

ESTIMATION OF GUPTA INDEX USING SPATIAL AND TEMPORAL VARIABILITY OF NITRITE AND CHLOROPHYLL A IN KUNE - VAINI LAGOONS SYSTEM

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Abstract

This paper represent the role of a new trophic state index (TSI), Gupta index for the estimation of status of eutrophication in a lagoon system. Depending on the data availability, alternative TSI (Chl-*a*) and TSI (NO₂-N) can account for the biological and physical contributions to eutrophication. It will be possible to estimate the TSI of fresh water and brackish water lagoons and other water bodies using the new expressions taking into consideration the spatial and temporal variability in the data set. The aim of this research was to evaluate seasonal variation of the trophic index using both concentration of nitrites and chlorophylls a (Chl-*a*).

This study was conducted in Ceka, Zaje and Merxhani lagoos, as the most important aquatic bodies of the whole wetland system under hydro-ecological assessment. The sampling and other field approach in the zone was done every two months, respectively in July, September, and November - 2018, and January, March, May, and July in 2019. At least 5 representative stations were visited: in Ceka - three stations, in Zaje and in Merxhani respectively one station. Water analyses were conducted by using standard methods reported on the 'Standard Methods for the Examination of Water and Waste Water' by APHA, 2017).

The computed TSI (NO₂-N) varied from 37.77 (station V, expedition V) to 99.11 (station II, expedition III), with an overall value of 63.57. The computed TSI (Chl-*a*) varied from 63.82 (station I, expedition III) to 63.82 (station II, expedition VI), with an overall value of 33.36. The TSI based on these two parameters can serve as a complimentary and predictive tool for lagoon management and field programs to monitor the health of a lagoon.

This study offers Chl-*a*, and NO₂-N based TSI expressions for the estimation of status of eutrophication in Kune Vaini lagoons system analogous to Carlson's index.

Key words: Gupta index, KVLS, Spatial and temporal variability, Nitrite, Chlorophyll a.