ABSTRACTS

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stream discharge. Across the Midcontinental area, many stream sites are sampled for nutrients and streamflow; however, sites are required to meet certain criteria (number of samples, length of record, proximity of data to base year, etc.) before they are used for load estimation. Nutrient loads are being estimated using regression, weighted regression, and ratio estimator techniques. Final loads, used as calibration targets in the SPARROW models, will be selected from the regression or weighted regression methods, but only after passing bias and error evaluation, plus an evaluation of bias relative to the ratio estimator method. In the Midcontinental area, nutrient loads will be estimated at several thousand stream sites; however, once calibrated, the SPARROW models will estimate nutrient loads at over a million stream locations. *Keywords: Nutrients, Load estimation, Great Lakes basin.*

SAATI, R. and FULTHORPE, R.R., University of Toronto, 1065 Military Trail, Toronto, ON, M1C1A4, CANADA. **Molecular Profiling of Harmful Algal Blooms in Hamilton Harbour, Lake Ontario.**

Hamilton Harbour is a highly impacted region of Lake Ontario that has been devastated by pollution and nutrient overloads. Despite reduction in phosphorus loads in the 1970's, Harmful Algal Blooms (HABs) have recurred since the 1990's and therefore other factors are at play. We used molecular fingerprinting, amplicon and shotgun sequencing to investigate the microbial community structure within the Hamilton Harbour epilimnion throughout the 2014 and 2015 HAB seasons. Tag-encoded pyrosequencing of eukaryotic small subunit ribosomal RNA (SSU rRNA) genera revealed a diversity of Metazoa, Chlorophyta, and SAR group including a novel Rhizaria. Prokaryotic SSU rRNA showed the predominance of Actinobacteria, Proteobacteria and Cyanobacteria. The Actinobacteria:Cyanobacteria ratio decreased throughout the summer with microcystin producers peaking in August/September. Overall there was significant year-to-year variability in the diversity and abundance of Cyanobacteria. We amplified *nifH* genes and detected at least 3 main taxa capable of N-fixation in the communities of both summers. The metagenome of 2015 communities has also been obtained. We discuss the functional capabilities within the context of our understanding of bloom community structures and their responses to key physicochemical parameters throughout HAB season.
Keywords: Microbiological studies, Harmful algal blooms, Hamilton Harbour.

SALMASO, N., CERASINO, L., BOSCAINI, A., and CAPELLI, C., Fondazione E. Mach, Istituto Agrario di S. Michele all'Adige, Via E. Mach 1, S. Michele all'Adige (Trento), 38010, ITALY. **Expansion of New Cyanobacteria to the Large Italian Lakes: Ecological and Management Implications.**

Since the 1990s, the large lakes south of the Alps (Garda, Iseo, Como and Maggiore) were colonised by *Dolichospermum lemmermannii*. The development of this cyanobacterium was followed, in 2014, by the discovery of *Tychonema bourrellyi*. While the impact of *Dolichospermum* was limited to the development of surface "oligotrophic" water blooms during the summer months, a very recent investigation carried out in Lake Garda showed that *Tychonema* developed with biomasses comparable or higher than those of *Planktothrix rubescens*. Until now, *Planktothrix* was considered the dominant cyanobacterium in the southern perialpine lake district, and the principal producer of microcystins (MCs). Conversely, many isolates of *Tychonema* tested positive for the presence of the genes encoding anatoxin-a (ATX), and for the production of ATX. The increasing importance of *Tychonema* in Lake Garda could be confirmed by the increasing trend of ATX observed since 2009, which was followed by a concurrent decreasing trend of MCs. These changes are strongly altering the cyanobacterial community and the associated cyanotoxin profile of the large Italian lakes. The causes will be discussed considering in detail the analysis of the long-term data recorded in Lake Garda. *Keywords: Cyanophyta, Lake Garda, Harmful algal blooms, Perialpine lakes, Invasive species.*

SALONI, S., University of Western Ontario, London, ON, CANADA. **Evaluating Hydrologic Connectivity in the Prairie Potholes of Southern Alberta.**

The majority of wetland loss occurs due to a poor understanding of their role in maintaining a continuum of hydrologic connectivity in landscapes, which can have immense implications for the provision of ecological functions and ecosystem services to the society. Hydrologic connectivity is defined by the presence of surface and sub-surface flowpaths that are extensive networks connecting landscape within and across watershed boundaries. We will use novel remote sensing and digital terrain analysis to capture the spatio-temporal variability of the hydrological network in the Nose Creek watershed, a part of the Prairie Pothole Region in southern Alberta, which drains into Lake Winnipeg- 2013's most threatened lake of the year. This network comprising wetlands and lakes as nodes and streams as links will be analyzed using circuit theory which measures connectivity between nodes by the amount of current flowing through multiple pathways of varying resistance. Scenario modeling proposed (i) random loss of wetlands; (ii) loss of wetlands with minimum area will help to evaluate the importance of individual wetlands in maintaining hydrologic connectivity in the region. The anticipated results will provide a strong decision-making tool for effective wetland conservation and management. *Keywords: Wetlands, Hydrology, Connectivity.*