PERIPHYTON IN LAKE VECHTEN, WITH EMPHASIS ON BIOMASS AND PRODUCTION OF EPIPHYTIC ALGAE

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SUMMARY

Characteristics of the periphyton associated with the submerged macrophytes *Ceratophyllum*, *Elodea* and *Myriophyllum* were similar. During the whole growing season the periphyton dry weight often exceeded that of the macrophyte. The periphyton contained much detritus and carbonates, and the epiphytic algae were accompanied by large numbers of bacteria, protozoans and rotifers. Attached algae were scarce, but motile diatoms were abundant throughout the year. Thus the periphyton showed the features of a benthic community. Consequently, the role of the macrophytes would be rather the extension of the bottom area instead of actively promoting the growth of microorganisms by providing minerals or excreting organic substances.

During the peak of the littoral development the epiphytic algae expressed a high photosynthetic capacity, while at the same time the periphyton dark respiration was intense. After measurements of the depth distribution of biomass and light in a *Ceratophyllum* stand, it was concluded that the contribution of the epiphytic algae to the production in the lake's littoral zone was substantial. Furthermore, on a daily basis, the total association of macrophytes and periphyton would be oxygen consuming due to heterotrophic activity, notably mineralization of the detritus.