1996

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A BIOLOGICAL ASSESSMENT OF LANDSCAPE DISTURBANCE POTENTIAL ON THE LITTORAL ZONE BENTHOS OF A PRAIRIE POTHOLE LAKE.

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ABSTRACT

Land-use practices are known to impact adjacent water bodies. Little information exists regarding the identification of areas of disturbance around a single lake basin. Thirty-six drainages were identified on the landscape surrounding Oak Lake, Brookings County, SD. Components of the Revised Universal Soil Loss Equation (RUSLE) and land-use practices were incorporated into a GIS to delineate high and low disturbance potential for each drainage point. Littoral zone macroinvertebrates were sampled at drainage entry points around the basin to determine if changes in community structure were correlated with the disturbance potential of adjacent land areas. Preliminary analysis indicates more variety in high disturbance potentiai sites than reference sites, as well as some unexpected results for several metrics. For example, some high disturbance potential sites exhibit higher species diversity. This may reflect an intermediate disturbance and support the concept of a subsidy-stress gradient. Mean Macroinvertebrate Biotic Index scores (7.28 vs 6.14) and mean EPT: Chironomidae ratios (0.30 vs 1.61) for high disturbance potential vs reference sites, respectively, indicate a shift in community structure toward more tolerant species at high disturbance potential sites. These data suggest a correlation between landscape disturbance potential and adjacent littoral zone benthic communities.