

MODELING THE BREEDING HABITAT DISTRIBUTION OF THE APPALACHIAN YELLOW-BELLIED SAPSUCKER IN NORTH CAROLINA

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The breeding range of the yellow-bellied sapsucker (*Sphyrapicus varius*) includes forested habitats across northern North America as well as a portion of the southern Appalachian Mountains. Southern populations may be disjunct and ecologically distinct from northern populations, and additional information is needed about their geographic range and preferred habitats. Presence/absence data, GIS maps of elevation and topography, and four quantitative modeling techniques (logistic regression, linear discriminant analysis, Mahalanobis distance, and classification tree) were used to produce habitat maps for this species in North Carolina. Sensitivity and specificity of the quantitative models were compared to each other and to an expert opinion map developed by the NC GAP Analysis Program. The classification tree and a composite model, which combines results from several approaches, had the highest levels of specificity and accuracy. Quantitative models revealed that sapsucker occupancy was greatest on submesic mid-slopes, plateaus, and rounded knobs and slopes at elevations between 1,160 to 1,400 m. These topographic positions are occupied by high-elevation red oak forests as well as some northern hardwood and cove hardwood forests. The modeling results agree with field studies of habitat use in the study region. The elevation range of all occurrences (900 to 1,600 m) disagrees with anecdotal records which list the lower elevation limit for these populations at 1,065 m. Quantitative models can be used to refine the coarse-grained GAP models and guide future studies of habitat selection and population dynamics. Related website: <http://biology.mhc.edu/ybsa>

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