

ENVIRONMENTAL ASSESSMENT

1997 GYPSY MOTH SUPPRESSION PROJECT

FREDERICKSBURG & SPOTSYLVANIA NATIONAL MILITARY PARK

NORTH EAST REGION

USDI NATIONAL PARK SERVICE

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I. PURPOSE AND NEED FOR ACTION

A. Introduction

The gypsy moth was introduced into Massachusetts in 1869, and since that time the spread of this exotic species has been steadily moving southward and westward. The gypsy moth has been found in localized infestations throughout the United States, with populations concentrated in the northeast. Because this pest is often carried by wind or vehicles into non-infested areas, any location with suitable habitat is subject to defoliation. A high degree of vehicular visitation coupled with abundant habitat puts Fredericksburg and Spotsylvania National Military Park at a high risk for further defoliation.

The National Park Service (NPS) in conjunction with the U.S. Forest Service (USFS) and the Animal and Plant Health Inspection Service (APHIS) began a monitoring program in the park during 1982. Populations remained relatively low and egg mass surveys did not result in any positive finds until 1987, however by 1990, infestations exceeding 20,000 egg masses per acre were found at Ellwood in Wilderness Battlefield. The first year the park experienced extreme defoliation was 1993.

To discourage defoliation caused by high gypsy moth populations, the park, in response to National Park Service policy and in cooperation with the U. S. Forest Service, has undertaken an integrated pest management program for the gypsy moth.

This program emphasizes population monitoring to identify critical action thresholds, for which appropriate management activities can be made most effective.

Natural controls are to be maximized with environmentally acceptable insecticides being used only when appropriate. Control efforts proposed for 1997 include two aerial applications of a biological control agent to 300 acres of the total 8,000 acres within the park's ownership. Two areas within the park have been defined where populations of the gypsy moth indicate probable defoliation. However, only 1 of these areas, Lee Drive in the Fredericksburg Battlefield, will be treated.

The second infestation, located near State Routes 610 and 3 in the Chancellorsville Battlefield, will not be treated because of its isolated location. Tree mortality in this area would not be a threat to park structures or visitors, nor would it severely impact any historic resources. The boundaries of the area to be treated are delineated on the attached outline map (Appendix A).

At the present time the primary need for the proposed project is to reduce the impact of the gypsy moth in park development zones. Developed zones include Visitor Centers and grounds, picnic areas, interpretive waysides, and areas of concentrated visitor use. Defoliation of the forest canopy would result in increased mortality in these trees, predominantly oaks, already subjected to recreation-related stress. Increased mortality would also increase hazards to public safety.

B. Decision Making

This document has been prepared by the U.S. Department of the Interior, National Park Service. The responsible official is:

Director
North East Region
National Park Service
143 South Third Street
Philadelphia, Pennsylvania 19106

Pockets of gypsy moth populations have reached densities sufficient to cause forest defoliation within the park. The decision to be made is whether or not to suppress the gypsy moth in the park. Currently, the areas identified for treatment are not located near any rare, threatened or endangered species and are within developed zones or other critical protection areas.

Gypsy moth populations have diminished in surrounding areas during the fall/winter of 1996-97 due to the spread of the natural pathogens *Entomophaga maimaiga*, a fungus, and the nuclear polyhedrosis virus (NPV). Factors affecting the pathogen's ability to lower populations are also unknown. Consequently, the effect of these pathogens in subsequent years is unclear. The management strategy for the park will be to continue to suppress populations in order to protect the historic landscape as described in the park's Gypsy Moth Management Plan.

C. Relationship to Other Decisions

The U.S. Forest Service issued a Final Environmental Impact Statement (FEIS) in November, 1995, for Gypsy Moth Management in the United States: a cooperative approach. A subsequent Record of Decision was issued in January 1996 which documents the decision by the USDA to provide federal assistance to the states and federal agencies to conduct suppression, eradication and slow the spread activities.

The preferred alternatives for suppression includes use of integrated pest management procedures for control of the moth population when site-specific analyses indicated a need for action.

This Environmental Assessment is linked to the FEIS, as modified, and documents the site-specific analysis for Fredericksburg and Spotsylvania National Military Park.

D. Project Objectives

As stated in the Gypsy Moth Integrated Pest Management Plan for the Fredericksburg & Spotsylvania National Military Park (Appendix B), the project objectives are to:

1. Mitigate defoliation impacts in identified critical protection areas. These are the areas that contain prime historic scenes, park developments, or are the most visible to the visitor; and/or would create a safety hazard if left untreated.
2. To minimize impacts to all cultural and natural resources where defoliation would significantly change species composition or cause irreparable damage.
3. Reduce risks to public health and visitor safety.

4. Develop a cooperative atmosphere with park neighbors and local governments to reduce spread of gypsy moth to uninfested areas in or out of the park.

The proposed project will be considered successful if: (1) 70 percent foliage protection is achieved, as determined by aerial survey and/or ground surveys, and (2) egg mass densities are reduced to below the threshold of 500 egg (250 egg masses in high visitor use areas) masses per acre on land treated in 1997.

E. Biological Evaluations

Monitoring data collected in 1996 served as the basis for identifying treatment areas. These activities included intensive egg mass surveys. Egg mass surveys conducted during the fall are the most accurate method for evaluating the potential for defoliation in the following year. Personnel from the U.S. Forest Service accompanied park staff, in establishing and surveying permanent 1/40 acre plots for egg masses and tree mortality.

Monitoring data collected in 1996 are outlined in the USFS gypsy moth 1997 biological evaluation for Fredericksburg & Spotsylvania National Military Park (Appendix C): "Post-Suppression and Forest Health Evaluation of Gypsy Moth Infestations, *Lymantria dispar* (L.) on Fredericksburg and Spotsylvania National Military Park, Fiscal Year 1997." This, together with defoliation surveys and subsequent recommendations by USFS personnel, forms the primary basis for treatment area selection.

II. ISSUES, CONCERNS AND OPPORTUNITIES

A. Introduction

The National Environmental Policy Act (NEPA) requires efforts be made to inform and involve the public. It has also been the policy of this park to seek the advice, ideas and questions of the public when proposed actions may effect the natural or human environment.

Park representatives attend public meetings held by the state. Public announcements are sent to local radio and newspapers detailing the suppression program. In addition, flyers are distributed to homeowners in the vicinity of the spray block.

B. Key Issues, Concerns and Opportunities

During this public contact process in past years, we consulted local and national environmental groups as well as individuals who showed knowledge and expressed concern about the gypsy moth problem. To date, the public has expressed no concern with the use of biological pesticides in the Fredericksburg & Spotsylvania National Military Park.

III. PROPOSED ACTION AND ALTERNATIVES

A. Process Used to Formulate the Alternatives

Alternatives for gypsy moth suppression were established in accordance with the management objective set for the project. Site-specific information on human habitation; ecologically sensitive areas; rare, threatened or endangered species; location of wetlands and floodplains; and forest composition is available from the

Resource Management Branch of the park. National Park Service guidelines and policy for Integrated Pest Management determined the options available for treatment of the gypsy moth.

Three major standards guided the formulation of the alternatives: public comment, legislation and planning documents. The major public concern expressed to this office about gypsy moth and the proposed control measures was the effect of the moth on trees and tree mortality. A strong message to protect trees was received. Park Legislation mandates the park "...to preserve the present outline of the battlefields.." Two major park planning documents, the General Management Plan and the Resource Management Plan, reflect the legislative order and focus management and planning towards actions that preserve the woodlands and their historic significance.

In light of NPS policy to use the least toxic chemical method of suppression and minimize effects to non-target species, the alternative chosen was use of the nuclear polyhedrosis virus (NPV) (Hamden strain), Gypchek (alternative 3). Gypchek is a biological agent which was isolated from the gypsy moth and has a very narrow host range. No non-target effects are known. Therefore, the park is clearly guided to the alternative that protects the forest with Gypchek.

Treatment areas are selected based on an evaluation of biological potential, value of the resource, and environmental sensitivity in which the gypsy moth is feeding and reproducing. Egg mass and larval surveys are used to delineate infested areas and track the spread of the gypsy moth into previously uninfested areas. Other factors taken into consideration for selection of treatment areas are tree species composition, historic significance, land use, and geographic location.

B. Description and Review of Alternatives

Alternative 1: No Action

In this alternative, No Action would be taken to suppress gypsy moth populations on National Park Service property. This alternative would allow natural forces to control infestations, regardless of possible deleterious effects to natural and cultural resources.

Unacceptable levels of defoliation would occur (50 - 100%) in wooded areas where the population density is high. Mortality of host tree species affect the structure and composition of the wildlife habitat. Wildlife species that depend on the protection of the forest would lose habitat area due to loss of trees.

Dieback and decline of tree crowns and possible mortality would increase the numbers of hazard trees. Sections of the Park may then need to be closed to the public, reducing the opportunities for visitors to experience historical trails. Increased dead material on the forest floor would increase the fire hazard of the areas. Also, the removal of trees would negatively impact the amount of shade and aesthetics around the visitors centers.

Alternative 2: One Aerial Application of Bt

Areas with a population of 500 egg masses per acre or higher would be treated (250 egg masses per acre for high-value resource areas) and sprayed once with Bacillus thuringiensis var kurstaki (Bt) at a rate of 16 BIU per acre. Bt is a biological product (bacteria) chosen by the National Park Service as the least

toxic, most specific pesticide commercially available for control of the gypsy moth.

This alternative limits application to locations with high pest populations in critical-use areas, such as visitor centers. Areas, which are remote, are environmentally sensitive, or where vegetation-type is not critical to the historic scene, will not be treated. Bt has been used for suppression of the gypsy moth in prior years.

The use of Bt for control of the gypsy moth has been studied extensively.

Although the range of activity for Bt is narrow, it is well-documented Bt adversely affects other native lepidopterans, which would, in turn, be deleterious to some species higher up the food chain. The limited use of Bt, however, would minimize these effects to non-target species.

Proposed action: Two Applications of Gypchek

Infested areas described above would be treated with 2 applications of Gypchek 7-10 days apart at a rate of 25-125 million gypsy moth potency units per acre. Gypchek is a naturally occurring biological product, a nucleopolyhedrosis virus isolated from the gypsy moth, cultured by the United States Department of Agriculture. As production is limited, availability is also limited and cost is relatively high.

Benefits for use of Gypchek by the National Park Service are clear: the virus is host-specific, with no known adverse affects to non-target species and has very low toxicity. As the acreage meeting the criteria for treatment of gypsy moth is much reduced, Gypchek will be available to the park for the first time.

IV. ENVIRONMENT

A. Host Vegetation

Dominant tree species are tulip poplar, sweet gum, white and red oak, red maple, beech, mockernut hickory, ash, and sycamore. Scattered groves of Virginia and loblolly pine, black locust, and red cedar are also present. The majority of individual trees are less than 10 inches DBH and overall density ranges from 100 to 600 stem/acre. One stand of historic oak trees, within the treatment block, lies along an historic road trace and contains some of the park's oldest, and most important trees.

Common understory foliage includes American holly, dogwood, spicebush, hornbeam, viburnum and mountain laurel. Greenbriar, honeysuckle, poison ivy, and lycopodium are common in groundcover.

At the present time, the park's woodlands are generally healthy and vigorous, except for a few hardwood stands, in-decline, due to previous gypsy moth infestations.

B. Geography

Two distinct land form provinces control the terrain of FRSP: the Piedmont, composed of hard crystalline rocks, producing moderately steep stream and river valleys and rocky uplands; and the Atlantic Coastal Plain, composed of soft sedimentary rocks, producing flat river terraces and wetlands.

C. Land Use

Approximately 6,000 of the park's 8,000 acres are forested. All lands within the authorized boundary and in federal ownership have been zoned for management purposes as either historic or developed zones.

The primary purpose of the park is to preserve the resources within the park, to educate the public about the events that transpired on the battlefields and to commemorate the resultant loss of life. The land is also used for recreation, such as hiking, biking, picnicking, jogging and enjoying nature. Until the 1980's the adjacent land was primarily rural and agricultural. The area has since experienced a population boom for commuters to the Washington, D.C. metropolitan area. Undeveloped private lands are rapidly becoming extensive and relatively expensive residential and/or industrial communities. State Planning Unit 16, the area in which the majority of the park is located, is one of the fastest growing units in the state.

D. Human Population Density

Residential communities abut the park mainly along the northern border of the block. Informational letters explaining the park's spray program will be delivered to those adjacent neighbors.

E. Non-Target Organisms

The non-target organisms are all other floral and faunal species present, other than the primary host, the gypsy moth. Gypchek is a virus isolated from the gypsy moth, with a very narrow range of activity. Consequently few non-target affects are known to occur with Gypchek.

F. Rare/Endangered Species

The Fish and Wildlife Service of the Department of the Interior was consulted regarding rare and endangered species which may reside in the treatment areas. According to their records, no rare or endangered species reside in or near the proposed treatment areas. It is noted, however, that small whorled pogonia (Isotria medeoloides), a federally listed endangered plant, has been found in nearby Prince William and Caroline Counties and the potential exists for its presence on the extensive forest lands within the park. A plant listed as "imperiled" due to rarity by the state, crested coral-root (Hexalectri spicata) has been found on park lands, as well as state listed rare red milkweed (Asclepias rubra). No deleterious effects would be anticipated to possible rare, threatened or endangered species.

G. Wetlands

The treatment area includes 3 permanent streams and their associated wetland areas. Application of Gypchek to water or wetlands is not known to have any adverse effects to aquatic species or the wetland environs.

V. MITIGATION

Every effort is made to conduct the safest possible project. Correct application of the biological insecticide will be ensured by providing topographic maps of the treatment area to the pilot. The spray block is clearly distinguished by natural boundaries and landmarks, such as fields and roads. In addition, the

boundary has been digitized electronically utilizing a satellite -based geographic positioning system into the geographic information system (GIS) of both the US Forest Service (GYPSIES) and the park. The maps are transferred to the spray plane's electronic mapping system, which monitors the precise location of the block and area being treated.

To minimize possible human contact, the application is scheduled for the early morning when most people are indoors. Most visitation will be limited to vehicular traffic. Personnel acting as field crews, equipped with radios for quick response, will be present at each spray block during application.

Application will take place over forested areas only, with an observation aircraft monitoring the application. Pilots are instructed not to apply the insecticide over open bodies of water, roadways or houses. Pilots are also instructed not to fly or turn above water. All loading of insecticides will be monitored by NPS and US Forest Service personnel to assure proper safety procedures.

VI. RISK ASSESSMENT--PREFERRED ALTERNATIVE

The basic information for this analysis is taken from Appendices F, H and I of the FEIS. For additional information, contact the United States Department of Agriculture Forest Service.

Gypchek has been thoroughly tested for toxic effects. The data has been submitted to the United States Environmental Protection Agency as part of the registration package. Based on the mammalian data, Gypchek may be an eye irritant and, possibly, a dermal irritant. As Gypchek contains 80% gypsy moth parts (w/w) and exposure to gypsy moths has been associated with respiratory effects in humans, some respiratory effects may be possible with Gypchek.

The insecticide is not likely to be infectious or cause extraordinary effects in individuals with compromised immunity systems. Acute, subchronic and chronic toxicity tests in experimental animals have not identified toxic levels of Gypchek at doses up to 3,750 mg/kg of body weight. A NOEL of 45 mg/kg in body weight in rats was determined in a 2-yr feeding study.

Oral toxicity studies in wildlife indicate Gypchek has very low oral toxicity. No adverse effects on white-footed mice, shrew, and opossum were noted on general health, reproduction or gross pathology or histopathology from oral dosage.

Based on the tox data, a risk assessment determined there is low risk for the general public after application of Gypchek. Some uncertainty does exist with the assessment, however, due to limited data from human exposure.

VII. PUBLIC NOTIFICATION

The park will inform the public about this program through: public notices in local papers; flyers to adjacent homeowners; and public announcements on the radio.

VIII. LIST OF PERSONS AND AGENCIES CONSULTED

Dean Cumbia, Area Forester, Virginia Division of Forestry, Spotsylvania, Virginia.

Mrs. Joseph Debosh, Parkwood Subdivision Homeowners Association, Fredericksburg, Virginia.

John Ghent, Entomologist, Forest Pest Management, U.S. Forest Service, Ashville, North Carolina.

Cheri Gilcrest, Gypsy Moth Coordinator, Stafford County, Virginia.

John Grey, VPI Cooperative Extension Agent, Stafford County, Virginia.

Lake of the Woods Outdoor Club, Orange County, Virginia.

Teddy Mullins, Forestry Technician, George Washington National Forest, Harrisonburg, Virginia.

Dave Reynolds, IPM Coordinator, National Park Service, Mid-Atlantic Region, Philadelphia, Pennsylvania.

Dave Robison, Entomologist, Forest Pest Management, U.S. Forest Service, Asheville, North Carolina.

Patricia Sellers, Entomologist, Forest Pest Management, U.S. Forest Service, Harrisonburg, Virginia.

Ray Simms, VPI Cooperative Extension Agent, Spotsylvania County, Virginia.

IX. PREPARER

Susan Alberts, Natural Resource Management Specialist, National Park Service, Fredericksburg and Spotsylvania National Military Park, Fredericksburg, Virginia

APPENDIX A

SPRAY BLOCK
FREDERICKSBURG AND SPOTSYLVANIA NATIONAL MILITARY PARK
1997

BATTLEFIELD	ACREAGE
Fredericksburg Battlefield S. Lee Drive	300
<u>TOTAL</u>	<u>300</u>

APPENDIX B

APPENDIX C

Gypsy Moth Management Plan

FOR

FREDERICKSBURG AND SPOTSYLVANIA NATIONAL MILITARY PARK

1995

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I. SIGNIFICANCE OF THE RESOURCE

Fredericksburg and Spotsylvania National Military Park is an 8,000-acre unit of the National Park Service in Central Virginia established to commemorate four major battles of the Civil War. The land preserved within it has often been cited with the dubious distinction of being "the bloodiest ground on the continent." The forest and fields that comprise this historic landscape were witness to over 100,000 casualties. This historic setting attracts over 1.7 million visitors each year.

Preserving an historic pattern of fields and forests is fundamental to an understanding of the events that occurred on these battlefields. In addition, there is a need to retain healthy vegetation along boundaries to maintain visual and auditory buffers from modern intrusions. In this vicinity, natural areas are rapidly being lost due to development. This has resulted in a fragmentation of natural communities and therefore increases the value of the natural resources found within these protected areas.

Chancellorsville, Wilderness, and Spotsylvania contain significant examples of eastern piedmont forest in various stages of succession including stands of trees extant at the historical period. The battle for Fredericksburg occurred along the ridge that forms the fall line separating the Piedmont from the Coastal Plain.

Native flora and fauna are abundant within the four major units that comprise the park. Sensitive plant species have been identified. Several plant species found within the park are at the extreme of their distribution. Common wildlife species include white-tail deer, beaver, fox, and wild turkey. Black bear and bobcat sightings have also been reported on rare occasions. Birdwatching is a pastime enjoyed by many visitors.

II. HISTORY OF GYPSY MOTH IN THE PARK

The first discovery of a male moth in the vicinity of the park occurred in 1980.

The USDA Animal and Plant Health Inspection Service (APHIS) initiated a monitoring effort in conjunction with park management by placing 42 pheromone traps to detect the presence of male moths in 1982. Less than 50 moths were found at this time.

In 1983, the U.S. Forest Service became involved with the first surveys for egg masses and overall coordination of monitoring efforts. Egg mass survey and pheromone trap counts remained relatively low until 1988 when a dramatic increase was noted. Appendix II details monitoring efforts conducted thus far.

In results of the 1993 ground survey show increasing gypsy moth populations, in contrast with the previous year's results, in most areas of the Park. IPM measures during 1993 for gypsy moth around the Chancellorsville Visitor Center, however, were effective. The potential for a rapidly increasing population of moths in park units is becoming apparent.

One application of Bt was applied to 34 trees in the Chancellorsville and Wilderness Battlefields on May 6, 1993. The treatment was a ground treatment applied by Alan Parrett of Bartlett Tree Experts, with application at a rate of 30 BIU's (Billion International Units) per acre. This was the fourth year these areas have been treated with Bt, and the first time a ground treatment had been attempted.

Populations in the treatment area at the Chancellorsville Battlefield Visitor Center were severely reduced, therefore foliage protection was achieved and during 1994 a treatment will not be necessary.

The treatment prevented serious defoliation over most of the treatment areas. Use of Bt will generally protect the foliage during the year of treatment but does not always reduce the population, therefore, subsequent treatments may be necessary in high value areas.

III. MANAGEMENT CONCERNS

A. Park Resources:

Approximately 83% of the park is forested, most which consists of a hardwood or mixed pine-hardwood overstory. The majority of the trees in these stands would be defoliated if populations are allowed to reach high levels without abatement.

Nearly total defoliation would occur in some locations at peak levels. Many mature oak trees which date to the historic period could die from repeated defoliation in conjunction with other stress factors such as drought. The resulting mortality would increase both the fuel loading, which is already excessive in many areas of the park, and the temperature of the forest (by allowing more solar radiation.)

The threat of wildfire would therefore increase. Increased runoff could occur if mortality was high enough and stream degradation would result. Aquatic flora and fauna would be effected by changes in turbidity, water chemistry and temperature.

Terrestrial fauna would be affected by changes in food availability and habitat.

B. Historic Landscape:

The historic landscape preserved at the various units of the park are treated as cultural resources. Many of the tree stands present now were extant during the Civil War and contain individual specimen trees that "witnessed" the battles. There is also a need for maintaining a healthy vegetative buffer to screen out modern intrusions.

C. Endangered Species:

There are no endangered species known to exist within the park. However, exhaustive surveys have not been performed. The federally listed endangered plant, small whorled pogonia (Isotria medeoloides) has been documented in nearby Caroline and Prince William counties. Crested coralroot, (Hexalectris spicata) a plant listed by the state as "imperiled" due to rarity, has been found in the park. Also, two populations of the state listed rare red milkweed (Asclepias rubra) have been located. Massive defoliation would increase insolation, and therefore the temperature of the forest floor, which could have deleterious effects on populations that exist.

D. Aesthetics/Socioeconomic:

Visitors will find the park very unappealing during spring when caterpillar populations are at their peak. When gypsy moth populations are high, visitors will hear, smell, and see caterpillars. The frass (excrement) can be particularly annoying. Late stage larvae feed continuously, resulting in a steady rain of frass.

When populations get very large, a viral disease usually causes a crash in the population. However, this usually occurs only after severe defoliation has taken place. The resulting forest would be much hotter and more uncomfortable. Tree mortality in high visitor use areas would increase safety hazards to the public.

Negative public opinion would be fostered in adjacent residential communities if no action is taken.

IV. MANAGEMENT OBJECTIVES

The primary objectives of this plan are to:

A. Mitigate defoliation impacts in identified critical protection areas. These are the areas that contain prime historic scenes, park developments, are the most visible to the visitor, and/or would create a safety hazard if left untreated.

B. To minimize impacts to all cultural and natural resources where defoliation would significantly change species composition or cause irreparable damage.

C. To utilize an integrated pest management approach (IPM) in all attempts to control the gypsy moth population. All treatments will avoid adverse impacts to the park's natural environment and will have minimal impacts on non-target species.

Actions will be geared towards managing the population at a tolerable threshold kept in check by natural forces, such as predators and parasites.

D. Reduce risks to public health and visitor safety.

E. Develop a cooperative atmosphere with park neighbors and local governments to reduce spread of gypsy moth to uninfested areas in or out of the park.

V. MANAGEMENT ACTIVITIES

In cooperation with the U.S. Forest Service and Mid-Atlantic Regional Office (NPS), Fredericksburg & Spotsylvania National Military Park will maintain the Integrated Pest Management (IPM) program to achieve the major objectives of this plan. Activities under this IPM approach will include survey and monitoring of moth populations, data analysis and decision-making, intervention strategies and tactics, program evaluation, interpretation, and public relations.

A. Survey and Monitoring

Surveying park areas and monitoring Gypsy Moths are essential to provide management with current information regarding locations, numbers, and viability of moth populations. Data will be used to determine an appropriate selection of control actions. Without it, moth populations could expand to the point where IPM measures would be ineffective and chemical treatments, with their attendant effects, would be necessary.

Egg mass surveys will be performed throughout the park. These surveys will be coordinated with the Forest Pest Management Branch (FPM) of the U.S.F.S. In 1993, resource management staff established ninety three (93) permanent 1/40 acre plots, strategically located in all park units for utilization in monitoring gypsy moth populations and long-term impacts.

B. Analysis and Decision-Making

The park staff works closely with scientists at local universities and with the U.S. Forest Service to analyze monitoring and decide on intervention measures. Where analysis of data indicates that egg mass counts exceed 500/acre, consultations will focus on determining which, if any, control measures are recommended each year.

The park will also make a concerted effort to cooperate with state and federal agencies in the development of improved methods of gypsy moth control.

Documentation of tree mortality and species composition shifts will be maintained.

Monitoring data on population levels will be collected. Long-term evaluation of ecological effects of the moth and suppression efforts should be a goal.

C. Intervention Strategies and Tactics

Bacillus thuringiensis, commonly abbreviated Bt is a bacterium that is selectively pathogenic to caterpillars of moths, skippers, and butterflies. It acts as a stomach poison to hemorrhage the caterpillar gut, thus causing the larvae to cease feeding and eventually die of starvation. The strain of Bt we would be using is non-chemical and harmless to man, animal and plant life, and to beneficial insects other than the Lepidopteran listed above. Although Bt will not immediately reduce larval nuisances, it has proven to be an effective agent for foliage protection, particularly at low to moderate pest population levels. It is usually sprayed aerially but spot ground applications are also practical for selected areas. Aerial Bt applications are excellent for large tract foliage protection and under ideal conditions can produce 75% caterpillar mortality. Bt is readily available in quantity and is the pesticide used by many localities and state agencies for use in sensitive areas.

D. Evaluation

The monitoring system in the park will be used to evaluate the effectiveness of treatments. In particular, attention will be given to adult moth and egg mass monitoring data collected in the spray blocks after the applications of Bt. Visual inspections for defoliation will also be made.

E. Interpretation and Public Relations:

It will be necessary to provide park visitors, neighbors, and the media with accurate and current information concerning Gypsy Moths and NPS management programs. This

can best be achieved through well planned interpretive and public relation efforts.

The park's resource management staff and interpreters will play a primary role in providing needed information to park visitors and neighbors. Bulletin board displays, publications, and personal contacts will supplement the staff's efforts as appropriate throughout the spring and summer months.

All park employees will be briefed on the gypsy moth program so that basic visitor questions can be answered by maintenance, administrative, ranger and management staffs.

Communications with other federal agencies, county extension offices, and neighboring community organizations will be of mutual benefit.

VI. ENVIRONMENTAL ASSESSMENT

An environmental assessment will be prepared annually for the park which will includes this management plan as an appendix. This assessment will document a site-specific environmental analysis conducted jointly by the USDA-NPS and the USDA-F for a cooperatively funded gypsy moth suppression project. The USDA-F has the major responsibility for forest insect and disease control on all federal lands.

Under cooperative agreement between the USFS and the NPS, staff members of the USFS Forest Pest Management office will provide technical assistance and project funding for suppression actions selected by the park superintendent.

The environmental assessment is tied to the USDA Final Environmental Impact Statement as Supplemented, 1985 (FEIS) and includes a site-specific discussion of:

1. the purpose and need for action;
2. alternatives including the proposed action;
3. affected environment;
4. environmental consequences of the proposed action and alternatives,
including the risks to human health;
5. the specific procedures used to facilitate public participation in the
decision making process

APPENDIX D

**1997 GYPSY MOTH SUPPRESSION PROJECT
FREDERICKSBURG & SPOTSYLVANIA NATIONAL MILITARY PARK
NORTH EAST REGION
USDA NATIONAL PARK SERVICE**

RECORD OF DECISION AND

FINDING OF NO SIGNIFICANT IMPACT

The National Park Service has prepared this environmental assessment and statement of finding of no significant impact for the 1997 program for suppression of the gypsy moth. The proposed action is necessary to protect both significant natural and cultural resources.

The National Park Service has determined the proposed action can be implemented with no significant effect on park cultural or natural resources, as documented in the Environmental Assessment.

The proposal does not constitute a major federal action which will significantly affect the quality of the human environment as defined in Section 102(2) (c) of the National Environmental Policy Act of 1969 (PL 91-190, 83 stat. 853). Therefore, the National Park Service will not prepare an environmental impact statement for this project.

There are no significant effects on wetlands or floodplains.
No rare, threatened or endangered species are known to inhabit the area.

Compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, has been initiated.

Recommended:

Martha K. Leicester
Superintendent
Fredericksburg and Spotsylvania National Military Park

Approved:

Marie Rust
Director
Northeast Region