

# Ongoing research pulse trawling: outlook

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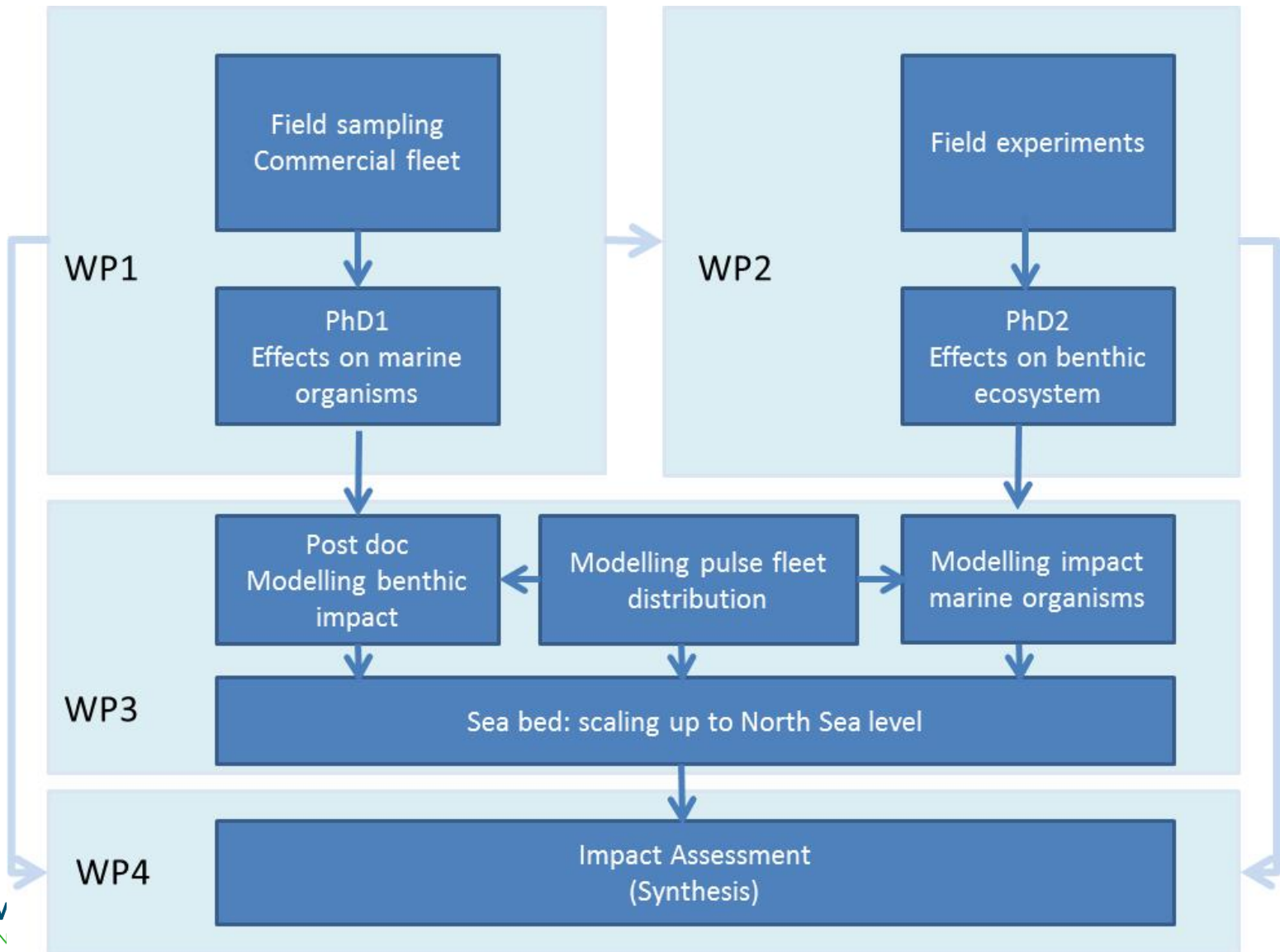
# Ongoing projects (Netherlands)

	2016	2017	2018	2019	2020
<b>Pulse assessment project</b>					
WP1					
WP2					
WP3					
WP4					

<b>Logbook analysis</b>	2017	2018	2019
<b>Various complementary projects</b>			
discard monitoring			
survival experiments			
in-situ field strength measurements			
others			

# Pulse impact assessment project (2016-19)

Partners: WMR, Wageningen University, Netherlands Institute for Sea Research, ILVO (Oostende)



# WP1 Effect on marine organisms

- Develop mechanistic and **predictive** understanding of effects electricity on marine organisms
  - Lab experiments
    - Sensitivity of fish, invertebrates
    - Response (behaviour)
  - Field sampling
    - Occurrence of pulse and catch related injuries
    - Bio-mechanics of different species
  - Estimate strength of exposure (modelling field strength)

# WP2 Impact on benthic ecosystems



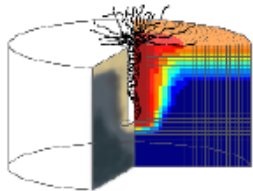
## Ecosystem services provided by sediments:

- Biomass production – Fisheries
- Biogeochemical reactor – removal of N, P, Si



## Measurements:

- Sediment oxygen consumption ~ activity
- Nutrient fluxes ~ biogeochemistry



## Modelling:

- (Food web modelling)
- Early diagenetic models (C, N, P, O cycle)

## WP 2: tasks

### Field Campaigns

Field campaign 1 (task 2.2).  
In situ effects of pulse and beam trawling on the benthic ecosystem. **DONE**



Field campaign 2 (task 2.1)  
Experimental assessment of the short-term effect of pulse stimulation on the sediment nutrient cycle. **ONGOING**

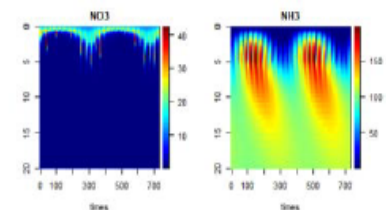


Field campaign 3 (task 2.3)  
Long-term effects of fishing. **PREPARATION PHASE**



### Modelling

predictive mechanistic model of the impact of beam trawl and electrical pulse fisheries on benthic-pelagic coupling (task 2.4). **ONGOING**





# Field campaign June 2018

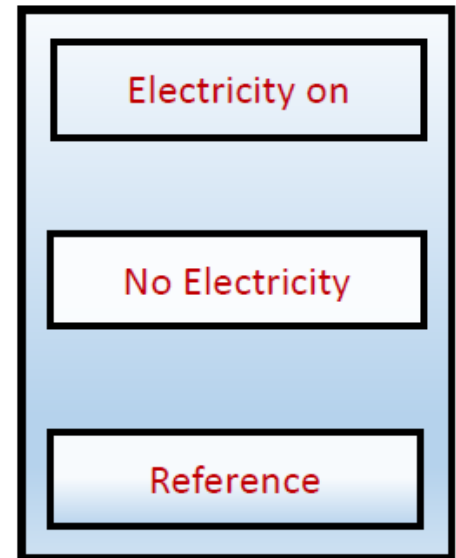
June 2018 in the "Vlakte van de Raan"  
(closed to fishing since 2016)

## Experiment Set-up:

- One reference area, highly fished
- One reference area, closed for fishing since 2016
  - Pulse treatments:
    - Electricity **on**
    - Electricity **off**

## - Sampling:

- T0 (before fishing)
- T1 (immediately after fishing)
- T2 (48 hours later)



## Gebieden Vlakte van de Raan



# Integration and scaling up to level of the North Sea and the ecosystem

WP2

WP1

Model distribution fishery  
Determine overlap with species  
Estimate population exposure  
→ Assess population impact  
given WP1 and WP2 results

WP3

Impact Assessment  
(Synthesis)

WP4



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# Final Impact Assessment: comparing pulse with traditional beam trawl

- Include stakeholder concerns (as much as possible)
  - Selection of species / ecosystems
- Include results complementary projects
  - Analysis of fishing behaviour pulse fishers (logbook analysis)
  - .....
- Input results → ICES WGELECTRA