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Copepod diversity along the Congo River Basin: a first approach

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The free-living copepods of the Congo River Basin in Africa, the second largest in the world just after the Amazonas River Basin, are still insufficiently known because of problematic accessibility and complex logistics related to sampling. We analyzed samples from 82 sites obtained during expeditions in 2010 and 2013. The Congo River main channel and its main mouth tributaries (1700km; between Kisangani and Kinshasa), and the Kasai River and its main mouth tributaries (600km) were visited. A Schindler-Patallas trap was used in the open waters, with five samplings at each site. Twenty-five taxa were found, with dominance of immature forms (nauplii and copepodites). We recognized three undescribed species of Cyclopoida. The most speciose genera were: *Microcyclops* (five species), *Mesocyclops*, *Eucyclops*, *Tropocyclops* and *Thermocyclops* (three species each). The most frequent species were: *Microcyclops varicans* (27,6% of the samples) and *Cryptocyclops* sp. (10,6%). Few presumably cosmopolitan species were found, like *Tropocyclops prasinus*, *T. decipiens*, and *Microcyclops varicans*. Few diaptomid calanoids were found. Rarefaction and extrapolation curves revealed that the diversity found is about half that estimated considering just the open water species here studied. Spatially, the highest species richness was found in the main channel of the Congo River (23) compared to Kasai (20) and other tributaries (14, 9 from the Congo tributaries, 6 from the Kasai). The abundance of adult individuals was low, with an average of 2,36 individuals per sample when considering all water bodies. A distance-based redundancy analysis based on abundance and Bray Curtis dissimilarity index revealed two large groups of copepod species in the sites of the Congo main channel, plus two minor groups with mixed sites among Congo and Kasai main channels, and tributaries of both rivers, the latter being represented by small groups correlated with nitrogen forms, total phosphorus, and oxygen concentrations. Concerning the two large Congo´s channel groups of species, one was associated with water transparency, chlorophyll, and phytoplankton dominated by Dinophyceae, Chlorophyceae, Cryptophyceae, and diatoms. The other was correlated with conductivity, chlorophyll-a and Cyanophyceae. Kasai main channel sampling sites were dispersed among the four groups resulting from our analysis. Our results indicate that the copepod species in the area are separated into two large groups associated with black and white waters, with low and high primary productivity, respectively. The results showed a high copepod diversity along the Congo Basin as expected for large tropical rivers, and a low abundance for the adult copepods, as in other lotic environments. More species are expected to be discovered in this basin with the continuation of this investigation.