



Influences of sea level and salinity changes on Baltic coastal wetland plant communities

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The salinity of the Baltic Sea is classified as brackish-water in the east with 6.5 psu due to the narrow connection with the Atlantic Ocean through the Danish Straits (Ward et al., 2016). Flooding is predominantly driven by atmospheric pressure and fluctuating meteorological conditions across the North Atlantic and Fennoscandia with very low tidal range (~0.02 m range in the east) (Suursaar & Sooäär, 2007). Recent estimates of relative sea level rise from three tide gauges along the Estonian coast are: 1.5–1.7 mm yr⁻¹ at Tallinn, 1.7–2.1 mm yr⁻¹ from Narva-Jõesuu and 2.3–2.7 mm yr⁻¹ at Pärnu (Ward et al., 2014) and salinity is expected to decrease in the eastern Baltic and increase in the west (Graham et al., 2007). The aim of this project is to investigate how species-rich Baltic coastal wetland plant communities are affected by changes in water levels and salinity as a result of climate change. Responses of main plant species (germination and growth) and coastal wetland plant communities have been evaluated under altered environmental conditions simulating future scenarios using mesocosm experiments. The experiment consists of 15 buckets per species and 5 treatments (3 replicates per treatment). Seeds of *Juncus gerardii*, *Festuca rubra* and *Salicornia salina* (450 seeds per species) were planted. Initial germination results show higher germination of *F. rubra*, followed by *J. gerardii* while *S. salina* didn't germinate. *F. rubra* had higher germination in lower water level and pattern salinity while *J. gerardii* with higher water level and pattern salinity in a period of 8 weeks.

Suursaar, Ü., and Sooäär, J. 2007. Decadal variations in mean and extreme sea level values along the Estonian coast of the Baltic Sea. *Tellus A*, 59(2), 249-260.

Ward, R.D., Teasdale, P.A., Burnside, N.G., Joyce, C.B., and Sepp, K. 2014. Recent rates of sedimentation on irregularly flooded Boreal Baltic coastal wetlands: responses to recent changes in sea level. *Geomorphology*, 217, 61-72.

Ward, R.D., Burnside, N.G., Joyce, C.B. and Sepp, K., 2016. Importance of Microtopography in Determining Plant Community Distribution in Baltic Coastal Wetlands. *Journal of Coastal Research*, 32, 1062-1070.