Public Abstract

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Title:Multiscale factors influencing detection, site occupancy and resource use by foraging bats in the Ozark Highlands of Missouri

Conservation of bat populations requires understanding the associations between bats and their use of resources. We applied a maximum likelihood approach to estimate probability of site occupancy using acoustic detection data for ten species of forest bats in the Ozark Region of Missouri. We evaluated a priori hypotheses relative to both probability of detection and site occupancy using AIC. Estimated species-specific detection probabilities varied among species. Time, temperature, moisture, vegetative clutter, and date influenced detection probability. Habitat, patch, and landscape characteristics influenced site occupancy and varied among species. Species responded to landscape pattern at different spatial scales. We evaluated use of resource utilization functions (RUFs) to assess habitat and landscape factors affecting foraging resource use by red bats, L. borealis, during the maternity season. Highest foraging use was associated with open deciduous forest on ridges and upland drainages in areas close to non-forest edge and relatively high road density. Resource selection was highly variable among individuals, geographic location, stage of lactation and temperature regime. The strong positive relationship between edge factors in a forested landscape suggests that management strategies that provide a range of composition and structural diversity will favor foraging use by L. borealis.