Abstract

The belt-forming algae of the genus *Fucus* are key species of the otherwise species-poor Baltic Sea. The distribution of the *Fucus* species is limited by the reduced salinity of brackish water to which the Baltic populations have adapted. The genus *Fucus* is known for high phenotypic plasticity and the absence of reproductive barriers, complicating the study of its recent radiation. The recent speciacion of the Baltic endemic *F. radicans* from locally adapted *F. vesiculosus* populations probably happened twice independenly 2 500–400 years ago.

Baltic Sea is the largest brackish ecosystem characterised by a pronounced salinity gradient ranging from 1.2 to 30.2 ‰. It is influenced by the discharge of over 200 rivers and water exchange with the ocean is limited by the shallow Danish Straits. Since 1970s, *Fucus* decline and local extinction due to eutrophication of the Baltic Sea have been reported. Baltic water has high residence time which leads to accumulation of nutrients.

In 1974, Helsinki Commission was established and the Helsinki Convention on the protection of the Baltic Sea Area was signed in response to its worsening state. *Fucus* belts, however, continue to decline and their ability for recovery is limited. Increased sedimentation due to eutrophication has in many locations resulted in the loss of viable substrate and colonization by opportunistic filamentous algae, further limiting the possibility of *Fucus* recolonization.

Key words: Baltic Sea, eutrophication, salinity, phylogeny, belt, *Fucus*, *Fucus radicans*