

Diatom 17: 101-109 (英文)

福嶋 悟：自然河川水が流入する下水処理水で再生された河川の珪藻群集

Satoshi Fukushima : Periphytic diatom assemblages in a stream rehabilitated with treated sewage receiving water from a natural stream

Abstract

This study was conducted to clarify the characteristics of periphytic diatom assemblages in a stream rehabilitated with advanced treated sewage, and the changes in periphytic diatom species transported to that stream from a natural stream. A total of 43 diatom species were observed in the rehabilitated stream. Among these species, *Achnanthes exigua*, *Fragilaria construens* f. *venter*, *Gomphonema parvulum*, *Nitzschia amphibia* and *Nitzschia constricta* were abundant. Near the discharge point of the sewage effluent the average water temperature was about 21°C (above 15°C even in winter), and the structure of periphytic diatom assemblages had been affected by the high water temperature. Many species adapted to clean water conditions were observed at the sites receiving sewage effluent, suggesting that species transported from other water environments constituted the periphytic diatom assemblage with the species flowing from the sewage treatment plant.

The number of species constituting the assemblage in the rehabilitated stream increased at site further downstream compared with sites where only sewage effluent was received by species transported from a natural stream to the rehabilitated stream, e. g. *Nitzschia dissipata*. The abundance of transported species in the periphytic diatom assemblages was less than 10% in many cases. However, it sometimes exceeded 10%, and these species were not observed during the period when water inflow from the natural stream stopped and only a small amount of water was flowing there.

The changes observed in transported species at the downstream site in the rehabilitated stream indicate that the seasonal succession of periphytic diatom assemblages is caused by a flow of natural stream water even in a stream where treated sewage is used as maintenance water.

Key index words

diatom assemblage, rehabilitation, stream, transport, treated sewage, water quality