Ecology and Management Of Rabbits in Mississippi

Rabbits have long been an important game species in Mississippi. Rabbit populations responded well to early agricultural practices because those practices created ideal rabbit habitat. By the twentieth century, hunting for survival was less common, and sport or recreational hunting became more popular. In the last 30 years, rabbit numbers have declined because of changes in land use and management.

Rabbit populations have declined because of conversion of fields to closed-canopy forests, industrialization of farming and forestry, less use of prescribed fire, and the widespread change of native plant communities to non-native, invasive grasses like tall fescue and bermudagrass. Using proper management, you can increase local rabbit numbers for more hunting opportunities. Understanding the life history and ecology of different rabbit species provides the background for managing rabbits. If you know about rabbits' lives and seasonal habitat needs, it is easier to understand how to manage their habitat.

Life History and Ecology

General Characteristics

Two species of rabbits are found in Mississippi: the cottontail rabbit and the swamp rabbit, or cane-cutter. Both are relatively common to all regions of the state, but cottontails are more widely distributed.

Adult cottontails are smaller than swamp rabbits. Besides the relative size of adults, you can tell the difference between cottontail rabbits and swamp rabbits from some prominent features. The tops of cottontails' feet are light tan to whitish. They have a distinct rusty nape (back of neck) patch. Adult cottontails average about 2½ pounds. Average home range size (the area an animal spends most of its time) of female cottontail rabbits is 2½ acres; average home range size of males is 2½ to 7 acres.

Swamp rabbits' feet are darker brown. They have shorter, rounder ears and no rusty nape patch. Adult swamp rabbits average about 4 to 6 pounds. Average home range size of female swamp rabbits is 4½ acres; average home range size of males is 4½ to 6 acres. Actual home range size of both species will vary, depending on habitat quality and quantity.

Habitat Requirements

Cottontails are adapted to many grassy and brushy habitats and are most common in upland areas made up of native grasses, forbs (broadleaf plants), and shrubs. Swamp rabbits are more common in the brushy, lowland areas associated with wetlands, streams, and drainage ditches. These plant communities provide cover and food for rabbits.

Food Habits

Both cottontail and swamp rabbits eat a variety of plant foods, including green foliage and blossoms of grasses and forbs, fruits, and bark, twigs, or buds of trees and shrubs. Rabbits also eat a number of cultivated crops, such as bean crops (soybeans, field peas, etc.), clover, and small grains (wheat, oats, etc). Rabbits sometimes damage crops and plants used for landscaping.

MISSISSIPPI STATE UNIVERSITY
EXTENSION SERVICE

Breeding

Cottontails typically breed from January through September. The pregnancy period is about 28 days for cottontails. Young cottontails are born blind and mostly hairless. Average litter size is four to five for cottontails, and the largest litters are produced during May and June. A single female cottontail can easily have four to five litters per year.

Swamp rabbits usually breed from February to mid-July. Pregnancy lasts about 40 days for swamp rabbits. Because of the longer pregnancy period, swamp rabbits are more developed when they are born. Average litter size is three to four for swamp rabbits, and female swamp rabbits usually have only two to three litters per year.

Females of both species prepare a grass and fur-lined nest (called a form) in a shallow hole, typically in grassy or other hidden areas. The mother nurses the young in the nest at dawn and dusk. Young grow and develop quickly after birth. After about 2 weeks, young leave the nest and no longer depend on their mother.

Survival and Mortality

Rabbits have high death rates. Yearly death rates for cottontail populations may be as high as 80 percent. The population survives despite its high death rate because of rabbits' reproductive potential. Average life span is about 15 months for cottontails and about 2 years for swamp rabbits. The main causes of death are predators (including hunters), bad weather, collisions with vehicles, field and brush mowing, and disease. Domestic dogs and cats, hawks, owls, coyotes, bobcats, foxes, and snakes often prey on rabbits. Rabbits are susceptible to many diseases and parasites. The bacterial disease tularemia is probably the most fatal to rabbits. Tularemia is a serious disease that can be transmitted to humans. Infected rabbits may exhibit no outwardly visible symptoms but are often easily caught by humans or dogs. The disease is most often diagnosed because of white lesions on the liver and spleen. Promptly seek medical attention if you suspect you have had contact with a tularemic rabbit.

Habitat Management Practices

Several management practices can improve rabbit habitat. The next few paragraphs describe ways you can manage habitat for rabbits. In some cases, cost-share programs can help private landowners pay for these practices. Conservation programs for habitat management are discussed later.

Native Warm-Season Grass Management

Native warm-season grasses and forbs are best for rabbits. Native grasses, such as broomsedge, little bluestem, eastern gamagrass, and indiangrass, provide good cover for rabbits. These bunch grasses grow from spring through fall. Native forbs that complement native warm-season grasses by providing both food and cover include partridge pea, native lespedezas, blazing stars, ragweed, and many others. Without management, native grasses become too thick and reduce bare ground and forb cover. Periodic burning and disking help keep native grasses, forbs, shrubs, and bare ground in the right amounts and arrangement to provide good wildlife habitat. For more on establishing and managing native warm-season grasses for wildlife, see Mississippi State University Extension Service Publication 2435, "Native Warm-Season Grass Restoration in Mississippi." Another good resource is University of Tennessee Extension Publication 1746, "A Landowner's Guide to Native Warm-Season Grasses in the Mid-South" (http://www.utextension.utk.edu/publications/wildlife/default.asp). Ask a wildlife biologist to help you plan native warm-season grass establishment or management.

Herbicide Treatments

Herbicides can help restore neglected wildlife habitats. Usually, grassland habitat in old fields, native grasslands, and upland forests is lost when woody brush, such as green ash or cedar, takes over. Woody brush dominates grassland habitat because of lack of management such as prescribed fire. Scattered brush thickets provide cover for rabbits, but when woody brush completely covers grass fields and upland forests, it shades out desirable grasses and forbs and makes hunting difficult. Keep about 10 to 15 percent of grass fields or upland forests in scattered shrubs or thickets for good rabbit cover. With the right herbicides and management, you can reclaim grassland habitats that have been invaded by brush. After you get the brush under control, maintain grassland habitats with prescribed fire or disking.

Nonnative, invasive plants, such as tall fescue, bermudagrass, bahiagrass, and cogongrass, also damage grassland wildlife habitats. Apply herbicides appropriately to get rid of invasive plants, restore native plant communities, and improve habitat for rabbits and other upland wildlife. No single herbicide treatment will be right for every problem. You may have to try several herbicide combinations or treatments. Ask a wildlife biologist, registered forester, or other experienced natural resources management professional for advice on herbicide treatments.

Forest Management

Timber thinning can improve rabbit habitat in woodlands. Thin pine stands to average basal areas (total cross-sectional area of wood) of 60 square feet

per acre or less. This average allows enough sunlight for grasses and forbs to grow in the ground layer. You will have to thin younger pine stands again to keep grassy ground cover as the canopy closes in the years after thinning. If you thin younger pine stands to an average basal area of 50 square feet per acre or less, you can go longer between thinning and still keep ground cover. See the Mississippi State University Forest and Wildlife Research Center Brochure "Pine Forestland Management for Wildlife" for more information about managing pine forests to improve wildlife habitat. Get a copy of this brochure from the Mississippi Department of Wildlife, Fisheries and Parks or at http://www.fwrc.msstate.edu/pubs/forestland.pdf.

You can also thin hardwood stands to improve rabbit habitat. As with pines, the goal of hardwood thinning is to allow enough sunlight in the ground layer for grasses and forbs to grow. However, thinning hardwood stands is more difficult than thinning pine stands, especially if you are also managing for timber production. Consult a registered forester to help you develop a management plan for forest stands.

After thinning, use prescribed fire, disking, or both to encourage growth of grasses and forbs in upland forests. Forest openings, or small clear-cuts within forest stands, create extra grassland habitat in larger forest stands. Openings of ¼ to 1 acre are large enough for rabbits. A consulting forester can mark openings when marking timber for thinning. Timber harvest contractors can cut forest openings during thinning operations. Besides providing wildlife habitat, forest openings are handy loading areas during timber harvesting operations.

Timber stand improvement can enhance timber quality and wildlife habitat in forest stands. Timber stand improvement usually means cutting or selectively applying appropriate herbicides to remove less desirable timber trees. Spaces in the middle or upper canopy layers created by the tree removal may increase grasses and forbs in the ground layer, providing food and cover for rabbits. See Mississippi State University Extension Service Publication 1281, "Timber Stand Improvement," for more information on timber stand improvement practices. Ask a registered forester for more information on timber stand improvement. It is a good idea to work with both a wildlife biologist and a registered forester to develop a forest and wildlife management plan that balances wildlife and timber management goals.

Shrub Cover and Brush Piles

Although too much brush cover is undesirable, scattered shrub thickets (including wild plums, blackberry and other briars, dogwoods, or sumacs) provide good protective cover. You can make brush piles where shrub cover is rare. Brush piles are cheap, fairly easy to build, and make almost instant cover. You can make brush piles by cutting brush, trees, or limbs and piling them up in open areas. You can also fell several large trees on top of one another to create cover. You can pile almost any woody debris to create brush piles. Brush piles should be 5 to 6 feet tall and at least 10 to 20 feet wide. You will need to pile more woody debris on the pile after several years of decay. Provide shrub cover or brush piles every 100 yards or so. Keep about 10 to 15 percent of grass fields or upland forests in scattered shrubs, thickets, or brush piles for rabbit cover. Be sure to protect desirable shrub thickets or brush piles from disking or burning. If you use prescribed burning, simply disk firebreaks around desirable shrub thickets or brush piles.

Prescribed Burning

Prescribed burning in fields, grasslands, and open woodlands reduces brush growth and encourages growth of new grass and nutritious annual plants, such as ragweed and native legumes. Rotational burning makes a patchwork of burned and unburned areas in fields or upland forests and maintains a mix of annual and perennial plants. Divide fields or grasslands into strips or patches with disked firebreaks and burn each strip or patch every 3 to 4 years. Divide upland forest stands into 5- to 20-acre blocks with bare soil firebreaks and burn every other block every 3 to 4 years. This setup creates more manageable units for burning and provides a mix of recently burned and unburned stands. Recently burned areas are better feeding areas because burning improves edible grasses and forbs. Areas that have not been burned for 2 to 4 years provide cover. Ask a wildlife biologist or registered forester to help you plan prescribed burns for specific wildlife or forestry goals.

Always get a certified prescribed burn manager to carry out or oversee a prescribed burn. The manager develops a written burn plan and gets the appropriate permits before burning. Check with the Mississippi Forestry Commission for more information about prescribed burning regulations. Another useful reference on prescribed fire is Mississippi State University Extension Service Publication 2283, "Prescribed Burning in Southern Pine Forests: Fire Ecology, Techniques, and Uses for Wildlife Management."

It is often recommended that firebreaks be established in vegetative cover. This is acceptable when firebreaks are not being used. However, when a site is burned, it is best to have bare soil firebreaks. When not in use, seed firebreaks with winter wheat, oats, or clover for a winter cover. Ryegrasses, except for native species, are not recommended because they are invasive. Seed with suitable, noninvasive cover plants for a summer cover every year to keep firebreaks open and easier to maintain.

Disking

Disking is another management practice that can be used to promote the growth of annual grasses and forbs needed by rabbits. Disking can be used in areas where burning is not possible. Light disking that incorporates at least 50 percent of the aboveground residue can stimulate and maintain natural food plants for rabbits. It can also reduce brush infestations in fields, grasslands, and open woodlands. Light disking for wildlife habitat management does not require a seedbed-quality preparation. Leaving some residue in disked areas is good. Disking can be done from October through February. Fall disking tends to promote forbs and legumes, and spring disking promotes annual grasses. Fall disking may help stimulate more food plants for rabbits. On sites with an agricultural history, spring disking may promote agricultural pest species such as johnsongrass.

Rotational strip disking maintains a mixture of annual and perennial plant communities. In rotational strip disking, you disk 30- to 60-foot strips every 2 to 3 years, and you disk at least some of the area every year. Recently disked areas provide young grasses and forbs that are valuable rabbit foods. Areas that have not been disked for 2 or 3 years provide more perennial grass cover. Disking on a 2- to 3-year rotation helps prevent open ground from being taken over by brush. Disk along the contour of the land to minimize erosion. You can get a good reference on disking for wildlife habitat entitled "Light Disking To Enhance Early Successional Wildlife Habitat in Grasslands and Old fields: Wildlife Benefits and Erosion Potential" through the Mississippi Natural Resources Conservation Service or from the Natural Resources Enterprises website (http://www.naturalresources.msstate.edu/) by searching under the "Resources," "Wildlife Management," and "Bobwhite Quail" links.

Mowing

Mowing is often used to manage grassland habitats. Mowing temporarily reduces brush and grass cover. However, mowing entire fields is the worst management practice for wildlife habitat. Perennial, woody brush continues to sprout back after mowing, and mowing reduces the most desirable natural rabbit food plants. Rotational prescribed burning or disking is better for maintaining quality grassland wildlife habitat. Selective herbicide treatment and management with regular burning or disking treatments are the best ways to manage brush. Mowing can help prepare sites with thick, perennial grass cover for strip disking. Mowing can also cut back plants for better herbicide application and coverage. If you mow to create shooting lanes for rabbit hunting, do it as little as possible. Consider using strips disked during fall for shooting lanes. Mow a narrow strip on one or both sides of the disked strip to use for a walking path. These disking treatments will increase natural food plants the following spring and summer. If you must mow, wait until after nesting season has ended (October) and avoid mowing entire fields.

Supplemental Food Plantings

With proper management, native plants will provide enough rabbit foods. Food plantings can provide extra food resources for rabbits, especially during winter months. Food plantings should be near protective cover, such as tall grass, thickets, or brush piles. Winter food plantings include wheat, oats, clovers, and smooth or hairy vetch. Summer foods are usually plentiful, but warm-season food plantings may help if native forbs are hard to come by. If warm-season forbs are scarce, try planting alyceclover, partridge pea, or Kobe or Korean lespedeza for summer feeding.

Habitat Management Practices for Cottontail Rabbits

Management practices are designed to alter the habitat to provide food and cover for rabbits. Typically, food is available, but protective cover is often in short supply. There are several management tools that can help you create and improve rabbit habitat. For those who are interested in quail, the management practices described here are compatible for both species. If quail are a priority, manage for quail, and rabbit populations will also respond. See Mississippi State University Extension Service Publication 2179, "Ecology and Management of the Northern Bobwhite" for more information on quail management.

Fields and Grasslands

Open lands include old fields, native grasslands, Conservation Reserve Program (CRP) fields, and agricultural crop and grazing or hay lands. These habitats usually support existing rabbit populations and can easily be improved for rabbits.

You can create cover for rabbits in crop fields, pastures, or hay fields by making 30- to 120-foot field buffers around the perimeter of fields. Fence in buffers or other idle habitats created in grazing lands. Use herbicides to remove any non-native grasses, such as tall fescue, bermudagrass, or bahiagrass, from the buffer area. You can then plant buffers with native warm-season grasses and forbs, winter wheat, or oats and clover and allow them to remain fallow. A conservation program may cost-share the establishment of these buffers.

You can also buffer drains within fields. Establish native warm-season grasses and shrubs in them to improve cover for rabbits. Disk or burn a third of the

buffer during fall or winter each year after the second or third year of establishment. To provide winter and spring foods, seed portions of the buffer disked during fall with wheat or oats and clover. You can add native warm-season grass and shrub corridors, or cover strips, through the insides of large crop fields or pastures to create more cover for rabbits. Fence in pasture corridors to keep out livestock.

Old fields or CRP fields established in tall fescue, bermudagrass, or bahiagrass do not provide good rabbit habitat. These are nonnative, sod-forming grasses that exclude many desirable native plants, and many native wildlife species are not adapted to their growth habits. Converting tall fescue, bermudagrass, or bahiagrass to native warm-season grasses and forbs will provide habitat for both rabbits and quail. If your field is enrolled in CRP, you will need to change the CRP contract before you change the established cover. Consult the USDA-Farm Service Agency to modify CRP contracts. Ask a USDA-Natural Resources Conservation Service or Mississippi Department of Wildlife, Fisheries, and Parks wildlife biologist for more information about how to work with the Farm Service Agency to change a CRP contract to improve wildlife habitat.

Prescribed burning and rotational strip disking are cost-effective ways to maintain grass and forb cover in old fields, native grasslands, and CRP fields. Rotational burning encourages new grass growth, reduces excess brush growth, and stimulates growth of nutritious annual plants like ragweed and native legumes. Rotational strip disking can maintain food plants for rabbits and reduce brush infestations in fields and grasslands. Before burning or disking in CRP fields, ask the Farm Service Agency to make sure these practices are allowed by the CRP contract. If not, in most cases the contract can be changed to include prescribed burning as a management option. A Natural Resources Conservation Service or Mississippi Department of Wildlife, Fisheries, and Parks wildlife biologist can tell you how to work with the Farm Service Agency to modify a CRP contract to enhance wildlife habitat.

Establish or keep some shrub thickets at regular intervals in old fields, field buffers, CRP fields, and other grassland areas to provide protective cover. You can make brush piles where shrub cover is scarce. Remember to protect shrub or brush-pile cover from disking or burning. If you use prescribed burning, disk firebreaks around desirable shrub thickets or brush piles.

Forest Lands

You can manage upland pine, hardwood, and mixed pine-hardwood forests for rabbits. Bottomland hardwood stands may support some cottontails and can be managed for both swamp rabbits and cottontails. (See swamp rabbit management section.) For forestlands to be productive habitat for rabbits they must produce an abundance of grasses and forbs in the understory, or ground layer. To accomplish this, many forest stands need to be thinned and prescribe-burned at regular intervals.

Apply prescribed fire to thinned pine stands every 3 to 4 years to stimulate seed germination and reduce litter (pine straw, dead grass, etc.), which limits growth of grasses and forbs. Apply selective herbicides to control brush if hardwood brush is too thick in the ground and middle-canopy layers of pine forests. Protect some scattered patches of brushy cover from herbicide and fire throughout forest stands.

You can enhance upland hardwood stands by commercial thinning or timber stand improvement using an individual stem treatment. Once the canopy is opened and sunlight can reach the forest floor, you can apply prescribed fire on a 3- to 5-year rotation to stimulate desirable plants and reduce undesirable hardwood sprouts. Smaller stands that do not have desirable timber species may be easier to thin by hand cutting or directly applying selective herbicide using a method like the “hack-and-squirt” technique (see Mississippi State University Extension Service Information Sheet 1573, “Tree Injection with Reduced Labor Requirements”). Opening the canopy and applying prescribed fire should create a grassland community underneath fire-tolerant hardwoods. Conduct prescribed burning in hardwood stands very carefully. Always check with a registered forester or wildlife biologist before burning in hardwood stands. Oaks such as post, blackjack, scarlet, bluejack, and turkey oak and hickories such as shellbark and shagbark hickory are relatively fire tolerant. These species also produce food for deer, turkey, quail, and other wildlife. Although these may not be valuable timber stands, they will provide habitat for a number of game and non-game species.

If prescribed fire is not an option, you can enhance rabbit habitat in thinned pine plantations with woodland strip disking. The stands must be fairly free of exposed stumps, logging slash, and other debris. Disk one-third of thinned rows in plantations or one-third of the area around saw timber-aged trees each year. Be careful when disking in woodlands to avoid personal injury and damaging trees or equipment. A heavy-duty disk is recommended for woodland strip disking.

You can create forest openings 1/4 acre to 1 acre in size to enhance rabbit habitat. Maintain openings with rotational disking, alternating food plantings, or prescribed burning. If you use prescribed burning to manage woods, simply let fires burn through openings. Remember to protect some patches of thicket cover by disking firebreaks around them.

Habitat Management Practices for Swamp Rabbits

Swamp rabbits depend mostly on bottomland forests, wetland habitats, and grassland habitats next to streams, drainages, or wetlands. Conserving these habitats and maintaining food (grasses, forbs, and vines) and cover (cane and other thickets) are essential for increasing swamp rabbit populations.

Thinning bottomland hardwood forests or timber stand improvement treatments can improve swamp rabbit habitat by increasing sunlight on the ground. Increasing sunlight on the ground promotes growth of grasses and forbs that provide food and cover. Creating ¼-acre to 1-acre forest openings throughout forests also enhances grass and forb cover. You can pile debris from thinning or cutting in portions of forest openings to create escape cover.

If you harvest timber in bottomland hardwood forests (clear-cuts), do not clear-cut within 100 to 200 feet on either side of the stream (200 to 400 feet total). These areas are called streamside management zones. Thinning, timber stand improvement treatments, and maintaining scattered thickets can enhance swamp rabbit habitat in streamside management zones.

You can enhance grassy habitats next to wetlands with prescribed fire or strip disking. Rotationally burn or disk every 3 to 4 years to maintain new growth of grasses and forbs. Disked strips can be planted with summer and winter food plantings to increase food.

Conservation Programs for Private Landowners

Before managing a property for rabbits, put a wildlife habitat management plan in place. Farmers can work with a wildlife biologist to develop a plan that includes affordable, practical habitat management practices. Forest landowners can meet with a wildlife biologist and a registered forester to write a management plan for both forest and wildlife goals.

Several conservation programs can help private landowners with start-up costs of farm and forest wildlife management practices. Many of the same habitat management practices can be applied under different conservation programs, but there are differences in eligibility and financial incentives under each program. You cannot apply more than one conservation program to an acreage. You may be able to apply a combination of conservation programs to different acreage on the same property to get the most benefit. If you plan ahead, you can use several programs and practices to help meet your management goals in a way that makes financial sense. Wildlife biologists from the Mississippi Department of Wildlife, Fisheries, and Parks' Private Lands Habitat Program and Small Game Program or USDA-Natural Resources Conservation Service (NRCS) can help you plan for wildlife management and choose conservation programs.

See the tables on the following pages for more information about available programs.

Name of Conservation Program	What It Does	Who Qualifies	Who Administers It	Additional Notes
Conservation Reserve Program (CRP)	• provides technical and financial assistance to address soil, water, and related natural resource concerns on their lands • encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage, such as marginal pastureland, to vegetative cover such as native grasses, wildlife plantings, trees, filter strips, or riparian buffers. • provides an annual rental payment for the term of the multi-year contract • provides cost sharing to establish and manage vegetative cover practices	• eligible farmers and ranchers	• USDA-Farm Service Agency • USDA-Natural Resources Conservation Service (NRCS) provides technical assistance, conservation planning, and practice implementation.	• For landowners who have acreage enrolled in existing CRP forest conservation covers (such as CP11), mid-contract management cost-shares are available for prescribed burning and herbicide application. To be eligible for cost-shares, mid-contract management practices must be incorporated into the CRP contract and management plan before any management is implemented. • If mid-contract management practices are not already required by the contract, contract holders must modify their Conservation Plan of Operation to reflect the timing, frequency, and extent of approved mid-contract management practices. • For more information, see Mississippi State University, Forest and Wildlife Research Center Brochure, "Conservation Reserve Program Mid-Contract Management: Practices for Wildlife Habitat Improvement in Mississippi" available at http://www.fwrc.msstate.edu/pubs/midcontract.pdf. Copies may also be obtained from the Mississippi Department of Wildlife, Fisheries, and Parks.
Conservation Security Program (CSP)	• supports ongoing stewardship of private agricultural lands by providing payments for maintaining and enhancing natural resources • gives financial and technical help to protect and improve soil, water, air, energy, plant and animal life • encourages conservation on working lands (cropland, pasture, grassland) and forested land that is part of a farm	• limited to producers in specific watersheds • different priority watersheds are chosen for CSP every year	• NRCS	
Environmental Quality Incentives Program (EQIP)	• addressing specific resource concerns that will improve air and water quality, reduce soil erosion, improve riparian, aquatic, and forestland habitats, and address wildlife issues	• agricultural producers who face threats to soil, water, air, and related natural resources on their land • management practices available through EQIP depend on the county where a property is located because each county has specific natural resource concern priorities.	• NRCS	• Some counties have wildlife habitat management practices available through EQIP, and/or practices that are not specifically designated for wildlife but may be used to enhance wildlife habitat. Landowners managing forests are advised to contact their local NRCS office for specific eligibility requirements as well as local county resource concern priorities.

Name of Conservation Program	What It Does	Who Qualifies	Who Administers It	Additional Notes
Forest Resource Development Program (FRDP)	• provides cost-shares for forest management practices such as herbicidal control of invasive vegetation and forest regeneration	• available to any non-industrial private forest landowner	• Mississippi Forestry Commission	
Grassland Reserve Program (GRP)	• offers landowners the opportunity to enhance grasslands on their property • helps landowners restore and protect grassland, rangeland, pastureland, shrubland and certain other lands • provides assistance for rehabilitating grasslands • conserves vulnerable grasslands from conversion to cropland or other uses • conserves valuable grasslands by helping maintain viable ranching operations • provides conservation easements and restoration agreements to restore, protect, and enhance grasslands	• contact your NRCS office for more information	• NRCS • Farm Service Agency • Forest Service	
Healthy Forests Reserve Program (HFRP)	• voluntary program established for the purpose of restoring or enhancing forest ecosystems, such as longleaf pine, to 1) promote the recovery of threatened and endangered species, 2) improve biodiversity, and 3) enhance carbon sequestration • provides financial incentives, through conservation easements and/or 10-year restoration agreements, for appropriate forest management practices that will meet program management objectives	• contact your NRCS office for more information	• NRCS	
Wetlands Reserve Program (WRP)	• provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns • provides financial incentives, through conservation easements and/or 10-year restoration agreements, to restore, protect, and enhance wetlands, including bottomland hardwood forests, while retiring marginal land from agriculture	• contact your NRCS office for more information	• NRCS	

Name of Conservation Program	What It Does	Who Qualifies	Who Administers It	Additional Notes
Wildlife Habitat Incentives Program (WHIP)	• encourages the creation of high quality wildlife habitats that support wildlife populations of national, state, and local significance • offers technical and financial assistance to develop or improve upland, wetland, riparian, and grassland habitat in both open lands and non-industrial private forestlands • offers cost-shared practices for prescribed fire; herbicidal control of invasive vegetation; establishment of buffers, transition zones, and hedgerows; native vegetation establishment; and wetland management	• available to agricultural and non-industrial private forest landowners	• NRCS	

Non-Governmental Organizations

Delta Wildlife provides technical assistance and cost-share for habitat development to landowners in the Delta region. Contact Delta Wildlife for information about their habitat management programs. Wildlife Mississippi has prairie and longleaf pine restoration programs available to eligible landowners in the Blackland Prairie and longleaf pine regions of Mississippi. Contact Wildlife Mississippi for information about their prairie and longleaf restoration programs.

Technical Assistance for Private Landowners

The following agencies are available to provide wildlife and/or forest management planning or technical assistance:

Delta Wildlife, Inc.
Website: http://www.deltawildlife.org/
Phone: 662.686.3370

Mississippi Department of Wildlife, Fisheries, and Parks
Website: http://www.mdwfp.com/
Phone: 601.432.2199

Mississippi Forestry Commission
(Registered foresters available to assist landowners with forest management planning)
Website: http://www.mfc.state.ms.us/
Phone: 601.359.1386

Mississippi State University, Forest and Wildlife Research Center
Website: http://www.cfr.msstate.edu/fwrc/
Phone: 662.325.2952

Mississippi State University, Wildlife and Fisheries Extension
Website: http://msucares.com/
Phone: 662.325.3174

USDA-Farm Service Agency
(Administers the Conservation Reserve Program)
Website: http://www.fsa.usda.gov/
Phone: 601.965.4300

USDA-Natural Resources Conservation Service
(Wildlife biologists and registered foresters provide landowner technical assistance)
Website: http://www.ms.nrcs.usda.gov/
Phone: 601.965.4339

Wildlife Mississippi
Website: http://www.wildlifemiss.org/
Phone: 662.686.3375

More Information

Publications and information sheets produced by the Mississippi State University Extension Service and mentioned in the text are available on the Mississippi State University Extension Service website (http://msucares.com) or through county Extension offices.

Hunting and Harvest Management

In areas where there are plenty of rabbits, rabbit hunting is a relatively easy, low-cost, and exciting sport. When in the field, remove entrails (guts) from harvested rabbits right away. Keep harvested rabbits cool. The hide can be removed later. To avoid disease risks, it is a good idea to carry rubber gloves and hand sanitizer to the field for dressing rabbits. If you enjoy hunting rabbits but do not like to eat them, try to find someone who can use the meat. Always dress game promptly and properly before giving it to others.

The rabbit-hunting season in Mississippi is open from mid-October through February, although some public lands may have specific dates on which rabbit hunting is open. Consult hunting regulations to find exact hunting season dates; hunting season dates can be found on the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) website (http://www.mdwfp.com/) or by contacting an MDWFP office. Check area regulations to determine when rabbit hunting is allowed on public hunting areas.

Rabbit hunting is often done with dogs, usually beagles. However, you may also enjoy walking through cover alone or in a group to flush or "jump" rabbits. Hunt grass fields, thickets, fencerows, woody edges, and open woods to find rabbits. Kicking around brush piles and shrub thickets in grassy areas will often yield rabbits. Safety is always a top priority on any hunting trip. Be aware of where other hunters, dogs, buildings, and roads are. Wear an orange vest or hat so other hunters can see you.

Private landowners may be willing to allow hunters access to their property to hunt rabbits, especially in agricultural areas, where rabbits may damage crops. Always ask permission from the landowner before hunting on private property. Do not take game other than species you have to permission to take legally. Obey all game laws. Be courteous, and do not leave litter (including shotgun shells) behind. Drive vehicles only on clearly established roads. If no fee is charged to hunt, it is a good idea to provide a small token of appreciation to the landowners for allowing hunting on their property. This may be as simple as periodically offering a few dressed rabbits or some other gift. Ethical and polite hunters are more likely to be invited back.

In areas with relatively large amounts of quality habitat, legal harvest of rabbits has little impact on rabbit populations. Remember that if surrounding areas do not have good rabbit habitat, populations in isolated "islands" of habitat are more likely to be negatively affected by intense hunting pressure than in areas where habitat is plentiful in the surrounding area. Areas without much acreage in fields, grasslands, or open forests will likely not support good numbers of cottontails. If quality bottomland and wetland habitats are scarce, swamp rabbits will be few in number.

Quality cover is the main factor that determines rabbit population productivity. If you want higher rabbit populations and habitat is lacking on a large scale, consider ways to affect the surrounding land. You may try working with nearby landowners to increase rabbit habitat over a larger area. A wildlife biologist can assist groups of landowners with common wildlife goals who are interested in developing a cooperative wildlife management strategy. To learn more about developing a landowner cooperative, read "Wildlife and Forestry Landowner Cooperatives" (Extension Publication 1637). It is available from the Mississippi State University Extension Service county offices or on their website (http://msucares.com/pubs/index.html).

Summary

Cottontail and swamp rabbits are relatively common to all regions of Mississippi. Within the last 30 years, rabbit populations have declined a lot because of changes in land use and management. With proper management, local rabbit populations can be increased for more hunting opportunities. Often, rabbit habitat can be created relatively easily. You can use a number of habitat management practices to enhance rabbit habitat quality, including prescribed burning, light disking, native warm-season grass restoration, developing protective thicket cover, and forest thinning. Several conservation programs are available to assist private landowners with habitat management. Wildlife biologists from state, federal, and private natural resource management agencies are also available to help private landowners with wildlife management planning and selecting conservation programs and practices for wildlife management.

By Rick Hamrick, Mississippi Department of Wildlife, Fisheries, and Parks; Dave Godwin, Mississippi Department of Wildlife, Fisheries, and Parks; and **Dr. Bronson Strickland**, Assistant Extension Professor, Wildlife and Fisheries.

Publication 2467
Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture.
Published in furtherance of Acts of Congress, May 8 and June 30, 1914. Melissa Mixon, Interim Director.
(POD 02-09)

MISSISSIPPI STATE UNIVERSITY
EXTENSION SERVICE
MSUcares.com