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SUMMARIES OF DOCTOR'S THESES and of other Dutch papers which might escape attention because of their mode of publication

P. H. NIENHUIS: *Biosystematics and ecology of Rhizoclonium riparium (Roth) Harv. (Chlorophyceae: Cladophorales) in the estuarine area of the rivers Rhine, Meuse end Scheldt.* Ph. D. Thesis Rijksuniversiteit Groningen, pp. 1–240 (1975).

ABSTRACT

During the years 1966–1973 a study has been made of the biosystematics and ecology of the filamentous green alga *Rhizoclonium riparium* (Roth) Harv. in the estuarine area of the rivers Rhine, Meuse and Scheldt.

On the strength of morphological, ecological and cultural evidence *R. hieroglyphicum* (C. Ag.) Kütz. has to be abandoned as a separate fresh-water species.

Populations of *R. riparium* growing in the intertidal belt, show a phenotypically based morphocline. The morphological characteristics of the species are completely changeable in cultures.

A quantitative analysis of the validity of the taxonomical criteria, both on the evidence of field and culture material, showed that, a.o., the diameter of the filaments, the length/width ratio of the cells, the presence and shape of rhizoids and lateral branches and the mode of reproduction cannot be used to separate *R. implexum* and *R. riparium*. It is proposed to synonymize *R. implexum* (Dillw.) Kütz. with *R. riparium* (Roth) Harv. The latter name has priority over the former.

The distribution and ecology of *R. riparium* have been investigated and related to a number of environmental factors. *R. riparium* is a holeuryhaline alga, and it has an extremely wide horizontal distribution which covers the whole salinity range from marine up to and including fresh water. Both on hard and on soft substrates the alga covers large parts of the eu- and supralittoral zones. *R. riparium* grows in numerous vegetation types, in sheltered places with pH values always higher than 6, either fully exposed to sunlight or permanently shaded.

The temporal changes in algal vegetations containing *R. riparium*, and concomitant processes in their environments were studied during 3 years in 29 permanent quadrats, plotted in tidal salt marshes and along brackish inland waters. Fluctuations in soil moisture content and in salinity of the soil moisture, stability of the substrate and cover of phanerogams were correlated with the number and cover of algal species in a relevé, and the similarity between the species composition of successive relevés.

Stability of the substrate is a prerequisite for the development and maintenance of perennial green algal mats dominated by *R. riparium*. *R. riparium* does not act as a quickly growing colonist, and the settlement and expansion of a population takes several months, as could be observed from artificially cleaned permanent quadrats. Shortly lasting hyperhaline conditions do not limit growth. The wax and wane of the *Rhizoclonium* populations is irregular, and no marked seasonal periodicity can be observed, unless the soil moisture content acts as a limiting factor in summer. Below 20% soil moisture content the expansion of *Rhizoclonium* populations stops, and below 5% the populations die off and disappear.

Effects of grazing, treading, inundation, sunlight, temperature, precipitation, evaporation and other factors on algal mats with *Rhizoclonium* have been discussed.