

Fox Squirrel Distribution and Habitat Selection in Florida

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Abstract: The eastern fox squirrel (*Sciurus niger*) occurs across most of eastern North America, with 10 recognized subspecies in the United States. Six of these occur in the southeastern coastal plain and Piedmont regions and are associated with the fire dependent, pine (*Pinus* sp.) forests that once dominated the landscape. In Florida, over 90% of the longleaf pine (*P. palustris*) forests have been lost, and the resulting range contraction and population decline in fox squirrels has led to the protection of two subspecies: the Sherman's fox squirrel (*S. n. shermani*) and big cypress fox squirrel (*S. n. avicennia*). Knowledge of distribution and habitat selection is essential for sustainable management; however, this information is lacking for fox squirrels in many parts of their range, particularly in Florida. One way to address this issue is to collect sighting information from the general public. To address the paucity of data from the public, we developed a web survey to collect location data of fox squirrel sightings from the general public as well as natural resource professionals for comparison. A total of 4,221 sightings were reported by 2,673 individuals in 66 of Florida's 67 counties and 74% of the sightings were submitted by the general public. The following environmental variables were evaluated: landcover, canopy cover, edge, and forest patch size. We used the Maximum Entropy (Maxent program) algorithm to model the probability of fox squirrel distribution in Florida with the presence only location data collected from the survey. Four data sources were evaluated using Maxent: all presence locations, professional presence locations, public professional locations, and a subsample of public and professional location data. For each data source, road bias was "corrected" for comparison to original. Of the eight data sources, the professional data source resulted in the highest predictive accuracy value for the area under (AUC) the receiver operating characteristic (ROC) curve. Further analysis and field validation is necessary to determine the predictive accuracy of various data sources which may be used to determine the distribution of the fox squirrel and evaluate habitat preferences.

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