

DESCRIPTION FOR THE GENERAL PUBLIC

Dominant species of Baltic cod parasites are acanthocephalans (*Echinorhynchus gadi*) and nematodes (*Contracaecum osculatum*, *Anisakis simplex*, *Pseudoterranova decipiens*, *Hysterothylacium* sp.). The life cycles of these parasites are not described in detail for the Baltic Sea. The main objective of the project is to determine the ways of parasitic infections of cod from the Baltic Sea, based on the parasitological analysis of marine invertebrates, that are the food components of these fish. The relationship between the sampling region and season and the presence of infected invertebrates in cod diet will be analyzed. The following hypotheses will be verified:

Which invertebrate species, that are a food component for cod, can be a source of parasitic infection? Do different species of invertebrates serve as an intermediate host for different species of parasites? How does the proportion of infected invertebrates change in different cod sampling area and sampling season? How does the infected food components present in cod diet depend on the biological parameters of the fish (like length, age, condition)?

The biological material consist of digestive tracts of cods collected during the commercial and research cruises between 2013-2015. Samples were kept frozen until the analysis of diet composition. The analysis of the cod diet composition has been performed by the Project Leader. Invertebrates and parasites found in the lumen of the stomach were collected and frozen again. Within the project the parasitological analysis of the invertebrates will be carried out. The invertebrates will be digested in artificial gastric juice (water solution of pepsin and HCl) for better detection of the parasites in the body cavity. The taxonomic identification of the parasites will be performed on the base of its anatomical and morphological features. The taxonomic position of the parasites will be verified using molecular methods, based on analysis of DNA. Photographic documentation of acquired parasites will be performed. Finally, statistical methods will be applied to determine the relationship between the occurrence of infected invertebrates and parasites itself in the diet of cod versus biological parameters of the host and area and season of sampling.

The reason to undertake research on this subject, is the fact that the presence of parasites direct in organisms which are the diet components of cod has never been analyzed before. It is very interesting to follow the ways of infection with different species of parasites and check if it depends on the area and season of sampling or the biological parameters of cod. Results of this study will expand knowledge about way of parasite infection of cod, as well as help in describing the detailed life cycles of parasites of cod in the Baltic Sea. The proposed scope of the study is multidisciplinary, because it combines various branches of science together, such as biology, ecology, physiology, parasitology and genetics, that makes the research more complex. The results of the project will be published in scientific journal from JRC list and will be a crucial part of dissertation of the Project Leader. Results will be also presented during two international and one national scientific conferences.