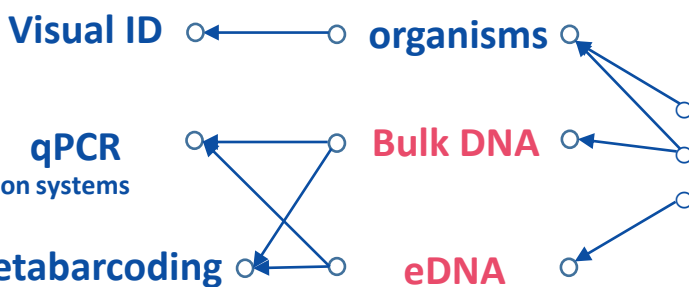
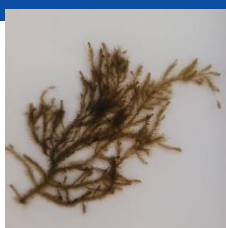
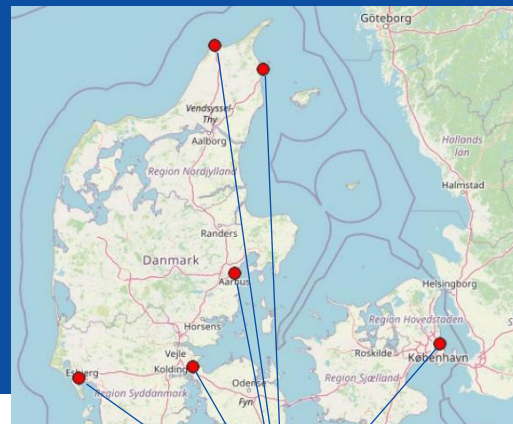


Detecting NIS in Danish harbors: visual screening vs. metabarcoding vs. qPCR

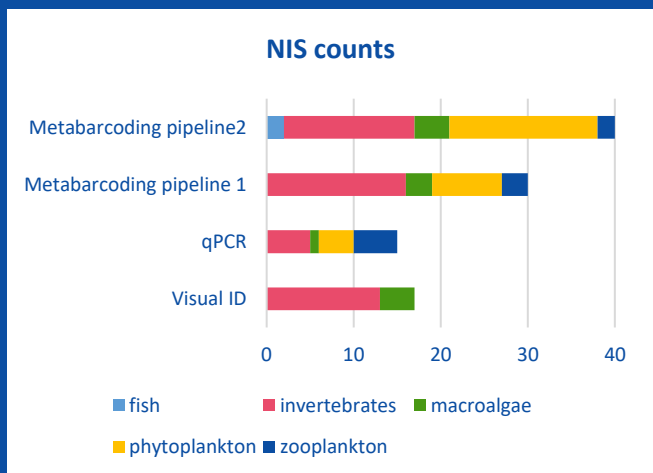
Traditional sampling methods for **non-indigenous species (NIS)** are often labor intensive, associated with observer bias and uncertainties due to the patchy distribution and small population sizes at early stages of invasion. DNA-based techniques have the potential to greatly reduce cost and labor, and improving the detection of species. But can they live up to that expectation?



Sediment and scraping
Settling plate samples
Water samples

23 species specific detection systems

3 primers sets, 2 bioinformatics pipelines



	Time per sample	Cost per sample
qPCR bulk vs. visual ID	double	times five
qPCR eDNA vs. visual ID	half	half
Metabarcoding bulk vs. visual ID	one and a half	double
Metabarcoding eDNA vs. visual ID	one third	one fifth

Metabarcoding detects (more) sessile, mobile & planktonic species

eDNA based methods are comparatively cheap and fast



Bioinformatics pipelines and reference databases require standardization

