

Annual variation of the relationships between the environmental factors and phytoplankton communities in the marine ranching ground of Tongyeong from 2000 to 2004

S. W. Jung, E. H. Lee, J. M. Kim* and J. H. Lee

Division of Life Sciences, Sang Myung University, Seoul 110-743, Korea
Division of Marine Resources, Korea Ocean Research and Development Institute,
Ansan 400-625, Korea*

In order to reveal the relationship between the environmental factors and phytoplankton communities, the study was seasonally conducted at 10 stations in both surface and bottom in the marine ranching ground of Tongyeong from April, 2000 to October, 2004.

Water temperature was seasonally changed from 9.4°C to 25.1°C, pH was 7.50 from 8.54, salinity was 25.4 to 35.8 psu, dissolved oxygen was 3.61 to 12.91 mg/l, and suspended solid was 8.03 to 25.20 mg/l. In nutrients, ammonia, nitrate and nitrite, phosphate and silicate were varied from 0.0146 to 0.5267 mg/l, 0.0154 to 0.7209 mg/l, 5.10 to 87.560 ug/l, and 0.0077 to 1.0427 mg/l, respectively.

Chlorophyll *a* was fluctuated from 0.76 to 8.83 ug/l and typically shown as characteristics of temporal climate such higher concentrations in autumn than those of other seasons.

Total phytoplankton standing crops of phytoplankton and diatoms were fluctuated from 0.53 to 614.00×10⁴ cells/l. In the statistical analysis, Pearson correlation analysis between the standing crops of diatoms and the environmental factors indicated that water temperature and nitrite were positive correlation, and DO, ammonia, nitrate and phosphate were negative correlation. Between total standing crops of phytoplankton communities and diatoms, they were higher correlation coefficient than other communities.

Using a stepwise regression analysis, total standing crops were the influence of salinity, pH, nitrate, phosphate and silicate.