Shedding light on zooplankton diversity from the Congo River Basin

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The Congo River Basin is the second largest in the world, and its plankton biota remains completely unknown. We studied the zooplankton diversity across 1700 km of the main channel (from the cities of Kisangani to Kinshasa) and subsequently in the mouths of the 25 largest tributaries during 2013 (N=39), and across 500 km of Kasai-Kwa River and tributaries in 2015 (N=25). We recorded 135 zooplankton species (26 for Testate Amoebae, 56 for Rotifera, 27 for Cladocera and 26 for Copepoda). At least five cladoceran and four copepod species are new. A non-metric multidimensional statistical analysis with Bray Curtis dissimilarity revealed that the zooplankton composition within Congo main channel was more similar than within the mouths of several tributaries and the Kasai-Kwa River basin. In the later, the tributaries were distinct from each other and from the main channel of Kasai River. A distance-based redundancy analysis using Bray-Curtis dissimilarity on abundance data revealed two main groups of species and limnological variables, one comprising sites with high total suspended matter, conductivity, chlorophyll, phytoplankton abundance (white water rivers), and other with sites with high transparency and dissolved organic carbon concentration (black water rivers). Zooplankton diversity was uniform in the Congo main channel and in the Kasai-Kwa River, with low difference among sites. There was also a distinct third group, unrelated to variables. This study reveals a high diverse zooplankton community in the Congo basin, with new species and distinct community between the studied rivers, but homogeneous along each one.