Wetland Classification Systems for Mapping

Once wetlands have been mapped, a classification system is applied to identify and characterize those wetlands. The most common classification system in the U.S. is that developed by Cowardin et al. (1979) but other systems are also used. Three are described here.

Cowardin Classification – Officially known as the U.S. Fish and Wildlife Service (USFWS)'s Classification of Wetlands and Deepwater Habitats of the United States, this is the national standard for wetland classification in the U.S. It emphasizes vegetation structure, hydroperiod, and certain natural and human modifications (e.g., beaver-influence, excavation, impoundment, partial drainage, farming) and has been used by the National Wetland Inventory (NWI) to map wetlands since the 1970s. The Cowardin classification has effectively characterized diverse wetlands types for mapping purposes and for natural resource management; however, it does not include properties essential for estimating likely wetland functions. Learn more about the classifications and codes used in this diagram.

Hydrogeomorphic (HGM) Classification (Brinson 1993) – Developed in the early 1990s to assess wetland function, the HGM classification system groups wetlands based on geomorphic position (depressional, slope, riverine, flats, fringe) and hydrologic characteristics, such as water source and hydrodynamics. The system also includes modifiers that can be used to incorporate physical or biotic characteristics, such as vegetation or soil type. Learn more in this NRCS report.

Landscape Position, Landform, Water Flow Path, And Waterbody Type (LLWW) (Tiner 2014) – this classification system enhances the utility of NWI data for better characterization of wetlands and for preparing preliminary assessments of wetland functions. Key components include hydrogeomorphic features (landscape position, landform, and water flow path) and specific descriptors for water bodies (type, natural vs. artificial, etc.). Five landscape positions for wetlands are recognized: marine (ocean intertidal shores), estuarine (estuarine intertidal shores), lentic (lake or reservoir shores), lotic (river and stream shores and floodplains), and terrene (isolated or not subject to overflow from rivers, streams, or lakes). Landforms include basin (depression), flat (broad nearly level landform), floodplain (subject to river overflow), fringe (shallow-water wetland, bank, or tidal wetland with unrestricted flow), and slope (>2% slope). Several water flow paths are defined: inflow, outflow, throughflow, bidirectional-tidal, bidirectional-nontidal, and isolated (geographically isolated; often surrounded by nonhydric soils). Find more information on NAWM's LLWW Classification page and in this story map from the University of Montana.

References

Brinson, M. M. 1993. A Hydrogeomorphic Classification for Wetlands. Technical Report WRPDE-4. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi.

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