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Ecological status of streams of the equatorial forest in Cameroon: Benthic macroinvertebrates structure and physicochemical profile

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Abstract

With the aim of contributing to improvement of knowledge on biodiversity and functioning of forest streams in Cameroon, a study on the ecology of benthic macroinvertebrates was carried out in seven streams of the Nyong watershed in Cameroon from February 2019 to February 2020. A total of 167 samples of water and benthic macroinvertebrates were taken at 13 stations over 13 months. Benthic macroinvertebrates were collected using the kick net method following the multihabitat approach and on a monthly sampling frequency. Environmental variables were measured both in the field and in the laboratory each month using apparatus. Environmental variables were not significantly different between stations, but significant variations were observed temporally. The variables such as depth, speed, width, humidity or air temperature varied significantly from one month to another. However, the water was slightly acidic with very low levels of nitrogen compounds, orthophosphates, solid particles, hardness, alkalinity, manganese, potassium and low value of conductivity. During this study, 13690 benthic macroinvertebrates belonging to 4 phyla, 7 classes, 16 orders and 93 families were collected. Benthic macroinvertebrates were abundant and rich at stations characterised by moderate current and varied substrate. The diversity varied significantly from 1.33 ± 0.14 bits/ind to 2.00 ± 0.35 bits/ind (P-value = 0.0101) and the high values were found in stations with multiple substrates and well-oxygenated water. In addition, the community was more abundant during the short dry season, especially in August 2019 (1471 individuals) (P-value = 0.0060) but richer during the long dry season in February 2019 (54 families) (P-value = 0.0481).

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