CREATION OF HYDRIC SOILS, WETLANDS, AND AMPHIBIAN HABITAT THROUGH CONTROLLED MINE SUBSIDENCE: EARLY RESULTS[1].

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Abstract: A project was initiated in southern Illinois to create wetland habitat through controlled mine subsidence, as compensation for wetland impacts incurred during road construction. Wetland habitat will also provide amphibian-breeding habitat within the upland forest where subsidence occurred. In conjunction with underground coal mining, the subsidence occurred in 1999, creating two depressions that held water throughout spring and into summer in both 1999 and 2000. Ten species of frogs, toads, and salamanders quickly colonized this new habitat, with at least five showing successful recruitment. Plant community composition has begun to change to more inundation-tolerant species. Hydric soil development was of particular interest due to the minimal surface disturbance associated with mine subsidence. Due to space limitations, a 3 cm soil probe was used to extract undisturbed soil cores. All sampling points were permanently marked with metal stakes and locations were obtained by GPS. Soil samples were air dried and stored for further analyses. Detailed profile description forms were completed with emphasis on redoximorphic feature color development, structure, and root abundance. Soils within the subsidence depressions have shown significant changes in morphology, while nearby controls have not. Soils located on the fringe of inundation showed a dramatic increase in the number and size of redoximorphic features as well as a decreased matrix chroma. Soils under continuous inundation transformed from poorly/somewhat poorly drained, borderline soils into clearly hydric, poorly drained soils. Although study of existing and forthcoming depressions will continue, early results indicate that this initiative may be headed towards success.

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