

## Phytoplankton composition and microcystin concentrations in open and closed bays of Lake Victoria, Tanzania. (2015).

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### Abstract

This study was carried out in order to investigate the spatial variation of algal toxin (microcystin) concentrations along the shoreline of Lake Victoria. A total of 16 nearshore stations differing in connectivity to the main lake basin were categorized as either closed bays (ratio of bay area to bay opening < 1) or open bays (ratio ≥ 1) and sampled during November and December 2009. Water samples were analyzed for total phosphorus (TP), chlorophyll a, phytoplankton community composition and concentrations of microcystin (MC). Open and closed bays were significantly different for phytoplankton abundance and composition: Average phytoplankton biovolume was higher for closed bays (45 mm<sup>3</sup> L<sup>-1</sup> ± 11 SE) than open bays (5 ± 2 mm<sup>3</sup> L<sup>-1</sup>). Cyanobacterial biovolume (mainly *Microcystis* spp., *Anabaena* spp. and *Planktolyngbya* spp.) also was significantly higher in closed bays (82 ± 9% of total biovolume) than in open bays (44 ± 5%). In contrast, diatom biovolume was lower in closed bays (7 ± 1%) than in open bays (36 ± 6%). MCs were found only among sites from closed bays and concentrations ranged from 0.4 to 13 µg L<sup>-1</sup> MC-LR equiv. and coincided with high abundance of *Microcystis* spp. It is concluded that the level of water exchange from individual bays to the main basin is an important factor influencing eutrophication and microcystin production in nearshore habitats of Lake Victoria.

Keywords: bay morphometry, eutrophication, *Microcystis*, *Anabaena*, microcystin

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