

## Heavy Metal and Faecal Bacterial Contamination of Urban Lakes in Yaoundé, Cameroon

Joseph Demanou<sup>1</sup> and Randall E. Brummett<sup>2</sup>

1. Laboratory of General Biology, University of Yaoundé I, BP 755, Yaoundé, Cameroon.

2. International Centre for Living Aquatic Resources Management (ICLARM), BP 2008 (Messa), Yaoundé, Cameroon

[E-mail R.Brummett@cgiar.org](mailto:R.Brummett@cgiar.org)

Concentrations of faecal bacteria and heavy metals (Cr, Cd, Hg, Pb and Zn) were measured in fish, mud and water from two urban lakes in Yaoundé, Cameroon. The mean densities of faecal coliforms (FC) and faecal streptococci (FS) in water were  $6160 \pm 8493$  and  $387 \pm 320$  CFU/100ml, respectively, in Lac Central, and  $8,376 \pm 1604$  and  $1,198 \pm 997$  CFU/100 ml, respectively, in Lac Melen. Mean intestinal coliform bacterial density ranged from  $2.3 \times 10^5 \pm 7.3 \times 10^5$  faecal streptococci CFU/100g in *Oreochromis niloticus* from Lac Melen to  $3.6 \times 10^7 \pm 7.0 \times 10^7$  faecal coliform CFU/100g in *Hemichromis fasciatus* from Lac Central. Predatory fishes (*H. fasciatus*, *Clarias gariepinus*) had higher concentrations of both types of coliform bacteria than omnivorous species (*Heterotis niloticus*, *O. niloticus*). The ratios of FC/FS in Lac Central and Lac Melen were 15.9 and 7.0, respectively indicating a human source for the contamination. All the heavy metals for which we screened were isolated from lake sediments, however, in water and fish, only lead and zinc were detected. In Lac Central, zinc concentration ranged from 39.5 to 81.5  $\mu\text{g/l}$  with a mean of 57.3  $\mu\text{g/l}$ . In Lac Melen, zinc concentration ranged from 41.2  $\mu\text{g/l}$  to 90.2  $\mu\text{g/l}$  with a mean of 65.7  $\mu\text{g/l}$ . Lead concentration in Lac Central ranged from 15.1 to 18.2  $\mu\text{g/l}$  with a mean of 17.4  $\mu\text{g/l}$ . In Lac Melen, lead concentration ranged from 17.0 to 23.0  $\mu\text{g/l}$  with a mean of 20.1  $\mu\text{g/l}$ . Heavy metal concentrations in fish tissue were below recommended limits. The piscivorous *H. fasciatus* accumulated the most metal and, among tissues, most of this was in the liver. There were otherwise no significant differences among species ( $P < 0.05$ ). There were no significant differences ( $P < 0.05$ ) between small and large fish in terms of heavy metal accumulation and none of the metals surveyed showed signs of accumulating in the food chain.