

Harmful algal blooms in the Kattegat-Skagerrak and the Baltic Sea, and their effects on aquaculture

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Abstract

Phycotoxin-producing phytoplankton occur both in the Baltic Sea and in the Kattegat-Skagerrak. Several dinoflagellate genera and one diatom genus produces the toxins. These toxins may accumulate in filter feeders such as bivalves. The Swedish mussel industry is concentrated to the Skagerrak coast and is affected by the harmful algal blooms (HAB). In this talk, long term data from the period 1988-2018 on the occurrence of the toxin-producing algae and the toxins in bivalves will be presented. High concentrations of Diarrhetic Shellfish Toxins (DST) is the most common problem for the mussel industry. Fortunately, DST is decreasing. This cooccurs with a decrease in the abundance of *Dinophysis acuta*, one of the DST-producers. High concentrations of Paralytic Shellfish Toxins caused by the dinoflagellate genus *Alexandrium* occur occasionally. In spring 2017 levels of toxins were above the regulatory limit, resulting in closures of shellfish harvesting. In autumn 2018, high concentrations of Azaspiracidic Shellfish Toxins (AZT) were observed for the first time. *Azadinium* sp., producer of AZT, were present. Amnesic Shellfish Toxins, produced by diatoms from the genus *Pseudo-nitzschia*, are sometimes observed, but this is not a major problem. Blooms of *Pseudochattonella* spp. are common in the Kattegat-Skagerrak, and this genus causes fish mortalities. In the Baltic Sea are instead blooms of filamentous cyanobacteria the major HAB problem, where *Nodularia spumigena* produces the toxin nodularin. In addition, most of the toxin producing genera that cause problems along the Skagerrak coast also occurs in the Baltic. Results will be discussed in a climate change perspective.

Keywords:

Mussel farming, phytoplankton, phycotoxins, blue growth, *Mytilus edulis*, *Ostrea edulis*

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