



Mussel Production to Utilize Excess Nutrients In Fjords – Is it Cost-Effective as Mitigation Measure?

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ABSTRACT

Mussel production is an alternative measure to reduce excess nutrients in fjords causing unwanted eutrophication and negative impact on ecosystem services, and hereby improving the utilisation of the nutrients. The basic principle of mussel farming as a mitigation tool is that by harvesting cultured mussels, the unidirectional flow of mineral nutrients from land to sea is returned by bringing back the nutrients bound in the mussels from sea to land, and hence regarding the emitted nutrients as a resource that can be recycled. Further, as the production of nitrogen fertilizer is an energy demanding process with negative climate impact and phosphorus is a limited resource on a global scale, there are several environmental interests in using mussels as a mitigation tool. Mitigation mussel production can be carried out at lower costs compared to consumption mussel production, and our study has demonstrated that using mussels to remove nutrients from the coastal environment can be a cost-effective means of mitigation of excess load of nutrients. Many land based measures are partly already in use and thus have a restricted capacity for additional reduction of nutrient load to the marine environment, and the costs of implementing land based abatement measures for nutrient load reductions are thus increasing at the margin. Compared to the most expensive land-based measures mitigation mussel production is a cost-effective measure to obtain the nutrient load reductions required in order to obtain set environmental goals.