

Wildlife Management: Cottontail Rabbits

Eastern Cottontail Rabbits (*Sylvilagus floridanus*) are among the most common mammals in Maryland and one of the easiest to manage. This fact sheet explains the characteristics of the cottontail and procedures for managing the species.

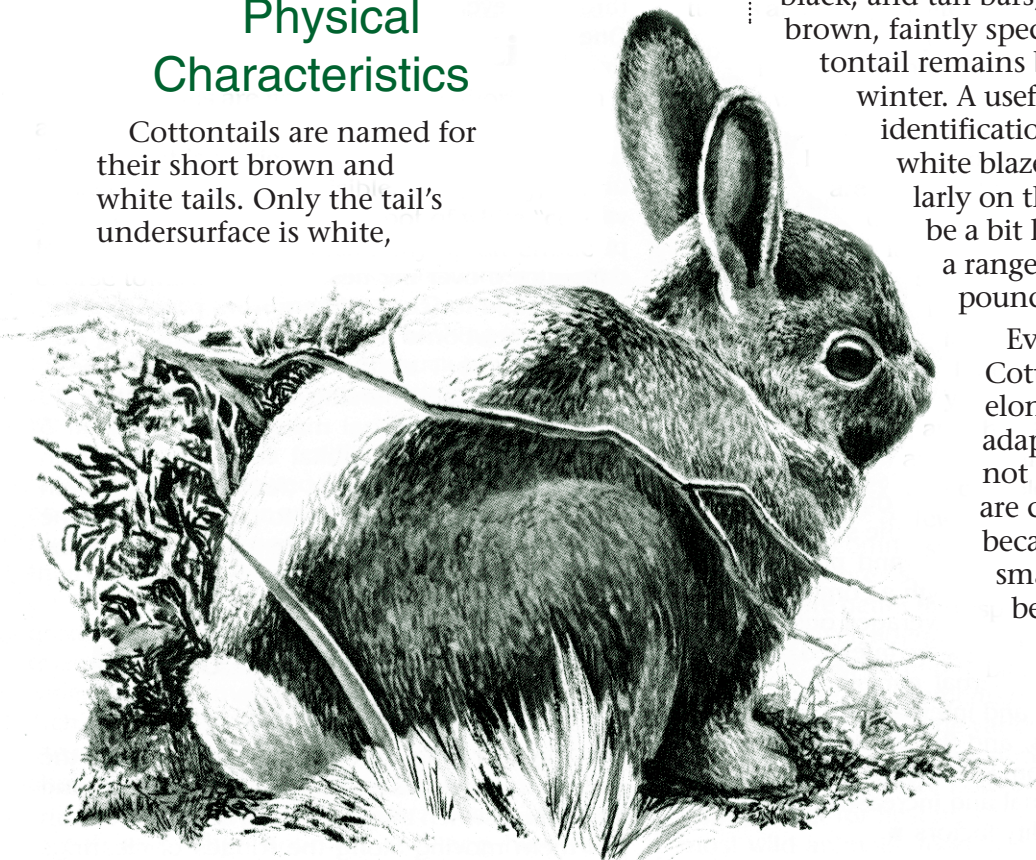
Physical Characteristics

Cottontails are named for their short brown and white tails. Only the tail's undersurface is white,

but it is carried so that the brown upper surface is usually not visible. Frequently, all you see of the rabbit is this spot of white "cotton" as the animal bounds away on an erratic course toward cover. Cottontails have white undersides, but the rest of the pelage (coat) is made up of multicolored hairs having brown, black, and tan bars, giving the cottontail a brown, faintly speckled appearance. The cottontail remains brown throughout the winter. A useful, but not foolproof, field identification feature is an oblong, white blaze on the forehead (particularly on the young). Females tend to be a bit larger than the males, with a range in weight from 2 to 4 pounds.

Even though Eastern Cottontail Rabbits have large, elongated incisor teeth that are adapted for gnawing, they are not classified as rodents. They are classified as lagomorphs because of a second pair of smaller incisors located just behind the upper, larger pair.

Rabbits differ from hares in that their young are born furless, blind, and helpless, whereas hares are born fully furred, able to see, and capable



of running in just a few hours. Wildlife species with such characteristics are termed altricial and precocial, respectively.

Eastern Cottontail Rabbits prefer wooded areas and open field habitats. They are superbly adapted for detecting and fleeing from predators. Their eyes are located on the sides of their heads for wide peripheral vision. Their ears are pivotable, relatively large, and slightly cupped so that faint sounds can be detected. Upon first sensing danger, cottontails usually sit perfectly still and rely on their camouflage coloration to help avoid detection. When necessary, however, their long and powerful legs can propel them along on an erratic 18- to 20-mile-per-hour dash. Despite their abilities to avoid capture, Cottontail Rabbits are important prey for a wide variety of predators.

Abundance and Distribution

Cottontail Rabbits are found throughout Maryland. If no mortality occurred, one pair of rabbits and their offspring could give rise to 5 million rabbits over a 5-year period. You might expect that the fields and woodlands would be overrun with rabbits because of their reproductive capabilities (which are discussed in the next section). In a natural, diverse ecosystem, the cottontail population is kept in check by a host of mortality factors. On the average, only 20 to 25 percent of the young live 1 full year. Including adult mortality, about 85 percent of the population dies each year. Predators, such as red and gray foxes, kill many rabbits, but weather, disease, parasites, and the social behavior of the rabbits also suppress their numbers. At high population levels during breeding seasons, parasites and diseases, such as tularemia, spread quickly as a result of the increased incidence of contact between individuals. Good habitat during the breeding season may support 10 rabbits per 4 acres. Fall populations are usually thinned down to two to three rabbits per acre by the variety of mortality factors mentioned.

Survival in the nest is partly dependent upon favorable weather conditions. Cold and wet springs or falls can drastically reduce the survival rates of the first or last litters of the season. Farming activities, such as haying and plowing, frequently destroy nests. Through a

combination of these factors, nest survival averages only 50 percent. In addition, cottontails are infested routinely with a multitude of external parasites (fleas, fly bots, ticks, and lice) and internal parasites (tapeworms, roundworms, and flukes). While any one kind of parasite seldom kills the host directly, they can weaken the animal and increase its susceptibility to other mortality factors.

Life History of Cottontail Rabbits

The relative success of the cottontail rabbit as a species is due in large part to its high reproductive capacity. The mating season begins with the first warm days in late February and continues into September. Throughout the breeding season, dominant males maintain territories of 3 to 25 acres where they breed with the majority of receptive females. Other males live within such territories as long as they remain subordinate and accept the social hierarchy. During the nesting season, females defend a home territory of about 2 acres from other trespassing females. When areas are overpopulated, frequent social interactions and disruptions increase physiological stress, causing reductions in litter success rates and sizes.

Both the male and female exhibit wild, leaping courtship antics before breeding takes place. Males will readily breed with any receptive female and do not assist in the care and protection of the young.

Gestation lasts approximately 28 days, and the female is capable of mating again immediately after giving birth. Litter sizes typically range from three to seven, with three or four more typical. One mature, healthy female can have as many as five litters per breeding season, contributing up to 35 newborns to the fall population. Nests consist of shallow depressions in the ground lined with a combination of hair plucked from the female's underside and dead grasses. Cottontails nest in a variety of places including open fields and thick patches of brush. A cap of fur and stems is also constructed over the nest as protection from the weather and for concealment from predators.

Table 1. Life History of Eastern Cottontail Rabbits

Breeding	Late February to September
Gestation	28 days (female is capable of mating again immediately after giving birth)
Litter size	3 to 7 with 3 or 4 more typical
Litters per year	3 to 4
Mortality rate per year	75 to 85 percent
Mortality factors	Predators, disease, parasites, and weather
Weight	2 to 4 pounds
Home range	3 to 25 acres (females—2 acres during nesting season)
Primary food (Summer)	Timothy, clover, alfalfa, soybeans, wheat, rye, chickweed, goldenrod, fallen fruit, and garden crops, such as lettuce, peas, and beans
(Winter)	Bark and twigs of such species as sumac, white and red oak, dogwood, sassafras, maple, rose, willow, apple, raspberry, and poison ivy

The newborns are about 4 inches long and weigh a mere 1 ounce. Young cottontails need parental care and nursing for approximately 20 days after birth. Sexual maturity can occur at 3 months under ideal habitat conditions. In such cases, females-of-the-year (females born within the year) can contribute up to one-quarter of the year's total population. Table 1 summarizes the life history of the cottontail.

Observing Cottontail Rabbits

The best times to observe cottontails are the early morning hours and about an hour before and after sunset when they feed most actively. You can see them moving along the fringes of clearings just a few hops from dense cover. You seldom will see Cottontail Rabbits in the open during the winter months. They seem to realize their increased vulnerability due to the sharp contrast of their brown bodies against the snow. On occasion, you may see a stationary rabbit snuggled down in its "form," which is usually located in brush or beside a hole in the ground. A form is a hollow in the vegetation

or snow that protects from the wind and provides some overhead cover. On sunny winter days, you often can see rabbits basking in the sun just a few feet from the woodchuck burrows they use as shelters from predators and freezing weather.

Evidence of their feeding on shrubs or seedlings are cleanly nipped twigs at heights of 2 feet above the ground or snow. If the twigs are cut any higher and have a somewhat jagged appearance, then deer probably were the feeders. Tooth marks on trunks of trees or along lower branches at ground or snow level can be identified as rabbit gnawing if they are about 1/8-inch wide, whereas marks about 1/16-inch wide are made by mice. Other evidence of the presence of rabbits is their droppings, which are about one-half the size of marbles.

Rabbits leave very distinctive tracks in snow or soft soil. When hopping, the long hind feet actually come down in front of the smaller front feet. Rabbits seldom are vocal. Except for the few mews and soft grunts made at the nesting site, the only other vocalization rabbits make is a plain-

tive scream when they are injured or extremely frightened.

Managing Cottontail Rabbits

Habitat

Cottontails are one of the easiest mammals to manage. Habitat diversity and interspersed areas are the keys to rabbit management. Interspersed areas are the mixing of key habitat areas preferred by rabbits. Rabbits are primarily an “edge” species, that is, a species commonly found where two habitats meet. Therefore, several small patches of food and cover are better than large areas of each type.

When given adequate amounts of quality food and cover, rabbit populations flourish. In areas without these requirements, rabbit densities generally are sparse. A wide variety of food is suitable for cottontails. During the summer, food is usually not a critical concern; however, they need undisturbed cover for nesting sites at this time. As with most wild animals, food and shelter are the limiting factors of cottontail populations through the winter. Ideally, food and cover should exist on the same site.

With just a little effort, existing habitats can be greatly improved. Do not allow old field

vegetation to grow out of reach of rabbits. Trees such as evergreens make excellent “living brush piles” when they are partially cut and toppled over. You can obtain excellent results when you use several trees in a group. Brush left over from logging or firewood cutting makes superb cover when piled at least 5 feet high and 10 feet in diameter. Place these shelters near areas of grasses or shrubs and build them on top of dilapidated farm machinery, stumps, or log pieces. This way, the brush is off the ground where it will not decay as quickly, and there are rabbit access spaces underneath the pile. (See Fact Sheet 599, “Brush Piles for Wildlife,” for more information.)

Cover

Rabbits will use cover as long as it is sufficiently large and protective. Make sure that cover strips, briar patches, or brush piles are at least 20 feet wide. Cover development falls into two major categories—vegetative and artificial. Vegetative cover includes natural thickets, such as the fabled briar patch (blackberry), honeysuckle, fallow areas, bicolor lespedeza, or any naturally growing thicket that is sufficiently thick to provide protection from foxes, hawks, owls, dogs, and other predators. Artificial cover includes brush piles, rail fences, or piles of rock with drain tiles for access. Brush piles provide good escape cover but always should be located near an adequate food supply. A



diversity of food and cover is the key to good rabbit habitat.

Adequate cover also may be provided by allowing little used or unused areas, such as stream banks, drainage ditches, fencerows, pond edges, or edges of fields, to revert back to natural vegetation. These areas usually provide long narrow strips of cover that can be improved further by planting food strips adjacent to them.

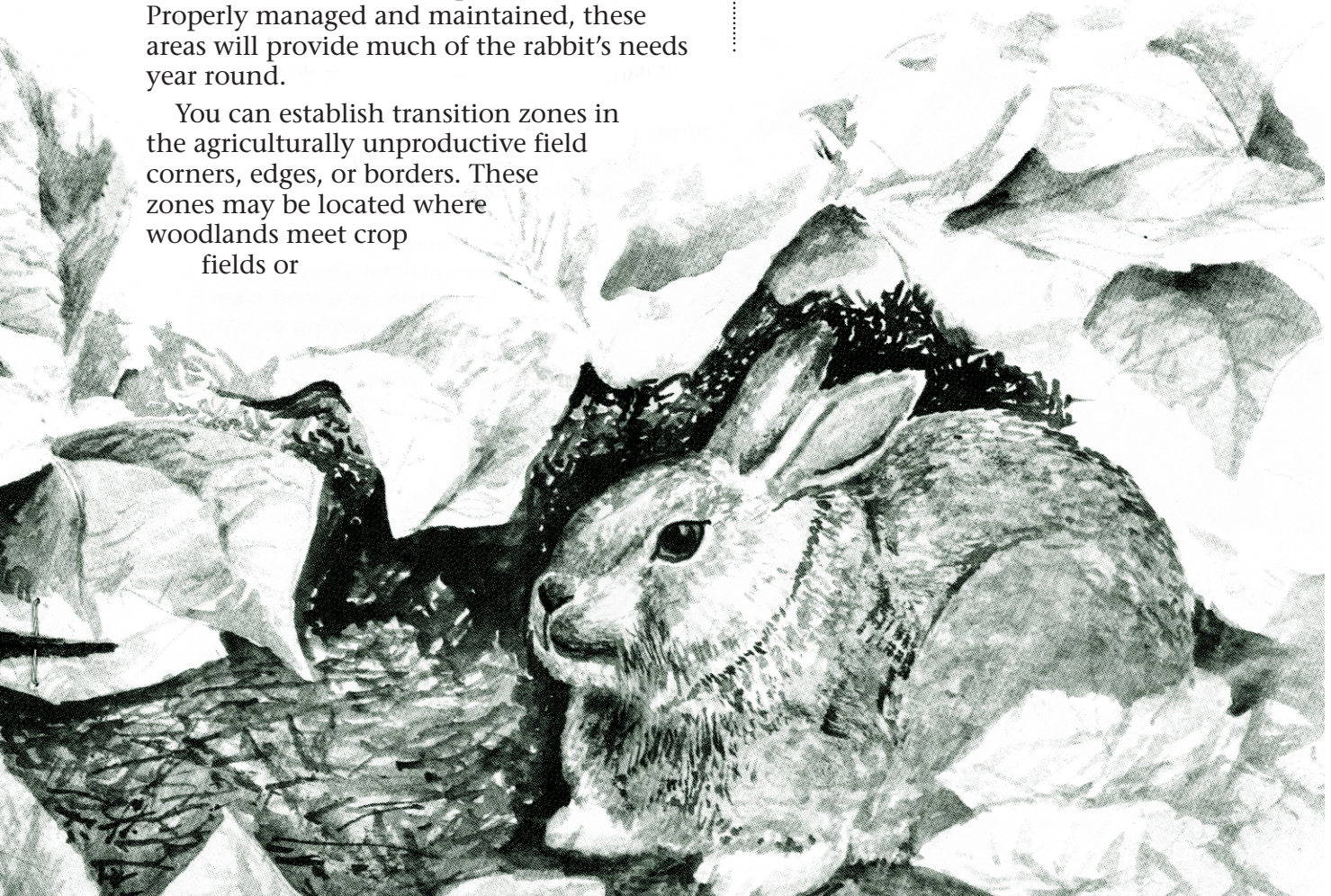
Transition Zones

Vegetative cover in transition zones is important. Transition zones are simply a third habitat type developed between two existing and different habitat types. In most cases, you can develop transition zones along an adjoining edge between fencerows, roads, ditch banks, timbered areas, and cultivated fields. These zones between forest and field are extremely important because rabbits are an edge species, and the amount and quality of edge present usually dictates the abundance of cottontails on a particular area. Properly managed and maintained, these areas will provide much of the rabbit's needs year round.

You can establish transition zones in the agriculturally unproductive field corners, edges, or borders. These zones may be located where woodlands meet crop fields or

exposed pastures and along fence lines and roadways. These transition strips may cover all the unproductive field edge but should never be less than 15 feet wide. The species and composition of the vegetation that invade these areas will depend upon the soil type, fertility, and pH in the area. The establishment of these zones is perhaps the easiest and cheapest rabbit management practice on agricultural land because nature does the work. To establish these zones, simply remove strips of land from their previous use and protect them from any disturbance, such as disking, fire, or grazing, except at the proper time. (See Fact Sheet 600, "Field Border Management," for more information.)

To maintain transition zones in a mixture of legumes, grasses, and weeds, burn, plow, or disk them in early spring. It is not necessary, however, to do this every year. When more than 50 percent of the soil is covered in dead vegetation, the land needs maintenance. Fields having transition zones around three or four sides may be maintained on one side



annually, starting approximately 2 years after zones are established.

The importance of transition zones in cottontail management depends largely on the kind of habitat adjoining cultivated areas. Large fields and pasture, for example, contain areas within the center that are not utilized. Generally, rabbits will not venture far into the open from the nearest adequate cover type. To provide access routes into these areas, divide large fields into smaller tracts by providing travel lanes across or into these fields. Leave undisturbed strips (at least 60 feet wide and wider) for native vegetation. Create these strips by connecting adjacent timbered, cultivated areas or areas providing adequate cover. These strips should be main-

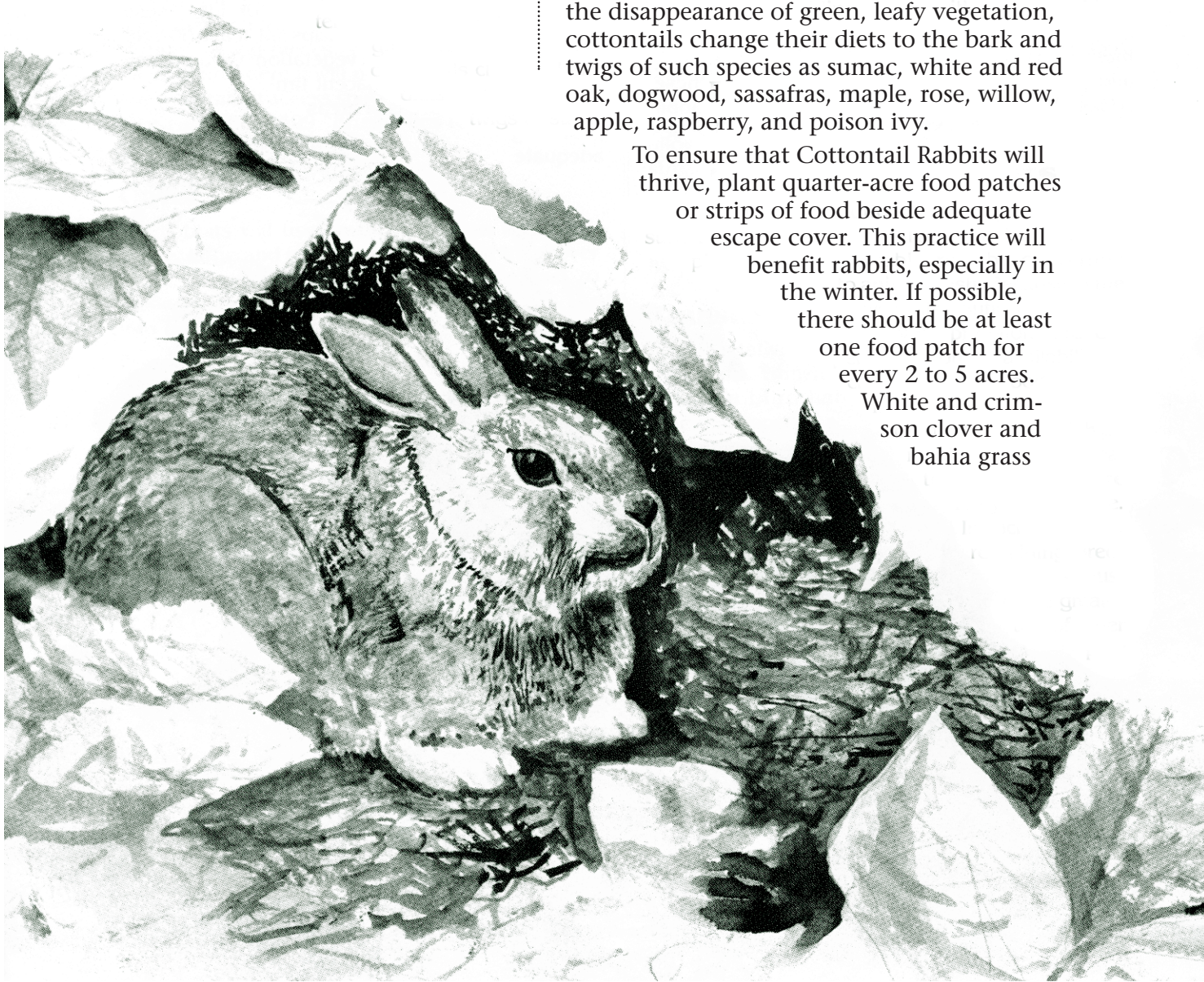
tained by mowing, disking, or burning one side of each strip every 2 or 3 years in the early spring or late fall. Brush piles or other suitable escape cover located randomly throughout transition zones will greatly increase rabbit utilization of the area.

Food

Cottontails are herbivores (the majority of their diet consists of vegetation). If given a choice, cottontails will eat succulent growth such as leaves, stems, shoots, and flowers rather than dried plants, bark, or twigs. During summer months Cottontail Rabbits eat goldenrod, timothy, chickweed, clover, alfalfa, sorrel, soybeans, wheat, rye, fallen fruit, and garden crops, such as lettuce, peas, and beans. With the approach of winter and the disappearance of green, leafy vegetation, cottontails change their diets to the bark and twigs of such species as sumac, white and red oak, dogwood, sassafras, maple, rose, willow, apple, raspberry, and poison ivy.

To ensure that Cottontail Rabbits will thrive, plant quarter-acre food patches or strips of food beside adequate escape cover. This practice will benefit rabbits, especially in the winter. If possible, there should be at least one food patch for every 2 to 5 acres.

White and crimson clover and bahia grass



provide good food during the spring, and any green succulent vegetation, such as alfalfa, wheat, barley, rye, ryegrass, winter peas, various annual grazing mixtures, and grain wasted during harvest, will provide a supplemental winter food source.

Regardless of the amount or type of food and cover provided for the cottontail, diversity of both is the key to providing rabbits with the necessities of life.

Understanding the Ecological Role of Cottontail Rabbits

As herbivores, cottontails are primary consumers. Thus, in the natural system, the cottontail plays an indispensable role by converting vegetation into animal flesh. Because of the cottontail's wide distribution and abundance, many predators are dependent upon the availability of cottontails as a food source. In areas with low densities, or

during years of high rabbit mortality, predator populations are likely to decrease. In such instances, remaining predators must make greater use of other prey species, such as ruffed grouse, ring-necked pheasant, woodchucks, or mice. The cottontail is a major prey of both the red fox and gray fox, which are highly prized furbearers. An abundant and healthy cottontail population is an important component in a varied and stable Maryland wildlife community.

Adapted from:

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Fact Sheet 597 Introduction to Wildlife Management

Fact Sheet 598 Planting Crops for Wildlife

Fact Sheet 599 Brush Piles for Wildlife

Fact Sheet 600 Field Border Management

Fact Sheet 601 Eastern Cottontail Rabbits

Fact Sheet 602 Bobwhite Quail

Fact Sheet 603 Ring-necked Pheasants

Fact Sheet 604 Ruffed Grouse

Fact Sheet 605 Mourning Doves

Fact Sheet 606 Eastern Wild Turkeys

Fact Sheet 607 Tree Squirrels

Fact Sheet 608 Black Bears

Fact Sheet 609 Wood Ducks

Fact Sheet 610 Dabbling Ducks

Fact Sheet 611 Diving Ducks

Fact Sheet 612 Canada Geese

Fact Sheet 613 Songbirds

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