Swedish Mussel Production and Seed Availability

Åsa Strand
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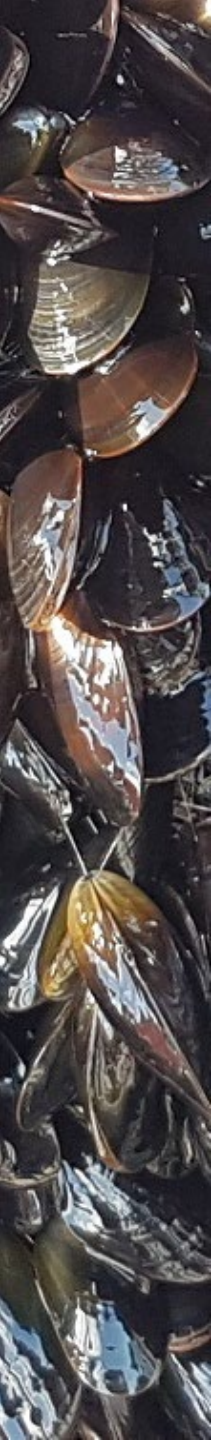
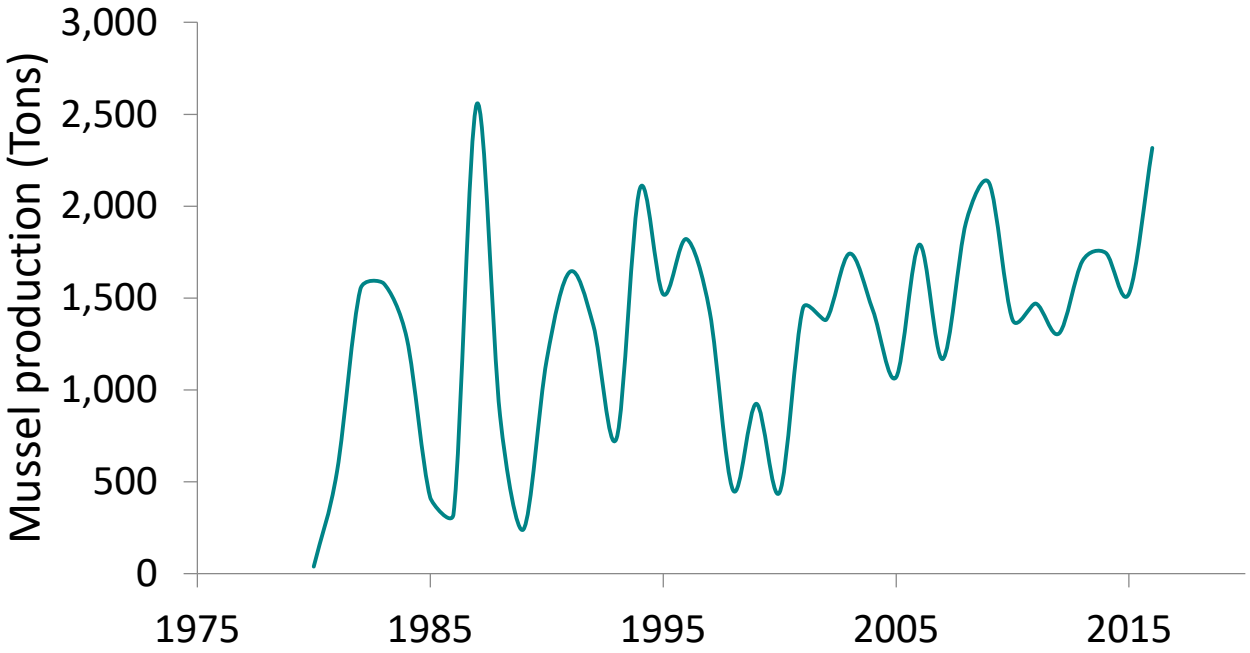
Swedish Environmental Research Institute



Swedish mussel production

- West coast production: 2 000 t 2017
- Predicted increase by 5 000 – 7 000 t during 2018 – 2020
- Also culture of mussels in the Baltic sea for remediation of eutrophication effects



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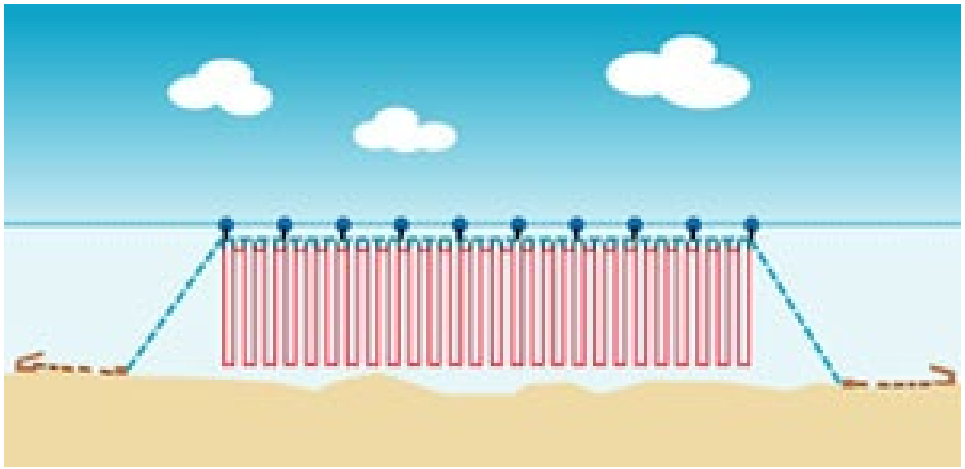
How?

- Moving away from traditional systems



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How?

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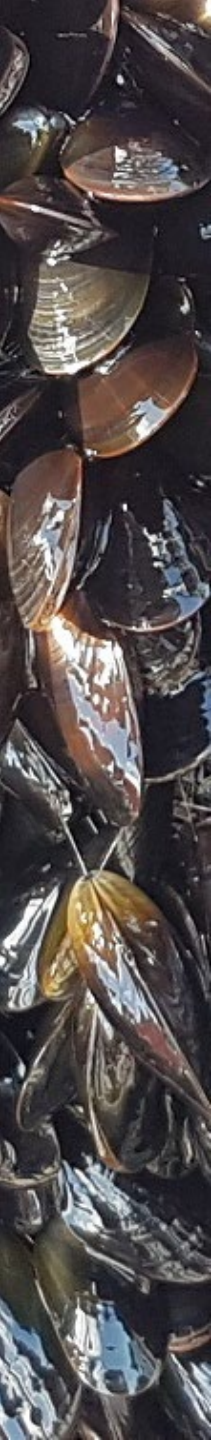
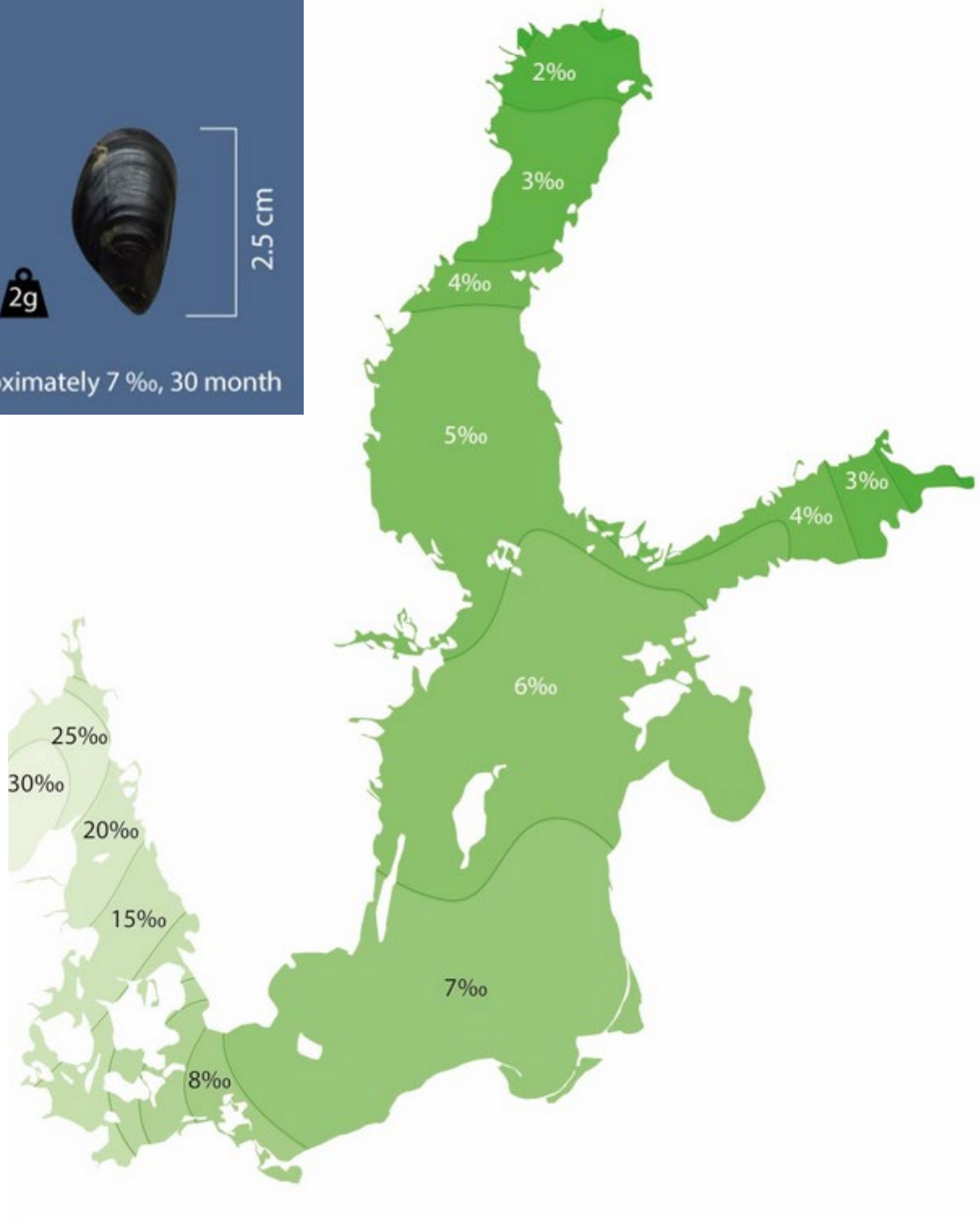



5 cm
13g
2g
2.5 cm
More than 25 ‰, 18 month
Baltic Sea, approximately 7 ‰, 30 month


2‰
3‰
4‰
5‰
3‰
4‰
6‰
25‰
30‰
20‰
15‰
7‰
8‰

How?

- Moving away from traditional systems

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How?

- Development areas:
  - Improved quality
  - Reduced predation
  - Meet consumer demands

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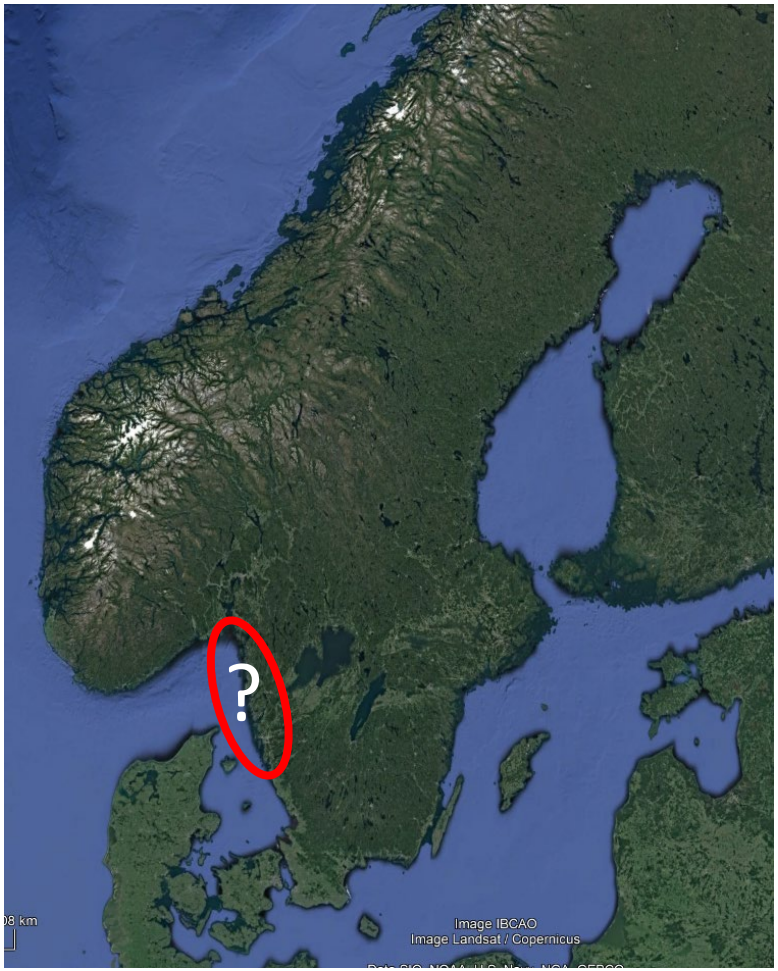
Seed supply?



- Reports from farmers on reduced spat settlement
- Reports from public on reduced wild populations
- All anecdotal…

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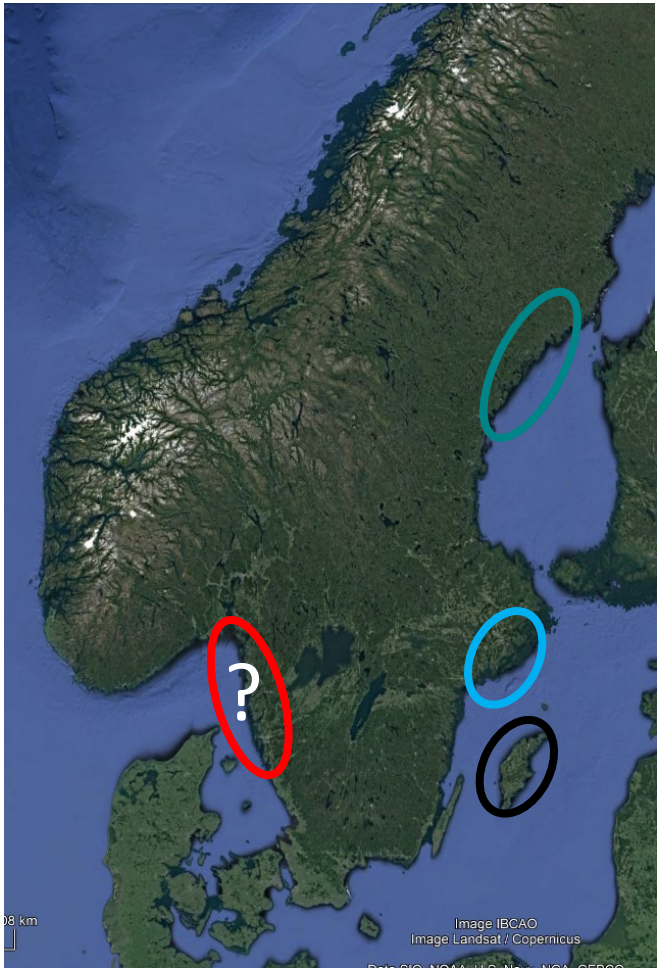
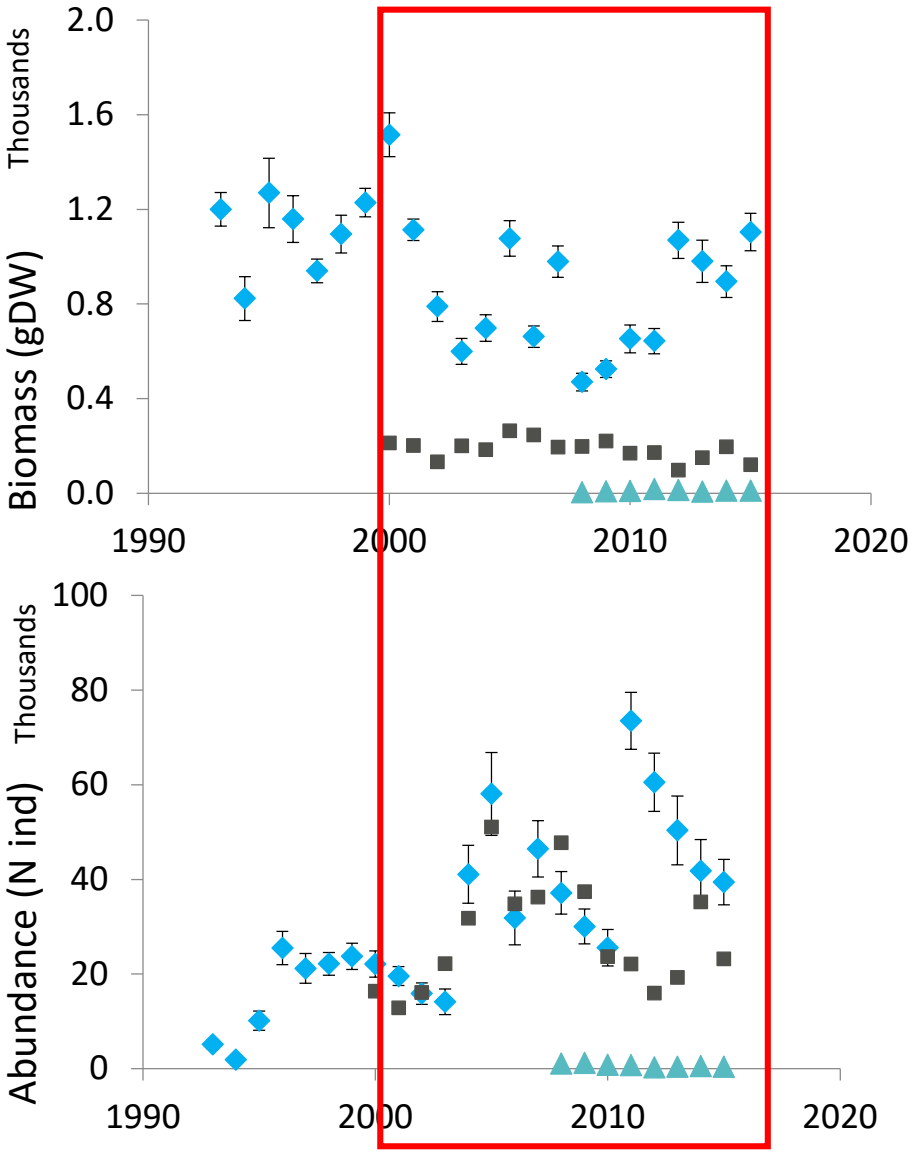
Seed supply?





Data from: Nationella miljöövervakningen för vegetationsklädda bottnar

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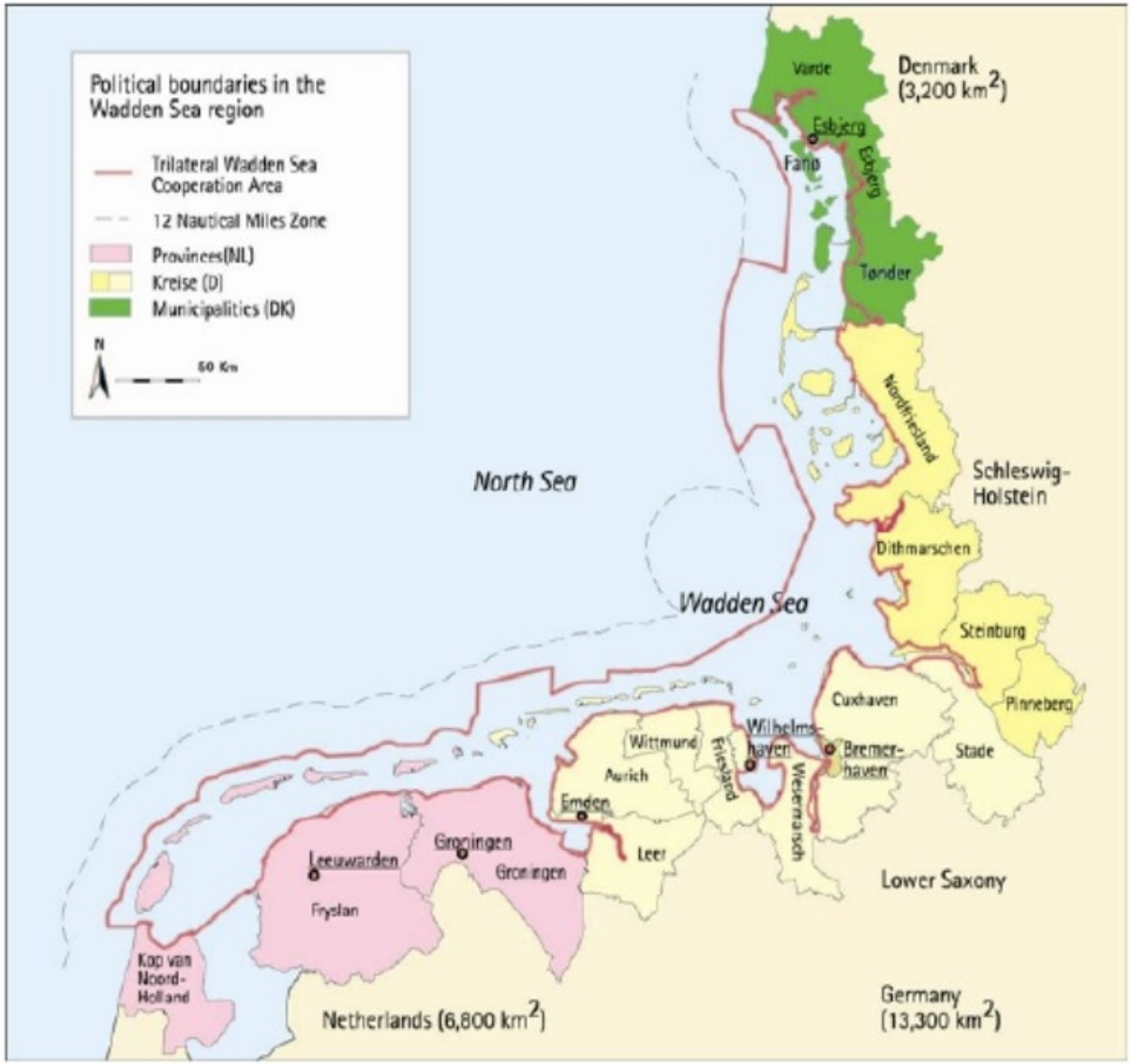
Seed supply?


Wadden sea and Denmark
Sweden
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Image IBCAO
Google

Wadden Sea



https://www.slideshare.net/riseagrant/marencic-waddensearh-i20120514rev

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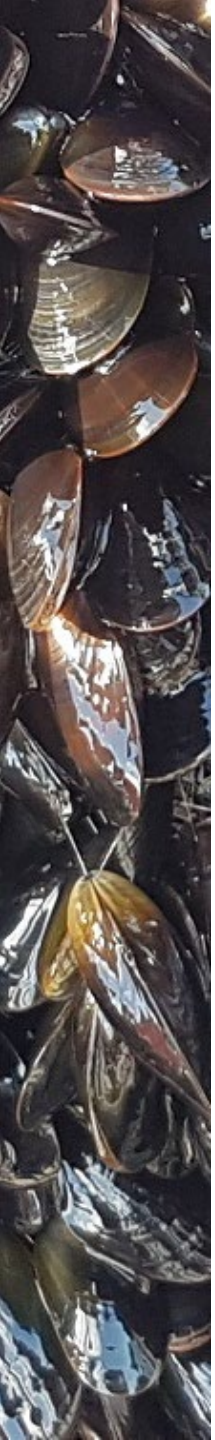


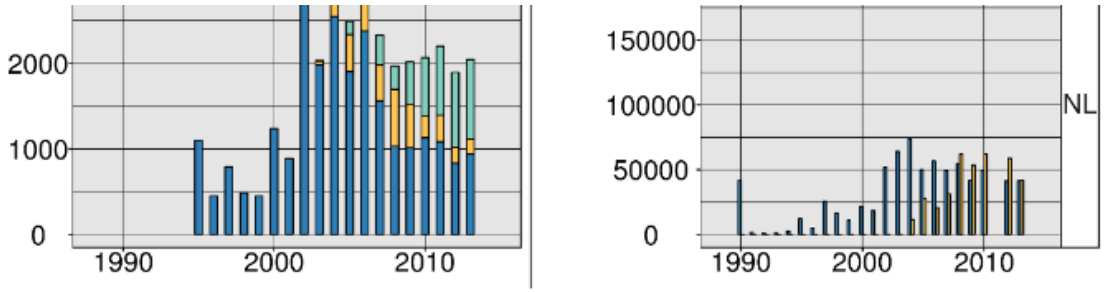
Wadden Sea

- Decrease in the 1980s and early 1990s
- Caused by commercial harvest of wild populations
- Intertidal + some subtidal areas are closed for fishery (from various times since 1992)
- Yearly monitoring (poor data from Denmark), 1988-2013

Wadden Sea

Conclusion:

- Dynamic population development
- Affected by natural mortalities
- Dependent on natural recruitment events which are sporadic



Folmer E., Büttger H., Herlyn M., Markert A., Millat G., Troost K. & Wehrmann A. (2017). *Beds of blue mussels and Pacific oysters*. In: Wadden Sea Quality Status Report 2017. Eds.: Kloepper S. et al., Common Wadden Sea Secretariat, Wilhelmshaven, Germany. Last updated 01.03.2018. Downloaded *03-10-2018*

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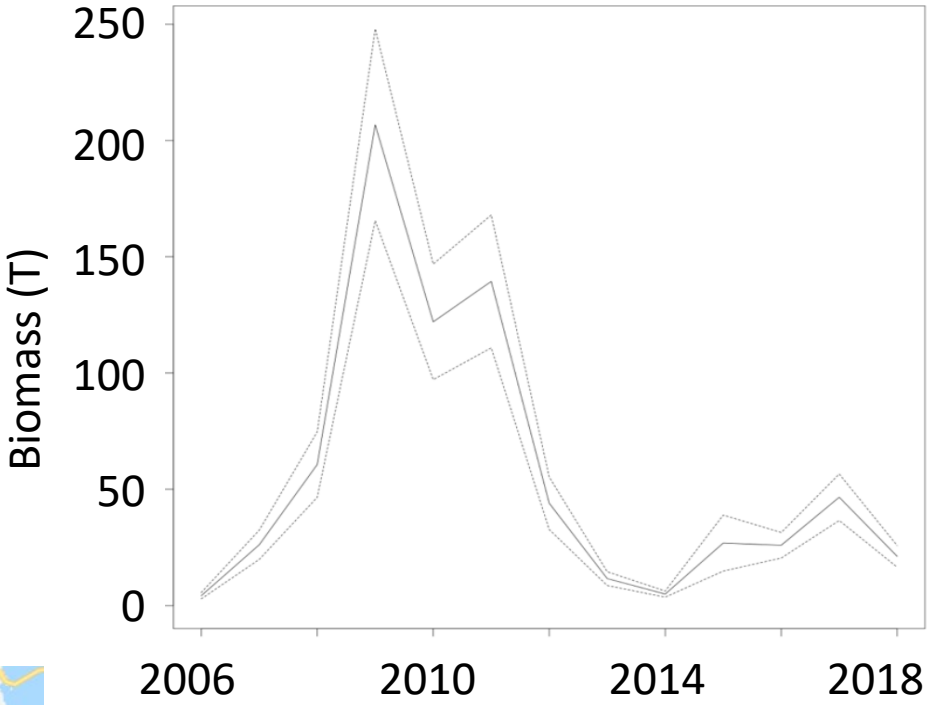
Denmark

Monitoring for fisheries (DTU)



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Seed supply?


Scotland
Wadden sea and Denmark
Sweden
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Image IBCAO
Google

Seed supply?


Newfoundland
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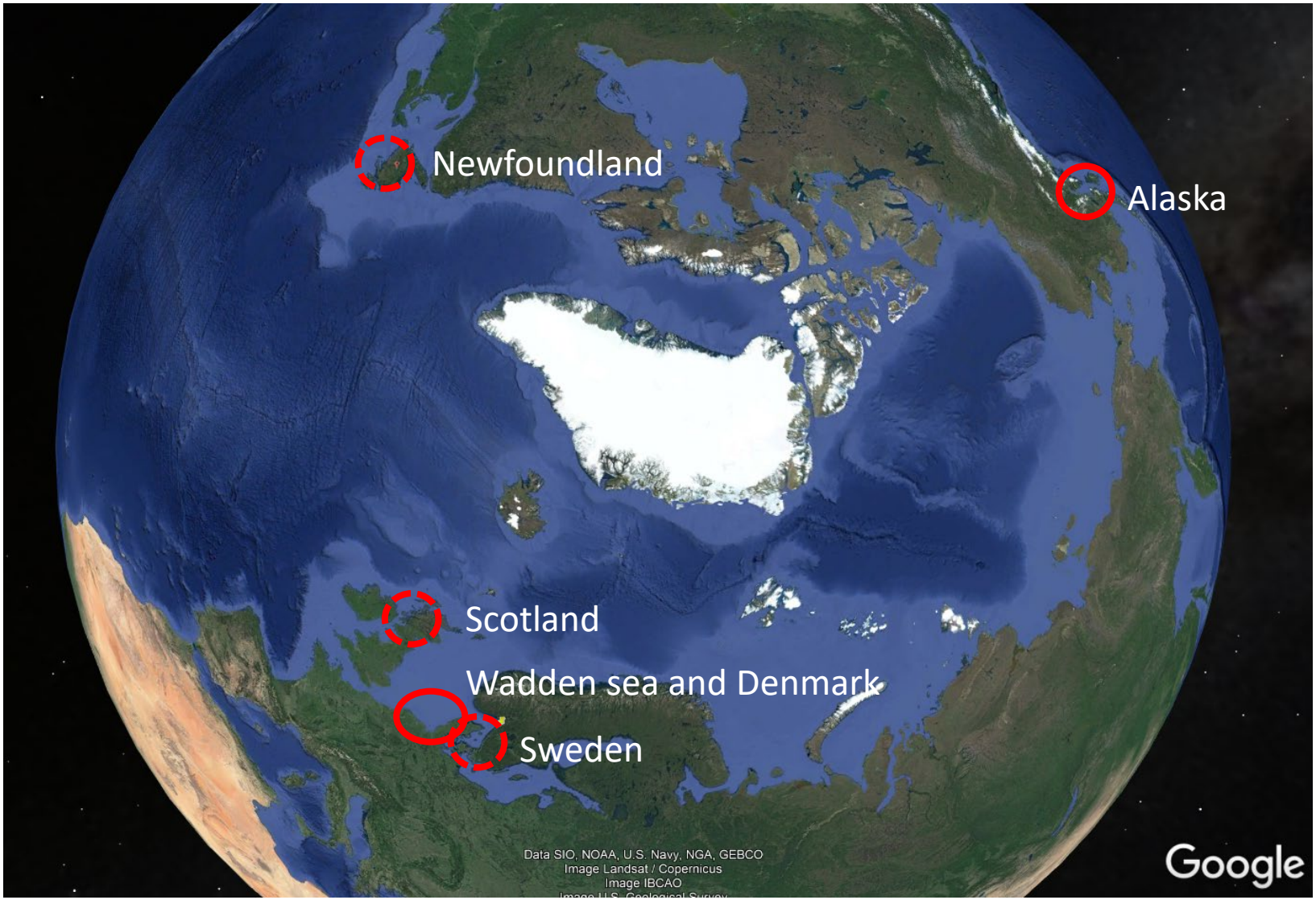
Alaska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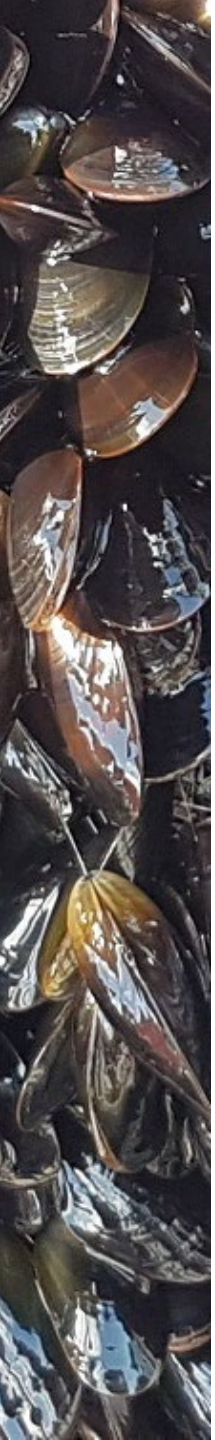
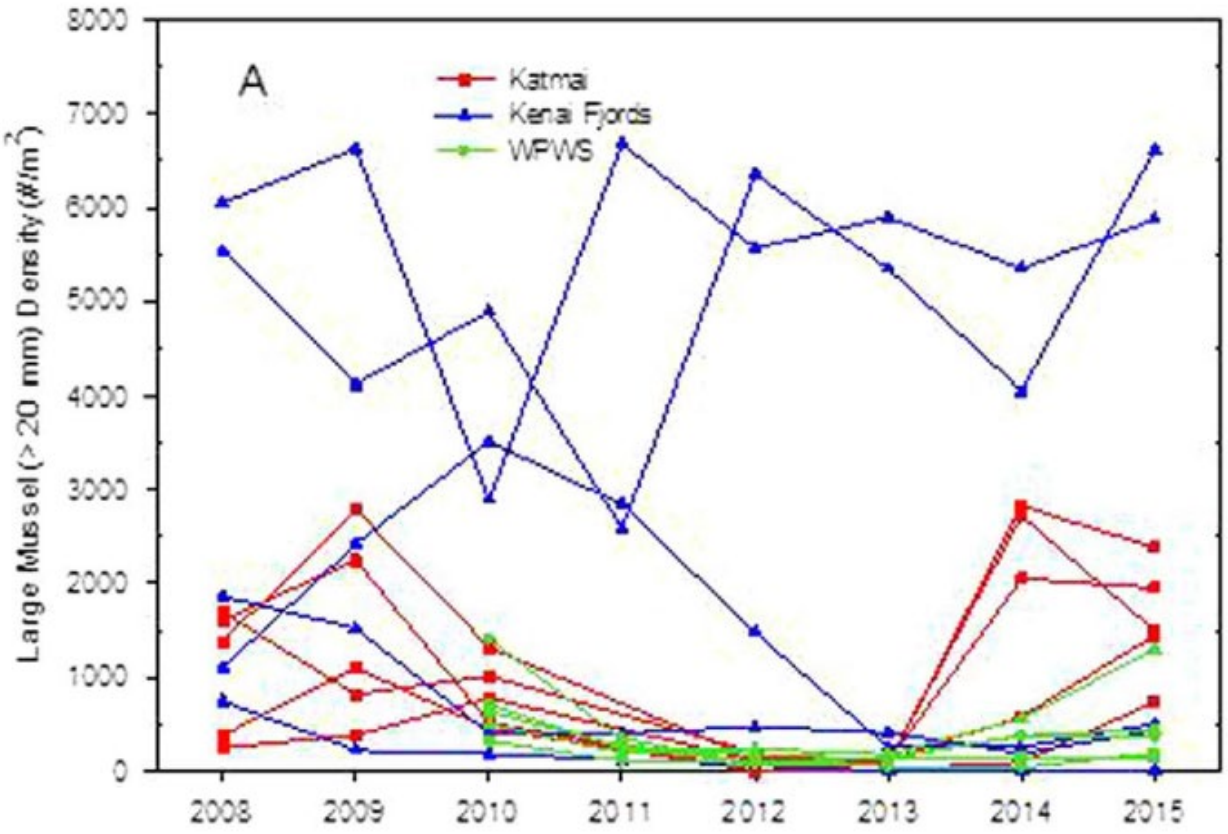


Alaska



High variability but no shortage of spat

Bodkin e t al. 2018. Variation in abundance of Pacific Blue Mussel (Mytilus trossulus) in the Northern Gulf of Alaska, 2006–2015. Deep Sea Research Part II: Topical Studies in Oceanography, 147: 87-97.

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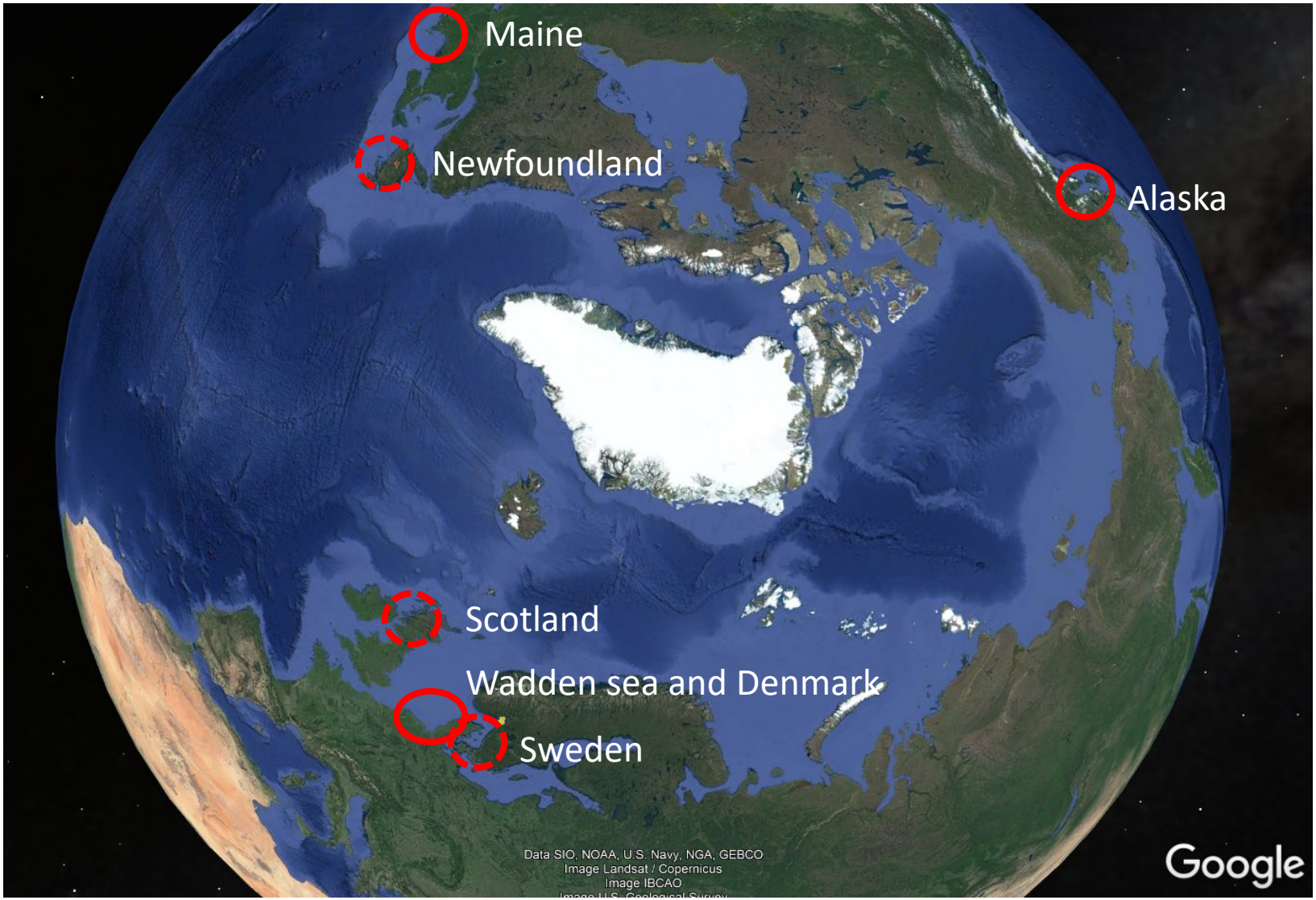
Maine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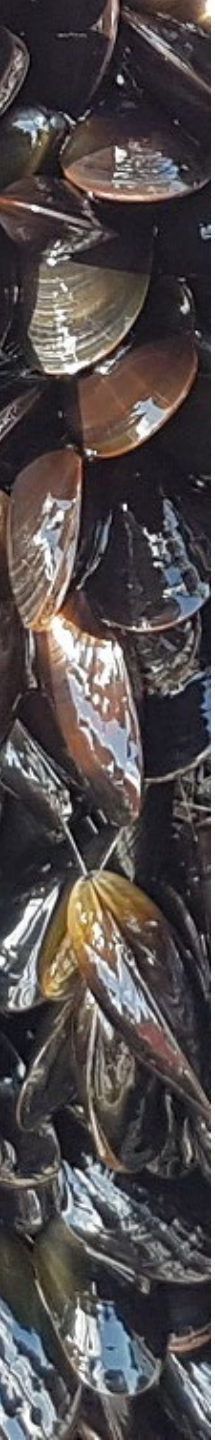

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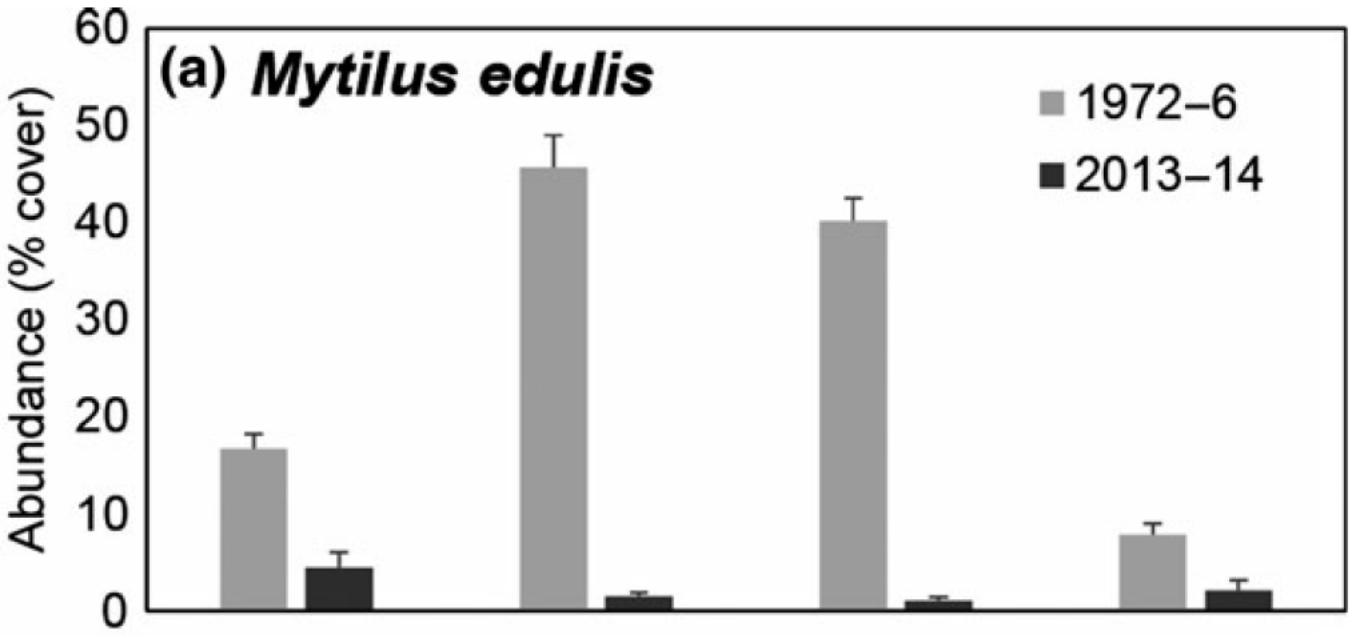

Sorte et al. 2017. Long-term declines in an intertidal foundation species parallel shifts in community composition. Global change biology. 23: 341-352.

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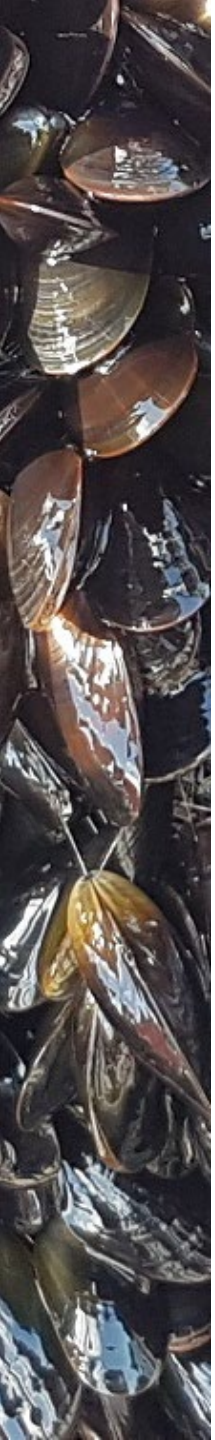
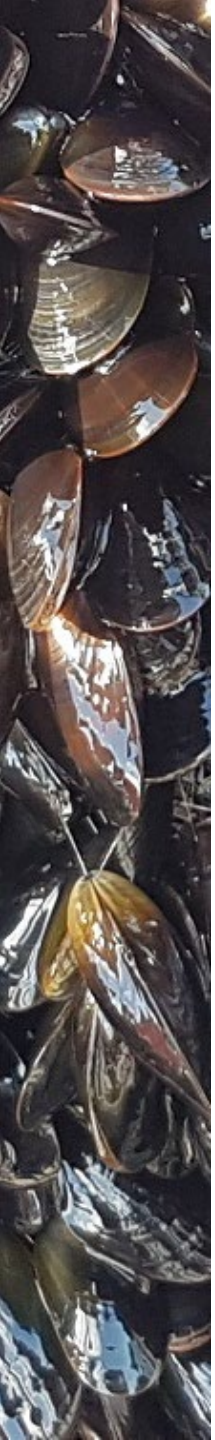


What can we learn from this?

- Lack of data!
- Long, continuous, time series needed due to high variability among years.
- Ongoing study in Sweden – historical data from 1970-2018, although not continuous.



What can we learn from this?

- Lack of data!
- Long, continuous, time series needed due to high variability among years.
- Ongoing study in Sweden – historical data from 1970-2018, although not continuous.
- Do we need to wait for good data?
- Assume there is a problem, how will this affect the industry?
- Importance of wild populations as a seed source (sort of initiated…)

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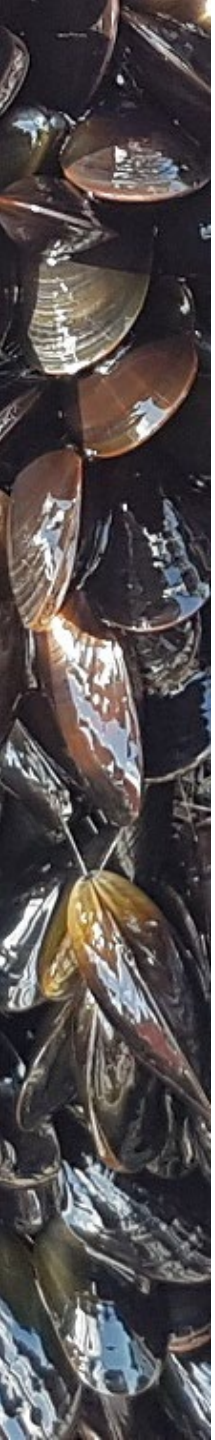

What can we learn from this?

- Possible solutions?
  - Restoration? (pilot project ongoing)
  - Controlled spat production? (Hatcheries, alternatives?)

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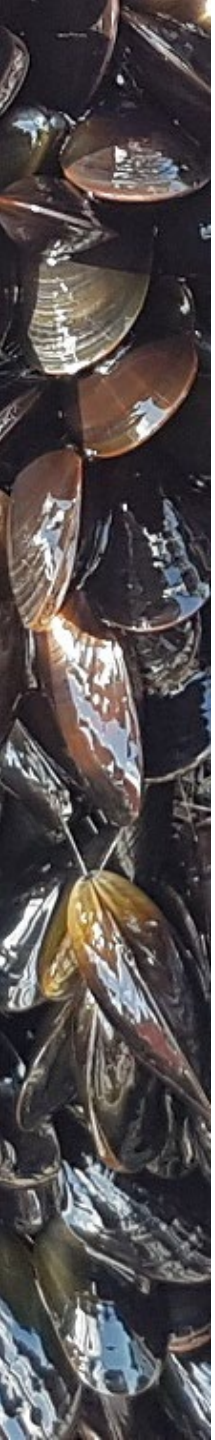

Thanks for your attention!

And thanks to all colleagues and students who have participated in this work, and to FORMAS, the European fisheries found and several small private foundations for their economical support.

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