Many Missouri agencies are restoring savannas and woodlands with prescribed fire and forest thinning. Our objective was to determine how site occupancy of big brown bats (Eptesicus fuscus), eastern red bats (Lasiurus borealis), northern long-eared bats (Myotis septentrionalis), evening bats (Nycticeius humeralis), and tri-colored bats (Perimyotis subflavus) varied among savannas, woodlands, and forests as a function of habitat, landscape, and management characteristics in the Missouri Ozarks. We identified sites that are actively managed for savanna and woodland conditions and control areas on similar landforms but no recent management and had succeeded to more closed canopy forest. We used Anabat II bat detectors to survey 148 points during May to July of 2011 and 171 points during May through June of 2012 and fit site occupancy models for each species. The probability of detecting bat species with acoustic detectors varied by species and was affected by temperature, relative humidity, barometric pressure, tree density, Julian date, distance to water, and visit. The probability a site was occupied by foraging bats varied among species as a function of percent forest and urban land cover, tree stocking, distance to water and roads, number of fires in the last 10 years, and vegetative composition. Vegetative conditions created by savanna woodland restoration and management resulted in greater occupancy of eastern red bats, evening bats, big brown bats, and tri-colored bats than in mature, un-managed forest; while northern long-eared bats preferred conditions associated with more closed canopy forest.