

# ALLAMUCHY NATURAL AREA MANAGEMENT PLAN

New Jersey Department of Environmental Protection  
Division of Parks and Forestry  
Office of Natural Lands Management  
CN 404  
Trenton, New Jersey 08625

Prepared by  
Larry S. Miller

Adopted by the Commissioner of the  
Department of Environmental Protection

May 24, 1989

# PUBLIC NOTICES

## AGRICULTURE

(a)

### STATE AGRICULTURE DEVELOPMENT COMMITTEE Notice of Availability of Grant Funds and Application Deadline Farmland Preservation, Nonprofit Acquisition Grant Program

Take notice that, in compliance with N.J.A.C. 2:76-12, 13, 14, 15 and 16, the State Agriculture Development Committee announces the availability of the following State grant funds:

- A. **Name of grant program:** Farmland Preservation, Nonprofit Acquisition Grant Program.
- B. **Purpose:** To provide a grant to private nonprofit organizations for up to 50 percent of the cost of acquisition of development easements on farmland or up to 50 percent of the cost of acquisition of fee simple titles to farmland from willing sellers.
- C. **Amount of money available:** Up to \$2 million will be awarded in grants for the 2003(A) funding round. The State Agriculture Development Committee shall establish a maximum funding limit per project or per applicant based on available funds and project priorities. There is no minimum or maximum grant request amount. Any funding awarded by the State Agriculture Development Committee is subject to approval by the Garden State Preservation Trust and appropriation.
- D. **Match:** The nonprofit organization must provide the balance of the funds in the form of cash or a donation of all or a portion of the eligible development easement cost or fee simple acquisition of the land cost of the project site.
- E. **Organizations which may apply for funding under the program:** A tax exempt nonprofit organization which is exempt from Federal taxation pursuant to section 501(c)(3) of the Federal Internal Revenue Code, 26 U.S.C. §501(c)(3), and which qualifies for a grant pursuant to Garden State Preservation Trust Act, N.J.S.A. 13:8C-42, P.L. 1999, c.152.
- F. **Qualifications needed by an applicant to be considered for funding:** To qualify for grant consideration, the board of directors or governing body of the applying tax exempt nonprofit organization shall:
1. Demonstrate to the State Agriculture Development Committee that it qualifies as a nonprofit organization which is exempt from Federal taxation pursuant to section 501(c)(3) of the Federal Internal Revenue Code, 26 U.S.C. §501(c)(3), and which qualifies for a grant pursuant to Garden State Preservation Trust Act, N.J.S.A. 13:8C-42, P.L. 1999, c.152;
  2. Demonstrate that it has the resources to match the grant requested;
  3. Acquire a development easement on farmland or acquire land in fee simple title to be permanently preserved for farmland preservation purposes pursuant to N.J.A.C. 2:76-12, 13, 14, 15 and 16; and
  4. Agree to enter into a project agreement with the State Agriculture Development Committee in the event a project is approved by the State Agriculture Development Committee pursuant to N.J.A.C. 2:76-16.1.
- G. **Procedure for eligible organization to apply:** All interested applicants should write to the address below or call (609) 984-2504 for an application package.

H. **Address to which applications must be submitted:**

Gregory Romano, Executive Director  
State Agriculture Development Committee  
PO Box 330  
Trenton, New Jersey 08625-0330

I. **Deadline by which applications must be submitted:** Completed applications must be received by the State Agriculture Development Committee on or before January 14, 2002.

J. **Date by which applicant shall be notified of approval or disapproval:** It is anticipated that applicants will receive notice by March 1, 2002.

## ENVIRONMENTAL PROTECTION

(b)

### DIVISION OF PARKS AND FORESTRY

#### Natural Areas System

#### Notice of Amendments to the Management Plan for the Allamuchy Natural Area

Authority: N.J.S.A. 13:1B-3, 13:1B-15.4 et seq., 13:1B-15.12a et seq. and 13:1D-9.

Take notice that, in accordance with N.J.A.C. 7:5A-1.8, and the recommendation of the Natural Areas Council (Council), Robert C. Shinn, Jr., Commissioner, Department of Environmental Protection (Department), has adopted amendments to the management plan for the Allamuchy Natural Area.

The Allamuchy Natural Area is a 2,440-acre tract located within Allamuchy Mountain State Park in Allamuchy Township, Warren County and Byram Township, Sussex County. The tract is characterized primarily as upland mixed-oak forest. Interspersed throughout the area are mixed hardwood forest, swamp hardwood forest and hemlock-spruce forest. Numerous old fields are also present in the southern section of the natural area. Lacustrine habitat is also present and includes the roughly 48-acre Deer Park Pond. Several endangered and threatened animal species are known to utilize the natural area, including the barred owl and bobcat. The natural area is administered by the Division of Parks and Forestry through Hopatcong State Park (hereinafter referred to as the administering agency). The Allamuchy Natural Area was designated to the Natural Areas System in 1975. The Natural Areas System is established and administered pursuant to N.J.S.A. 13:1B-15.4 et seq. and 13:1B-15.12a et seq. These statutes give the Department the responsibility of acquiring, maintaining and preserving natural areas as examples of the State's natural heritage and as places of scientific study. Currently, the Natural Areas System contains 42 areas totaling more than 38,000 acres.

The rules governing the Natural Areas System provide guidelines for the preparation of management plans at N.J.A.C. 7:5A-1.8. The primary purposes of a natural area management plan are to describe the natural features of the area and prescribe specific long- and short-term management techniques and public uses to ensure preservation of the area in accordance with its management objective (see N.J.A.C. 7:5A-1.8). An adopted management plan may be amended after review of the proposed amendments by the Natural Areas Council, an advisory group to the Commissioner of the Department. The Council may then recommend to the Commissioner that the plan amendments be adopted. The Commissioner accomplishes adoption of the plan amendments through publication of a notice in the New Jersey Register (see N.J.A.C. 7:5A-1.8(i)).

The management objective for the Allamuchy Natural Area is preservation of a hardwood forest of significant size, successional fields and protection of a rare plant community (N.J.A.C. 7:5A-1.13(a)2). The

existing management plan for this area, adopted on May 24, 1989, primarily specifies techniques designed to ensure preservation of the forest communities of the natural area and populations of State endangered and threatened species. Amendments to this management plan are needed in order to delete techniques that are no longer applicable, that have been completed, and/or that are no longer pertinent to the goals and objectives of the natural area. In addition, the management plan needs to be revised in order to address the expired Successional Field Maintenance Plan, Appendix B to the existing management plan, as well as current issues and management needs, such as control of invasive exotic plant species. The management plan amendments address all of these needs. Management techniques contained in the existing management plan and not addressed in the plan revision remain unchanged and in effect.

Management techniques specified in the management plan revision include the following: (1) managing invasive exotic plants to reduce their frequency and distribution throughout the natural area; (2) enhancing field habitat for suitability and use by grassland birds; (3) providing the State Park Service with an opportunity to explore alternative access routes for the natural area; and (4) giving the State Park Service the discretion to expand hunting opportunities in the natural area to include other game species, including small game and wild turkey. Adoption of the management plan revisions will help to ensure protection of native plant communities and State endangered and threatened species, and will have a long-term positive effect on the public, including that portion of the public that conducts research and educational activities.

At its October 11, 2000 meeting, the Natural Areas Council reviewed and discussed staff recommendations regarding the proposed amendments to the Allamuchy Natural Area Management Plan. By unanimous resolution, the Council recommended adoption of the proposed amendments for continued management of the natural area and submitted these recommendations to the Commissioner of Environmental Protection for approval in accordance with the procedure set forth at N.J.A.C. 7:5A-1.8. The Commissioner agreed with all of the recommendations of the Council and approved the amendments to the Allamuchy Natural Area Management Plan on September 12, 2001.

Following is a summary of the amendments to the management techniques prescribed for the Allamuchy Natural Area along with an explanation for each:

A. Management Techniques removed from the existing plan:

1. Repairs to Deer Park Pond dam.

This technique is no longer needed as rebuilding of the dam was completed in 1996.

2. The classification zones in the existing management plan divide the Allamuchy Natural Area into two management zones; ecological reserve and conservation preserve.

The division of the Allamuchy Natural Area into two management zones serves no effective purpose toward management of the natural area and therefore is eliminated. The specific management techniques contained within the management plan provide sufficient guidance on the type of habitat management permitted within the natural area.

B. Management Techniques added to the management plan:

1. The Office of Natural Lands Management (ONLM) within the Division of Parks and Forestry will develop techniques to control invasive exotic plant species in the natural area. Specifically, Japanese barberry (*Berberis thunbergii*) is targeted for control. This species dominates the understory shrub layer and is widespread throughout the area. Three one-acre experimental treatment areas will be established and a variety of control techniques applied. Mechanical removal (cutting with loppers and a brush-cutter), chemical herbicide application (spraying by backpack sprayer) and a combination of both techniques will be implemented. The success of each technique will be evaluated through statistical analysis to determine the most efficient and cost-effective method of treatment.

This technique is needed in order to achieve the management objective of preservation of the hardwood forest. Over time, Japanese barberry has spread through the natural area forming impenetrable thickets in the forest shrub layer and in field areas, displacing native vegetation. Development of a suitable technique for controlling Japanese barberry

will help to restore and protect native plant communities, thereby contributing to the management objective of this natural area.

C. Management Techniques modified in the existing management plan:

1. The technique to relocate the entrance/access road is modified in order to provide the State Park Service with the opportunity to explore alternative access, including access and monitoring from Stephens State Park. All plans for proposed routes shall be forwarded to the ONLM for review and recommendation by the Natural Areas Council prior to implementation.

Given that changes in property ownership may occur and there exists the potential for acquisition of land adjacent to the natural area, it may be feasible to create access that will originate directly from Stephen's State Park. This will result in improved monitoring and maintenance of the area and provide for public access and enjoyment, while minimizing impacts to the natural features of the area.

2. The Successional Field Maintenance Plan outlined in Appendix B of the management plan has expired and is replaced with management techniques designed to enhance habitat for grassland birds and to maintain habitat diversity through restoration of selected fields to an early successional condition. For several species of birds habitat loss is widely suspected to be a major factor behind current population declines. Factors such as habitat fragmentation, changes in farming practices, reversion of farmland to forest, and increased distribution of invasive exotic species have all contributed to population declines in some species of grassland birds. Grassland species most likely to benefit from habitat enhancement at the Allamuchy Natural Area include bobolink, Eastern meadowlark, grasshopper sparrow, vesper sparrow, and possibly savannah sparrow. While specific habitat requirements vary for each species, management will focus on protecting or establishing larger contiguous blocks of grassland, providing structurally diverse habitat, reducing edge and eliminating and controlling woody encroachment. These techniques will benefit all species. To achieve suitable field conditions a combination of mechanical (cutting and mowing), chemical (herbicide application), burning (prescribed fire) and planting (seeding with warm season grasses) techniques will be used. Roughly nine fields totaling approximately 50 to 75 acres will be treated.

This technique is included to address the expired 10-year Successional Field Maintenance Plan (Appendix B of the adopted management plan). During the 10-year period of the plan, field maintenance consisted mainly of periodic cold season burning and occasional mowing. In some locations this has helped to keep fields in an early successional condition. Most of the fields, however, have succeeded to a later stage of development and are now dominated by woody trees and shrubs. Maintenance of these older fields to provide early successional habitat is no longer practical. Of the original 19 fields there remain roughly nine areas that can be restored to or maintained in an early successional condition. Protection and maintenance of the remaining early successional fields, through chemical, mechanical, burning and planting methods, will help enhance habitat diversity and is consistent with the management objective of the Allamuchy Natural Area.

3. The State Park Service has been given the discretion to abandon the current use policy allowing deer hunting only and to permit hunting of other game species, including small game and wild turkey, within the Allamuchy Natural Area.

Hunting is a use that is consistent with achieving the management objective of the area, and limiting it serves no effective management purpose.

Copies of the adopted plan and the amendments may be obtained from:

Office of Administrative Law  
 Quakerbridge Plaza, Building 9  
 PO Box 049  
 Trenton, New Jersey 08625-0049  
 Department of Environmental Protection  
 Division of Parks and Forestry  
 Office of Natural Lands Management  
 PO Box 404  
 Trenton, New Jersey 08625

This notice is published as a matter of public information.

## ABSTRACT

Allamuchy Natural Area, located within Allamuchy Mountain State Park, became incorporated into the Natural Areas System in 1978. The natural area was formerly referred to as Deer Lake Park Natural Area. The majority of the natural area is located in Allamuchy Township, Warren County with a small portion lying within Byram Township, Sussex County. This area is within the Highlands physiographic province. The natural area portion of the State Park was designated to the System for preservation of a hardwood forest of significant size and successional fields. In addition, the area contains rare species habitats.

This management plan has been developed pursuant to N.J.A.C. 7:2-11.1 et seq. which mandates that such plans be prepared for all areas designated to the Natural Areas System. Management is aimed at prescribed uses and practices that will be allowed and implemented in order to maintain and, if practicable, enhance the natural features which the site contains.

The following is a summary of major management techniques recommended in this plan. Chapter III should be consulted for detailed information on prescribed management techniques.

### **Classification**

Portions of Allamuchy Natural Area, including the rare plant species habitat, Deer Park Pond and areas where the Successional Field Maintenance Plan will be implemented (Appendix B), are classified as conservation preserve in order to allow for habitat manipulation. The majority of the natural area is classified an ecological reserve, where little to no habitat manipulation is required.

### **Boundaries**

The natural area boundaries are somewhat revised from that which was previously accepted. Several interior parcels and areas north of and adjacent to Waterloo Road have been added because of acquisitions which occurred after the original boundaries were drawn.

A portion of Allamuchy Pond and acreage east of the Pond have been deleted from the natural area. Another deletion includes the Miller Farm leased land along Route 517. The occupied and vacant dwellings and their curtilage are interior exceptions within the natural area.

With these additions and deletions, the natural area is comprised of approximately 2,440 acres.

## **Habitat Manipulation**

In keeping with the designation objective, the Office of Natural Lands Management, State Park Service and State Forestry Services have formulated a "Successional Field Maintenance Plan" that would allow a range of fields of various ages at any one time (Appendix B).

If necessary, mechanical weed control on Deer Park Pond is allowable by the administering agency without Natural Areas Council approval. If other weed control measures are necessary, these measures have to be reviewed by the Office of Natural Lands Management and the Natural Areas Council prior to implementation.

## **Human Use**

All current recreational uses will be allowed to continue. Camping and off-road vehicles are prohibited.

It is recommended that the farm house on Deer Park Road continue to be used for employee housing. Any proposed change in use must first be reviewed by the Office of Natural Lands Management and the Natural Areas Council.

The 1.2 miles of Deer Park Road past parking lot #2 shall remain closed to vehicles other than Park maintenance, emergency and security vehicles.

## **Endangered and Threatened Species Management**

To protect the rare limestone fen community, hydrology changes in the area of the fen must be avoided. Any plans that may impact the fen must first be reviewed by the Office of Natural Lands Management and the Natural Areas Council.

Management for barred owl at Allamuchy can be accomplished by maintaining old growth forest. Within the natural area, mature forest is provided in the Ecological Reserve and in sections of the Conservation Preserve.

## **Needed Research**

The program identifying successional fields and other representative biotic communities should encourage research. Findings from this research would help contribute to resource decisions for Allamuchy Natural Area.

## **Proposed Projects**

If and when State Park Service decides to relocate the entrance road to the natural area, all development plans shall be forwarded to the Office of Natural Lands Management for review and recommendation by the Natural Areas Council.

Deer Park Pond dam repairs will be permitted only for safety considerations and shall conform with the Dam Safety Act and any other Federal or State regulations. The

repairs shall not increase the width or height of the dam unless the current size is in violation of any regulations. In addition, there shall be no changes in the current water levels.

NATURAL AREAS COUNCIL

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This management plan was written and prepared by Larry S. Miller of the Office of Natural Lands Management. Gratitude is expressed to the following persons for their contributions towards the completion of this document: The Natural Areas Council, Joseph R. Arsenault, Thomas F. Breden, John B. Broshkevitch, Robert J. Cartica, Louis S. Cherepy, Russell A. Cookingham, Patricia D'Arcy, Nicholas DeMicco, David R. Edelman, John J. Garcia, Jr., Frank F. Guidotti, Bonnie G. Hammerstedt, Barry L. Leilich, Martin Rapp, David B. Snyder, Robert H. Soldwedel, Larry Torok, and John R. Weingart. Appreciation is extended to Patrick B. Brown, former Student Intern, who prepared a working draft plan at the beginning of the planning process for Allamuchy Natural Area. Finally, special thanks are reserved for Bart H. Wallin, Superintendent of Hopatcong State Park whose past and current management practices have been instrumental in maintaining Allamuchy consistent with its designation objective.

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## INTRODUCTION

This management plan for the Allamuchy Natural Area will describe the resource features which this site contains and then prescribe uses and practices that will be allowed and implemented to maintain and, if practicable, enhance these features.

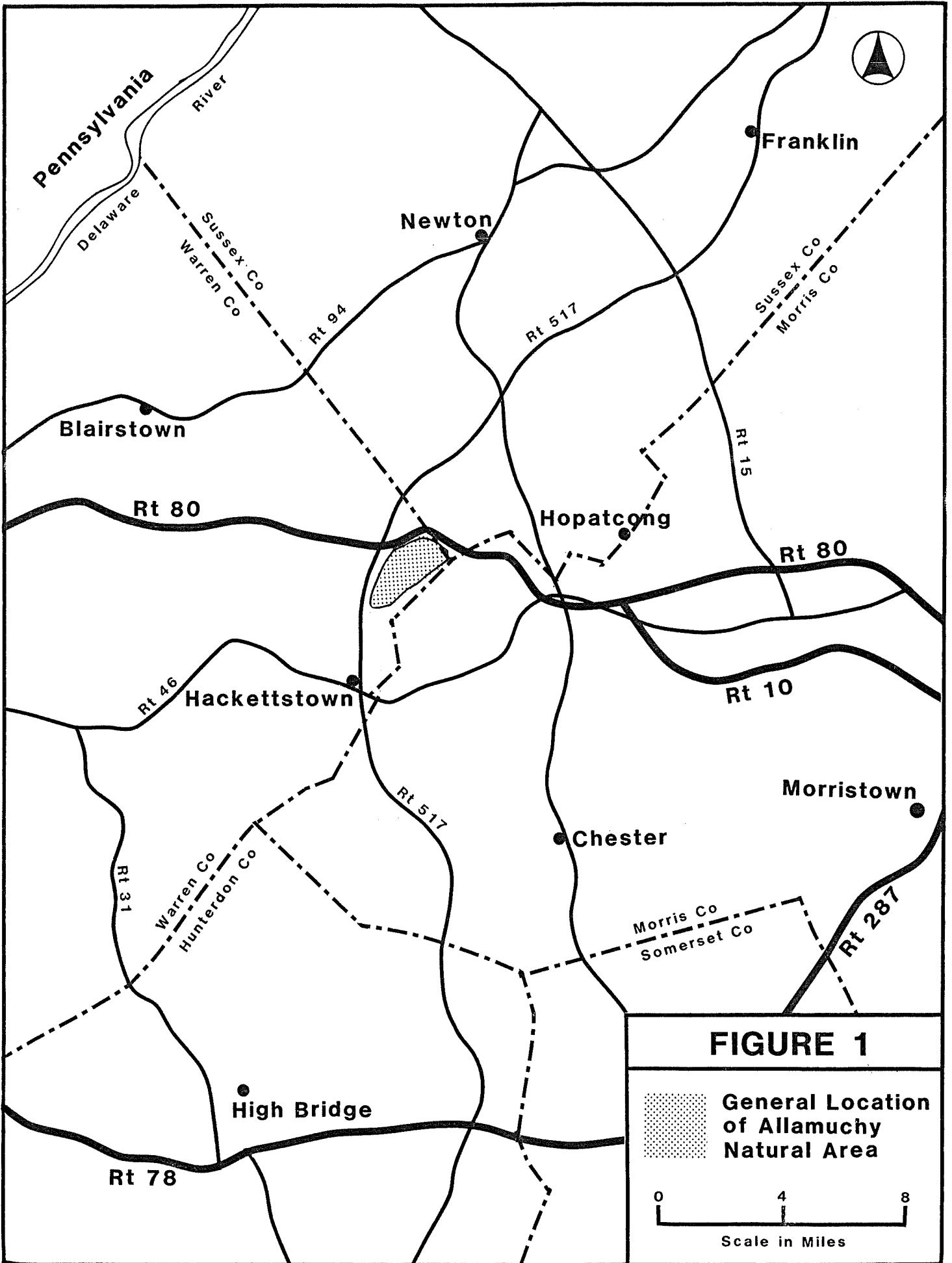
Creation of the Natural Areas System was mandated under the Natural Areas System Act of 1976 (N.J.S.A. 13:1B-15.12a et seq.). A "Natural Area" is defined as "an area of land or water, owned in fee simple or as a conservation easement by the Department, which has retained its natural character, although not necessarily completely undisturbed, or having rare or vanishing species of plant or animal life, or having similar features of interest, which are worthy of preservation for present and future residents of the State" (N.J.A.C. 7:2-11.3).

Allamuchy Natural Area is located east of Route 517 and south of Route 80 within Allamuchy Mountain State Park. The natural area lies within Allamuchy Township, Warren County and Byram Township, Sussex County and is part of the Highlands physiographic province of New Jersey. Figure 1 shows the general location of the natural area. The updated natural area boundaries are indicated in Figure 2. Further discussion concerning boundaries is located in the "Management Techniques" section of this plan.

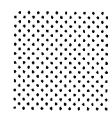
The acquisition of Allamuchy Mountain State Park was initiated as part of the proposed Hackettstown Reservoir project. In 1960, the U.S. Army Corps of Engineers recommended acquisition of over 10,000 acres for recreation use and the development of a water supply reservoir within the Musconetcong River Basin. This project was incorporated into the Delaware River Basin Commission's 1962 Comprehensive Plan, Phase I. Subsequently, steps were taken to purchase lands under the New Jersey Green Acres program (Edwards and Kelcey, Inc., 1968). Allamuchy Mountain State Park was established in 1966. Allamuchy Natural Area (formerly referred to as Deer Lake Park Natural Area; the name change was established through the Rule revision) became part of the State Natural Areas System in 1975 following the promulgation of the Natural Areas System Act of 1975. Comprising approximately 2,440 acres, the natural area represents 34% of the total acreage (approximately 7,265 acres) of Allamuchy Mountain State Park (New Jersey Department of Environmental Protection, 1988b).

The designation objectives for this natural area under the Administrative Code include "preservation of a hardwood forest of significant size, successional fields and protection of a rare plant community" (Appendix A). The Administrative Code also mandates the preparation of this management plan.

The Division of Parks and Forestry, through Hopatcong State Park, serves as the administering agency, being responsible for establishing policy and after consultation with other Divisions, organizations and individuals, making land management decisions affecting Allamuchy Natural Area. They shall also act as the managing agency implementing the management policies necessary to achieve the designation objectives of this plan.



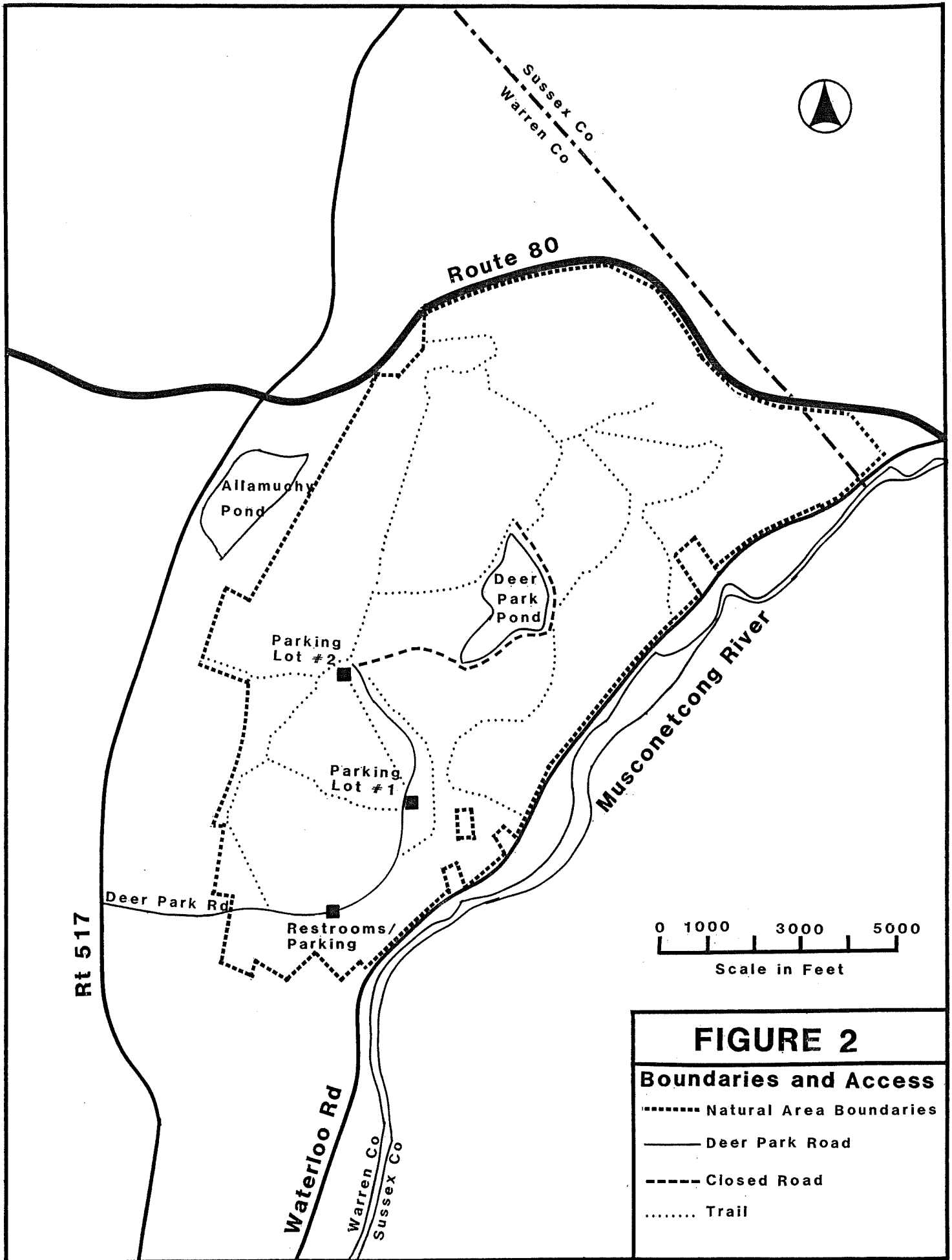
**FIGURE 1**



**General Location  
of Allamuchy  
Natural Area**



Scale in Miles



**FIGURE 2**  
**Boundaries and Access**  
 ..... Natural Area Boundaries  
 ——— Deer Park Road  
 - - - - Closed Road  
 ..... Trail

## SITE DESCRIPTION AND MANAGEMENT CONCERNS

### **Topography and Surface Hydrology**

Allamuchy Natural Area lies within the Highlands physiographic province. The topography of the area is typical of the Highlands with broad, massive ridges with rock outcroppings and steeply sloping narrow valleys. The highest elevation is 1,160 feet above sea level south of Deer Park Pond and the lowest is 700 feet on the eastern boundary along Waterloo Road. The majority of the natural area is an upland plateau with several individual peaks while the eastern and northeastern portions have the steepest slopes.

The natural area is part of the Delaware River Basin and includes the watershed of one of northwestern New Jersey's major rivers; the Musconetcong River. Deer Park Pond, located near the center of the area, is about 50 acres in size and lies within the Musconetcong River drainage (memorandum of Russell A. Cookingham, October 14, 1986). In addition to this sizeable pond (Figure 2), the natural area includes several smaller ponds and swamps and numerous small streams and runoff areas which have not been mapped on Figure 2.

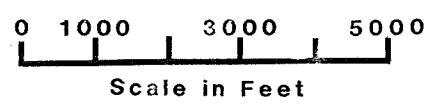
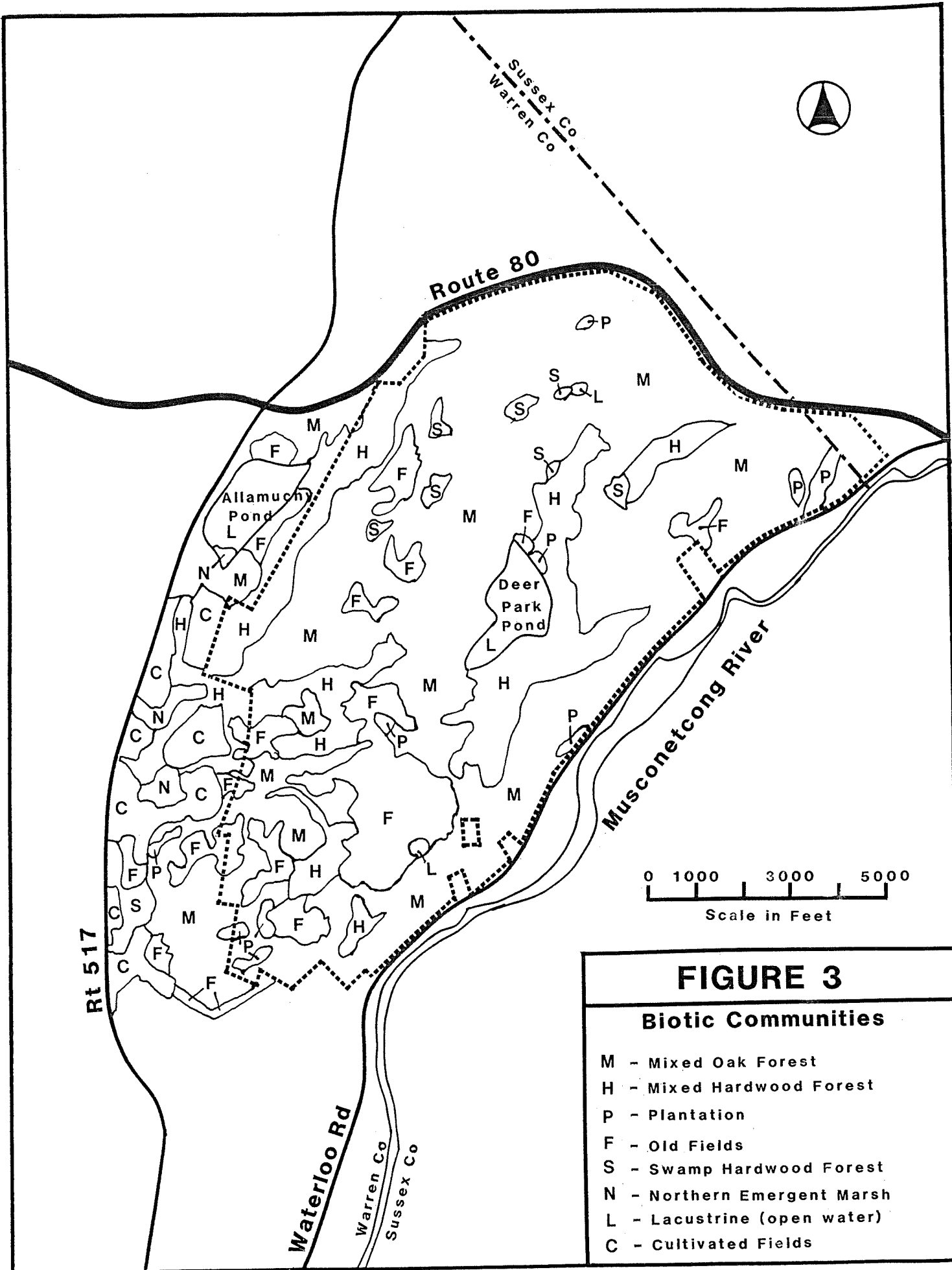
### **Geology and Soils**

The bedrock of this area is made up mostly of Precambrian granitic gneiss. Other lower lying portions of the natural area are underlain by Kittatinny Limestone and Martinsburg Shale of Paleozoic age (Wolfe, 1977). Because the natural area lies north of the terminal moraine, water bodies within the area were found in glacial hollows or in places of retarded drainage behind deposits of glacial moraine (Edwards and Kelcey, Inc., 1968).

The two predominant soil associations include the Rock outcrop - Rockaway - Parker and the Edneyville - Parker - Rock outcrop. These associations occur on ridges and slopes which are extremely stony and excessively drained. Slopes range up to 25 percent. Representative soil series include Rockaway stony loam and Washington gravelly and very stony loam. Carlisle muck occurs on nearly level swamps and low lying areas (U.S. Department of Agriculture, 1975).

### **Biotic Communities**

The community classifications, vegetative descriptions and Figure 3 were derived from aerial photo analysis by Joseph Arsenault, Office of Environmental Analysis and from field examination by Patrick B. Brown in September 1986. Additional information was obtained from Robichaud and Buell (1973). Figure 3 indicates only general locations and approximate boundaries for the various community types. Representative animal species for



**FIGURE 3**

**Biotic Communities**

- M - Mixed Oak Forest
- H - Mixed Hardwood Forest
- P - Plantation
- F - Old Fields
- S - Swamp Hardwood Forest
- N - Northern Emergent Marsh
- L - Lacustrine (open water)
- C - Cultivated Fields

the individual communities were derived from the Natural Heritage Program database (February 1987) and the Division of Fish, Game and Wildlife (memorandum of Russell A. Cookingham, October 14, 1986).

### Mixed Oak Forest

This mature upland community is the most prevalent community in the natural area, particularly in the northern portion. Dominant tree species that form the canopy include red oak (*Quercus rubra*), white oak (*Q. alba*) and black oak (*Q. velutina*). Other common trees are chestnut oak (*Q. prinus*), sugar maple (*Acer saccharum*), tulip tree (*Liriodendron tulipifera*), shagbark hickory (*Carya ovata*) and other hardwood species. The understory is composed of flowering dogwood (*Cornus florida*), shadbush (*Amelanchier arborea*), hop-hornbeam (*Ostrya virginiana*) and young trees of the same species found in the canopy layer. Highbush blueberry (*Vaccinium corymbosum*), Japanese barberry (*Berberis thunbergii*), maple-leaved viburnum (*Viburnum acerifolium*) and spicebush (*Lindera benzoin*) are typical of the shrub layer. Spring groundcover species include mayapple (*Podophyllum peltatum*), violets (*Viola* spp.), spring beauty (*Claytonia virginica*), Jack-in-the-pulpit (*Arisaema triphyllum*) and Solomon's seal (*Polygonatum pubescens*). In late summer and fall, white snakeroot (*Eupatorium rugosum*), yarrow (*Achillea millefolium*), grasses, sedges, asters and goldenrods are among the more conspicuous plants.

The mixed oak forest can be expected to contain a variety of mammals including Eastern chipmunk (*Tamias striatus*), Eastern gray squirrel (*Sciurus carolinensis*), Southern flying squirrel (*Glaucomys volans*), whitetail deer (*Odocoileus virginianus*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), porcupine (*Erethizon dorsatum*), mice, shrews and bats. Mammals occurring near the streams and waterways most likely include racoon (*Procyon lotor*), mink (*Mustela vison*) and long-tailed weasel (*M. frenata*).

Upland portions of the mixed oak forest can support a number of reptiles and amphibians including Eastern box turtle (*Terrapene carolina*), Northern brown snake (*Storeria dekayi*), Eastern garter snake (*Thamnophis sirtalis*), black rat snake (*Elaphe obsoleta*), red-backed salamander (*Plethodon cinereus*), wood frog (*Rana sylvatica*), and American toad (*Bufo americanus*). Among the reptiles and amphibians with potential to be found in the streams and waterways are Northern water snake (*Nerodia sipedon*), snapping turtle (*Chelydra serpentina*), green frog (*Rana clamitans*), pickerel frog (*R. palustris*) and Northern two-lined salamander (*Eurycea bislineata*).

Stratification within the mixed oak forest provides habitat for a large variety of birds. These may include great horned owl (*Bubo virginianus*), red-bellied woodpecker (*Melanerpes carolinus*), white-breasted nuthatch (*Sitta carolinensis*), wood thrush (*Hylocichla mustelina*), red-eyed vireo (*Vireo olivaceus*), and black-throated blue warbler (*Dendroica caerulescens*) to name a few. In addition, the natural area supports wild turkey (*Meleagris gallopavo*) and ruffed grouse (*Bonasa umbellus*).

According to the Division of Fish, Game and Wildlife, there is potential for trout reproduction in the tributaries to the Musconetcong River, but it has not been verified. The

Musconetcong is heavily stocked with trout in the spring and fall. Fish species that are typical of streams in this part of the State include creek chub (*Semotilus atromaculatus*), blacknose dace (*Rhinichthys atratulus*), white sucker (*Catostomus commersoni*) and common shiner (*Notropis cornutus*).

### **Mixed Hardwood Forest**

This community type is interspersed with the mixed oak forest and is found throughout the northern and southern sections of the natural area. The forest is composed of medium aged hardwoods including: bitternut and shagbark hickories, mockernut hickory (*Carya tomentosa*), sugar and red maples, various oaks, sweet birch, yellow birch (*Betula lutea*), honey locust (*Robinia pseudoacacia*), basswood (*Tilia americana*) and white ash. The tree understory contains sassafras (*Sassafras albidum*), flowering dogwood and young oak, birch, hickory and maple. A distinct shrub layer exists beneath the understory with vegetation similar to the mixed oak forest. This includes viburnum, highbush blueberry and spicebush. With the addition of sensitive fern (*Onoclea sensibilis*), the forest floor has many of the same species as the groundcover in the mixed oak forest.

The assemblage of wildlife species in the mixed hardwood community closely resembles that found in the mixed oak forest. Additional mammal species might include striped skunk (*Mephitis mephitis*) and little brown myotis (*Myotis leibii*). This community would also be expected to contain less mast-eating mammals such as squirrels. Additional bird species might include American goldfinch (*Carduelis tristis*), Northern oriole (*Icterus galbula*), scarlet tanager (*Piranga olivacea*) and tree swallow (*Tachycineta bicolor*).

### **Hemlock - Spruce Forest**

Bordering the northeastern shoreline of Deer Park Pond is a community of hemlock (*Tsuga canadensis*) and Norway spruce (*Picea abies*). This community, although small, is the largest of several pockets of plantation types species. The understory of the hemlock-spruce forest is a mixture of highbush blueberry and various oaks. Groundcover includes partridge berry (*Mitchella repens*) and mosses. In addition to wildlife mentioned in the previous two communities, this forest would likely contain the following species: red squirrel (*Tamiasciurus hudsonicus*), Southern red-backed vole (*Clethrionomys gapperi*), pine warbler (*Dendroica pinus*), pileated woodpecker (*Dryocopus pileatus*) and blue jay (*Cyanocitta cristata*).

### **Old Fields**

Numerous old fields and young woodlands are located throughout the southerly portion of the natural area. Common species include Eastern redcedar (*Juniperus virginiana*), ailanthus (*Ailanthus altissima*), young red oak, red maple, gray birch (*Betula populifolia*) and black cherry (*Prunus serotina*). Shrubs and vines include multiflora rose (*Rosa multiflora*), hawthorn (*Crataegus spp.*) and Japanese honeysuckle (*Lonicera japonica*). Some of the plants making up the herbaceous groundcover are barberry (*Berberis spp.*), goldenrod (*Solidago spp.*), yarrow and flat topped white aster (*Aster umbellatus*). In



addition, Carline thistle (*Carlina vulgaris*), an introduced Eurasian species found only in New Jersey and New York, can be found in the old field community (Snyder, 1987).

Successional fields support a variety of mammals including woodchuck (*Marmota monax*), Eastern cottontail rabbit (*Sylvilagus floridanus*), white-footed mouse (*Peromyscus leucopus*), meadow vole (*Microtus pennsylvanicus*), and many of the same species found in the upland forest including whitetail deer. Among the reptiles and amphibians this community can support are Eastern box turtle, Northern black racer (*Coluber constrictor*), Eastern milk snake (*Lampropeltis triangulum*) and American toad. Avian species may include rufous-sided towhee (*Pipilo erythrophthalmus*), Eastern meadowlark (*Sturnella magna*), song sparrow (*Melospiza melodia*), mourning dove (*Zenaida macroura*), and red-winged blackbird (*Agelaius phoeniceus*).

### Swamp Hardwood Forest

Pockets of this community mostly occur at the head of streams and watercourses within the area. The Yellow Trail, extending westerly in the southwest portion of the natural area, exhibits a good example of this community. Typical trees include red maple, sugar maple, silver maple (*Acer saccharinum*), swamp white oak (*Quercus bicolor*), white oak and sweet birch. The understory consists of hop-hornbeam, flowering dogwood, common alder (*Alnus serrulata*), bigtooth aspen (*Populus grandidentata*), witch-hazel (*Hamamelis virginiana*) and scattered stands of yellow birch (*Betula lutea*). Common herbs on the swamp forest floor are skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*) and a variety of sedges and mosses.

Although the swamp hardwood forest areas are scattered and small in size, the potential for diverse wildlife exists. Some of the mammals that are likely to occur are muskrat (*Ondatra zibethicus*), raccoon, mink, red squirrel, shorttail shrew (*Blarina brevicauda*) and star-nosed mole (*Condylura cristata*). Reptiles that are probable dwellers of this community include painted turtle (*Chrysemys picta*), spotted turtle (*Clemmys guttata*), Northern water snake, Northern brown snake and Eastern ribbon snake (*Thamnophis sauritus*). Common amphibians that likely inhabit the area are two-lined salamander (*Eurycea bislineata*), Eastern newt (*Notophthalmus viridescens*), gray treefrog (*Hyla versicolor*) and spring peeper (*H. crucifer*). A few of the many bird species that may frequent this area are green-backed heron (*Butorides striatus*), mallard (*Anas platyrhynchos*), Eastern screech-owl (*Otus asio*), hairy woodpecker (*Picoides villosus*), Eastern kingbird (*Tyrannus tyrannus*), yellow warbler (*Dendroica petechia*), Northern waterthrush (*Seiurus noveboracensis*) and swamp sparrow (*Melospiza georgiana*).

### Northern Emergent Marsh

This wetland community is found in scattered locations throughout the natural area. Common plants within the marsh include broad-leaved cattail (*Typha latifolia*), purple loosestrife (*Lythrum salicaria*), sweet flag (*Acorus calamus*), reed canary grass (*Phalaris arundinacea*), jewelweed (*Impatiens biflora*), and marsh fern (*Thelypteris palustris*). Shrub species occurring in this habitat are meadowsweet (*Spiraea alba*), arrowwood (*Viburnum*

*dentatum*), and silky dogwood (*Cornus obliqua*).

The marsh areas are likely to contain many of the same species found elsewhere in the natural area. Mammals include muskrat, shorttail shrew and meadow vole. Reptiles and amphibians that inhabit the marshes are Northern water snake, Eastern garter snake, spotted turtle, painted turtle and Southern leopard frog (*Rana sphenoccephala*). Some of the more common bird species include song sparrow, belted kingfisher (*Ceryle alcyon*), red-winged blackbird and common yellowthroat (*Geothlypis trichas*).

### Lacustrine

The lacustrine habitat includes open nonvegetated standing water and shallow water characterized by the frequent presence of rooted aquatic plants. Deer Park Pond is the primary example of this habitat within the natural area. The most representative form of wildlife are the various fish species. Surveys conducted by the Division of Fish, Game and Wildlife in the 1950's indicate the following populations exist within Deer Park Pond (memorandum of Russell A. Cookingham, October 19, 1986). The dominant predators are largemouth bass (*Micropterus salmoides*) and chain pickerel (*Esox niger*). The most common panfish include: bluegill (*Lepomis macrochirus*), pumpkinseed (*L. gibbosus*), black crappie (*Pomoxis nigromaculatus*), yellow perch (*Perca flavescens*) and brown bullhead (*Ictalurus nebulosus*). Among the other species present are carp (*Cyprinus carpio*), golden shiner (*Notemigonus crysoleucas*) and chubsucker (*Erimyzon spp.*).

Mammals occurring in or near the pond are muskrat, river otter (*Lutra canadensis*) and mink. Deer Park Pond also has resident beavers (*Castor canadensis*) whose dams and lodges can be found on the shoreline. Probable reptiles in the ponds include snapping turtle (*Chelydra serpentina*), stinkpot (*Kinosternon odoratus*), spotted turtle, Northern water snake and Eastern ribbon snake. Amphibians include Eastern newt, bullfrog (*Rana catesbeiana*), green frog (*R. clamitans*) and Southern leopard frog. Bird species frequenting the ponds include wood duck (*Aix sponsa*), gadwall (*Anas strepera*), blue winged teal (*A. discors*), common merganser (*Mergus merganser*), and belted kingfisher.

### Endangered and Threatened Species

The Natural Heritage Program database (October 1986) has identified an assemblage of limestone fen plants occurring within a small area in the southern section of the natural area. This area is impacted from past human use. Within this assemblage of plants are three rare species: Eastern smoke grass (*Muhlenbergia glomerata*), water avens (*Geum rivale*) and meadow willow (*Salix petiolaris*). These species are predominantly restricted to the calcareous conditions of a limestone fen.

The New Jersey Division of Fish, Game and Wildlife has a recorded sighting of barred owl (*Strix varia*), a State threatened species, within Allamuchy. Although this is the only record of an endangered or threatened species, it is possible that the following species

may also exist here due to the area's suitable habitat (memorandum of Russell A. Cookingham, October 14, 1986):

bog turtle (*Clemmys muhlenbergii*) (E)  
timber rattlesnake (*Crotalus horridus*) (E)  
long-tailed salamander (*Eurycea longicauda*) (T)  
wood turtle (*Clemmys insculpta*) (T)  
Cooper's hawk (*Accipiter cooperii*) (E)  
cliff swallow (*Hirundo pyrrhonota*) (E, breeding)  
vesper sparrow (*Pooecetes gramineus*) (E)  
osprey (*Pandion haliaetus*) (T)  
red-shouldered hawk (*Buteo lineatus*) (T)  
red-headed woodpecker (*Melanerpes erythrocephalus*) (T)  
great blue heron (*Ardea herodias*) (T)  
bobolink (*Dolichonyx oryzivorus*) (T)  
savannah sparrow (*Passerculus sandwichensis*) (T)  
grasshopper sparrow (*Ammodramus savannarum*) (T)  
brook trout (*Salvelinus fontinalis*) (T)

## Human Use

Current public recreational uses include hiking, birdwatching, fishing, deer hunting, cross county skiing, orienteering, horseback riding and boating (electric motors only) at Deer Park Pond.

The natural area is part of an area designated by the Division of Fish, Game and Wildlife as Deer Management Zone 40 which includes lands south of Route 80, west of the Musconetcong River and east of Route 517. Management Zone 40, known as "Deer Park," has a special deer hunting permit season. A total of 60 shotgun permits, 72 muzzleloader permits and 65 bow permits are available for the 1988 hunting season (New Jersey Department of Environmental Protection, 1988a). Approximately 50 deer are killed by hunters in Zone 40 each year (memorandum of Russell A. Cookingham, October 14, 1986). This is the only hunting presently allowed within the natural area.

Several years ago, the State of Arkansas had personnel trapping ruffed grouse within Allamuchy in an effort to re-introduce grouse into their state. In exchange, Arkansas wild turkeys were released in Allamuchy Mountain State Park. (John B. Broshkevitch, personal communication).

The fields located primarily in the southern portion of the natural area are maintained as fields to create a greater diversity of habitats and species and to offer the visitor a unique opportunity to view old field successional stages in an otherwise typical northern New Jersey hardwood forest. However, thus far, no attempt has been made to identify the specific ages of fields in order to provide educational opportunities for the public.

The number of visitors using the natural area at any one time has not been quantified. Meaningful statistics on visitor use would aid in determining future management.

### **Man-made Features**

Deer Park Pond was formed by an earth-filled dam across a stream leading to the Musconetcong River. As part of the National Dam Safety Program, the U.S. Army Corps of Engineers performed a Phase I Inspection Report for Deer Park Pond Dam in 1981 and listed the dam as a significant hazard potential structure in poor overall condition. The subsequent Phase II report by a private consultant included alternative remedial measures and preliminary cost estimates (Woodward-Clyde Consultants, 1984). As a result of the Phase I and II reports, the Division of Parks and Forestry has proposed future funding for repairs and maintenance of the dam. However, current funding is not available. Because of continuing sink holes developing along the top of Deer Park Pond Dam, only maintenance vehicles are allowed up to the spillway (Guidotti, 1986).

The natural area is presently accessible only by Deer Park Road. This gravel, mostly single lane road enters the natural area off of Route 517 (Figure 2) and extends 3.6 miles to the northern shoreline of Deer Park Pond. A restroom/parking area, located 0.8 miles in from Route 517, is a mowed area containing the only public restrooms within the natural area. One mile further along the road is parking lot #1, and 0.6 miles past this is parking lot #2, both mowed, grassy areas. In 1983, as a result of severe budget restrictions, the last 1.2 miles of road past lot #2 was closed to vehicles. In addition, from January 1 to March 31, the road between lot #1 and #2 is also closed to vehicles. Trash cans are kept at these lots and trash pickup is made weekly by Park personnel.

There are numerous trails throughout the natural area that offer easy access through the various community types (Figure 2).

Just prior to reaching parking lot #1 along Deer Park Road is a house owned by the Division of Parks and Forestry and currently occupied by the Superintendent of Hopatcong State Park. Associated with the former farmhouse is a small one-car garage and a small pond behind the house. In addition, there is a vacant house near the restroom/parking area. The house was formerly used for employee housing.

### **Other Features/Issues of Interest**

The first mile of the existing entrance road (Deer Park Road) to Allamuchy Natural Area is privately owned (Figure 2). In order to gain control of the entrance, State Park Service has proposed that a new two-way entrance road be built off of Route 517 on State Park property. The two-way entrance road would traverse through the Miller Farm land using existing roads where possible. The road would intersect with the Yellow Trail (an old farm road) where it would begin an interior one-way loop road. After heading south

on what is now the Yellow Trail, the road would join Deer Park Road and continue on a one-way loop to Parking Lot #2. From this point the road would continue on what is currently the Red Trail, west to where the Yellow Trail meets the two-way entrance road, thereby completing the loop. The existing Deer Park Road entrance would no longer be used for public access to the natural area (Bart H. Wallin, personal communication).

According to a report prepared by State Park Service (Ojamaa and Smith, 1982), Allamuchy Pond's southern shoreline and the old farm area to the south have potential for intensive recreational development. The report indicates that the south shore area of the pond could be developed into a day-use complex for 1,500 to 2,000 people. Facilities would include a swimming beach, family picnic areas, play fields, bathhouse, comfort stations and parking areas. A family campground with 100-150 campsites and associated facilities would be developed in the area of old farm fields located approximately 3,500 feet to the south of Allamuchy Pond. Other areas within Allamuchy Mountain State Park were also recognized as having potential for recreational development (Ojamaa and Smith, 1982).

The State Green Acres Program is currently pursuing acquisition of the Mattison property, an inholding located just north of Waterloo Road that is surrounded by natural area.

## MANAGEMENT TECHNIQUES

### **Rules and Regulations**

Relevant sections of the rules and regulations concerning Natural Areas and the Natural Areas System (N.J.A.C. 7:2-11.1 et seq.) appear in Appendix A. An important function of these rules is to provide general interim management guidelines for all natural areas for which management plans have not been prepared. Upon preparation of a management plan, interim management guidelines may continue or may be superseded by management techniques more appropriate to fulfill the designation objective of the natural area. The following analysis will outline management uses contrary or supplemental to existing rules. Appendix A should be consulted by managers for guidance on issues not covered below.

### **Designation Objectives and Classification**

The designation objectives for Allamuchy Natural Area are "preservation of a hardwood forest of significant size, successional fields and protection of a rare plant community." Management efforts must be directed toward maintaining the diverse character of the area while still allowing for a variety of recreational opportunities for the visitor. Public use will only be allowed to the extent that it will not impair the integrity of the natural area. Other primary objectives are to protect the limestone fen community and its associated rare plant species and to maintain habitat for the state-threatened barred owl. In addition, habitat diversity must continue in order to sustain the wide array of wildlife species found at Allamuchy. Therefore, portions of the natural area, as will be outlined below, are classified as conservation preserve in order to allow for manipulation of habitat, while the majority of the area will encompass an ecological reserve, where little to no habitat manipulation is required.

The following management techniques are directly related to previous sections of this plan and the interim management guidelines found in Appendix A. Techniques are based in part on consultation with appropriate agencies, individuals, and the Natural Areas Council, and are designed to adequately maintain, and, if possible, enhance the quality of the natural area.

Throughout this section, administering and managing agency refers to the Division of Parks and Forestry, through Hopatcong State Park.

### **Boundaries**

1. Figure 2 indicates the boundaries of the natural area, which are somewhat revised from that which was previously accepted. Several interior parcels and

acquisitions contiguous with the natural area have been added. The former boundaries excluded the entire entrance road corridor up to parking lot #2. In addition, areas north of and adjacent to Waterloo Road have been added to the natural area because of acquisitions which occurred after the original boundaries were drawn.

2. A portion of Allamuchy Pond and acreage east of the Pond have been deleted from the natural area. The area east of Allamuchy Pond, and forming a portion of the western boundary of the natural area, is a line 500 feet east of and parallel to an existing fence beginning at the northern terminus of the northernmost Miller field and continuing northeast along a straight transect until it intersects with the same fence near the northern boundary of the natural area (Figure 2).

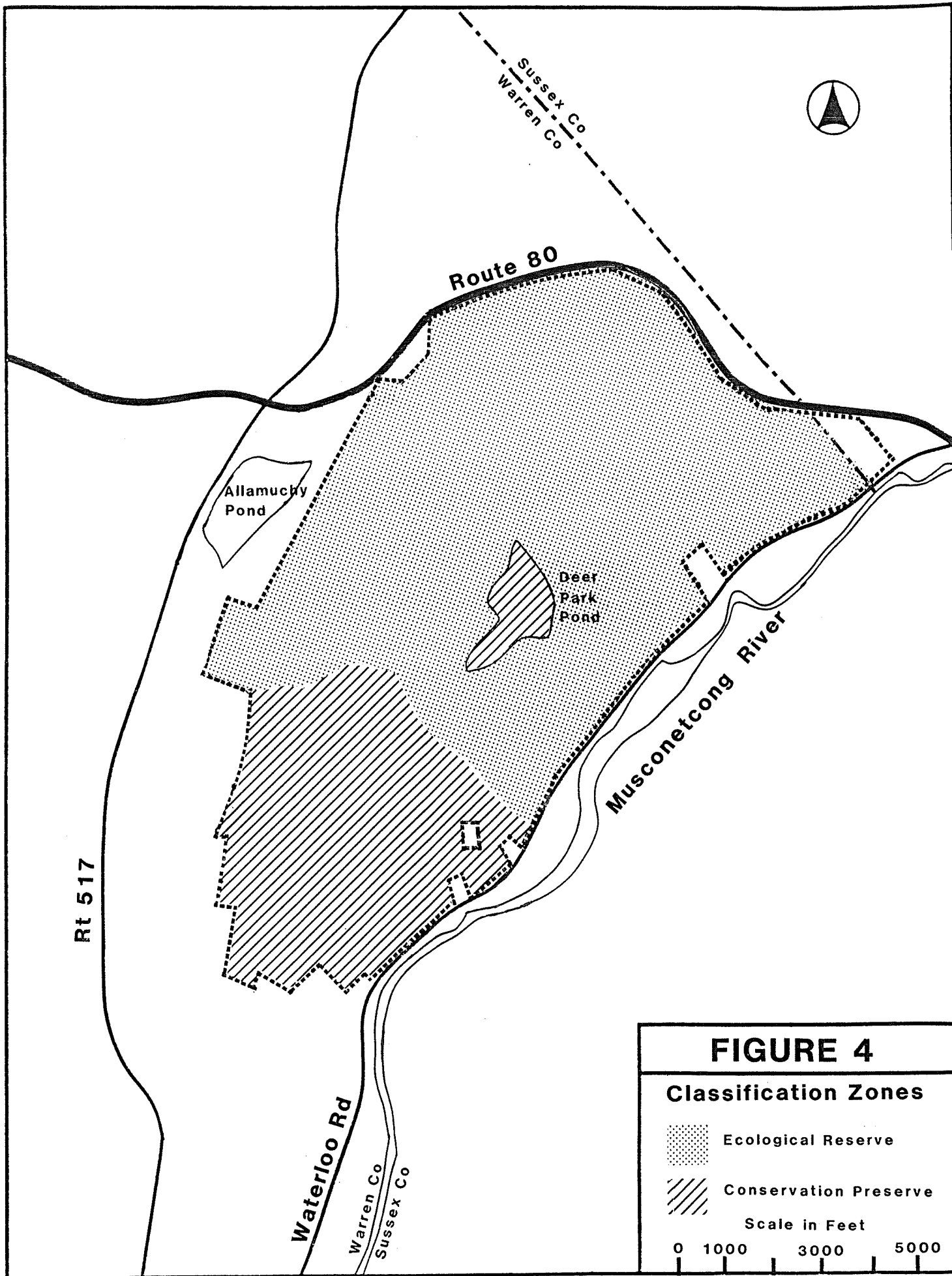
The Miller Farm leased land along Route 517 has been deleted from the previously accepted boundary since the Natural Areas Act of 1975 prohibits leased lands within natural areas and because Miller Farm held the lease prior to the State purchasing the property. However, if the lease is terminated, the area will then be under consideration to be added to Allamuchy Natural Area.

Interior exceptions to the natural area boundaries include both the occupied and vacant dwellings and their curtilage. This includes the garage and small parking area opposite the occupied dwelling.

3. If the State secures the Mattison property or any additional lands through acquisition or easement, these lands will be considered for inclusion into the natural area.



### **Habitat Manipulation**

1. Classification zones are indicated in Figure 4. Refer to Appendix A for general guidelines for permitted habitat manipulation activities within these zones.
2. The Office of Natural Lands Management, State Park Service and State Forestry Services have formulated a plan whereby habitat manipulation would be necessary to support a range of fields of various ages at any one time. This "Successional Field Maintenance Plan" is included in Appendix B.
3. In the event Deer Park Pond becomes eutrophic to the point where weed control is necessary, mechanical weed control can be performed by the administering agency without Natural Areas Council approval. However, if other means are needed to control weeds, these control measures would have to be reviewed by the Office of Natural Lands Management and the Natural Areas Council prior to implementation. Efforts should be made to protect wildlife habitat during any weed control practices. Because the use of weed control is considered a habitat

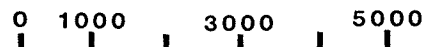


**FIGURE 4**

**Classification Zones**

-  Ecological Reserve
-  Conservation Preserve

Scale in Feet





manipulation technique, Deer Park Pond shall be classified as Conservation Preserve.

### **Human Use**

1. All current recreational uses shall be allowed to continue since these activities appear to have no serious or long term effects on the integrity of the area.
2. Camping and off-road vehicles are prohibited.
3. It is recommended that the farm house on Deer Park Road continue to be used for employee housing. Any proposed change in use must first be reviewed by the Office of Natural Lands Management and the Natural Areas Council.
4. The 1.2 miles of Deer Park Road past parking lot #2 shall remain closed to vehicles other than Park maintenance, emergency and security vehicles. There shall be no new parking area built past lot #2.

### **Endangered and Threatened Species Management**

1. In order to protect the rare limestone fen community, hydrology changes in the area of the fen must be avoided. Any plans for trails, roads, etc. that may alter drainage patterns or impact the fen in any way must first be reviewed by the Office of Natural Lands Management and the Natural Areas Council.
2. Management for barred owl at Allamuchy can be accomplished by providing adequate habitat. Since the barred owl nests in cavities in mature trees, old growth forest is necessary to maintain the owls at Allamuchy. Within the natural area, mature forest is provided in the Ecological Reserve and in sections of the Conservation Preserve. Management for other wildlife species that have potential to occur will be formulated when the species are documented to be present.
3. Because of the sensitivity of this information, the exact mapped locations of the rare community and rare species will not be provided in this report. However, the administering agency will be provided with the locations in order to manage these rare occurrences.

### **Needed Research**

1. The program identifying successional fields, together with the other representative biotic communities, will hopefully encourage research. Findings from this research would help contribute to resource decisions for Allamuchy Natural Area.

### **Proposed Projects**

1. If State Park Service decides to pursue their proposal to relocate the entrance road, all development plans shall be forwarded to the Office of Natural Lands Management for review and recommendation by the Natural Areas Council.
2. Deer Park Pond dam repairs will be permitted if and when funding becomes available. These repairs shall be made only for safety considerations and shall conform with the Dam Safety Act and any other Federal or State regulations. However, these repairs shall not increase the width or height of the dam unless the current size is in violation of any regulations; in which case the project shall be reviewed by the Natural Areas Council and the Office of Natural Lands Management. In addition, there shall be no changes in the current water levels. Presently, only maintenance and emergency vehicles are allowed to cross the dam.

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APPENDIX A

INTERIM MANAGEMENT PRACTICES FOR NATURAL AREAS

From Natural Areas System Rules  
(N.J.A.C. 7:2-11.1 et seq.)

7:2-11.9 INTERIM MANAGEMENT PRACTICES

- (a) Interim management practices shall be implemented by the administering agency, provided that:
  - 1. The practice will have no direct or indirect adverse impact on natural features of concern;
  - 2. The administering agency notifies the secretary of the Council, in writing, no later than 30 days after initiating the practice;
  - 3. Approval of the Commissioner is not required by provision elsewhere in this subchapter; and
  - 4. The practice is consistent with terms of any conservation easement held by the Department.
- (b) Interim management practices which require the approval of the Commissioner shall first be submitted to the Council for its review and recommendation.
- (c) Upon finding that an interim management practice listed below at (e) or (f) would be detrimental to achieving a specific designation objective, the Council shall recommend to the Commissioner the substitution of a more appropriate interim management practice. Should the Commissioner concur with the recommendation of the Council, the Commissioner may approve substitution by a more appropriate interim management practice.
- (d) Where there are conflicts between general practices described below at (e) and practices specific to a natural area classification described below at (f), the latter shall apply.
- (e) The following interim management practices apply generally to all natural areas:
  - 1. Natural area boundaries shall be made clearly evident by posting signs at a maximum density of ten signs per mile; entrance points shall be posted to indicate to users that they are entering a natural area; boundary signs shall be

- of a standard size and format as approved by the Commissioner and provided by the Division;
2. Boundary fences that are needed to protect the natural area may be installed provided the fence shall not have a detrimental effect on movement of wildlife, air circulation, or other natural conditions;
  3. Vehicular access lanes may be maintained within a natural area but may not be enlarged in any manner except upon approval of the Commissioner.
  4. Existing firebreaks within a natural area may be maintained for safety purposes; temporary firebreaks made by mowing, raking, plowing or wetting, may be used in conjunction with prescribed burning for habitat management;
  5. Existing structures may be maintained in a natural area but may not be enlarged; new structures, of a temporary nature, may be constructed for research purposes in accordance with N.J.A.C. 7:2-11.10;
  6. No measures, such as cutting of grass, brush, or other vegetation, thinning of trees, opening of scenic vistas, or planting, shall be taken to alter natural processes or features for the purpose of enhancing the beauty or neatness of a natural area;
  7. Except as otherwise provided in this section, there shall be no introduction, removal or consumptive use of any material, product, or object to or from a natural area; prohibited activities include grazing by domestic animals, farming, gathering of plants or parts thereof, mining or quarrying, and dumping, burying, or spreading of garbage, trash, or other materials; structures or materials may be removed as follows:
    - i. Old interior fences may be removed, giving consideration to leaving posts to mark boundaries between former land uses;
    - ii. Rubbish or any other waste material may be removed; and
    - iii. Structures having no historic, scientific or habitat value may be demolished and removed unless such structures are deemed essential for administrative purposes;
  8. Water levels within a natural area shall not be altered except to restore water levels which have been altered due to a sudden natural phenomena or man-induced conditions off-site; routine repairs to existing water control structures may be undertaken but the structures may not be enlarged;
  9. All wildfires shall be brought under control as quickly as possible; after a fire within a natural area, there shall be no cleanup or replanting except as approved

by the Commissioner to achieve the designation objective or for reasons of health and safety;

10. Prescribed burning, to eliminate safety hazards and to manage habitat, may be conducted upon review of a proposal for prescribed burning by the Council and approval by the Commissioner; use of vehicles and equipment shall be specified in the proposal for prescribed burning;
11. Erosion control within a natural area shall not be undertaken except to restore existing grades which have been altered due to a sudden natural phenomena or man-induced conditions within or beyond the natural area;
12. Habitat manipulation may be undertaken if preservation of a particular habitat type or species of native flora or fauna is included in the designation objective of the natural area and the prior approval of the Commissioner is obtainable;
13. Gypsy moth control activities may be implemented as an interim management practice after approval by the Commissioner; the Commissioner shall review a control plan only after the State Forester has determined that egg mass counts and prior year defoliation indicates that tree mortality will be severe without intervention; to the extent practicable, biological controls, rather than chemical means, shall be used to control gypsy moths;
14. There shall be no physical manipulation of a natural area or application of chemicals known as adulticides for the purpose of controlling mosquitos; the application of larvacides may be permitted in salt marshes only and only as follows:
  - i. The application of Bacillus thuringiensis var. israelensis (BTI) may be initiated by a mosquito control agency at any time; and
  - ii. The application of other larvacides may be initiated upon approval by the Commissioner of a specific plan submitted by a mosquito control agency; the plan shall identify the specific area where an application will be made, the types and amount of larvacide to be applied, the need for the application, and the reason why BTI cannot be used for this application;
15. Research activities and the collection of specimens may only be conducted in accordance with N.J.A.C. 7:2-11.10 and upon approval of the administering agency; and
16. Public use of natural areas shall be allowed only to the extent and in a manner that it will not impair natural features; the administering agency may restrict access and use as necessary to protect the natural area; the following are permissible public uses:

- i. Hunting, trapping, and fishing are permitted in accordance with N.J.A.C. 7:25-5 and 7:25-6; except for the stocking of fish and game, habitats may not be manipulated for the purpose of enhancing hunting, trapping, or fishing;
  - ii. Occasional camping along trails, boating, and swimming may be permitted in specified locations of natural areas in accordance with N.J.A.C. 7:2-2, 7:2-5, 7:2-7, 7:2-8, and 7:25-2, and are further limited as follows:
    - (1) No permanent structures may be erected;
    - (2) No motorized methods of boating or camping are permitted;
    - (3) Trailside shelters of the type called lean-tos are permitted, but there may not be two such shelters within three miles of each other; and
  - iii. Existing trails may be maintained, but not enlarged in any manner, by the administering agency to allow public use and prevent erosion, trampling of vegetation beyond the trails, and other deterioration as follows:
    - (1) New trails or enlargement of existing trails for interpretive purposes may be initiated subsequent to review of a plan by the Council and approval of that plan by the Commissioner;
    - (2) Rare plants may not be removed for the purpose of maintaining existing or constructing new trails; and
    - (3) To the extent possible, natural materials shall be used on and along trails; and
  - iv. All pets shall be kept caged or leashed and under immediate control of the owner except that dogs used while legally hunting shall be exempt from the leashing requirement.
- (f) The following interim management practices, unless superseded by an adopted management plan, apply to the appropriate specified natural area classifications:
1. Location markers identifying interpretation points of interest may be installed except within ecological reserves;
  2. Trail blazes may be used within any natural area;
  3. Existing vehicular access lanes may not be enlarged in any manner within an ecological reserve;
  4. New vehicular access lanes may be constructed only within buffer areas and upon approval by the Commissioner;

5. New structures and enlargement of existing structures may be undertaken by the administering agency only within buffer areas, provided the structures directly or indirectly contribute to the designation objective;
6. The alteration of natural processes or features for the purpose of enhancing public use of the natural area may be conducted by the administering agency only within buffer areas; and
7. The following management practices shall not be permitted within ecological reserves:
  - i. New, existing, or temporary firebreaks;
  - ii. Construction of new trails;
  - iii. Alteration or restoration of water levels;
  - iv. Prescribed burning;
  - v. Erosion control measures;
  - vi. Gypsy moth control activities; and
  - vii. Manipulation of vegetation and wildlife habitats.



APPENDIX B

SUCCESSIONAL FIELD MAINTENANCE PLAN  
FOR THE ALLAMUCHY NATURAL AREA

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INTRODUCTION

The designation objective of the Allamuchy Natural Area includes the preservation of successional fields (N.J.A.C. 7:2-11.12(c)2). The purpose of this field maintenance is to provide the public with an opportunity to view a variety of old-fields in various stages of secondary succession within a relatively small area. Education as well as research are to be encouraged within this area. In addition, the Allamuchy Natural Area Management Plan indicates that all fields must be labelled as to their age since clearing. The only other location in New Jersey that supports an organized patchwork of variably aged successional fields is the William L. Hutcheson Memorial Forest of Rutgers University. However, Hutcheson Forest is located in Somerset County in the Piedmont physiographic province while Allamuchy Natural Area lies north of the terminal moraine of the Wisconsin ice sheet in the Highlands physiographic province.

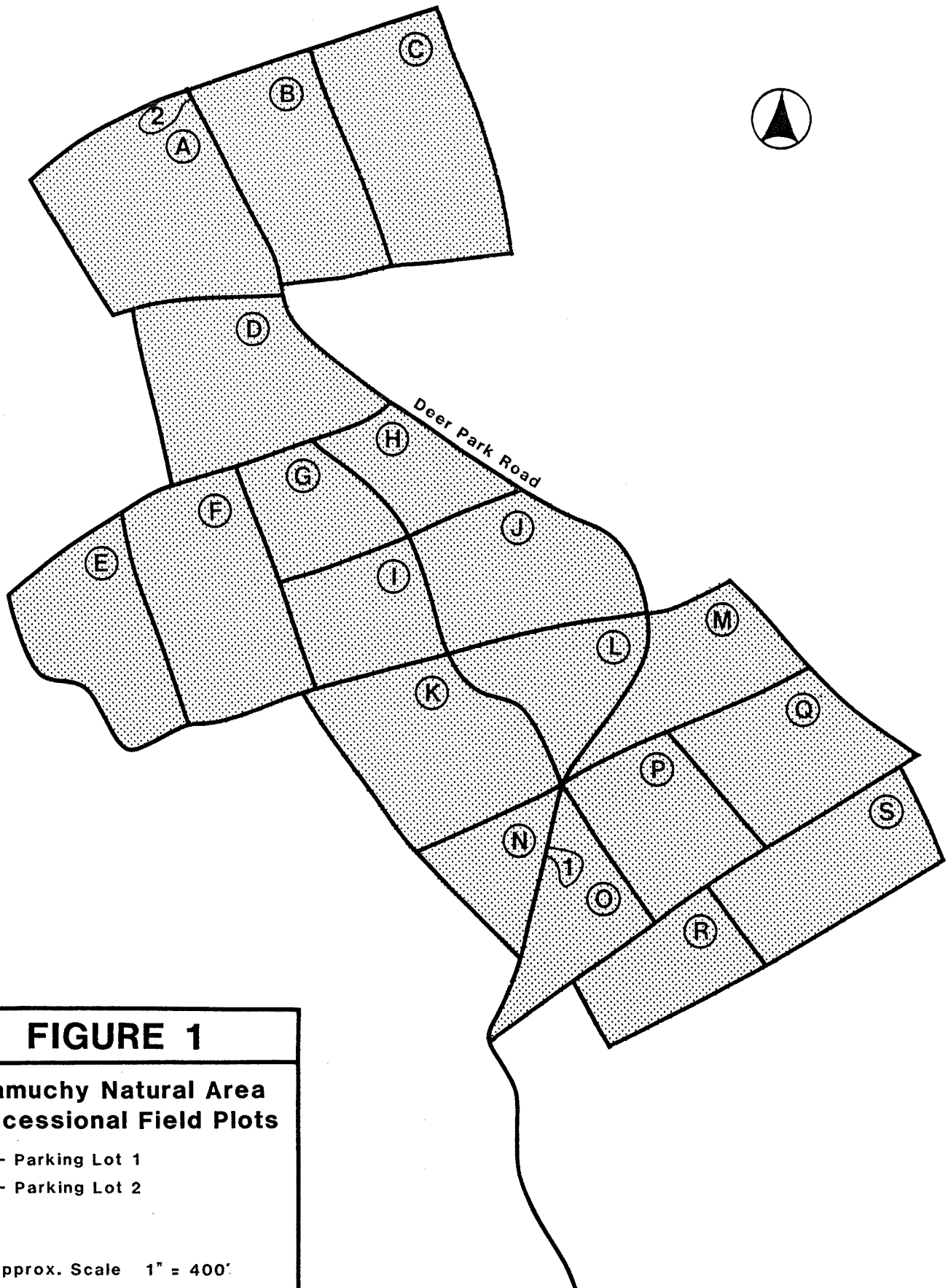
The south-central portion of the Allamuchy Natural Area contains a patchwork of fields, young woodlots, forest and hedgerows which have been manipulated in a variety of ways since they were abandoned from farming. These fields are located on both sides of Deer Park Road between Parking Lot 1 and 2, and form part of the Conservation Preserve in which habitat manipulation is permissible. Although these fields range in age from one year since clearing to near maturity in structure and composition, few records have been kept as to their exact ages or the method of clearing used. In many cases, individual trees

or stands were left uncut when fields were "cleared," so that a patchwork exists within a single field.

The purpose of this plan is to provide an organized framework for the maintenance of successional fields within the Allamuchy Natural Area that would permit public interpretation and encourage scientific research. The plan addresses a 10-year period, after which a new plan will be prepared.

### PROCEDURES AND METHODS

1. The manipulation activities outlined in this plan shall be restricted to the area delineated in Figure 1. This area is subdivided into nineteen "fields", labelled A to S, which now contain vegetation ranging from one year of growth since clearing to fully developed woodlots. The individually labelled fields or plots are easily recognizable in the field because they are, for the most part, separated by continuous or intermittent stone walls, which often are associated with well developed hedgerows. Fields A and O contain parking areas #1 and #2, respectively. Deer Park Road borders or touches a corner of 11 of the 19 fields. The size and current condition of each field as observed on December 22, 1988 is briefly described in Table 1.
2. Table 2 indicates a 10 year clearing schedule for all 19 fields and is aimed at displaying fields in various successional stages within each year. Duplicate and triplicate age treatments may be provided in any one year. Although the proposed clearing schedule need not be strictly adhered to, it should provide a solid framework for planning. Modifications may be made to the schedule in Table 2, due to availability of funding, equipment, personnel, or other practical considerations, provided that prior approval is obtained from the Natural Areas Council. The Administering Agency should notify the Council of any proposed modifications by August 1 of each year.
3. Three fields in Table 2 are designated as Option Fields in which optional clearing activities may be conducted. This is to provide additional flexibility in the clearing schedule and in methodology. No clearing activity is prescribed for seven fields which are currently much more advanced successionally than the others (Tables 1 and 2). Clearcutting of these woodlots may be pursued in future plans or by the Administering Agency on an as-needed basis.
4. Although the clearing schedule in Table 2 indicates that the oldest field of known age in 1999 will be nine years, a future goal will be to display fields of much older age classes such as 6-10, 11-20, 21-30, and 30-35 years. Future plans should consider this goal.
5. Field clearing activities should be conducted between late fall and late winter, although fall clearing is preferred. In clearing fields, all above ground biomass should be removed, including all trees. The most desired field preparation technique following removal of any woody vegetation is plowing, but burning may also be used. Existing



**FIGURE 1**

**Allamuchy Natural Area  
Successional Field Plots**

- 1 - Parking Lot 1
- 2 - Parking Lot 2

Approx. Scale 1" = 400'

TABLE 1  
SIZE AND DESCRIPTION OF FIELD PLOTS  
AS OBSERVED ON DECEMBER 22, 1988

| <u>PLOT</u> | <u>APPROX.<br/>ACREAGE</u> | <u>DESCRIPTION</u>   |
|-------------|----------------------------|--|
| A           | 7                          | Uniform field, approximately one year since clearing. Gently sloping.  |
| B           | 5.5                        | Well Developed herbaceous and shrub growth with hardwood trees 4-7 years in age and one tree of about 25 years. Drum chopping and removal of single tree required prior to clearing. Gently sloping. |
| C           | 7                          | Very similar to Plot B.  |
| D           | 6.5                        | Herbaceous growth recently cleared, contains some shrub growth. Unpaved road. Moderately sloping.  |
| E           | 5                          | Well developed herbaceous and shrub growth with hardwood trees 5-6 years in age. Some recent clearing of herbaceous and shrub growth. Drum Chopping required. Gently sloping.                        |
| F           | 6.5                        | Similar to plot E, but estimated to be 2-3 years since clearing. Some young tree growth. Gently sloping.   |
| G           | 3                          | Uniform field, approximately one year since clearing. Moderately sloping.  |
| H           | 2.5                        | Very similar to plot G.  |
| I           | 3.5                        | Young woodlot 15-30 years in age. Moderately sloping.  |
| J           | 5                          | Very similar to plot I.  |
| K           | 6                          | Not observed, but believed to be an older  |

TABLE 1

(continued)

| <u>PLOT</u> | <u>APPROX.<br/>ACREAGE</u> | <u>DESCRIPTION</u>  |
|-------------|----------------------------|---|
|             |                            | woodlot, age not known. Moderately sloping.   |
| L           | 3.5                        | Older woodlot with semi-open canopy, age not known. Moderate to steep slopes.   |
| M           | 4                          | Very similar to L.  |
| N           | 2.5                        | Young woodlot containing patchwork of cleared zones. Trees up to 15 years in age. Drum chopping required prior to clearing. Steep slopes.   |
| O           | 3                          | Uniform field, approximately one year since clearing. Gently sloping.   |
| P           | 4.5                        | variably aged field containing a patchwork of herbaceous growth, well developed shrubs and young trees up to 15 years in age. Drum chopping required prior to clearing. Moderately sloping. |
| Q           | 5                          | Older woodlot, age not known. Moderately sloping.   |
| R           | 3                          | Field approximately one year since clearing, also containing some young tree growth. Drum chopping required prior to clearing. Gently sloping.  |
| S           | 4.5                        | Very similar to plot R.   |

TABLE 2

TEN-YEAR CLEARING SCHEDULE FOR SUCCESSIONAL FIELD MAINTENANCE  
AT THE ALLAMUCHY NATURAL AREA

| ACTIVITY (AGE) |             |             |             |             |             |
|----------------|-------------|-------------|-------------|-------------|-------------|
| <u>PLOT</u>    | <u>1990</u> | <u>1991</u> | <u>1992</u> | <u>1993</u> | <u>1994</u> |
| A              | CLEAR (1)   | - (2)       | CLEAR (1)   | - (2)       | CLEAR (1)   |
| B              | CLEAR (1)   | - (2)       | - (3)       | CLEAR (1)   | - (2)       |
| C              | -           | CLEAR (1)   | - (2)       | - (3)       | - (4)       |
| D              | -           | -           | -           | -           | CLEAR (1)   |
| E              | -           | -           | -           | -           | -           |
| F              | -           | CLEAR (1)   | - (2)       | - (3)       | CLEAR (1)   |
| G*             |             |             |             |             |             |
| H*             |             |             |             |             |             |
| I              | -           | -           | -           | -           | -           |
| J              | -           | -           | -           | -           | -           |
| K              | -           | -           | -           | -           | -           |
| L              | -           | -           | -           | -           | -           |
| M              | -           | -           | -           | -           | -           |
| N              | -           | -           | -           | -           | -           |
| O              | CLEAR (1)   | CLEAR (1)   | CLEAR (1)   | CLEAR (1)   | CLEAR (1)   |
| P              | CLEAR (1)   | - (2)       | - (3)       | - (4)       | - (5)       |
| Q              | -           | -           | -           | -           | -           |
| R              | -           | CLEAR (1)   | - (2)       | CLEAR (1)   | - (2)       |
| S*             |             |             |             |             |             |

\* Option fields

TABLE 2  
(continued)

| ACTIVITY (AGE) |             |             |             |             |             |
|----------------|-------------|-------------|-------------|-------------|-------------|
| <u>PLOT</u>    | <u>1995</u> | <u>1996</u> | <u>1997</u> | <u>1998</u> | <u>1999</u> |
| A              | - (2)       | CLEAR (1)   | - (2)       | CLEAR (1)   | - (2)       |
| B              | - (3)       | - (4)       | - (5)       | - (6)       | - (7)       |
| C              | - (5)       | - (6)       | - (7)       | - (8)       | - (9)       |
| D              | - (2)       | - (3)       | - (4)       | - (5)       | - (6)       |
| E              | CLEAR (1)   | - (2)       | - (3)       | - (4)       | - (5)       |
| F              | - (2)       | - (3)       | CLEAR (1)   | - (2)       | - (3)       |
| G*             |             |             |             |             |             |
| H*             |             |             |             |             |             |
| I              | -           | -           | -           | -           | -           |
| J              | -           | -           | -           | -           | -           |
| K              | -           | -           | -           | -           | -           |
| L              | -           | -           | -           | -           | -           |
| M              | -           | -           | -           | -           | -           |
| N              | -           | -           | -           | -           | -           |
| O              | CLEAR (1)   | CLEAR (1)   | CLEAR (1)   | CLEAR (1)   | CLEAR(1)    |
| P              | - (6)       | CLEAR (1)   | - (2)       | - (3)       | - (4)       |
| Q              | -           | -           | -           | -           | -           |
| R              | CLEAR (1)   | - (2)       | CLEAR (1)   | - (2)       | CLEAR (1)   |
| S*             |             |             |             |             |             |

\* Option fields

hedgerows should be left in place or encouraged to develop to allow for plot separation and tree seed input.

6. Clearing activities should be conducted under the direction of the Administering Agency. Depending on the availability of funding or clearing procedures desired in any particular year, clearing need not be performed by the Division of Parks and Forestry. Clearing and subsequent monitoring of fields may be performed as a contractual or voluntary research project, under the direction of the Administering Agency. Additional options for accomplishing field clearing should also be pursued by the Administering Agency and the Office of Natural Lands Management (ONLM).
7. The Administering Agency shall keep records of all procedures used in field clearing. This includes clearing techniques, general vegetative status prior to clearing, dates, and any other relevant data. Copies of records shall be forwarded to ONLM annually.
8. A small sign indicating the field letter and its known or approximate age shall be placed by the Administering Agency at each field. It is suggested that a removable plate indicating the field age be used on permanently placed signs. Existing woodlots should be labelled with their estimated age. Whenever possible, records should be checked to determine the field age.
9. Public access to the fields shall be facilitated whenever possible, the public being encouraged to traverse the fields at their edges. Educational and research use of the fields should be promoted. Preparation of a descriptive brochure is an option which should be pursued by ONLM during field development.
10. Plans for fall or winter clearing must be submitted by the Administering Agency, in the form of a memorandum, by September 1 of each year. Desired dates and methods must be indicated.
11. Preparation of subsequent successional field maintenance plans shall be the responsibility of ONLM, in coordination with the Administering Agency and the Natural Areas Council.