2nd EUROPEAN LARGE LAKES SYMPOSIUM 2009

Vulnerability of large lake ecosystems – monitoring, management and measures

PROGRAMME AND ABSTRACTS

10–14 August, 2009
Campus Roslagen, Norrtälje, Sweden

the decreasing of phosphorus loading leads, for some lakes, to their return into an oligothrophic state, and for other lakes this does not occur.

INTERACTIONS BETWEEN NUTRIENT AVAILABILITY AND CLIMATIC FLUCTUATIONS AS DETERMINANTS OF THE LONG TERM PHYTOPLANKTON COMMUNITY CHANGES IN LAKE GARDA, NORTHERN ITALY

Nico Salmaso
IASMA Research and Innovation Centre, Istituto Agrario di S. Michele all'Adige – Foundation E. Mach. Via E. Mach, 1, I-38010 S. Michele all'Adige (Trento) Italy. E-mail: nico.salmaso@iasma.it

Major focus in interpreting phytoplankton changes in specific typologies of waterbodies or in single lakes is directed towards nutrients and climatic dynamics. The most important effects of temperature fluctuations on phytoplankton in deep and large lakes are connected with changes in thermal stratification patterns, which in turn control the extent of the growing season, deep vertical mixing processes and water turbulence. During the last 35 years, the Lake Garda (A=368 km^2, z_{max}=350 m) underwent a significant increase of phosphorus in the water column, from ca. 10 µg P l^{-1} to over 20 µg P l^{-1}, and a significant increase of water temperatures (0.015 °C yr^{-1}), in line with the warming recorded in other deep lakes at the southern and northern borders of the Alps. The results obtained during the research carried out since the beginning of the 1990s in the deepest zone of the lake (Brenzone station, LTER station since 2007) showed a major and continuous increase of Cyanobacteria (mainly *Planktothrix rubescens*) and, partly, Peridiniales. At the same time, these more regular changes were linked with other modifications of the phytoplankton community occurring at the seasonal and annual scale, and controlled by the variations of air and water temperature in winter and the extent of vertical water mixing and nutrient fertilisation of surface waters in spring. In particular, the development of diatoms in mid and late spring months, and the growth of *Planktothrix* in summer and autumn, showed a strong dependence from the winter climatic oscillations and the surface spring replenishment of TP. The results highlight the necessity to study the consequences of climatic fluctuations and climate warming on the phytoplankton communities at different levels of complexity, including both the direct effects of temperature and thermal regime and the indirect effects mediated by the phisiographic characteristics of water bodies.

EFFECT OF TEMPERATURE INCREASE IN THE LIFE CYCLE TRAITS OF AN EGG BEARING COPEPOD

***Anissa Souissi*[*], *Sami Souissi*[*], *David Devreker*[**] & *Jiang-Shiou Hwang*[***]**
[*)] University of Sciences and Technology of Lille-Lille1. Laboratory of Oceanography and Geosciences, UMR CNRS 8187 LOG, Marine Station of Wimereux, 28 Avenue Foch, 62930 Wimereux, France; Anissa. anissa.ben-radhia@ed.univ-lille1.fr, Sami.Souissi@univ-lille1.fr, [**)] Horn Point Laboratory; University of Maryland Center for Environmental Science - 2020 Horns Point Road - P.O. Box 775 - Cambridge, MD 21613, USA; devreker@hpl.umces.edu, [***)] Institute of Marine Biology, National Taiwan Ocean University, Keelung, Taiwan 202, ROC; Jshwang@mail.ntou.edu.tw

In order to understand the responses of individuals and populations of aquatic organisms to temperature increase like a global warming scenario we developed new experimental protocol to study through several generations all life cycle parameters of one example of egg bearing

14.00-14.20 **THE TROPHIC STATE OF LAKE CHUDSKOE AND LAKE PSKOVSKOE** (page 4)
Grigory Frumin

14.20-14.40 **VIRUSES AS AN INPORTANT COMPONENT OF PLANKTONIC FOOD WEBS IN LARGE LAKES AND RESERVOIRS OF THE UPPER VOLGA** (page 7)
Alexandr I. Kopylov, Elena A. Zabotkina & Dmitrii B. Kosolapov

14.40-15.00 **INVESTIGATION OF STABILITY AND SEASONAL CYCLING OF THE LAKE ONEGA PLANKTON SYSTEM** (page 16)
Maria Syarki

15.00-15.30 *Coffee*

15.30-15.50 **TEMPORAL AND SPATIAL DISTRIBUTION PATTERNS AMONG PELAGIC PHYTOPLANKTON AND ZOOPLANKTON IN A LARGE LAKE IN FINLAND** (page 20)
Markku Viljanen, Minna Rahkola-Sorsa, Petra Can, Anna-Liisa Holopainen, Kai Rasmus & Greta Waissi

15.50-16.10 **SPATIAL AND TEMPORAL PATTERNS OF THE PHYTOPLANKTON DISTRIBUTION IN LADOGA LAKE AROUND VALAAM ISLANDS** (page 21)
Ekaterina Voyakina

16.10-16.30 **AUTOTROPHIC PICOPLANKTON AS A COMPONENT OF MICROBIAL FOOD WEB IN THE LARGE MESOEUTROPHIC CLEAR WATER LAKE** (page 4)
Grażyna Brek & Anne Ojala

Chair: Gesa Weyhenmeyer

PARALLEL SESSION/THEME 2 *Global change impacts on large lakes* (hall "Skonaren")

10.20-10.40 **LONG-TERM VARIATIONS OF THE PLANKTON SPRING BLOOM IN LAKE ERKEN – FLUCTUATIONS, GRADUAL CHANGES OR SHIFTS?** (page 22)
Thorsten Blenckner, Kurt Pettersson & Gesa A. Weyhenmeyer

10.40-11.00 **IMPACTS OF WARMER CLIMATE CONDITIONS ON LAKE GENEVA: RESULTS FROM THE COUPLING OF SINGLE-COLUMN LAKE AND ATMOSPHERIC MODELS** (page 24)
Marjorie Perroud & Stéphane Goyette

11.00-11.20 **INTERACTIONS BETWEEN NUTRIENT AVAILABILITY AND CLIMATIC FLUCTUATIONS AS DETERMINANTS OF THE LONG TERM PHYTOPLANKTON COMMUNITY CHANGES IN LAKE GARDA, NORTHERN ITALY** (page 26)
Nico Salmaso

11.20-11.40 **HOW DOES PHYTOPLANKTON PRODUCTIVITY RESPOND TO WARMING? INSIGHT FROM LONG-TERM DATA FROM LAKE GENEVA** (page 28)
Rémy D. Tadonléké & Val H. Smith

12.00-13.20 *Lunch*

Chair: Thorsten Blenckner

13.20-13.40 **DIFFERENCES IN CLIMATIC FORCING OF PLANKTON SUCCESSION BETWEEN LARGE AND SMALL LAKES ACROSS EUROPE – S SIMULATION APPROACH** (page 28)
Dietmar Straile & Klaus Joehnk

13.40-14.00 **PLANKTONIC ROTIFERS AS TINY SENTINELS OF HEMISPHERIC WIDE CLIMATE OSCILLATIONS AND EUTROPHICATION IN TEMPERATE LAKES** (page 27)
Sami Souissi, Juan Carlos Molinero & Orlane Anneville