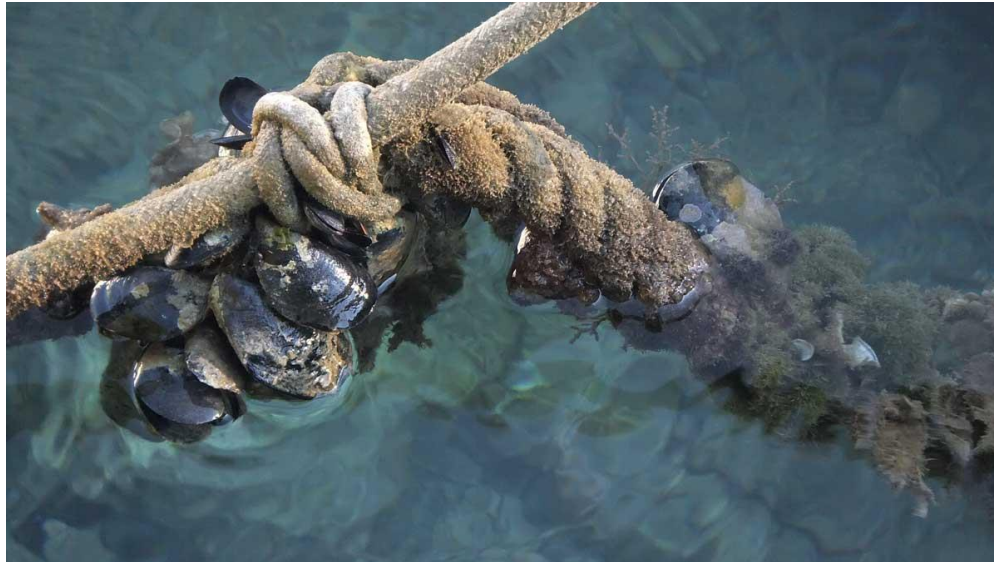




EUROPEAN UNION
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PILOT MUSSEL

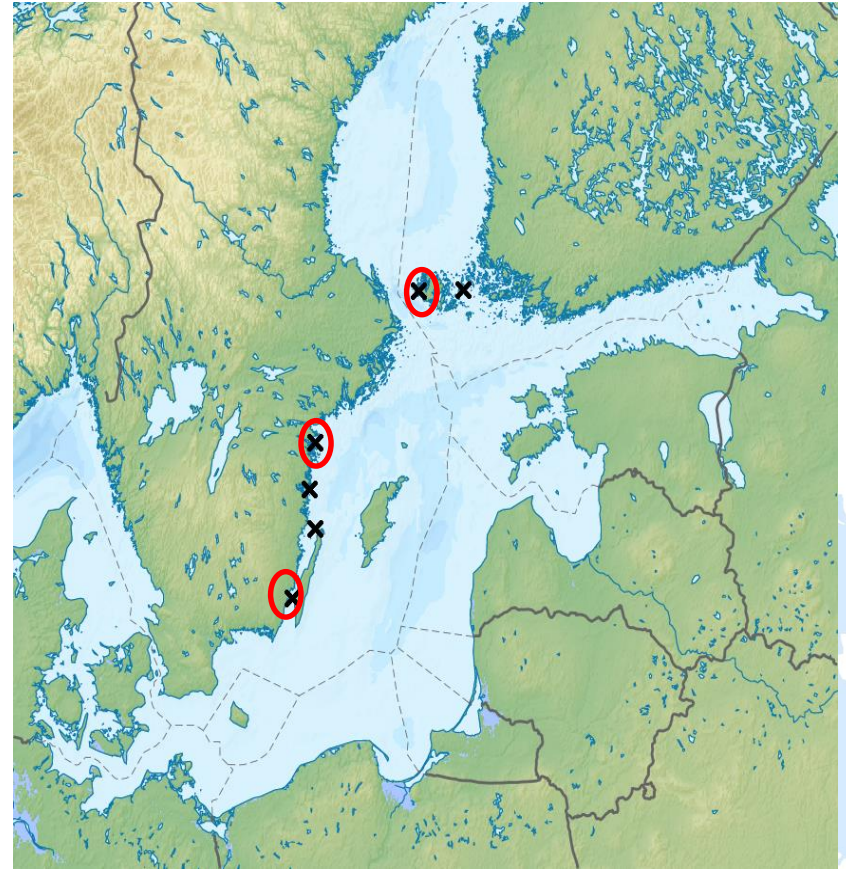
NUTRITRADE- Nutrient offsetting for the Baltic Sea

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.

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



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Reflections on the future

Will mussel farming cost fall?

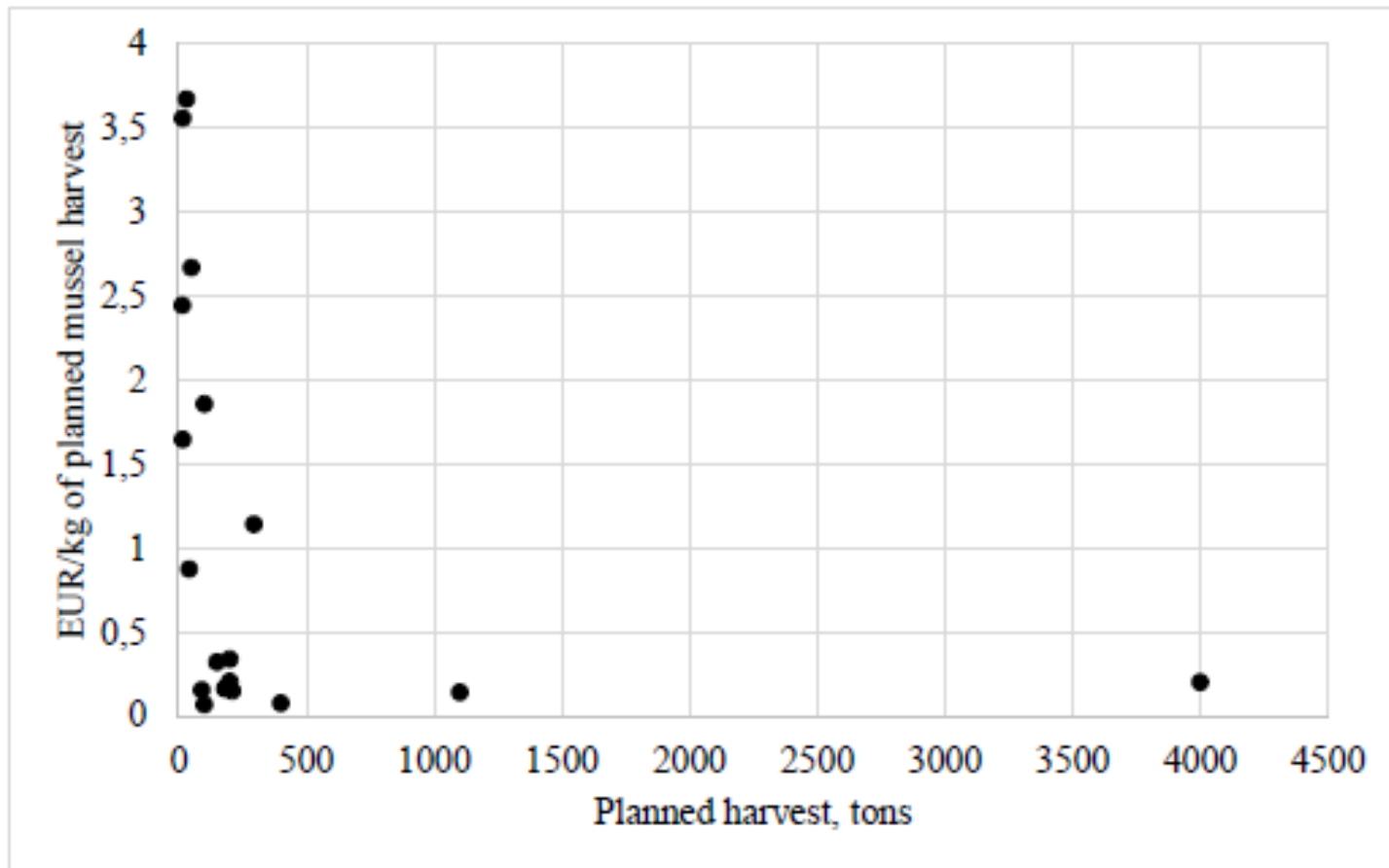
- Potential for commercial use as, e.g., feed
- Cultivation cost will fall as mussel farmers gain experience, and markets develop.
- We have surveyed all studies reporting mussel farming projects in the Baltic Sea region
- Taking into account the *life time of the equipment*, our results suggest that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



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Mussel production costs are lower for larger projects



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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).





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