

PA-25.

## Water quality and phytoplankton communities in the Dong River of Kangwon Province, Korea

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The purpose of this survey is to examine the water quality and to take the quantitative and qualitative analysis of the planktonic and benthic phytoplankton communities at 6 stations in the Dong River Valley and its tributary streams (Giwha stream, Dongnam stream, Joyang River and Changri stream) of Kangwon Province from November, 2001 to March, 2002. During the studies, water temperature ranged from 3.5°C to 12.8°C, pH 6.5 ~ 7.9, DO 9.29 ~ 11.36mg/l, BOD<sub>5</sub> 0.20 ~ 2.38mg/l, TN 1.2842 ~ 3.1871mg/l, TP 0.0052 ~ 0.0576mg/l and SS 0.85 ~ 9.62mg/l. Six taxa of planktonic phytoplankton identified were poor flosra in November, 2001. The representative species due to frequency were *Achnanthes lanceolata*, *A. minutissima*, *Cymbella minuta*, *C. parva*, *Diatoma vulgare*, *Fragilaria ulna*, *Gomphonema* sp., *Navicula* sp., *Nitzschia palea.*, *Scenedesmus* sp. and *Stephanodiscus hantzschii*. Monthly dominant species of phytoplankton were *Achnanthes lanceolata* and *A. minutissima* in both February and March, 2002, but blue-green algae, *Oscillatoria* sp. and diatom, *Stephanodiscus hantzschii* were predominant at some stations in March. Phytoplankton standing crops ranged from 10 cells/ml to 36 cells/ml in November and 168 ~ 299 cells/ml in February, while it changed 452 ~ 801 cells/ml at St. 1, 2, 3 and 1,032 ~ 1,712 cell/ml at St. 4, 5, 6 in March. Benthic phytoplankton communities was composed of 38 taxa in November, 31 taxa in February and 23 taxa in March. It showed a contrary tendency to planktonic phytoplankton diversity. Benthic diatoms which were higher than 25% of the total populations were *Cymbella turgida*, *Diatoma vulgare*, *Cocconeis placentula*, *Navicula cryptocephala* var. *intermedia* in November, *Achnanthe lanceolata*, *Cocconeis pediculus*, *Achnanthes minutissima* in February and *Achnanthe lanceolata* and *Cyclotella* sp. in March. The parameters(TN, TP, COD) quality standards for lake and river were the first class according to the Korean Environmental Preservation Law in the most of stations, but the second class at St. 6 in the vicinity of Trout Culture Farm. Planktonic phytoplankton blooms occurred in the temperature increasing season and benthic daitoms were very rich in Giwha streams affected by the Dongnam Coal Mine.