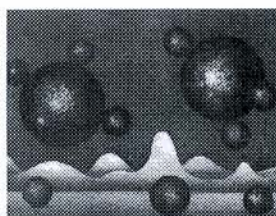


BOOK OF ABSTRACTS



Shallow Lakes 2005
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reconstructed with the down-core diatom-TP inference models. The uppermost part of Lake Kaiavere sediment core consists of loose grayish green calcareous gyttja that extends down to 27 cm, and is underlain by dark brown coarse-detritus calcareous gyttja with abundant charyophyte stems and occasional mollusk remains. Investigated sediment sequence spans ca. past 200 years, with excellent chronological control by radiometric dating of ^{210}Pb . Down-core distribution of spheroidal fly-ash particles that are emitted during high-temperature combustion of fossil fuels was similar to the fuel combustion history of the region and agreed well with the depth-age model of radiometric dates. Pre-1900 year sediment of the lake is characterised by littoral diatoms, constituting 80-90% of the assemblage. A high proportion of littoral diatoms suggests well-illuminated water column of the lake. Abundant remains of bottom macrophytes, particularly charophytes additionally show clear-water conditions. The reconstructed diatom-based total phosphorus concentration around $40\text{--}60\ \mu\text{g P l}^{-1}$ suggests slightly eutrophic conditions. Even though the frequency of eutrophic planktonic diatoms gradually increases due to progression of eutrophication resulting from increased nutrient input from agriculture a clear state of the lake with abundant calcifying charyophyte submerged plants existed in Lake Kaiavere until 1960s. Since late 1960s diatom stratigraphy shows a tremendous increase in diatom concentration, especially planktonic diatom productivity, namely *Aulacoseira ambigua*, *A. granulata* and *Stephanodiscus parvus*. Submerged macrophyte remains disappear in the sediment matrix. This change suggests the loss of submerged macrophytes in profundal areas of the lake. Phytoplankton blooming followed by reduced light availability of the water column and more turbid surface water are probably a result of progressive nutrient enrichment of the lake. Diatom-inferred epilimnetic total phosphorus increased in the late 1980s to up to $100\ \mu\text{g P l}^{-1}$.

Anastasiadou Ch., I. Kagalou, E. Papastergiadou & I. Leonardos. *The functional plasticity of the habitat in the presence and the abundance of the freshwater shrimps (Atyaephyra desmaresti and Palaemonetes antennarius) in Lake Pamvotis (NW Greece).*

Lake Pamvotis is a shallow, karstic lake, in NW Greece. It is a eutrophic ecosystem influenced mostly by external and internal organic loads. The freshwater shrimp fauna plays a significant role in benthic communities. In the recent years, in view of short temporal scales the freshwater shrimps have been proposed as reliable ecological indicators. We examined the freshwater shrimp in relation to its habitat preference and the physicochemical parameters. The study revealed the presence of two species of shrimps, *Atyaephyra desmaresti* and *Palaemonetes antennarius*. The species *P. antennarius* is recorded for the first time in Lake Pamvotis. Field observations in different habitats, depths and seasons, revealed the specific preferences of each species. The presence and abundance of the species differed significantly during the year. In spring and summer, *P. antennarius* was found in limnetic, shallow habitats, which are characterized by the presence of the macrophyte *Phragmites australis*, while in autumn and winter it was found in deeper habitats (up to 7 m). *A. desmaresti* has always been found in habitats with rich aquatic vegetation (species belonging to genera *Myriophyllum* and *Potamogeton*), up to 2 m. The seasonal pattern of this species revealed a higher abundance in the spring and summer.

Azevedo J.M.N., A. Valente, V. Gonçalves, & N. Vieira. *Biomanipulation of the Furnas Lake (Azores, Portugal).*

The Furnas Lake is located in the island of São Miguel, Azores. It is a small lake (area, $1.92\ \text{km}^2$; average depth, 6.9 m) with agriculture as the main activity in the catchment area ($12.45\ \text{Km}^2$). Water temperatures range from $10\ ^\circ\text{C}$ to $24\ ^\circ\text{C}$. The water is turbid (Secchi disc depth is rarely $>1\ \text{m}$) and with a relatively high nutrient load (total N up to $2\ \text{mg.l}^{-1}$, total P up to $0.1\ \text{mg.l}^{-1}$). Turbid water and the frequent algae blooms caused by agricultural runoff are considered a nuisance for tourism. The Regional Government has taken a series of measures to improve nutrient control, both upstream and in the water mass, but the problem has persisted. A two-year biomanipulation project started in March 2005 is aimed at reducing the cyprinid density (carp, *Cyprinus carpio* and roach, *Rutilus rutilus*) of the lake from 150 to about $20\ \text{kg.ha}^{-1}$, and at monitoring the effects of this measure on water quality, macrophytes, zooplankton and the fish communities. The project work plan includes 1). the production of public information campaigns directed to all lake users; 2). a survey of the initial state of the

distribution and biomass of macrophytes, and species, size and biomass of zooplankton; 3). an intensive removal of carp and roach during the reproductive season, employing gill and seine nets; and 4). to monitor the effects of biomanipulation on the water quality and biota.

Bicudo D.C., C. E. M. Bicudo, B. M. Fonseca, A. Araújo & I. S. Vercellino. *Trophic state classification schemes comparison for three shallow tropical small reservoirs (Brazil): an inter-annual study.*

Trophic-state classification of lakes and reservoirs is a useful tool for management strategies. Most classification schemes have used temperate lakes for their database. For tropical lakes, such classification schemes are still controversial. This study is aimed at (1) evaluating trophic classification schemes based on an inter-annual comparison of three tropical reservoirs, and (2) at classifying the trophic status of these reservoirs. This research was carried out in a Biological Reserve in São Paulo, southeast Brazil (23° 38'-23° 40'S and 46° 36'-46° 38'W). Three shallow small reservoirs (IAG, Ninféias and Garças ponds) belonging to the same watershed have been monitored monthly since 1997 for limnological characterization and restoration plans. Variables used for trophic classification were: nitrogen, phosphorus, chlorophyll-a concentrations and water transparency. The classification schemes based on Carlson Index (Carlson, 1977), OECD (1982), Toledo et al. (1983) Index, and Salas & Martino (1991) (CEPIS) Index were compared among lakes and years (IAG: n = 2; Ninféias: n = 5; Garças: n = 8 years). OECD classification and Carlson Index were elaborated using temperate lakes data, but other schemes were developed for tropical lakes. Trophic state assigned to reservoir differed, depending on the classification system used. The mean annual values (n = 2) for water quality variables for IAG reservoir were: transparency 1.3 m, TP 14 $\mu\text{g.L}^{-1}$, TN 299 $\mu\text{g.L}^{-1}$, and Chl. a 5.8 $\mu\text{g.L}^{-1}$. Trophic classification of this reservoir varied from oligotrophic to mesotrophic. These mean annual values (n = 5) of these parameters for Ninféias reservoir were: transparency 0.82 m, TP 21 $\mu\text{g.L}^{-1}$, TN 376 $\mu\text{g.L}^{-1}$, and Chl a 8 $\mu\text{g.L}^{-1}$. The reservoir was classified as varying broadly from oligotrophic, mesotrophic to eutrophic. Similarly, the Garças reservoir based on these parameters (transparency 0.46 m, TP 239 $\mu\text{g.P.L}^{-1}$, TN 3569 $\mu\text{g.L}^{-1}$, and Chl a 174 $\mu\text{g.L}^{-1}$) varied from eutrophic to hyper-eutrophic. Trophic state of the reservoirs is overestimated if temperate classification systems are applied. Among the schemes based on tropical data base, we propose to add Toledo et al. Index for tropical waters, with exclusion of SRP, since concentrations were mostly under detection limit of the method regardless of the reservoir trophicity. Application of an index as that of Salas and Martino are recommended for comparisons, instead of schemes based on phosphorus or chlorophyll-a concentrations. According to Toledo et al. Index (SRP excluded), IAG, Ninféias and Garças reservoirs were classified as oligotrophic, mesotrophic, and eutrophic, respectively. **Literature:** Carlson, R.E. 1977. A trophic state index for lakes. *Limnol. Oceanogr.*, 22: 361-369.

Bijkerk R. & A.M.T. Joosten. *Desmids as indicator organisms in the Water Framework Directive.*

The European Water Framework Directive requires biological assessment tools to identify the status class of water bodies. Tools have to be developed for several biological quality parameters including the phytoplankton. In the Dutch proposal for stagnant freshwaters, the parameter species composition is divided into two measurement tools: 1). A tool to measure the presence of anthropogenic influence based on blooms of phytoplankton species, and 2). A tool to measure the absence of anthropogenic influence, in other words, nature value, based on the desmid flora. The application of desmids in ecological quality assessment in the Netherlands was initiated by Coesel (1998) and further elaborated for application in the WFD. In using desmids as a tool to measure water quality, the species are distinguished into four classes of sensitivity for deterioration of the environment. If a viable population of a sensitive or highly sensitive species is detected, the ecological quality class of the water is judged as good or very good, respectively. The analysis and assessment are straight forward and not very sensitive to differences in analytical effort or expertise. **Literature:** Coesel, P.F.M. 1998. *Sieralgen en natuurwaarden*. Wetensch. Meded. KNNV. 224: 1-56, Koninklijke Nederlandse Natuurhistorische Vereniging, Utrecht