CAPE MAY POINT NATURAL AREA

MANAGEMENT PLAN

DIVISION OF PARKS AND FORESTRY
OFFICE OF NATURAL LANDS MANAGEMENT
CN 404
TRENTON, NEW JERSEY 08625

PREPARED BY:
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FEBRUARY, 1986

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ABSTRACT

The Cape May Point Natural Area, located within Cape May Point State Park, became incorporated into the Natural Areas System in 1978. The natural area is located in southern Cape May County and lies within the Outer Coastal Plain physiographic province. This portion of the State Park was designated into the System because of the unique coastal habitats it offers to wildlife, waterfowl and shorebirds. The natural area is a nationally significant site along the East Coast for residential and migrating birds and is situated on a dynamic area of ocean beach and dunes, freshwater to brackish marshes and ponds and varied uplands. This southern region of New Jersey also provides habitat for northern and southern species of flora and fauna. In addition, the natural area supports a diversity of threatened and endangered species of both plants and wildlife.

This management plan has been developed pursuant to N.J.A.C. 7:2-11.5 which mandates that management plans be prepared for all areas designated to the Natural Areas System. Management will be aimed at prescribing uses and practices that will be allowed and implemented in order to maintain and, if possible, enhance the natural features which the site contains.

The following general management techniques are recommended in this plan. Chapter III contains detailed information on issues and prescribed management techniques and should be referred to for additional information.

Classification Based on Sensitivity

Cape May Point Natural Area is to be designated a Class II Natural Area for two reasons: (1) the natural features present are not so sensitive that their use should be restricted for ecological research and study, and (2) management techniques can be designed to protect the natural area's sensitive features while also allowing for their careful observation along existing interpretive trails.

Dune Erosion

The Park Service will continue to perform temporary management of breached dunes as the need arises involving the use of bulldozers and drag lines to remove storm deposition from the ponds to form temporary berms.

All major dune restoration projects will be coordinated with the Office of Natural Lands Management (ONLM) and reviewed by the Natural Areas Council. Expansion of the dune inland from its current position resulting in destruction of existing vegetation, must first be approved by the Natural Areas Council.

Park staff will fertilize the "Cape" American Beach Grass plantings following dune restoration projects to accelerate the growth of the beach grass and to stabilize the dunes.

The existing back road system (Maintenance/Pedestrian Road) behind the dune will be maintained now and in future dune restoration projects as an open access road for Park Service vehicles only. This road also serves as a foot path.

Crossing over the dunes by foot and by vehicle is prohibited in the natural area except in the proposed pedestrain and vehicular beach access path located in proximity to the Bunker and during emergency conditions.

Water Management

Water management of the ponds shall be based on maintaining/improving the existing diversified freshwater habitat. Current work recommendations and future water management measures to maintain high water levels in the natural area will be coordinated with ONLM prior to installation and construction.

The Park Superintendent will be responsible for monitoring water conditions at the natural area.

Mosquito Control

No physical manipulation of the marshes by the Cape May County Mosquito Extermination Commission to control mosquito populations will be permitted. The State Park's objective is to use water management techniques which naturally control mosquito populations.

Aerial and hand spraying at the natural area to control mosquito populations is prohibited. This management plan also recommends no spraying of the Nature Conservancy's South Cape May Meadows.

Mosquito control methods within the natural area deemed necessary by the Cape May County Mosquito Extermination Commission must first be approved by the Commissioner of the New Jersey Department of Environmental Protection.

The Park Superintendent shall submit a report to ONLM and the Natural Areas Council each year indicating any mosquito control measures used over the year, the success of these measures, and measures proposed for use in the subsequent year.

Endangered/Threatened Wildlife

Any planned activity, use or structure which may have a negative impact on endangered/threatened wildlife species shall be reviewed by the Natural Areas Council.

The need for nesting structures for avian species shall be determined by the Park Superintendent and coordinated with the ONLM prior to construction.

Threatened Plant Species

ONLM will inform the Park Superintendent and park personnel of all known locations of threatened plant species.

Any planned activity or use which may have a negative impact on threatened plant populations shall be reviewed by the Natural Areas Council.

Specific management techniques for the maintenance and/or enhancement of populations of identified threatened plants shall be coordinated with ONLM.

Public Access and Use

The primary access points into the natural area from within State Park boundaries will continue to be open to the general public.

Foot traffic will be limited to interpretive trails, the combined pedestrian/vehicular beach access path, and the beach for passive recreational activities. Access on the Red Trail is available to those physically disabled.

The following activities are prohibited at the natural area: hunting, trapping, pond fishing, and walking on the dunes.

Any planned activity or use within the natural area which may result in the alteration or destruction of existing habitat shall be reviewed by the Natural Areas Council.

Man-Made Features Maintenance

The Park Superintendent will be responsible for maintenance and improvements of man-made features throughout the natural area to allow for their continued interpretational use. Any improvements which may negatively effect the flora/fauna of the natural area shall be reviewed by the Natural Areas Council.

There will be no construction of new trails within the natural area.

A verbal agreement establishing a right-of-way for an adjacent landowner exists along Grass Path. The Park Superintendent, in conjunction with ONLM, shall make arrangements with said landowner for continued mowing of Grass Path once a year between the months of November and March.

Proposed construction of new structures within the natural area must serve the objectives of this management plan and shall be reviewed by the Natural Areas Council with regard to the effect it may have on the natural habitat, and plant and animal species.

Ecological Monitoring

Park staff will be responsible for monitoring the natural features of the area. Any unusual or significant developments or sitings should be recorded at the Park Office and brought to the attention of ONLM. Information and monitoring of the natural area conducted by individuals and outside public agencies should also be recorded by Park staff.

Non-Conforming Uses

Two picnic areas and the new road proposed to be constructed alongside the current entrance/exit road in the State Park do not serve the purposes of the natural area. They will be deleted from the natural area boundaries and remain within State Park boundary lines.

Boundaries

With the adoption of this management plan, the two picnic areas and the proposed new road shall be deleted from the natural area boundaries and shall reside under State Park boundary lines.

The Division shall acquire for inclusion in the natural area the four 50-foot paper streets and the interior building lot.

Two land areas adjacent to the natural area are recommended for acquisition: (1) municipal land owned by the Borough of Cape May Point along Lighthouse Avenue and (2) privately owned woodlands along Sea Grove Avenue adjacent to the northern natural area boundary.

Posting Boundaries of the Natural Area

Signs will be placed at all entrance points and along the perimeter of the natural area indicating to users that they are entering the natural area.

Procedures for Conducting Research

Procedures for persons who wish to conduct research within the natural area as outlined in the Administrative Code shall be followed. Research proposals shall be reviewed by the Park Superintendent and ONLM.

Research Goals

ONLM will cooperate with the Park Superintendent in compiling an inventory of mammals, aquatic plants and animals and other informational gaps as identified in the site description and recommended by Park staff.

A study to seek viable alternative solutions to combat the severe dune erosion problem at Cape May Point and portions of Lower Township is proposed for the Division as a long-term management goal. State and/or Federal funding must be sought for this study.

Public Participation and Education

Current practices of public participation and education shall continue at the natural area due to the successful involvement of local environmental/birding/nature groups and individuals in plant, bird and wildlife species identification.

ACKNOWLEDGEMENTS

The Office of Natural Lands Management expresses its gratitude to the following persons for their contributions towards the completion of this document: The Natural Areas Council (Thomas J. Gilmore - Chairperson, Thomas F. Hampton, Ronald B. Krauth, David F. Moore, Thomas O. Niederer, Kathryn A. Porter, George Schindler), Sara Davison, Judy Hansen and those persons of the Divisions of the Department of Environmental Protection who reviewed and made contributions to this management plan.

Special thanks are reserved to Phillip J. Breden, Superintendent of Cape May Point State Park, and Patricia Sutton, Interpretive Naturalist of Cape May Point State Park, whose past and current management practices provided a solid basis for the development of this plan.

Sincere gratitude is extended to Robert J. Cartica whose assistance and review made possible the completion of this document.

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INTRODUCTION

This is the management plan for the Cape May Point Natural Area, located within the Cape May Point State Park, Cape May County, New Jersey.

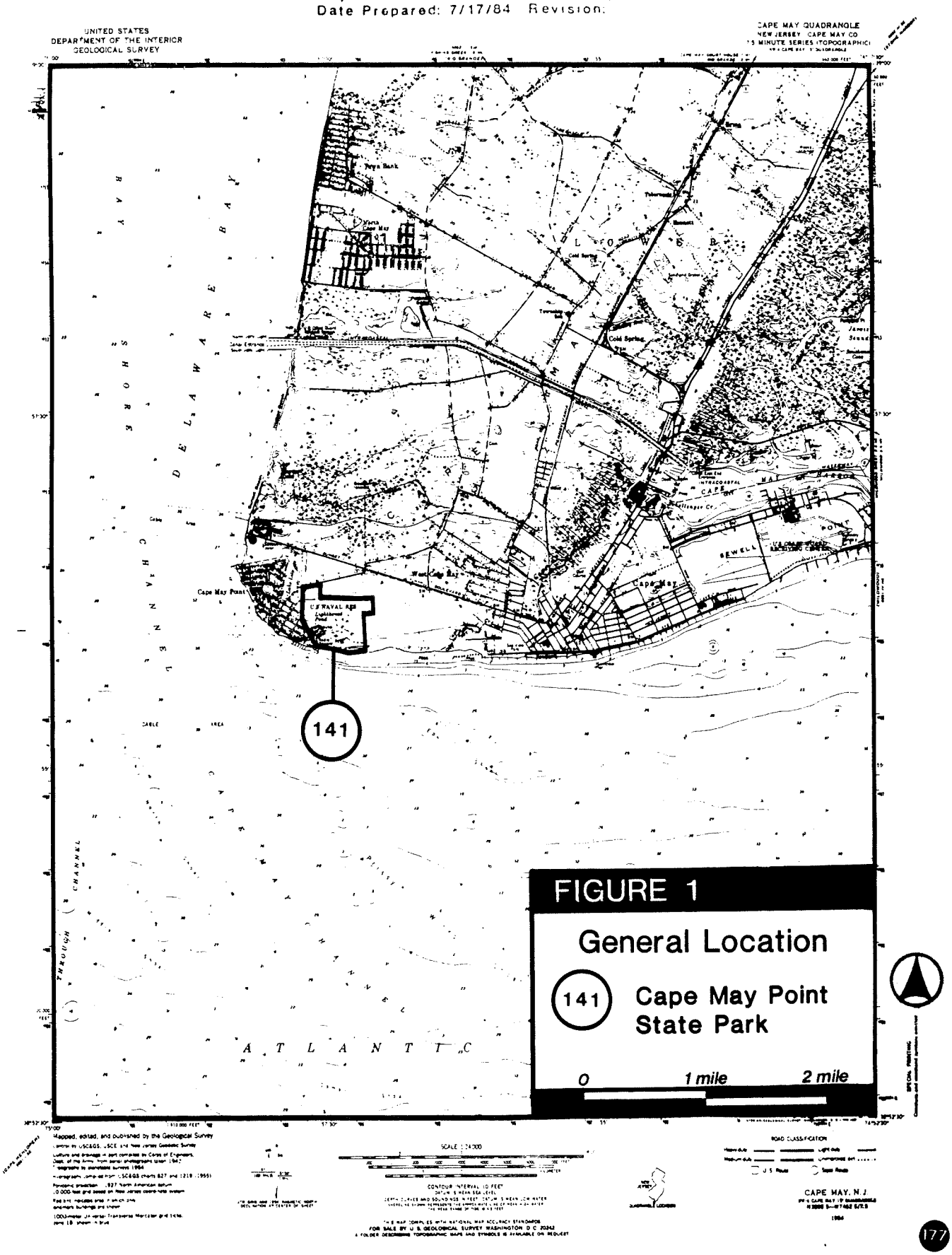
The New Jersey Administrative Code (N.J.A.C. 7:2-11.1 et seq.) mandates that management plans be prepared for each natural area designated to the System. The purposes of the management plan are to prescribe natural resource management techniques to protect and, if possible, enhance the natural features of the site and to provide recreational uses compatible with the protection of these valuable natural features. The sensitivities and environmental features that characterize Cape May Point Natural Area serve as the basis for prescribed management strategies and uses.

The Natural Areas System Act of 1976 (N.J.S.A. 13:1B-15.12a et seq.) defines a Natural Area as "an area of land or water which has retained its natural character, although not necessarily completely undisturbed, or having rare or vanishing species of plant and animal life or having similar features of interest which are worthy of preservation for the use of present and future residents of the State." Cape May Point Natural Area was officially designated as part of the Natural Areas System under the 1978 Administrative Code (N.J.A.C. 7:2-11.1 et seq.). The natural area demonstrates a unique natural setting as it is a nationally significant site along the East Coast for residential and migrating birds and is situated on an ever changing area of man-made dunes and ocean beach, coastal freshwater to brackish marsh and ponds, wooded islands, and varied uplands. The Park boasts an added cultural and historic resource as it was New Jersey's former coastal defense base. Botanically, the Cape May region is known as a geographic merging point for a number of northern and southern species of plants. In addition, the natural area supports a diversity of endangered and threatened species of both plants and wildlife. A trail system, bird blinds, observatory platforms and photo-blinds are present recreational facilities in the natural area. Public recreational use includes nature hiking, beach combing and surf fishing.

Cape May Point State Park and inclusive natural area (approximately 200 acres) are administered by the New Jersey Department of Environmental Protection, Division of Parks and Forestry. It is located on the historic Cape May Peninsula situated in the southwest corner of New Jersey's coastal zone where the waters of the Atlantic Ocean and Delaware Bay meet and is in the Outer Coastal Plain physiographic province. The Park is located within Cape May County, 2 miles West of America's oldest seashore resort, Cape May, and directly East of the Borough of Cape May Point.

Figure 1 shows the location of Cape May Point State Park on the Cape May U.S.G.S. Quadrangle. The Park is accessible to points north via the Garden State Parkway and Route 9, and to points South via the Cape May-Lewes ferry. Figure 2 indicates the current boundaries of the natural area. Lying north of the natural area is Sea Grove Avenue and individual private residences; to the West, Lighthouse Avenue; to the South, the waters of the Atlantic Ocean and Delaware Bay; to the East, a tract of land known as the Cape May Migratory Bird Refuge/South Cape May Meadows (referred to hereafter as South Cape May Meadows),

PARKS AND FORESTRY ADMINISTERED PROPERTIES
DEP, Division of Parks and Forestry
Date Prepared: 7/17/84 Revision:



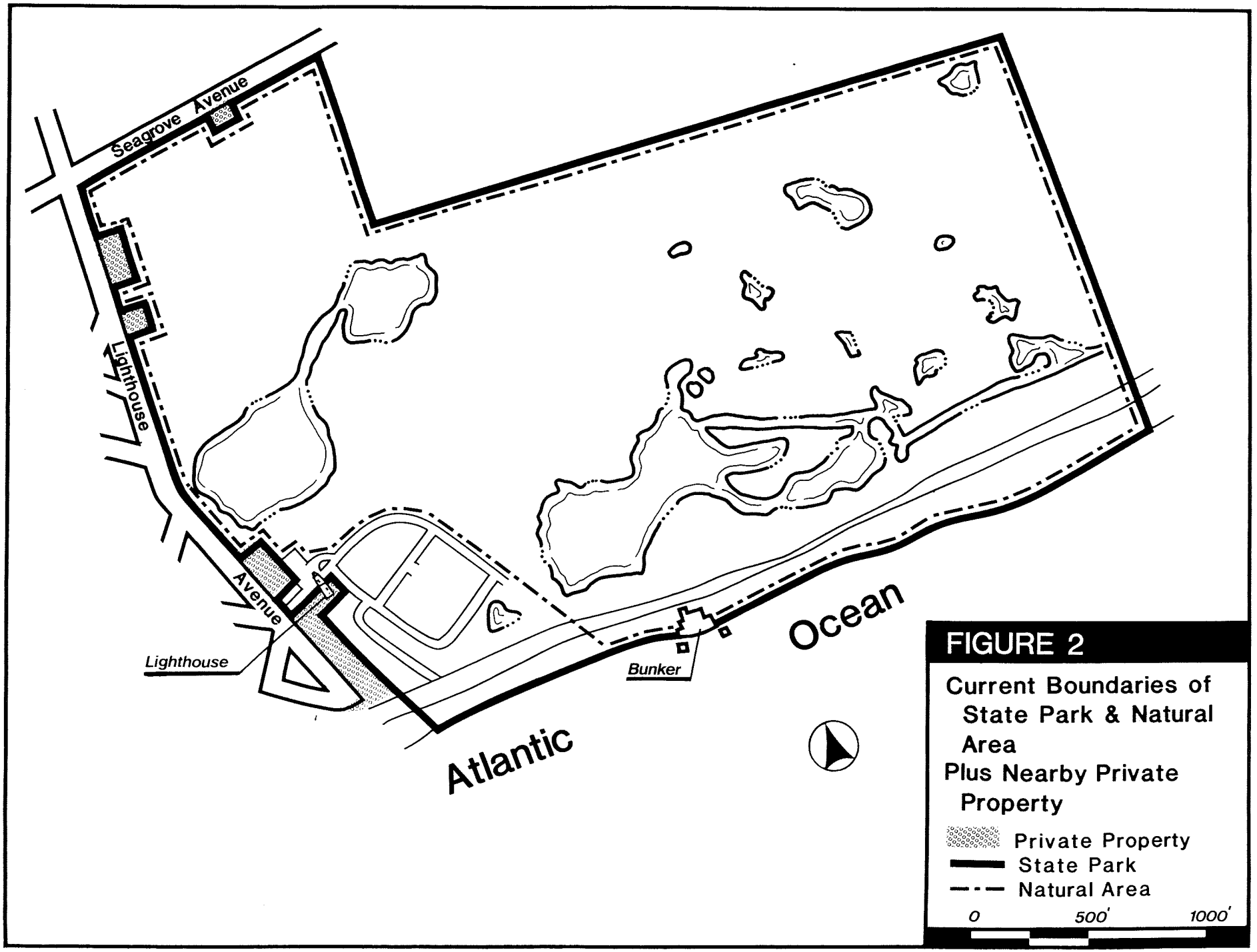


FIGURE 2

Current Boundaries of State Park & Natural Area
Plus Nearby Private Property

Private Property
State Park
Natural Area

0 500' 1000'

a nature preserve owned by The Nature Conservancy. South Cape May Meadows (approximately 187 acres) plays a similar vital ecological role to that of the natural area as it provides diverse natural habitats upon which great numbers of migrating and residential birds and other wildlife depend.

Historic Background

Cape May Point State Park was a Naval and Coast Guard Station used during World War II to protect the Delaware Bay from invasion of enemy forces and was the communications center for the Navy's Atlantic Fleet during the Korean War. In June 1964, the United States Government transferred this land (approximately 133 acres) to the State of New Jersey with the stipulation that the property be developed for public use. Cape May Point State Park was established in 1974 as a State recreational park and wildlife sanctuary. Additional lands were acquired through purchase or as gifts and in 1978 the majority of the Park area was designated to the Natural Areas System.

Historically, the combination of natural and human influences upon the Cape May Point environs has significantly influenced the ecological character and stability of this area. The low-lying areas of the State Park were once a tidal salt marsh system connected to Skillingers Creek (later called Cape Island Creek) which entered from the east and wound through South Cape May Meadows to the ponds at the Point (Breden, 1981).

Early land uses occurring in and around the natural area included filling for residential and farming purposes, diking off areas for salt hay production, and ditching for mosquito control. Woodlands and dunes were also cut down and dismantled for residential and agricultural development. This action increased the vulnerability of the area to coastal storms and associated erosion. In 1888, the town of South Cape May, formerly called Mount Vernon, stood on the beachfront between Cape May City and Cape May Point. Through the years, coastal storms cut away at this land; but the infamous 1962 coastal storm destroyed the land where South Cape May stood. Today, all of the once developed beachfront is completely covered by the ocean (Sutton, 1982).

The salt hay farming industry involved the diking of salt marshes to create semi-permanent summer ponds. This action eliminated tidal flow creating the freshwater marshes and ponds cited by Witmer Stone in 1890 when he first visited Cape May Point and found extensive cattail meadows (Stone, 1937).

The impoundments created during salt hay farming were thought to be a major reason for the high mosquito populations. To alleviate this problem, mosquito extermination work was begun in 1916 in Cape May County. Ditches were created connecting all the low lying areas, meticulously channeled to run through every pond. Additional drainage and filling of land occurred during the Depression Era using C.C.C. labor (Stone, 1937). Today, the natural area and South Cape May Meadows contain many old mosquito ditches.

Over time, the activities placed upon the natural area and immediate environs shut off the tidal food web, greatly disrupted the natural hydrology, altered the vegetative habitats, deprived the area of marshland buffers to the

sea and created new mosquito problems. At the same time, these man-made influences also created a unique coastal freshwater system from a previous tidal flow system which today provides critical habitats for residential and migratory birds and other wildlife.

SITE DESCRIPTION

Geology

Cape May Point Natural Area is located in the Outer Coastal Plain physiographic province. This area of land consists of sedimentary deposits dating from Tertiary time (Robichaud and Buell, 1973). Geologically, these sedimentary deposits exposed at the surface consist of unconsolidated, nonglacial deposits of clay, sand, marl and gravel. Most extensive is the Cape May Formation of the late Pleistocene and Holocene ages, which rests over the Cohansey Formation. Cape May Diamonds - clear quartz pebbles collected from Cape May beaches, dunes and overwash areas for more than 100 years - have given Cape May County the distinction of being a unique Geologic Area on the New Jersey shore (N.J. Department of Environmental Protection, 1981).

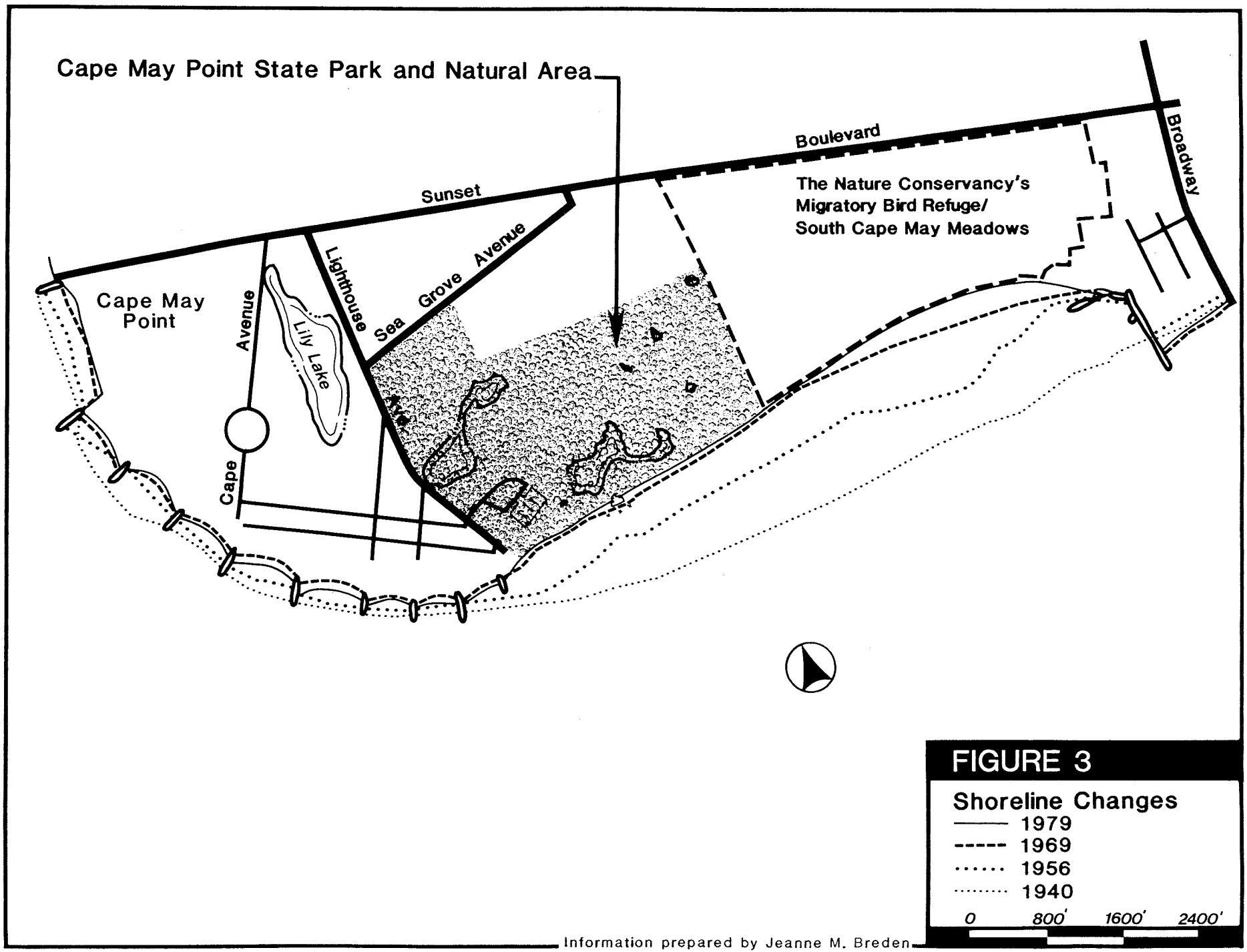
The natural area is situated in a unique coastal environment as its geology and topography are continuously influenced by wave and wind erosion and deposition, changes in the sea level, and climate. As a result of these natural processes, the relief of the natural area is relatively flat. Seventy percent of the natural area is wetland and few elevated surface features are present except for eroding dunes and varied uplands.

As previously mentioned, the natural character of the land was severely altered by both natural and man-made influences. Previous existing salt marshes are visible today when beach erosion exposes old salt meadow peat and sod (Wolfe, 1977). Its exposure is evidence of a considerable change in the shoreline position. Over the past 43 years, the shoreline at the park has receeded 1200 feet (Figure 3).

Soils

The following information on soils was obtained from the Soil Survey of Cape May County, New Jersey (U.S. Department of Agriculture, 1977). The majority of the natural area is composed of Fill land or Tidal marsh. Fill areas are quite sandy and have low available water capacity. Permeability is rapid and the organic-matter content is low. The tidal marshes in the natural area are not flooded twice daily. However, in coastal storms the protective dunes are usually washed out. In this situation, the freshwater marshes and ponds become inundated by salt water, creating more brackish marsh and pond habitats which eventually freshen with rainwater after tidal action is curtailed with dune work.

Fort Mott sand is found in the northwest section of the natural area, known as Weatherby's Woods. Available water capacity is moderate; permeability is moderately rapid in the subsoil; organic-matter content and natural fertility are low. Hammonton sandy loam soils found in the remaining wooded areas and the overgrown field are somewhat poorly drained soils. Organic content and natural fertility are low. Sassafras soils occur in the northeast section of the natural area consisting of nearly flat to gently sloping, well-drained soils. Available


Cape May Point State Park and Natural Area
Boulevard
Broadway
Sunset
Sea Grove Avenue
Lighthouse Ave.
Cape May Point
Avenue
Lily Lake
Cape
The Nature Conservancy's
Migratory Bird Refuge/
South Cape May Meadows
FIGURE 3
Shoreline Changes
1979
1969
1956
1940
0
800'
1600'
2400'
Information prepared by Jeanne M. Breden

water capacity is high with permeability being moderate. Organic content and natural fertility are moderate.

Climate/Storms

Climatic information is derived from the U.S. Department of Agriculture (1977) and Sutton (1982). Southern Cape May County has a humid and temperate climate as it is substantially influenced by the Atlantic Ocean and Delaware Bay. The influence of these coastal waters is greatest in the southern peninsular part of the county and least in the northern part which has a relatively uniform climate. Cape May experiences lower temperatures than Belleplain (23 miles NNE of Cape May) from March to January due to ocean cooling and higher temperatures from September to November due to ocean warming. July is usually the warmest month, January the coldest.

Wind also has an influencing role in Cape May County's coastal environment as it is most effective in transport and deposition near the shorelines. During fall, winter and early spring, the wind generally blows from the northwest. In late spring and summer, winds frequently shift and blow from the south and southeast. These shifting winds affect the stability of the sand dune. Average wind speed is 10 miles per hour (mph) in summer, 15 mph in winter. Between December and March, Cape May averages 5 days/month with gale force winds (greater than 34 mph).

In Cape May County, coastal storms occur at a rate of 1.27 per year based on a 57-yr. record. These are usually the result of tropical storms, hurricanes or northeast storms. Average tides are 2 feet above and below mean sea level. The record high tides are 8 feet above mean sea level. During the storm of March 1962, tides remained high for 5 cycles. At that time, waves as high as 12 feet battered the coast resulting in a loss of considerable coastal frontage. The Northeaster of October 1980 brought waves from 10 to 15 feet high with sufficient fury to flatten approximately 2000 feet of dunes between Cape May City and Cape May Point. Between 1842 and 1972, the area between Cape May City and Cape May Point lost approximately 275 acres of land to the ocean (Sutton, 1982). Significant coastal storms (1970-1981) and the extent of flooding and erosion are shown below and were obtained from Sutton (1982):

RECENT COASTAL STORMS
1970 - 1981

DATE	WIND (mph)	FLOODING & EROSION	RAINFALL
12/31/70-1/1/71	60-65	Moderate	-
8/27-28/71 Tropical Storm Doria	55-60	Minor to Moderate	Heavy (5.22")

RECENT COASTAL STORMS (Cont'd)
1970 - 1981

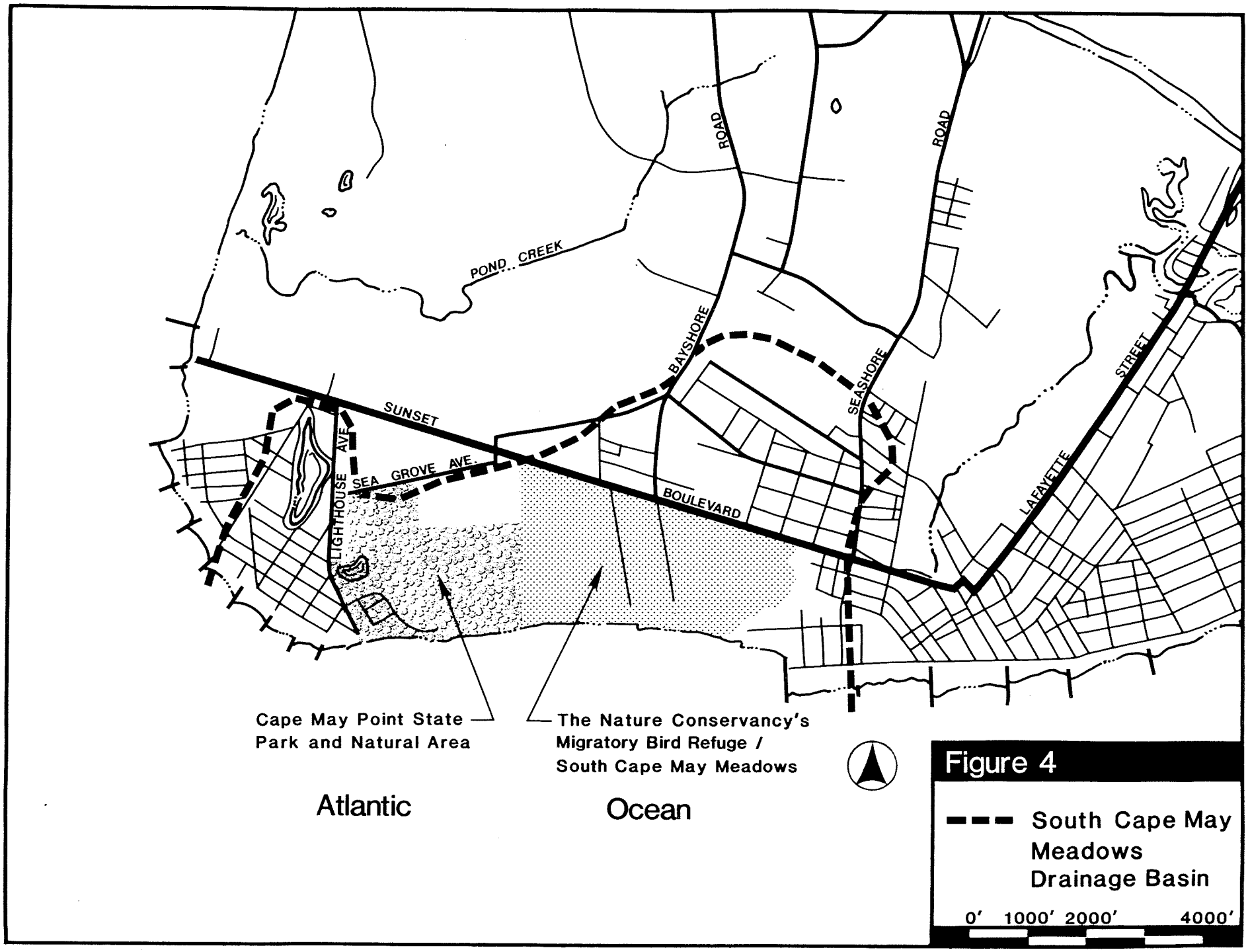
DATE	WIND (mph)	FLOODING & EROSION	RAINFALL
12/1-2/74 Worst storm since '62 storm	Over 60	Severe, very strong wave action	-
8/9/76 Hurricane Belle	Up to 54	Minor	Heavy (3.86")
2/5-7/78	Up to 56	Severe	Blizzard (17.4" snow)
2/18-9/79	Up to 51	Severe	Blizzard (18.2" snow)
10/25/80 Worst storm since '74 storm	Up to 66	Severe	Moderate (1.87")

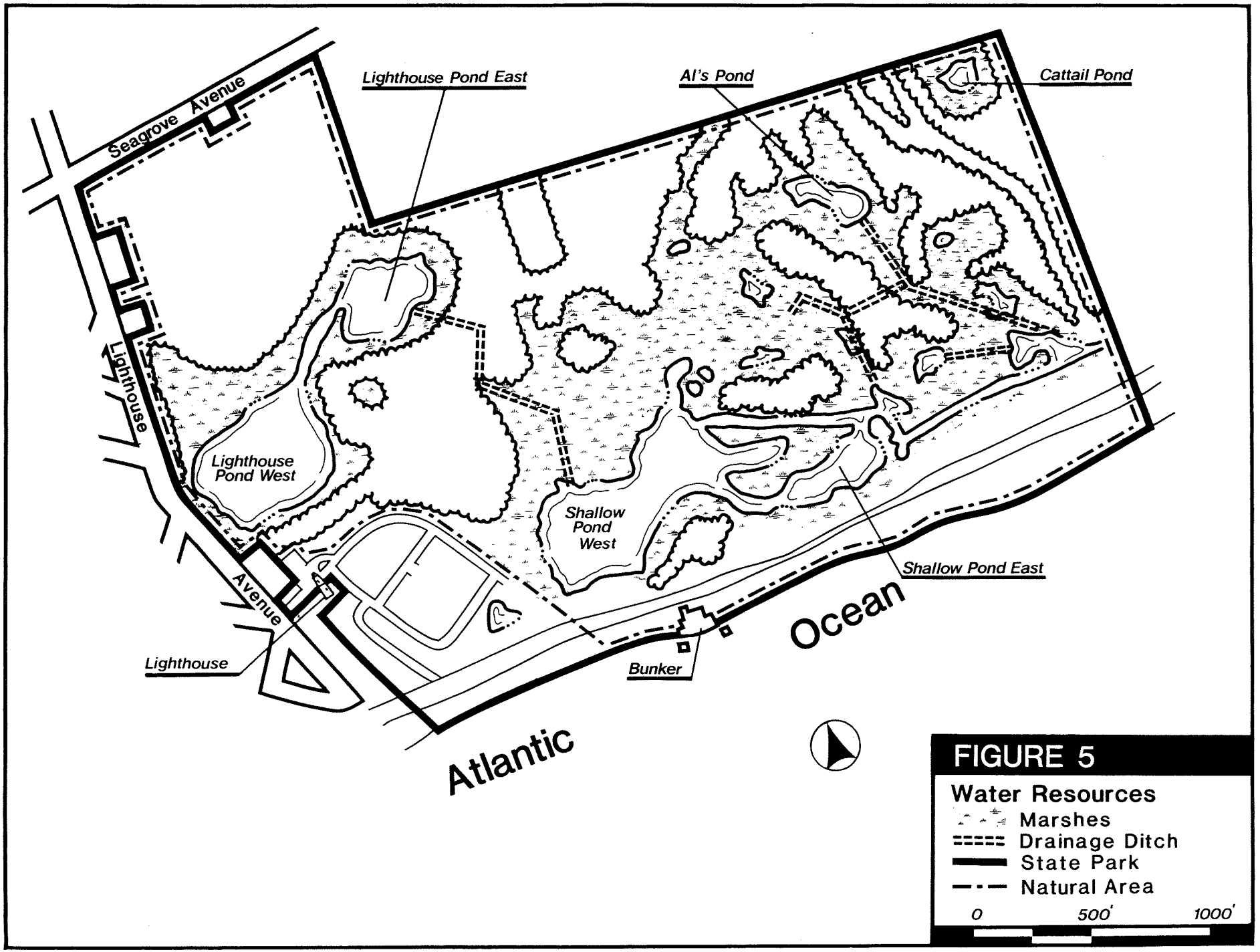
Hydrology

Since over 70 percent of the natural area is low-lying freshwater to brackish marshes and ponds, the status of this water-related habitat is of great ecological and hydrological concern.

Both the natural area and South Cape May Meadows are located in the South Cape May Meadows Drainage Basin. This comprises approximately 918 acres or 1.43 square miles and is located in the municipalities of West Cape May, Cape May Point, Lower Township, and Cape May City (Fig. 4). Average elevation is one to two feet above sea level. The water features within the boundaries of the natural area include ponds, marshes, channels and drainage ditches and represent important ecological waterways (Fig. 5).

The hydrology and drainage patterns of the natural area are complicated by historical land alterations, natural storm deposition, and ocean encroachment. As previously discussed, early changes in the character of this land disrupted the once natural balances between freshwater and saltwater in the South Cape May Meadows drainage basin, which at one time kept a naturally high water table. The cutting off of tidal flow gave birth to a freshwater impoundment. Contributing to the drainage situation were mosquito commission ditching, C.C.C. drainage projects, agricultural and residential development, and saltwater inundation from tidal-storm breaching of dunes. These man-induced and natural changes in the environment increased the flow of water out of the natural area which, in turn, compounded problems for the hydrology of the natural area: low water table, poor water retention, purification and quality, proliferating growth of Reed Grass


POND CREEK
ROAD
ROAD
BAYSHORE
SEASHORE
STREET
SUNSET
LIGHTHOUSE AVE.
SEA GROVE AVE.
BOULEVARD
LAFAYETTE
Cape May Point State Park and Natural Area
The Nature Conservancy's Migratory Bird Refuge / South Cape May Meadows
Atlantic
Ocean
Figure 4
South Cape May Meadows Drainage Basin
0' 1000' 2000' 4000'


Seagrove Avenue
Lighthouse Pond East
Al's Pond
Cattail Pond
Lighthouse
Lighthouse Pond West
Shallow Pond West
Shallow Pond East
Avenue
Lighthouse
Bunker
Ocean
Atlantic
FIGURE 5
Water Resources
Marshes
Drainage Ditch
State Park
Natural Area
0
500'
1000'

(Phragmites australis) and hazardous fire conditions. To combat excessive drainage problems, water control structures were installed by Park Staff to maintain high water levels.

Since the March 1984 northeast storm, the natural area's complex hydrological system has actually improved, not due to any man-manipulation, but due to a "fate of nature." Breached dunes at the southeast corner of the natural area behind the beach filled both the water channel (the main drainage ditch) and covered the bridge. This blocked the flow of water out of the Park, raising the water level. The evidence of an increased water level is visible in new water clearings which once were overgrown by Phragmites (Phillip J. Breden, personal communication).

The natural area receives water from three major sources: precipitation and resultant runoff, groundwater flooding, and stormwater flooding. Normal drainage flow in the natural area runs eastward from Lily Lake to the Lighthouse and Shallow ponds and again eastward through the main drainage channel behind the beach flowing into South Cape May Meadows. Since the channel today is blocked by sand, water drains slowly beneath the sand and via low depressions entering South Cape May Meadows and finally exiting at the ocean outlet in the southeast corner of the Nature Conservancy's property.

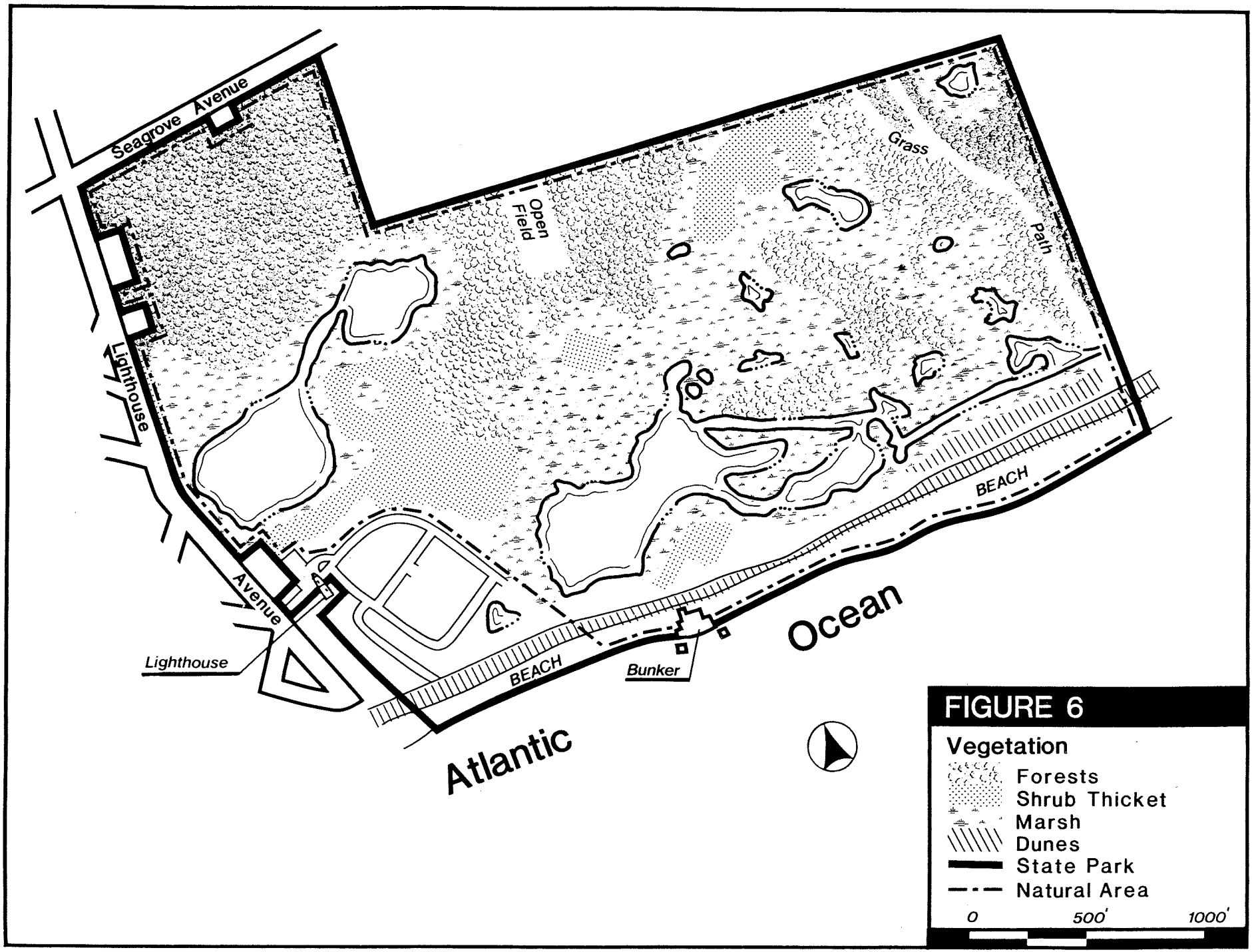
The ocean itself exerts great influence on the flow patterns in the natural area, both from the east and the west. To the west, periodic flooding of the Borough of Cape May Point from storms and the steadily encroaching ocean have resulted in a drainage way from Lily Lake eastward through the Park following the natural gradient of flow. An overflow pipe was constructed from Lily Lake to Lighthouse Pond to relieve the potential for flooding. To the east, the influence of the ocean during periods of sea water flooding of South Cape May Meadows backs up water into the natural area.

Vegetation

Cape May Point is a geographic merging point for a number of northern and southern plant species. The vegetation of the natural area is also unique in that it has experienced and adapted to various ecological, geological and man-made changes. This area of coastal "freshwater" ponds and marshes has been repeatedly and severely inundated by ocean waters during storms. Only plants adapted to this dynamic environment of salt air and high winds survive. Variations in soil moisture content and salinity are also important limiting factors in the type of plant life found in the natural area.

The following presentation of plant species and vegetative community types is based on Breden (1981) and gives a general overview of the diversity which exists within the natural area. A more detailed analysis of individual plant species in each community type is found in the management plan for Cape May Point State Park (Breden, 1981).

Vegetative community types of the natural area include forests, marshes, an overgrown field, shrub thickets, dunes and beachfront (Fig. 6). Open water contains submerged aquatic vegetation of which little or no information is


Seagrove Avenue
Open Field
Grass
Path
Lighthouse
BEACH
Avenue
Lighthouse
Bunker
BEACH
Ocean
Atlantic
FIGURE 6
Vegetation
Forests
Shrub Thicket
Marsh
Dunes
State Park
Natural Area
0
500'
1000'

available. Appendix A contains an updated listing of the plant species at Cape May Point State Park, prepared in March 1984 (revised, October 1984) by Patricia Sutton, Park Naturalist, with the assistance of William J. Bailey, Gil Cavileer, Karl Anderson and Sherry Poucher and was obtained from Breden (1981).

1. FORESTS. Wooded zones in the natural area are highly variable. Dominance of tree species fluctuates in accordance with various limiting factors - soil types, proximity to the ocean, elevation from the water table, former agricultural use, and the addition of dredge spoils and fill material to some areas. Presently, canopy species include Sassafras (Sassafras albidium), Sour Gum (Nyssa sylvatica), Persimmon (Diospyros virginiana), White Oak (Quercus alba), Spanish Oak (Q. falcata), White Poplar (Populus alba), Bigtooth Aspen (P. grandidentata), Ailanthus (Ailanthus altissima), and Mockernut Hickory (Carya tomentosa). Isolated Pitch Pines (Pinus rigida), and Eastern Red Cedar (Juniperus virginiana) are also dominant overstory trees. Eastern Red Cedar is also abundant in the shrub zones.

a. WEATHERBY'S WOODS and ROADSIDE VEGETATION. The forest stand located in the northwest corner of the Park is commonly known as Weatherby's Woods. Canopy dominants range from the dense stand of Ailanthus on the northern perimeter, to a stand of Poplars near the center of the tract. In the remainder of the area, dominance is shared by Spanish Oak and Sour Gum. Flowering Dogwood (Cornus florida) is also confined to this section of the Park. As in other sectors of the woodland community, vines are aggressive and may be detrimental to the trees.

Roadside vegetation on the edge of Weatherby's woods forms a distinct association of trees, shrubs and herbs. Beach Plum (Prunus maritima) and Japanese Knotweed (Polygonum cuspidatum), Cedars and Sour Gum are found here.

b. WOODED STANDS INTERRUPTING THICKET. Throughout the rest of the Park, thickets and marsh are interrupted by small patches of trees. Located Southeast of Lighthouse Pond East and along the yellow trail going towards Al's Pond are Sour Gum canopies allowing little light penetration. A distinct strata of shade tolerant herbs grow here. Vines are not aggressive and are found under the Sour Gums. Persimmon is common around the edges of the Sour Gum canopies. White Oak, Post Oak (Q. stellata), and Red Maple (Acer rubrum) protrude from the thicket. Occasionally either Wax Myrtle (Myrica cerifera) or Dwarf Sumac (Rhus copallina) become dense enough to form continuous shrub canopies.

c. SASSAFRAS WOODS. Sassafras canopies occur in the wooded areas surrounding the open field, the wooded area along Grass Path and the wooded island located slightly east of Shallow Pond West. Persimmon and Spanish Oak also compete for space and light. In this zone there is considerable light filtration and vines occur in abundance. Jack-in-the-pulpit (Arisaema triphyllum) could be considered an indicator herb in this zone. Domestic Pear (Pyrus communis) trees were planted years ago, remnant of the lighthouse keeper's orchard.

d. MOCKERNUT HICKORY/MIXED OAK STAND. Mockernut Hickory and Spanish Oak are restricted to one wooded section located South of Al's Pond. In this zone, White Oak, Scrub Oak (Q. ilicifolia) and Sassafras could all be considered

subdominant. There is a distinct understory comprised mostly of mixed Red Oak and Hickory. Highbush Blueberry (Vaccinium corymbosum) is also a common shrub. Vines creep along the forest floor, where herbs are otherwise sparse. Solomon's-seal (Polygonatum biflorum) and Wild Geranium (Geranium maculatum) are both particular to this community.

2. MARSHES. Pond edges within the natural area support wetland plant communities which vary significantly from one site to the next. The less brackish areas support much Rose-mallow (Hibiscus palustris) and Whorled Marsh Pennywort (Hydrocotyle verticillata) grading into cattails (Typha latifolia and T. angustifolia) or Reed Grass (Phragmites). Phragmites, a marsh plant which favors drier habitat conditions, was common when the area experienced excessive water drainage. Recently, the high water level in the natural area has decreased the proliferating growth of Phragmites. At one time, Cattail Pond in the northeastern section of the natural area was completely surrounded by a thick stand of cattails. Most other ponds have experienced the eutrophication associated with Phragmites encroachment. Salt Marsh Grass (Spartina patens) is confined to a very limited area on the seaward edge of the pond behind the dunes (Shallow Pond) and is lacking the associated salt marsh vegetation. Mock Bishop's-weed (Ptilimnium capillaceum) is present on the edges of less brackish waters. Depending on precipitation and drainage, pond and marsh species vary significantly with water levels. Salt water intrusion is another varying influence.

There are several meadows in the Park, mostly found adjacent to the ponds. Dominant species vary, with American Three-square abundant in some areas, Salt Meadow Grass or Spike rush (Eleocharis spp.) in others. The meadows are generally edged with Grounsel-tree (Baccharis hamimifolia), Wax Myrtle, Dwarf Sumac, and Eastern Red Cedar.

3. OLD FIELD. A field, previously cultivated in beans and formerly planted with grains and forage grasses, currently represents the secondary succession common to the area. Groundsel-tree, Sassafras, and Dwarf Sumac exist as well as Horseweed (Erigeron canadensis), Seaside Goldenrod (Solidago sempervirens), Poison Ivy and various grasses.

4. SHRUB THICKET. A shrub strata covers a significant portion of the natural area. Bayberry (Myrica pensylvanica) and Groundsel-tree are predominant behind the dune community. These shrubs also form borders around wooded islands, where they are mixed with stands of Eastern Red Cedar. In some areas, Dwarf Sumac and Wax Myrtle form a continuous canopy over other shrubs. Black Cherry (Prunus serotina) and Pitch Pine provide isolated patches of shade. In less shaded areas vines form impenetrable thickets.

Extending from the Hickory/Oak Woods at three different angles are dredge spoil dikes created in the process of mosquito ditching. Plants of the shrub and thicket community are present here, including Dwarf Sumac, Wax Myrtle, Highbush Blueberry, Sassafras, and Red Cedar which compete for space in these narrow strips.

5. DUNES/BEACH. A man-made sand dune parallels the beachline and is backed by brackish water and marshes for most of their length. In the

progression to stability, Beach Grass (Ammophila brevigulata) dominates the seaward slope and dune top. Vegetation found on the marshside includes Bayberry, Beach Heather (Hudsonia tomentosa) and Groundsel Tree. Over the years, much of the dune has been reconstructed and Beach Grass planted for the preservation and flood protection of leeward communities: the ponds, marsh, and wooded uplands. In localized areas, high salt content or lack of competition from other plants may be reasons for Spartina spp. growth. Bayberry and Groundsel-tree occur in stabilized zones in the dunes. Most of the ground cover in the dune community is xerophytic or succulent herbs.

Wildlife

Except where indicated, the following wildlife analysis and species listing is based on information gathered from Breden (1981).

Cape May Point Natural Area offers a unique diversity of coastal habitats that are important for migrating and residential birds and wildlife, especially as surrounding woods and farmlands are rapidly being replaced by residential and commercial development. Based on the vegetative diversity of the natural area along with the region's peninsular geography and mild climate, the natural area can be expected to support varied wildlife types.

Birds

Located in the Atlantic Flyway, Cape May has long been recognized as an nationally significant site for observing the spring and fall migration of birds to and from the south. The peninsular geography, diversity of habitat and strategic position along the East Coast to the prevailing west winds combine to make South Cape May attractive to a diversity of bird species (New Jersey Audubon Society, 1981). During spring migrations, many birds are diverted to southern Cape May County by northerly winds, but the fall is the time of the greatest bird concentrations. During the fall migrations, the southbound birds stop to feed and rest for their continuing journey south.

It is now well established that autumn hawk flights of immense proportion occur on the southern New Jersey peninsula. Documentation of Cape May, New Jersey as a raptor concentration area began with the various works of Stone (1937). Further analysis of the hawk migration phenomena was presented in Allen and Peterson (1936) (as reported in Breden, 1981). The 1970 Autumn Hawk Count at Cape May Point started the annual systematic documentation of flights. Over 41,021 raptors were recorded during the 1970 count (Choate and Tilly, 1973). A regular yearly autumn hawk watch was begun in 1976 by the Cape May Bird Observatory of the New Jersey Audubon Society. Cape May is extremely important to critical numbers of raptors including the Sharp Shinned Hawk (Accipiter striatus), American Kestrel (Falco sparrerius) and the Peregrine Falcon (Falco peregrinus).

The ponds of the natural area are prime feeding grounds for countless waterfowl, wading birds and shorebirds. The Mute Swan (Cygnus olor), Mallard (Anas platyrhynchos), Black Duck (A. rubripes) and Gadwall (A. strepera) are waterfowl with confirmed nesting status in the natural area. Since 1982, a pair

of mute swans has nested in the natural area. This year (1985) two pairs nested with one pair successfully raising 2 young. Mute swans defend a territory of twelve acres during nesting season often killing marsh birds and waterfowl nesting in their territory.

Killdeer (Charadrius vociferus), American Woodcock (Philohela minor) and Willet (Catoptrophorus semipalmatus) are common shorebirds in the State Park with confirmed nesting status. Wading birds common in the ponds include Snowy Egret (Egretta thula), Great Blue Heron (Ardea herodias) and the Glossy Ibis (Plegadis falcinellus).

Vegetative edges and marshes provide cover for both nesting and migrating song birds. The concentration of migrating songbirds provides the primary food source for the many migrating hawks.

Appendix B is an updated listing of birds for Cape May Point State Park. The list was compiled by Patricia Sutton, the Park Naturalist, based on both the New Jersey Audubon Society (1981) list and her personal observations, and was obtained from Breden (1981). The number and variety of bird species attest to the fact that the Park and surrounding areas comprise a region of unique value to residential and migrating birds.

Mammals

Cape May Point Natural Area is known or expected to contain 36 non-marine mammal species (Breden, 1981). The approximately 200 acres of vegetative habitats sustain a diversified mammalian fauna. Muskrats (Ondatra zibethica) are common throughout the natural area. They are occasionally seen around ponds and ditches. Many of their lodges and scenting pads are visible on pond edges. Other mammal species common to the natural area include the Racoon (Procyon lotor), River Otter (Lutra canadensis), and Red Fox (Vulpes fulva). There are no endangered or threatened mammals found in the natural area.

The Bottle-nosed Dolphin (Tursiops truncatus) is common off the beachfront of South Cape May because it breeds in the lower Delaware Bay. Some recent marine mammal strandings at the Park's beachfront include an Antillean Beaked Whale (Mesoplodon europaeus) that died of starvation from plastics found in the stomach (December 1983), two Bottle-nosed Dolphins found dead along the beachfront (July 1984), and a stillborn Bottle-nose Dolphin (June 1985).

Appendix C, compiled by the Park Naturalist, contains a list of mammals known and expected to occur in the natural area and the adjacent marine environment (Breden, 1981).

Reptiles and Amphibians

Appendix D compiled by the Park Naturalist contains a list of the distribution and habitat preference of reptile and amphibian species known or expected to occur in the State Park (Breden, 1981). The diversity of soils and vegetation in the natural area provides the conditions necessary for the survival and reproduction of these different herpetiles.

As the salinity of the ponds and marshes changed from tidal to freshwater, new species occurred in the natural area. With the exception of the Diamond-back Terrapin (Malaclemys t. terrapin), all the species are non-migratory and year-round residents. For many of them, a freshwater habitat is of critical importance at some stage in their life cycle.

Adult Snapping Turtles (Chelydra serpentia) can grow to 35 pounds and prey on many marsh and water birds attempting to nest in the natural area's ponds. Adult Snapping Turtles have no natural predators except each other during the mating season. One natural control is that their eggs are dug up and eaten by Racoons, River Otter, and Oppossum (Didelphis marsupialis).

Aquatic Organisms

Although no extensive field work has been done in the Park, the freshwater to brackish ponds and marshes of the natural area can be expected to contain the aquatic organisms normally found in these habitats. The water level in some of the ponds flucuates with the season, and at times they may dry up. Coastal storms have severely affected the ponds and marshes of the natural area, inundating all low-lying areas with saltwater from the ocean. Only the most adaptable marine organisms can adjust to this drastic change in salinity.

Mosquitos use the ponds for their aquatic larval stage. The Cape May Mosquito Extermination Commission found the following mosquitos to be breeding in the natural area ponds, ditches, and surrounding marsh: Aedes canadensis, A. cantator, A. sollicitans, A. vexans, Anopheies bradleyi, Culex salinarius, C. pipens, and C. territans. The ponds also provide habitat for predatory Dragonfly Nymphs and larval water beetles, as well as predaceous adult beetles, Back-skimmers and water bugs, all of which feed on other aquatic insects.

Aquatic animal life is abundant. On the surface are familiar pond insects, including Water Striders and Wirligig Beetles. Closely associated with the surface are several kinds of diving beetles and other air-requiring aquatic insects. Along the bottom of the ponds, tiny crustaceans and eight-legged water mites can be found. The larger bottom predators are the Dragonfly Nymphs. Flatworms feed on animal carcasses laying on the bottom and, along with snails, feed on the algae which coat decaying plant material and other debris.

The fish species found in the ponds and ditches of the natural area are species known to occur in fresh and brackish waters: Mummichog (Fundulus heteroclitus), Banded Killifish (F. idaphanus), Sheepshead Minnow (Cyprinodon variegatus), Rainwater Killifish (Lucania parva), Tidewater Silversides (Menidia beryllina), Mosquitofish (Gambusia affinis), American Eel (Anguilla nostratra), and several kinds of sticklebacks including Three-spined Sticklebacks (Gaster osteus aculeatus). It is also possible that Carp (Cyprinus carpio) and Yellow Perch (Derca flavescens) occur in the natural area since they are known to inhabit Lily Lake.

Endangered and Threatened Wildlife Species

1. BIRDS. One of the most significant features of the natural area is its value to migrating birds. Southern Cape May is of extreme importance to migrating birds of the Eastern Flyway, including large numbers of endangered and threatened species. The value of open space in Cape May Point in terms of endangered species use is indicated by Stone (1937), Choate and Tilly (1973), New Jersey Department of Environmental Protection (1978a), and Breden (1981) (who cites documentation by Allen and Peterson, 1936; Dunne, 1977, 1978; and New Jersey Department of Environmental Protection, 1978b, c).

Diminishing open space due to the spread of tourist-related development activity poses a threat to the bird species that inhabit this area. Thus, the importance of maintaining suitable resting and feeding habitats along this migration route is paramount.

Appendix B contains the Checklist for birds at Cape May Point State Park, which classifies bird species into the following categories: endangered, threatened, declining, undetermined, Blue Listed (National Audubon Society's Blue List of troubled species which currently suggest population decline) and extirpated as a nesting bird. Based on definitions from the New Jersey Endangered and Nongame Species Program (N.J. Department of Environmental Protection, 1985), 'endangered' species are "those whose prospects for survival in the state are in immediate danger because of a loss or change of habitat, over-exploitation, predation, competition or disease." (The symbol 'E-b' indicates that the breeding population of a particular bird species is endangered.) 'Threatened' species are "those who may become endangered if conditions surrounding the species begin or continue to deteriorate." 'Declining' species are "those which have exhibited a continued decline in population numbers over the years." 'Undetermined' species are "those about which there is not enough information available to determine the status." 'Extirpated' species are "those that formerly occurred in New Jersey, but are not now known to exist within the state."

Based on the New Jersey Audubon Society (1981) and the current listing of endangered and threatened wildlife in New Jersey (New Jersey Department of Environmental Protection, 1985), endangered and threatened bird species which may be found in Cape May County are listed below. Individual notes and descriptions for these endangered and threatened birds are provided in Appendix E and were obtained from Breden (1981).

Endangered

Pied-billed Grebe (Podilymbus podiceps) (E-b)

Cooper's Hawk (Accipiter cooperii)

Bald Eagle (Haliaeetus leucocephalus)

Northern Harrier (Circus cyaneus) (E-b)

Peregrine Falcon (Falco peregrinus)

Piping Plover (Charadrius melodus)

Upland Sandpiper (Bartramia longicauda)

Roseate Tern (Sterna dougallii)

Least Tern (Sterna albifrons)

Black Skimmer (Rynchops nigra)

Short-eared Owl (Asio flammeus) (E-b)

Short-billed Marsh Wren -or- Sedge Wren (Cistothorous platensis)

Cliff Swallow (Petrochelidron pyrrhonota) (E-b)

Henslow's Sparrow (Ammodramus henslowii)

Vesper Sparrow (Pooecetes gramineus) (E-b)

Threatened

Great Blue Heron (Ardea herodias)

Yellow-crowned Night Heron (Nyctanassa violacea)

Red-shouldered Hawk (Buteo lineatus)

Osprey (Pandion haliaetus)

Merlin (Falco columbarius)

Barred Owl (Strix varia)

Red-headed Woodpecker (Melanerpes erythrocephalus)

Bobolink (Dolichonyx oryzivorous)

Savannah Sparrow (Passerculus sandwichensis)

Grasshopper Sparrow (Ammodramus savannarum)

2. REPTILES and AMPHIBIANS. Appendix D indicates the status of rarity of the reptiles and amphibians of the State Park. The natural area is known to support the Southern Gray Treefrog (Hyla chrysoscelis) and may also

support the Eastern Tiger Salamander (Ambystoma tigrinum), two state endangered species. The presence of the Eastern Tiger Salamander is unconfirmed, but is considered likely because suitable habitat for this species is available (heavily wooded areas with freshwater breeding ponds).

Giant sea turtles wander north in the Gulf Stream reaching New Jersey's offshore waters as ocean water temperatures warm up during the summer months. During July and August there are literally hundreds of Atlantic Loggerhead (Caretta caretta) and Atlantic Leatherback sea turtles (Dermochelys coriacea) (both Federally and State Endangered) from five to 100 miles offshore. The Atlantic Ridley Sea Turtle (Lepidochelys kempi) (Federally and State Endangered) has become more common in the waters off of Cape May Point. Two other sea turtles may be found in our offshore waters, though they are very uncommon: the Green Sea Turtle (Chelonia mydas) (N.J. Threatened Species) and the Atlantic Hawksbill Sea Turtle (Eretmochelys imbricata) (federally endangered). Since the beaches at the Park and natural area are so active with tourists, joggers, bathers, and beachgoers during the sea turtle's nesting season, the chance of a sea turtle nesting attempt here is very slim. However, an empty turtle egg was found on the Park's beachfront on 25 June 1985 that Bob Schoelkopf of the Marine Mammal Stranding Center felt could be a sea turtle egg (Patricia Sutton, personal communication).

The following reptiles and amphibians are classified as declining by the Endangered and Nongame Species Program (N.J. Department of Environmental Protection, 1985). The Eastern Hognose Snake (Meterdon platyrhinos) is a regularly seen resident in the natural area that favors upland edges of low areas (Breden, 1981). The following species are all unconfirmed but have suspected occurence in the natural area due to the presence of suitable habitat:

Eastern Spadefoot Toad	(Scaphiopus holbrooki)
Marbled Salamander	(Ambystoma opacum)
Spotted Salamander	(Ambystoma maculatum)
Eastern Four-Toed Salamander	(Hemidactylium scutatum)
Northern Red Salamander	(Pseudotriton r. ruber)

Threatened Plant Species

Cape May Point Natural Area contains several plant species classified as endangered, rare or of special concern (David B. Snyder, personal communication). Information on plant species is based on Snyder and Vivian (1981) and Snyder (1984). In this report, 'state endangered' is defined as any vascular plant species whose continued survival is, or soon will be, in jeopardy in the State of New Jersey, regardless of its status elsewhere. A 'rare' species is defined as one not currently threatened with extinction; but it occurs in such small numbers in New Jersey that it may become endangered if its environment deteriorates further. Potentially threatened plant species in New Jersey are designated 'special concern' (Snyder, 1984). Because of the sensitivity of this information, the exact mapped locations of these rare plant populations will not

be provided in this report. The following is a list and notes on these threatened species.

BUTTERFLY PEA Clitoria mariana Status: STATE ENDANGERED

The most critically threatened plant species in the natural area which is the only known extant site in the state (Snyder and Vivian, 1981). Four stations are found in the natural area. The old literature listed this species as "rare and local" (Stone, 1910).

AWL-LEAVED RUSH Juncus coriaceus Status: STATE ENDANGERED

A southern species at its northern limit of its range. Only known extant site in the state is at Cape May Point State Park.

POND PINE or SWAMP PINE Pinus serotina Status: RARE

A southern species at its northern most limit in south Jersey. Until the early 1900's this species was not known to occur north of Virginia. One station is found in the natural area.

WHORLED MARSH-PENNYWORT Hydrocotyle verticillata Status: RARE

One extant station currently known only from Cape May County.

MISTFLOWER or BLUE BONESET Eupatorium coelestinum Status: RARE

At the northeastern limit of its geographic range. Locally common in southern Cape May County, but rare elsewhere in the state. Seven stations are found in the natural area.

WILD CRAB APPLE Pyrus angustifolia Status: RARE

At the northeastern limit of its geographical range.

LONG'S RUSH Juncus longii Status: RARE

Restricted primarily to Cape May County. One of a few known extant occurrences.

RATTLESNAKE MASTER Eryngium aquaticum Status: SPECIAL CONCERN

Probably no more than 25 stations in the State. One station is found in the natural area.

SPRING or EARLY LADIES'-TRESSES Spiranthes vernalis Status: SPECIAL CONCERN

There are 5 stations of Spring Ladies'-tresses within Cape May Point State Park.

BEARDED SKELETON GRASS Gymnopogon ambiguus Status: SPECIAL CONCERN

Infrequent in New Jersey. Weedlike in its behavior, occurring along roadsides and lawns.

FOG FRUIT Phyla lanceolata Status: SPECIAL CONCERN

A southern species at northern limits of its range. No extant occurrences presently known in New Jersey. Collected in the State Park in 1917 and 1926. May still be extant in park.

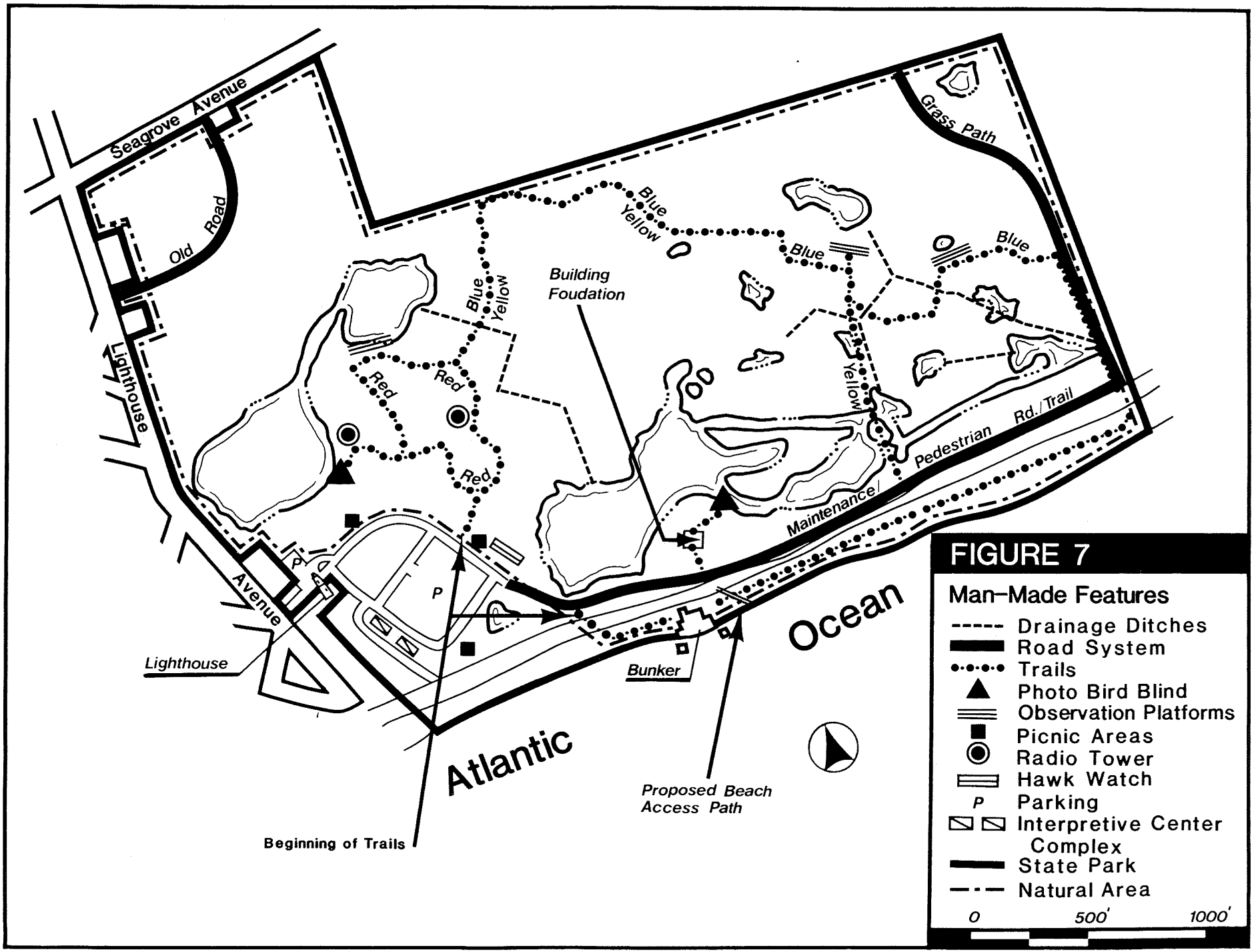
Man-made Features

Figure 7 contains the locations of man-made features within the designated natural area, outside the natural area but within State Park boundaries, and significant man-made features surrounding the State Park. Man-made features in the natural area not shown on Figure 7 include water control structures, sitting benches and fences.

The three mile trail system is connected by dirt/grass/sand paths and wooden boardwalks along which photo-bird blinds and observation platforms are located. Laid out on high ground and over the spoil banks of old drainage ditches, three designated trails marked by color provide visitors with an opportunity to observe the various habitats of the natural area. Wooden bridges extend over drainage channels and smaller ponds. Wooden fences are strategically placed in areas where visitors tend to wander off the trails; sitting benches are found throughout the trail system. Two of the three road-paths are part of the existing trail system. Grass Path runs from the northeast corner of the natural area towards the beach. The southern end of Grass Path becomes part of the blue trail. Maintenance- Pedestrian Road, a sand path which runs parallel to the beach, provides vehicle access to State Park vehicles only. This road also serves as a foot path as it is part of the existing trail system. The proposed pedestrian/ vehicle beach access path from Maintenance-Pedestrian Road to the beachfront is also located on Figure 7. Old Road, a dirt path, is located in Weatherby's Woods. From Lighthouse Road, Old Road curves towards Sea Grove Avenue.

A verbal agreement establishing a right-of-way for an adjacent landowner exists along Grass Path (giving said landowner access to the beach as a result of state condemnation of his property). The landowner mows Grass Path on an irregular schedule and is seldom seen using it (Breden, personal communication).

Previously existing military structures - the Bunker, radio towers and foundation of a military building do not degrade the natural area. The Bunker serves as a unique observation platform providing a panoramic view of the entire Park and as an effective patrol post for the Park personnel. The radio towers serve as nesting structures and perch platforms for migrating and residential bird species. The building foundation serves as a trail foundation for foot traffic from the yellow beach trail to the photo-blind on Shallow Pond West. Two picnic areas are presently located in the natural area's boundaries.


Seagrove Avenue
Old Road
Lighthouse
Avenue
Lighthouse
Grass Path
Blue
Yellow
Blue
Blue
Blue
Yellow
Building
Foudation
Red
Red
Red
Yellow
Pedestrian
Rd./Trail
Maintenance
P
Bunker
Ocean
Atlantic
Proposed Beach
Access Path
Beginning of Trails
FIGURE 7
Man-Made Features
Drainage Ditches
Road System
Trails
Photo Bird Blind
Observation Platforms
Picnic Areas
Radio Tower
Hawk Watch
P Parking
Interpretive Center Complex
State Park
Natural Area
0
500'
1000'

Man-made features outside the natural area but within State Park boundaries include the parking areas, Interpretive Center Complex, picnic pavillion, Gate House, and various other buildings. The main parking facility was completed in the summer of 1980 and presently accommodates 130 cars. Current plans include renovation of the parking area to accommodate 200 cars and construction of a new exit road to be located alongside the existing entrance/exit road in the Park.

The lighthouse, located outside State Park boundaries, is owned by the U.S. Coast Guard and maintained as a navigational aid. Having aesthetic, historic and cultural features, the lighthouse attracts tourists, artists and photographers. Currently, negotiations are being made between the Federal Government, State Park Service and a local private group concerning acquisition of the lighthouse.

Threats and Impacts

The following list of features are identified as having a direct or indirect negative impact on the natural area. Although the State Park can exert little authority for action on some of these features, it is important that these features be acknowledged because of the potential negative impact they may have on the ecological integrity of the natural area.

a. DUNE EROSION. Natural dunes and salt marsh once protected the mainland of southern Cape May County. Today, a thin veneer of man-made dunes is all that stands between the ocean and low-lying interior of the natural area. During any unusual high tide or storm tide, the breaching of dunes is inevitable. This process removes the protection the dunes once offered to low-lying back areas. Steady sea encroachment poses a serious threat to both vegetation and wildlife.

The history of this dynamic, high-energy, sand-starved beach environment shows a pattern of yearly dune breaches (Sutton, 1982). Erosion between Cape May City and Cape May Point has forced an angular cut back eastward of the land from the Point, eliminating a once existing road (Mt. Vernon Avenue), the town of South Cape May, two earlier lighthouses at Cape May Point, a Coast Guard Station, and naval installations.

The Cold Spring Jetty, built by the U.S. Army Corps of Engineers in 1911 to keep Cape May Harbor open, has played a key role in speeding up the natural erosion process at the natural area by halting southern littoral flow. The shoreline changes that resulted are evident. While beaches to the north of the jetty (Wildwood Crest) have continued to gain sand, those to the south (Cape May Point State Park and South Cape May Meadows) have steadily lost sand with no replenishment. This, in combination with the numerous groins built along Cape May City's beachfront, has resulted in a sand starved erosion problem for Cape May Point State Park and South Cape May Meadows.

b. DEVELOPMENT PRESSURE. Presently, the natural area is buffered by open space, scattered farmlands and increasing residential and commercial development. These farmlands and open space areas are under tremendous development pressure due to the growth of casino and tourist-related activities. Lost to housing, the development of the once open land will result in a less protective buffer for the natural area and decrease habitat diversity. The Park's immediate buffer of

privately owned open space to the north has diminished rapidly. Between 1970 and 1980, the population of Cape May Point has increased 20 percent (Breden, personal communication). The Park's broad buffer of farmland/open space south of the Canal (necessary to millions of migrating birds) has also diminished.

c. CAPE MAY POINT STORM DRAINS. A threat to the water quality of the natural area exists from the storm drains in the Borough of Cape May Point. All storm drains in Cape May Point empty into the natural area's Lighthouse Pond. The threat of water pollution, especially pollutants generated from non-point sources, poses a potentially severe environmental impact on the entire natural area.

d. HUMAN IMPACT. Due to Cape May Point's geographic location, cultural heritage and ecological significance as part of the Atlantic Flyway, tourists come in great numbers to the State Park. The Park is one of the more popular sites in North America for birding and provides public recreational facilities. Over 100,000 people visited the State Park/natural area in August 1985 alone, and an estimated 486,000 people visited the park during 1985 (Breden, personal communication). Cape May Point State Park provides one of the few free beaches in the area. This and the convenience of a parking lot and public restrooms have contributed to saturation attendance during the tourist season. The potential for abuses by the public on the natural area's fragile dune vegetation, nesting bird sites, migrant bird concentrations and endangered species increases greatly with increased human use.

The use and acquisition of Cape May Point Lighthouse and the Magnesite Plant in Cape May Point are currently being negotiated. When open to the public for recreational use, both will most likely result in an increase in the number of visitors, increasing the potential for abuse and disturbance of the area's natural features.

e. FIRE HAZARD. Although the State Park was not officially closed to the public when the State-wide Fire Alert was proclaimed by the Governor throughout many New Jersey State Parks and Forests (April 1985), the threat of a fire occurring in the natural area still exists. Past drought conditions in New Jersey and previous low water levels and phragmites encroachment in the natural area indicate a potential fire threat.

f. PEST CONTROL. An important open space cluster of agricultural lands, wetlands, wooded lands and ponds lies south of the Cape May Canal upon which many residential and migrating birds and wildlife depend.

Extensive draining and filling of marshy areas in Cape May County inevitably led to heavy chemical control of mosquitos. Spraying of insecticides via ground and airplane applications continues in specific locations in Cape May County. The State Park uses only natural mosquito controls (Water Management) in the natural area, but some of the areas surrounding the Park continue to be sprayed with chemical insecticides. The natural area could be affected by insecticide drift. DDT was used heavily in the county for 23 years until it was banned in 1967. Many wildlife species affected by DDT are still struggling to regain healthy population numbers (Sutton, 1982).

Improper use of herbicides and pesticides associated with agriculture could also have a detrimental effect on birds and wildlife dependent on the remaining open-space habitats. Gypsy moths have not yet moved into the southern tip of Cape May County. Currently, the pesticide "Sevin" is sprayed aerially for gypsy moth control. This chemical is known to be toxic to many insects besides the gypsy moth caterpillar, including a number of the gypsy moth's natural predators (Sutton, 1982).

MANAGEMENT TECHNIQUES

The management plan will prescribe a series of management techniques for the protection and possible enhancement of natural features, while at the same time allow for continued public interpretive and recreational uses.

This section will first establish the classification of the natural area. Sensitivities of a natural area's resources to human impact serve as the basis for designation into one of three classifications according to the rules and regulations specified in N.J.A.C. 7:2-11.4-11.5. Following the identification of classification, specific issues affecting the natural area and associated prescribed management techniques will be provided. These techniques are based in part on consultation with appropriate agencies of the State and the Natural Areas Council, and are designed to adequately maintain and, if possible, enhance the quality of the natural area.

Classification Based on Sensitivity

Cape May Point Natural Area demonstrates numerous sensitive features and ecological relationships of natural significance. As a result of both natural processes and man-made activities, the conditions of the natural area today are significantly different from the biotic conditions of the original tidal salt marsh ecosystem. Today, the natural area lies within a dynamic coastal environment which contains freshwater to brackish marshes and varied uplands situated adjacent to the open ocean. The proximity of a freshwater marsh system to the ocean creates a unique relationship of varied habitats and excellent opportunities for migrating birds and other wildlife. At the same time, however, the natural area has suffered a severe dune loss. The freshwater ponds and marshes lying directly behind the dunes are edged with salt marsh due to ocean inundation during storms.

Perhaps most important, the natural open-space areas of southern Cape May are known as a nationally significant site along the East Coast for migratory birds. This southern region of New Jersey is known as a geographic merging point for a number of northern and southern species of vegetation. The natural area also provides habitats for endangered and threatened species of both plants and animals.

The Cape May Point Natural Area shall be designated as Class II Natural Area because (1) the natural communities present are not sufficiently rare or sensitive to human impact to justify their use for ecological research and study only and (2) management techniques can be designed to effectively avoid sensitive populations of threatened or endangered species while also allowing for their careful observation. The administrative code indicates that Class II Natural Areas shall be managed "for the purpose of interpretation of natural processes, flora and fauna of the State", and that "Recreational uses may be permitted as deemed compatible with interpretive purposes" (N.J.A.C. 7:2-11.5(b)2a). The natural area's known ecological significance, geographic location and cultural heritage have attracted a high concentration of visitors to the Park.

Recreational activity occurs on limited trail routes, compatible with the preservation of the valuable features present in the natural area.

It is the goal of this management plan to maintain the present freshwater ecosystem and rich diversity occurring within the Cape May Point Natural Area. Maintenance of this system will, in some cases, require active management.

Dune Erosion

Beach erosion is a major threat. Storm dune breaching and associated sea water flooding periodically affect the freshwater nature of the ponds and marshes, posing a serious threat to both vegetation and wildlife. Without a protective dune, the Park is totally vulnerable.

The following are current and proposed management techniques for dune stabilization. Appendix F lists recent dune stabilization efforts at Cape May Point State Park and was compiled by Patricia Sutton (personal communication) in May, 1985.

1. Low Cost Dune Stabilization Measures. Current management of dune breaching occurs on a storm-by-storm basis. This involves bulldozing up breaches and/or using drag lines to push storm deposition from the ponds to form a temporary berm. Although these efforts only temporarily restore the dunes (i.e., they do little to control the continual erosion in the area), the Park Service will continue to perform these management repairs to the dune as the need arises.

2. Major Dune Restoration Plan. Major dune restoration activity at the State Park involves trucking in very coarse sand and gravel to rebuild high dunes. The State Division of Coastal Resources, in conjunction with the State Park Service, is currently in the implementation stage of dune reconstruction at Cape May Point State Park. Dredge spoils from Spices Creek along the Cape May Canal is being hauled in for the reconstruction of the dunes at the Park. Again, this type of management activity does not control the erosion problem in the area; it is a temporary effort at restoring the dunes.

All major dune restoration work will be coordinated with ONLM and reviewed by the Natural Areas Council.

Park staff will fertilize the "Cape" American Beach Grass plantings following dune restoration projects to accelerate the growth of the beach grass and to stabilize the dunes.

The Park Service will perform repairs to the dune as the need arises. However, any expansion of the dune inland from its current position resulting in destruction of existing vegetation must first be approved by the Natural Areas Council.

3. Long-term Solution. In considering a solution to the erosion problem at Cape May Point Natural Area, the State Park property cannot be

considered a separate entity. The project must also include that area immediately east of the Park, the Nature Conservancy's South Cape May Meadows. One long-term solution to this critical erosion problem is based on an in-house issue paper on erosion at Cape May Point State Park (N.J. Department of Environmental Protection, 1982). This high-cost proposal is based upon the U.S. Army Corps of Engineers (1977) and is outlined briefly below:

a. construct seven groins at approximately 700 feet spacing from the 2nd Avenue Jetty to the Nunnery Jetty.

b. immediately following the groin installation, start an initial beach replenishment program using 800,000 cubic yards of sand.

c. establish an annual beach replenishment of 5,000 cubic yards of sand.

d. plant new dune areas with beachgrass.

It must be emphasized here that this type of high cost engineering project is only one alternative for the long-term solution to erosion at this vulnerable beachfront. A study to seek viable alternative solutions to combat the severe dune erosion problem at Cape May Point and portions of Lower Township is proposed as a long-term management goal of the Division. State and/or Federal funding must be sought for this study. Inaction to solve this critical erosion problem will not only cause significant damage to Cape May Point State Park and natural area, but will also have serious effects on South Cape May Meadows, the town of Cape May Point, and portions of Lower Township.

A secondary issue is pedestrian and vehicular access near and over the dunes. Maintenance/Pedestrian Road runs behind the existing dune system and will be maintained now and in future dune restoration projects as an open access road for Park service vehicles only. This road also serves as a pedestrian foot path.

Crossing over the dunes by foot and by vehicle is prohibited at all times in the natural area, except in those designated access points for pedestrians and vehicles and during emergencies. The design plans for the dune restoration project contains one combined pedestrian and vehicular beach access path from Maintenance/Pedestrian Road to the beachfront and will be located in proximity to the Bunker (Fig. 7). This access point will be designed into the dune itself and contain a compacted gravel core base capable of supporting motor vehicles. Vehicular access to the beachfront is important for administrative and maintenance purposes (routine dune maintenance and patrol work, litter clean-up, monitoring of the natural area's dune and beachfront, emergency situations). This access point will also provide visitors to the Park access to the beachfront.

Water Management

Ecological restoration and preservation of various habitats of the natural area are primary goals for the long-term benefit of the great numbers of birds and wildlife dependent on this area. Historic drainage efforts and natural processes have contributed to various hydrological conditions at the natural area, previously discussed under the Hydrology section. In response to past drainage problems, the Park uses several water control structures to raise and maintain high water levels.

To adequately manage current drainage conditions, seven work recommendations have been prepared by the Park Superintendent and Park Naturalist (Philip Breden and Patricia Sutton, personal communication, May, 1985) which specify the use of various water control structures to maintain high water levels for the existing diversified freshwater habitat and to improve wildlife and bird habitat, to aid in biological control of mosquitos, and to improve water quality. These recommendations are described in Appendix G. Maintenance of the natural area's freshwater levels are highly important to migratory birds and other wildlife and absolutely need to be protected and managed accordingly.

The Park Superintendent will be responsible for maintaining and monitoring water conditions at the natural area. Any planned activity using water control structures shall be coordinated with ONLM.

Mosquito Control

Extensive draining and filling of marsh areas inevitably led to heavy chemical control of mosquitos in Cape May County. Spraying of insecticides via ground and airplane application continues in specific locations in Cape May County. The State Park has taken the policy of no spraying primarily because of the abundance of migratory birds dependent on the natural area.

No physical manipulation of the marshes by the Cape May County Mosquito Extermination Commission to control mosquito populations will be permitted. The water management measures conducted by the State Park to naturally control mosquito populations are the most effective and least detrimental methods used to control mosquito populations.

To minimize the potential for adverse impacts on the natural area, aerial and hand spraying at the natural area to control mosquito populations will continue to be prohibited. It is recommended that the South Cape May Meadows also not be sprayed.

Mosquito control methods within the natural area deemed necessary by the Cape May County Mosquito Extermination Commission must first be approved by the Commissioner of the New Jeresey Department of Environmental Protection.

The Park Superintendent shall be responsible for preparing a report, within one year after the approval of this management plan and in each subsequent year, outlining any insect control measures used during the preceding year, evaluating the success of these measures, and outlining those measures proposed for use in the following year. This report will be sent to ONLM and the Natural Areas Council for consideration and recommendation to the Department.

Endangered/Threatened Wildlife

The most significant feature of the natural area is its value to migrating birds. Cape May Point State Park together with similar open space lands south of the Canal provide important resting and feeding grounds to migratory birds of the Eastern Flyway, including large numbers of birds determined to be endangered or threatened by the NJDEP's Nongame and Endangered Species Program (Appendix B, E).

Management techniques must preserve the natural area as habitat suitable for the continued support of existing species. In addition, techniques must be explored to enhance the suitability of the habitat for rare wildlife with minimum compromise to the natural character of the area. Management of wildlife species determined to be endangered or threatened should focus on the preservation and possible enhancement of associated habitats.

Cape May Point Natural Area requires use of active water management (using water control structures) to maintain the freshwater conditions of the marsh and ponds upon which some endangered and threatened avian species depend.

It may be appropriate to construct nesting structures for avian species such as the Osprey since natural nesting sites may be limited. The need for such structures will be determined by the Park Superintendent and shall be coordinated with ONLM prior to construction.

Any planned activity or use within the natural area which may result in the alteration or destruction of existing habitats shall be reviewed by the Natural Areas Council with regard to the impact it may have on endangered or threatened wildlife species. The Administrator of ONLM and the Park Superintendent shall resolve any differences of opinion through a decision by the Division Director.

Threatened Plant Species

Cape May Point Natural Area supports several populations of plant species classified as endangered, rare or of special concern. The presence of these populations must be taken into consideration with respect to all other management techniques and uses within the natural area, particularly the placement of any structures. The preservation and enhancement of these plant species should be a priority.

Plant species and their exact locations will be considered confidential information and will not be available to the general public. ONLM will provide the Park Superintendent with one copy of a map indicating known locations of all threatened plant species within the natural area.

The Park Superintendent will inform all Park field personnel of these known locations so that accidental destruction of populations may be avoided. In all cases, rare plant populations will be monitored by the Superintendent to detect any changes or impacts related to public use.

ONLM will provide the Park Superintendent and Park personnel with materials which will allow the proper identification and recognition of threatened plant

species thought to be extant within the natural area. Special effort should be made to locate the Fog Fruit (Phyla lanceolata), last observed in the State Park in 1926. ONLM will be notified immediately of the name and location of any threatened plant species thought to be found within the natural area, excluding those known locations identified on the threatened plant species map. ONLM will, if necessary, visit the location to check the validity of the identification and will make any necessary revisions to the threatened plant species map. Under no circumstances will a known or suspected threatened plant species, or its parts thereof, be removed, destroyed or otherwise disturbed by Park personnel or personnel of ONLM.

Any planned activity or use within the natural area which will result in the alteration or destruction of existing habitat for threatened plant species shall be reviewed by the Natural Areas Council. The Administrator of ONLM and the Park Superintendent shall resolve any differences of opinion through a decision by the Division Director.

Specific management techniques for the maintenance and/or enhancement of populations of identified threatened plants shall be coordinated with ONLM.

Public Access and Use

From within the State Park boundaries, the main entrance point into the natural area is located east of the main parking area; this then branches into three trails marked by colors (the red, yellow and blue trails). Two other entry points into the natural area occur along the beach (Fig. 7).

Foot traffic in the natural area is limited to interpretive trails, the combined pedestrian/vehicular beach access path and the beach for passive recreational purposes. Access on the Red Trail is available to those physically disabled.

Interpretive nature and bird walks along the trails, bird banding projects, bird migration studies, guided beach walks, special group tours as well as hiking, bird watching, sunbathing and surf fishing represent a selection of recreational and educational activities. These and other activities are listed in Appendix H compiled by Patricia Sutton (personal communication, Spring, 1985).

The following recreational activities and uses are and shall continue to be prohibited at the natural area: hunting, trapping, pond fishing, and walking on the dunes.

Any planned activity or use within the natural area which may result in the alteration or destruction of existing habitat shall be reviewed by the Natural Areas Council with regard to the effect it may have on the natural habitat, associated wildlife and bird species, and threatened/endangered plant and animal species.

Man-Made Features Maintenance

All man-made features previously discussed contribute scientific, educational and recreational values and do not significantly damage the natural area. They are, therefore, accepted features which serve the purposes of the natural area.

Trails and other structures have maintenance requirements. The Park Superintendent will be responsible for maintenance and improvements of such features throughout the natural area to allow for their continued interpretational use. Any improvements which may negatively effect the flora/fauna of the natural area must be reviewed by the Natural Areas Council. There will be no construction of new trails within the natural area.

A verbal agreement establishing a right-of-way for an adjacent landowner exists along Grass Path (giving the landowner access to the beach as a result of State condemnation of his property). The Park Superintendent, in conjunction with ONLM, shall make arrangements with this landowner for continued mowing of Grass Path once a year between the months of November and March.

Proposed construction of new structures within the natural area must serve the objectives of this management plan and shall be reviewed by the Natural Areas Council with regard to the effect it may have on the natural habitat and plant and animal species.

Ecological Monitoring

Park staff will be responsible for monitoring the natural features of the area including wildlife and plant populations, nesting species, shoreline erosion, water levels, water quality, and vegetative succession.

Any unusual developments or unusual sitings of wildlife or bird species should be recorded by Park Staff and brought to the attention of ONLM. Additionally, information and monitoring of the natural area by individuals and outside public agencies should also be recorded by Park staff. This is an important function for the continued ecological health of the natural area and helps one to understand the dynamics of a natural area and the stresses placed upon it.

Non-Conforming Uses

The Natural Areas Systems Act defines non-conforming uses as "any use or facility or structure lying within but not serving the purpose of a natural area which is regulated by the Administering Agency..." (N.J.A.C. 7:2-11.2). According to the Administrative Code, management plans must identify all non-conforming uses and easements, assess their impacts and define the critical level of impact of each. For the purpose of this management plan, critical levels of impact are defined as those levels at which uses begin to degrade a natural area.

Motor vehicle use within the natural area by Park personnel for administrative and maintenance purposes is conforming since it is necessary to serve the purposes of the natural area. Existing uses and structures within the natural area which are non-conforming and which degrade the value of the natural area include two picnic areas and the new road proposed to be constructed along side the current State Park entrance/exit road. The entrance of pets into the natural area is also a non-conforming use.

The two picnic areas and the new road proposed to be constructed along side the current entrance/exit road to the State Park will be deleted from the natural area's boundaries and will remain within State Park boundary lines.

Pets may be allowed within the natural area as long as they are leashed and held by their owners.

Boundaries

With the adoption of this management plan, the two picnic areas and the new road shall be deleted from the natural area's boundaries. These deleted areas will remain within State Park boundary lines.

Four fifty-foot right-of-way paper streets not owned by the State exist within the natural area. Before the State acquired the property in the northwest section of the natural area, referred to as Weatherby's Woods, the area was planned on paper as a residential community. The land exclusive of these streets was bought by the State. Consequently, these streets were never vacated by the developer. Thus, they have yet to be acquired by the State. Additionally, one interior building lot was never acquired by the State.

The Division shall acquire for inclusion in the natural area the four 50-foot paper streets and the interior building lot.

Two critical buffer areas which currently lie outside State Park/Natural Area boundaries are recommended for acquisition to the Cape May Point Natural Area:

a. Valuable woodlands along Seagrove Avenue adjacent to the northern natural area boundary provide critical buffer. The natural area boundary cuts diagonally through the most heavily wooded sections of cedars and through most of the mature mixed hardwood forest east of Rutherford's field. Consequently, much of the woodland that adds greatly to the distinctive character of the Park and which provides valuable cover to migrating birds and resident wildlife, in actuality, lies outside Natural Area/State Park boundaries. This woodland area is owned by one landowner and is currently zoned in Lower Township as residential - single.

b. Municipal land owned by the Borough of Cape May Point along Lighthouse Avenue near the entrance road to the Park property is critical for acquisition. These individual lots are zoned as Cape May Point municipal property.

Posting Boundaries of the Natural Area

One sign has been placed in the field designating the natural area, located at the main entrance point to the trails.

ONLM will provide the Park Superintendent with State Natural Area signs. The Park Superintendent will be responsible for placing signs along the perimeter of the natural area from the secondary parking area to the main trail entrance point at regular intervals. In addition, roads bordering the natural area will be posted with signs at regular intervals. These include Lighthouse Avenue and Seagrove Avenue. The following entrance points will also be marked by signs: Yellow Trail (entrance to the back trail system near Maintenance/Pedestrian Road), Blue Trail (entrance to the back trail system near Maintenance/Pedestrian Road), and both entrance points to the natural area along the beachfront.

Procedures for Conducting Research

Nature study and scientific research are major functions of the Natural Areas System. Research projects conducted by Park Services, universities and others greatly benefit our understanding of ecological systems within the natural area.

Past and ongoing research projects in the natural area have included Hawk and Owl banding projects by the U.S. Fish and Wildlife Service since 1967, Spring and Fall Hawk migration studies, song bird banding activities, and various botanical research.

The general procedures for persons who wish to conduct research projects within natural areas are outlined in the Administrative Code (N.J.A.C. 7:2-11.6). These procedures shall be followed and generally indicate that (1) only qualified persons may conduct research, (2) no research will be permitted which may detrimentally affect the biota, (3) a specific written research proposal shall be submitted to the Department for approval, (4) status reports shall be provided to the Park Superintendent annually, and (5) upon completion of the study, results shall be submitted to the Department. The Administrative Code should be consulted for details on application procedures.

The Park Superintendent shall be responsible for obtaining the written research proposal and shall forward a copy to ONLM for review or concurrence. Denial, full acceptance or acceptance with revisions must be provided by the Park Superintendent and ONLM within thirty (30) days of application submittal.

Research Goals

Information gaps in the Site Description and recommended studies by Park staff will serve as a framework for identification of suggested future research projects by the Park Service and others. The results of such research efforts will aid in determining future management techniques.

A study is needed to seek viable alternative solutions to combat the severe dune erosion problem at Cape May Point and portions of Lower Township.

Recommended future studies include a mammal inventory, muskrat population monitoring and an aquatic plant and animal inventory. Sources of information for compiling lists may include knowledgeable individuals, local experts, persons from academic institutions, and the State Division of Fish, Game and Wildlife. After compilation of the lists, pamphlets may be prepared for distribution to visitors.

Public Participation and Education

Due to the popularity of the State Park and inclusive natural area, involvement by the public is great. The public is encouraged to record sitings in the Park Office on forms which indicate species they have seen or suspect they have seen within the natural area, along with the date, time and location of the occurrence. This information is an asset to the continued preservation of the natural area.

Current practices of public participation and education shall continue at the natural area due to the successful involvement of local environmental/birding/nature groups and individuals in plant, bird and wildlife species identification.

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APPENDIX A

CAPE MAY POINT STATE PARK PLANT LIFE

KEY

* - alien
E - State Endangered
R - Rare

Plants included in Snyder and Vivian (1981) Rare and Endangered Vascular Plant Species in New Jersey, 1981.

Osmundaceae -- Osmunda Fern Family

Osmunda cinnamomea	-	Cinnamon Fern
O. regalis	-	Royal Fern

Polypodiaceae -- Fern Family

Dryopteris palustris	-	Marsh Fern
Pteridium aquilinum	-	Bracken

Cupressaceae -- Juniper Family

Juniperus virginiana	-	Red Cedar

Pinaceae -- Pine Family

Pinus rigida	-	Pitch Pine
P. serotina	-	Pond or Swamp Pine (R)
P. thunbergii	-	Japanese Black Pine*

Typhaceae -- Cattail Family

Typha latifolia	-	Broad-leaved Cattail
T. angustifolia	-	Narrow-leaved Cattail

Zosteraceae -- Pondweed Family

Potamogeton spp.	-	Pondweed
Ruppia maritima	-	Ditch-grass

Gramineae -- Grass Family

Bromus racemosus	-	Upright Brome*
Festuca rubra	-	Red Fescue
F. elatior	-	Meadow Fescue*
Puccinellia fasciculata	-	Torrey's Meadow Grass
Poa compressa	-	Canada Bluegrass*
Eragrostis pectinacea	-	Purple Love-grass
E. spectabilis	-	Petticoat-climber
Uniola laxa	-	Slender Spike-grass

Gramineae -- Grass Family (Continued)

Triodia flava	-	Tall Red-top
Triplasis purpurea	-	Sand Grass
Distichlis spicata	-	Marsh Spike-grass
Phragmites communis	-	Giant Reed Grass
Lolium perenne	-	Perennial Rye-grass*
Elymus virginicus	-	Wild Rye
Holcus lanatus	-	Velvet Grass*
Ammophila breviligulata	-	American Beach Grass
Agrostis alba	-	Red-top*
Muhlenbergia schreberi	-	Nimble-will
Aristida longespica	-	Slender Three-awn
Spartina alterniflora	-	Salt-marsh Cordgrass
S. patens	-	Salt Meadow Cordgrass
Cynodon dactylon	-	Bermuda Grass*
Anthoxanthum odoratum	-	Sweet Vernal Grass*
Paspalum floridanum	-	Florida Paspalum
P. ciliatifolium	-	Ciliate-leaved Paspalum
Panicum dichotomiflorum	-	Spreading Panic
P. virgatum	-	Switchgrass
P. microcarpon	-	Barbed Panic
P. lanuginosum	-	Woolly Panic
P. clandestinum	-	Deer-tongue Grass
Echinochloa pungens	-	Native Barnyard Grass
E. walteri	-	Satl-marsh Cockspur Grass
Setaria geniculata	-	Perennial Foxtail
S. glauca	-	Yellow Foxtail*
Erianthus giganteus	-	Plume Grass
Andropogon scoparius	-	Little Blue Stem
A. virginicus	-	Broom Sedge
Tripsacum dactyloides	-	Gama Grass

Cyperaceae -- Sedge Family

Cyperus filicinus	-	Nuttall's Cyperus
C. filiculmis	-	Slender Cyperus
Scirpus smithii	-	Smith's Club-rush
S. americanus	-	Three-square Bulrush
Scleria nitida	-	Shining Nut-rush
Carex hormathodes	-	Marsh Straw Sedge
C. straminea	-	Straw Sedge
C. lanuginosa	-	Woolly Sedge
C. swanii	-	Swan's Sedge
C. lurida	-	Shallow Sedge

Araceae -- Arum Family

Arisaema atrorubens	-	Jack-in-the-pulpit

Lemnaceae -- Duckweed Family

Lemna minor	-	Duckweed

Juncaceae -- Rush Family

Juncus gerardi	-	Black Rush
J. tenuis	-	Path Rush
J. dichotomus	-	Forked Rush
J. effusus	-	Common Rush
J. biflorus	-	Two-flowered Rush

Juncaceae -- Rush Family (Continued)

J. scirpoides	-	Scirpus-like Rush
J. canadensis	-	Canada Rush
J. coriaceus	-	Awl-leaved Rush (E)
J. longii	-	Long's Rush (R)

Liliaceae -- Lily Family

Allium canadense	-	Wild or Meadow Garlic
A. vineale	-	Field Garlic*
Hemerocallis fulva	-	Tawny Day-lily*
Lilium superbum	-	Turk's-cap Lily
Yucca filamentosa	-	Yucca or Spanish Bayonet
Asparagus officinalis	-	Asparagus*
Polygonatum biflorum	-	Solomon's Seal
Smilax rotundifolia	-	Common Greenbrier

Iridaceae -- Iris Family

Sisyrinchium atlanticum	-	Blue-eyed Grass
Iris prismatica	-	Slender Blue Flag

Orchidaeae -- Orchid Family

Habenaria lacera	-	Ragged Fringed Orchis
Sprianthes vernalis	-	Spring Ladies'-tresses

Salicacea -- Willow Family

Populus tremuloides	-	Quaking Aspen
P. grandidentata	-	Big-toothed Aspen
P. alba	-	White Poplar*

Myricaceae -- Wax Myrtle Family

Myrica pensylvanica	-	Northern Bayberry
M. cerifera	-	Common Waxmyrtle

Juglandaceae -- Walnut Family

Carya tomentosa	-	Mockernut Hickory

Fagaceae -- Beech Family

Quercus alba	-	White Oak
Q. stellata	-	Post Oak
Q. velutina	-	Black Oak
Q. falcata	-	Spanish Oak
Q. ilicifolia	-	Scrub Oak
Q. phellos	-	Willow or Swamp Oak

Ulmaceae -- Elm Family

Celtis occidentalis	-	American Hackberry

Moraceae -- Mulberry Family

Morus rubra	-	Red Mulberry
M. alba	-	White Mulberry*

Urticaceae -- Nettle Family

Boehmeria cylindrica	-	False Nettle

Polygonaceae -- Buckwheat Family

Rumex crispus	-	Curled Dock*
R. obtusifolius	-	Broad-leaved or Bitter Dock*
R. acetosella	-	Sheep or Common Sorrel*
Polygonum amphibium	-	Water Smartweed
P. pensylvanicum	-	Pennsylvania Smartweed
P. hydropiperoides	-	Mild Water Pepper
P. cespitosum	-	Long-bristled Smartweed
P. persicaria	-	Lady's-thumb, Redleg*
P. cuspidatum	-	Japanese Knotweed*

Chenopodiaceae -- Goosefoot Family

Chenopodium album	-	Lamb's-quarters, Pigweed*
C. ambrosioides	-	Mexican Tea*
Salsola kali	-	Common Saltwort

Amaranthaceae -- Amaranth Family

Amaranthus hybridus	-	Spleen Amaranth*

Phytolaccaceae -- Pokeweed Family

Phytolacca americana	-	Pokeweed

Aizoaceae -- Carpetweed Family

Sesuvium maritimum	-	Sea-purslane

Portulacaceae -- Purslane Family

Portulaca oleracea	-	Purslane*

Caryophyllaceae -- Pink Family

Scleranthus annuus	-	Knawel*
Spergularia marina	-	Salt-marsh Sand Spurrey
Steelaria media	-	Common Chickweed*
Silene cucubalus	-	Bladder Campion*
Saponaria officinalis	-	Bouncing Bet, Soapwort*
Dianthus prolifer	-	Childing Pink*
D. armeria	-	Deptford Pink*

Ranunculaceae -- Buttercup Family

Ranunculus sceleratus	-	Cursed Crowfoot
Clematis dioscoreifolia	-	Yam-leaved Clematis*

Magnoliaceae -- Magnolia Family

Magnolia virginiana	-	Sweetbay Magnolia

Lauraceae -- Laurel Family

Sassafras albidum	-	Sassafrass

Papaveraceae -- Poppy Family

Fumaria officinalis	-	Fumitory, Earth-smoke*

Cruciferae -- Mustard Family

Draba verna	-	Whitlow-grass*
Thlaspi arvense	-	Field Pennycress*
Lepidium virginicum	-	Pepper Grass, Poor-man's-pepper
Capsella bursa-pastoris	-	Shepherd's Purse*
Cakile edentula	-	Sea Rocket
Raphanus raphanistrum	-	Wild Radish*
Brassica hirta	-	White Mustard*
B. juncea	-	Indian or Chinese Mustard*
B. rapa	-	Field Mustard*
Sisymbrium altissimum	-	Tumble Mustard*
Rorippa sylvestris	-	Creeping Yellow Cress*
Barbarea verna	-	Early Winter Cress*
Cardamine pensylvanica	-	Pennsylvania Bittercress

Rosaceae -- Rose Family

Pyrus communis	-	Pear*
P. angustifolia	-	Narrow-leaved Wild Crab Apple (R)
P. arbutifolia	-	Red Chokeberry
Amelanchier canadensis	-	Swamp Juneberry, Shadbush

Rosaceae -- Rose Family

Fragaria virginiana	-	Wild Strawberry
Potentilla canadensis	-	Dwarf Cinquefoil
Geum canadense	-	White Avens
Rubus flagellaris	-	Dewberry
R. phoenicolasius	-	Wineberry*
R. allegheniensis	-	Blackberry
Rosa multiflora	-	Multiflora Rose*
R. palustris	-	Swamp Rose
R. carolina	-	Pasture or Carolina Rose
Prunus maritima	-	Beach Plum
P. serotina	-	Wild Black Cherry

Leguminosae -- Legume Family

Cassia fasciculata	-	Partridge Pea
Trifolium arvense	-	Rabbit's-foot Clover*
T. pratense	-	Red Clover
T. medium	-	Zigzag Clover*
T. repens	-	White Clover*
T. hybridum	-	Alsike Clover*
T. agrarium	-	Hop Clover*
T. procumbens	-	Smaller Hop Clover*
Melilotus officinalis	-	Yellow Sweet Clover*
M. alba	-	White Sweet Clover*
Medicago sativa	-	Alfalfa*
Desmodium ciliare	-	Small-leaved Tick-trefoil
D. paniculatum	-	Panicled Tick-trefoil
Lespedeza repens	-	Creeping Bush-clover
L. violacea	-	Violet Bush-clover
L. virginica	-	Slender Bush-clover
L. capitata	-	Round-headed Bush-clover
Vicia sativa	-	Spring Vetch*
V. angustifolia	-	Narrow-leaved Vetch*
V. cracca	-	Cow or Tufted Vetch*
V. grandiflora	-	Large-flowered Vetch
Lathyrus latifolius	-	Everlasting Pea*
Apios americana	-	Groundnut
Strophostyles helvola	-	Trailing Wild Bean
S. umbellata	-	Pink Wild Bean
Clitoria mariana	-	Butterfly Pea (E)

Oxalidaceae -- Wood Sorrel Family

Oxalis eurpoaea	-	Yellow Wood Sorrel

Garaniaceae -- Geranium Family

Geranium maculatum	-	Wild Geranium
G. carolinianum	-	Carolina Cranesbill
G. pusillum	-	Small-flowered Cranesbill*
G. molle	-	Dove's-foot Cranesbill*
Erodium cicutaria	-	Storksbill, Alfileria*

Simarubaceae -- Ailanthus Family

Ailanthus altissima	-	Ailanthus, Tree of Heaven*

Euphorbiaceae -- Spurge Family

Euphorbia polygonifolia	-	Seaside Spurge

Anacardiaceae -- Cashew Family

Rhus copallina	-	Winged or Dwarf Sumac
R. radicans	-	Poison Ivy

Celastraceae -- Staff Tree Family

Euonymus americanus	-	American Strawberrry Bush
Celastrus scandens	-	American Bittersweet

Aquifoliaceae -- Holly Family

Ilex opaca	-	American Holly
I. laevigata	-	Smooth Winterberry Holly

Aceraceae -- Maple Family

Acer rubrum	-	Red Maple

Balsaminaceae -- Touch-me-not Family

Impatiens capensis	-	Jewelweed, Spotted Touch-me-not

Vitaceae -- Grape Family

Ampelopsis brevipedunculata	-	Porcelainberry or Asiatic Ampelopsis*
Parthenocissus quinquefolia	-	Virginia Creeper
Vitis labrusca	-	Fox Grape
V. aestivalis	-	Summer Grape

Malvaceae -- Mallow Family

Malva neglecta	-	Common Mallow or Cheeses*
M. moschata	-	Musk Mallow*
Kosteletzkya virginica	-	Seashore Mallow
Hibiscus syriacus	-	Rose-of-sharon*
H. palustris	-	Crimson-eyed Rose-mallow

Guttiferae -- Saint John's-wort Family

Hypericum perforatum	-	Common Saint John's-wort*

Cistaceae -- Rockrose Family

Hudsonia tomentosa	-	False Heather, Woolly Hudsonia

Violaceae -- Violet Family

Viola lanceolata	-	Lance-leaved Violet
V. spp.	-	Violet
V. kitaibeliana	-	Field Pansy*

Cactaceae -- Cactus Family

Opuntia humifusa	-	Prickly Pear

Elaeagnaceae -- Oleaster Family

Elaeagnus umbellata	-	Autumn Olive*

Lynthraceae -- Loosestrife Family

Decodon verticillatus	-	Swamp Loosestrife

Nyssaceae -- Sour Gum Family

Nyssa sylvatica	-	Sour Gum or Black Tupelo

Melastomaceae -- Meadow Beauty Family

Rhexia virginica	-	Virginia Meadow Beauty

Onagraceae -- Evening Primrose Family

Oenothera biennis	-	Evening Primrose
O. laciniata	-	Cut-leaved Evening Primrose
O. fruticosa	-	Sundrops

Umbelliferae -- Parsley Family

Hydrocotyle verticillata	-	Whorled Marsh-pennywort (R)
Eryngium aquaticum	-	Rattlesnake Master
Cicuta maculata	-	Water Hemlock
Sium suave	-	Water Parsnip
Ptilimnium capillaceum	-	Mock Bishop's-weed
Daucus carota	-	Wild Carrot, Queen-Anne's Lace*

Cornaceae -- Dogwood Family

Cornus florida	-	Flowering Dogwood

Ericacease -- Heath Family

Vaccinium corymbosum	-	Common Highbush Blueberry
V. caesariense	-	New Jersey or Coastal Highbush Blueberry

Primulaceae -- Primrose Family

Anagallis arvensis	-	Scarlet Pimpernel*
Samolus parviflorus	-	Water Pimpernel

Ebenaceae -- Ebony Family

Diospyros virginiana	-	Persimmon

Oleaceae -- Olive Family

Ligustrum vulgare	-	Common Privet*
L. Ovalifolium	-	California Privet*

Gentianaceae -- Gentian Family

Sabatia angularis	-	Rose Pink
S. stellaris	-	Sea or Marsh Pink
S. campanulata	-	Slender Marsh Pink

Apocynaceae -- Dogbane Family

Apocynum cannabinum	-	Indian Hemp

Asclepiadacease -- Milkweed Family

Asclepias tuberosa	-	Butterfly-weed
A. incarnata	-	Swamp Milkweed
A. syriaca	-	Common Milkweed

Convolvulaceae -- Morning Glory Family

Ipomoea hederacea	-	Ivy-leaved Morning Glory*
Convolvulus sepium	-	Hedge Bindweed
C. arvensis	-	Field Bindweed
Cuscuta spp.	-	Dodder

Boraginaceae -- Borage Family

Myosotis laxa	-	Small Forget-me-not

Verbenaceae -- Vervain Family

Verbena hastata	-	Blue Vervain

Labiatae -- Mint Family

Teucrium canadense	-	Germander, Wood-sage
Prunella vulgaris	-	Heal-all, Selfheal*
Lamium amplexicaule	-	Henbit*
Salvia lyrata	-	Lyre-leaved Sage

Labiatae -- Mint Family (Continued)

Monarda punctata	-	Horsemint
Lycopus spp.	-	Water Horehound, Bugleweed

Solanaceae -- Nightshade Family

Solanum dulcamara	-	Nightshade, Bittersweet*
S. carolinense	-	Horse-nettle
Physalis heterophylla	-	Clammy Ground-cherry
Datura stramonium	-	Jimsonweed*

Scrophulariaceae -- Figwort Family

Verbascum thapsus	-	Common Mullein*
V. blattaria	-	Moth Mullein*
Linaria vulgaris	-	Butter-and-eggs, Toadflax*
L. canadensis	-	Blue or Old-field Toadflax
Veronica chamaedrys	-	Bird's-eye Speedwell*
V. arvensis	-	Corn Speedwell*
Gerarida purpurea	-	Purple Gerardia

Bignoniaceae -- Bignonia Family

Campsis radicans	-	Trumpet Creeper

Lentibulariaceae -- Bladderwort Family

Utricularia gibba	-	Humped Bladderwort

Plantaginaceae -- Plantain Family

Plantago major	-	Common Plantain*
P. rugelii	-	Red-stemmed Plantain
P. lanceolata	-	English Plantain*
P. aristata	-	Bracted Plantain

Rubiaceae -- Madder Family

Galium aparine	-	Cleavers
G. triflorum	-	Fragrant Bedstraw
G. asprellum	-	Rough Bedstraw
Diodia teres	-	Buttonweed
Cephalanthus occidentalis	-	Buttonbush

Caprifoliaceae -- Honeysuckle Family

Lonicera japonica	-	Japanese Honeysuckle*
Triosteum perfoliatum	-	Feverwort, Tinker's-weed
Viburnum dentatum	-	Southern Arrowwood
Sambucus canadensis	-	Common Elderberry

Campanulaceae -- Bluebell Family

Lobelia puberula	-	Downy Lobelia

Compositae -- Composite Family

Eupatorium album	-	White Boneset
E. hyssopifolium	-	Hyssop-leaved Thoroughwort
E. pilosum	-	Hairy Thoroughwort
E. rotundifolium	-	Round-leaved Thoroughwort
E. perfoliatum	-	Boneset
E. serotinum	-	Late Flowering Thoroughwort
E. coelestinum	-	Mistflower or Blue Boneset (R)
Mikania scandens	-	Climbing Hempweed
Heterotheca subaxillaris	-	Camphorweed
Chrysopsis mariana	-	Maryland Golden Aster
Solidago sempervirens	-	Seaside Goldenrod
S. juncea	-	Early Goldenrod
S. nemoralis	-	Gray Goldenrod
S. odora	-	Sweet Goldenrod
S. fistulosa	-	Pine-barren Goldenrod
S. rugosa	-	Rough-stemmed Goldenrod
S. altissima	-	Tall Goldenrod
S. graminifolia	-	Lance-leaved Goldenrod
S. tenuifolia	-	Slender Fragrant Goldenrod
Aster divaricatus	-	White Wood Aster
A. pilosus	-	Heath Aster
A. vimineus	-	Small White Aster
A. lateriflorus	-	Calico Aster
A. novi-belgii	-	New York Aster
A. subulatus	-	Annual Salt-marsh Aster
Erigeron pulchellus	-	Robin-plantain
E. annuus	-	Daisy Fleabane*
E. canadensis	-	Horseweed
Baccharis halimifolia	-	Groundsel-tree
Pluchea purpurascens	-	Salt-marsh Fleabane
Gnaphalium obtusifolium	-	Sweet Everlasting
Ambrosia artemisiifolia	-	Common Ragweed
Xanthium echinatum	-	Beach Clotbur
Silphium laciniatum	-	Compass Plant
Heliopsis helianthoides	-	Ox-eye
Eclipta alba	-	Yerba-de-tajo*
Helianthus annuus	-	Common Sunflower
H. giganteus	-	Tall or Giant Sunflower
Bidens connata	-	Swamp Beggar Ticks
B. bipinnata	-	Spanish Needles
Achillea millefolium	-	Yarrow*
Anthemis cotula	-	Mayweed*
Matricaria matricarioides	-	Pineapple-weed
Chrysanthemum leucanthemum	-	Ox-eye Daisy*
Artemisia vulgaris	-	Common Mugwort*
Erechtites hieracifolia	-	Pilewort, Fireweed

Compositae -- Composite Family (Continued)

Senecio vulgaris	-	Common Groundsel*
S. tomentosus	-	Woolly Ragwort
Carduus nutans	-	Musk or Nodding Thistle*
Cirsium vulgare	-	Bull Thistle*
C. horridulum	-	Yellow Thistle
Centauria maculosa	-	Spotted Knapweed*
Cichorium intybus	-	Chicory*
Hypochoeris radicata	-	Cat's-ear*
Taraxacum officinale	-	Dandelion*
Sonchus oleraceus	-	Common Sow-thistle*
S. asper	-	Spiny-leaved Sow-thistle*
Lactuca scariola	-	Prickly Lettuce*
L. canadensis	-	Wild Lettuce
L. hirsuta	-	Hairy Lettuce
Prenanthes spp.	-	Rattlesnake-root
Hieracium pratense	-	King Devil*
H. paniculatum	-	Panicled Hawkweed

APPENDIX B

A CHECK LIST OF THE BIRDS OF CAPE MAY POINT STATE PARK

SPECIES STATUS FOR THE STATE OF NEW JERSEY

EX -extirpated as a nesting bird

E -endangered

E-b -only breeding population endangered

T -threatened

D -declining

U -undetermined

* -Blue Listed: Placed on National Audubon Society's Blue List of troubled species, those species which are currently giving evidence of population decline. The Blue List serves as an "early warning system."

SEASONS

W	-Winter	December-February
Sp	-Spring	March-May
Su	-Summer	June-July
F	-Fall	August-November

RELATIVE ABUNDANCE

a	-abundant	a species observable in great numbers
c	-common	a species which should be seen or heard in proper habitat
u	-uncommon	present but in limited numbers or secretive, not certain to be seen
o	-occasional	seen only a few times during a season
r	-rare	seen at intervals of several years

NESTING STATUS IN THE CAPE MAY POINT STATE PARK

C -confirmed
P -probable

Species Status		W	Sp	Su	F	Nest
	LOONS, GREBES, PETRELS, CORMORANTS, SHEARWATERS					
	Common Loon	u	c	o	c	
	Red-throated Loon	c	a	r	c	
D...	Red-necked Grebe	o	o		r	
	Horned Grebe	c	c		u	
E-b.	Pied-billed Grebe	c	c	u	c	
	Cory's Shearwater			c	o	
	Greater Shearwater		o	u	o	
	Sooty Shearwater		u	o	r	
	Manx Shearwater		r		r	
	Leach's Petrel		r		r	
	Wilson's Petrel		o	c	o	
	Gannet	u	u		c	
	Great Cormorant	o	o		o	
	Double-crested Cormorant	u	a	o	a	
	WADING BIRDS					
T...	Great Blue Heron	c	c	o	c	
	Green Heron		c	c	c	C
	Little Blue Heron	o	c	c	c	
	Cattle Egret		c	c	c	
	Great Egret	o	c	c	c	
	Snowy Egret	o	c	c	c	
	Louisiana Heron	o	c	c	c	
	Black-crowned Night Heron	u	c	c	c	
T...	Yellow-crowned Night Heron		u	u	u	
D*..	American Bittern	u	u	o	c	
D...	Least Bittern	o	u	u	u	C
	Glossy Ibis	r	a	a	c	
	White Ibis	r		o	o	
	WATERFOWL					
	Mute Swan	u	c	c	c	C
	Whistling Swan	u	o		c	
	Canada Goose	c	c	u	a	
	Brant	a	a	o	u	
	Snow Goose	a	o		c	
	Mallard	c	c	c	c	C
U...	Black Duck	a	c	c	a	C
	Gadwall	c	u	u	c	C
	Pintail	a	c	o	a	
	Green-winged Teal	c	c	o	a	
	Blue-winged Teal	o	c	u	c	
	European Wigeon	r	r		r	
	American Wigeon	u	c	o	a	

Species Status		W	Sp	Su	F	Nest
	Northern Shoveler	c	c	u	a	
	Wood Duck	o	u	u	c	
	Redhead	o	o		o	
	Ring-neck Duck	o	u		u	
*...	Canvasback	u	c		c	
	Greater Scaup	c	c	r	c	
	Lesser Scaup	o	o		o	
	Common Goldeneye	c	c	r	u	
	Bufflehead	c	c	o	c	
	Oldsquaw	c	c		c	
	Harlequin Duck	o	o		r	
	Common Eider	o	o	r	o	
	King Eider	o	o		o	
	White-winged Scoter	c	c	r	c	
	Surf Scoter	c	c	r	c	
	Black Scoter	c	c	r	a	
D...	Ruddy Duck	o	u	u	u	
	Hooded Merganser	c	c	r	c	
	Common Merganser	u	o		o	
	Red-breasted Merganser	c	c	r	u	
	DIURNAL RAPTORS					
	Turkey Vulture	c	c	c	c	
	Black Vulture	r	r	r	r	
U*..	Sharp-shinned Hawk	u	c	o	a	
E*..	Cooper's Hawk	o	u		c	
	Goshawk	u	o		u	
	Red-tailed Hawk	c	u	u	c	
T*..	Red-shouldered Hawk	u	u	o	c	
	Broad-winged Hawk		u	u	c	
	Swainson's Hawk				r	
	Rough-legged Hawk	u	o		o	
U...	Golden Eagle	o	r		o	
E*..	Bald Eagle	o	o	o	o	
E-b*	Northern Harrier	u	u	o	c	
T*..	Osprey	r	c	c	c	
E...	Peregrine Falcon	o	o	r	u	
T*..	Merlin	o	u		c	
	American Kestrel	u	c	u	a	
	GAME BIRDS, RAILS, COOT, GALLINULES					
	Buffed Grouse	o	o	o	o	
	Bobwhite	c	c	c	c	
	Ring-neck Pheasant	u	u	u	u	
U*..	King Rail	r	o	o	u	
	Clapper Rail	u	c	c	c	
U...	Yellow Rail		r	r	r	

Species Status	W	Sp	Su	F	Nest
U... Black Rail		r	r	r	
Virginia Rail	u	u	u	u	C
Sora	r	u	u	c	C
Common Gallinule	r	u	u	u	C
Purple Gallinule		r			
D... American Coot	u	u	o	c	
SHOREBIRDS					
American Oystercatcher	u	c	c	c	
Semipalmated Plover	o	c	u	c	
E*.. Piping Plover	o	u	u	u	C
Killdeer	c	c	u	c	C
American Golden Plover		r		u	
Black-bellied Plover	c	a	o	c	
Ruddy Turnstone	u	a	u	c	
American Woodcock	u	c	u	a	C
U... Common Snipe	o	u	o	u	
Whimbrel	o	c	u	c	
E*.. Upland Sandpiper		o	o	o	
Spotted Sandpiper		u	o	u	
Solitary Sandpiper		u	o	u	
Willet	r	c	a	c	C
Greater Yellowlegs	u	c	u	c	
Lesser Yellowlegs	r	c	c	c	
Red Knot	o	a	u	u	
Purple Sandpiper	c	c		u	
Pectoral Sandpiper		u	o	u	
White-rumped Sandpiper		u	o	u	
D... Baird's Sandpiper			o		
Least Sandpiper	r	a	u	c	
Curlew Sandpiper		r	r	r	
Dunlin	a	a	o	a	
Long-billed Dowitcher	r	u	o	c	
Short-billed Dowitcher		c	a	c	
Stilt Sandpiper		r	u	u	
Semipalmated Sandpiper	r	a	a	a	
Western Sandpiper	u	u	u	c	
Buff-breasted Sandpiper		r	o		
D... Marbled Godwit		r	o	o	
D... Hudsonian Godwit		r	r	o	
Ruff		r	r	r	
Sanderling	c	a	c	c	
American Avocet				o	
Wilson's Phalarope		o	o	o	
Northern Phalarope		r	r	o	
Pomarine Jaeger		u	r	o	
Parasitic Jaeger		u	r	u	
Long-tailed Jaeger		r		r	

Species Status		W	Sp	Su	F	Nest
	GULLS, TERNS, ALCIDS					
	Glaucous Gull	r	r			
	Iceland Gull	r	r			
	Great Black-backed Gull	c	c	u	c	
	Herring Gull	a	a	c	a	
	Ring-billed Gull	c	c	o	c	
	Black-headed Gull	r	r		r	
	Laughing Gull	r	a	a	a	
	Bonaparte's Gull	c	u		u	
	Little Gull	r				
	Black-legged Kittiwake	u	o		o	
	Gull-billed Tern		u	u	u	
	Forster's Tern	o	c	c	c	
D*..	Common Tern		c	c	c	C
	Artic Tern				r	
E*..	Roseate Tern			r	r	
E*..	Least Tern		c	c	c	C
	Royal Tern		o	o	c	
	Sandwich Tern				r	
	Caspian Tern		r	o	u	
	Black Tern		r	u	u	
E...	Black Skimmer	r	c	c	c	
D...	Razorbill	r				
	Thick-billed Murre	r				
D...	Dovekie	r				
	Black Guillemot	r				
	DOVES, OWLS, NIGHTJARS					
	Rock Dove	c	c	c	c	
	Mourning Dove	c	c	c	c	C
	Yellow-billed Cuckoo		c	c	c	C
*...	Black-billed Cuckoo		o	o	r	
*...	Barn Owl	o	o	o	u	
	Screech Owl	u	u	u	u	P
	Great Horned Owl	u	u	u	u	C
	Snowy Owl	r				
T..	Barred Owl	o	o	o	o	P
U..	Long-eared Owl	o			u	
E-b*	Short-eared Owl	u	u		u	
	Saw-eared Owl	u	u		u	
	Saw-whet Owl	o	r		u	
	Chuck-will's-widow		c	c	c	P
D..	Whip-poor-will		c	c	c	
	Common Nighthawk		o	o	u	
	Chimney Swift		u	u	c	C

Species Status	W	Sp	Su	F	Nest
HUMMINGBIRD, KINGFISHER, WOODPECKERS, ETC					
Ruby-throated Hummingbird....		u	u	c	C
Belted Kingfisher.....	u	u	u	u	C
Common Flicker.....	u	c	c	a	C
T*.. Red-headed Woodpecker.....	o	u	u	u	
Red-bellied Woodpecker.....	u	u	u	u	C
Yellow-bellied Sapsucker.....	o	o		u	
*Hairy Woodpecker.....	u	u	u	u	C
Downy Woodpecker.....	u	u	u	u	C
Eastern Kingbird.....		c	c	a	C
Western Kingbird.....	o			o	
Great Crested Flycatcher.....		c	c	c	C
Eastern Phoebe.....	o	u	o	u	
Yellow-bellied Flycatcher....		o		u	
Acadian Flycatcher.....		c	c	c	
Willow Flycatcher.....		u	u	?	C
Alder Flycatcher.....		o		?	
D... Least Flycatcher.....		u		c	
Eastern Wood Pewee.....		c	c	c	
Olive-sided Flycatcher.....		r		o	
D... Horned Lark.....	u	u	u	c	C
Tree Swallow.....	u	c	a	a	C
Bark Swallow.....	u	c	a	a	
Rough-winged Swallow.....		c	c	c	C
Barn Swallow.....	r	c	c	c	C
E-b. Cliff Swallow.....		o		u	
D*.. Purple Martin.....		c	c	c	C
JAYS, CROWS, TUFTED-TITMOUSE, ETC					
Blue Jay.....	c	c	c	a	P
Common Crow.....	c	c	c	c	C
Fish Crow.....	o	c	c	c	
Black-capped Chickadee.....			o	o	
Carolina Chickadee.....	c	c	c	c	C
Tufted Titmouse.....	c	c	c	c	C
White-breasted Nuthatch.....	u	o		c	
Red-breasted Nuthatch.....	u	o		c	
Brown Creeper.....	u	u		c	
House Wren.....		u	u	u	C
Winter Wren.....	o	o		u	
Carolina Wren.....	u	c	c	c	C
Long-billed Marsh Wren.....	u	c	c	c	C
E*.. Short-billed Marsh Wren..... -or- Sedge Wren		r		o	

Species Status		W	Sp	Su	F	Nest
	MOCKINGBIRDS, THRUSHES, GNATCATCHER, ETC					
	Mockingbird	c	c	c	c	C
	Gray Catbird	u	c	c	c	C
	Brown Thrasher	o	c	c	c	C
	American Robin	c	c	c	a	C
	Wood Thrush		u	u	c	P
	Hermit Thrush	u	u		u	
	Swainson's Thrush		c		c	
	Gray-checked Thrush		o		u	
	Veery		r	c	c	P
U*..	Eastern Bluebird	u	o	o	u	
	Blue-gray Gnatcatcher		c	c	c	C
	Golden-crowned Kinglet	u	u		a	
	Ruby-crowned Kinglet	o	u		c	
	Water Pipit	u	u		c	
	Cedar Waxwing	c	u	c	c	
	Northern Shrike	r				
U...	Loggerhead Shrike	r			o	
	Starling	a	c	c	a	C
	VIREOS, WARBLERS, BLACKBIRDS, TANAGERS					
D...	White-eyed Vireo		c	c	c	C
	Yellow-throated Vireo		u	o	u	
	Solitary Vireo		u		u	
	Red-eyed Vireo		c	c	c	C
	Philadelphia Vireo				u	
D*..	Warbling Vireo		r		r	
	Black-and-white Warbler		c	c	c	C
	Prothonotary Warbler		u	u	u	
	Worm-eating Warbler		r	u	u	
	Golden-winged Warbler		u		u	
	Blue-winged Warbler	r	c	u	c	P
	Tennessee Warbler		c		a	
	Orange-crowned Warbler	o	r		o	
	Nashville Warbler		o	c		
EX..	Northern Parula		c	o	c	
	Yellow Warbler		c	c	c	C
	Magnolia Warbler		c		c	
	Cape May Warbler		u		u	
	Black-throated Blue Warbler		c		c	
	Yellow-rumped Warbler		r	r	o	
	Blacked-throated Green Warbler		c		c	
	Cerulean Warbler		r		o	
	Blackburnian Warbler		c		c	
	Yellow-throated Warbler	a	a	r	a	

Species Status		W	Sp	Su	F	Nest
	Chestnut-sided Warbler.....		c		c	
	Bay-breasted Warbler.....		c		c	
	Blackpoll Warbler.....		c	o	a	
	Pine Warbler.....	o	c	c	u	
	Prairie Warbler.....		c	c	c	P
	Palm Warbler.....	u	c		c	
	Ovenbird.....		c	c	c	C
	Northern Waterthrush.....		c		c	
	Louisiana Waterthrush.....		r		o	
	Kentucky Warbler.....		u	o	u	
	Connecticut Warbler.....				u	
	Mourning Warbler.....		o		o	
	Common Yellowthroat.....	u	c	c	a	C
D*	Yellow-breasted Chat.....	r	c	c	u	C
D	Hooded Warbler.....		u	u	o	
	Wilson's Warbler.....		o		u	
	Canada Warbler.....		u	o	c	
	American Redstart.....		c	u	a	
	House Sparrow.....	c	c	c	c	C
T	Boblink.....		u	o	a	
D	Eastern Meadowlark.....	u	c	u	c	
	Yellow headed Blackbird.....			r	r	
	Red-winged Blackbird.....	c	a	a	a	C
	Orchard Oriole.....		c	c	r	C
	Northern Oriole.....	r	c	o	a	
	Rusty Blackbird.....	o	o		u	
	Boat-tailed Grackle.....	u	c	c	c	
	Common Grackle.....	c	c	c	a	P
	Brown-headed Cowbird.....	u	c	c	a	C
	Scarlet Tanager.....		c	u	c	C
	Summer Tanager.....		o	o	o	
	GROSBEAKS, FINCHES, BUNTINGS, SPARROWS					
	Cardinal.....	c	c	c	c	C
	Rose-breasted Grosbeak.....		u		o	
	Blue Grosbeak.....		u	u	u	
	Indigo Bunting.....		c	c	c	
	Dickcissel.....	o			o	
	Evening Grosbeak.....	u	u		c	
	Purple Finch.....	c	u		c	
	House Finch.....	c	c	c	c	C
	Common Redpoll.....	o	r			
	Pine Siskin.....	u	o		u	
	American Goldfinch.....	c	c	c	a	C
	Red Crossbill.....	r	r		o	
	White-winged Crossbill.....	r				
	Rufous-sided Towhee.....	u	c	c	c	C
T	Savannah Sparrow.....	u	c		c	

Species Status	W	Sp	Su	F	Nest
T*.. Grasshopper Sparrow.....				r	
E*.. Henslow's Sparrow.....				r	
Sharp-tailed Sparrow.....	u	c	c	c	
Seaside Sparrow.....	o	c	c	c	
E-b* Vesper Sparrow.....	o	o		u	
Lark Sparrow.....				o	
Dark-eyed Junco.....	c	c		c	
Tree Sparrow.....	c	c		u	
Chipping Sparrow.....	r	c	c	c	C
Clay-colored Sparrow.....				r	
Field Sparrow.....	u	c	u	c	C
White-crowned Sparrow.....		o		u	
White-throated Sparrow.....	c	c		c	
Fox Sparrow.....	u	u		u	
Lincoln's Sparrow.....		o		o	
Swamp Sparrow.....	u	c	c	c	C
Song Sparrow.....	c	c	c	c	C
Lapland Longspur.....	o			r	
Snow Bunting.....	c	u		u	

APPENDIX C

MAMMALS
OF CAPE MAY POINT STATE PARK

Status in Cape May Point State Park

C - Presence confirmed.

P - Cape May Point State Park is within the animals range and habitat requirements; unconfirmed but suspected occurrence.

U - Status uncertain; possible occurrence.

Status in State of New Jersey

***** - Undetermined status.

Habitat Type

P - On the banks of or in the various park ponds (Lighthouse Pond, Shallow Pond, Al's Pond...).

M - Marsh area surrounding major pond; includes smaller ponds and channels (ditches).

Sc - Upland edge of pond, marsh areas, thickets, hedgerows, scrub, brush, and channel edges.

F - Open field.

W - Heavily wooded areas - mainly deciduous.

D - Ocean front beach and dunes.

B - Buildings.

H - Hollow trees.

	HABITAT	SPECIES STATUS
BATS		
Keen Myotis, Myotis kenni*****	P,M,Sc,W,B,H	P
Little Brown Myotis, Myotis lucifugus	P,M,Sc,W,B,H	C
Small-footed Myotis, Motis subulatus*****	Sc,W,B	P
Silver-haired Bat, Lasionycteris noctivagans*****	W,B	P
Eastern Pipistrel, Pipistrellus subflavus	M,Sc,W,B	P
Red Bat, Lasiurus borealis	M,Sc,W	C
Big Brown Bat, Eptesicus fuscus	M,Sc,W,B,H	P
Hoary Bat, Lasiurus cinereus*****	W	C
FLESH-EATERS		
Raccoon, Procyon lotor	P,M,Sc,F,W,D	C
Longtail Weasel, Mustela frenata	P,M,Sc,W	C
River Otter, Lutra canadensis	M,Sc,W	C
Striped Skunk, Mephitis mephitis	M,Sc,F,W	C
Red Fox, Vulpes fulva	P,M,Sc,F,W,D	C
Gray Fox, Urocyon cinereoargenteus	P,M,Sc,F,W,D	P
GNAWING MAMMALS		
E. Chipmunk, Tamias striatus	Sc,W,D	P
E. Gray Squirrel, Sciurus carolinensis	W	C
Red Squirrel, Tamiasciurus hudsonicus	Sc,D	C
S. Flying Squirrel, Glaucomys volans*****	W	C
White-footed Mouse, Peromyscus leucopus	Sc,F,W	C
Rice Rat, Oryzomys palustris*****	M,Sc	U
S. bog Lemming, Synaptomys cooperi*****	M	U
Boreal Reback Vole, Clethrionomys gapperi	Sc,W	C
Meadow Vole, Microtus pennsylvanicus	P,M,W	C
Pine Vole, Pitymys pinetorum	Sc,W	P
Muskrat, Ondatra zibethica	M	C
Meadow Jumping Mouse, Zapus hudsonius*****	M,Sc,F,W	C
Norway Rat, Rattus norvegicus	M,W,B	C
House Mouse, Mus musculus	F,B	C
RABBITS AND HARES		
E. Cottontail, Sylvilagus floridanus	Sc,F,W,D	C
EVEN-TOED HOOFED MAMMALS		
White-tailed Deer, Odocoileus virginianus	M,Sc,F,W,D	C
MARSUPIALS		
Virginia Opossum, Didelphis marsupialis	P,Sc,F,W,D	C

	HABITAT	SPECIES STATUS
SHREWS & MOLES		
Least Shrew, Cryptotis parva*****	M,Sc,F	C
Shorttail Shrew, Blarina brevicauda	M,P,Sc,F,W	C
Masked Shrew, Sorex cinereus	M,Sc	C
Starnose Mole, Condylura cristata*****	M,Sc	C
Eastern Mole, Scalopus apuaticus	M,Sc,F	C

MARINE MAMMALS

C - Common to nearby waters
U - Status uncertain; possible occurrence

Dense Beaked Whale - Mesoplodon densiorostris	U
Gulfstream Beacked Whale - Mesoplodon gervaisi	U
Antillean Beaked Whale - Mesoplodon europaeus	C
True's Beaked Whale - Mesoplodon mirus	U
Cuvier's Beaked Whale - Ziphius cavirostris	U
Pygmy Sperm Whale - Kogia breviceps	U
Dwarf Sperm Whale - Kogia simus	U
Beluga Whale - Delphinapterus leucas	U
Atlantic Killer Whale - Orcinus orca	U
Long-finned Pilot Whale (Blackfish) - Globicephala melaena	U
Short-finned Blackfish - Globicephala macrothyncus	U
Minke Whale - Balaenoptera acutorostrata	U
Spotted Dolphin - Stenella dubia	U
Striped Dolphin - Stenella coeruleoalba	U
Common Dolphin - Delphinus delphis	U
Atlantic Bottlenose Dolphin - Tursiops truncatus	C
Atlantic White-side Dolphin - Lagenorhynchus acutus	U
Whitebeak Dolphin - Lagenorhyncus albriostris	C
Risso's Dolphin - Grampus griseus	U
Atlantic Harbor Porpoise - Phocoena phocoena	C
Harbor Seal - Phoca vitulina	C
Harp Seal - Pagophilus groenlandica	U
Gray Seal - Halichoerus grypus	U
Hooded Seal - Cystophora cristata	U

APPENDIX D

REPTILES AND AMPHIBIANS OF CAPE MAY POINT STATE PARK

Status in Cape May Point State Park

C - Presence confirmed.

P - Cape May Point State Park is within the animals range and habitat requirements; unconfirmed but suspected occurrence.

U - Status uncertain; possible occurrence.

Status in State of New Jersey

* Endangered.

** Threatened.

*** Peripheral status.

**** Declining.

***** Undetermined.

Habitat Type

P - On the banks of or in the various park ponds (Lighthouse Pond, Shallow Pond, Al's Pond...).

M - Marsh area surrounding major ponds; includes smaller ponds and channels (ditches).

Sc - Upland edge of pond, marsh areas, thickets, hedgerows, scrub, brush, and channel edges.

F - Open field.

W - Heavily wooded areas-mainly deciduous.

D - Ocean front beach and dunes.

B - Buildings.

H - Hollow trees.

REPTILES

	HABITAT	SPECIES STATUS
LIZARDS		
N. Fence Lizard, *Sceloporus undulatus*	D,Sc,W	C
Ground Skink, *Lugosoma laterale******	Sc,W	U
Common Five-lined Skink, *Eumeces fasciatus******	Sc,W	C
SNAKES		
N. Water Snake, *Natrix s. sipedon*	P,M,Sc	C
N. Brown Snake, *Storeria d. dekayi*	P,M,Sc,W	P
Red-bellied Snake, *Storeria occipitomaculata*	M,Sc,W	P
E. Garter Snake, *Thamnophis s. sirtalis*	P,M,Sc,F,W	C
E. Ribbon Snake, *Thamnophis s. sauritus*	M,Sc	C
Smooth Earth Snake, *Haldea valariae*	Sc,F,W	P
E. Hognose Snake, *Heterodon platyrhinos*****	Sc,F	C
S. Ringneck Snake, *Diadophia p. puctatus*	M,Sc,W	P
E. Worm Snake, *Carphorphis a. amoenus*	Sc,W	P
N. Black racer, *Coluber c. constrictor******	P,M,Sc,F,W,D	C
Rough Green Snake, *Opheodrys aestivus*	P,M,Sc	C
Black Rat Snake, *Elaphe o. obsoleta******	Sc,W	C
E. King Snake, *Lampropeltis g. getulus******	M,Sc,W	C
Coastal Plains Milk Snake, *Lampropeltis doliata temporalis*	M,Sc,W	U
TURTLES		
Common Snapping Turtle, *Chelydra serpentina*	P,M	C
Common Musk Turtle, *Sternotherus odoratus*	P,M	P
E. Mud Turtle, *Kinosternon s. subrubrum*	P,M	C
Spotted Turtle, *Clemmys guttata******	M	C
E. Box Turtle, *Terrapene c. carolina*	Sc,F,W,D	C
N. Diamond-back Terrapin, *Malaclemys t. terrapin*	D	C
E. Painted Turtle, *Chrysemys p. picta*	M,L	C
Red-bellied Turtle, *Chrysemys rubriventris*	M,L	C
SEA TURTLES		
Atlantic Green Sea Turtle, *Chelonia mydas**		U
Atlantic Hawksbill Sea Turtle, *Eretmochelys imbricata**		U
Atlantic Loggerhead Sea Turtle, *Caretta caretta**		P
Atlantic Ridley Sea Turtle, *Lepidochelys Kempi**		P
Atlantic Leatherback Sea Turtle, *Dermochelys coriaced**		P

AMPHIBIANS

	HABITAT	SPECIES STATUS
FROGS AND TOADS		
E. Spadefoot Toad, *Scaphiopus holbrooki*****	Sc,F	P
Fowler's Toad, *Bufo woodhousei fowleri*	P,Sc,F,W	C
M. Cricket Frog, *Acria c. crepitans******	P,M	C
N. Spring Peeper, *Hyla crucifer*	P,M	C
Southern Gray Tree Frog, *Hyla versicolor**	M	P
N.J. Chorus Frog, *Pseudacris triseriata kalmi*	P,M	C
Bullfrog, *Rana catesbeiana*	P,M	C
Green Frog, *Rana clamitans*	P,M	C
Southern Leopard Frog, *Rana pipiens sphenocephala*	P,M	C
Pickeral Frog, *Rana palustris*	M	C
Wood Frog, *Rana sylvatica*	M	C
SALAMANDERS		
Marbled Salamander, *Ambystoma opacum*****	Sc,W	P
Spotted Salamander, *Ambystoma maculatum*****	Sc,W	U
E. Tiger Salamander, *Ambystoma t. tigrinum**	Sc,W	P
Spotted Newt, *Notopthalmus v. viridescens*	M	P
E. Red-backed Salamander, *Plethodon c. cinereus*	Sc,W	P
E. Four-toed Salamander, *Hemidactylium scutatum*****	Sc,W	P
N. Red Salamander, *Pseudotriton r. ruber*****	M,Sc,F,W	U
M. Two-lined Salamander, *Euryucea b. bislineata*	M	C

APPENDIX E

ENDANGERED and THREATENED BIRD SPECIES OF CAPE MAY

ENDANGERED BIRD SPECIES

PIED-BILLED GREBE (*Podilymbus podiceps*)

A common migrant and winter resident. Draining and/or filling of freshwater marshes and bogs destroys habitat used in breeding and on migration. Only breeding population endangered.

COOPER'S HAWK (*Accipiter cooperii*)

Highly dependent on the entire are during its autumn southbound migration, more Cooper's Hawks migrate through Cape May Point than through all other official hawk watch spots in the northeastern United States.

BALD EAGLE (*Haliaeetus leucocephalus*)

Once a common breeder in Cape May County, the Bald Eagle migrates through Cape May, often remaining in the vicinity for periods of two or three days (Dunne, 1978). The greatest number of wandering and temporarily resident Bald Eagles (almost entirely immatures) currently appear in the Cape May Point State Park area and adjacent open lands from August through November, while the few seen on the northward migration (mostly May and June) never seem to linger. As late as the 1950's, they were not an uncommon sight soaring over the area. The last known nesting site in the vicinity was in Coxe Hall Creek directly to the north. Extensive habitat destruction due to development and drainage in the southern part of the county and the effects of spraying the chemical insecticide DDT, have presumably accounted for progressively fewer sightings making the remaining undeveloped habitat all the more critical.

NORTHERN HARRIER (*Circus cyaneus*)

Migrant/winter resident. Only breeding population endangered.

PEREGRINE FALCON (*Falco peregrinus*)

While 18 species of hawks rely heavily on lower Cape May County during their fall migration, none is so critically endangered as the Peregrine Falcon. The Peregrine Falcon is in great need of critical habitat protection, be it resting, wintering, or migratory stop over areas. Cape May Point's Peregrine Falcon count averages the second highest in the nation.

South Cape May Meadows, a bordering area to the east of the Park, owing to its open nature and geographic location, is singularly attractive to large numbers of breeding, wintering and migrating birds. The area is unique in terms of its importance to migrating birds of prey in general and Peregrine Falcons in particular. South Cape May Meadows is the only place in the vicinity of Cape May Point ideally suited for hunting by the *Falco*

peregrinus tundrius subspecies which have been released by Cornell University's Laboratory of Ornithology in their "Peregrine Reintroduction Program". The important of maintaining suitable habitat along their migration route is paramount. The preservation of South Cape May Meadows can do much to ensure the health and well being of populations of birds living hundreds of miles north of Cape May.

PIPING PLOVER (Charadrius melodus)

Nester/migrant. Strictly dependent on undisturbed coastal beaches (i.e. South Cape May Meadows beachfront). Has declined severely because of habitat destruction and human disturbance at nesting areas.

UPLAND SANDPIPER (Bartramia longicauda)

Migrant/possible breeder in South Cape Meadows. Strictly dependent on short-grass habitat, as is found in South Cape May Meadows, for nesting and feeding.

ROSEATE TERN (Sterna dougallii)

Rare fall visitor.

LEAST TERN (Sterna albifrons)

This species breeds just outside the Park on the landward and ocean side of the dunes in South Cape May Meadows and is dependent on the Park's ponds as feeding habitat. The yearly Colonial Bird Nesting Survey estimated approximately 50 breeding pair of Least Terns with a hatch of 100 found in 1977. Diminishing productivity has been recorded each consecutive year since 1977 in South Cape May Meadows. Throughout June and July, they feed constantly at ponds in the Park and South Cape May Meadows. South Cape May Meadow's beachfront is the only suitable and relatively undisturbed nesting habitat in the area.

BLACK SKIMMER (Rynchops nigra)

A commonly observed bird north of the Park in the summer and fall, they breed at Stone Harbor Point and migrate through Cape May Point in the fall, taking advantage of the Park's ponds and South Cape May Meadows for resting and feeding.

SHORT-EARED OWL (Asio flammous)

Migrant/rare winter resident. Once a common winter resident, now threatened by habitat loss due to ditching and alteration of coastal marshes. Only breeding population endangered.

SHORT-BILLED MARSH WREN (Cistothorus platensis)
-or- SEDGE WREN

Migrant. In 1890 Witmer Stone found this species abundant all the way from Broadway (West Cape May) to the Lighthouse, nesting in the marsh elder bushes and in the taller edges all along Cape Island Creek...By 1920 the drainage of these marshlands in the interest of mosquito extermination had sadly depleted the numbers of the marsh wrens and destroyed most of the fields of cattails so that the birds were found only in the vicinity of South Cape May. Then by 1926 these marshes (in South Cape May Meadows) had been destroyed by fill, obliteration the habitat of these birds. (Stone, Witmer. 1937. Bird Studies at Old Cape May). Marsh restoration efforts may restore the Short-billed Marsh Wren as a breeding bird in southern New Jersey.

CLIFF SWALLOW (Petrochelidon pyrrhonota)

Migrant. Only breeding population endangered.

HENSLOW'S SPARROW (Ammodramus henslowii)

Rare migrant. In Witmer Stone's time, 1930's, this species was a common summer resident of the Cape May Peninsula. Its favored habitat where upland and meadow meet has been so severely altered that it is now only a rare migrant. South Cape May Meadows is possible where it would first reestablish itself in the area.

VESPER SPARROW (Pooecetes gramineus)

Migrant. Only breeding population endangered.

THREATENED BIRD SPECIES

GREAT BLUE HERON (Ardea herodias)

Common summer resident. This species has a low tolerance threshold and so travels from suitable roosting habitat to the Park to feed because of its protected nature.

YELLOW-CROWNED NIGHT HERON (Nyctanassa violacea)

Uncommon summer resident. This species has a low tolerance threshold and so travels from suitable roosting habitat to the Park to feed because of its protected nature.

RED-SHOULDERED HAWK (Buteo lineatus)

Migrant/winter resident.

OSPREY (Pandion haliaetus)

Once a common breeder in Cape May County, this species is now endangered in New Jersey. A few local breeding Osprey, as well as hundreds of migrants use the ponds and water retention areas of the Park and ponds of South Cape May Meadow's as a prime feeding area; hence the Cape May Point area is very important to the northeastern coastal Osprey population during their soutbound migration.

MERLIN (Falco columbarius)

Migrant/rare winter resident.

BARRED OWL (Strix varia)

Possible nester in the Park/uncommon resident.

RED-HEADED WOODPECKER (Melanerpas erythrcephalus)

Migrant. One of the most enduring colonies in the state (3 or 4 pairs) nests at the County Park in Cape May Court House, 13 miles north of the Park.

BOBOLINK (Dolichonyx oryzivorus)

Occasional summer resident/abundant fall migrant. In 1935 Otway Brown discovered a flock nesting in Cold Spring, just a few miles north of the Park. In 1924 eight birds bred in the South Cape May Meadows (Witmer Stone, 1937). Threatened due to loss of habitat and early mowing of the grain fields in which it nests. In recent years several colonies have reestablished themselves as summer residents in the historic breeding areas of South Cape May and Cold Spring. The may possibly by breeding. Marsh habitat restoration in the Park may encourage these possible breeders.

SAVANNAH SPARROW (Passerculus sandwichensis)

Summer migrant/winter resident.

GRASSHOPPER SPARROW (Ammodramus savannarum)

Migrant. In Witmer Stone's 1930's records this species was a common summer resident in old fields of the uplands as well as along the edge of the salt meadows. Habitat loss due to alteration and development has relegated this species to merely migrant status.

APPENDIX F

RECENT DUNE STABILIZATION MEASURES AT CAPE MAY POINT STATE PARK

STORMS		DAMAGE AND DUNE WORK
MARCH 6-8, 1962	-	"unusually severe extratropical cyclone."
	-	Large dune built in 1964 from Cape May to Cape May Point.
DECEMBER 1-2, 1974	-	Northeast Storm; worst storm since 1962 storm; severe erosion.
		DECEMBER 1974/AUGUST 1976/OCTOBER 1977: Bureau of Parks repaired breached dunes by hauling and emplacing sand from the Corps of Engineers spoil area along the Cape May Canal to rebuild the dunes.
FEBRUARY 5-7, 1978	-	Northeast Storm; severe erosion.
FEBRUARY 18-19, 1979	-	Northeast Storm; severe erosion.
		SPRING 1980 - Bureau of Parks funded extensive dune work; hauled in sand and rebuilt dune from parking area to Bunker.
		SUMMER 1980 - YCC planted dune grass obtained free from the Plant Materials Center in Cape May Court House.
OCTOBER 25, 1980	-	Northeast storm washed 1,500 feet of dune back into the natural area. October through January, there was a cut with tidal flow into Shallow Pond west of the Bunker.
		SUMMER 1981 - Bureau of Parks funded dune work. Bull-dozer pushed up sand that had been washed back into natural area. Then a dragline was used to relocate additional sand from dune washover area.
		SUMMER 1983 - Park Service bulldozed up sand that had been washed back into Park from minor winter storms.
MARCH 29, 1984	-	Northeast Storm washed 1,500 feet of dune back into Park.
		SUMMER 1984 - Bureau of Parks funded dune work between Picnic Pavillion and wash out beyond Bunker. Bulldozer pushed up sand that had been washed back into Park. Then a dragline was used to relocate additional sand from dune washover area.

APPENDIX G

CAPE MAY POINT NATURAL AREA
WATER MANAGEMENT
WORK RECOMMENDATIONS

Updated May 1985 to take into consideration the changed state of the Park's water drainage problem. Two northeast storms (October 25, 1980 and March 29, 1984) succeeded in filling in the main drainage ditch behind the dune, when the dune was washed back into it. Previously this ditch had unnaturally drained much of the Park.

The following work recommendations are listed in order of priority and are recommended to maintain high water in areas still being drained by other drainage ditches. Their locations are illustrated on the accompanying map of the Park. These work recommendations will: (1) enhance the Natural Area as wildlife habitat and (2) maintain the already existing hiking trials which follow old dikes presently being undermined by muskrats.

1. To maintain adequate water levels in the central marsh west of the diked portion of the Yellow Trail as it heads to the beach this dike/trail should be raised and widened to form a dam. It can be strengthened by timbers, logs, sand bags, earth, muck and slash disposal.

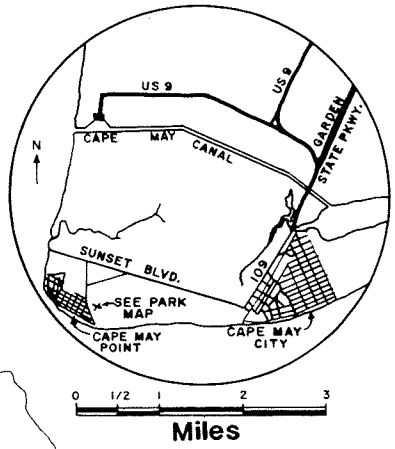
2. To maintain viable habitat north of the Blue Trail Dike this dike needs real strengthening utilizing timber and fill, with a control structure placed in the dike at the weakest point (where the old ditch passes through the dike). Interim measures were taken by YCC; dredged material was used to fill low spots in the dike. However, the dikes eventually weakened. Muskrats also contribute to the dike's collapse with their excavations. Yearly maintenance is very necessary since muskrat activity weakens the dike.

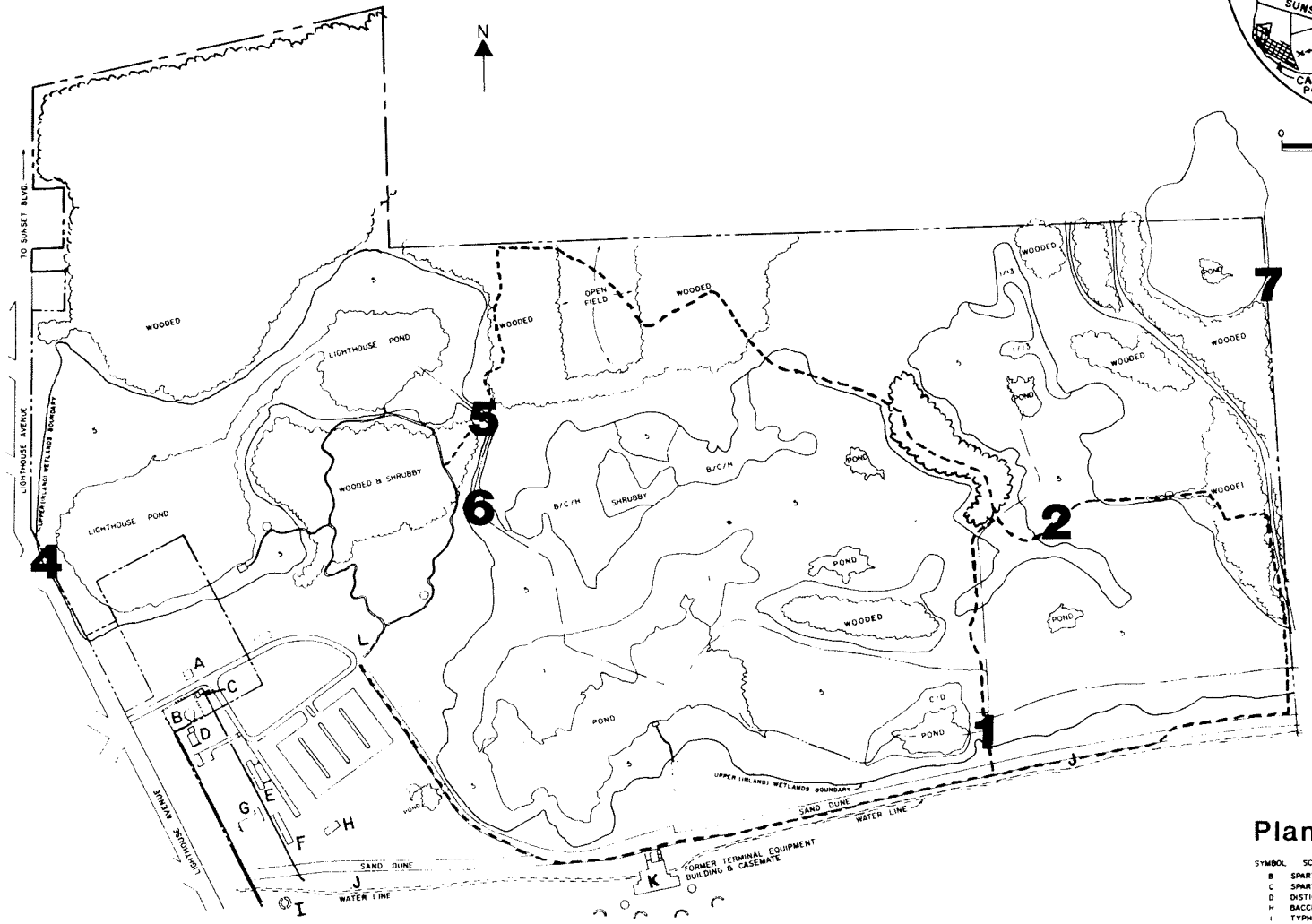
3. To maintain viable habitat north of the "Rutherford Dike" (dike on Yellow Trail before Al's Pond) the dike itself needs real strengthening utilizing timber and fill. Interim measures were taken by YCC; ponds were dug next to the dike and the dredged material used to fill low spots in the dike. Unfortunately these ponds were dug too close to the dike and have acted like sumps, drawing water up to the dike and weakening it. Muskrats also contribute to the dike's collapse with their burrows through it. Spring overwash still occurs. A genuine dike is necessary here; the existing dike must be raised and greatly strengthened. A water control structure should be placed in the dike at the weakest point. Yearly maintenance is also necessary since muskrat excavations break dikes down.

4. In preparation for raised water levels in the Lighthouse Ponds on a year-round basis a 25-30 foot wide berm of fill should be placed at the weak point along Lighthouse Avenue, as marked by the underground installation of the Lily Lake overflow pipe into Lighthouse Pond West.

Work Recommendations

Cape May Point State Park





Plant Legend

SYMBOL	SCIENTIFIC NAME / COMMON NAME
B	SPARTINA ALTERNIFLORA (LOW VIGOR) - SALT MARSH CORD GRASS
C	SPARTINA PATENS - SALT MEADOW GRASS
D	DISTICHLIS SPICATA - SPIKE GRASS
H	BACCHARIS HALIMIFOLIA - SEA MYRTLE
I	TYPHA SPP - CATTAIL
S	PHRAGMITES COMMUNIS - COMMON REED
13	SCIRPUS AMERICANUS - AMERICAN THREE SQUARE

NOTE: SPECIES COMBINATIONS ARE INDICATED BY MULTIPLE LETTERS FOR EXAMPLE: B/C

Updated March 1985

This berm of fill will add insurance against the possibility of overflow from Lighthouse Pond West passing onto Lighthouse Avenue. Under present conditions, water levels in the pond can rise a foot and one half over normal high water-spring levels without flooding the adjacent road and town of Cape May Point.

5. Proposal for the channel/ditch from Lighthouse Pond East to Shallow Pond: construct a low spillway dam, perhaps in conjunction with a new bridge across this wide ditch. This bridge is part of the yellow trail and in need of replacement. Even in the wet summer of 1978 the upper section of this channel went completely dry, and there is always a severe draw-down period here as evidenced by the dense phragmites growth in the channel bed, as well as throughout lower sections of the channel.

6. Two water control structures should be placed south of #5 (the low spillway dam), employing high spoil banks and any bends in the channel, if practicable.

7. Proposals for management of "Cattail Pond" area (northeast section of Natural Area), including drainage ditch from area. The cattail marsh and pond area in the northeastern section of the Natural Area is the healthiest and least disturbed eco-system in the Park. The pond is clear and free of the advanced stages of eutrophication that besets other ponds in the Park. The cattail vegetation survives due to the lowness of the elevation and the fact that it is not drained directly by a ditch from the pond itself, but from a ditch along the eastern edge of the marsh (marking the boundary of the Park and the adjacent Nature Conversancy property) and connecting with the main drainage channel behind the beach.

   The ditch draining this area is unrelated to any subdrainage system in the Park. The cattail pond area is isolated from the closely related wetlands areas of the Park proper by wooded islands and extensive filling for roadways to the beach. Despite healthiness of cattail vegetation wildlife populations are inexplicably low, and conscientious effort must be made to restore this vital section.

   Install three rudimentary weirs in the channel to keep the water just under the brim full level. The first one should be placed in the southeastern corner of the cattail marsh where the woodlands abut the channel entrance to the marsh. The top boards should be removable and notched for gradual passage of flow. The second structure can be installed approximately one-third of the way to the main drainage channel and the third structure near the entrance to the ditch to the main drainage channel. Because this section is unrelated to larger problems in the Park, rudimentary control devices will be fully adequate.

APPENDIX H

CAPE MAY POINT STATE PARK INTERPRETATIVE PROGRAM

I. WALKS

A. General Nature
B. Bird
C. Edible and Herbal
D. Beach
E. Wildflower and Weed
F. Insect
G. Hawk I.D.

II. SLIDE SHOWS

A. Historic Cape May Point, 1800 to today
B. Cape May Point State Park, an introductory slide show
C. Migration at the Tip, world renowned bird migration through Cape May Point
D. The Rounded Tip, erosion
E. Monarch Migration, a butterfly's journey
F. New Jersey Pine Barrens
G. Bird Melodies, common summer birds and their songs

III. FILMS

(To be acquired if Interpretive Program became year-round with suitable budget).

A. Bird Migration
B. Monarch Butterfly migration
C. Pond Life, Freshwater

IV. SUMMER NATURE CLUBS (2)

(2nd week July - 2nd week August: 6 meetings @ 2 hours/week).

A. 7-11 years old
B. 11-14 years old

V. EDUCATION PROGRAMS FOR SCHOOL GROUPS, fail thru spring

VI. WHEELCHAIR BIRD WALK COURSE

A. Bird Migration slide show
B. How to use equipment and field guide session
C. Bird Walk

VII. OUTREACH PROGRAM, take slide shows out to local groups