

Diatom 17: 111-133 (英文)

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Abstract

The sampling plots are located on the brackish water wetlands, near the Tseng-Wen Estuary, in southwestern Taiwan. It is a wild animal and mangrove conservation area, and many birds feed there. The periphytic algae and water samples were collected seasonally during autumn 1998 to summer 1999 from seven different concentrations of salinity gradient (from 0.6‰ to 3.4‰ tested in the first sampling season, October 31). In the field, pioneer diatoms growing on the artificial substrates of microscope slides were studied and cultured for a period of 15-days in three seasons ; autumn-winter (October to November), winter (January) and spring-summer (March to April). A total of 36 diatom species were observed. The diatoms contributed more than 72% of the total algal species (50 species). Pennate diatoms were generally the most prevalent, with only three species of centric diatoms found. Microalgal communities were dominated by diatom species except the cyanobacterium of *Oscillatoria*. After 15 days of culture in the field, there was a significant similarity at the sampling site Tw1 (0.98**), Tw3 (0.99**) and Tw4 (0.87**) between the dominant diatoms growing on the artificial substrates and the dominant periphytic diatoms growing on the higher plants or macroalgae in nature, during the autumn-winter season from October 31 to November 14. Moreover, after three seasons, the 15-day of cultures at the nearby corners of Tw1A, Tw1B, Tw1C, showed significant similarity between the artificial substrates and natural plant substrates in autumn-winter (mean of 0.99**) and spring-summer (mean of 0.91**), but very low similarity during the low winter temperature.

Besides, on the artificial substrates of slides, the genera *Amphora*, *Cocconeis*, *Achnanthes*, *Melosira* and *Synedra* always were the dominant pioneer diatom assemblages growing on the slides, then, the movable diatom assemblages of the genera *Navicula*, *Nitzschia*, *Gyrosigma* and *Pleruosigma* moving on the substrates. Finally, as in nature, all of the above genera had opportunities to become one of the co-dominant diatoms, growing on the natural or artificial substrates in these brackish wetland plots.

Key index words

brackish water, diatom, pioneer diatom