An Industrial Approach to Managing for WILDLIFE and TIMBER

By Mike Staten and John Hodges

For many years managers of industrial forests have been concerned about the effects of timber management on wildlife habitat. Concern is growing because of declining populations of some songbirds, a long list of threatened and endangered species, and additional multiple-use values to be extracted from the forest. Most private forest managers are therefore faced with the necessity of blending economic and ecological goals on the lands they manage.

One of the most ecologically sensitive areas of the United States, the Lower Mississippi Alluvial Valley, is also productive timberland. Anderson-Tully Company’s forestlands span some 700 river miles, in seven states, along the Mississippi River from Cairo, Illinois, to Baton Rouge, Louisiana. The lands are located in the floodplains of the Arkansas, Mississippi, and White Rivers, and on upland sites near Vicksburg, Mississippi. The company pursues long-term forest management practices to produce both quality timber and habitat for a diversity of wildlife species.

Economic Goals

Anderson-Tully produces a continuous supply of high-quality trees for sawlogs, veneer, and other products. The company has production facilities in Vicksburg and Memphis. The sawmills, veneer plant, and other facilities at Vicksburg represent the largest hardwood manufacturing complex in the United States. To supply high-grade sawlogs to company mills for dimension products and veneer, company foresters manage more than 50 tree species. Some 35 hardwood species are used in the mills, and more than 90 percent of the sawlogs come from company lands. In addition, the company sometimes sells sawlogs to other hardwood sawmills. Pulpwood harvests are conducted and provide income but are primarily a silvicultural tool to improve composition and quality of the hardwood stands.

The company began purchasing forestland in 1898. Cutting practices that emphasized the production of large, high-quality trees and large volumes per acre were employed from the beginning. Professional foresters were first hired in the 1940s, and a continuous forest inventory system was installed beginning in 1967. Remeasurements are made at five-year intervals and serve as the basis for assessing changes in the forest and determining allowable cut by forest area and species.

Historically, the uneven-aged system of silviculture using single-tree selection harvests was followed on company lands. That type of silviculture promotes growth of high-quality trees and ensures a forest cover on the site at all times. However, adequate regeneration of most desirable species did not occur. Furthermore, the selection system is not suitable for very intolerant species, such as cottonwood (Populus deltoides). Consequently, company foresters have been given greater flexibility in selecting the silvicultural method, based on species and stand condition.

Group selection, shelterwood, and small dearcuts are now preferred. These methods permit openings large enough to favor the somewhat intolerant but highly desirable species, such as red oaks (Quercus sp.) and ash (Fraxinus sp.). Innovative techniques have also been developed for securing natural regeneration of cottonwood in even-aged stands on young soils. Artificial regeneration is used sparingly, when natural regeneration methods cannot be used. Supplementing natural regeneration of oaks by underplanting has been successful.

Ecological Goals

In deciding to manage for both timber and wildlife, Anderson-Tully Company identified several goals.

1. Provide habitat for the diversity of wildlife species found in a bottomland hardwood forest ecosystem by understanding habitat requirements.
for as many species as possible, monitoring habitat suitability, and enhancing habitat diversity through a variety of silvicultural treatments.

Maintaining a diversity of habitats is essential for maintaining a diversity of wildlife. This goal coincides with the company's economic goal of producing quality sawlogs, which requires long rotations stimulated by multiple silvicultural treatments. Those silvicultural treatments ensure a range of stand conditions varying from early successional stages to older, mature stands. They also provide great diversity in both composition and stratification and thus provide habitat for a variety of wildlife species. Treatment entries, for example, usually create canopy gaps that promote the formation of vegetation layers, which in turn provide important habitat niches for many mammals, birds, and herpetofauna.

In fact, only minor modifications in standard silvicultural practices have been necessary to improve wildlife habitat, and these have been made at little economic concession. Modifications include leaving snags, den trees, and other residual trees that are beneficial for wildlife even though they have no commercial value. Clearings along company roads are sometimes made to maintain sunlight on the roadbed, and these clearings are often used by hunting clubs to establish food plots.

To document habitat and wildlife relationships, Anderson-Tully monitors habitat and wildlife communities. A randomly chosen subset of existing forest inventory plots, based on forest type, is sampled on a five-year interval to document forest structure, understory vegetation composition, and bird assemblages. Forest characteristics sampled include snags with cavities, live trees with cavities, downed wood, topwood, vegetation coverage, and canopy closure.

Five 10-minute point counts to determine bird species assemblages are also taken at each inventory plot. Successional stage, number of dead trees, and vegetation layers are described in each bird plot. These data are summarized by timber type to monitor changes in habitat, structure, and species composition. Changes over time will be used to dictate management changes necessary to maintain the desired levels of habitat quality.

A long-term study of bottomland hardwood ecosystems is now being conducted on Anderson-Tully property in conjunction with the University of Arkansas-Monticello. The study is documenting faunal (insects, herpetofauna, small mammals, birds) and floral (woody and nonwoody plants) relationships within a forest managed using both even-aged and uneven-aged silvicultural systems.

2. Maintain habitat for threatened and endangered species found within company forests through research and habitat improvement.

To understand how silvicultural perturbations influence components of the system, the company has been a long-time supporter of research on management of habitats for wildlife species of concern, such as the cerulean warbler (Dendroica cerulea). This warbler's range is primarily in the Appalachian region, but its outer limits extend into the upper portion of the Lower Mississippi Alluvial Valley. Company lands have been part of a long-term study of this species. The study, being conducted with the USDA Forest Service and the University of Memphis, is evaluating response to silvicultural treatments and has helped foresters recognize potential habitat and make decisions about forest management.

Another threatened species is the Louisiana black bear (Ursus americanus luteolus), and again, company lands have been part of a study area. Researchers from Mississippi State University used telemetry studies to gain valuable information that has significance for management of habitats within the bear's range.

3. Manage certain game species, particularly white-tailed deer, within the capacity of the habitat to support them in good physical condition while allowing adequate regeneration of desirable tree species.

White-tailed deer (Odocoileus virginianus) populations are managed for high fawn production and improved antler characteristics and to minimize overbrowsing, which can damage regeneration and affect the habitat of other species. Examples of species affected by browsing are the Kentucky warbler (Oporornis formosus), hooded warbler (Wilsonia citrina), and Swainson's warbler (Limothlypis swainsonii), which all need understory shrubs for nesting.

In the 1950s, vast areas of bottomland hardwoods in the Lower Mississippi Alluvial Valley were cleared for agriculture. About 80 percent of the valley's bottomland hardwood ecosystem has now been cleared. Company lands include some of the largest remaining fragmented tracts of forest—ideal habitat for an edge species like white-tailed deer—and serve as corridors between public lands, such as national forests and national wildlife refuges.

The location of the company's lands in the valley makes them highly attractive to hunters and other recreational users. In the mid-1950s, the company implemented a lease system for use of its lands by the public. Leasing gives the company control over access to its lands and the activities on them, and also provides an economic return from resources other than timber. Hunting opportunities are now leased annually by 275 clubs, and some areas are ad
administered by state agencies as wildlife management areas and are open to the general public.

Although leasing is an important source of income, the company's lease rates are considerably below the average for similar lands in the valley. In return, the clubs are expected to assist in controlling access, managing wildlife, and maintaining the road system. Leases on company lands have very little turnover, and a long-term relationship is preferred.

Of the 275 hunting clubs, more than 200 lease enough area or are located close enough to other landbases to significantly affect the local deer population. These clubs collect physical data from the deer they harvest to help biologists make decisions for popular management. Where possible, clubs are grouped into associations that maintain the road system, controlling access, managing wildlife, and for other wildlife species, while encouraging healthy herds with high reproductive success and improved physical condition. To achieve those goals, company biologists spend considerable time with clubs preparing management strategies, recommending harvest goals, and urging clubs to meet their goals.

An Interdisciplinary Program

Three professional wildlife biologists plan and implement wildlife and habitat management programs for the company. They assist in dealing with environmental issues, serve as liaison with the public (giving tours and making presentations), and work with hunting clubs through management and educational programs. They also prepare a semiannual newsletter, called The Habitat, which is distributed by mail free to all club members and other interested persons.

Within the company, foresters and biologists work closely together and are continually improving their knowledge of systems and functions in the forests they manage. Company biologists also have forestry degrees. By understanding silvicultural systems and methods employed by the foresters, biologists can suggest alterations to management techniques that maintain the desired silvicultural results while achieving the wildlife goals. Foresters, for their part, have added wildlife habitat manipulation to their daily silvicultural considerations and now regard snags, cavities, and noncommercial, soft mast tree species as important elements of forest management.

Recently, company biologists produced a handbook describing habitat associations and management of 73 bird species found on their forestlands (Staten 1994). Each species account provides keys to identification by sight and sound, foraging habits, nesting requirements, reproductive cycle, and silvicultural treatments that would enhance its habitat. This handbook has sparked enthusiasm among company foresters for bird identification and habitat management for species of concern. Much to their delight, foresters discovered one bird species nesting in a company forest that the biologists missed.

Anderson-Tully Company has found producing quality hardwood sawtimber very compatible with accommodating a wide range of wildlife species. Habitat management is accomplished with little modification of standard silvicultural procedures, which can create a diversity of forest stages from early to late succession and tree species from intolerant to tolerant, thus providing habitat for a diverse assemblage of wildlife species.

Success in integrating economic and ecological considerations is no doubt largely related to the product objective—quality sawlogs—and the relatively long rotations, which permit flexibility of silvicultural operations. Companies with different goals and shorter rotations may not have this degree of flexibility, but the concepts and some of the approaches used may be useful to other companies attempting to integrate timber management and wildlife.

A handbook that describes bird species found on company lands is an outgrowth of a collaboration between biologists and foresters working to produce hardwood sawtimber while practicing wildlife habitat management.

Literature Cited


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