

# FOREST LANDOWNER

Wildlife on  
Your Property

## Hunting Leases and Income Growth

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Recreational Pond Management

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Manage Intensively for More Wildlife

## HARDWOOD REGENERATION helps WILDLIFE

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**FLESHY FRUIT, OR SOFT MAST**, is a key food resource for wildlife. Unlike many other wildlife foods, fruits are available throughout the year, particularly when other food sources may be scarce. Fall migratory birds and resident winter birds depend on soft mast because it is easily attained and high in energy. Fruit consumption has also been linked to the survival and reproductive success of several mammals.

Studies have shown a short-term increase in fruit production after natural disturbances, such as storms and silvicultural practices like regeneration cutting—both reduce plant competi-

tion and open the canopy, allowing more sunlight to reach the forest floor. To effectively manage forestland to enhance fruit production, and thus wildlife habitat, we must understand both the short- and long-term changes in production after a disturbance.

Since 1999, SRS scientists have quantified fruit abundance of all fruit-producing plants in both young and mature stands of two common forest types in the Southern Appalachians: drier upland hardwoods and moister cove hardwoods. They found much more fruit was produced in young stands than in mature forests. In the

first two years, production was similar, but during years three to five of the study, the younger stands produced 5.0 to 19.6 times more fruit. Due to the fairly stable conditions in mature stands, fruit production remained relatively low and constant.

In contrast, the dynamic process of colonization and recovery in the young, recently harvested stands caused significant changes in fruit production. Adapted to colonize disturbed sites, pioneer species such as pokeweed and blackberry became major fruit producers. Fruit production also increased in huckleberry and



**ABOVE** White-tail deer browse in a field. Photo courtesy of the USDA Natural Resources Conservation Service.



**ABOVE** White oak acorns are a highly preferred food source for many species of wildlife. Photo courtesy of Arlyn W. Perkey, USDA Forest Service, Northeastern Area State and Private Forestry.



**LEFT** A male turkey shows off for potential mates. Photo courtesy of the National Wild Turkey Federation.

stump sprouts of fruit producing trees. Flowering dogwood, American holly, Fraser magnolia, black cherry, sassafras, and blackgum all produced fruit from stump sprouts within one to three years. Overall, young regenerated stands produce abundant fruit and are an important food source for wildlife.

Wildlife habitat can be significantly enhanced by creating or maintaining openings of young stands within forests. By selecting and leaving a few

fruit producing trees with different seasonal availability, these openings could provide an ideal food source.

#### **In a Nutshell: A Key Forest Resource**

The annual production of acorns in a forest ecosystem directly impacts the regeneration of oak species and the reproduction, survival, and body condition of many wildlife species. Black bears, wild turkeys, ruffed grouse, white-tailed deer, and several small

mammals all depend on acorns for food. It's no wonder that state and Federal resource agencies make such a tremendous effort each year to estimate the size of acorn crops, or hard mast production.

Estimates are made using one of several hard mast index methods (HMIs) that have been developed by researchers to rate acorn crops on a relative scale. HMIs effectively track patterns of acorn production because they allow for comparisons of crop

sizes among years and areas, given that the same method is used. Because agencies use different HMIs, it is difficult to compare acorn crop production among states and regions. While HMIs are effective tools, they can be labor intensive and time consuming. There is a need to simplify and coordinate HMI methods among all eastern states.

Cathryn Greenberg, SRS research ecologist and Gordon Warburton, wildlife biologist with the North Carolina Wildlife Resources Commission, developed a faster, simpler method to estimate acorn crop sizes. They found that the proportion of trees bearing acorns alone is a successful predictor of HMIs. Their method, based on 21 years of data from visual acorn surveys, produced similar index values to those generated using the Whitehead HMI method. This similarity allows for continuity between the historic HMI data collected by states and the new Greenberg and Warburton method, which is an effective and efficient alternative. If

adopted by state and federal agencies as a standard, stand-alone index of acorn production, it would allow for the comparison and tracking of data across the eastern United States. ♦

### Resources

Greenberg, Cathryn H.; Levey, Douglas J.; Loftis, David L. 2007. Fruit production in mature and recently regenerated forests of the Appalachians. *Journal of Wildlife Management* 71(2): 321-335.

Greenberg, Cathryn H.; Warburton, Gordon S. 2007. A rapid hard-mast index from acorn presence-absence tallies. *Journal of Wildlife Management*. 71(5): 1654-1661.

Warburton, Gordon S. 2006. Oaks, acorns, and game management. Presentation. Southeastern Association of Fish and Wildlife Agencies. SEAFWA 2006. 60th annual conference. Norfolk, VA. Nov. 5-8, 2006.

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