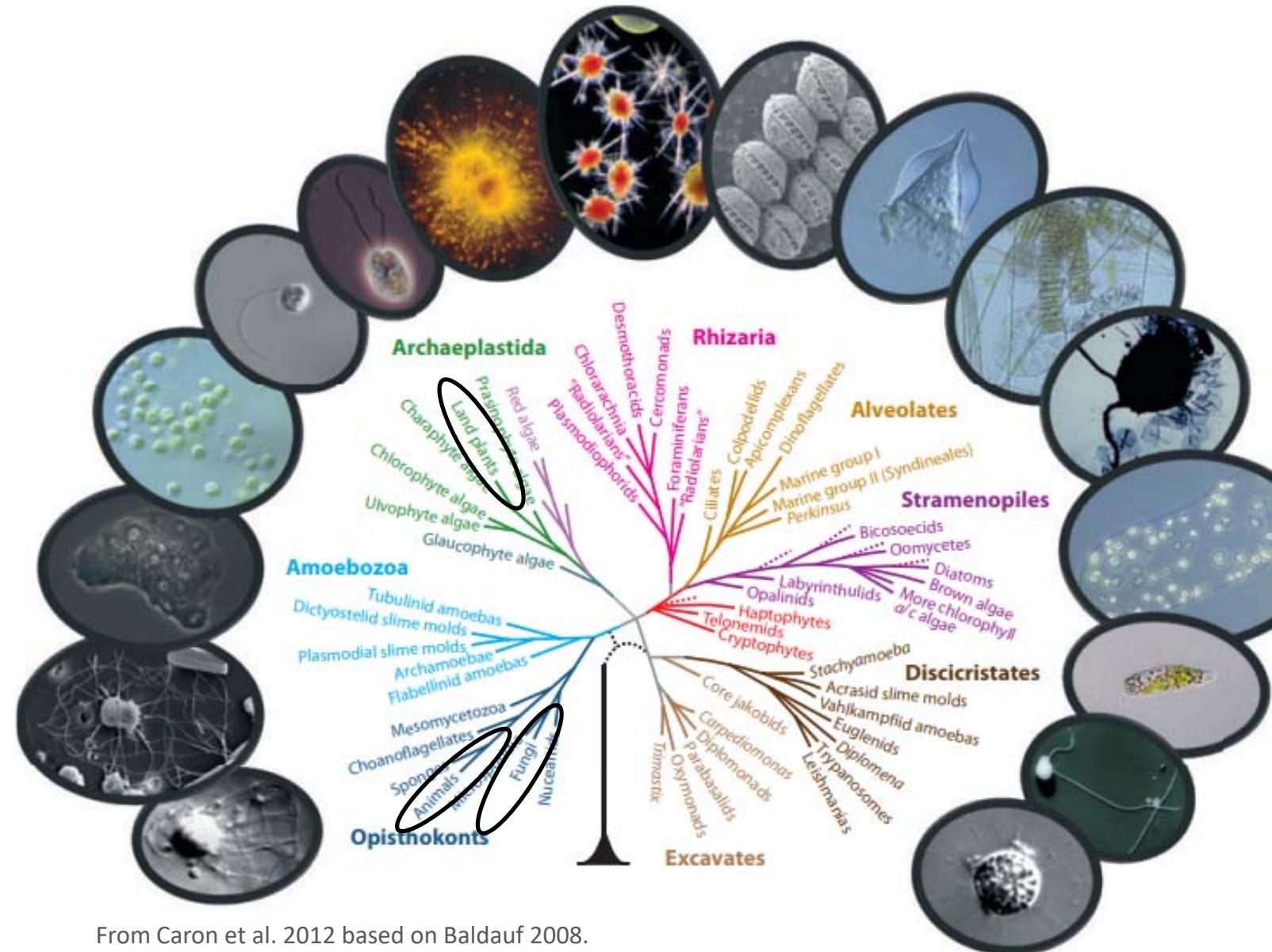
Supervisors

Professor Bente Edvardsen

Doctor Anders K. Krabberød

# Protists

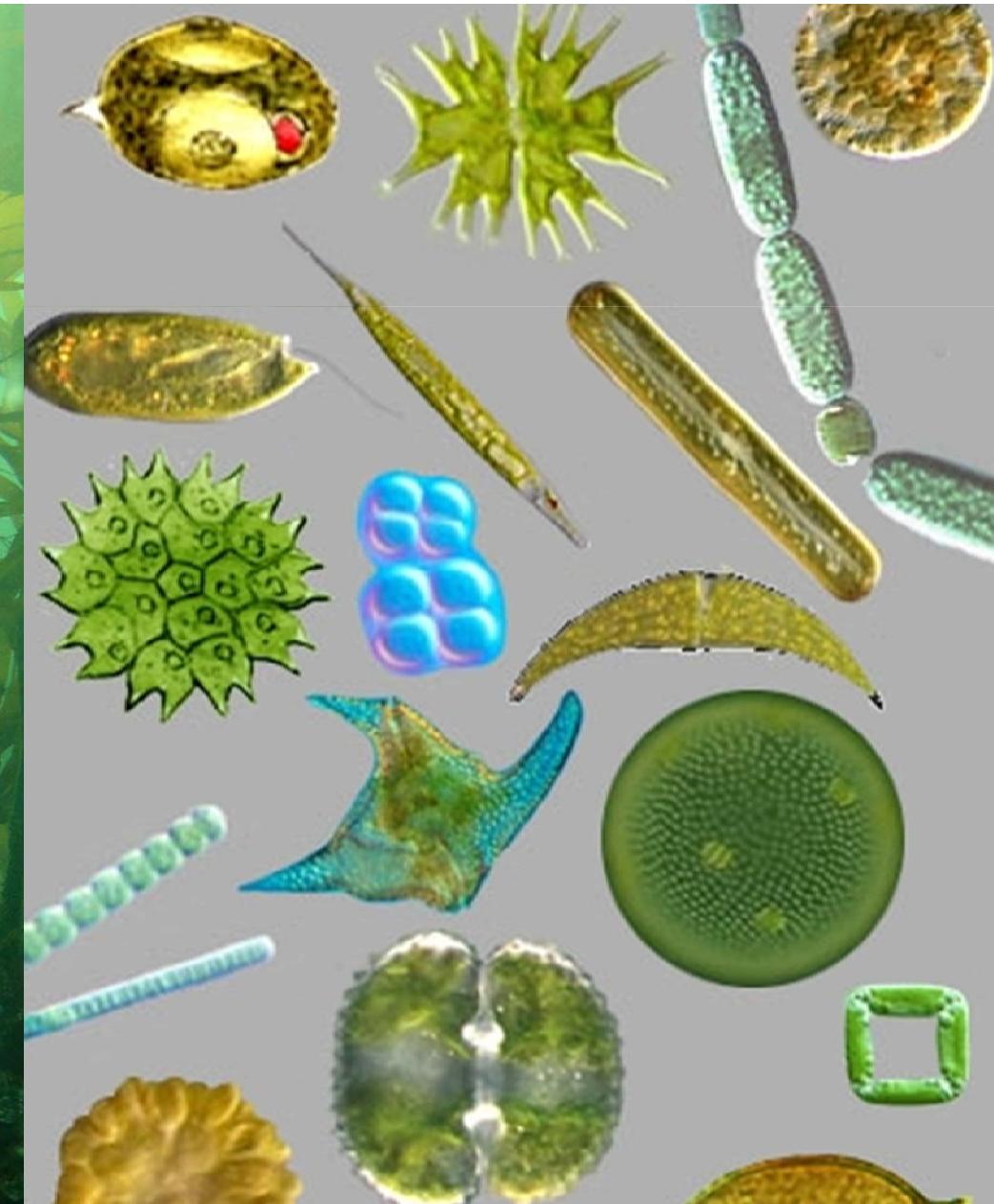
- Eukaryotes



From Caron et al. 2012 based on Baldauf 2008.



Marine pelagic  
protists  
 $0.2 - 200 \mu\text{m}$   
Phytoplankton

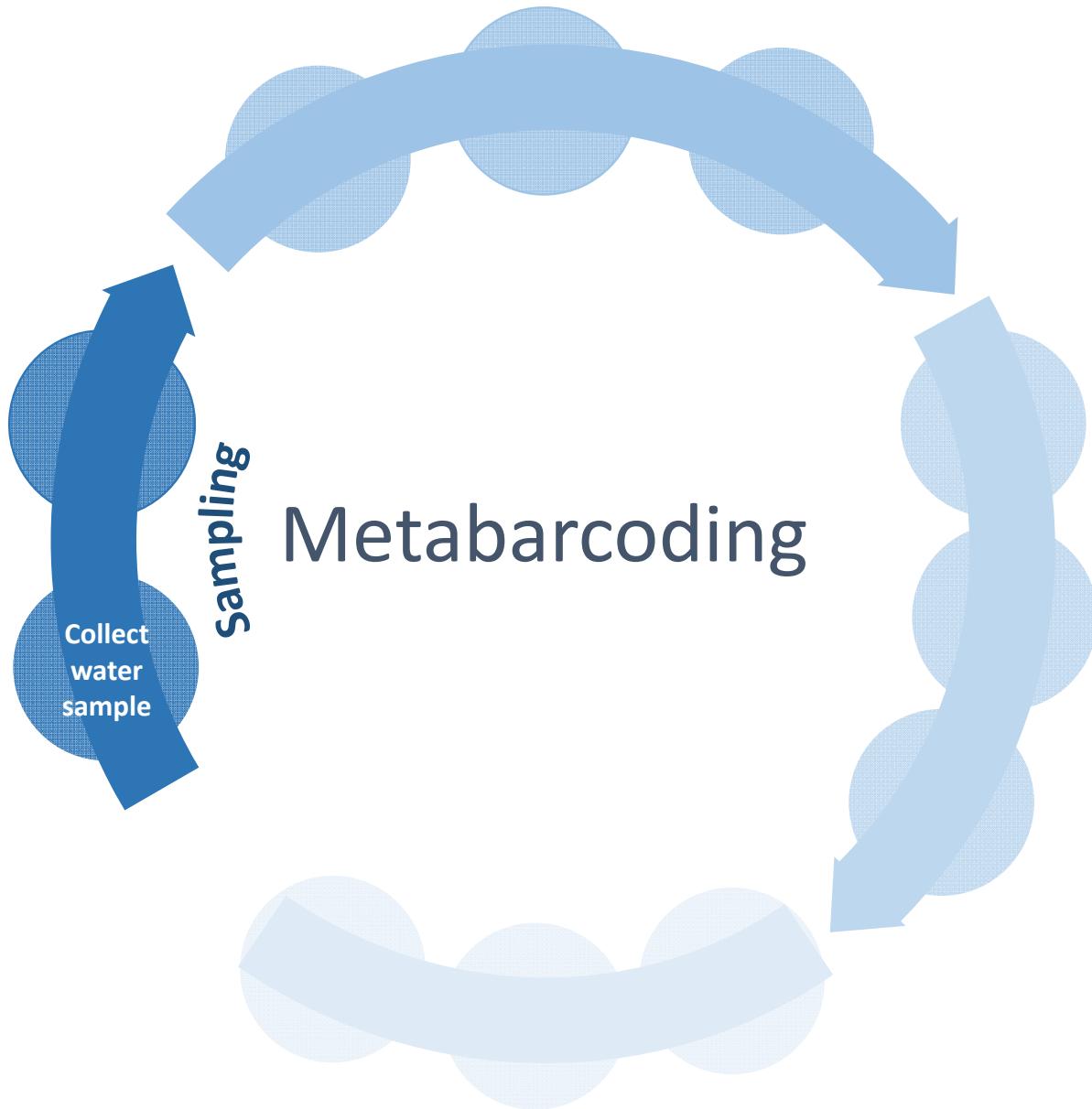


# Marine environmental monitoring

- Cornerstone of the marine foodweb
- Predators, decomposers, parasites
- Climate change
- Eutrophication
- Toxic species
- Invasive species
- Good taxonomer
- Large ( $>15 \mu\text{m}$ )
- Well preserved

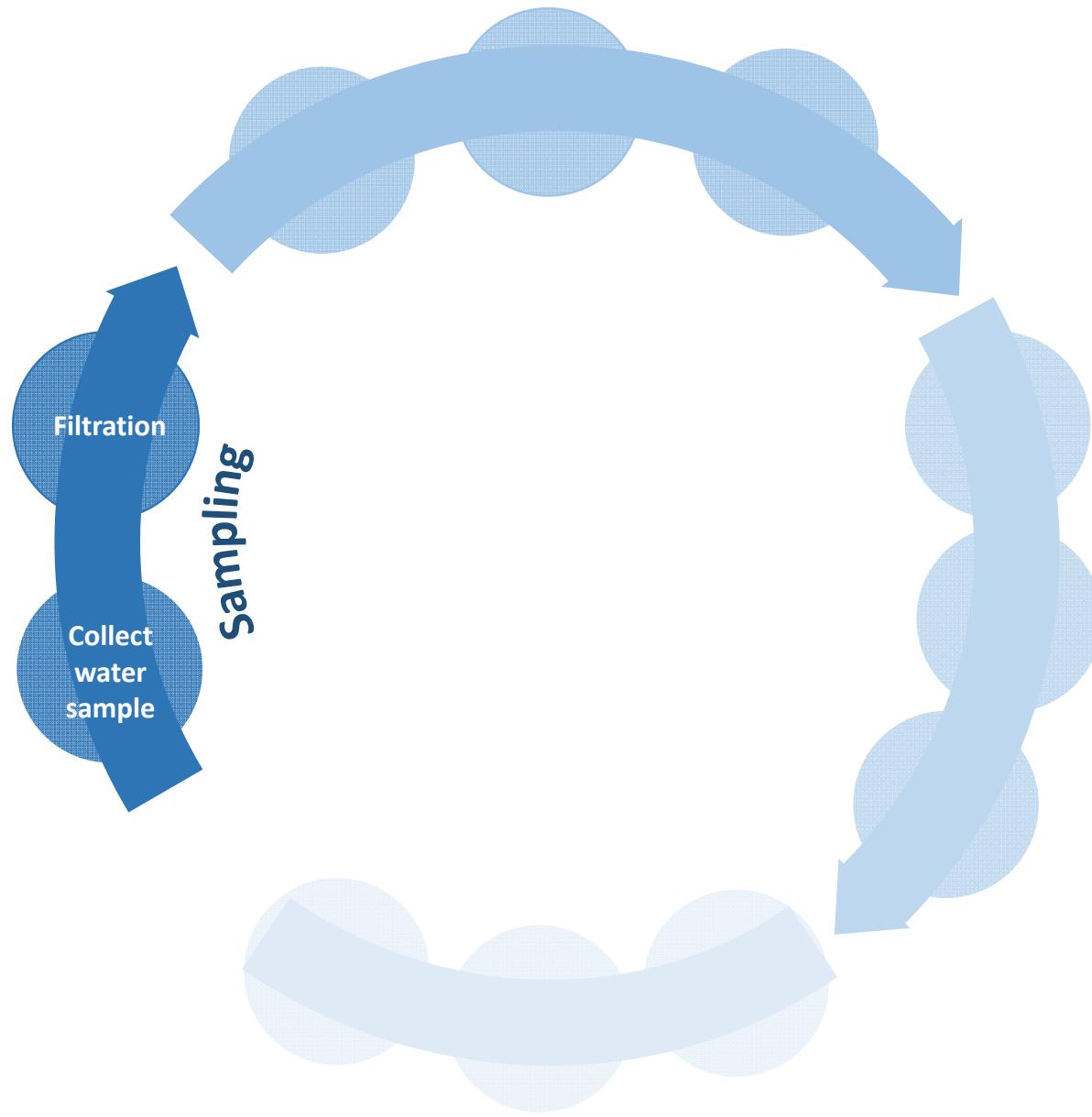


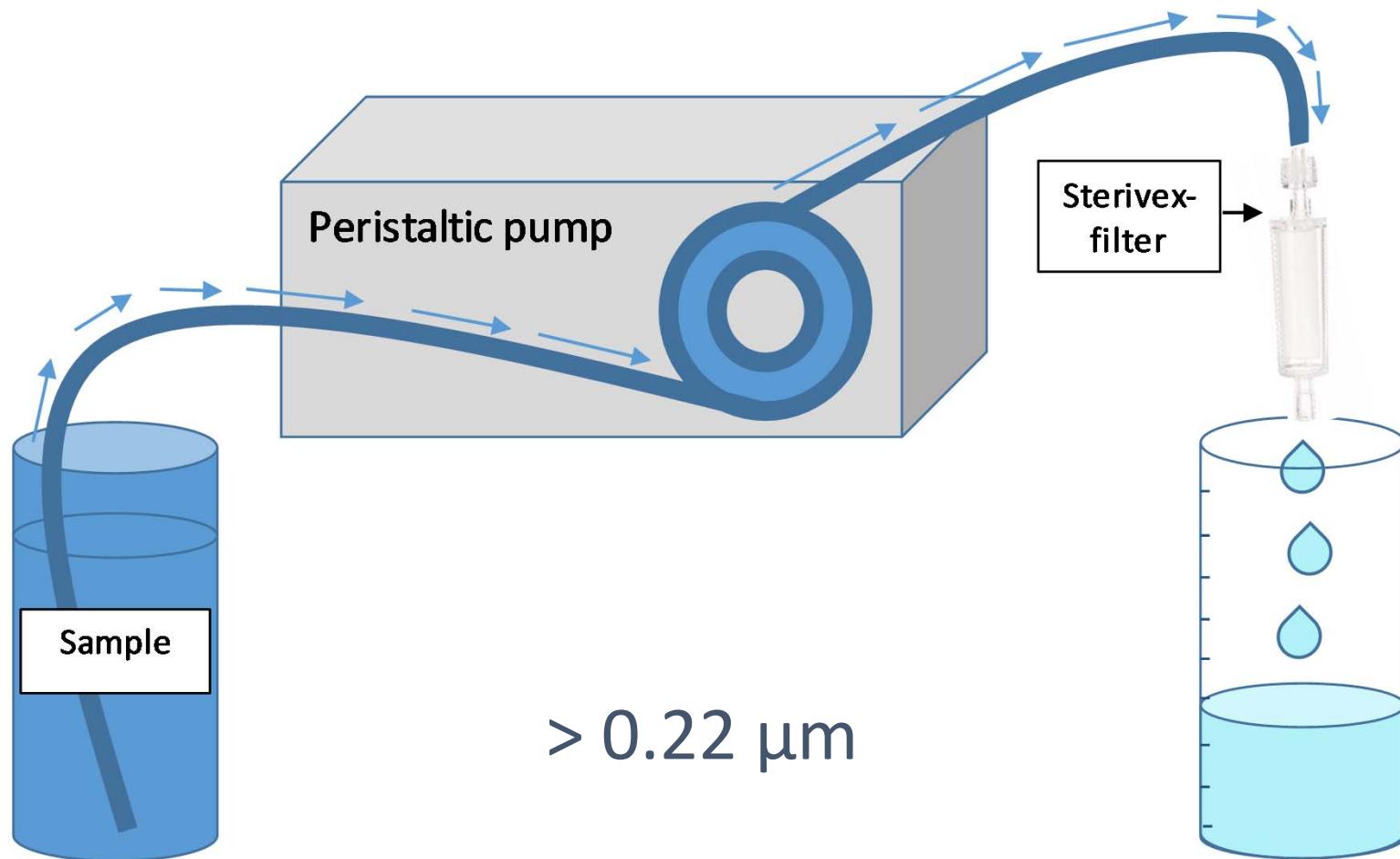
# Metabarcoding

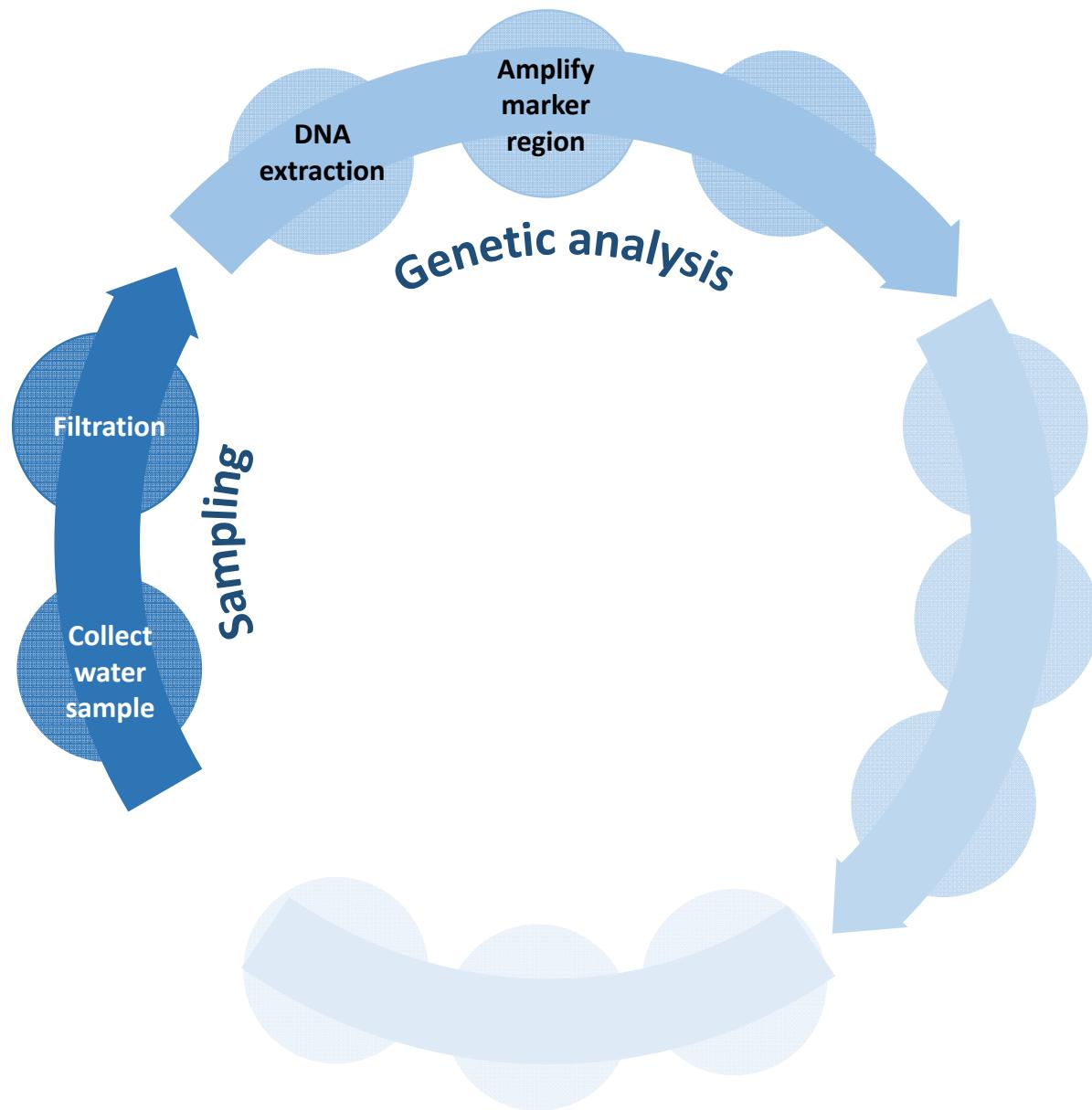


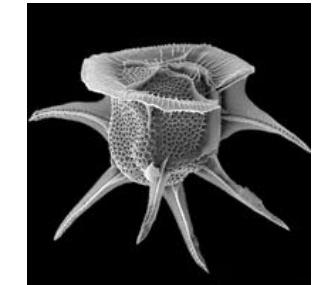
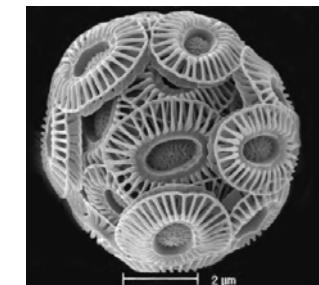
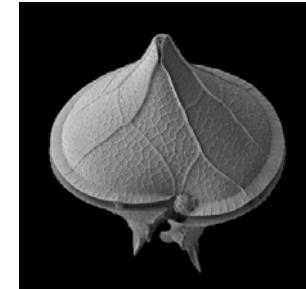
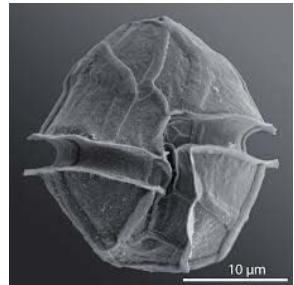
- 2 year periode
- 5 m



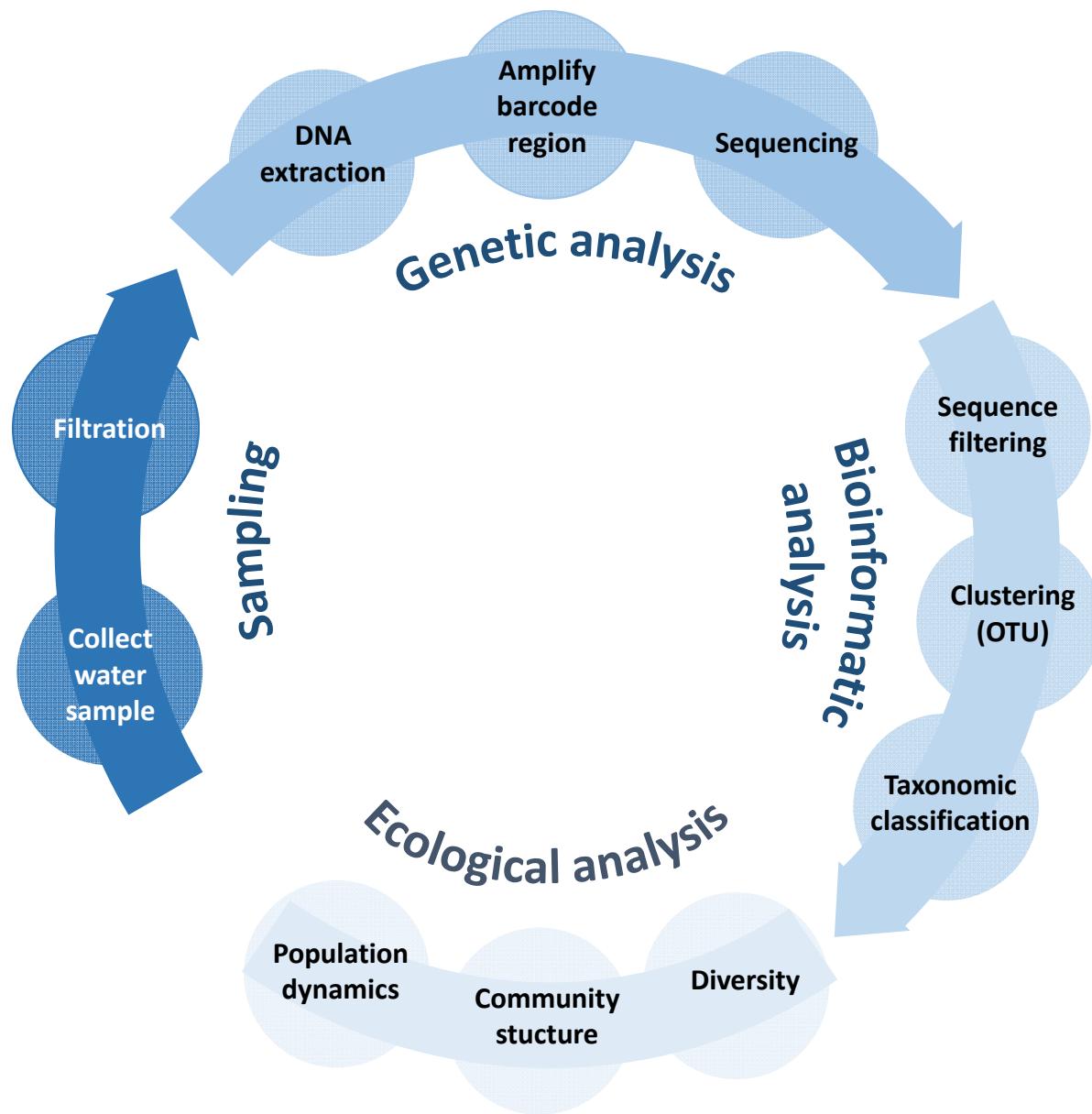








Genetic marker:  
V4 region in the 18S ribosomal gene



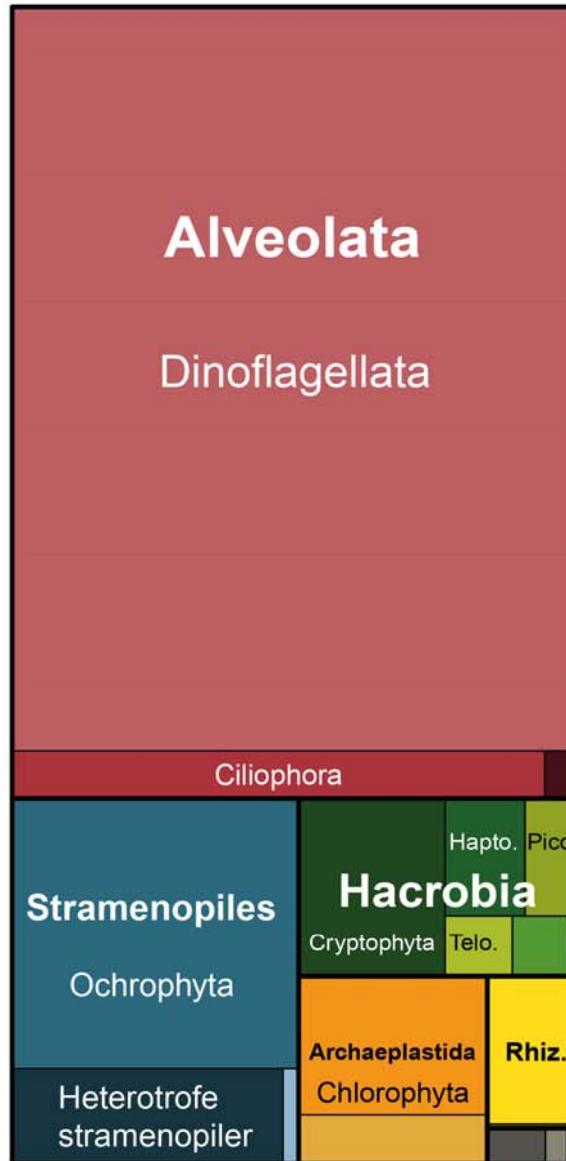
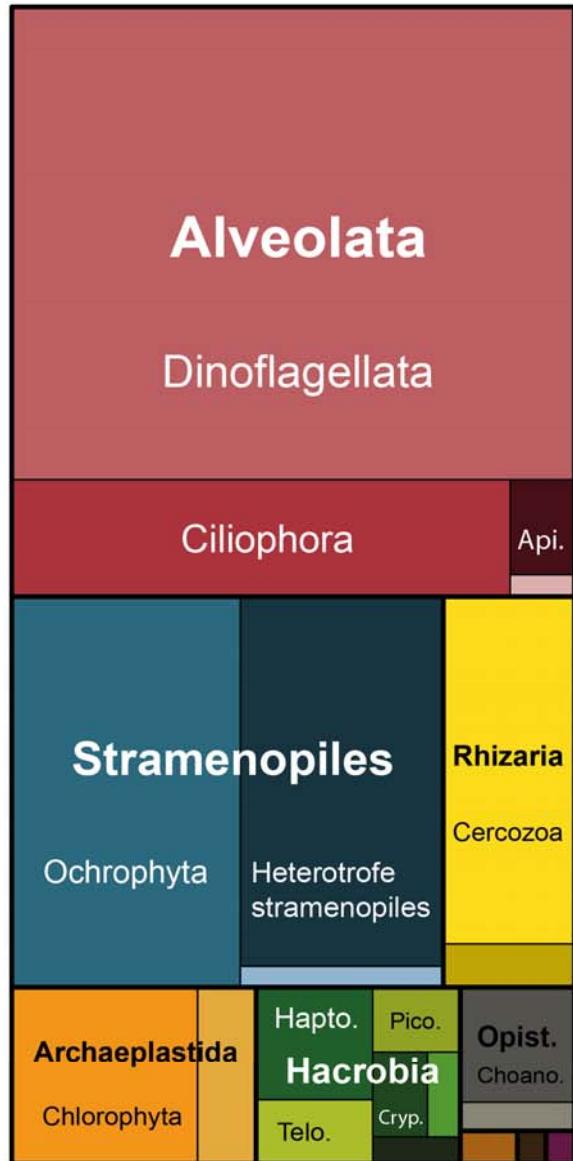
What groups of protists can be detected by metabarcoding in the inner Oslofjord?

OTUs

Reads

Group/Phylum

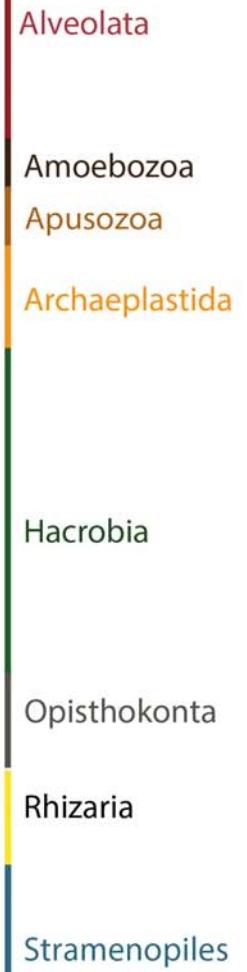
Supergroupe



Group/Phylum

Apicomplexa
Ciliophora
Dinoflagellata
Perkinsea
Amoebozoa
Apusozoa
Chlorophyta
Rhodophyta
Centroheliozoa
Cryptophyta
Haptophyta
Katablepharidophyta
Picozoa
Telonemia
Choanoflagellida
Mesomycetozoa
Cercozoa
Radiolaria
Heterotrofe stram.
Ochrophyta
Stramenopiles
Uklassifisert Eukaryot

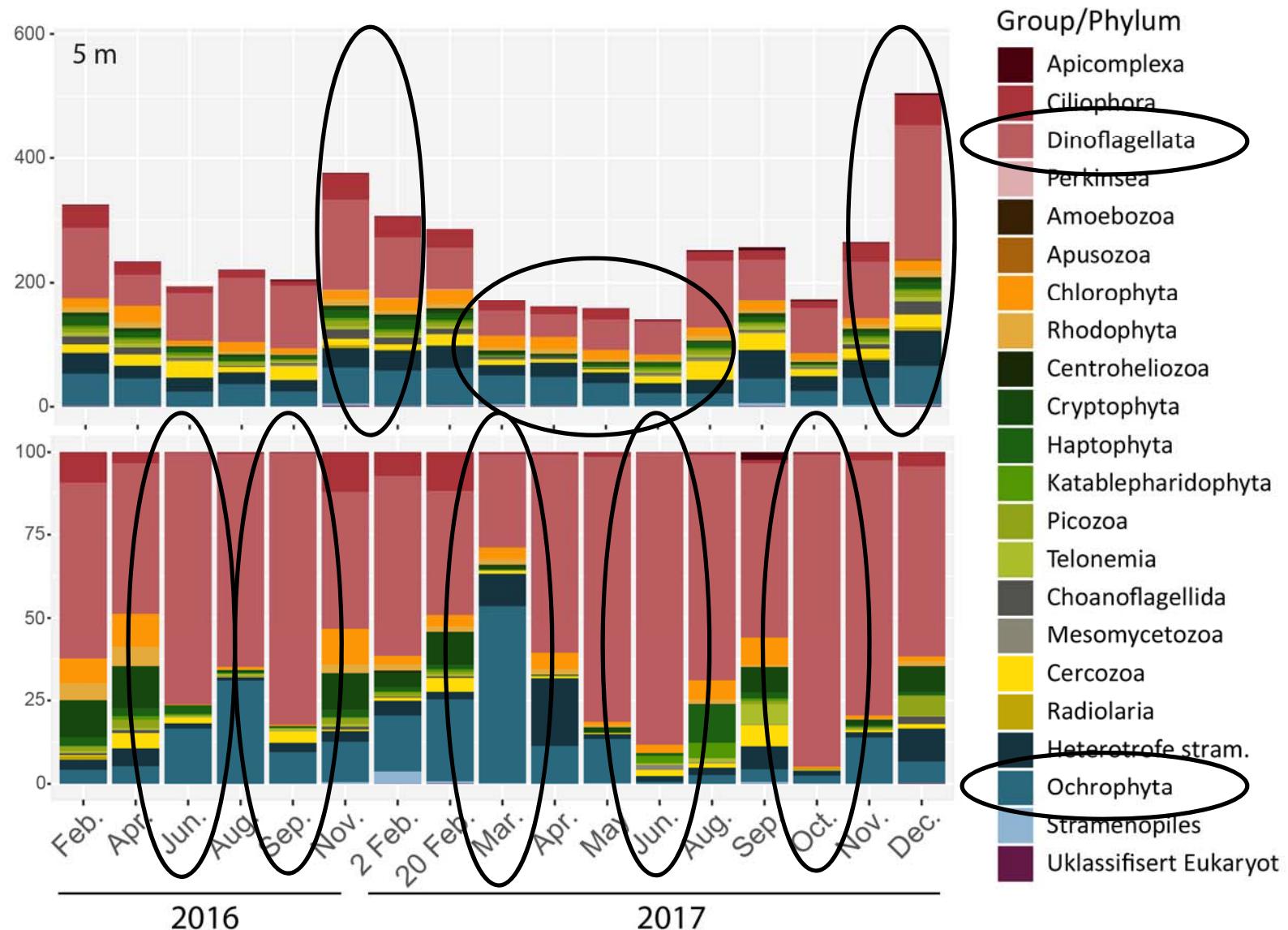
Supergroupe



How did the samples vary through the sampling period?

# Number of OTUs

# % Reads



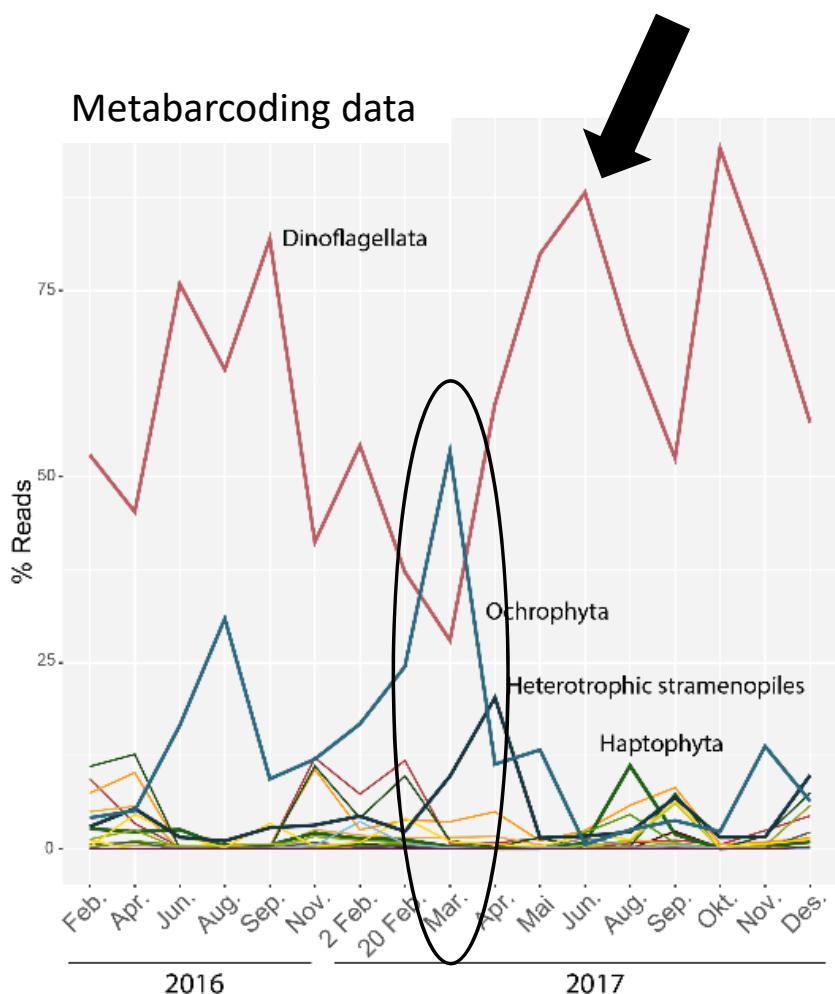
Revealed only by metabacoding:

- Parasites
- Naked celles

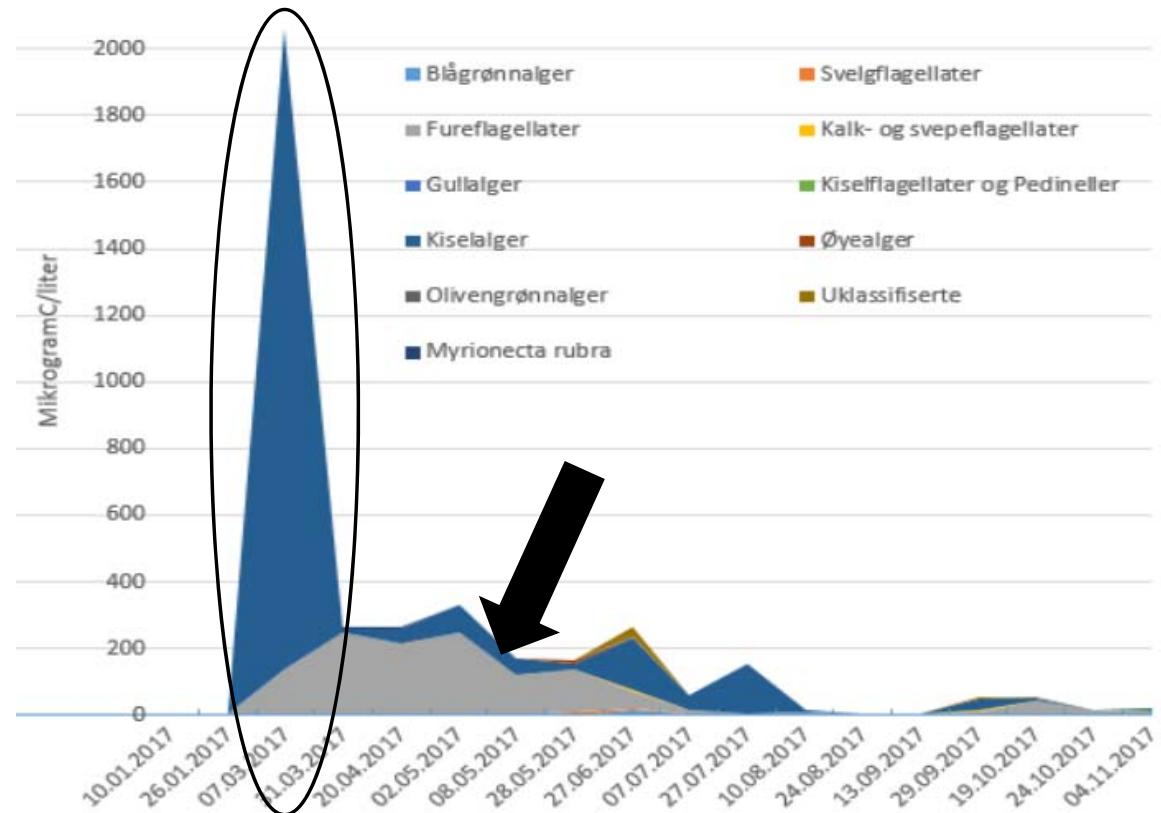
Revealed only by light microscope:

- Lack interspecific variation in the marker
- Lack sequences in the reference database

Metabarcoding data



Light microscope cell count data by NIVA (Norli & Eikrem, 2018)



Light microscope v+. Metabarcoding?

Thank you!