



## **Soil stratigraphy of charcoal kiln remains (CKR) in the Litchfield Hills, CT, USA**

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Charcoal kiln relicts (CKRs) are small anthropogenic landforms that are often found in historic mining areas. CKRs have not been a big research topic yet but mainly were studied as by-products of archaeological excavations. In the last years newly available and very accurate Digital Elevation Models (DEMs) based on high-resolution Airborne Laser Scanning (ALS) data have been used to identify these archaeological remains. In addition, findings of several thousands CKRs in the North German Lowland have increased the awareness that historical charcoal production may significantly contribute to Late Holocene landscape change. Besides the archaeological aspect of CKRs, potential impacts of charcoal burning on the ecology of modern soil landscapes and ecosystem processes must be considered.

A relatively high density of CKRs is found in the Litchfield Hills nearby the town of West Cornwall, Litchfield County, CT, USA. The CKRs are especially well preserved on slopes of the tributary valleys of the Housatonic River and form little, circular ramparts with diameters normally less than ten meters. First, rough field surveys in Litchfield County in spring 2015 have suggested differences between soils inside and outside the CKR. Soils on the CKR seem to have relatively deep humus-rich and charcoal containing topsoils whereas the topsoils outside the CKR appear typically thinner and less rich in humus. More thorough investigations have been started in autumn 2015 to prove the hypothesis that properties, distribution and development of soils are controlled by archaeological remains of historical charcoal burning.

We present preliminary results from our field studies conducted in October 2015. The stratigraphy and the extent of the 26 CKRs were studied using a sedimentological-pedological approach by coring and trenching. Our results indicate that in Litchfield County the CKRs were used twice and in quick succession. Before the second reuse, the rim of the platform was stabilized with boulders. The black topsoils on the CKRs contain residual charcoal and the topsoils are thicker compared to the soil sequences outside of the CKRs.