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Natural Resource Condition Assessment for Mammoth Cave National Park

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Abstract

The 1916 Organic Act established the National Park Service (NPS) with a purpose to conserve the scenery, natural and historic objects, and wildlife within national parks by such means as will leave them “unimpaired for the enjoyment of future generations.” This requires a metric by which the conditions of relevant resources can be evaluated. For NPS this is done through the Inventory and Monitoring (I&M) Program Network and by individual park Science Divisions along with cooperating partners. Natural Resource Condition Assessments (NRCAs) for national parks report on current conditions, critical data gaps, and condition influences for selected resources in the parks to assist land managers with protection, restoring and maintaining resources. An NCRA is underway for Mammoth Cave National Park (MACA). Selection of the resources evaluated in this assessment is based on the NPS Ecological Monitoring Framework. This has four hierarchical levels to structure the resources being considered, and is based on resource conditions at MACA. The Level 1 categories include Air and Climate, Geology and Soils, Water, Biological Integrity, Human Use, and Landscapes (Ecosystem Patterns and Processes). The lower level subdivisions reflect both expected finer details as well as the varieties of surface and underground resources. The principal resource threats at MACA are based on external influences including impacts to water quality and air quality, as well as from invasive species. White Nose Syndrome, a fungal and often fatal disease afflicting bats that was first identified in 2006 was confirmed at MACA in 2013, and Kentucky’s forests are threatened by several diseases and insects. An interesting and bright spot concerns air quality, which has long been deteriorated by regional pollution sources. Following coal power plant emission improvements in the late 2000s, annual average rainfall pH has risen from below 4.7 to over 5.1, while SO₄ concentrations have fallen by 45%.