Mitochondrial Ancient DNA Analysis of Lawson Cave Black Bears (*Ursus americanus*)

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Abstract

The distribution of black bear (*Ursus americanus*) in southern and central Missouri has been controversial. This controversy centers on two questions: 1) Where does the historical species fit into the continental phylogeography; 2) Are the contemporary black bears native to the region, or the result of an in-migration of black bears translocated into Arkansas? To answer these questions I extracted DNA from 10 black bears, collected from Lawson Cave, an Historical Era (0-550 year old) site in central Missouri. These bears are the most recent samples that can be unambiguously identified as native to Missouri. I successfully amplified the control region of the mitochondria of four of the 10 samples. Two of the four samples are exact matches to a known haplotype, extending from Minnesota to Mexico. Using modern samples and sequences from central North America I created a phylogeny that grouped into two clades. All of the samples from Lawson Cave grouped into clade 1. This suggests that this clade is recently native to Missouri. I also compared samples collected from a study of modern Missouri black bears. These bears fell into both clade 1 and clade 2. This study was unable to determine whether certain modern bears belong to clade 1 as a result of *in situ* mitochondrial continuity, or because of the widespread distribution of this clade throughout central North America. These results suggest that although certain bears belong to a clade native to Missouri, many also belong to a group not known from Missouri's historic past.