

FREDERICKSBURG & SPOTSYLVANIA NATIONAL MILITARY PARK

INTEGRATED PEST MANAGEMENT PLAN

for

ANTS

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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 and contains numerous buildings, including 2 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, and minimizes the use of pesticides.

The Washington Office of the National Park Service by policy does not approve pesticides for control of ants which are “occasional invaders ” or nuisance insects. However, these insects can become pests if they nest and become established in buildings. Several different ant species have required chemical treatment as pests within the park, including wood-destroying pests, such as carpenter ants, and occasional invaders, such as large yellow ants.

II. BIOLOGY

Ants are social insects, included in the class *Insecta* and the family *Hymenoptera*, with bees and wasps. Insects which exhibit social behaviors are generally recognized as higher on the evolutionary scale than solitary individuals, such as beetles, flies and crickets. Ants commonly live in large colonies consisting of several different individuals, including workers, and at least 1 reproductive queen.

The development of insect “societies” permitted the specialization of distinct functions within each colony. The workers, the largest group, tend to daily routines, including foraging for food,

and building the tunnels. The queen or queens lay the eggs which ensures the sustainability of the colony.

New colonies are frequently, created by means of “swarming,” at which time large numbers of winged males and female reproductives pair up to mate and fly away to begin new colonies. This swarming behavior is highly visible and is usually the first indication of an infestation in or near a structure.

III. DETERMINING THE COURSE OF ACTION

When ants have been determined to be pests, the first step for control should be the identification of the species. Identification is critical for control and is fundamental for the application of integrated pest management (IPM). A list of those species most likely to become a pest in the Fredericksburg area is included in the appendix of this IPM plan¹.

Many of the ants commonly occurring in this area are native species. 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. Ants living outdoors are a fundamental part of the environment and serve an integral function in the balance of nature. Outdoor treatment for ants should not normally be necessary in this park. In more temperate or tropical regions, however, control of either fire or harvester ants outdoors may be needed, if the nests are located near people or RT&E species.

Ants found inside buildings, however, can either be native, like carpenter ants, or exotic, such as pharaoh ants. Most, however, are considered only as “nuisance” pests or occasional invaders, unless nests have been established inside walls, floors, etc. The Washington Office normally does not approve pesticides for control of nuisance insects, including ants. Usually only 1 ant, the carpenter ant (*Camponotus* sp.), causes serious damage to cultural or historic resources in the Fredericksburg area.

If flying-ants are located in or near a building, proper identification should be made to determine if the ants are nuisance species or carpenter ants. If the species is not known, several specimens should be kept and given to the Natural Resource Management Specialist. Specimens should be stored in a rigid container, such as a film box, if possible. If a container is not available, a specimen can be detained by adhering it to a piece of tape. PLEASE KEEP IT SAFE FROM HARM. Identification from bits and pieces is possible, but not guaranteed. If the flying ants disappear rapidly, and a specimen can not be found, a wing sample can be used for identification, if it is intact.

MONITORING

After an ant problem has been identified, and the species determined, the ants must be monitored

¹ Field Guide for the Management of Structure-Infesting Ant. Hedges, Stoy. Pest Control Technology. Franzak & Foster Co.

to determine the extent of the problem. Monitoring will determine whether a large number of ants are involved, suggesting an interior nest, or if the problem is only minor.

Monitoring might require only 1 visual assessment, or, for areas with known ant problems or where prevention methods were employed, sticky traps or routine visual inspections might be needed. If ants are still present, the area should be monitored to determine if populations reach action thresholds.

Threshold levels for treatment should be “pre-determined,” with some variance for the specific circumstances. It is difficult to predict all circumstances which may arise, especially when conditions in parks vary appreciably.

CONTROL

The best control method for most nuisance species is prevention, such as good sanitation, removing the attractant or closing all the entry ways. The following methods should be used for preventative control when ants become a problem:

1. Keep all food stuffs in insect-resistant containers, such as glass or plastic jars. Keep all areas clean of crumbs. Minimize/eliminate all sources of available water. Maintain good housekeeping practices. Empty trash cans routinely. Do not discard food stuffs in trash cans.
2. Close all possible entrances. Use silicon to seal all cracks and crevices, especially in food areas. If the exact entry has not been determined, follow the ants to determine the point of entry.
3. Minimize the amount of time pet food is kept in bowls. If possible, remaining food should be returned to original containers after feeding. In areas with severe ant problems, food containers can be placed on water-filled tin or plastic bowls, to form a “moat.”

CHEMICAL CONTROL METHODS

With integrated pest management, chemical control is always the last control alternative. If prevention was not successful, chemical control may be necessary under some circumstances. Keep in mind Washington, by policy, may not approve chemical control of nuisance species. Make sure population levels from monitoring can support your request.

Listing all specific circumstances requiring the use of pesticides would be difficult, due to the ever changing complexities in parks. However, it is foreseen an occasion will occur when pesticides would be needed. Some examples are as follows: large swarms of flying ants inside an office or other public building; nests of ants, particularly pharaoh ants, inside food-handling establishments; or carpenter ant nests inside roofs, walls or floors.

For ant nests (except carpenter ants) located inside a structure, use of enclosed ant stations with

baits that are carried back to the nest is recommended. Suggested products are listed in Table 1. Limited use of crack and crevice borate-based products or diatomaceous earth can also be used, however, this method may not eliminate the problem. To exterminate the entire colony, it is necessary to remove the reproductive queen or queens. For pharaoh ants (*Monomorium pharaonis*), which can be particularly difficult to remove, use of the pharaoh ant bait, Pharorid., should be used.

For swarming or flying ants inside buildings, it is important to determine if the ants are carpenter ants. For carpenter ants, refer to the section below. For nuisance ants, the ants should either be vacuumed or sprayed with a pyrethroid-based aerosol (Refer to table 1). The source of entry should be closed to exclude the ants, if possible, and any attractants (either food or water) should be removed. If all entries are not able to be permanently caulked, as in some historic structures, or ants continue to be a problem, either a bait station or a crack and crevice treatment should be used (Refer to Table 1)

CARPENTER ANTS

Frequent carpenter ants inside buildings can be an indication of a more serious structural problem. Carpenter ants prefer wood which is moist, and nests are usually located around leaky pipes, toilets, or roofs. If sticky traps or visual inspections indicate large numbers, a thorough site inspection with a moisture meter should be conducted. All water leaks must be repaired to eliminate the carpenter ants. For small infestations, the ants can be controlled with the use of borate-based baits.

Large infestations of carpenter ants might be found when the wall, floor or roof, etc, is opened up for repair. If large numbers of ants are seen inside the wall void or ceiling, the entire colony will need to be sprayed with a pesticide by a certified structural pest control applicator. Park staff should contact either the park or regional office IPM coordinator for recommendations for pesticides.

To prevent infestation by carpenter ants and wood-destroying fungi, all lumber used in buildings should be pressure-treated with borates. This is especially true for any wood which will be repeatedly moistened, either from contact with the soil or exposure to rain.

Some buildings in forest locations or near water have such high levels of humidity, that normal moisture levels in wood exceed those necessary for wood-destroying pests. Under these conditions, carpenter ants can be a continual problem in buildings, and all wood should routinely be treated with borates.

Carpenter ants in low levels can be found in buildings as an occasional invader. This is true when a decaying tree, etc, located near the structure becomes infested. These occasional invaders can be controlled through the use of weather stripping, caulking holes, and repairing holes in screens, etc. All branches, vines and tree limbs should be pruned away from the house, in

severe cases of decay, the tree should be removed.

APPENDIX

TABLE 1. LIST OF RECOMMENDED CHEMICAL TREATMENTS

<u>PRODUCT</u>	<u>MAKER</u>	<u>TYPE OF APPLICATION</u>
WOOD TREATMENT		
BORACARE, Impel rods	NISUS	Wood preservative, treatment for wood-destroying pests
Timbor	US Borax	Same as above, use for new wood
BAIT		
MaxForce, Combat	Clorox	Contains Hydramethylon in a bait station
Drax Ant Control Gel	Waterbury Companies	Boric acid bait
AEROSAL		
PT 565 XLO	Whitmire	Contact for flying ants, or crack and crevice for ant nests in voids
CRACK AND CREVICE		
PT 565 XLO	Whitmire	Contact for flying ants, or crack and crevice for ant nests in voids
Perma Dust PT 240	Whitmire	Contains borates and pyrethrins
Insecto	Natural Insecto Products	Diatomaceous earth
Insectigone	Chemfree Environment, Inc.	Diatomaceous earth

BASIC ANT ANATOMY²

In order to be able to correctly identify the species of ants found in and around structures, one must have a good understanding of basic ant anatomy. Anatomy is the study of different body parts of animals.

Ants are insects. They have three body regions called the head, thorax and abdomen. Ants have one pair of antennae and three pairs of legs. Winged ants (swarmers) have two pairs of wings. The front wings are larger than the hind wings. The legs and wings are attached to the thorax.

One of the key identifying characters is the pedicel. The pedicel is the narrow segment between the thorax and abdomen. This gives ants their "pinched" waist when viewed from above. The pedicel may consist of one or two segments. These segments are commonly referred to as the nodes.

Ants have either one node or two nodes. This is the first identifying character of an ant one should look at when attempting to identify a particular species.

² Basic ant anatomy and the following descriptions and pictures of ants are excerpted from Pest Control Technology's Field Guide for the Management of Structure-Infesting Ants. Hedges, Stoy A., Franzak & Foster Co., Cleveland, Ohio.

PAVEMENT ANT

Tetramorium caespitum

Identifying Characters. Pavement ants are small dark brown ants which have two nodes between the thorax and the abdomen. The thorax, when viewed from the side, is uneven in shape and two small spines are present on the top rear of the thorax. The key identifying character is the presence of grooves on the head and thorax. This can be seen using a 30x hand lens. Pavement ant workers also have a small stinger at the tip of the abdomen. The workers are all of one size.

ARGENTINE ANT

Iridomyrmex humilis

Identifying Characters. The Argentine ant is a small, light to dark brown ant. It has a single node between the thorax and abdomen and the workers are all one size. The thorax, when viewed from the side, is uneven in shape. It resembles the crazy ant and the honey ant in appearance, however, the Argentine ant does not have a small circle of hairs at the tip of the abdomen. Its legs are not extremely long and are in proportion to its body. The first segment of the antennae (the scape) is not longer than the height of the head.

LARGE YELLOW ANT

Acanthomyops interjectus

Identifying Characters. The large yellow ant is a medium sized ant, reaching about 1/4-inch in length. The workers have one node and the colony has only one size of worker. The antenna has 12 segments which gradually enlarges toward the tip. A small circle of hairs is present at the tip of its abdomen. The yellow ant is most easily recognized by its yellow-orange color, and the fact that when workers are crushed, they give off an odor smelling like lemons or citronella. In fact, they are often called citronella ants.

BLACK FIELD ANT

Formica spp.

Identifying Characters. The black field ant is a rather large, dark brown ant about 3/8 inch long. It closely resembles a black carpenter ant in appearance and is often confused with carpenter ant workers by pest management technicians. Like the eastern black carpenter ant, the black field ant has one node. Unlike the eastern black carpenter ant, however, the black field ant's thorax, when viewed from the side, is uneven in appearance. The black carpenter ant's thorax is evenly rounded.

PHARAOH ANT

Monomorium pharanonis

Identifying characters Pharaoh ants are small, yellow ants about 1/16-inch in length. They have two nodes and the workers are all one size. It is often confused with the thief ant which is also a small, yellow ant with two nodes. The Pharaoh ant's antenna has 12 segments and ends in a *three-segmented club*. The thief ant's antenna has only 10 segments and a two-segmented club.

CARPENTER ANTS

Camponotus spp.

Identifying characters. Carpenter ants are large ants, however, each colony has several sizes of workers. The workers have only one node. The key identifying character is the evenly rounded thorax when viewed from the side. No other ant, except for the velvety

tree ant, encountered around structures, will have this evenly rounded thorax. Many different species of carpenter ants are found in the United States and each may be colored differently. The most common carpenter ant in the eastern United States is colored black. The Florida carpenter ant and another species found in the southern states is colored red and black. One species found in Hawaii and another found along the East Coast is light tan in color. Color is not a character that should be used to identify carpenter ants.