

Assessing the environmental sustainability of cultivation systems in wetlands using the WET-Health framework in Zimbabwe

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Abstract

This article assesses the environmental sustainability of cultivation systems in three selected communal wetlands in Zimbabwe using the WET-Health framework developed by Macfarlane et al. (2008). This research was motivated by the desire to provide baseline information critical for effective and robust wetland policy development, as monitoring of wetland ecological conditions is relatively poor despite high community dependence on them. The WET-Health framework is based on indicator and impact scores of (1) extent, (2) intensity, and (3) magnitude of impact of different land-use types on wetlands. Our results show that wetland degradation is caused principally by land-use activities in the wetland instead of those in the upstream catchment. The tillage system of broad ridges and broad furrows (BR/BF) caused wetland drying due to drainage and alteration of vegetation community structure and composition. However, BR/BF is effective in erosion control. It is therefore argued that, in general, the BR/BF tillage system does not contribute to sustainable wetland use as it disrupts the ecosystem's hydrological functioning. Given the inherent subjectivity of the WET-Health method results, this study has shown that integration of spatial mapping techniques, such as highresolution remotely sensed data, improves the quality of ecological assessment.