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## **RACCOON BIOLOGY AND MANAGEMENT**

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## THE RACCOON IN BRIEF

*Scientific name: Procyon lotor*

*Mammal relatives:* The carnivores (Order: Carnivora, Family: Procyonidae).

*Weight:* Adults average 13 pounds, with a normal range of 10 to 25 pounds, occasionally reaching 40 pounds.

*Size:* About 28 inches long, with a bushy, ringed tail approximately 10 inches in length.

*Sex differences:* Sexes appear similar. Average weight of adult males is greater than average weight of adult females. Examine external sex organs carefully to determine sex.

*Average life span:* Maximum lifespan 16 years in the wild. Under normal conditions, the oldest raccoons will be less than 10 years old. Raccoons in captivity may survive 15-18 years.

*Pregnancy (gestation):* About 63 days. Most young born in April or May.

*Litter size:* 2-6, average slightly over 3. One litter per year.

*Young:* Newborn weigh 3 ounces. Eyes open at 19 or 20 days. Young attend mother on hunting trips after 2 months.

*Food:* Raccoons are omnivores. Typical foods include frogs, fish, shell-fish, small mammals, birds, eggs, reptiles, insects, fruit, nuts, and corn.

*Habitat:* Wooded areas near streams, rivers, or swamps.

*Distribution:* Throughout Virginia, from highly populated urban areas to remote areas. Geographic range includes all 49 of the continental states, Mexico, and much of Canada.

## THE RACCOON AND MAN

Of the wild mammals in Virginia, the raccoon ranks as one of the most interesting. This ring-tailed, black-masked creature captures our imagination because of its almost human curiosity and ingenuity, its ability to adapt to such a broad variety of local habitats, and its secretive habits. Observant people can readily find signs of raccoons in marshes and the mountains and even inside city limits, or wherever adequate amounts of nutritious food, good resting and denning cover, and fresh or brackish water come together. There are healthy populations of raccoons in the cities of Richmond and Arlington along the river banks, just as there are raccoons along the remote Laurel Fork in Highland County.

As with all wildlife, raccoons can be beneficial or harmful to man depending on local situations. Our aims are to encourage balanced appreciation of the raccoon. This publication presents information on the biology and management of the raccoon in light of the various ways the raccoon touches our lives.

Just about anyone who has walked along the banks of our streams, rivers, and lakes has seen the hand-shaped tracks of the raccoon. However, few folks regularly see raccoons. Raccoons, like most of our mammals, are shy and not active during the day. In the evening, the ring-tailed animals leave their hiding spots to search for food. The sight of a raccoon family out on a foraging trip along a river bank or lake shore adds a special note to an evening fishing trip. These contacts between man and raccoon are unplanned, positive encounters. Increasing these contacts can be a goal of the wildlife manager, especially in park situations.

All across rural Virginia, the raccoon is enjoyed by a rugged group known as coon hunters. There are nearly 38,000 Virginians who hunt raccoons. Nothing delights these hunters more than the baying of hounds on the hot trail of a raccoon. Raccoon hunting is a distinct American tradition, dating back to the early pioneers. Although today's hunter has greater mobility to get to the hunting grounds, and better lights to guide his way through the woods at night, much of the lore of coon hunting has remained unchanged over the generations. Coon hound pups are still trained by dragging a coonskin for them to follow. A raccoon hunter will show off his hunting gear, but it is the history of certain locally famous and infamous dogs and the merits of different breeds of hounds that brings out the rich character of the sport. Some hunt the raccoon for its hide, which in recent years has brought as much as \$25.00 for a large prime pelt. Some take the raccoon for the meat. However many dedicated raccoon hunters hunt purely for the excitement of the chase and let the treed raccoons go afterwards.

Most dedicated raccoon hunters belong to local clubs where stories about great dogs and wiley old coons are swapped with as much enthusiasm as is devoted to the buying and selling of pups or to showing and field testing of their dogs. Coon hunters value their dogs highly. It is not unusual for a champion dog to sell for \$1000.00. Pups from champion lines bring as high as \$200.00 each. When these dollar values are added to costs for dog food, housing, veterinary services, hunting vehicles equipped with dog boxes, and hunting gear, such as the

\$100 miner's spotlights used by many hunters, it is clear that raccoon hunting contributes to the economy as well as to the social life of many Virginia communities.

Raccoon pelts have ranged from an average of \$5 to as high as \$25 at the fur market. As the price of hides rises, the number of trappers and trapped raccoons increases. As would be expected, hunters and trappers compete for raccoons when prices for long-haired furs is relatively high.

This competition has resulted in conflicting demands on the Virginia Commission of Game and Inland Fisheries from both hunters and trappers. The Game Commission has the difficult task of establishing seasons and bag limits for both the hunting and trapping seasons in such a way that both groups will have a fair chance to use the raccoon resource without endangering the raccoon populations. The essential elements of the Virginia Game Commission policy on raccoon hunting and trapping are: 1) to schedule the hunting and trapping seasons carefully in order to prevent hunting too early in the fall when raccoon kits are small, and also, in order to protect the next year's breeding stock, to not extend the season too late into the winter; 2) to encourage both hunters and trappers to abide by the game regulations on seasons and bag limits, and the laws, especially the trespass law which requires landowner permission before beginning a hunt or setting a trap line; 3) to set the killing season late enough so that pelts taken are of prime quality; 4) to permit sufficient harvest of raccoons to prevent excessive damage to farm crops; and 5) to encourage trappers to conscientiously check their traps and to mark each trap with their name and address.

Experienced trappers injure few dogs because these trappers set traps in places where dogs are unlikely to walk, check their traps each morning, and know how to release a dog from a trap. The best way is to throw a coat over the dog's head, to gently but firmly press the dog to the ground with the knee, and then to use one hand and a foot to open the trap. The trapper is legally responsible for returning the dog to its owner and paying for damages.

To the trapper, hunter, and nature lover, the raccoon is considered a valuable wildlife species. However, to the home gardener who just lost his crop of sweetcorn or to anyone who has just picked up trash scattered about from a tipped-over garbage can, the raccoon is thought of as a midnight marauder. The unwelcome exploits of raccoons include raids on chicken coops, on bunk silos of corn, on melons in the field, and on other

commercial agricultural operations where highly nutritious foods are concentrated near good raccoon habitat. In areas where ducks and geese nest on the ground, wildlife managers control raccoon numbers to reduce waterfowl nesting loss.

The relationship between the raccoon and man varies from place to place and even from one time to another. Sometimes it is desirable to reduce the damage caused by raccoons. At other times it is desirable to increase raccoon numbers. At still other times, we can learn to make better use of the raccoons in an area not by changing their behavior or numbers, but by learning their habits so that our observations take on greater meaning. The following sections summarize what is known about the biology of the raccoon, and the management practices used to change raccoon numbers. References are added to permit and promote deeper investigations into the life and management of the raccoon.

## RACCOON POPULATION CHARACTERISTICS

### Reproduction

The raccoon breeding season is between January and March. In Virginia, the female will normally produce her first litter when she is one year of age. Most of the kits are born in April. The number of young varies from 3 to 6, but the average litter size is about 3. If a female raccoon fails to conceive in January, she will generally breed a month or two later. This is why small, immature raccoons are observed at times when most other young are at least half-grown. Typically, 2 of 3 kits will survive to breed the following year. Survival rates depend on a number of factors, including hunting and trapping pressure, food, weather, predation, diseases, parasites, and other forces of nature.

### Density

Raccoons may be found almost anywhere in Virginia, from heavily populated cities to the most primitive of forests. In many urban and suburban areas raccoon populations have reached higher densities than occur under wilderness conditions. The average raccoon density in rural Virginia is about 1 animal for every 13 acres of suitable habitat. In such prime areas as beaver ponds and brushy river bottoms, densities may be 1 raccoon for every 5 acres. In some populated urban areas, raccoons achieve much higher densities than in rural areas. The lack of hunting and trapping pressures, abun-

dant food from garbage cans and dumps, plus ample bedding cover, allow for these higher raccoon densities. Automobiles and canine distemper often control populations in urban habitats.

### Limiting Factors

Limiting factors are those forces which limit the abundance of animals. If there were no limiting factors, raccoons and all other forms of life would swarm over the earth. Population ecologists study the factors which prevent species numbers from endless expansion. Wildlife managers are trained to recognize limiting factors under field conditions and manipulate those forces to increase or decrease the abundance of raccoons, for example, to levels desired by people.

Food availability can be an important limiting factor for Virginia's raccoons, especially during winter. Poor acorn crops threaten local populations of raccoons. Winter food shortages cause weakness, increased susceptibility to parasites and disease, and probably reduce the number and vitality of young born the following spring. Weak young are more prone to death from a great variety of causes than are healthy, robust young.

Canine distemper and pneumonia are important raccoon diseases. High raccoon densities permit rapid spread of these diseases, resulting in local die-offs. Generally, rabies is not a large problem in Virginia.

Hunting mortality limits raccoon numbers in many areas. An enthusiastic group of hunters, hunting two or more nights each week, can be a major cause of mortality over an area of several hundred square miles. Also, trapping is a source of raccoon mortality in Virginia. Hunters, however, are responsible for most of the raccoon harvest. In Virginia, the number of raccoons harvested by hunters was approximately 350,000 during the 1973-74 hunting season. Virginia trappers took about 12,000 raccoons in the 1974-1975 season. The Alabama Department of Conservation estimated that 25,345 hunters harvested 174,035 raccoons during the 1966-67 hunting season in Alabama. In Tennessee, 81,442 raccoons were reported to have been harvested in 1961.

Predation on raccoons is not great. Bobcats and large owls are the prominent natural predators of raccoons. The courageous and cunning raccoon generally stands up to any confrontation. Even a coon dog has trouble holding its ground against a mature raccoon.

In areas where hunting and trapping pressure is low, raccoons may live as long as 16 years. Under normal conditions, however, the oldest raccoon will be no more than 10 years of age. Many hunters claim an old coon is wiser than an owl and can easily out-wit the hounds.

## RACCOON HABITAT AND MANAGEMENT

The habitat of a raccoon must provide the essentials of life, namely *food*, *cover*, and *water*. The maximum number of raccoons in an area (carrying capacity) depends on the quality and extend of the habitat. When the habitat requirements of the species are known, an area can be managed to increase or decrease its carrying capacity.

### Food

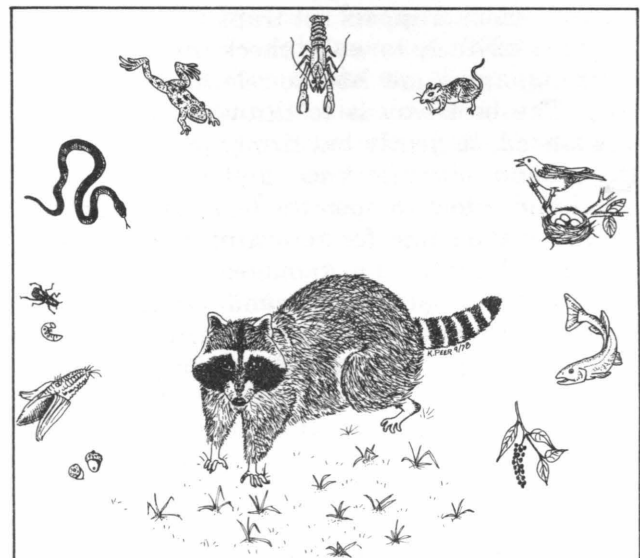
Although it is classified as a carnivore, the raccoon is an omnivore because it eats both plants and animals. Raccoons search out food high in energy and protein. For example, the diet of a raccoon over a year might include the following:

#### Plants

Acorns  
Young Grasses  
Berries  
Cherries  
Peaches  
Plums  
Apples  
Peas  
Potatoes  
Corn  
Tomatoes  
Wild Grapes

#### Animals

Crayfish  
Fish  
Snakes  
Frogs  
Turtles  
Mollusks  
Worms  
Insects  
Birds  
Eggs  
Young muskrats  
Mice



If raccoons eat so many different foods, then are food shortages possible? Yes, especially during a hard winter after a poor acorn year. After such a winter, reproductive success may be effected with fewer kits born per female.

### Cover

Where food is abundant, usually the cover is excellent. Optimum raccoon habitats are brushy riverbottoms, mature oak stands near swamps, woodlots near corn fields, and even mature oak woodlots in suburban neighborhoods. Each of these areas provides not only food, but also places where raccoons can hide during the day and escape the cold winter weather. Large, hollow denning trees are ideal cover, but raccoons may also use rock piles, muskrat lodges, or even abandoned woodchuck burrows as den sites. During the cold winter months as many as 10 raccoons have been observed in a single den tree.

### Water

Raccoons are rarely very far from water. They need to drink and streams, rivers, and swamps provide much of the raccoon's food. The surest way to decrease raccoon numbers is to pollute, dam, or drain wetlands.

### Habitat Management

If the ultimate determinant of raccoon numbers is the quality and extent of habitat, then raccoon densities can be changed by varying cover, food, or access to water.

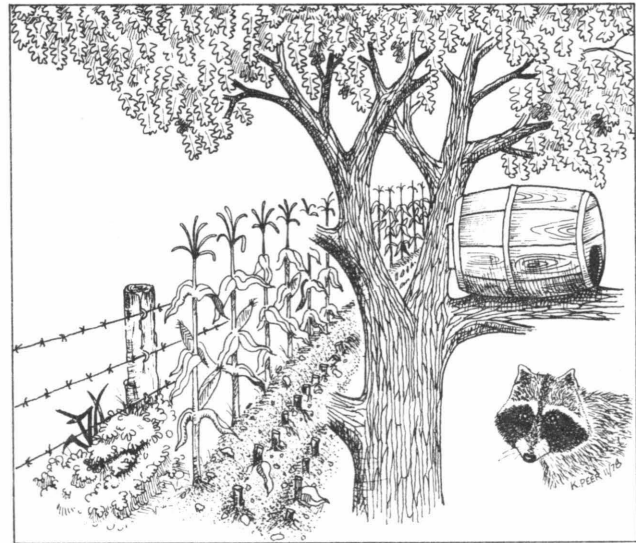
Conservation, and even construction of denning spots, is primary to good habitat management for raccoons. Listed below are practices which work.

1. Prevent denning tree loss in logging operations. Leaving a few old snags in a hollow might save the logger some expense, and these old trees have the potential of housing raccoons.

2. Put up new dens. In places where there are no or very few large trees, but where food and water are abundant, artificial dens have proven effective in increasing raccoon numbers. Large nail kegs or wooden boxes with sides approximately 2 feet in length and openings about 8 inches square will work. Sawdust should be placed in the bottom of the artificial dens. Securely attach dens to trees from 25 to 40 feet above the ground. They should be spaced at about 2 or 3 dens per 10 acres.

Other cover improvements can include the preservation or creation of large stump and brush piles, fencerows, and old fields.

3. Provide more food. Raccoon reproduction may be increased by leaving unharvested strips



of field corn near wooded areas or by planting wildlife plots with corn to supplement the natural food supply during periods of food shortage, such as during the coldest winter months and especially in early spring. This extra food may allow females to produce healthier kits. Mature oak trees which have large and wide canopies are excellent acorn producers and should be maintained.

4. Provide adequate clean water. Most water shortages and pollution are man-made. Water projects, including the building of dams, stream channelization, and the draining of wetlands often destroy important feeding grounds of the raccoon and a host of other wildlife species. Concerned citizens should inform themselves of the details of proposed projects and attend public hearings.

Polluted water is of little value to raccoons and may severely limit the production of aquatic foods. Identify sources of pollution and take actions to eliminate them. Silt from poor farming practices and highway runoff are potentially detrimental to food production and thus raccoon survival. Industrial and municipal water pollution should be reported to the Virginia Water Control Board.

## DISEASE AND PARASITISM

Raccoons harbor a wide variety of parasites and diseases, some of which are potentially dangerous to man and domestic animals. A disease of special concern to raccoon hunters is rabies, since men and dogs can contract this disease. Virginia's raccoons have low levels of rabies, but raccoons from Florida more frequently

carry the disease. Rabid raccoons have no apparent fear of men or dogs and may froth at the mouth. Hunters should prevent their dogs from attacking such raccoons. They should kill the raccoons, place them in plastic bags without touching them with bare hands and bring these animals to the nearest Department of Health office. Of course, raccoon hounds should be vaccinated against rabies before going on their first hunt.

A number of diseases and parasites can reduce raccoon numbers. An extensive study of raccoon biology in Alabama documented several local die-offs and traced them to outbreaks of diseases. When a disease-carrying raccoon is stocked in an area where the resident raccoons have not experienced the disease, a die-off can occur. After a die-off, raccoon numbers will be relatively low for several years. Raccoons also carry parasite eggs, as well as adult parasites, in their digestive tracts. One such parasite is a kind of roundworm which develops in the brain tissue of groundhogs, rabbits, and other game animals. In cottontail rabbits the disease is called wryneck or torticollis because the neck muscles contract and the head is pulled to one side. Infected rabbits often die from this parasite.

## STOCKING RACCOONS

Stocking raccoons is a common practice in Virginia and in many other states where raccoon hunting is traditional. Since the operation is one that costs time and money, the probable results of the investment should interest individuals and groups who plan to stock raccoons.

### Cost and Benefits

The average cost of each raccoon stocked is from \$10 to \$20 at the time of purchase from the dealer. A permit from the Virginia Commission of Game and Inland Fisheries is required before raccoons can be stocked. Also, raccoons brought into Virginia from other states must be quarantened to insure that they are free of disease. If the regulations were followed routinely, the initial cost of raccoons for stocking would rise considerably.

When raccoons are stocked in an area of low raccoon density, the raccoon hunting may improve temporarily. However, the general, long-range status of the population will not be improved by stocking. Stocking is potentially detrimental to native raccoon populations due to transmission of new strains of diseases and parasites.

Another consideration in raccoon stocking is economic. The chance that a raccoon brought from Florida and released in Virginia in April will be bagged by the hunter in the fall is less than one in ten. In Pike and Jackson Counties, Kentucky, it cost \$535.50 for each of 10 raccoons harvested by hunters. These raccoons were captured in Florida, released in April and harvested in November. In the same study it was determined that the cost for each raccoon harvested that came originally from Virginia was \$270.

Hunters will reach their own conclusion on the pros and cons of stocking, but the results of this analysis indicate that it is usually illegal, always expensive, possibly dangerous to humans and dogs, and perhaps injurious to other wildlife.

## CONTROLLING RACCOON DAMAGE

Since raccoons are enjoyed by so many people and since raccoons are important parts of local ecosystems, the aim of pest control programs should be to reduce the damage caused by raccoons rather than to destroy all the raccoons in a locality. Because the raccoon is classified as a fur bearing animal, persons desiring to kill or trap raccoons should check with their local game wardens.

Probably the most frequent raccoon problem is garden raiding. Raccoons relish sweet corn in the milk stage. Experience has shown the authors that the best way to prevent raccoon damage to gardens is to erect a fence of metal wire with a mesh size of not greater than 4" x 4" and to top the fence with an electric fence wire. The fence should be buried to prevent entrance through a hole between the ground and the bottom of the fence. Currently, there are no chemical repellents for raccoons approved by the Environmental Protection Agency. Unless the gardener wants to trap diligently year in and year out, this means of control is not likely to prevent garden damage.

Another frequent problem around the home is garbage can dumping and littering. Once a raccoon has learned the location of vulnerable garbage cans which contain meat and vegetable scraps, the raccoon will make nightly raids. There are three ways to handle the problem. The best way is to build a frame in which to set the garbage cans. The top rail of the frame should be spaced so that once the can is put into the frame, the can cannot be tipped over. Garbage can lids should fit snugly, so that raccoons can't lift off the lid. The second way is to eliminate food

scraps from the refuse by burying them in a compost pile. The third way is to trap the raccoons. Large box traps can be purchased or built for trapping raccoons. VPI&SU Extension Publication 283, *Live Trapping Objectionable Animals*, describes trapping methods in detail. The key to successful raccoon trapping is prebaiting the trap. The trapper should place food in the trap, but wire the trap door so that it will not fall for the first few nights. When the raccoon begins to feed on the bait regularly, then the trap should be set.

In agricultural areas, raccoon damage is usually more of an annoyance than a serious

economic problem. However, there are active raccoon hunters in any farming area who will jump at the chance to hunt problem raccoons. The best way to deal with raccoons which raid hen houses is to block all entrances to the hen house each night after the hens go to roost. For other problems, such as persistent feeding at bunk silos where raccoons tear open the plastic and expose the silage to weathering and further consumption by wildlife, the farmer may have to trap nuisance raccoons. In this instance, corn is a less attractive bait than sardines or some other animal bait.

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