

## Degree projekt

**Subject field:** Ecology, Marine

**Title:** Temperature sensitivity of plankton respiration coupled to resource supply.

**Project period:** Spring or autumn 2025. 15 to 60 ECTS



**Background:** Respiration is one of the most important processes in the biosphere and an integral part in the metabolism of all living organisms. In aerobic environments oxygen is consumed coupled with degradation of carbon compounds constituting the major process removing oxygen and producing carbon dioxide. Thereby respiration is relevant for both the occurrence of hypoxia and release of CO<sub>2</sub> from aquatic environments (i.e., climate change effects). The knowledge of interaction between temperature and availability of organic carbon substrates for regulation of respiration in organisms is limited.

**Overall aim:** Clarifying the interaction of temperature and substrate availability for regulating plankton respiration.

**Research question:** Is plankton respiration more temperature sensitive at higher substrate supply during the spring bloom?

**Method:** The sensitivity to small temperature changes in steps of 1 °C will be investigated before, during and after the spring bloom in the northern Baltic Sea. The effect of addition of cell substrates will complement field studies. Respiration is measured by a sensor-based technology using incubator with Peltier-element technique. The field work will be done in the Öre Estuary coupled to a running monitoring program.

**Workplace:** Dep. of Ecology and Environmental Science and Umeå Marine Sciences Center (UMF), Norrbyn.

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