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REGIONALISATION IS KEY TO ESTABLISHING REFERENCE CONDITIONS FOR NEOTROPICAL SAVANNA STREAMS

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Areas with minimal anthropogenic influences are frequently used as reference sites and represent the best ecological state available in a region. Streams under such conditions are necessary to evaluate the conservation status of aquatic ecosystems of a region and to monitor them, considering natural environmental variability. Therefore, we sought to analyze whether hydrological units are reliable regional units. For this purpose, we studied reference sites in three different landscape units of the same hydrological unit. We tested the hypothesis that sites in the same landscape unit display water quality, physical habitat structure, and composition and structure of macroinvertebrate assemblages more similar to each other than to sites located in different landscape units in the same hydrological unit. We found that taxonomic richness and composition of the macroinvertebrate assemblages were negatively affected by site slope and positively affected by the presence of leaf packs on the streambed. The three landscape units supported significantly different macroinvertebrate assemblages and indicator taxa. Therefore, a hydrological unit does not constitute a homogenous entity in terms of environmental variables and biological composition if it incorporates high landscape heterogeneity. These results should improve and facilitate selecting reference sites for biomonitoring programs and for managing tropical headwater streams.

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