

A New Era for Danish Marine Fish Farming?

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Introduction

The world's fish production has been rapidly increasing, but the Danish marine fish production has been left behind for the last 15 years. This has been due to environmental concern, but in spring 2003 the national Danish marine farming committee published a report to encourage an economical healthy development for Danish marine fish farming with low environmental impact (Havbrugsudvalget, 2003a). This review will discuss the reasons for the stagnation and the new promising future for Danish fish farming.

Review

The Danish marine fish farms were in 1987 subject to the Danish Water environment plan regulations that imposed a limit on the loss of nutrients to the environment. This led to the request of a total stop of new, and expansion of the already existing marine fish productions in 1996. The request led to a stagnation resulting that Denmark has not been able to exploit the growth potential manifested on the global scale (Havbrugsudvalget, 2003a)(Fig. 1).

The request lasted for five years until the Ministry of Energy and Environment realised that the environmental efficient food production had been neglected. In spring 2003 the Danish marine farming committee published a report that recommended an active development of marine fish farming in Denmark. The fish farming committee stated that if new Danish fish farms were placed in open waters, the environmental impact would be small compared to the benefits from the increased production (Havbrugsudvalget, 2003a).

The stagnation has caused large economic losses in the terms of unexploited fish production and the estimated income losses is €1.5 billions, which equals half the costs of the Great Belt bridge (Denmark). The efficient decoupling of production and environmental impact is likely to continue in future and hopefully, the success in Danish marine fish farming has only been delayed (Fig. 2).

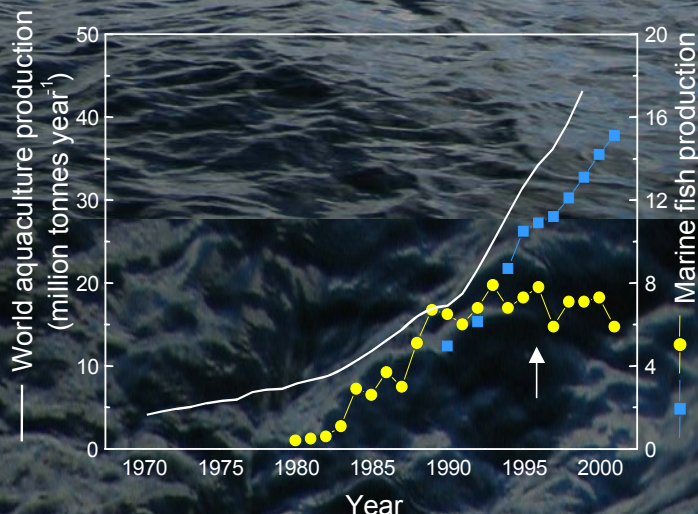


Fig. 1. World aquaculture production in million tonnes year⁻¹ (—)(FAO) and on secondary value axis the Danish marine fish production in thousand tonnes year⁻¹ (●)(Havbrugsudvalget, 2003b) and world marine fish production in million tonnes year⁻¹ (■)(FAO). Arrow indicate the Danish request in 1996.

The background for the committee recommendation was the recognition of the fact, that the specific release of nutrients in the Danish mariculture has been markedly reduced. During the past 20 years nitrogen and phosphorous release has been reduced by 60% and 70% respectively to 38kg N and 4kg P per ton of fish produced (Havbrugsudvalget, 2003a, b; Kjeldsen, pers. comm.).

Following this recommendation marine fish farmers have started the development of new fish farms in open waters. Musholm Lax A/S (in the Great Belt) with a production of more than 2 500 tons of trout is the first concrete result of these new developments. Several more fish farms are in the pipeline.

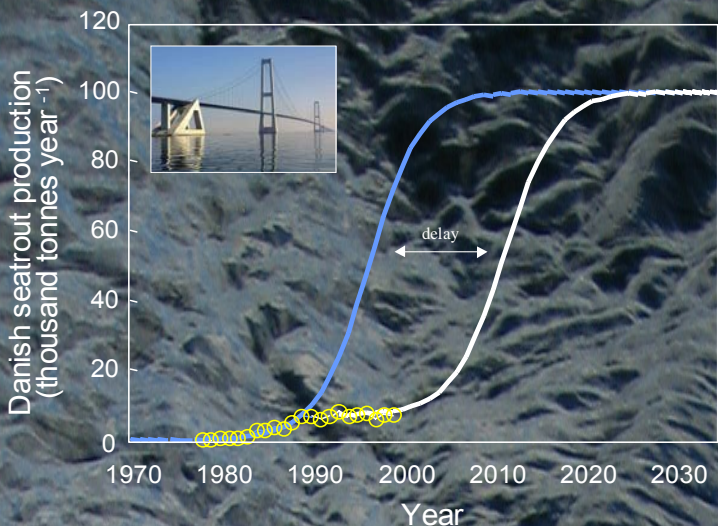


Fig. 2. The Danish seatrout production in thousand tonnes year⁻¹ (●). The hypothetical seatrout production without the stringent Danish legislation (—) and the future potential in the production (—). The estimated value of the income losses due to the delay in production is half the cost (€1.5 billions) of the Great Belt bridge (Denmark)(inserted picture (Sund & Bælt, 2000))

DHI-Water and Environment aims at developing even more environmentally efficient fish production methods, and we have recently initiated research involving polycultures in the Danish waters. In this research seaweed and mussels will act as biofilters, and the nutrient waste from the fish production will be converted into a valuable product.



References

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