

Alaska Full Vertebrate Pest Control Manual



Category Seventeen A

In general, applicators who apply pesticides to property other than their own must obtain certification from the Alaska Department of Environmental Conservation (ADEC) Pesticide Program. Applicators who apply restricted-use pesticides, regardless of location, must also be certified.

Category Seventeen A, Full Vertebrate Pest Control, is intended for individuals who apply pesticides, whether indoors or outdoors, to manage vertebrate pests, including rodents, birds, bats, squirrels, and other wildlife.

The information needed to successfully complete the written core examination required for all certified pesticide applicators in Alaska includes:

1. National Pesticide Applicator Certification Core Manual;
2. Alaska Core Manual; and
3. State of Alaska Pesticide Regulations in Title 18, Chapter 90 of the Alaska Administrative Code (18 AAC 90)

The information needed to successfully obtain certification in Category Seventeen A in Alaska includes:

1. This Alaska Manual; and
2. Alaska Department Of Fish And Game *Rat Control For Alaska Waterfront Facilities*

Learning Objectives for This Manual

- Define vertebrate.
- Explain how signs of mice are similar and different from those of rats.
- Describe how to trap voles.
- Explain why rodenticides are not recommended for voles.
- Describe how to get bats out of a structure.
- List some things that may repel bats.
- Explain why bat eradication should not be attempted in summer months.
- Describe how to trap squirrels.
- Explain why rodenticides are not recommended for squirrels.
- Explain which kinds of birds are protected from capturing, killing, or interfering with nests.
- Describe some ways to exclude birds from nesting or roosting on buildings.
- Describe each of the three different types pesticides that may be used against birds.
- Explain the best way to reduce damage from hares, rabbits, moose, deer, elk, or beaver.

CALCULATIONS

Precise and accurate application is important for every pesticide application but this is particularly true for the types of pesticide applications allowed under Category Seventeen A. Strong math skills, including the ability to calculate odd shaped areas, mixing ratios, rates of application, etc. will be necessary to successfully pass the Category. To ensure you can pass the calculations portion of the Category Seventeen A Exam, you will need to carefully review pages 164-165, and 190-192 in the National Core Manual. Additional resources for pesticide applicator math are available online from the [Purdue Pesticide Program](#).

VERTEBRATE PESTS

Vertebrates are any animals with a backbone or spinal column. This includes mammals (humans, moose, bats), reptiles (lizards, snakes), and birds. Insects, snails, and worms are examples of invertebrates. Vertebrate wildlife such as birds, bats, and moose are not considered pests in their normal habitats, but may become pests when they conflict with humans. A few vertebrates, such as rats and mice, are common pests in urban and industrial sites.

With the exception of rodents, there are very few pesticide products designed for use on vertebrate pests. Most of those available are repellents which use various odors to discourage animals. Non-chemical methods of control, especially exclusion, are generally more effective. However, application of pesticides to the property of others, including odor-based repellents, requires the applicator to be certified.

RODENTS

Mice, rats, and voles are significant pests in Alaska. Applicators who wish to focus ONLY on rodent control may wish to become certified in, Category 17B, Limited Vertebrate Pest Control, is an option.

Rats

Norway rats are a common pest in Alaska, and can be very destructive. Detection, prevention, and control of rats is described in the Alaska Department of Fish And Game's *Rat Control for Alaska Waterfront Facilities*.

Mice

The house mouse is a common household pest. These rodents are not native to Alaska, but survive well here both inside structures and sometimes outdoors. Mice cause similar damage as rats.

The house mouse is a small gray rodent with a slightly pointed nose, small, black, protruding eyes, and large mostly hairless ears. The adult mouse can be distinguished from a young roof rat because the head and feet of the mouse are distinctly smaller in proportion to its body size. The head and body of adults are 2½ to 3½ inches long. The tail is hairless, and adds three to four inches to the animal's length.

Signs of mice are similar to signs of rats, with some small differences. The feces are smaller, only 1/8 inch to ¼ inch long, and are pointed, rather than rounded. Smudge marks left by rats are much more obvious than those from house mice. Where rodents have gnawed, the size of the tooth marks can help distinguish whether it was caused by rats or mice.

Prevention and control of mice is similar to that for rats.

Voles

There are several species of voles in Alaska; red-backed and meadow voles are most common. They mainly eat grasses and seeds. They are three to six inches long, with short ears and short tails. They can cause damage by tunneling through vegetable and flower gardens and feeding on plant roots. They may destroy tree roots or girdle the trees just above the soil line.

Voles are active both day and night throughout the year. They spend most of their time underground or in dense grass. Tunnels with one inch openings and runs through heavy grass or thatch show where voles are living. In winter they tunnel under the snow and line the tunnels with vegetation. Winding trails of packed vegetation are often seen soon after snow melts.

Mowing or trimming vegetation and eliminating thatch will reduce habitat for voles. Tree trunks can be protected by wrapping them with ¼ inch mesh hardware-cloth. The cloth should be wrapped around the lower part of the trunk, and must be buried 6 inches below the soil surface. Mousetraps are also effective for controlling voles. Excavate a small part of a tunnel, place a trap, baited with peanut butter in the tunnel, and cover the opening with boards.

Many rodenticides list voles as a target species, and can be effective against voles. However, voles are a main food source for many predators including hawks, owls, foxes, wolves, martens, weasels, and shrews. Due to the likelihood of secondary poisoning, use of rodenticides for voles is not encouraged. Trapping is the preferred control method for voles.

Shrews

There are about ten species of shrew in Alaska. They are three to six inches long with a long pointed nose and long whiskers. They have very short legs. Shrews are active all year.

Shrews are often mistaken for mice, but they are not rodents. Shrews are actually beneficial since they eat insects. They typically stay outside of structures, unless lured in by meat. Shrews do not cause damage to plants or structures, and are not considered pests; leave the shrews alone.

BATS

There are several species of bat in Alaska. The little brown bat is the most common. These bats are dark brown, and only 3-4 inches in length. Bats are the only true flying mammals, and are generally beneficial because they feed on insects.

Little brown bats live in colonies or groups. They sometimes hibernate or roost inside buildings in attics, wall and ceiling voids, chimneys, and other small spaces. Bat droppings and urine can cause a foul odor, may stain walls and ceilings, and can even lead to structural collapse. They are also likely to create squeaking and scratching noises.

During warm weather, bats feed on insects. They are generally not active in bright daylight. They rest in dark, sheltered locations such as caves, buildings or hollow trees. They may hibernate in buildings over the winter.

Bats are associated with rabies and other diseases in many parts of the world, but it is extremely rare in Alaska. Bats do bite so they should always be handled with heavy gloves.

The best way to control bats is to exclude them from entering houses and structures. The first step is to determine where they are located and where they are entering and exiting the building. Bats can squeeze through small openings less than an inch in diameter. Look for loose flashing, vents, shingles or siding. They may also enter under eaves and soffits, at cornices, louvers or doors, through chimneys, or where utility pipes or wiring enter. Look for any droppings or smudges near openings. You may need to observe bats near twilight as they leave their roost to feed. Bat droppings look like mouse droppings, except they contain parts of insects and tend to accumulate in one spot. You may also be able to track bats by the odor of their guano.

Before bat-proofing a building, first make sure all bats have left the structure. Create a one-way-net and leave it in place for several days until you are sure all bats are gone. Simply hang ¼-inch mesh bird netting loosely over the entrances. Tape down the top and sides, but leave the bottom free-hanging about one foot below the opening. This allows bats to escape but not re-enter. After evicting the bats, seal up all openings and gaps to prevent bats from re-entering the structure.

Bright lights can be used in attics or other large areas to repel the bats and encourage them to leave. There are now some registered pesticide products containing naphthalene that claim to repel bats. Ultrasonic devices do not repel bats.

Avoid doing any bat removal during summer months. Young bats remain roosting inside during June and July until they are old enough to fly. Do all bat removals and exclusions in early summer (before bats are born) or late fall so that young bats are not trapped inside, where they will die.

TREE SQUIRRELS

There are two types of tree squirrels in Alaska; red squirrels and northern flying squirrels. Northern flying squirrels live in dense forest canopies and generally are not considered pests.

Red squirrels may move into structures, where they can be very destructive. They may chew on woodwork, tear out insulation or mattress stuffing for nesting material, cache food stores, or gnaw on wires. They may travel on power lines and short out transformers. They also create noise within walls and attics.

Red squirrels average about one foot in length (including their bushy tail), and are dark red color with a white underbelly. They are very energetic and are known for their noisy chatter. They remain active all year. Red squirrels mostly feed on spruce cones, but are also very attracted to food from bird feeders.

The best way to control squirrels in structures is to exclude them. The first step is to find out where the squirrels are entering. They can fit through almost any small opening, including holes that they gnaw through siding or shingles. Look also for knotholes, joints between siding, soffits,

attic louvers, ventilators, chimneys, and openings where utility wires or pipes enter. Seal all openings or cover with heavy wire mesh.

Squirrels can be trapped with rat snap traps. Bait the traps with peanut butter, which will stick to the trap and keep the squirrel from snatching the bait and escaping. Traps should be located on the roof, the base of trees, or in the attic. Make sure to tie or nail down the trap. Red squirrels are considered furbearers in Alaska, but there is no closed season, and no bag limit for hunting and trapping of red squirrels.

There are many pesticide products that list squirrels as a target species, and can be effective against red squirrels. However, squirrels are very mobile, and are a main food source for many predators including hawks, owls, and, martens. Due to the likelihood of secondary poisoning, use of rodenticides for squirrels is not encouraged. There are also several pesticide products that claim to repel squirrels.

BIRDS

Birds in Alaska cause a variety of problems which may result in needing to control them.

- Gardens and landscaping may be damaged by birds such as magpies, crows, starlings, woodpeckers, pigeons, sparrows, robins, and geese who may feed, roost, or nest in these areas.
- Goose droppings may foul lawn areas in parks and yards.
- Attacks by nesting gulls are common in urban areas.
- Some urban areas have problems with large flocks of pigeons or other birds, which are a nuisance due to accumulation of droppings. Bird droppings near nesting and roosting sites may build up into a thick layer over time. They also contain ammonia and uric acids that can damage structures and can land on cars or people.
- Birds pose a significant risk to aircraft safety if they are present near landing strips or runways. In these areas, food sources such as grass or insects must be eliminated.
- Birds may carry some infectious diseases, including encephalitis, histoplasmosis, salmonella, and other viruses.

Before determining how to control a bird pest problem, it is important to understand that almost all birds are protected by Federal and state laws. Most birds in Alaska fall under the Migratory Bird Treaty Act, which makes it illegal to injure, capture, or kill these birds or to interfere with their nests. Pigeons, starlings and house sparrows are not directly protected because they are introduced species.

Bird netting can be used to reduce damage to gardens. Make sure the netting reaches the ground or birds may fly under the net and become trapped.

Canada geese prefer mowed lawn areas. Barrier fencing can be used to keep geese out of an area. Re-landscaping to eliminate large lawn areas may also be useful. Odor-based repellents (discussed below) are also an option.

Excluding birds from structures can reduce the number of birds nesting or roosting on buildings. Eliminate large crevices and block openings with netting or screen. Ledges and other roosting/nesting sites can be netted or have spike strips installed. Tacky gels are designed to be sticky enough to make a bird uncomfortable, but not so sticky that the birds are trapped. They can be applied to ledges and other roosting areas. These techniques can be used for any species of bird, provided you don't interfere with existing nests.

Frightening birds with scarecrows, reflective tape, loud noises, or other scare tactics rarely works over the long-term, as birds become used to the devices. Ultrasonic devices do not repel birds.

Removing nests and eggs may help reduce the number of birds in an area. However, it is illegal to interfere with the nests of any birds except sparrows, pigeons, and starlings.

Trapping, including net guns, may help to reduce the number of some birds. All traps must be removed if non-target birds are in the area, which makes this technique unpractical for most situations. You may be federally prosecuted if protected birds (all except pigeons, starlings, and sparrows) are impacted.

Avitrol is a pesticide product which is marketed as a "frightening repellent". Birds that eat the bait have seizures and send out distress signals, which scares off the rest of the flock. While only a small number of birds are killed, the risk of poisoning a protected bird is high. Frightening repellents should only be used in cases where bird control is critical. All bait must be removed if any non-target birds are present, which makes this technique unpractical for most situations. You may be federally prosecuted if protected birds (all except pigeons, starlings, and sparrows) are impacted.

Chemical sterilants are fertility control pesticides that prevent eggs from becoming fertilized. It may only be used to control non-protected birds. It will not kill birds but populations will slowly decline over the years. All bait must be removed if any non-target birds are present, which makes this technique unpractical for most situations. You may be federally prosecuted if protected birds (all except pigeons, starlings, and sparrows) are impacted.

There are several odor-based repellent pesticides designed for birds. These products contain methyl anthranilate. It is made from grapes and has a pleasant, fruity scent, and is used as a flavoring in some grape drinks. However, birds avoid the odor. This repellent doesn't harm the birds, so it may be used to discourage any type of bird. In some cases the product is dispensed into the air with a fogger for short term removal of birds. Other products are designed to be sprayed onto vegetation or structures, where it may remain effective for up to a week. These products can be sticky or unpleasant for humans, so care must be taken when applying. This control may not be used in areas where it may interfere with nesting birds. This is the most common chemical control used for birds in Alaska, since repelling birds without harming them is not federally prohibited.

OTHER VERTEBRATES

There are a number of other types of wildlife that occasionally become pests. This includes hares, rabbits, moose, deer, elk, beaver, porcupine, and musk rats.

There are two species of hares in Alaska, the snowshoe hare and the Alaska hare. There are also introduced domestic rabbits. Hares don't use dens and burrows for shelter or to escape from predators. Rabbits make and use nests and burrows. Hares and rabbits can cause extensive damage to gardens and crops. Moose, Sitka blacktail deer, and elk (introduced in some locations) also browse on or trample gardens and crops. They can also present a safety hazard to people and pets. Beaver and porcupine may damage trees by feeding on the bark or cutting down smaller trees (beaver). The main problem caused by musk rats is burrowing.

One of the most effective methods of reducing damage for most of these pests is to fence the animals out. For rabbits and hares, the small mesh fence must be about three feet high, with the bottom 6 inches buried. For beaver, the fence must be at least four feet tall. For moose, deer, and elk, it may take very substantial fences to keep them out.

Protect individual plants or trees by wrapping or encircling with hardware cloth (for rabbits and hares) or fencing. Porcupines move from tree to tree on the branches, so wrapping trees may be less effective.

There are several registered pesticide products that claim to repel various wildlife. Some repellents are contact or taste repellents. Make sure these products are not applied to fruits or vegetables that are intended for consumption. These products protect only the parts of the plant that they are applied to, and won't protect new growth.

Many repellents are odor-based. They produce an odor that is offensive to the pest. Some studies have found that products containing putrescent eggs are more effective than products containing blood or predator urine.

All of these animals except domesticated rabbits are considered game in Alaska; contact the Alaska Department of Fish and Game for any regulations on hunting or trapping.

Sources of Information:

- Florida Public Health Pesticide Applicator Training Manual, Chapter 8, http://entnemdept.ufl.edu/fasulo/vector/chapter_08.htm
- Alaska Department of Fish and Game species profiles, <http://www.adfg.alaska.gov/index.cfm?adfg=animals.main>

ALASKA DEPARTMENT OF FISH AND GAME RAT CONTROL FOR ALASKA WATERFRONT FACILITIES**Learning Objectives for the Rat Control Manual**

Regulation

- List activities and actions related to rodents that are illegal in the state of Alaska.
- Describe the identification, biology, development, behaviors, and damage caused by rodents.
- List some human health problems caused by rodents.
- Explain how rodent populations can impact wildlife.
- Explain the purposes of inspecting an area for rodents.
- Describe the various signs of rodents that should be looked for during an inspection.
- List three types of non-natural food sources that rats rely on.
- Describe ways to improve sanitation to help reduce rodents.
- Describe the types of pathways that rats prefer.
- Describe the types of shelter areas that rats prefer.
- Describe some methods to prevent rats from coming ashore from ships or boats.
- Describe some methods to control or prevent rats from invading ships or boats.
- List methods to exclude rodents from entry into a structure.
- Describe good locations for placement of rodent traps.
- Describe three effective stations to protect rodent traps.
- List effective ways to bait traps.
- Explain how most current rodenticides kill rats and mice.
- List some of the safety features of rodenticides that are designed to help prevent accidental poisoning of children and dogs.
- State the best way to prevent non-target animals from accessing rodenticide.
- State how often bait stations should be checked.
- Describe how to place bait stations for most effective rat control, including how far apart bait stations should be placed.
- Describe some hazards associated with the use of pellet rodenticides.
- Describe a situation where liquid bait would be appropriate.
- Explain how tracking powder works to kill rodents.
- Describe some precautions that must be taken when using tracking powders.
- Explain why rodent control will not be successful if it only targets a single site.
- List some elements of an effective rodent control plan.

Before Using Any Pesticide

STOP

**All pesticides can be harmful to health
and environment if misused.**

**Read the label
carefully. Use only
as directed.**