

FREDERICKSBURG & SPOTSYLVANIA NATIONAL MILITARY PARK

INTEGRATED PEST MANAGEMENT PLAN

for

MICE

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I. INTRODUCTION

The Fredericksburg and Spotsylvania National Military Park is a complex of several individual park units extending over approximately 8,000 acres in Virginia from urban Fredericksburg to rural Spotsylvania County. The park includes forests, pastures, and farming units. It also contains numerous buildings, including houses, two visitor centers, office buildings, and historic structures.

The National Park Service has adopted the methods of integrated pest management (IPM) for control of any exotic or native species which are determined to be “pests.” IPM utilizes mechanical and biological controls and prevention as primary tools, which minimizes the use of pesticides. When pesticides are used, the least toxic product is chosen.

The policy of the National Park Service has determined that native species are not managed or controlled in natural landscapes. Mice, however, become pests if they enter and nest in buildings. Mice can also be a carrier of disease, of which, the hantavirus can be a serious concern.

II. BIOLOGY AND IDENTIFICATION

Several different species can be found inside buildings. However, the house mouse (*Mus musculus*) and deer mice (*Peromyscus* spp.) are the most common. The house mouse, which is thought to have originated in Asia, is now a common resident world-wide. This mouse breeds prolifically and has the capability of producing approximately 40 young per year, for up to 6 years. The house mouse is approximately 2.5-3.5 inches long, with a pointed head and long, hairless, dark tail. (Refer to Table 1 in appendix). In the US, it is predominately found inside houses and structures, although it does live outdoors.

In contrast, deer and white-footed mice are commonly found outside in natural settings and form

the base of the woodland food-chain. Deer and white-footed mice enter buildings as an occasional invader, but they will also establish and live indoors. Both are similar in appearance to the house mouse, but can be differentiated by the large ears and white color on their belly and feet. Deer mice also have white on the underside of their tails.

The deer mouse has been identified as a carrier of the hantavirus, which has caused fatal respiratory infections in people. The hantavirus is predominantly associated with the arid Southwest, however, it has now been linked to several deaths in the East. Proper health and safety precautions must be taken when working in and/or cleaning deer mouse-infested buildings. Sweeping floors of infested buildings should be avoided without approved face masks, as the virus is known to be ingested aurally with dust particles. Proper methods of cleaning buildings can be obtained through the IPM Coordinator at the park or Regional Office.

Other similar species include the meadow vole (*Microtus* spp.), mole (*Scalopus* sp.), and shrews (*Cryptotis* and *Blarina* spp.). All 3 species have tails shorter than their head and body and ears which are very small or non-apparent.

III. DETERMINING THE COURSE OF ACTION

Mice living outdoors are a fundamental part of the environment and serve an integral function in the balance of nature. The National Park Service, by policy, does not control native species unless they are determined to be a threat to the health and safety of park employees or visitors or are causing significant damage to park cultural or natural resources.

Mice located inside buildings should be removed due to potential damage to cultural resources and potential threat to the health of employees and visitors. In most circumstances, however, mice should be considered only a “nuisance” pest or occasional invader. Normally, the use of a live or snap trap will resolve the problem. However, if mouse droppings can be seen throughout the structure, or if droppings are still noticed after trapping, additional monitoring may be necessary.

MONITORING

To determine the extent of the problem, a structure should be monitored closely for signs of mice. The most common sign will be mouse droppings in corners, kitchen cabinets, and dark areas, like the backs of book shelves. Wood floors and baseboards should be checked for small holes, used by the mice for entry. Holes are normally found in dark corners or remote areas and under furniture, in cabinets, or along the bottom of wooden doors.

A non-toxic tracking powder can be used to monitor for the presence of mice and assist in locating the source of entry. Toxic tracking powders are a threat to public safety and non-target species, as they can be easily moved outside or onto other surfaces, such as food-handling areas. Consequently, they are rarely approved for use in the park.

If monitoring locates signs of numerous mice, a full inspection should be completed and the building mouse-proofed. All potential sources of entry, any exterior opening larger than ¼ inch, must be closed. Some of the most common points of entry will be voids around water pipes in the kitchen and bathroom, around dryer vents, and around electric wires. Medium gauge metal screening should be used to close exterior openings, as mice are able to chew through many softer materials. Interior openings, along pipes and in corners, can be stuffed with steel wool and or expanding foam and closed with wire mesh screening.

CONTROL

The best control method for most nuisance species is prevention, such as good sanitation and closing exterior holes. The following methods should be used for preventative control:

1. Keep all food stuffs in mouse-resistant containers with tight-fitting lids, such as glass or plastic jars.
2. Maintain good housekeeping practices. Keep all areas clean of crumbs. Empty trash cans routinely. Do not discard food stuffs in trash cans.
3. Minimize/eliminate all sources of available water
4. Close all possible entrances. Non-toxic tracking powders can be used to help monitor movement.
5. Minimize the amount of time pet food is kept in bowls. Remaining food should be returned to original containers after feeding.
6. Mouse-proof any containers housing specimens of organic origin, such as herbarium specimens.
7. Do not use real food, grains, plants, or other food-stuffs in visitor centers or other interpretive displays. Plastic or other replicas should be used in lieu of the actual item.

CHEMICAL CONTROL

With integrated pest management, chemical control is always the last alternative. When pesticides are used, the least toxic product should be chosen. Baits containing rodenticides are

very rarely approved for use in park areas and should be necessary only if human health or safety is an issue. For mice and other rodents, the need could arise in circumstances where immediate control is necessary, such as food-handling areas or hantavirus contamination.

The use of some rodenticides, particularly in outdoor areas, creates a concern for secondary poisoning of non-target species, including dogs, cats, crows, bluejays, foxes, etc. Any mice or other rodent killed using rodenticides must be physically collected and properly disposed of to prevent other animals from eating the remains. Care should also be used in any inside areas with free access outside, such as barns and storage sheds. Poisoned animals can remain mobile for extended periods, depending upon the amount ingested and the type of rodenticide used, creating potential for movement outdoors. Secondary poisonings have occurred in parks where rodenticides were used on neighboring property, but the afflicted animal, after ingestion, moved inside park service boundaries.

TRAPS

A number of different types of snap and live traps have been recently introduced on the market with varying results. One live trap with good results is the mouse-sized Hav-a-Hart trap. This trap is rather expensive, but can be used repeatedly and is worth the investment. Another live trap with good results consists of a gray, plastic box, which rotates backward after entry of the mouse. The door is closed automatically by force of gravity.

Glue traps are considered inhumane and pose a threat to non-target species. Consequently, they should not be used in the park areas. Devices creating ultra-sonic noises are usually ineffective and should be considered a waste of money for most vertebrate and invertebrate pests. Snap traps, now made with an imitation, yellow plastic “cheese” near the trip end, do not appear to be as effective as the standard design.

TABLE 1. Rodents: Pictorial Key to Some Common United States Genera.¹

¹ NPCA Field Guide to Structural Pests. Smith, Eric H. and Richard C. Whitman. National Pest Control Association, 1992 .

