



EUROPEAN UNION
European Regional
Development Fund



PILOT MUSSEL

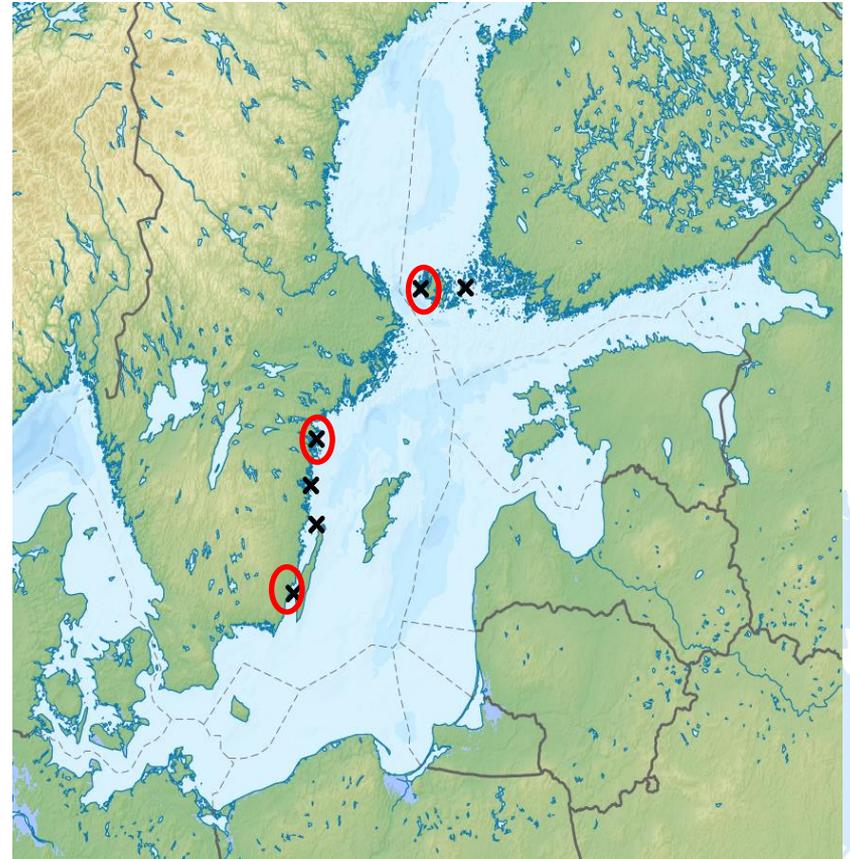
NUTRITRADE- Nutrient offsetting for the Baltic Sea

Background

- Mussels absorb nutrients from Baltic Sea.
- Emerging potentials to utilize as poultry feed
- SLU procures harvests of mussels from the Baltic Sea, in two separate tenders
 - Tender I: Advertise autumn 2015 → Harvest autumn 2017 → 1 contract
 - Tender II: Advertise autumn 2016 → Harvest autumn 2018 → 5 contracts
- The contracts imply that we should harvest 134 tons of mussels in total.

Where are the mussel farms located?

- 1st tender: invited mussel farmers along Swedish coast facing Baltic Proper,
- 2nd tender: added Åland and the Öresund straits
- Contracted farms are marked out with an X on the map
- 3 of those have harvested, in total 28 tons, marked with red ring



What about the environmental effect?

- Mussel farms send a 1 kg sample in, where nitrogen and phosphorus content is measured.
- Before we know the exact content we can only estimate the environmental effect:
- Conservative estimates:
 - N-content 6.4-10.2 kg/ton
 - P-content 0.4-0.6 kg/ton
- Thus, if harvests are taken as planned, the total nutrient removal effect of the project is 858-1367 kg N and 54-80 kg P.



NutriTrade

Nutrient Offsetting for the Baltic Sea

Is mussel farming a cost-effective measure?

- The bids we have received are in the range of 1 to 2.5 EUR/kg harvested mussels.
- Cost per kg N removed: 100 to 417 EUR.
- Cost per kg P removed: 1,670 to 6,250 EUR.
- But implies double counting, one could say that one of the nutrient is removed for free
- This is comparable to the more expensive measures, currently providing support under the CAP rural development program



NutriTrade

Nutrient Offsetting for the Baltic Sea

Reflections on the future

Will mussel farming cost fall?

- Potential for commercial use as, e.g., feed
- Cultivation cost will fall as mussel farmers gain experience, and markets develop.
- We have surveyed all studies reporting mussel farming projects in the Baltic Sea region
- Taking into account the *life time of the equipment*, our results suggest that mussel harvesting costs about 0.5 EUR per kg mussels.
- Hence, good potential to be cost effective if mussel farming obtains continuous support.



NutriTrade

Nutrient Offsetting for the Baltic Sea

How should support to mussel farming be designed?

- Mussel production is stochastic.
- Farmers could be unwilling to join unless support should be divided between investment and harvest.
- The more support is given to investment, the more inspections are necessary.
- The more support is given to investment, the higher is the risk for opportunistic behavior (e.g., do not cultivate, but sell the equipment outside the eligible area).



NutriTrade

Nutrient Offsetting for the Baltic Sea



NutriTrade
Nutrient Offsetting for the Baltic Sea



NutriTrade
Nutrient Offsetting for the Baltic Sea



NutriTrade
Nutrient Offsetting for the Baltic Sea