

LABORATORY OF AQUACULTURE AND ARTEMIA REFERENCE CENTER

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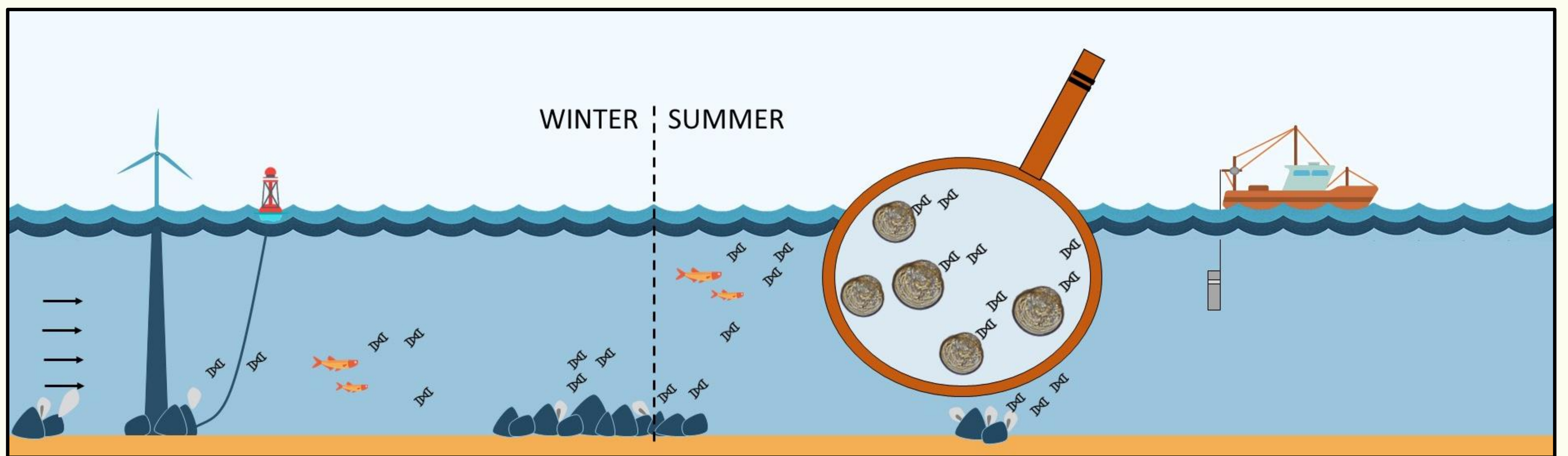
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FINDING NATIVE OYSTERS IN THE BELGIAN NORTH SEA USING eDNA

When initiating native **oyster aquaculture**, the use of local spat is essential. For native **oyster reef restoration** and **oyster reef construction**, connectivity is necessary for safeguarding genetic diversity and thus robustness of the reef.

Applying eDNA technology to historical and recent water samples taken in summer and winter (BNZ), will give important geographical information on the presence of native oyster populations and spat distribution.



eDNA Methodology

- Historical water samples: VLIZ LifeWatch with niskin bottles
- Vacuum filtration using cellulose filters
- DNA extraction from filters using CTAB
- Quality control: nanodrop
- qPCR with environmental master mix, mtDNA primer sets for COX1 gene and fluorescent probe for detection of *ostrea edulis* DNA in environmental samples.

Oyster spat collection methodology

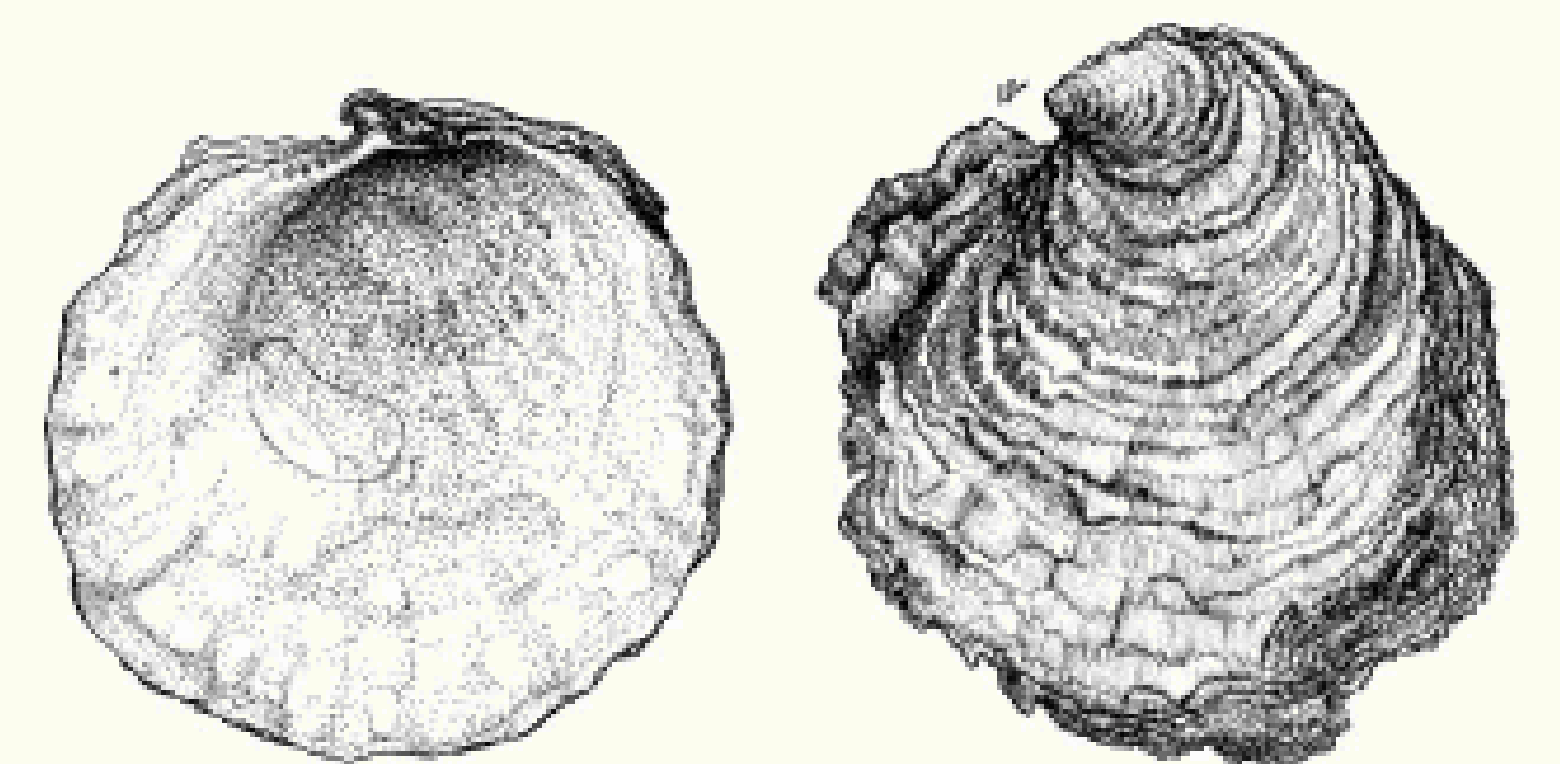
Spat will be collected with **chinese hats**, and **tubular nets** containing oyster shells. Both spat collector types will be deployed in triplicate starting from **week 24**. New collectors will be added every two weeks, up to **week 33**. Collectors will be left in the water until **retrieval in November** allowing spat to grow. Collectors will be brought to the lab to identify species, calculate collection success, evaluate ease of deployment, fouling, spat removal best-practice and storage (van den Brink 2013).

Experimental follow-up

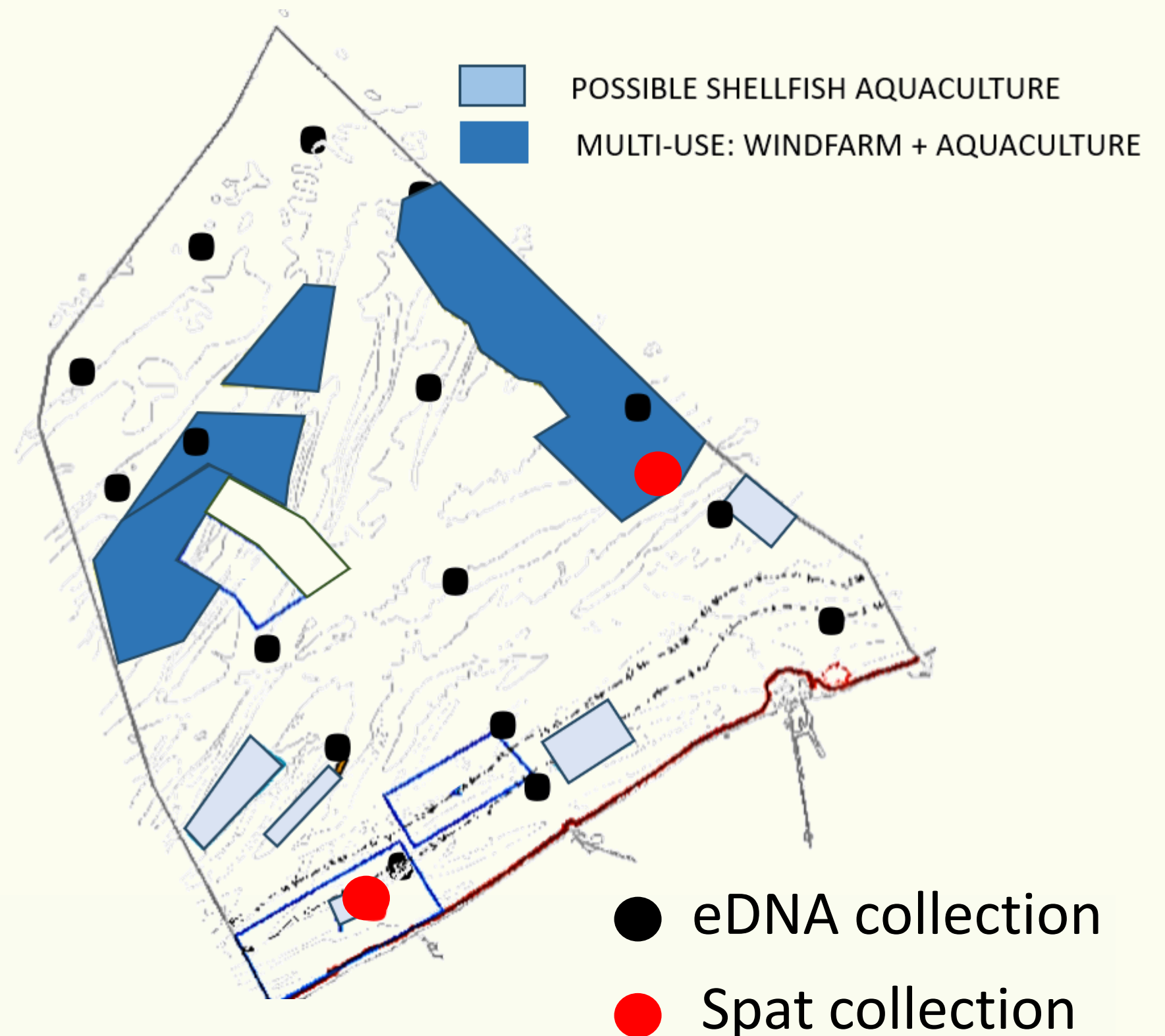
- Primer testing with conventional PCR
- Primer selectivity testing using qPCR
- Primer sensitivity testing using qPCR
- Oyster DNA degradation test vs temperature
- eDNA analysis on historical water samples (10year period)
- eDNA analysis on recent water samples

RESULT

- eDNA heat map indicating where oyster population might be present
- Oyster spat geographical distribution map based on eDNA
- Oyster spat temperal variability based on spat collection



Ostrea edulis Linnaeus, 1758 (Ostreidae)



Native Oyster Aquaculture and Restoration (pHD)

Supportive study creating interactions between native oyster aquaculture and restoration efforts.

1. Suitability mapping based on remote sensing and DEB-model
2. Aquaculture larvae dispersal supporting reef restoration
3. Geographical spat distribution by using eDNA
4. Connectivity research using eDNA
5. Verifying the presence of *Bonamia ostrea* in the BNZ
6. Using HSP70 response to increase survival during handling

Contact

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