

**Czaplicka-Kotas, A., Slusarczyk, Z., Pieta, M., Szostak, A. Analysis of Relations Between Water Quality Parameters of Lake Goczalkowickie with Regard to Phytoplankton Blooms. *Ochrona Srodowiska* 2012, Vol. 34, No. 1, pp. 21–27.**

**Abstract:** Statistical relations between the water quality parameters were determined based on the analysis of ammonia nitrogen, nitrite, nitrate, orthophosphate and total phosphorus concentrations observed in Lake Goczalkowickie (impounding reservoir) over the period of 1994–2009. Measuring stations were divided into two groups: those located on the surface of the lake water and those situated at the depth of 2 m and 6 m. The mean value equality test verified that at either of the two depths the values of the water quality parameters measured during blooms of diatoms, cyanobacteria and green algae were different from the values of these parameters measured over the period with-out blooms. When water samples were taken from the surface of the lake, significant differences in the values measured during blooms and the lack thereof were observed with ammonia nitrogen, nitrites and nitrates. The water quality parameters examined exhibited significant differences in their seasonal patterns, except ammonia nitrogen and nitrites, which did not show any significant seasonal variations. The study revealed that phytoplankton bloom affected the correlation between the water quality parameters tested. In many instances, Spearman correlation coefficient values that were insignificant in the absence of blooms became significant when blooms were present.

**Keywords:** Lake Goczalkowickie, phytoplankton blooms, seasonal variations, ammonia nitrogen, nitrite, nitrate, orthophosphate, total phosphorus, correlations.