Macroalgae harvesting and cultivation practices in the Baltic Sea

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Algae

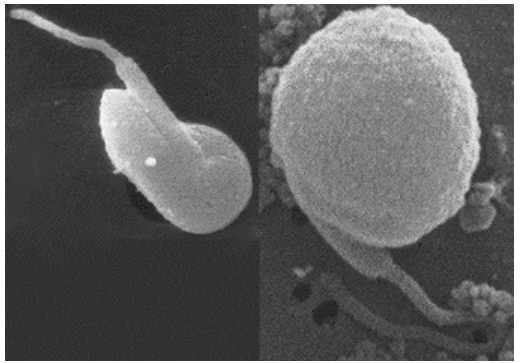
alga ← eukariotic, water, chlorophyll, photosynthesis

Macroalgae

µm

cm

m



Micromonas pusilla

Valonia ventricosa

Macrocystis pyrifera

Number of macroalgae in the Baltic

- ??? 300-400 max.
- potential for new introductions
- depends on the type of substrate and salinity

Weiberger et al. 2019, Botanica Marina 63(1): 61–72

... potential of macroalgae

- high levels of nutrient uptake
- high photosynthesis level
- high growth rate (with exeptions)

... but week tradition of exploitation and no tradition of cultivation in the Baltic

Green algae

***Ulva lactuca* and other Ulvacae:**

- potential for **deeutrophisation** of waters and **biofuels production**
- potential of cultivation tested in a numer of countries but with no groundbreaking discoveries

Red algae

***Furcellaria lumbricalis*:**

- exploited in Denmark (1940-60) and Poland (1960-70)
- nowadays unattached *F. lumbricalis* only in the area of the **West Estonian Archipelago Sea** (total bomass 179,000 t ww in 2017)
- exploited by ESTAGAR (from 1960) and VETIK (harvesting limited to 2,000 t ww/year)
- new records in Poland in the Puck Lagoon

New observations in Poland

Brown algae

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Saccarina latissima:

- distribution **limited by salinity** (Bornholm)
- **commercial sea-based aquacultures** in: Denmark (7 locations) and Germany (1 location)
- the largest farm in Denmark 10 t (ww) in 2014
- “Seafarm project” – 5 Swedish universities from 2014 (Skagerrak)

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Brown algae

***Fucus* spp.:**

- **harvesting licence** - Organic Seweed in Denmark (10% of the standing stockper year)
- experimental harvesting in Germany within FucoSan Project
- **cultivation** within FucoSan Project in Germany showed **it is possible and can be profitable**

FUCOSAN

Interreg
Deutschland - Danmark

EUROPEAN UNION

Beach wrack as a potential resource

- **different composition** depending on the region
- dominance of opportunistic species (e.g. *Ceramium, Vertebrata, Cladophora, Pylaiella, Ulva*)
- estimated washed ashore biomass as high as 45,000 t dw/year in Germany, 60,000 t dw/year in southern Sweeden

Weiberger et al. 2019, Botanica Marina 63(1): 61–72

Beach wrack as a potential resource

- **traditionally used as fertilizer and soil conditioner**
- currently – potential for **fertilizer and biofuel production** (Sweden, Denmark)
- pilot projects showed - the **cost** for small-scale customized production is presently **too high to be competitive**.

Weiberger et al. 2019, Botanica Marina 63(1): 61–72

Anything can happen…

- the **suboptimal geographic conditions** constitute an important limitation to the production of seaweeds in the Baltic Sea
- various scenarios of **recovery of natural communities**
- **algae explotation possible** but with lessons from the past in mind and further research

Thank you

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