III. Biological Data

10. Phytoplankton

(by Noriko Takamura)

Water samples were taken from the surface to 2.0 m depth with an acrylic column sampler at Sts. 3 and 9. The water sample (100 ml) for counting picocyanobacteria and eucaryotic picoplankton was fixed with glutaraldehide (final concentration, 1%) and then it was kept cool (4-6^{o}C) until it was counted (up to 2 weeks). The water sample (approx.1-3 ml) was filtered on nuclepore filters (pore size; 0.2μm), previously dyed with Sudan black B. The filter was placed onto a clean slide, a small drop of the immersion oil added, and a coverslip was mounted on the top of the filter. 400 cells of picocyanobacteria were counted for each sample with an epifluorescence (G-filter) microscope. 100 cells of eucaryotic picoplankton were counted for each sample with an epifluorescence (BV-fiter) microscope. The number per one ml was converted as follows:

$$\text{Cells*ml}^{-1} = \text{Counted number (cells)} \times \text{area of filtration (mm}^2\text{)} / \text{total counted areas (mm}^2\text{)} / \text{volume of filtration (ml).}$$

Counting procedures were done within two weeks.

The water sample (100ml) for counting phytoplankton was fixed with Lugol's iodine solution (final concentrations; 0.2-0.4%). The Lugol's iodine solution was composed of I_2 (g):KI(g):acetic anhydride (ml):distilled water (ml) as 1:2:2:20.

The sample was put in a sedimentation chamber (Utermöhl 1958), and was kept for 24 hours. The number of each species was counted for each sample with an inverted microscope. The number per one ml was converted as follows:

$$\text{Cells*ml}^{-1} = \text{Counted number (cells)} \times \text{area of sedimentation chamber (mm}^2\text{)} / \text{total counted areas (mm}^2\text{)} / \text{volume of sedimentation (ml)}$$

Counting procedures were done within three months.

The phytoplankton species were expressed as μm^3*ml^{-1}, because the size of phytoplankton species largely differed among species. The volume of each phytoplankton species occurred in Lake Kasumigaura was measured separately according to the method of Wetzel and Likens (1991).

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