BaltVib - Pathogenic Vibrio bacteria in the current and future Baltic Sea waters: mitigating the problem

Context

*Vibrio* – microbes that are part of the natural bacterioplankton in temperate marine waters – have in recent years flourished in the Baltic Sea, probably stimulated by elevated surface water temperatures. Several *Vibrio* species are human pathogens. It is hence of great concern that *Vibrio*-related wound infections and fatalities have increased dramatically along the Baltic coasts. Future climate change is predicted to escalate this problem, posing a significant threat to human health and the Baltic tourism industry. However, the projections do not yet take into account the influence of ‘ecosystem engineers’ such as mussels and macrophytes on *Vibrio* diversity and abundance. Recent data indicate that in some of the ‘ecosystem engineers’ habitats the abundance of pathogenic *Vibrio* spp. is reduced. However, climate change will also affect the structure and functioning of the ecosystem engineers, with as yet unknown consequences for the Vibrio populations in the Baltic Sea.

Main objectives

BaltVib aims to delineate the current and future *Vibrio* status, determine biotic and abiotic key factors regulating *Vibrio* prevalence, and identify nature-based solutions (NbS) to mitigate the problem. This opens up the option for NbS strategies to control pathogenic vibrios in the nearshore habitat where humans interact with the sea.

Main activities

The main activities will be understanding *Vibrio* – ecosystem engineer relations in the past, indexing the current distribution, regulation and pathogenicity of *Vibrio*, making a projection of *Vibrio* - ecosystem engineer relations in the future. Further we will test the potential of underwater islands as an NbS to reduce pathogenic *Vibrio* spp.

National authorities of the partner countries with responsibility for public health, bathing water quality, Marine Strategy Framework Directive and Water Framework Directive will be actively included in the decision-making process during the project through means of an advisory board. Additionally, politicians, stakeholders and the general public will be actively engaged to foster understanding of the need to protect and restore the biodiversity of seagrass meadow habitats as potential biofilters to conserve or reach a good ecological status and protect human health. This will be achieved through a number of workshops, trainings, the provision of data and open web-GIS “BALTIC SEA ATLAS” maps and a website.

BaltVib’s goals will be achieved through interdisciplinary integration of marine, microbiological, molecular and socio-ecological expertise carried by partners from seven Baltic nations.