

LESSON 10: Rodent Management

TYPE OF INSTRUCTION: Lecture and demonstration

TRAINING TIME: 2 Hours

TOOLS, EQUIPMENT, AND MATERIALS: None

PERSONNEL: One instructor, MOS 91S or AOC 72 series

INSTRUCTIONAL AIDS: Projection equipment, screen, PowerPoint presentation

REFERENCES: AR 40-5, Preventive Medicine; FM 21-10, Field Hygiene and Sanitation; FM 4-25.12, Unit Field Sanitation Team; FM 4-02.17, Preventive Medicine Services; FM 3-05.70, Survival; FM 4-25.11, First Aid; FM 4-02.33, Control of Communicable Diseases Manual

STUDY ASSIGNMENT: FM 4-25.12, Chapter 2

STUDENT UNIFORM AND EQUIPMENT: Duty uniform; Soldier's Guide and pencil/pen; FM 21-10; FM 4-25.12

TRANSPORTATION REQUIREMENTS: None

Section I. INTRODUCTION

Show Slide FSTCC0010-1: Title

OPENING STATEMENT: Throughout history, rodents have played an important role in human affairs. Rodents are carriers of several diseases, and are a host for many more. One of these deadly diseases is plague. This disease alone caused the death of approximately one fourth of the population of Europe during the middle ages. Plague still occurs today, even in the United States. In addition to disease transmission, rodents cause millions of dollars of damage to crops and foods each year in the U.S. alone. This lesson covers rodent characteristics as well as the intimate relationship of rodents to human disease, rodent management, and dead rodent disposal.

Show Slide FSTCC0010-2: Lesson Objectives

NOTE: Inform the students of the enabling learning objectives for this lesson.

LESSON OBJECTIVES

After completing this lesson, you should be able to:

- 10-1. Describe the general characteristics of rodents.
- 10-2. Identify the habitat, life cycle, food preferences, and physical characteristics of the 3 species of rodent important to military operations.
- 10-3. Name the human diseases associated with rodents.
- 10-4. Identify the measures used to control rodents.
- 10-5. Identify the processes and procedures associated with the disposal of dead rodents.

Section II. EXPLANATION

Show Slide FSTCC0010-3: Rodent Characteristics

10-1. RODENT CHARACTERISTICS

Rodents are a large group of mammals that include a wide variety of animals such as squirrels, chipmunks, prairie dogs, rats, and mice. Nearly 40% of all mammals are rodents. Two characteristics set rodents apart from other mammals. First is their two sets of chisel-like incisor teeth. The second is the absence of canine teeth. This tooth arrangement makes it easier for them to maintain their particular eating habits since rodents are primarily plant and seed eaters. During recent years three particular species of rodents have closely associated themselves with humans for food and shelter. These are the species we will discuss in this lesson.

Show Slide FSTCC0010-4: Norway Rat

a. Norway rat.

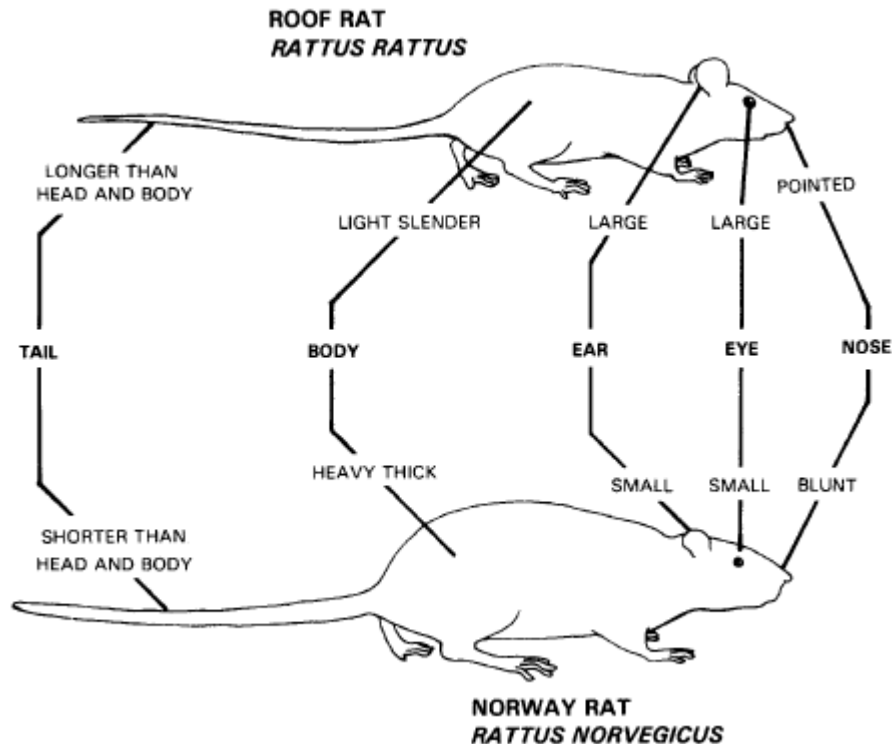
(1) Characteristics. The Norway rat has a tail that is shorter than the combined length of the head and body. Its body is thick and its nose is blunt. The eyes and ears are small. As an adult, the Norway rat may weigh up to sixteen ounces (1 pound).

(2) Habitat. The Norway rat is usually found at ground level in temperate or moderate regions. These rodents live on farms and in cities. Their shelter is most often a burrow in the ground.

(3) Food. Norway rats require from $\frac{3}{4}$ to 1 ounce of food a day and up to 1 ounce of water. Living in close contact with humans has given the Norway rat a taste for

human food. Rather than plants and seeds they prefer meats, fish, and garbage. They're very brave and have been known to venture as far as 100 to 150 feet from their shelter to search for food.

(4) Life cycle. In the wild the Norway rat will live for up to one year. They reach sexual maturity between three and five months of age. They will usually have seven or eight litters a year. While a single female rat may have as many as eighty-four young per year, only about twenty of them are actually weaned.



Show Slide FSTCC0010-5: Roof Rat

b. Roof rat.

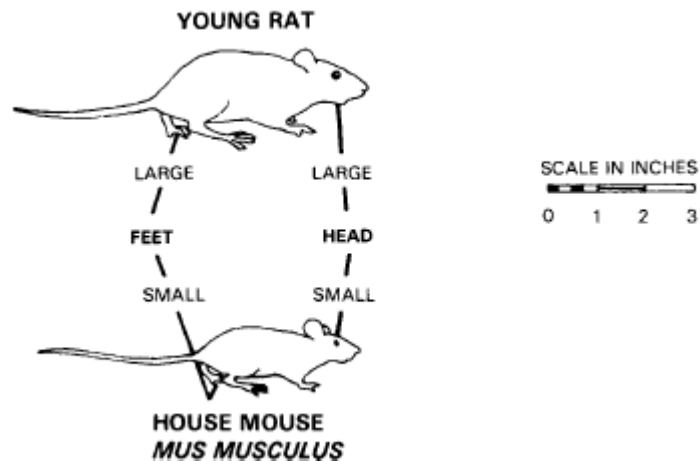
(1) Characteristics. The roof rat has a tail that is longer than the combined length of its head and body. Their body is slender and their nose is pointed. Their eyes and ears are large. As adults they may weigh from eight to twelve ounces.

(2) Habitat. The roof rat lives in warm tropical or sub-tropical climates. They are often found near shipping ports and coastal areas. You may also find the roof rat living in attics or between the walls of buildings. Roof rats are excellent climbers, so you may also find them nesting in trees.

(3) Food. Their preferred diet consists of vegetables, fruits, and grains. However, they will also eat human food and garbage. Their daily requirements consist

of $\frac{3}{4}$ to 1 ounce of food and up to one ounce of water daily. They, too, have been known to roam from 100 to 150 feet from their primary shelter looking for food.

(4) Life cycle. The life span of a roof rat is approximately one year. And, like the Norway rat, the female reaches sexual maturity at three to five months of age. The roof rat will typically have about six litters per year. A total of about twenty offspring will be weaned.



Show Slide FSTCC0010-6: House Mouse

c. House mouse.

(1) Characteristics. The house mouse has a tail that is roughly the same length as its head and body combined. They have a small body and a pointed nose. Their eyes are small and their ears appear large for their body. As an adult, the house mouse weighs $\frac{1}{2}$ to $\frac{3}{4}$ of an ounce.

(2) Habitat. The house mouse can easily adapt to a variety of living conditions throughout the world. They often live in houses and outbuildings, but have also been known to gnaw nest holes in frozen beef carcasses in storage lockers for shelter.

(3) Food. The house mouse diet consists of any food available. It does prefer grain and grain products, such as bread. The daily ounce of food and $\frac{1}{20}$ th of an ounce of water. They have been known to roam up to fifty feet from their shelter looking for food.

(4) Life cycle. The house mouse lives for up to one year. The female becomes sexually mature at six weeks. This is considerably sooner than the other rodents we have discussed. The gestation period for the house mouse is a short nineteen days. Each year the female is capable of producing six to eight litters. From these about thirty-five young are weaned.

Show Slide FSTCC0010-7: Diseases they Carry – Leptospirosis

10-2. DISEASES CARRIED BY RODENTS

Rats and mice are harmful to both humans and domestic animals. They are carriers of diseases that are transmitted to humans both through direct contact and through contact with their feces and urine.

a. **Leptospirosis.** This disease is caused by a disease organism that is shed with the animal's urine. Humans are infected when their broken skin or mucous membranes come in direct contact with the urine or tissue of an infected animal. They may also contract the disease if their broken skin or mucous membranes come in contact with contaminated water or moist infected soil. Humans can also contract the disease if they eat food that has been 'marked' with the animal's urine or feces.

Show Slide FSTCC0010-8: Diseases they Carry – Salmonellosis

b. **Salmonellosis.** This disease is caused by the disease organism being shed through either the urine or feces of an infected animal. Infections most commonly occur when humans eat food that is contaminated or food that is prepared on a contaminated surface. Mice are more common carriers of this disease than rats.

Show Slide FSTCC0010-9: Diseases they Carry – Hanta Virus

c. **Hanta virus.** There are a variety of hanta viruses, but all are contracted in the same manner. These diseases are transmitted through dried rat or field rodent urine and feces. Infection occurs when the dried fecal and urine particles are inhaled.

Show Slide FSTCC0010-10: Diseases they Carry – Rat Bite Fever

d. **Rat bite fever.** As its name implies, rat bite fever is caused by the bite of the rat. The organism that causes the fever is found on the teeth and gums of the rat.

Show Slide FSTCC0010-11: Diseases they Spread

10-3. DISEASES SPREAD BY RODENTS

Not only do rats and mice carry harmful organisms that cause disease in man, but they are also the host for fleas and mites, known as ectoparasites, which also carry diseases.

Show Slide FSTCC0010-12: Diseases they Spread – Plague

a. **Plague.** This is the most familiar arthropod-borne disease known to man. It is transmitted to humans primarily when the fleas of the infected rodent bite them. Humans may also acquire the disease by exposure to infected animal tissue. This

disease is found all over the world and can be passed from human to human, as is often the case in an epidemic.

Show Slide FSTCC0010-13: Diseases they Spread – Murine Typhus

b. **Murine typhus.** This infection is transmitted through the feces of an infected flea. When a flea bitten soldier scratches the bite, he rubs the flea feces into the skin causing the infection.

Show Slide FSTCC0010-14: Diseases they Spread – Rickettsial Pox

c. **Rickettsial pox.** This is a mild disease which is transmitted from mice to humans by the bite of the house mouse mite.

Show Slide FSTCC0010-15: Rodent Management

10-4. RODENT MANAGEMENT

Rodents can be a problem in any area where soldiers live; whether they live in a billet or a long-term bivouac site. Where there is food, water, and shelter there is the possibility of rodent infestation. As with any potential problem, the earlier it is detected, the easier it is to control or eliminate.

Show Slide FSTCC0010-16: Rodent Survey

a. **Rodent survey.** Conducting the rodent survey is very important. It is the most important tool for early detection of rodents in your unit area. Rodent surveys must be ongoing to be effective. Any time you see any sign that rodents are present, a complete rodent survey should be conducted. As a member of the Field Sanitation Team you may conduct the survey during waste disposal and field sanitation inspections. An active rodent survey program looks for signs of rodents such as sightings of live rodents, the presence of dead rodents, rodent droppings and smudge marks, rodent tracks and trails, gnaw marks, burrows, and rodent sounds and odors.

Show Slide FSTCC0010-17: Eliminate the Food Source

b. **Eliminating food sources.** If rodents can't find a food source within your unit area, chances are they'll go elsewhere to find it. Proper waste disposal and proper sanitation measures should be followed to ensure that food waste does not become a food source for these pests.

(1) Eliminate access to garbage by using tight-fitting lids and disposing of garbage regularly in approved sites.

(2) Store all food in a tightly covered, metal, rodent-proof container. Although plastic bags may reduce the odors that attract rodents to your area, they are not rodent-proof.

(3) Clean up any food spills that may occur. Should you spill food on a dirt surface near your living area, use your E-Tool or a shovel to clean up as much of the spill as possible. Dispose of the food, dirt and all, in a tightly sealed trash container.

Show Slide FSTCC0010-18: Eliminate the Water Source

c. **Eliminating water sources.** Like the food sources, anytime you can reduce the rodents' access to a water supply you will greatly reduce the likelihood that they will stay in the area.

(1) Drain run-off puddles that develop in low spots.

(2) Remove any items from the unit area that may hold water, such as old tires and cans.

(3) Keep stored water in bottles or five-gallon cans that close tightly.

(4) Store cases of bottled water off the ground on pallets.

(5) In areas with indoor plumbing, check to ensure that there are no leaky pipes. Repair any leaks found as soon as possible.

Show Slide FSTCC0010-19: Eliminate Shelter

d. **Eliminating shelter.** Rodents rely on concealment when traveling, feeding, and resting. It is important to know that they are creatures of habit and tend to follow the same path to and from food, water, and nesting areas. They will also avoid well-lit, open spaces.

(1) Keep the unit area free of unnecessary debris, building material, and trash to limit the areas where rats and mice can hide or nest.

(2) Minimize the amount of vegetation around buildings and tentage. Remove or thin areas of dense vegetation where rodents can hide. Keep fence lines clear of thick growing vines, shrubs, and tall grass.

(3) Keep your living areas free from clutter. Stack stored material away from the walls and, when possible, off of the ground. Putting stored material on pallets is a good way to accomplish this. Deny rodents access to potential nesting materials, such as paper, unused clothing, straw, or hay.

Show Slide FSTCC0010-20: Rodent Traps

e. **Rodent traps.** The management measures we have discussed so far have focused on the prevention of infestation. If you should determine through your rodent survey that you have an infestation problem, you may have to resort to a more aggressive management measure. Rodent trapping is a management measure that involves the use of various baits and traps.

Show Slide FSTCC0010-21: Snap Traps

(1) Snap traps. Snap traps are used to kill rodents in areas where poison baits can not be used. For example, use a snap trap in an area where food is stored or prepared. Snap traps are also used when the rodent survey determines that the rodent population is not dense and immediate results are desired.

(a) Location. Trapping is only effective if the traps are placed where a rodent will encounter them. The best location for the snap trap is against a wall, behind or under objects, and in places or on routes where rodents have been spotted. Rodent runways are another good example. Since many rodents will not approach new traps, it may be necessary to leave the trap baited, but not set, for a few days to let the rodent get used to its presence.

(b) Number of traps. Placement of a large number of traps in or near rodent runways for a short period of time is often more effective than a few traps inappropriately placed over a longer period.

Show Slide FSTCC0010-22: Baiting Snap Traps

(c) Bait. Bait the trap with the food preferred by the suspected species of rodent. Ensure that the bait is securely fastened to the trap trigger mechanism.

WARNING: DO NOT use poisonous baits on snap traps that are placed in food storage or preparation facilities.

DEMONSTRATION: Demonstrate to the students how to set and bait a snap trap. Be sure to caution them against getting their fingers in the way of the hammer once the trap has been set.

Show Slide FSTCC0010-23: Bait Stations

(2) Bait stations. Chemical rodent management involves the use of chemicals that are poisonous when consumed by rodents. The combined use of traps and poisons maximizes the effort in the elimination of rodents.

Show Slide FSTCC0010-24: WARNING

WARNING: These chemicals should never be used in food areas and should not be stored with or near food items. Rodent baits, known as rodenticides, may be confused for food and eaten by humans.

Show Slide FSTCC0010-25: Bait Station – Type of Bait

(a) Type of bait. The types of rodenticides used by the Field Sanitation Team are multiple dose anticoagulants. Anticoagulants thin the blood and prohibit it from clotting. This will cause the rodent to hemorrhage, or bleed to death, usually internally. This type of bait is considered the safest for general use.

(b) How it works. The action of the multiple dose anticoagulants is cumulative. In other words, to be effective the rodent must feed on the bait for several days with no more than forty-eight hours between feedings. For this reason, it is very important that the rodents' access to human food sources be limited or eliminated.

Show Slide FSTCC0010-26: Bait Station – Design

(c) Design of bait station. The rodent must enter the bait station to retrieve the bait. They are designed to be tamper-proof to prevent other animals and humans from tipping them over and spilling the bait.

(d) Effective placement. Placement of the bait stations is very important. As with the snap traps, they should be located in areas where rodents have been sighted, or along rodent runways. Placement near burrows or shelter is also good.

NOTE: If you notice that the rodents are not accepting the bait from within the bait station, notify Preventive Medicine personnel.

Show Slide FSTCC0010-27: Dead Rodent Removal

10-5. DEAD RODENT REMOVAL

If your trapping and baiting measures are effective, you will have some dead rodents to dispose of. Disposal of dead rodents is another important role of the Field Sanitation Team member. There are a few essential safety measures you should follow to protect yourself from the parasites that may still be living on the dead rodent. Do not assume that because the rodent is dead that all the parasites have left its body.

Show Slide FSTCC0010-28: Step 1 – Use Insect Repellent

a. First, spread insect repellent on your hands, sleeves, and the front of your uniform. This will help to protect you from any remaining parasites.

Show Slide FSTCC0010-29: Step 2 – Use a Shovel or Long-handle Tongs

b. Use long-handled tongs or a shovel to pick up the dead animal. Place the carcass in a plastic bag or in a metal container with a tight-fitting lid.

Show Slide FSTCC0010-30: Step 3 – Burn or Bury the Carcass

c. Finally, burn or bury the remains IAW your unit's tactical situation and local environmental restrictions.

Section III. SUMMARY

Show Slide FSTCC0010-31: Summary

NOTE: Review the main points with the audience. Ask and answer questions to ensure understanding of the material presented in this lesson.

CLOSING STATEMENT: During this lesson you were introduced to the general characteristics of rodents, and the specific characteristics and biology of the Norway and roof rats as well as the house mouse. You also learned about the relationship between rodents and human disease and the management of rodent populations in your unit area. As you can see, in field sanitation everything is linked in some way; practicing poor field sanitation techniques is an invitation to rodents and increases the likelihood that the soldiers in your unit will contract rodent-borne disease.