

Mysterious heath balds investigated at Great Smoky Mountains National Park

Researchers are delving into the mysteries of the puzzling heath balds that mark the slopes of Great Smoky Mountains National Park, Tennessee and North Carolina (photo). These are treeless shrublands that occur at middle to high elevations in the park, usually on extremely steep, rocky ridges. Estimates vary, but at least several hundred of them occur in the park. Scientists have speculated for years about what created them, how old they are, and what maintains them in the face of otherwise rapid forest succession in the rest of the park.



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Investigation of the heath balds was part of a larger soils mapping project funded through the Soil Resources Inventory of the Inventory and Monitoring Program. Dr. Rob Young, of the Department of Geosciences and Natural Resource Management at Western Carolina University, and his crew excavated two pits in each of 12 balds and found them to be essentially dried peat, with depths of organic layers to 39 inches (1 meter). This finding in itself is very unusual since peat lands are usually located in low, wet depressions. Wetlands in the Smokies do not seem to accumulate organic layers of peat as in the northern United States, and the balds occupy steep, rocky slopes rather than depressions.

Radiocarbon dating showed the oldest heath balds to be nearly 3,000 years old, although others appear to be much younger. The lowest layers in soil profiles of most balds are charcoal, suggesting that they developed after a fire. In at least one instance, a layer of charcoal was found part of the way down the profile, indicating that the bald existed for a long time, then burned completely, but returned as a heath bald, perhaps short-circuiting the normal succession process.

From a profile of the rich organic layers down to bedrock, researchers extracted pollen to be analyzed at the University of Tennessee, Department of Geography. The pollen may hold tantalizing information aside from answering questions about the balds, that is, *if* the pollen has been stratified in chronological order. Many species of plants have wind-blown pollen, so this profile could allow for a characterization of the Smokies forest vegetation through time, from the present to as far back as a few thousand years ago. This insight into the paleo-environment would be a significant step in understanding the natural history of the Great Smoky Mountains.

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