Wetland Delineation Methods in the Prairie Pothole Region. (S10-rickerl173842-Poster)

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Abstract:

Potholes are a major landscape feature of the Prairie Pothole Region (PPR) of North America and provide an example of regionally distinctive wetlands. Policies require wetland definition and delineation for implementation. Most wetland interpretations use three identifiers for delineation: presence of hydrophytic vegetation, hydric soils, and certain hydrology criteria. An important objective of this study was to investigate alternative and/or supplementary methods for determining the status of wetland hydrology and boundary delineation. Our approach was to use a Geographic Information System (GIS) to compare wetland areas delineated according to various criteria and methodology. An agricultural field in the PPR of eastern South Dakota was selected for investigation. Hydric soil boundaries were delineated in the field by an NRCS soil classifier. Hydrophytic vegetation boundaries were based on observed wetland vegetation and occurrences of wetland species in tilled areas. An electro-magnetic conductivity meter (EM 31, Geonics Limited, Inc.) was used to measure bulk electrical conductivity in the soil. Readings were taken in a grid system, using GPS to establish location, in 1995 and again in 2000. Delineated areas for hydric soils were larger than those for hydrophytic vegetation. Vegetation delineation was influenced by tillage that eliminated indicator species traditionally used for wetland determination. Interpolated EM data, when contoured, showed delineation similar to hydric soil and hydrophytic vegetation boundaries. Highest EM readings (70-80 mS/m) were in the deepest part of the wetland, with somewhat lower values rimming the wetland. The readings were consistent between years, even though precipitation was highly variable. The method is objective, relatively inexpensive, and may show less variability due to temporal weather patterns than other indicator methods.

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