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LONG-TERM CHANGES IN SOFT BOTTOM MACROFAUNA IN THE GULF OF  
BOTHNIA – A SIGN OF EUTROPHICATION

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Extended abstract

During the years 1983–1987, 53 stations sampled by Hesse in the 1920s and 28 stations sampled by Sallerberg in the 1950s (covering only the Southern Bothnian Sea and Åland Sea) were revisited.

Compared to the 1920s, significantly higher summed biomass values were found in the Bothnian Sea, but not in the Bothnian Bay. For the most important species, too, there were no significant differences in the Bothnian Bay. In the Bothnian Sea, the species *Saduria entomon*, *Macoma balthica*, and *Pontoporeia affinis* showed biomass values significantly higher today than 60 years ago. These species taken together make up more than 95% of the biomass.

The median of the 1980s/1920s ratios for the summed biomass was over 5.3 for the Bothnian Sea. The median is about the same as that calculated earlier for the central Baltic proper. The lower confidence limit is, however, lower, but well above the inter-annual variations.

In the southern Bothnian Sea and Åland Sea, too, biomass values were found to be significantly higher than in the 1920s. Of the species present, it was only *Macoma balthica* that showed significantly higher biomass values in the 1980s. Compared to the 1950s, significantly higher biomasses were found for *Saduria entomon* and *Macoma balthica* as well as for the total macrofauna biomass.

Back calculations produced data evidencing much higher biomass growth rates for the period 1950s – 1980s than for the period 1920s – 1950s, which indicates that the biomass increase has been occurring mainly since the 1950s. Macrobenthic production

estimates show even higher differences between 1950s – 1980s and 1920s – 1950s and thereby strengthen the inferences from the biomass data.

Changes in salinity and predation by fish as a possible cause for the biomass and production increase are rejected. On the other hand, increased sedimentation of organic matter as a result of long-term eutrophication is argued to be the principal cause.

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