



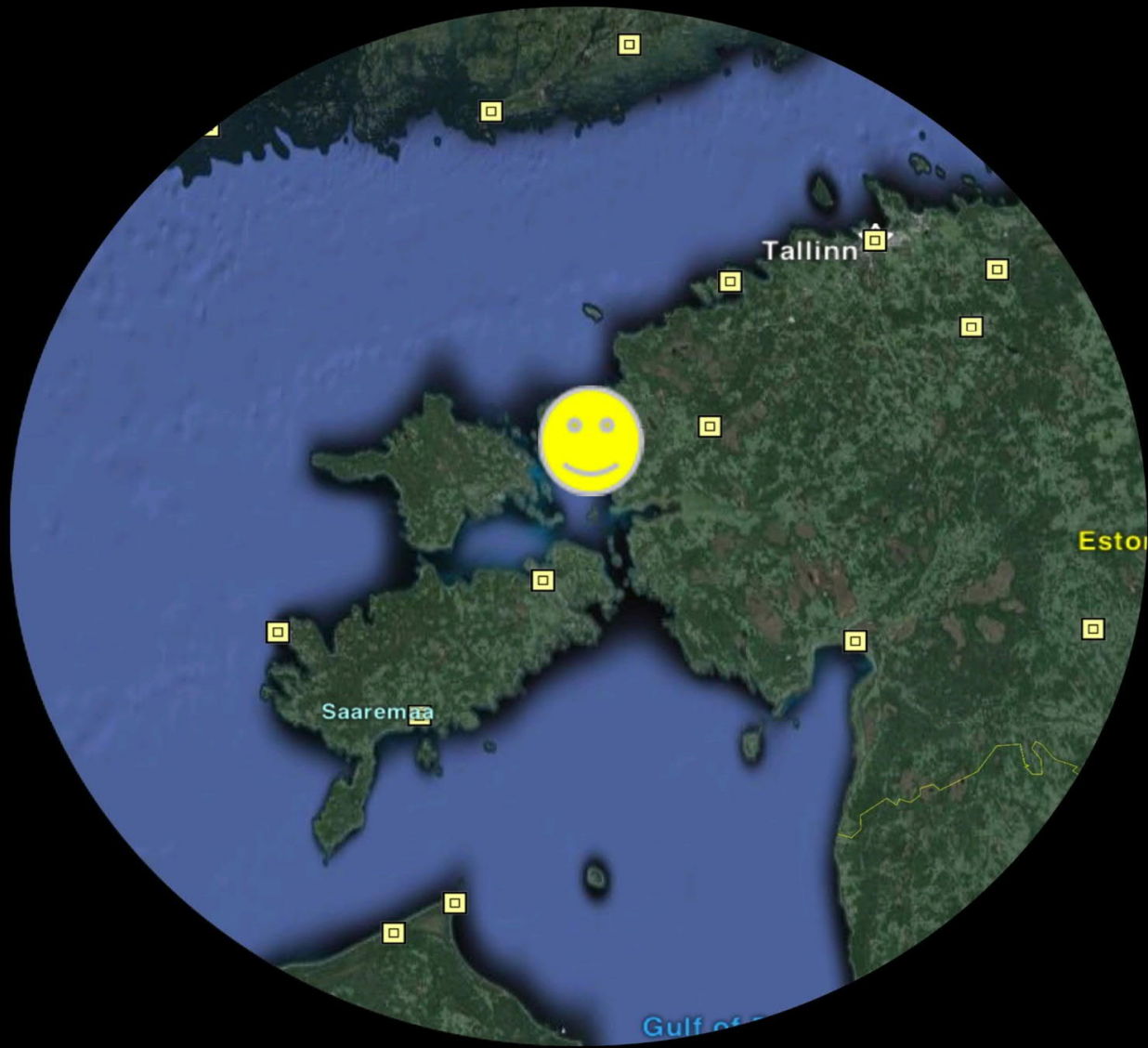
# EST-AGAR

BLUE GROWTH START-UP IN ESTONIA

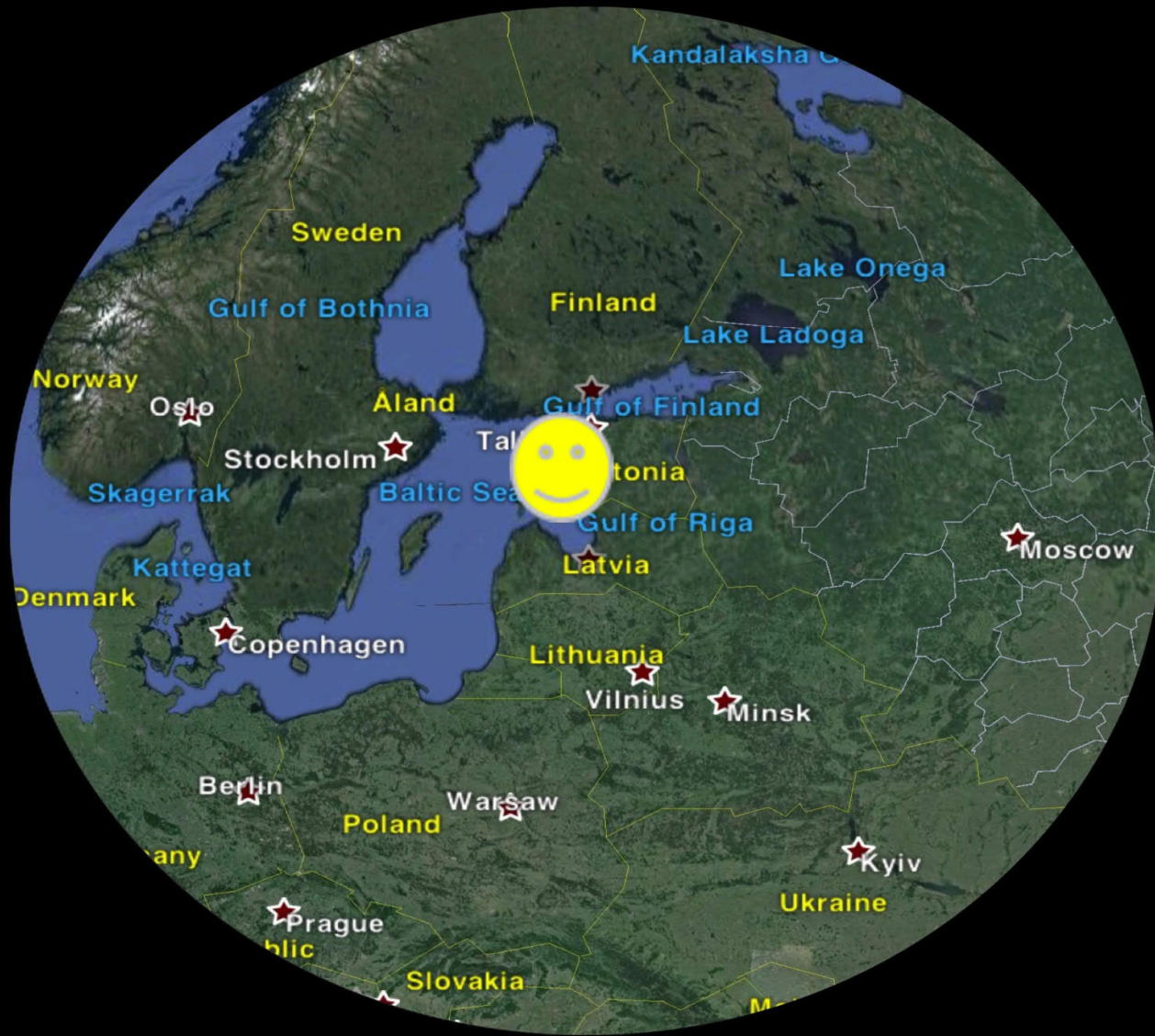
SEAWEED AND MUSSEL INNOVATION

2019







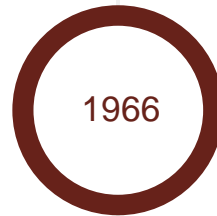




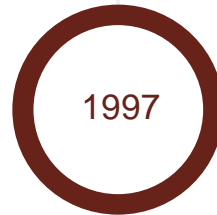
# Vormsi Agar OÜ 2012–2016

- Idea to use **local seaweed** in production
- A plan to **build a factory** on Vormsi
- Seaweed cultivation project
- Start with **mussels**
- Pilot production development plan for **new technologies** for production furcellaran, r-phycoerythrin and fertilizers
- Idea to **buy Est-Agar AS**

# Est-Agar AS



29 December 1966 beginning of furcellaran production (E407) in Saaremaa



Started Est-Agar AS



- Same technology with small changes
- mostly same clients
- seaweed harvest quota
- working factory





ESTAGAR





# Vormsi Agar + Est-Agar



## Est-Agar

Production basis

Clients

Cash flow

People

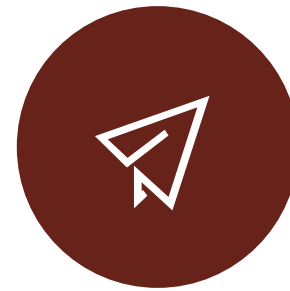


## Vormsi Agar

New technology

New products

Scientific partners



## Targets

Development

Growth

Active selling

Effective management

Est-Agar +  
Vormsi Agar

2030

Europe's leading, research based, local raw materials using **blue biotechnology** company

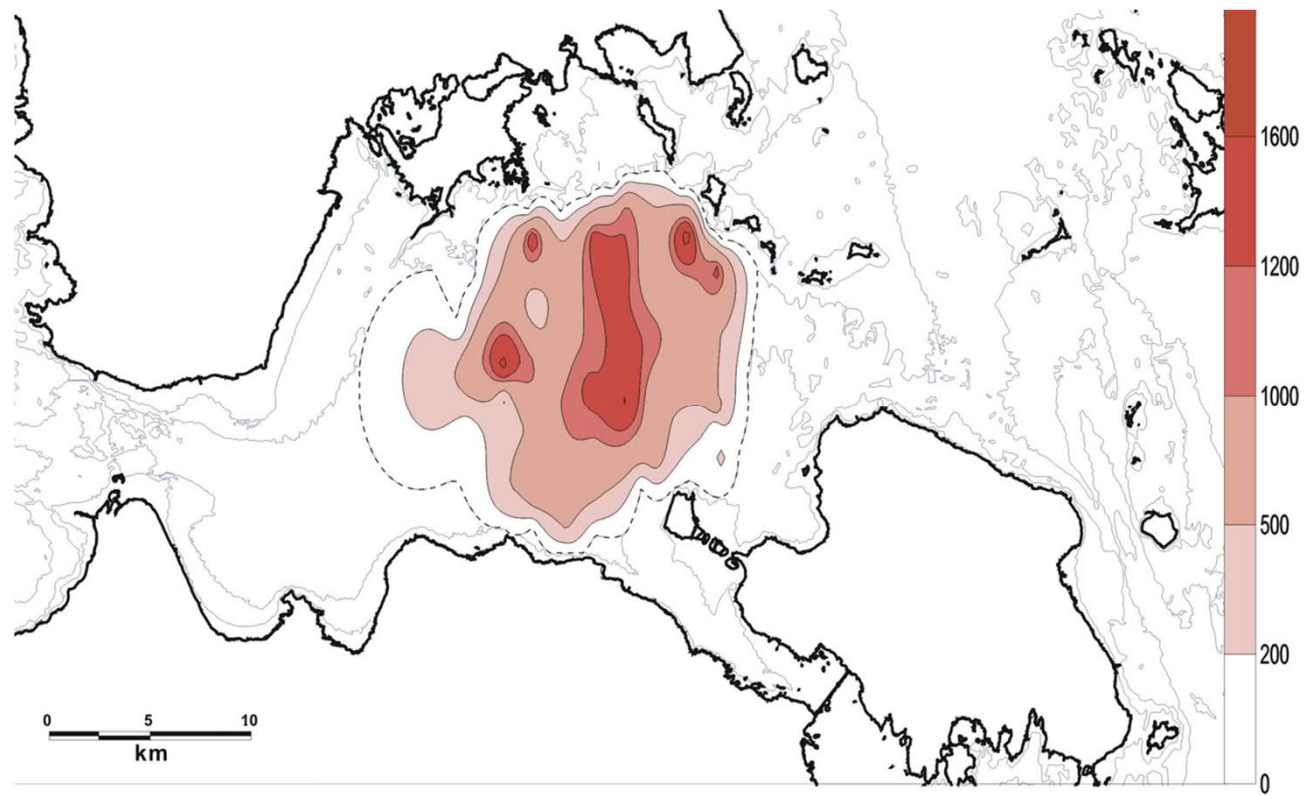
- Catch quota 2000T
- Plan for 2019 a ~300T
- Coast collection 100 – 1800T
- Plan for 2019 a ~1200T
- Real catch 2019 ~800T

Seaweed  
trawling and  
coast  
collection





EST-AGAR



**Kassari Bay** – colorcode for *Furcellaria lumbricalis* biomass (g/m<sup>2</sup>)









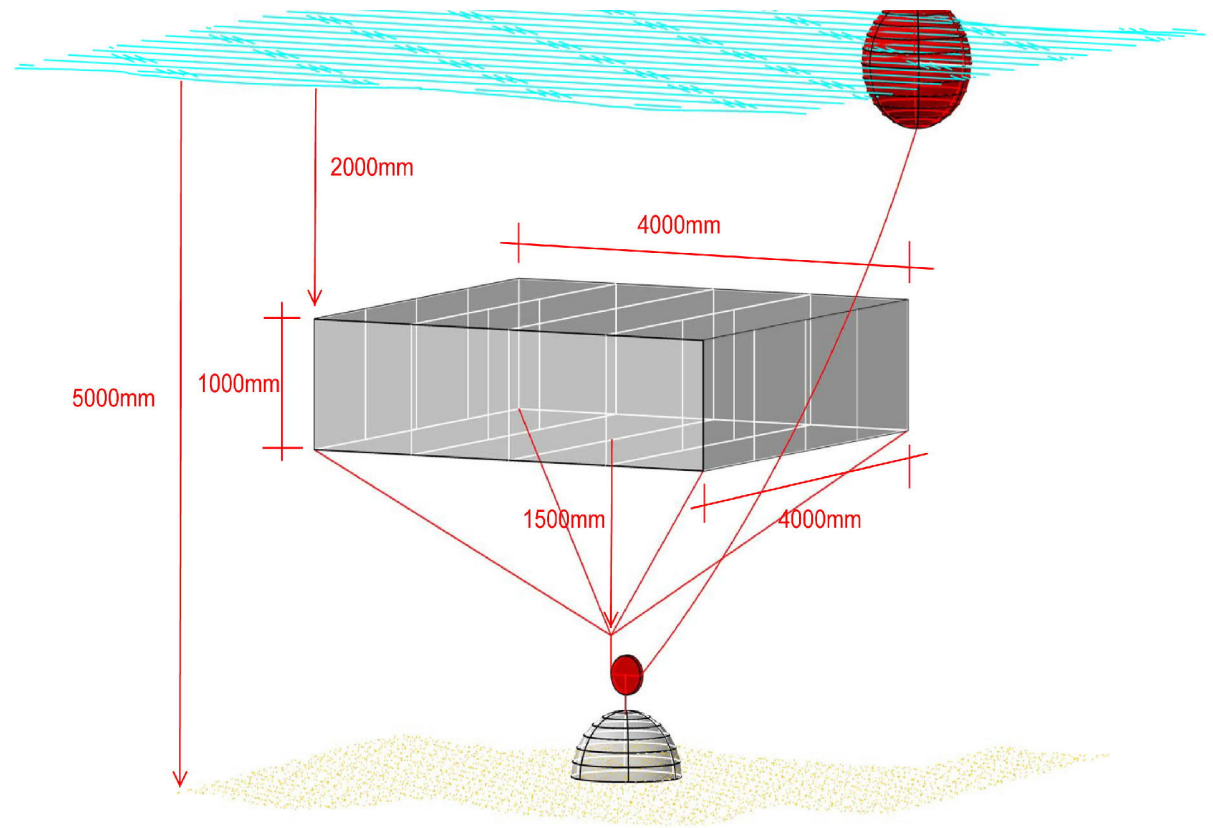








# Seaweed farming







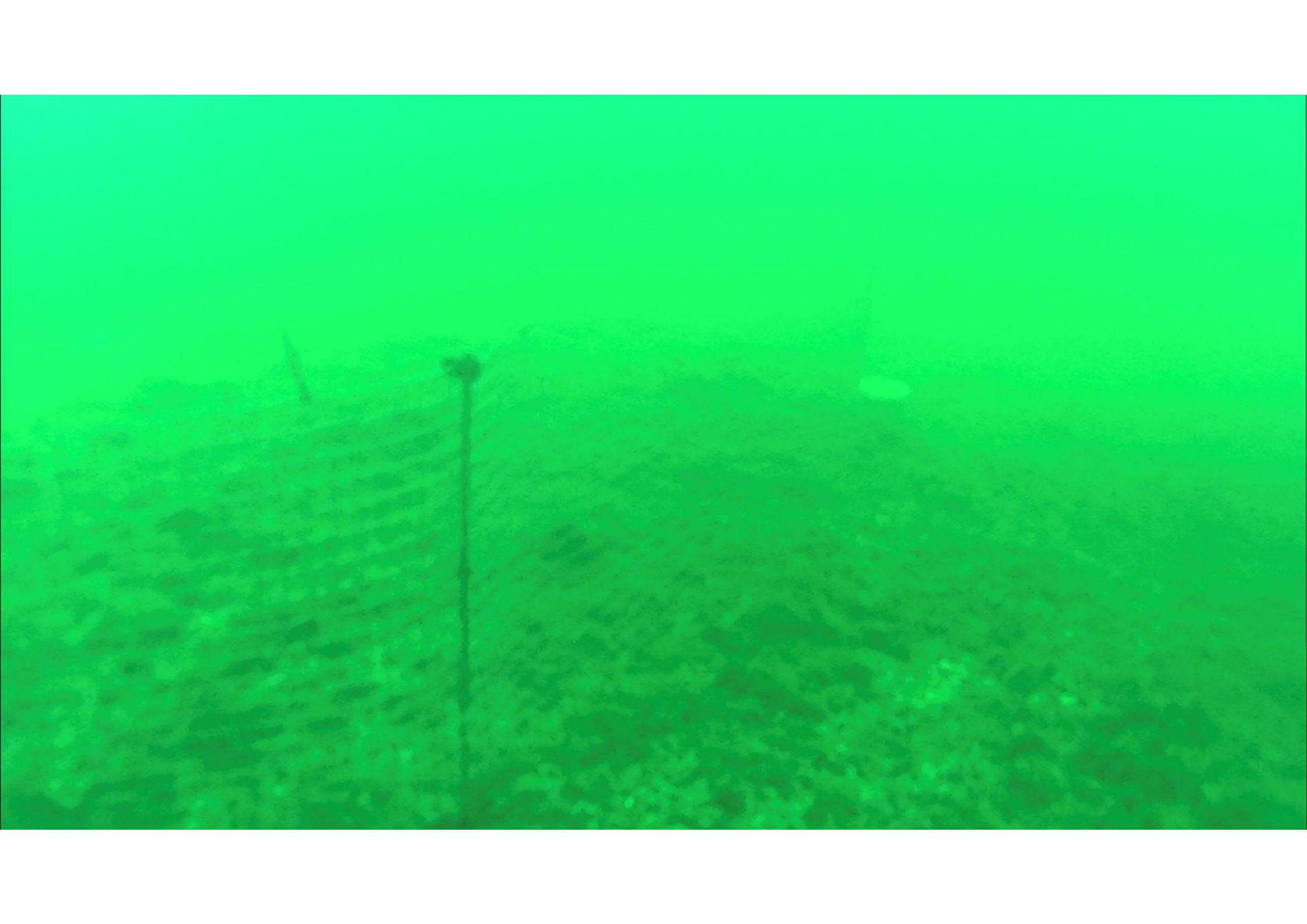


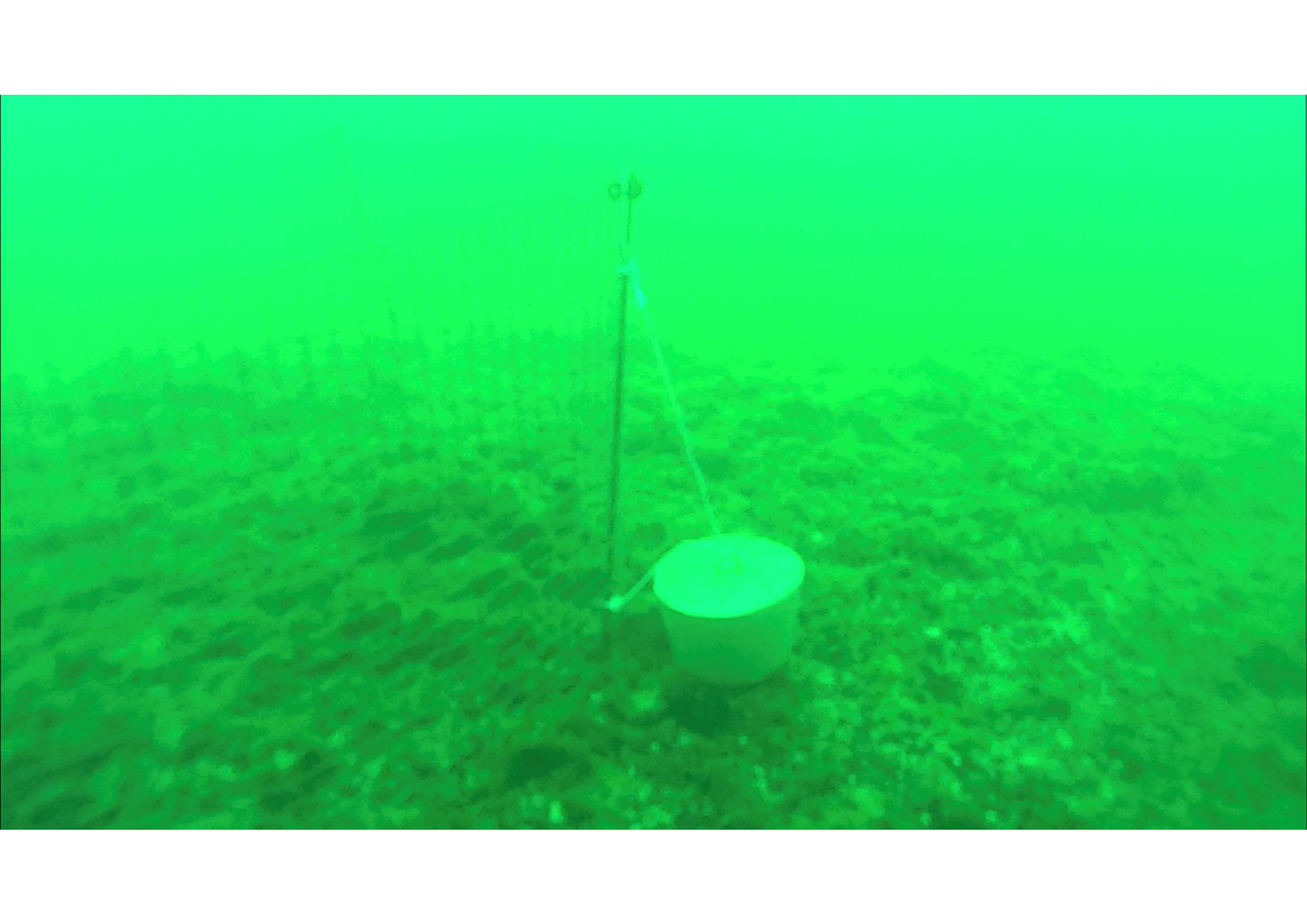




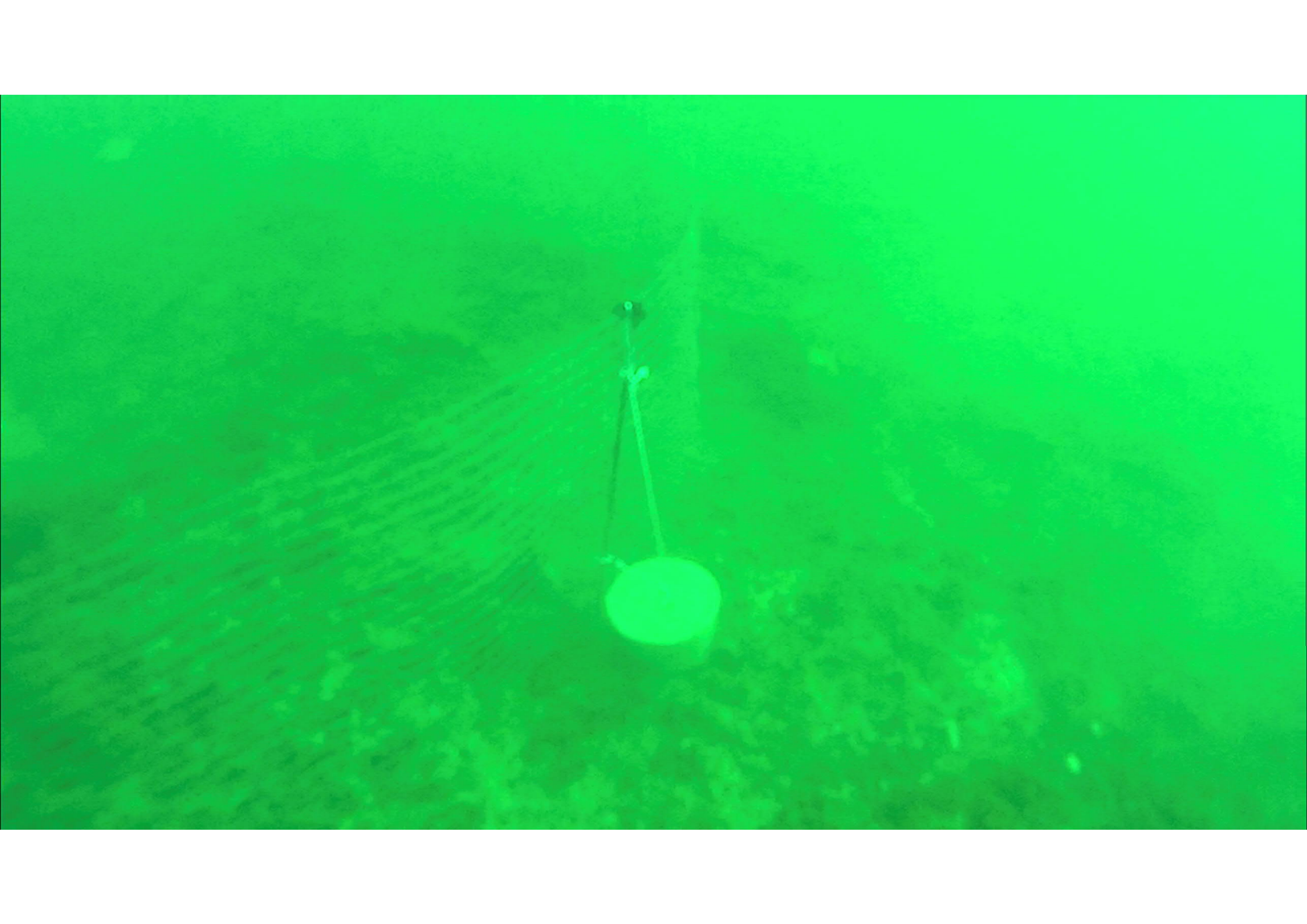














**Gelling  
polysaccharide**



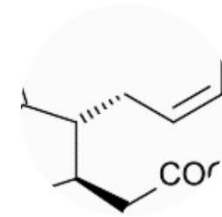
**R-phycoerythrin**



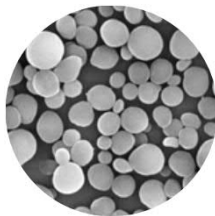
**Fertilizer**



**Antioxidants**



**Bioplastics**



**Nanocellulos**



**Furcellaria  
Lumbricalis**





1 200 PULCELLINO PULBET

64.75 x 40  
1.25 g/cm<sup>3</sup>  
200 PULCELLINO PULBET

4 200 PULCELLINO PULBET

64.75 x 40  
1.25 g/cm<sup>3</sup>  
200 PULCELLINO PULBET

200 PULCELLINO PULBET

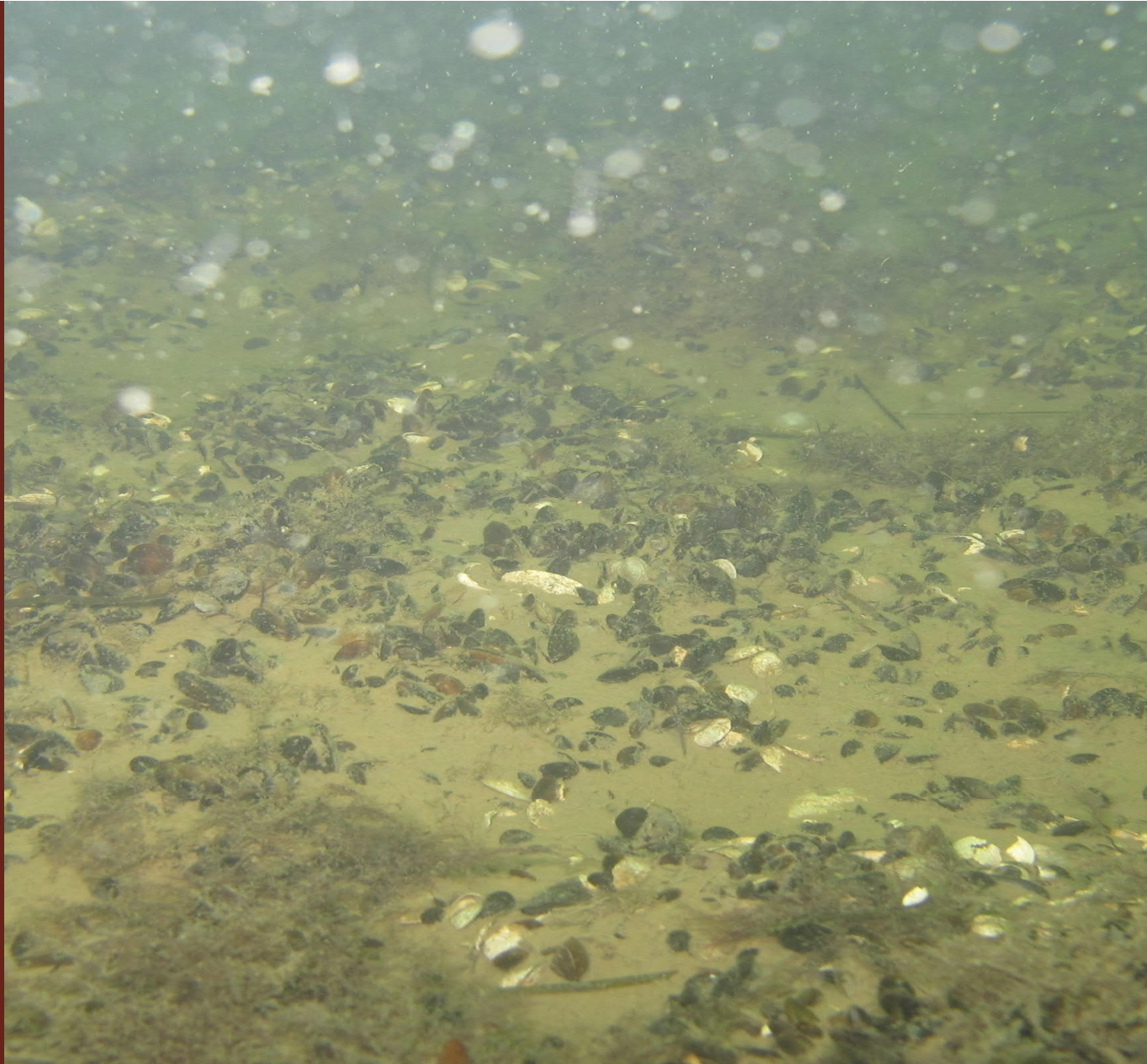
64.75 x 40  
1.25 g/cm<sup>3</sup>  
200 PULCELLINO PULBET

200 PULCELLINO PULBET

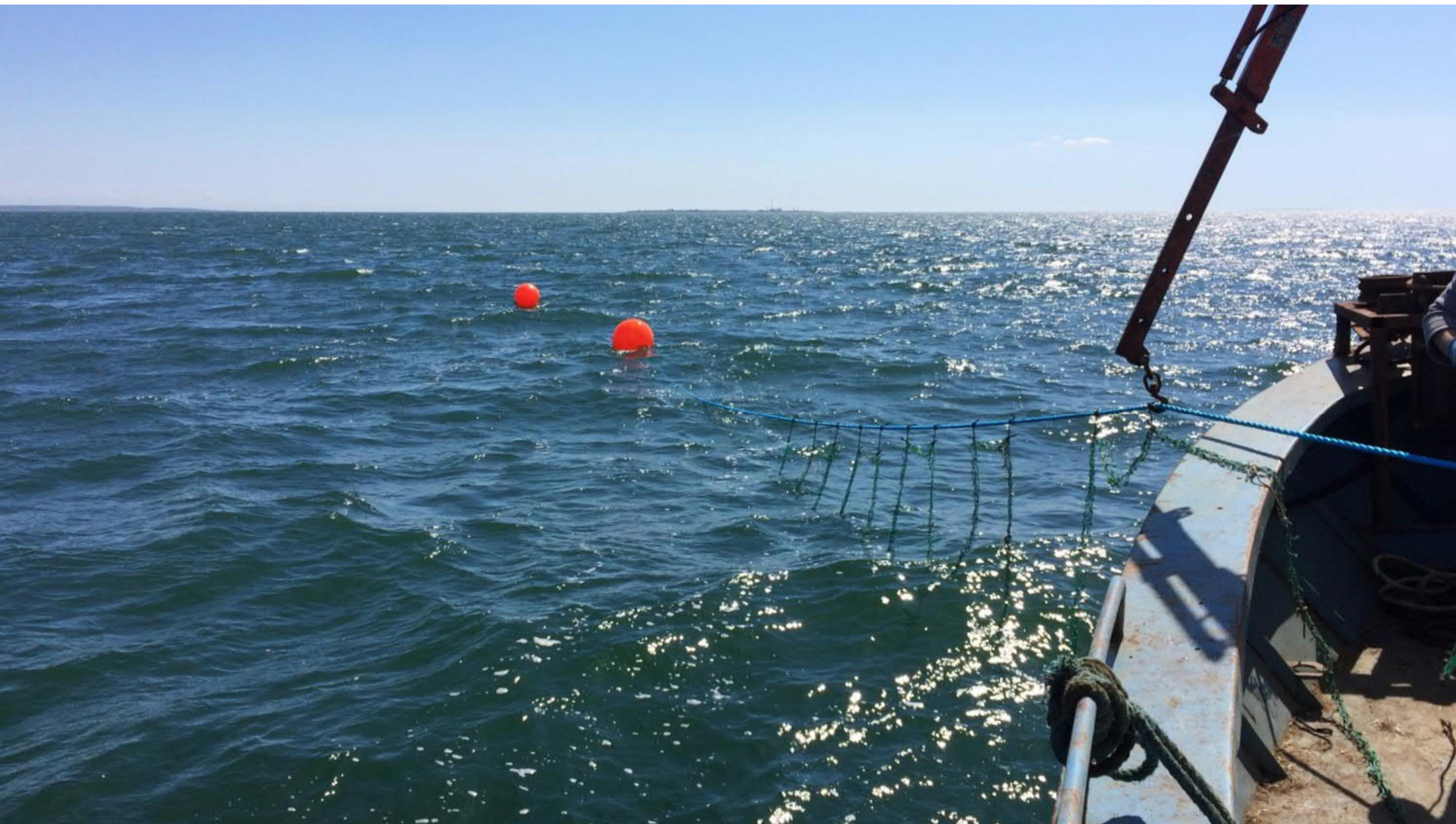
200 PULCELLINO PULBET



# Mussel farming











# Use of Baltic mussels

Odd Lindahl

## The possible uses of Baltic mussels

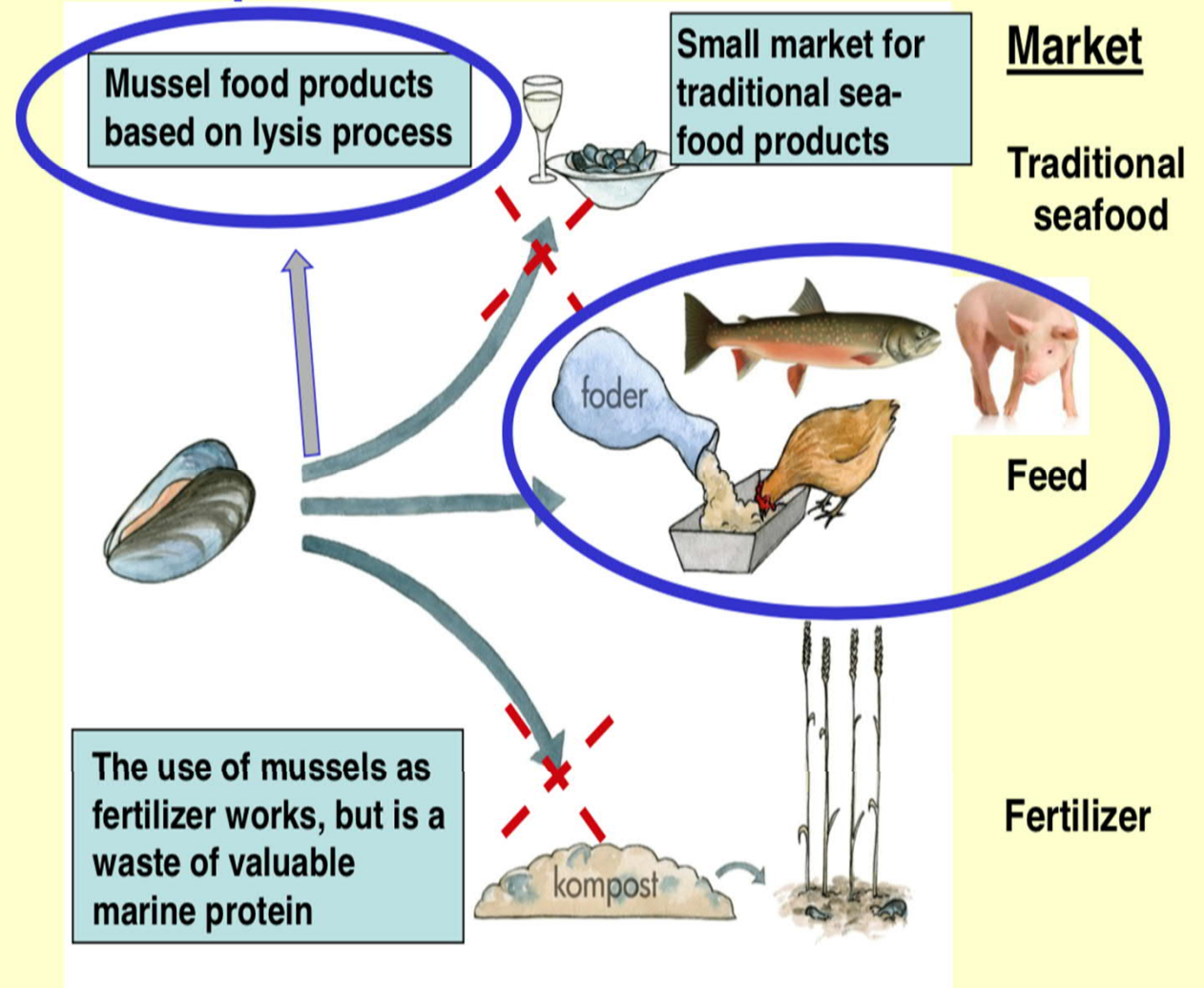
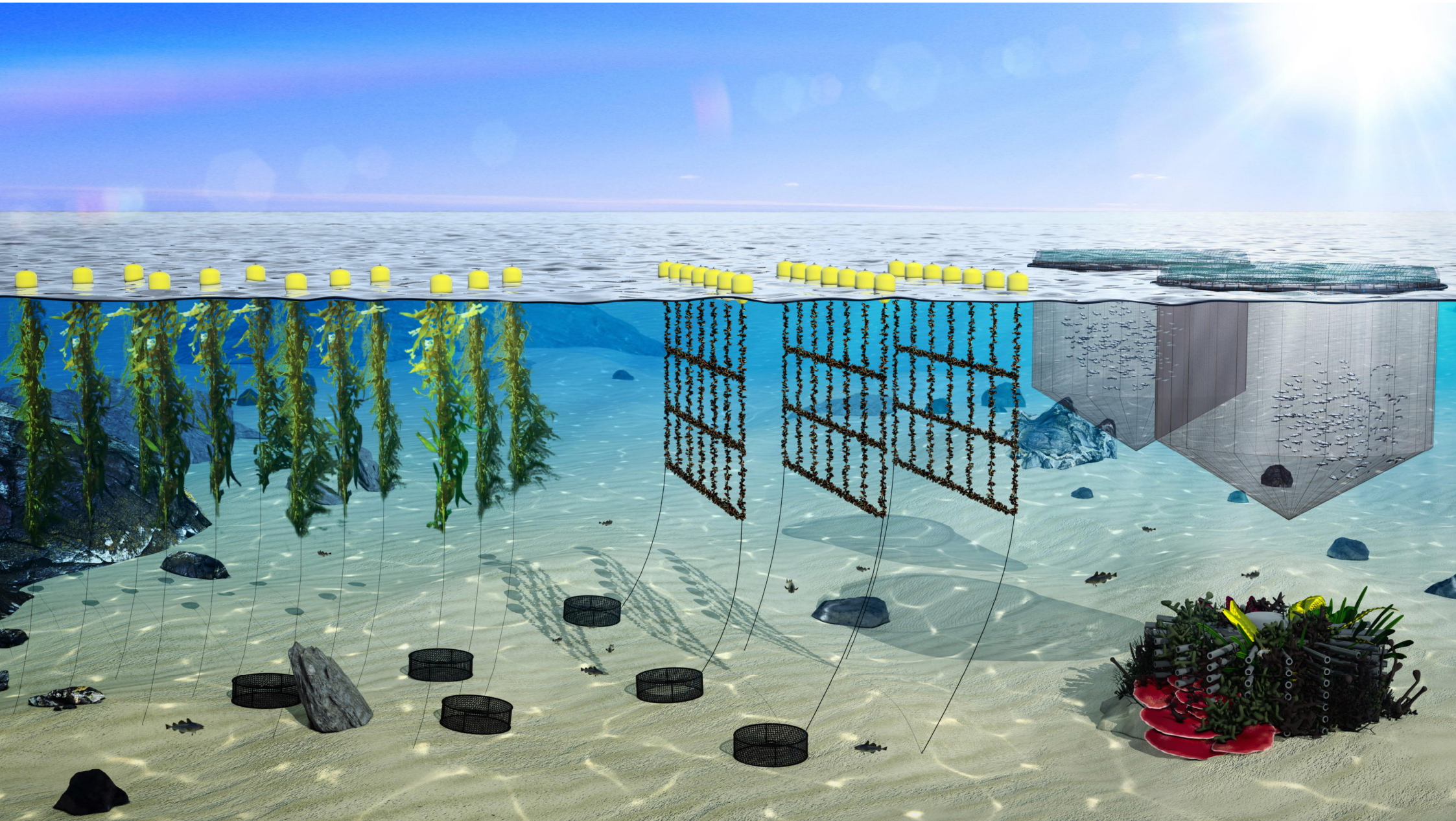


Illustration: Maj Persson



- Fish farmers
- Fishmeal factory
- Local fishermen's
- Farmers
- TU Marineinstitute

Cooperation









Thank You!

**Urmas Pau**

Est-Agar AS

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