

Appendix D. Updated Research Information

Southern Research Station

Below is a list of all ongoing research projects of the Southern Research Station's Nacogdoches Research Work Unit (SRS-RWU-4251) on the National Forests and Grasslands in Texas (to include research on the Stephen F. Austin Experimental Forest as of September 2004.)

1. Long-term study on the population dynamics of snags in pine-hardwood forests on the Stephen F. Austin Experimental Forest (SRS-4251-2.2) initiated in 1994 ran until at least 2006. Data still being analyzed Six plots 0.56 ha were selected in 1994 at all existing snags inventoried. Annually, each plot is examined in detail for the height and condition of existing snags and the creation of new snags through tree mortality. Eventually, snag population dynamics data will be available for both pine and hardwood snags in mixed pine-hardwood forest habitat.
2. Long-term study of Red-cockaded Woodpecker use of seed-tree cuts on the Angelina National Forest (SRS-4251-2.4) initiated in 1984 to run until at least 2009. This study previously documented the value of seed-tree and shelterwood cuts to Red-cockaded Woodpeckers, but has been extended to monitor the long-term value of these sites to woodpeckers as the new pine forest regenerates under the residual pines left during irregular seed-tree and shelterwood harvesting. There is a potential problem in these stands for the regenerating pines to form a dense midstory that would be unacceptable to the Red-cockaded Woodpecker. At present, 20 years after the shelterwood harvest, we still see only positive benefits of the irregular shelterwood harvesting technique.
3. Availability, suitability, and use of trees and snags as foraging sites for woodpeckers on the Stephen F. Austin Experimental Forest (SRS-4251-2.5) initiated in 1984 to run until at least 2006. The first component of this study examined the quality of hardwood snags and use of them by woodpeckers as foraging habitat in bottomland hardwood forests. The results of this part of the study have been published. The second phase of the study will quantify the same variables but with pines in upland pine habitat. A second component of this study examining pine snags is on hold pending sufficient funding to implement the research.
4. Long-term study of the Losses of Red-cockaded Woodpeckers cavity trees to bark beetles on the Angelina National Forest (SRS-4251-2.7) initiated in 1986 to run until at least 2009. This study examines the high infestation rate of active Red-cockaded Woodpecker cavity trees by southern pine beetles (*Dendroctonus frontalis*) relative to infestation rates of control pine within and outside cavity-tree clusters. Factors possibly related to bark beetle infestation rates are stand disturbance, stand structure, and resin wick volatiles from cavity trees. Results

thus far indicate that southern pine beetles do preferentially attack active Red-cockaded Woodpecker cavity trees and that nest trees of the preceding breeding season have the highest probability of being infested. Use of artificial cavity inserts to augment the supply of suitable cavities for woodpeckers does not increase the risk or rate of infestation by southern pine beetles.

5. Effects of midstory foliage on Red-cockaded Woodpecker foraging behavior and foraging habitat selection on the Angelina and Davy Crockett national forests (SRS-4251-2.10) initiated in 1989. Data are being collected on the Davy Crockett National Forest. The study evaluates possible negative effects the presence of hardwood midstory may have on Red-cockaded Woodpecker foraging behavior and explores thresholds of hardwood tolerance relative to foraging habitat selection by Red-cockaded Woodpeckers.
6. Pileated Woodpecker (*Dryocopus pileatus*) behavior and habitat use in mature longleaf pine and bottomland hardwood forests on the Stephen F. Austin Experimental Forest and Angelina National Forest (SRS-4251-2.15) initiated in 1992 run until 1996. Two papers have been published from this study and some data are still currently being analyzed for additional papers.
7. Habitat selection by canebrake rattlesnakes (*Crotalis horridus*) and Louisiana pine snakes (*Pituophis ruthveni*) on the Angelina and Sabine national forests (SRS-4251-4.5) initiated in 1992. Data are still being collected in this long-term study, which will run likely until 2009. Telemetry studies on these two rare species are being used to examine their movement patterns, geographic distribution, and habitat selection. The Louisiana pine snake appears to be a critically rare species because of the loss of well-burned pine forest habitat and mortality associated with vehicle use of relatively dense forest road systems that occur within the species' shrinking habitat.
8. Long-term study on amphibian community succession and recruitment to artificial ponds on the National Forests in eastern Texas (SRS-4251-4.8) to be conducted on the Stephen F. Austin Experimental Forest and Davy Crockett National Forest, initiated in 2000, and run until at least 2028. This study will examine the anuran species (frogs) that use wildlife ponds on national forests and, through the creation of new ponds, explore the succession of anuran species and predators in newly created artificial ponds. The study will also evaluate possible relationships among anuran population dynamics, pond community structure, predator-prey interactions, and global climate change.
9. Study on foraging habitat, nesting habitat, and prey composition of resident and migrant American Kestrels in eastern Texas and west-central Louisiana. The study examines the biology of the resident *Falco americanus paulus*, a declining subspecies, and its dependence on fire-maintained pine habitats.

Forest Health Protection

1. Long-term study on the effectiveness of trap trees on southern pine beetle (SPB) population reduction. This study tests the efficacy of attracting dispersing SPB to trees baited with SPB lures for reducing populations. Trees are baited in the spring during the primary dispersal period for SPB. This technique is applied during latent or intermediate population levels of SPB. The objective is to reduce and/or delay SPB population increases. Attacked trees will be felled and removed to decrease SPB numbers. Two treated and two study plots have been established on the Angelina NF. The study will run through the next SPB outbreak.
2. Long-term study on the impacts of forest management practices on ant diversity. Pitfall traps are placed in transects in forest stands on the Sam Houston and Davy Crockett NFs. Selected stands were scheduled for future thinning or prescribed burning. Trapping is conducted in one week periods three to four times per year. All ants collected are identified by Jerry Cook at Sam Houston State University. Trapping began in 2003 and will continue until funding is no longer available. Trends in ant diversity following stand entries will be documented.