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Wildlife management is often viewed as the enhancement or conservation of habitat to nurture wildlife populations and generally increase their numbers or health.

However, some species at one time or another require quite the opposite to actually eliminate the species or reduce their population to an acceptable level. This “acceptable level” could be determined by conflicts with human populations or other wildlife populations. Examples include removing predators for bobwhite introduction in unfamiliar habitat; fire ant eradication to improve turkey nesting success; or biologists introducing contraceptive inhibitors into urban deer populations to prevent herd increases, thereby decreasing the number of “vehicle vs. deer” insurance claims.

In this article we will identify only a few common mammalian species and their somewhat effective control methods. These control methods are most commonly referred to as wildlife damage control programs and they must be based on sound economic, ecological, and sociological principals to present a positive component of your wildlife management plan.

Spring 2007

First, we must identify the species causing the damage. Since most wild animals are secretive, nocturnal, and not easily observed, we often find evidence of their destructive habits instead of the actual vermin themselves. Characteristics of this damage are the clues to identification of the species, followed by positive identification of specific signs such as tracks, droppings, photos, or actually capturing one of the individuals.

The three species discussed in this article are found almost everywhere in the state of Alabama and across the Southeast, frequently prompting phone calls and on-site discussions with forest landowners. The most prevalent and destructive is the rat, more generally commensal rats (those that live or cohabitate with human populations) which include wood rats, hispid cotton rats, and even the ordinary house mouse. Next, and most worrisome to forest landowners, is the beaver. (We will also discuss muskrats and the identification differences.) Last on our list of pesky little vermin is the common tree squirrel.

Rats!

Sometimes we find ourselves putting things back – for storage, hard times, or

even precious mementoes from our past – only later to return and find them destroyed by little pesky vermin. Chances are you have been in contact with the most famous of all vermin in the Southeast, the Eastern wood rat (*Neotoma floridana*). Sometimes referred to as the pack rat, these rodents are about the size of the common chipmunk or flying squirrel, distinguishable by their hairy tail rather than the scaly tail of most rats, along with their soft fine fur, large ears, and white feet. Because of their relative size, they can do major damage in a short amount of time. Wood rats generally breed more than once a year and produce one to four young per litter.

Economic damage here in the Southeast is concentrated on agricultural crops and equipment. Feeding in barns, cabins, or other infrequently-used buildings, wood rats find food and nesting items that they usually take back outside to a more secluded nesting area. For nesting material, they shred expensive antique furniture and seats from seldom-used farm equipment, and gnaw the wiring harnesses from parked vehicles where they have taken winter refuge. As their

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nickname implies, they take jewelry, small shiny objects, or pieces as large as silverware and “pack” them with the rest of their nesting materials in tree bases, brush piles, or even rock outcroppings. Wood rats are responsible for the transmission of the bubonic plague where it still exists. For this reason, dead or dying rats should not be handled.

Hispid cotton rats and house mice are also classified as commensal rodents and are found living in farm and residential areas throughout the Southeast. Cotton rats are normally found living outside, while house mice live inside. Cotton rats are notorious for their direct competition with bobwhite quail, and are considered one of the major threats to ground bird nest populations. However, these rodents are easily contained through controlled burning since their nests are usually found on the ground or small brush piles made of grass and dried vegetation. Burning should be done during the winter months while quail are busy foraging and not nesting.

House mice were brought over with the European settlers many years ago and are considered the highest mammal species population in the Southeast. Very prolific, they are capable of producing 30-50 young per female, and high concentrations have been found with as many as 200 mice per acre. These rodents are very versatile in their feeding habits, able to survive without water for long periods of time. They cannot see well and are color-blind, relying on their sense of smell, taste, and touch to find their food sources. Curious by nature, they will “sample” anything new in their environment. They are responsible for burrowing around barns and feedlot operations. The majority of the damage they cause is from urine and feces left in food sources, rendering such unfit for human consumption.

Control methods for wood rats, cotton rats, and house mice are simple. Toxicants in the form of anticoagulants are available commercially in the form of baits. These baits are specially formulated to be used around the home or farm, and are a low hazard to pets and children if ingested. Finely-ground or cornmeal-consistency bait is recommended, since it

must be eaten to be effective. Pellet baits are generally not effective on wood rats because they will simply “pack” them away, essentially wasting them. By contrast, if house mice are your problem, pellet baits are well received as they will readily “nibble” on them until they have ingested a lethal dosage. In serious agricultural situations, zinc phosphide applied to grain is very effective on all three rats, but most chemical rodenticides are limited to a certified applicators license. Trapping is also effective using the standard rat snap trap, baited with peanut butter or bacon rind. In seldom-used areas, glue boards may provide effective control around roof vents and openings to the outside. Remember, all methods of control should be placed so that children, pets, and non-target species are protected.

Beaver

Our second pesky little vermin is *Castor canadensis* or the North American beaver, historically one of the most important mammals to inhabit our country. The beaver is the largest rodent found in North America reaching weights in the wild of almost 75 pounds. Most adult beaver commonly weigh around 50-60 pounds and have very dense fur, constituting their importance to early settlers during the cold winter months. The distinctive flattened tail is used as a warning device and counter-lever for the beaver while he carves away timber along his aquatic waterway. Wherever water is found, so is the beaver; from borders of

Mexico through Canada and Alaska, they are everywhere.

Evidence of beaver is usually the first indication that they have moved onto your property. The distinctive cone-shaped stump or stabs left from their feeding and dam building activities are conclusive of beaver habitation. Once they move in, they will feed on trees and woody species that grow near the water. If the waters they inhabit are acceptable to their needs, they will generally live in the soft banks and dams that provide warmth and security. However, if this habitat does not suit their needs, they will begin what many refer to as one of the modern wonders of the world: dam building. To contain water sources, dams can range from a hutch or lodge to length spans of 1,000 feet. The dams usually range from 2-5 feet high, depending on the fluctuation of the water. Beaver are very versatile and will use whatever resources are available, although they do prefer certain trees over others. Most particularly enjoy the storax (gum) found in sweetgum, blackgum, willow, and pines. These tree species are sought out by the beaver for both building materials and food. Crops less than



“Busy as a beaver,” the saying goes . . . the photos opposite illustrate just how industrious, yet destructive, they can be.



Gerald J. Lenhard, www.forestryimages.org



NC Forest Svc Archives, www.forestryimages.org



James Solomon, USDA Forest Service, www.forestryimages.org

500 feet from water also fall prey to the industrious beaver families.

Beaver work and feed throughout the nocturnal hours, usually for 12-14 hours. Monogamous mammals, they normally live in colonies of about eight to ten, and their young are born in the spring. They normally have three or four young per year which mature in one year. Territorial by nature, when the young ones become sexually active they are driven from the colony to start another colony elsewhere. In the wild, their lifespan is about ten years. Man is the only effective predator of the beaver in the water. On land, young beaver are often preyed on by coyotes, bobcats, and river otters.

Beaver pose particular problems for landowners. Even those humans upstream and downstream are affected by their engineering marvels. Timberland

flooding, dam failures, and burrowing have caused serious economic and biological losses throughout the southeastern U.S., with beaver damage estimates placed in the millions annually.

Controlling beaver activity has been controversial for years, and at best, continues to be hit and miss. It is virtually impossible, not to mention financially prohibitive, to exclude them from a water source. Because of the beaver's large size, toxicants have never been approved for fear they may come in contact with children or pets. If there is a valuable tree in the yard or along the waterway that should be protected, heavy hardware cloth can be wrapped around the base of the tree to a height of three feet to safeguard it from the beaver's powerful incisors. The cloth should be adjusted periodically to allow free growth and not girdle the tree unintentionally.

Different drain pipe systems have been developed. However, most have failed as soon as the beaver locate the sound or "feel" the water escaping, and they work through the night to stop the leak!

Many farmers and landowners have resorted to using shotguns and buckshot. Although perhaps self-satisfying to eliminate the source of frustration, most colonies contain numerous beaver. Night hunting is outlawed in much of the Southeast, even for nuisance animals. Trapping is by far the most effective, time conserving, and environmentally-

safe method to remove destructive beaver from your water source. The Conibear type #330 trap is humane and easily mastered by most anyone with woodsman skills. Traps should be used with caution in urban areas or where neighboring dogs roam free. When possible in these settings, place them underwater to prevent contact with non-target species. More information on beaver and the use of Conibear traps is available from the Animal and Plant Health Inspection Service at www.aphis.usda.gov.

As mentioned earlier, muskrats are sometimes mistaken for beaver. Their habitat, lodge building, and burrows in pond dams are similar, but on a smaller scale. Generally, muskrats do not get over three pounds in size and the round tail is the key to identification in the water. Very prolific creatures, muskrats will cycle on a boom/crash axis where their population will grow exponentially until they overpopulate, and then disease or lack of food will cause them to die off in great numbers. Before they crash however, their feeding habits on grains and leafy vegetation along creeks, rivers, ponds, and lakes is phenomenal. In a given year, a pair of muskrats can produce up to 40 offspring. Those offspring will reach sexual maturity by the next breeding season, with the males leaving to find other females and new breeding territories. Again, trapping is the most effective method of control using the Conibear 110 or even leg-hold traps. Quick attention is necessary in control of muskrat activity.

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Squirrels cause damage to pines by tearing away the cones.

Squirrels

Last on our list of pesky little vermin is the common tree squirrel found throughout the Southeast and especially in Alabama. This includes the Eastern gray squirrel (*Sciurus carolinensis*), the larger fox squirrel (*Sciurus niger*), and the elusive and mostly nocturnal Southern flying squirrel (*Glaucomys volans*). Each of these species fills a different niche in the canopy of woodland forest they inhabit. Depending on their location, each species varies in color and texture: from all black in the Deep South, to reddish brown with a black face in the coastal plains, to almost silver above the Mason-Dixon Line. Variations are found in the Eastern gray squirrel from reddish gray coats to silver, even in the same geographic location. The Southern flying squirrel varies from a dark shade of brown to a light tan coat with a lighter whitish underside.

All Southern squirrel species inhabit the forest overstory but usually occur in different basal area densities. In other words, the Eastern gray squirrel is more abundant in thick forests of hardwood and pine, whereas the fox squirrel will be found in lower density, often in open-grown stands of pine and hickory. In Alabama, fox squirrels may be found around old farm sites, overgrown fields, and on estate-size yards where the limbs of each individual tree do not touch. Usually a basal area of 30 or less will contain fox squirrels, as was common during the open burning days of bobwhite quail and longleaf pine.

Squirrels have a wide variety of food habits and sources; the obvious diet being mast (hard and soft) which is eaten in the fall and stored through the winter. In the spring, their diet changes to flower buds, tree buds, bushes – anything with a soft emerging bud is



fair game. They have been known to destroy ornamentals, fruit trees, and flowering plants while foraging on early buds. In the summer their diet changes again to fruits, berries, fungi, and available grain/corn sources found in gardens and cultivated farming operations. Flying squirrels are the only carnivores of the species, eating bird eggs, young fledglings, and flying insects when readily available.

Squirrels mate twice a year, once in winter and again in summer, typically having two to three young per litter. Their lifespan usually does not exceed four years. Squirrels are vulnerable to a number of diseases, and normally are not hunted until after the first frost because of “wolves,” botfly larvae that burrow into their skin during the summer months. Although the larvae do not affect the quality of the meat, many old-timers refuse to hunt until the winter frosts have killed the larvae.

A common complaint is, “I think I have squirrels nesting in my attic.” Frequently in residential areas, they seek refuge in attics, barns, or any dry area that will afford them protection from snakes, owls, and hawks. The power

company is sometimes called out on transformer outages caused by squirrels using the power lines to cross roads and travel from tree to tree. Their destructive ability is often discovered where they have gnawed siding, eaves, and construction material so they can enter and exit their nesting area in your home. Squirrels are frequently responsible for expanding the holes on bluebird, woodpecker, and other cavity nesting bird houses so that it will accommodate their larger size. Once inside they will destroy the bird nest, build their own nest, and continue to use the cavity for years.

To prevent squirrels from entering your home, close openings once the squirrel has left the building, and place wire mesh over openings that cannot be closed. Trim limbs and trees away from your house. If the animals are getting into your home via a power line, cut a 3-foot section of 2” pipe and split lengthwise. Call the power company and ask them to place the pipe around the power line that enters your home; squirrels cannot cross the pipe without falling off. Do not attempt to place the pipe yourself, because you may be electrocuted. Squirrels are considered game animals in much of the Southeast. It is not advised to kill or trap them outside legal season without first notifying your local Game and Fish office and asking their advice.

Most wildlife management plans are general and allow for flexibility to incorporate damage control activities. The key to implementing damage control activities is to alter or change the habitat to increase the desired species and decrease the non-desired species. Although some species will remain regardless of your efforts, controlling their population numbers is possible. There are many online and on-site resources available to landowners, homeowners, and interested parties. It is your responsibility to find your problem, identify the source of the problem, then apply the control methods in a safe and effective method to protect yourself and the non-target wildlife you are attempting to conserve, and lastly, evaluate your success. As a landowner, biologist, or forester, it is your responsibility to leave the forest in better shape than you found it. ♣