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LETTERS AND COMMENTS

Comment on R. W. Tiner: The primary indicators method—a practical approach to wetland recognition and delineation in the United States (Tiner 1993).

Mr. Tiner's hydric soil indicators support the indicators contained in the 87 and 89 Federal Wetland Manuals (Environmental Laboratory 1987, FICWD 1989) and indicate that the seasonal high water table (SHWT) must be less than 12 inches (30 cm) in sandy soils to be a hydric soil. Mr. Tiner concurs with this and adds that these are proposed indicators subject to change.

Soil Conservation Service's sandy soil indicators (South National Soil Survey Staff 1993) indicate the SHWT needs to be at depths of less than 6 inches (15 cm) before it is a hydric soil (Hurt and Puckett 1990). Sandy soils must have a SHWT at depths of less than 6 inches (15 cm) to meet the criteria for hydric soils (NTCHS 1991). *Frank C. Watts, USDA Soil Conservation Service, P.O. Box 753, Callahan, FL 32011-0753*

Literature Cited:

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Engineer Waterway Experiment Station, Vicksburg, MS, USA. Technical Report Y-78-1.

Hurt, G. W. and W. E. Puckett. 1990. Proposed hydric soil criteria and their field identification. *In* J. M. Kimble and R. D. Yeck (eds.) Proceedings of the Eighth International Soil Correlation Meeting (VIII ISCOM): Characterization, Classification, and Utilization of Wet Soils. U.S. Department of Agriculture, Soil Conservation Service, Lincoln, NE, USA.

Federal Interagency Committee for Wetland Delineation (FICWD). 1989. Federal Manual for Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, DC, USA.

National Technical Committee for Hydric Soils (NTCHS). 1991. Hydric Soils of the United States. U.S. Department of Agriculture, Soil Conservation Service, Lincoln, NE, USA.

South National Soil Survey Staff. 1993. Regional hydric soil indicators and hydrologic indicators in areas lacking significant hydrologic modification. South National Technical Center, Fort Worth, TX, USA.

Tiner, R. W. 1993. The primary indicators method–a practical approach to wetland recognition and delineation in the United States. Wetlands 13: 50–64.

Response to Watts' Comments

Mr. Watts' observations are correct. I intentionally proposed indicators for sandy soils that reflect a seasonal high water table within 12 inches (30 cm) of the surface. This is consistent with the 1989 Federal Manual. It is my understanding that in 1991, the National Technical Committee for Hydric Soils (NTCHS) revised the criteria for hydric sandy soils to bring the water table in these soils to the surface and, therefore, now require a seasonal high water table within 6 inches (15 cm). While this depth may be appropriate to get saturation to the surface, I do not agree that wetland soils must be saturated to the surface. Prolonged saturation and accompanying anaerobiosis in the root zone is probably sufficient to stress most plants and favor the establishment of hydrophytes—plants adapted for life in water or in substrates (soils) that are periodically anaerobic at or near the surface due to prolonged saturation.

My proposed soil indicators of wetlands in sandy soils, therefore, differ from the current NTCHS (1991) criteria. Much still needs to be learned about the hydrology of sandy wetlands and what additional soil properties may be useful as reliable indicators of these wetlands. I have initiated a study of plant-soil-water table relationships in such wetlands and contiguous uplands in southern New Jersey. This and similar studies should provide useful results for improving our understanding of these relationships.

Finally, my primary indicators method included the opportunity to add other regionally applicable, field-verifiable soil properties associated with prolonged seasonal high water tables (primary indicator S9). The Soil Conservation Service has developed a draft list of such indicators. This list needs to be field tested by interagency teams and by other wetland professionals prior to its operational use. With such review, the list could be used to expand the number of primary indicators of wetlands. *Ralph W. Tiner, U.S. Fish and Wildlife Service, Region 5, Hadley, MA 01035*

Literature Cited:

National Technical Committee for Hydric Soils (NTCHS). 1991. Hydric Soils of the United States. U.S. Department of Agriculture, Soil Conservation Service, Lincoln, NE, USA.