



Managing Iowa Wildlife

Raccoons

Introduction

The ringed tail and black mask of raccoons provide characteristics that make them easy to recognize. Their scientific name (*Procyon lotor*) means "little washing dog," referring to their general appearance, and their carnivorous food-handling habits. Raccoons don't actually "wash" their food. However, they often hunt in and around water and have an exceptionally well-developed touch in front of their feet. This leads them to carefully manipulate nearly everything they pick up with their front paws, giving rise to the myth of "washing" their food. (See figure 1.)

Raccoons are well-adapted and versatile mammals. This is evident from their wide geographic distribution and the variety of habitats they use. They are found as far north as Nova Scotia, across to British Columbia, and south through Mexico and into South America. They are in every region of the United States. During the last 30 years, their range has expanded into the northern Rocky Mountains and the Great Basin. They occur in habitats as different as salt marshes and northern woodlands. There are 26 separate subspecies of the raccoon, but only one is found in the midwestern states.

Because of their wide range and adaptability,

raccoons often interact with humans and their environment. Economically they have been important in the fur trade. Each year thousands of hunters and trappers pursue these animals and receive many hours of outdoor recreational enjoyment. Raccoon hunting and trapping are deeply ingrained traditions in many parts of our country and are enjoyed by young and old.

Raccoons also can be pesky individuals. Many times their habit of eating almost anything gets them into trouble. They become pests when they begin to raid sweet-corn patches, tip over garbage cans, and steal eggs or chickens from the hen-house. Their egg-eating tendencies also frustrate wildlife managers because raccoons enlarge holes in roofs or attics, or enter chimneys to find a safe place to raise their young.

The transmission of disease from raccoons to humans also may be a concern. Raccoons can contract several diseases, some of which can be transmitted to humans or their pets. Rabies is the greatest concern. The eastern states, particularly the southeast and middle Atlantic regions, have the highest incidence of rabies in animals, though levels in the Midwest are very low. Although few U.S. residents get rabies from raccoons, people should be careful with raccoons that act abnormally.

IOWA STATE UNIVERSITY
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Figure 1. *Procyon lotor*, the “little washing dog.” The raccoon, with well-developed tactile senses, is shown here handling a crayfish, a favorite food.

Life History and Ecology

Reproduction

In the Midwest most raccoon mating activity occurs during January and February. Males seek receptive females for mating but take no responsibility for raising the young. Pregnant females give birth in protected sites, such as hollow trees or buildings, after 62 days of pregnancy.

About 60 percent of the one-year-old females and nearly all older females will have one litter each year. On the average, each yearling female will give birth to three young; older females will have four young. However, litters as small as one and as large as eight have been observed. Most young in Iowa are born toward the end of April or early in May.

Young raccoons are born with a thin covering of hair, but enough to show the characteristic eye mask and ringed tail. The ears and eyes of the young are closed at birth and begin to open at about three weeks of age. The female brings no food to the young; milk is their only source of nutrition while they are in the natal den. Interestingly, the female sits upright to nurse the young rather than lying down like many other mammals.

The young become active and begin to follow their mother from the den when they are seven to ten weeks old. Normally if the female is disturbed at the den, she will relocate her litter to ensure its safety. The parental bond is relatively long. Many of the young stay with their mother through the fall and early winter months.

Habitat and Food Habits

“Variety” is the key word in raccoon survival. As “ecological generalists,” they range over a variety of habitats and eat a wide variety of foods. They have adapted well to the changes humans have brought to the landscape. Raccoons in Iowa typically live in and near wooded areas. However, some populations seem to be doing quite well on the prairies of the Dakotas and in urban settings. Raccoons inhabit many types of dens throughout the year. These may include trees, brush piles, buildings, abandoned cars and machinery, chimneys, holes in the ground, caves, culverts, and stormwater inlets. Secure sites, such as buildings and hollow trees, are selected when it’s time to give birth and during the severe winter months.

Raccoons use many different plant and animal food sources and will change foods as they

become available. During spring, raccoons may eat earthworms. During summer, they may eat a variety of fruits, berries, and vegetables, including wild grapes, mulberries, plums, and sweet corn. They also may eat many types of insects, bird eggs, crawfish, and clams. Waste grain, particularly corn, as well as a variety of nuts, including acorns and hickory nuts, are particularly important during the fall and winter. These high carbohydrate foods allow the animals to put on considerable fat reserves to prepare for the cold winter months.

Urban raccoons also may eat a wide variety of foods, but often they depend on the food they find in garbage cans. They may raid garden plots, especially those with sweet corn, and damage lawns by rolling up sod in search of grubs and earthworms.

Movements

Most daily movements of raccoons are within a relatively small area called a "home range." Researchers in Iowa have found home ranges of males to normally be no larger than 2 square miles. Home ranges of females usually do not exceed 1.4 square miles. Juvenile raccoon home ranges are much smaller, with maximum size about 0.6 square miles. (See figure 2.)

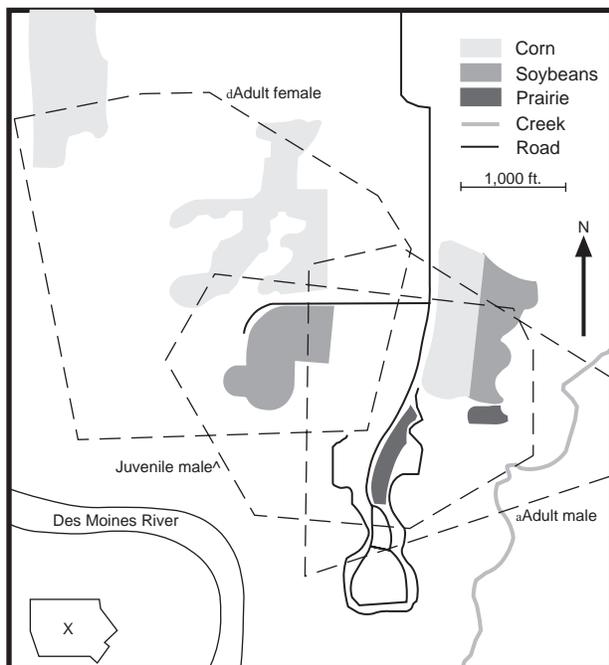


Figure 2. Minimum fall home ranges of three raccoons at the Iowa 4-H Education and Natural Resources Center, Madrid, October 1989. Locations were determined by radio collars attached to live-trapped raccoons.

Depending upon the resources available—food, rest, and denning sites—home ranges of raccoons in other states may vary considerably. In general, the ranges are smaller where resources are plentiful.

Home range sizes of raccoons also become smaller as winter approaches. During extremely cold days in winter, raccoon activity is reduced. They do not go into hibernation but sleep for several days at a time, awakening to eat, drink, or defecate. They may lose more than 25 percent of their body weight during the winter months. Movement outside the den becomes more frequent during mating in January and February, and as spring approaches.

There are two periods of the year when individual raccoons may change their residence in movements called "dispersals." In the fall, some young-of-the-year animals will move to a new location. Some one-year-old males also will disperse in late spring. These movements normally occur only once, and when the raccoons have found a new home, they will usually stay there permanently. In a recent Iowa study, most of these movements were found to range from 5 to 9 miles, though there was a report of a raccoon moving 81 miles. A report from Minnesota indicated a raccoon had moved 200 miles. Although these movements occur annually, less than 10 percent of the animals in a population actually move.

Death and Diseases

In an Iowa study, more than 1,200 raccoons were captured and tagged from 1983 to 1989 in Guthrie County. Nearly 350 captured raccoons were radio-collared to follow their daily movements and to determine causes of death. The study found that about 76 percent of the raccoon deaths in the study area were attributed to hunting and trapping. A second major cause of death was collisions with vehicles, which accounted for about 12 percent of raccoon mortalities. Other causes of death included dogs, coyotes, and drowning. Few, less than 2 percent, died from *distemper*, *parvovirus*, and internal parasites. (See figure 3.) In total, nearly 90 percent of raccoon deaths were related to human activity. In a harvested population, then, disease does not appear to cause a large number of mortalities among raccoons in most years.

That is not to say that raccoon diseases are not of some interest, however. Raccoons contract a number of diseases of concern to humans. *Distemper* occasionally causes raccoon numbers to decline in some locations. However, studies show that this is not as common as once

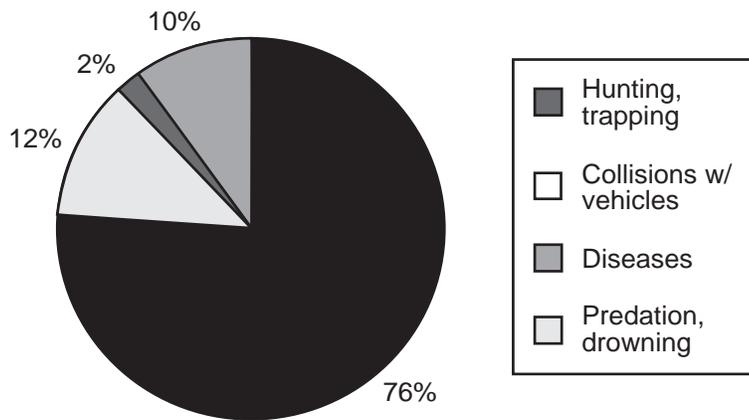


Figure 3. Causes of death in 1,200 raccoons in an Iowa study, 1983-1989.

thought. Raccoons in Iowa often are exposed to *canine*, *feline*, and *porcine parvovirus* but, as yet, there is no evidence showing that raccoons have transmitted this disease to pets or livestock. Iowa raccoons have a low rate of rabies, with about 5 percent exposed.

"Exposure" means that those tested have rabies antibodies in their blood, indicating they have been attacked (but not killed) by the virus, and they cannot infect other animals. Furthermore, they are extremely resistant to the skunk-strain rabies that is common in the Midwest.

Recently there has been concern about the raccoon roundworm (*Baylisascaris*) because of potential exposure to trappers and hunters who might accidentally touch feces. Evidence of these roundworms has been found in more than 65 percent of the raccoons sampled in Iowa.

Despite these fears, records show little cause for concern in Iowa that humans, pets, or livestock contract any of these diseases from raccoons. Of the 4,000 raccoons turned in and tested by the Iowa Department of Public Health in the last 25 years, only 0.7 percent of them tested positive for rabies. That is lower than the rate for dogs (2.3 percent) and for cats (2.8 percent). Moreover, there is no record of any Iowan who contracted rabies from a raccoon and only one possible transmission of the virus from a raccoon to a dog. The Iowa Department of Public Health has recorded no incidents of transmission of rabies or *parvovirus* from raccoons to either pets or livestock. Similarly, there are no known or recorded cases in Iowa of transmission of the round worm to humans or livestock by raccoons.

To continue this excellent record, the simplest advice is to use common sense. If you are a hunter or fur trapper or touch raccoon feces,

follow good hygienic practices. Do not touch your mouth before thoroughly washing your hands. If you observe a raccoon in the wild (especially during the day) that appears sick, is stumbling, or is aggressive, chances are it is sick. **As with any sick or injured wildlife, do not attempt to pick it up, cage it, or otherwise "assist" it.** Avoid it, and contact local authorities. Conservation officers, animal control officers, and other trained people will deal with the animal in the best and safest way.

Economic Importance

The harvest of raccoons through hunting and trapping is an important economic resource for Iowa. From 1985 through 1989, an average of more than 21,000 Iowans purchased a fur harvester's license for hunting or trapping furbearers in the state, though that number fell drastically during the 1988 to 1989 season. The harvest of these animals, as with other game species, is monitored carefully to assure a sustained yield of this natural resource. The harvest of raccoons brings from \$2 million to \$15 million to the Iowa economy each year.

Researchers have found that hunters and trappers typically have no long-term effects on the size of raccoon populations. In a recent Iowa study, an average of 25-30 percent of the fall population was harvested annually. This harvest had no effect on the raccoon population densities from one year to the next. In years when harvest rates are high, young-of-the-year and adult males tend to be taken disproportionately. Adult females in the population remain relatively unaffected and survive to have young again the following spring. Therefore a similar number of raccoons are raised each year, despite harvesting 25-30 percent annually. Research indicates that even harvest rates of up to 40 percent of the fall population do not affect the population level the following year. (See figure 4.)

During the past 25 years, the number of fur harvesters has closely followed the trend in pelt prices. As fur values rise and fall, so do the numbers of Iowans pursuing the furbearer. The number of raccoon and other fur hunters and trappers in Iowa has followed the downward trend of long-haired fur prices in recent years, falling from more than 28,600 youth and adult participants in 1985 to less than 10,500 in the 1989 to 1990 season. About a year's lag appears to occur in the fur harvesters' response to fur prices. An increase in the number of hunters and trappers typically does not occur the first

SURVIVAL OF RACCOONS

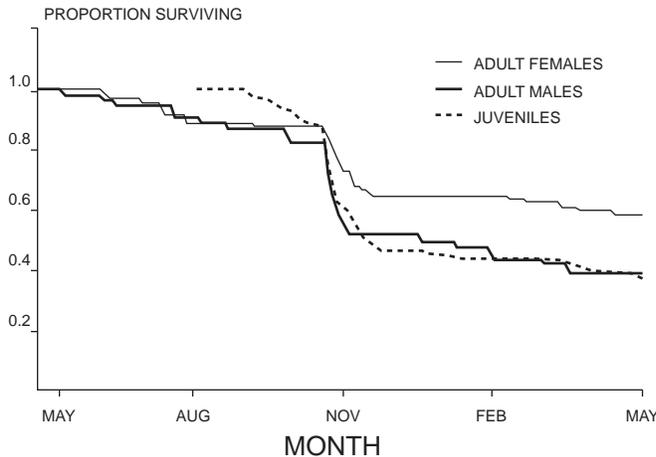


Figure 4. Survival of raccoons over a year. Note that adult females have higher survival rates than either adult males or juveniles. This allows harvest rates up to 40 percent without affecting the total population from year to year.

year of good prices. An increase in fur harvesters usually appears a year after a season with good prices.

In Iowa the price paid per raccoon pelt and the total number of raccoons harvested annually remained low until the early 1970s. Prices and harvest steadily increased until they peaked in the 1978 and 1979 seasons. In 1978, the average price paid per Iowa raccoon pelt was \$31.18, and the harvest was 252,000 animals. The 1979 season showed a slight drop in the price but an increase in harvest to more than 308,000 raccoons. Since then, the average price per pelt has continued to decline though the harvest increased until 1986. The 1990-91 season saw the lowest harvest since the 1970 season, with only 105,000 pelts sold. The harvest reflected the low price paid of \$4.70 per pelt, not the raccoon population, which remains high and healthy. (See figure 5.)

Management

Proper forest and woodlot management will encourage raccoon populations. Two factors are critical: adequate denning trees and food-producing trees. Keeping large, hollow oaks, basswoods, or silver maples (often called “wolf” trees) in a wooded area provides dens not only for raccoons, but also for squirrels, owls, and many other holeneating wildlife. For more information on

den trees, refer to Pm-1351b, *Managing Iowa Habitats: Wildlife Needs That Dead Tree*, available at your extension office. Whether trees are dead or alive, raccoons will use them for rearing young and as sleeping quarters year-round. Maintaining three to five of these wolf trees per acre will help promote raccoon and other hole-nesting wildlife populations. Even hollow, downed logs and brush piles have value as dens for raccoons and other wildlife.

Because of the variety in raccoon food habits, many trees and woody shrubs provide food for them. During the summer months, fruitbearing trees and shrubs serve as food sources for raccoons and other wildlife. These include black cherry, mountain ash, mulberry, and hawthorn trees, and chokecherry, serviceberry, wild plum, elderberry, blackberry, high-bush cranberry, and dogwood bushes. During the fall and winter, nutbearing trees such as oak

and hickory, and shrubs such as hazelnut and ninebark, can provide important nutrients that allow raccoons to survive the winter months. Many of these trees and shrubs must be mature to produce adequate fruit crops. For example, some species of oak must be 60 years old before they bear a good acorn crop. It is important, therefore, when managing woodlands for raccoons and other wildlife, to leave at least five good nutproducing trees per acre. Wildlife are more likely to thrive when a greater variety of plant species are available.

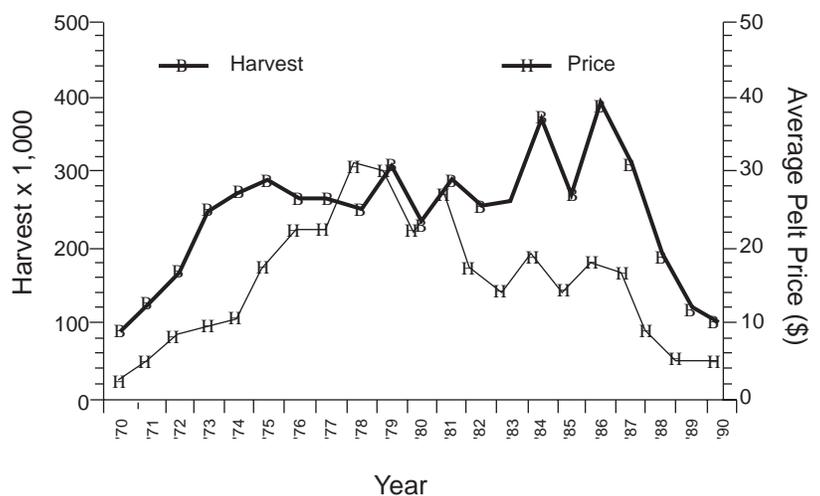


Figure 5. Raccoon harvest and average pelt price in Iowa, 1970-1990.

Raccoons flourish in areas of great habitat diversity. Combine sufficient den and food trees with access to a stream or pond that has crustaceans and frogs, add a farm field that is not fall-plowed where raccoons can glean waste grain, and you have an excellent area for raccoons.

Management Summary

- Maintain three to five hollow standing trees, dead or alive, per acre.
- Maintain downed logs and brush piles as den locations.
- Maintain at least five fruit- and nut-producing trees per acre.
- Plant and maintain a variety of fruit- and nut-producing shrubs.
- Maintain good water quality in streams and ponds to encourage aquatic life for raccoons to eat.
- Don't fall-plow harvested agricultural fields. Leave crop residue to provide food for wildlife and to protect against soil loss.

Problem Control

Where raccoons are a pest problem, control them by excluding them. No poisons or fumigants are registered for raccoon control.

Many vegetable growers, especially sweet-corn growers, have problems each year with raccoons eating their crops. Many techniques have been used to discourage this activity. Some have placed blood meal around the field or let a radio blare; others have tied a dog in the middle of the garden patch.

The primary way to prevent damage to crops is by excluding raccoons from the growing area. Because they are excellent climbers and are intelligent, this goal is difficult to achieve but not impossible. One technique that works well is to encircle the area with an electric fence. A two-wire fence with one wire 4 to 6 inches from the ground and the other at 12 inches will discourage even the hungriest of raccoons. (See figure 6.) A wider, "ribbon-type" electric fence recently has become available and may be successful. Contact your local garden center, farm store, or Premier Fence Systems in Washington, Iowa, for examples. (See figure 6 inset.) As with all electric fences, mow the vegetation beneath the fence to avoid electrical shorts. Although electric fencing is especially useful on a small scale, larger scale applications may be possible, depending upon the value of the crop.

Prevent access to poultry-raising areas by tightly covering doors and windows, and with wire-mesh fencing. Electrical fencing surrounding conventional mesh netting will discourage poultry-hunting raccoons.

Garbage cans fitted with tight-fitting or latched lids will keep out most raccoons. Wiring the cans shut may be necessary if they can be tipped over.

Prevent raccoon access to chimneys by firmly attaching commercially available screened chimney caps to chimney tops. You can also prevent raccoon access to the roof by cutting overhanging branches of adjacent trees. In severe situations, attach three-foot squares of slippery sheet metal to the corners of the building to prevent raccoons from climbing to the roof. (See figure 7.)

When raccoons are found and not wanted in buildings, they can usually be harassed into moving. Often, simply disturbing the animals will cause them to leave. At other times a harsher approach is necessary. One good technique, which does not harm the animal, is to place a rag with cleaning ammonia on it close to the animals. This technique will irritate them enough to make them move elsewhere. If this technique is used on a mother and her young, do it just before sunset. This helps the mother feel secure by allowing her to move her young in the dark. Check the next day to be sure they are all gone, then repair or cover the holes, or other raccoons may enter. If the holes are plugged when the female is gone and the young are still inside, she will find or make a hole to return to her young. In closed areas such as an attic, a supply of mothballs also may encourage them to move.

In some cases, trapping and removing offending raccoons may be necessary. Contact local wildlife officials, conservation officers, animal control officers, or pest control operators for assistance. Never attempt to remove them by hand! Raccoons will defend themselves by biting and scratching if they feel cornered or threatened. They are predators, not "cuddly little bears," as they are sometimes portrayed.

Remember: Whenever you are using exclusion as a control technique, make certain that all raccoons have left or been removed from the excluded area before you use the excluding technique. Sealing them inside will not only cause possible painful death for the animal but also extensive damage to the building.



Figure 6. A two-wire electric fence, properly placed, will help prevent raccoon damage to field or garden crops. Inset shows the “ribbob-type” electric fence used in place of the single wire type. This ribbon fence is more visible to raccoons and other wildlife, and may improve control.

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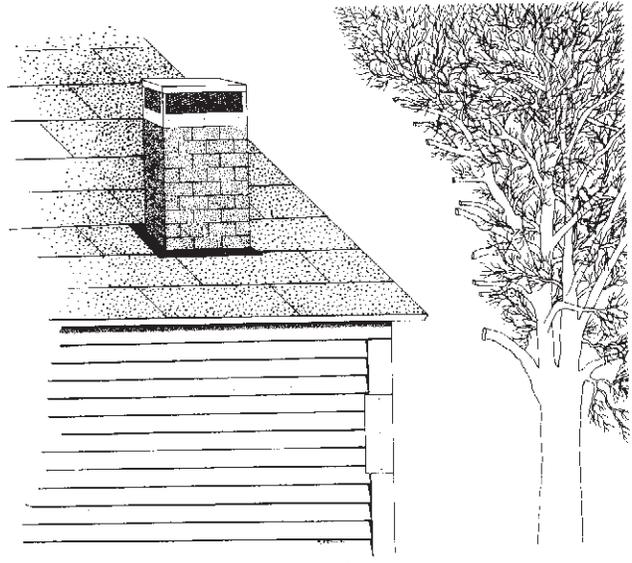


Figure 7. Chimney caps, tree trimming, and sheet metal corners prevent raccoon access to a house roof. Chimneys are popular raccoon den sites, especially in urban areas.

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.