

Predicting Raccoon, *Procyon lotor*, Occurrence Through the Use of Microhabitat Variables

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Recent increases in Raccoon (*Procyon lotor*) abundance have been implicated for decreased nesting success of songbirds and transmission of rabies. Understanding the relationship between occurrence and microhabitat factors should be helpful in managing this species, though our current understanding of this relationship is inadequate. Therefore, we conducted a study in western Tennessee during 2000–2002 to determine this association. Occurrence (capture) data were assessed from results of live trapping at 176 and 112 trap sites during winter and summer, respectively, at three sites. A maximum of 26 habitat variables were measured at each trap location; all grids were combined for statistical analyses to account for varying relationships between occurrence and microhabitat factors across different landscapes. Univariate and stepwise logistic-regression analyses were used to assess associations among microhabitat variables and occurrence. Resulting models were validated through the jackknife procedure. Predictive equations were constructed from logistic-regression models to compute capture probabilities. Univariate analyses yielded numerous significant variables with those representing forest characteristics and proximity to water generally the most significant. Strong concordance was observed between winter and summer seasons for most variables though several differed (number of large hardwood snags, ground dens, and plant food species, distance to potential water and roads). Such temporal variability was expected due to seasonal differences in habitat components and biological needs of Raccoons. Variables included in derived models were similar to those scoring highest in univariate analyses; classification rates for models (winter = 72%; summer = 78%) were among the highest recorded for generalist species. By accounting for landscape attributes and replicating across sites, more accurate and useful models were developed. Such models should provide the information required to effectively manage this species.

Key Words: habitat partitioning, logistic regression, mesopredator, microhabitat, *Procyon lotor*, Raccoon, western Tennessee.