Kazumi Asai: Statistic classification of epilithic diatom species into three ecological groups relating to organic water pollution. (1) method with coexistence index

Abstract
Tolerance indices to organic water pollution of 709 epilithic diatom species which were obtained from 1240 attached diatom assemblages were calculated by using two typical species. *Nitzschia palea* and *Achnanthes japonica* were selected as tolerant and intolerant typical species to organic water pollution, respectively. These two species were used for setting a hypothetical axis of organic water pollution in numerical calculation of tolerance indices of each diatom species.

Coexistence indices of epilithic diatom species pair also were calculated statistically. Two distinct boundaries were successfully recognized within the order of tolerance indices by comparing and examining the coexistence indices. Therefore, epilithic diatom species were classified objectively and nationally into three ecological groups (saprophilous, indifferent and saproxenous species) by setting up two boundaries. Both saprophilous and saproxenous species were decided now and were increased in number than previous report (Watanabe et al. 1990).

Based on the objective and statistic classification executed in this study, DAIpo (Diatom Assemblage Index to organic water pollution), whose value was numerically estimated by using relative abundance of each ecological group, is considered to became more reliable for water quality assessment.

Key index words
coexistence index, diatom, DAIpo, saprophilous species, saproxenous species, water pollution.