Wildlife Management Notes

No. 6 COTTONTAIL RABBITS

Stewardship FOREST

Lori Lowe Nicholson, Wildlife Extension Program Assistant

Dr. Ron Masters, Wildlife Specialist

Cottontail rabbits are distributed throughout the United States and Canada. The two species of rabbits in Oklahoma that this publication discusses are the eastern cottontail (*Sylvilagus floridanus*) and the swamp rabbit (*Sylvilagus aquaticus*). The eastern cottontail is found throughout Oklahoma, while the swamp rabbit is restricted to central, northeast, and southeast Oklahoma.

The two species can be differentiated by size and appearance. The pelage (fur) of the eastern cottontail is long and dense, brown to gray in color with white on the underside of both the body and tail. Some eastern cottontails may have a white spot on the forehead. The swamp rabbit resembles the eastern cottontail; however, it is easily the largest member of the genus, weighing three to six pounds, with a total length ranging from 18.2 to 22.1 inches. The pelage of this species is black to rusty brown on the dorsal (upper) side of the animal and white on the ventral side (underside).

HABITAT REQUIREMENTS

Cottontails are widely distributed throughout Oklahoma from bottomlands and marshes to uplands. Habitat requirements can be met in a variety of diverse areas, as no single plant community type describes habitat for the rabbit. Optimum habitat for the cottontail is composed of early successional stages with low structure, transitional zones, and disturbed areas. This includes moderately grazed, weedy pastures with native grasses and low, dense clumps of trees and shrubs. The presence of perennial bunch-type grasses and a variety of forbs is common to good rabbit habitat in a variety of plant community types. Escape cover is essential and can be provided by dense underbrush, low growing vines, thorny vines and bushes, and woody perennials. Rabbits thrive in areas such as old homesites, abandoned orchards, broomsedge fields, sumac and other woody thickets, hedgerows, native prairie, brushpiles, and openings dominated by shrubs, grasses, and forbs. Cottontails are rarely found in dense, mature forests or highly-stocked, pole-sized stands.

OSU OKLAHOMA COOPERATIVE EXTENSION SERVICE

Division of Agricultural Sciences and Natural Resources

The swamp rabbit, however, can be found in greater numbers than cottontails in areas that have been selectively logged and also in mature forests. Swamp rabbits are generally associated with habitat types such as bottomlands, floodplains, wooded swamps and marshes, estuaries and tributaries of rivers and streams, and canebrakes. Preferred habitat for the swamp rabbit is a system of low ridges, small sloughs, and marshes that are grass-dominated. Grain fields can also be utilized by the swamp rabbit in times of flooding as a source of food and cover. The swamp rabbit usually ranges no farther than 1.2 miles from a major water source.

FOOD

Food eaten by rabbits varies, depending on the species of rabbit and availability and palatability of plants. Rabbits feed on a variety of forest, pasture, and agricultural plants. Feeding habits change with the seasons and plant species that are available during those seasons. The diet of rabbits is often dominated by grasses in both summer and winter, with supplements of herbaceous forbs, browse, and cedar berries. Highly digestible, weedy forbs are preferred foods. High use of cedar berries and browse in the winter suggests inadequate amounts of herbaceous vegetation for winter diet requirements, as these items are often eaten during times of high energy demands and food shortage.

Both species prefer herbaceous plants; however, they use plants according to their abundance in a given area. Sedges are important in their diet. Coprophagy (eating of feces) is practiced by both species. Table 1 shows a list of some foods in the rabbit's diet.

Table 1. Foods Preferred by Rabbits

alfalfa	dogwood	ragweeds
apple	fireweed	raspberry
blackberry	gallberry	red maple
black cherry	grape	sassafras
blueberry/huckleberry	holly	sedges
bluegrasses	horse nettle	sheep sorrel
cereal grains	lespedezas	soybean
clovers	locust	sumac
corn	New Jersey tea	white oak
crabgrass	panicum	wild carrot
curly dock	paspalum	wild lettuce
dandelion	plaintain	wild rye
dewberry	poison ivy	willow

WATER

Cottontails will drink freestanding water, but water requirements are generally met by consumption of dew and succulent vegetation.

COVER

For cottontails, ground cover must be adequate. Escape cover, such as greenbriar patches, brushpiles, and dense, low-growing, woody vegetation is essential for survival. Old burrows, hollow logs, brush, and rock piles are structural components of the habitat

that can provide refuge from both inclement weather and predators. Sites that are subjected to periodic timber harvest are preferred to a greater degree than unmanaged forested sites. The swamp rabbit will use fallen logs, standing hollow trees, and dense vegetation for escape cover. Remnant stands of forested wetlands provide poor quality habitat for swamp rabbits because flood waters often force the rabbits to use unsuitable upland cover.

Resting sites for the swamp rabbit may consist of low tree crotches, tops of tree stumps, and tangled vines. The swamp rabbit swims and will use water as a means of escape if necessary.

The amount of available cover affects how well rabbit populations cope with predation. Rabbits can generally withstand predation as long as suitable cover is available. High predation rates are an indication of inadequate cover. Some of the many rabbit predators are shown in Table 2.

Table 2. Predators of Rabbits

MAMMALS	BIRDS
bobcat	Cooper's hawk
cougar	crow
coyote	golden eagle
domestic cat	goshawk
domestic dog	great horned owl
gray fox	marsh hawk
raccoon	red-shouldered hawk
red fox	red-tailed hawk
weasel	

NEST COVER

Cottontails nest in a variety of cover types; however, most nests occur in areas with a grassy component. Early nests are generally located in dense, grassy areas, with vegetation approximately six inches in height. Summer nests are found in less-exposed areas such as hayfields, where the vegetation is a height of eight inches or more.

The swamp rabbit builds its nest in areas where there is adequate vegetative ground cover for protection. Nesting sites of swamp rabbits are often in a shallow hole at the base of a tree.

HOME RANGE

Home ranges vary in size and are affected by habitat stability and dispersion of elements such as adequate food and cover. Home ranges also vary according to age and sex of the individual, season, weather patterns, density of population, and competition both within the species and with other species. Adult female cottontails generally have a home range of 15 to 20 acres, while the adult male may range up to 100 acres or more. Juveniles generally have a home range of nine to 15 acres. The home range for swamp rabbits varies widely from three to 32 acres.

STANDARD MANAGEMENT PRACTICES

Stand Size and Distribution Patterns

Stands managed for rabbits should be small, approximately 10 to 20 acres in size. Stands may be larger if they are linear in shape and laid out along contours. To keep some vegetation in early stages of succession, establish a harvest or disturbance rotation of small adjacent stands, cutting the next adjacent block when the initial harvest unit reaches 10 years of age. Locate harvest units near fields, streams, bottomlands, or pastures when possible. In prairie habitats, management unit size is less important. Retaining some type of permanent brushy cover becomes more important. Maintain brushy draws and plum thickets for cover.

Other species of wildlife require larger stand or management unit size and management for different stages of succession. Be sure that the management for rabbits will not conflict with management for other desired species with different habitat requirements. Also note that large, contiguous blocks of introduced pasture are detrimental to rabbits, as are extensive use of herbicides.

Rotation

Short rotations used for production of pulpwood, and longer sawtimber rotations are acceptable, as long as stands are open enough to allow adequate understory growth.

Regeneration

Most regeneration methods create good rabbit habitat. Good rabbit habitat can be achieved by using shelterwood, seed tree cuts, and clearcuts. Selection cutting only has limited benefits for cottontail rabbits. Regeneration cuts are beneficial until just after canopy closure and development of a sapling stand. The edges of dense sapling stands may be used for escape cover if open areas are adjacent.

Site Conversion

Rabbit habitat can be improved for eight to 10 years by employing stand conversion practices that disturb the soil and set back plant succession to herbs and shrubs. In swamps, stands should be converted to hardwood types, which encourage a more varied understory. Brush management practices generally benefit rabbits. Retain some untreated brushy areas, or allow brushy areas to develop for escape cover.

Site Preparation, Seeding, and Planting

Residual stems on harvested sites should be cut or sheared so there is partial cover for protection. The use of herbicides for site preparation is not recommended.To keep down the number of predatory birds, such as owls and hawks, snags may be removed from the cut opening. However, snag removal is detrimental not only for hawks and owls but also for some small mammals and cavity-nesting song birds. For escape cover, swamp rabbits will use hollow snags with holes at ground level.

Because of soil erosion, former fields, fence rows, windrows, and ditch banks can be reseeded with a mixture of both warm- and cool-season legumes and grasses, using native plants where possible. Reseeding of native grasslands should be done on fallowed ground in late spring.

Intermediate Treatments

In stands with trees that are eight inches or more in diameter at breast height (dbh), about 60 percent of the canopy should be retained. For stands with smaller average dbh, retention of 50 percent of the canopy cover should be adequate. Future thinnings allow for stimulation of understory growth during the life of the stand.

Prescribed Burning

Prescribed burning is a very effective tool that enhances habitat quality by improving the nutrition and palatability of plants used for food. Pine types should be burned at three- to five-year intervals, from December to March. Bottomland hardwood types should not be burned unless advanced regeneration is needed. Post oak-blackjack oak stands (cross timbers) can be burned to improve understory quality. Pastures that are fenced and moderately grazed should be left unburned for cover. It is best to choose a varied burning cycle rather than going with a regular cycle. Occasional one- or two-year burning cycles are beneficial. In prairie habitats, brushy draws should be burned with low-intensity fires or periodically protected from fire.

Direct Habitat Improvements

To improve cottontail habitat, key cover areas should be maintained. Continue to prune abandoned orchards. Sumac thickets and greenbriar thickets that are on the outer edges of openings should be left for cover. Briar thickets can be mowed or brush-hogged every two to three years. Native thorny shrubs can be planted in fence rows, along the border of fields, or in otherwise unused areas. Annual and perennial food plots can be planted in 1/8- to 1/4-acre plots within areas with limited cropland. Generally, food plots are not necessary.

Brushpiles are simple to construct using pallets, concrete blocks, pipes, or other materials to serve as a base for tree limbs, trees, and debris. Such piles provide good temporary cover; however, they last only three to five years and have a primary use of one to two years. If brushpiles are primary tools in a management program, at least one-third of them should be replaced annually.

For more permanent cover, live brush piles can be created by hinge-cutting or half-cutting elm (and other woody plants), or by planting a variety of woody shrubs that have both desirable form and growth patterns, such as sumac, plum, and cedar.

Cedar can become a problem on prairie, shrublands, and cross timber and post oak-blackjack oak forests. Remove all female cedars (distinguished by their berries) and retain only male trees. Cedars should be hinge-cut to provide desirable structure.

Table 3. Other Species That Can Benefit from Cottontail Management

black rat snake	cotton rat	red fox
bobwhite quail	field sparrow	red-tailed hawk
Carolina chickadee	gray fox	white-tailed deer
common yellow-throat warbler	indigo bunting	yellow-breasted chat
	prairie warbler	white-eyed vireo

MANAGEMENT OPTIONS/SIP COST-SHARE OPPORTUNITIES (See your Forest Stewardship Planner for details.)

Low Intensity

Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)
Planting of food and cover species (SIP-2,4,5,6,8; DH3, FP3, NG3, SL3, WA3)

Medium Intensity

Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)
Planting of food and cover species (SIP-2,4,5,6,8; DH3, FP3, NG3, SL3, WA3)
Prescribed burning (SIP-3,8,9; PB3, PB4)
Brush pile construction (SIP-8, BP3)

High Intensity

Mowing and discing (SIP-2,4,8; MW4, SD3, PL3)
Planting of food and cover species (SIP-2,4,5,6,8; DH3, FP3, NG3, SL3, WA3)
Prescribed burning (SIP-3,8,9; PB3, PB4)
Brush pile construction (SIP-8, BP3)
Create openings in forests (SIP-8, SO3)

Acknowledgments: Wild Mammals of North America by J. A. Chapman and G. A. Feldhamer, USFS Wildlife Habitat Management Handbook, Service Foresters Handbook, Stewardship Wildlife Notes from North Carolina Cooperative Extension Service, Effects of Timber Harvest and Prescribed Fire on Wildlife Habitat and Use in the Ouchita Mountains of Eastern Oklahoma by R. E. Masters, and Essential Amino Acid Nutritional Ecology of Cottontail Rabbits by D. G. Peitz were used as a basis for the material contained in this publication.

15% post-consumer waste

L-272

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Charles B. Browning, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Dean of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of $588.39 for 2,000 copies. #6300 0696 JDM. Design by Todd Sparks.