

**Proposed thesis topics for the Doctoral degree studies (2020-2024) in  
Ecology and Environmental Science at Marine Research Institute (Klaipėda University)**

**Nr 1.**

<b>Title of the doctorate theme</b>	<b>Biofouling in aquatic environment: processes and impacts</b>
<b>Brief description of the topic</b>	Biological fouling (biofouling) is the growth of organisms on artificial structures submerged in the sea or other aquatic environment. It develops sequentially from the initial conditioning layer of adsorbed organic and inorganic matter through the formation of a microbial film to a potentially diverse community of macroscopic plants and animals (Lewis 1998; Rajitha et al. 2020). Biofouling causes a significant operational and economic impact on ships, hydrotechnical structures, power plant cooling systems and aquaculture. The biological fouling of floating anthropogenic debris is known as the emerging vector for introduction of marine invasive species. The problem of biofouling is diverse and includes many research aspects, e.g. the role of bacterial biofilms in early stages of biofouling, patterns of biofouling in the freshwater, estuarine or marine environment, transmission of invasive species, antifouling technologies and their impact on biofouling and ambient environment. The proposed topic leaves sufficient freedom in the selection of specific aspects and the design of a research plan for the doctorate study project on biofouling.
<b>Requirements for a candidate</b>	A future graduate student should have deep knowledge in the field of aquatic ecology and good expertise in the laboratory analysis and field work. Preference will be given to those candidates who have the skills of molecular genetic analysis, experimental design, underwater video analysis, statistical methods. Good knowledge of English is a prerequisite (knowledge of other languages is an advantage).
<b>Existing research experience</b>	A doctorate student will join the research team which has long-term experience in benthic research and biological invasion studies. There is an opportunity for fellowship in leading centres in biofouling research in northern Europe.
<b>Existing research infrastructure and support</b>	A wide spectrum of research methods may be applied depending on the specific task and the work plan, from field studies (experimental biofouling plates, examination of underwater surfaces, remote underwater video survey, SCUBA diving methods) to laboratory analysis (visual identification of species, eDNA analysis, processing of photo- and video materials) and statistical analysis. Work will be partly supported by the joint Lithuanian – Polish project ADAMANT (Arctic benthic ecosystems under change: the impact of deglaciation and boreal species transportation by macroplastic) and INTERREG BSR project COMPLETE (Completing management options in the Baltic Sea Region to reduce risk of invasive species introduction by shipping).
<b>Potential supervisor</b>	Prof. habil. dr. Sergej Olenin (sergej.olenin@jmtc.ku.lt)