

# Synergy between Mariculture & Passive fisheries



# SYMAPA

Bert Groenendaal & Stephanie Debels (Brevisco)





# ABOUT BREVISCO



**Brevisco**  
Serving the Fishing &  
Aquaculture Industries

- Belgian SME established in 1981 by ir. Willy Versluys (71)
- Initial focus on nearshore and offshore fisheries
- Since 2008 also focus on aquaculture
- Various vessels in Ostend and Nieuwpoort
- Experienced crew
- Experienced in aquaculture, fisheries, marine surveys, diving activities, mooring activities, innovation projects
- Winner of the Blue Innovation Award 2020 for our private innovation project on nearshore mussel cultivation



**Our vision: to become the #1 operator company in nearshore and offshore aquaculture**

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# WHY SYMAPA? TRENDS ...

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- Growing interest in mariculture in Belgian part of the North Sea
  - International trend
  - Successful collaborative projects (AquaValue, Edulis, Value@Sea, Seaconomy, AT~SEA, BlueMarine, ...)
  - Blauwe Cluster
- Societal pressure
  - Multi-use of space
  - Sustainability (e.g. selective fisheries, extractive aquaculture, etc.)
  - Environment / ecosystem services



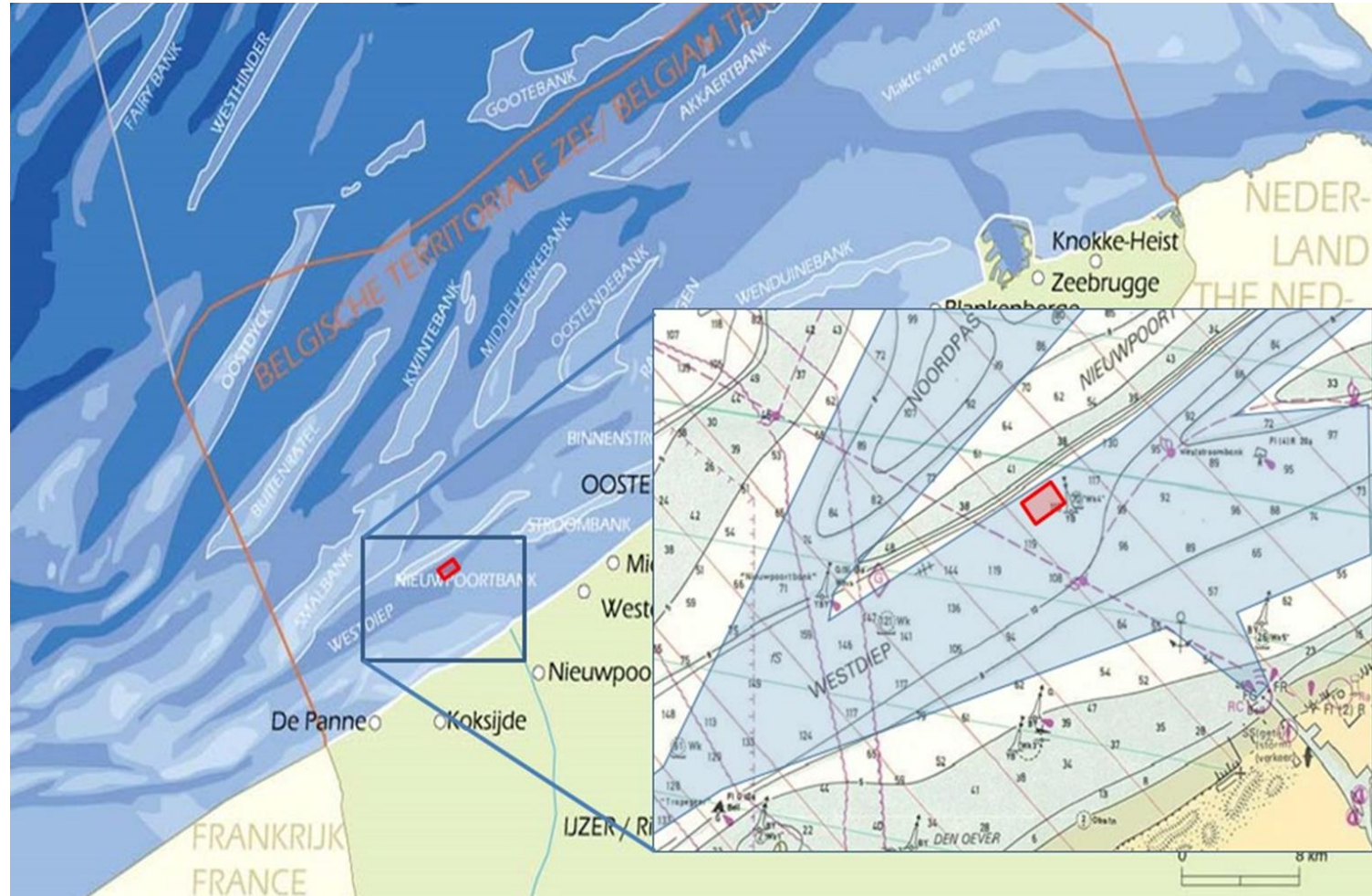
# PROJECT OBJECTIVES

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- Study synergetic effects between mariculture and passive fisheries:
  - manpower
  - space
  - logistics
  - infrastructure
  - market aspects
- North Sea proof and economically viable mariculture of mussels, oysters and seaweeds
- Advancement of passive fisheries techniques (light, sound, smell, etc.)
- Design of tomorrow's North Sea farm



# PROJECT LOCATION: WESTDIEP





# PROJECT CONSORTIUM



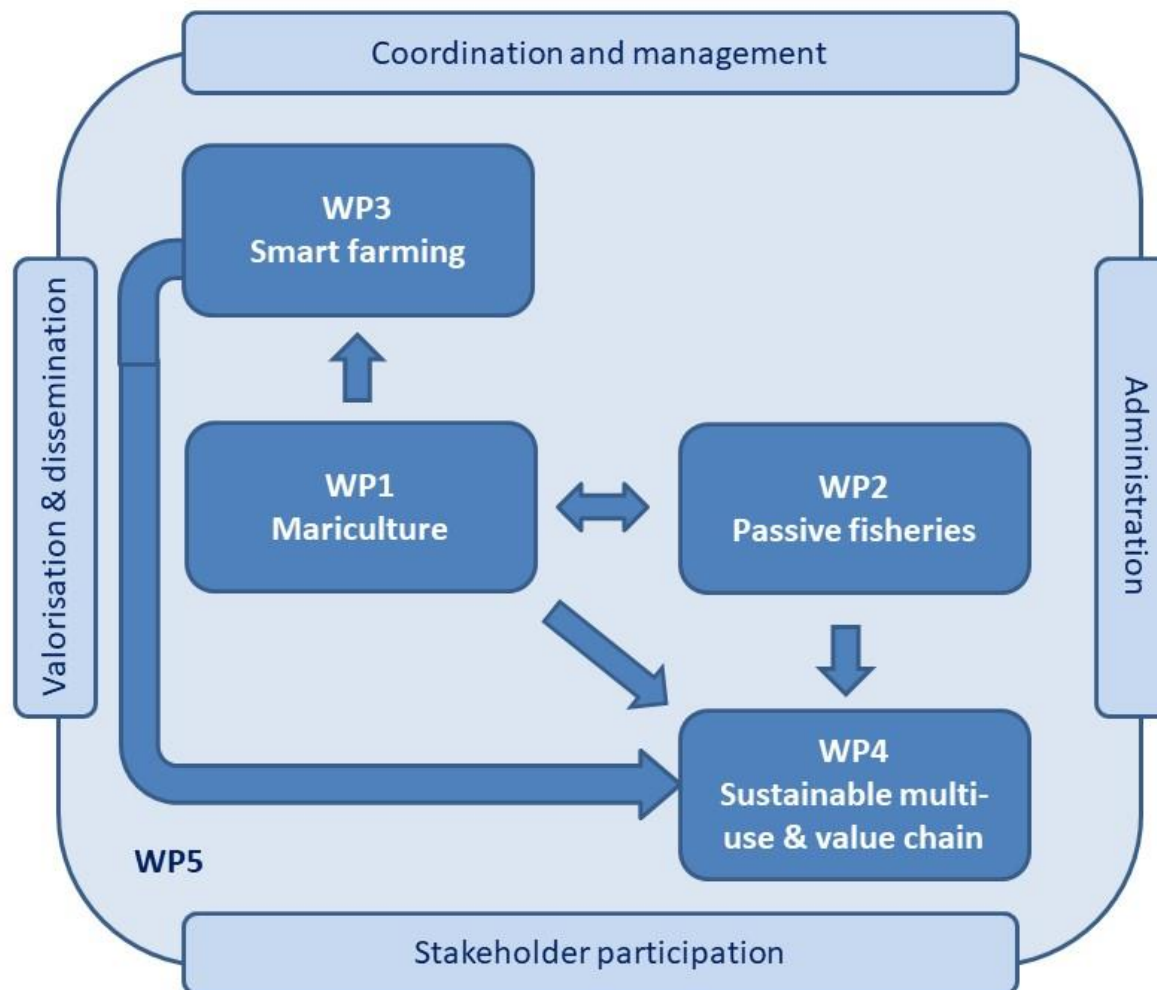
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# SYMAPA WORKPLAN

Start: Oct 2019  
Duration: 3 years



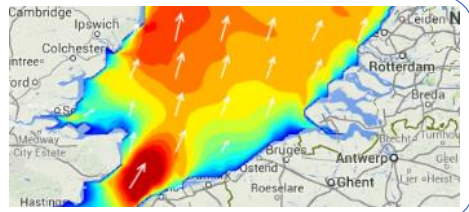


# Existing tools

# Developments

# Services

Marine forecasts (MFC)

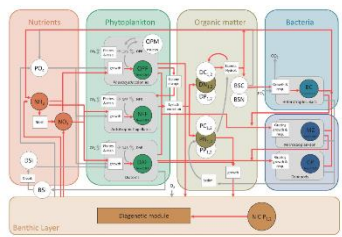


Taylor-made products (ex. Waves, T alarm)

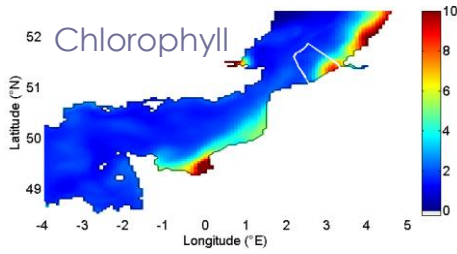
Marine forecasts  
 → plan operations at sea

Biogeochemical model → Nutrients, Chl...

COHERENS



Dulière et al. 2017



Desmit et al. 2015

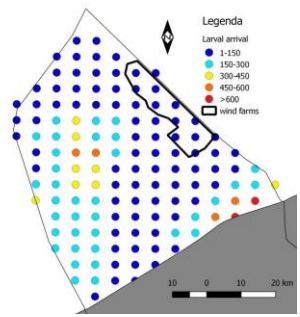
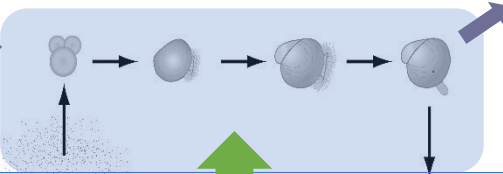
Include bivalves,  
 Include MIRO&CO in the forecasting service

Forecasts of nutrients and Chl  
 → seaweeds and bivalve growth

Larval Transport Model

Lacroix et al. 2013,  
 adapted for oysters & mussels

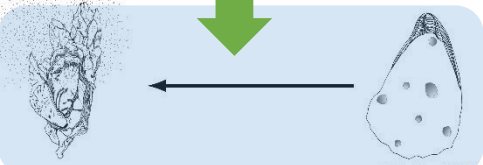
COHERENS



De Mesel et al. 2018

Improve oyster/mussel parameterisation  
 Include LARVAE&CO in the forecasting service

Forecasts of spat arrivals  
 → best period to collect spat

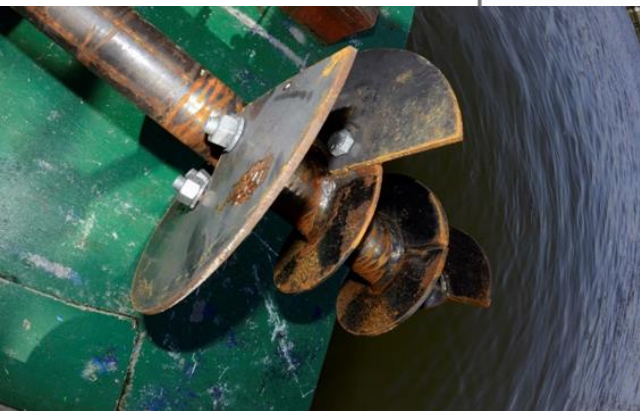
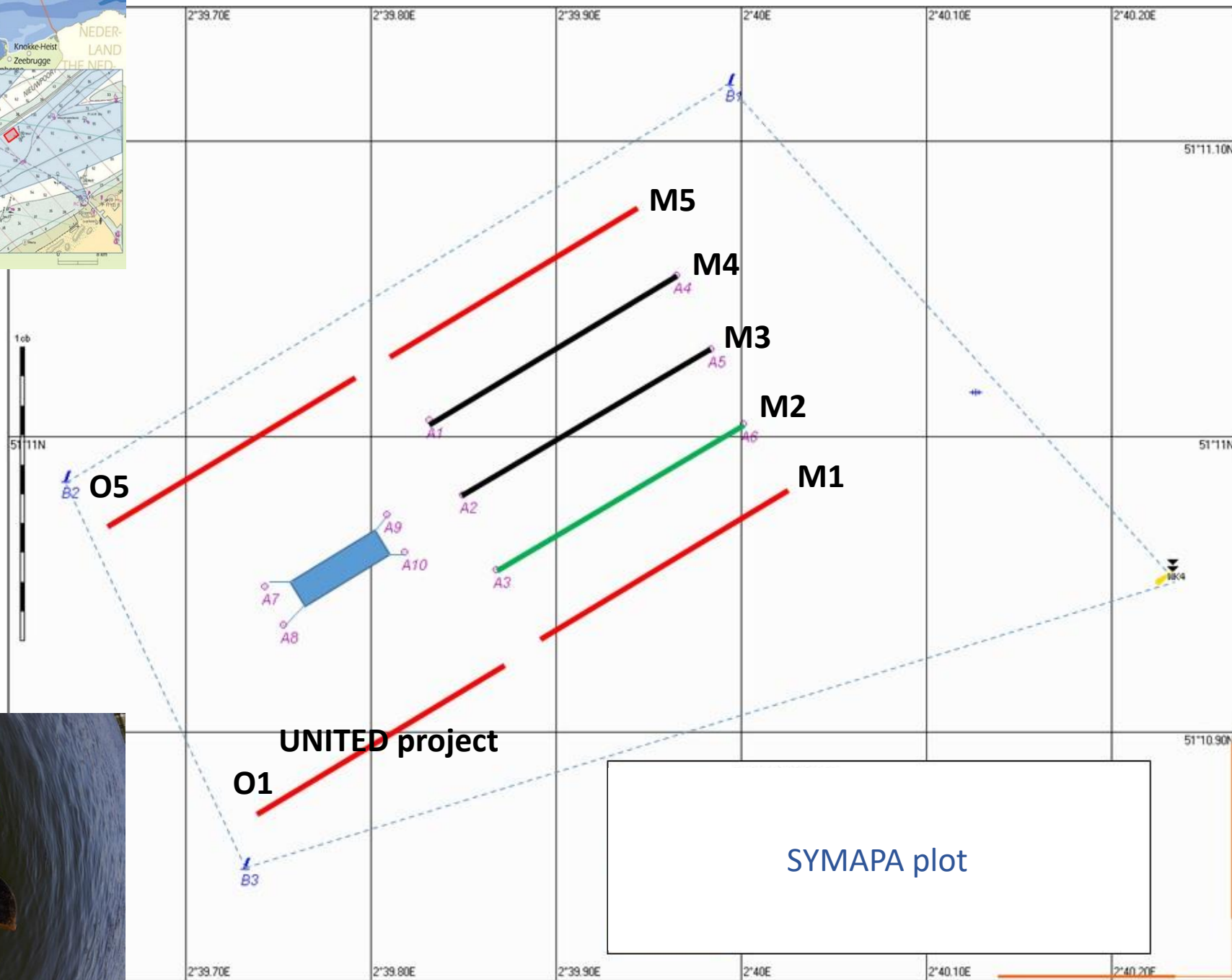
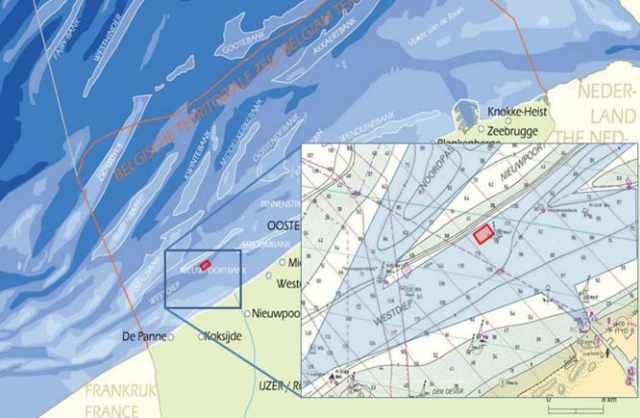


Oyster life cycle

DEB model  
 (ILVO, UGent)

Combine LARVAE&CO with a growth model  
 of oysters/mussels (// UNITED)

Assess bivalve growth, simulate several  
 generations





# SOME RESULTS

## Status oysters:

- 05 operational:
  - Various oyster spat collectors were tested (e.g. textile bars, frames with tubes, ZAPCO systems, etc.)
  - Heavy fouling on all structures
  - No loss of materials/structures



- Grow-out experiments were postponed due to lack of T20
- ILVO is currently analyzing the spat collection results



# SOME RESULTS

## Status mussels:

- Mussel lines M1 – M4 are operational
- Various materials and system configurations are being tested
- First cultivation results will probably be available in Spring 2021



## Status seaweeds:

- Winter 2019/2020: system testing
- Winter 2020/2021: 6 net substrates (3 x 12 m) seeded with *Saccharina l* and deployed (Nov 22/23)





# SOME RESULTS

## Status passive fisheries:

- Stream was modified with hauler
- Activities started mid August 2020
- Catch mainly consists of squid, 2 crab species and some fish species
- Good collaboration between ILVO, Brevisco and N93





# CONCLUSION

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- Despite the Covid 19 situation we were able to execute more or less all planned activities
- Main challenges:
  - North Sea proof cultivation systems
  - Fouling

