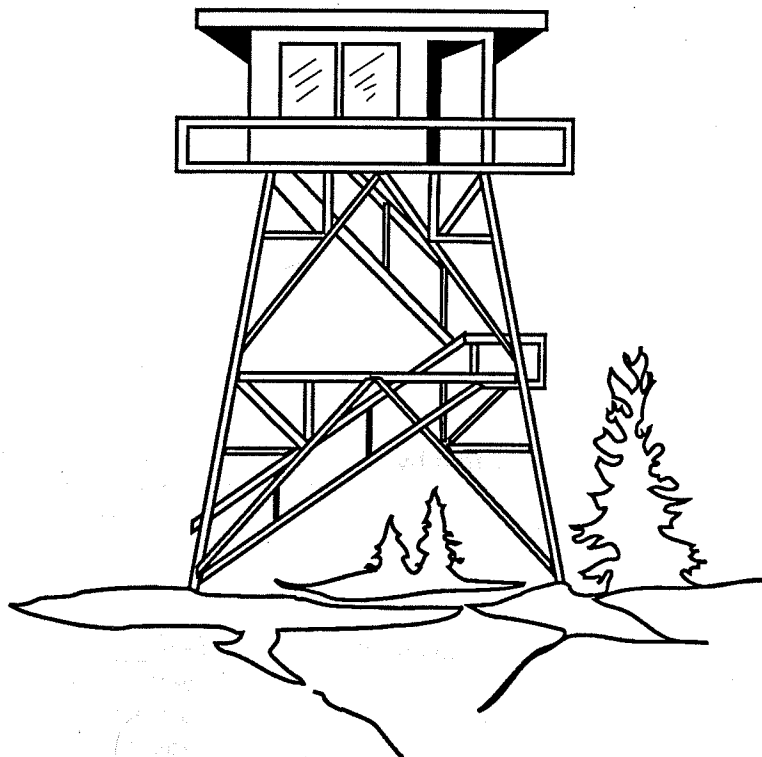


Fire Management Plan



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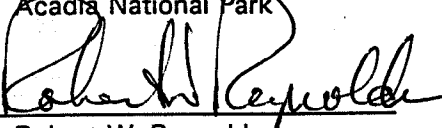
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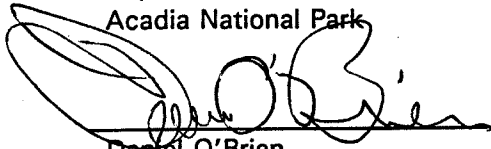
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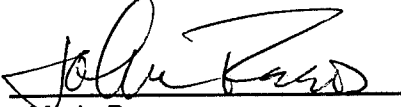

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Fire Management Plan

October 1993

ACADIA

National Park • Maine

ABSTRACT

National Park Service policy requires that all parks with vegetation capable of sustaining a wildland fire must implement a fire management plan for that park. Additionally, National Park Service policy recognizes the role of fire as a normal ecosystem process and as a potential management tool. The *Acadia National Park General Management Plan, October, 1992* specifically directs the park to "manage fire". That objective is incorporated into the objectives of the *Acadia National Park Resource Management Plan, December, 1991*.

The *Acadia National Park Fire Management Plan, October, 1993* is a detailed action plan for the implementation of specific fire management objectives which are derived from the park's resource management and general management objectives. The fire management plan will meet the objectives of the general management plan and the resource management plan through this detailed program designed to manage fire in order to protect human life and property, conduct research into the natural role of fire in the development and perpetuation of park habitats and then to restore or simulate the role of fire where appropriate to maintain native ecosystems and natural processes.

The fire management plan is an appendix of the resource management plan.

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SECTION 1: INTRODUCTION

This fire management plan establishes the fire management goals, objectives, policies, operational programs and research projects required to effectively manage wildland fire within the boundaries of Acadia National Park. The plan serves as a detailed action plan for the implementation of those programs and projects by the park staff.

The fire management plan is an appendix of the Acadia National Park resource management plan (December, 1991). It is the purpose of the fire management plan to help achieve the specific objectives of the resource management plan and the Acadia National Park general management plan (October, 1992).

The fire management plan meets National Environmental Policy Act (NEPA) compliance requirements. Management actions under this plan, including management ignited prescribed fires for research purposes, are categorically excluded from NEPA compliance. A separate categorical exclusion is written for each prescribed fire conducted in the park for research purposes. An environmental assessment of the fire management plan is not required since it has no prescribed fire component. An environmental assessment, in compliance with NEPA requirements, will be completed if a management ignited prescribed fire program is added to the fire management plan at a future date.

The fire management plan is reviewed by the National Park Service Branch of Fire and Aviation Management and approved by the regional director for the North Atlantic Region. The plan is reviewed annually and amended as needed. A copy of any amendment to the plan will be provided to the Branch of Fire and Aviation Management.

National Park Service (NPS) policy, as stated in NPS-18 (*Wildland Fire Management Guideline*), requires that "all parks with vegetation that can sustain fire must have a fire management plan". This plan must address both the need to protect life and property and the natural role of fire in the development and perpetuation of the park's ecosystem. The vegetation and fire history of Acadia National Park dictate the need to have a fire management plan for the park.

The authorities for conducting fire management programs in the units of the National Park System are found in the National Park Service Organic Act of 1916 and the National Parks and Recreation Act of 1978. These acts direct the National Park Service to provide for the public enjoyment of the protected resources in a manner that does not impair the values and purposes for which those resources have been set aside.

SECTION 2: POLICY COMPLIANCE

The fire management policy for the United States Department of the Interior is found in Departmental Manual (DM) 910. The National Park Service fire management policy is found in *Management Policies*, U.S. Department of the Interior, National Park Service, 1988, (4:14). This policy states that:

Fire is a powerful phenomenon with the potential to drastically alter the vegetative cover of any park. Fire may contribute to or hinder the achievement of park objectives. Park fire management programs will be designed around resource

management objectives and the various management zones of the park. Fire-related management objectives will be clearly stated in a fire management plan, which is to be prepared for each park with vegetation capable of burning, to guide a fire management program that is responsive to park needs.

Specific guidance for wildland fire management in National Park System units is found in NPS-18 (*Wildland Fire Management Guideline*).

Acadia National Park was originally established by Presidential Proclamation #1339 (39 Stat. 1785) as Sieur de Monts National Monument on July 8, 1916. The park's name was changed to Lafayette National Park in 1919 (40 Stat. 1178) and to Acadia National Park in 1929 (45 Stat. 1083). Other significant legislation affecting the park include the 1982 act establishing a boundary for the Isle au Haut unit (PL97-335) and the 1986 act establishing a permanent boundary for the rest of the park (PL99-420).

These proclamations and acts have established broad objectives for managing park resources and have identified values to be protected. These include the preservation of scenic, natural, scientific and cultural resources and values of the park.

The vast majority of the lands that comprise Acadia National Park have been acquired through donation by private individuals.

Preservation of outstanding scenic, natural scientific and historic values has been the stated intent of people who have donated tens of thousands of acres for the creation of the park over the past seven decades and the intent of the Secretary of the Interior and the Congress in accepting them Congress cited the island's distinction as (Samuel) Champlain's landing place and the great scientific interest of it's topography, geology and fauna and flora in the original enabling legislation and indicated that the purpose of the monument (park) was to protect these significant resource values. (*Acadia National Park General Management Plan Environmental Assessment*, 1991)

The park's general management plan (GMP) mandates that the park carry out interrelated strategies for the protection and management of park resources. The resource management goal of the GMP's objectives is to perpetuate the natural, cultural and scenic resources of the park. The objectives related to fire management are to:

- 1) Protect and manage the park's natural resources, giving priority to those which are exceptionally fragile or significant.
- 2) Improve the natural and cultural resource information base through expanded inventory, monitoring, research and improved data base management and GIS (geographic information system) systems.

The GMP specifically directs the park to "manage fire". As stated in the GMP, the park

will prepare and implement a park fire management plan. The purpose of this plan will be to assure the protection of human life and property, and to research and then restore or simulate the natural role of fire in the development and perpetuation of park habitats. The National Park Service will work with the State of Maine and local communities to assure preparedness for fire suppression. As part of that preparedness, preemptive or "presuppression" programs might be implemented to reduce fuel levels and control potential fire behavior at tactical locations. Specific

management actions will be detailed and impacts analyzed as part of the fire management plan. For example, clearly articulated vegetation and fuels management objectives, will be detailed and their impacts analyzed as part of the fire management plan.

The GMP further directs the park to "reduce the threat of fire" in cooperation with adjacent landowners and communities in order to enhance park values. The GMP states that the park

will work with local communities to reduce the threat of fire from sources external to the park by encouraging adoption of zoning, building codes, public education, and fuel-management policies that will discourage potential ignition or fire damage.

The GMP environmental assessment identifies fire management as a major planning issue for the park. It states that:

Some of the park's mature, even-age forests are susceptible to catastrophic fire, such as the fire that burned one-third of the island in 1947. Areas not burned in 1947 retain heavy fuel loads, and fire hazard is high in areas where visitor use is heavy. Additional research on fire history is needed to understand the role of fire in Acadia and to support an effective fire management plan.

The objectives of the park's resource management plan (December, 1991) are:

- 1) To maintain and understand ecosystem function in as natural a condition as possible.
- 2) Integrate the management of natural resources with the cultural heritage of the area.
- 3) To identify and delineate the entire spectrum of resources within Acadia National Park and to insure their continued viability.
- 4) To establish and conduct efficient periodic inventory, monitoring and assessment of the major resource systems within the park.
- 5) Insure public access and appreciation of ACAD's (Acadia National Park's) resources while providing adequate protection and preservation.

The fire management plan is a detailed action plan for the implementation of specific fire management objectives (see Section 4). These objectives are derived from and support the objectives of the park's general management plan and resource management plan. The fire management plan will meet the objective of the general management plan through a detailed program to manage fire in order to protect human life and property, conduct research into the natural role of fire in the development and perpetuation of park habitats and then to restore or simulate that role where appropriate. This program will also help meet the objectives of the resource management plan by aiding in the maintenance and perpetuation of ecosystems, through systematic and periodic inventories and long-term monitoring of fire-related resource systems, and by investigation into the effects of fire on various components of the park's ecosystems.

SECTION 3: DESCRIPTION OF THE PARK

The majority of information contained in the following section is excerpted from *Fire Regimes of the Coastal Maine Forests of Acadia National Park* by Patterson et al. (1983), unless otherwise noted. Where necessary, information from this source has been updated, added or revised.

3.1: OVERVIEW

Acadia National Park lies in Hancock and Knox Counties on the eastern coast of Maine (see Figure 3.1). The park encompasses approximately 35,000 acres (14,000 hectares) in three separate units:

Mt. Desert Island	29,600 acres (11,840 hectares)
Isle au Haut	3,400 acres (1,360 hectares)
Schoodic Peninsula	2,000 acres (800 hectares)

There are also ten small offshore islands in National Park Service ownership. Most of these islands have no structures or other improvements on them. For the purpose of this plan, these islands will be considered part of the unit to which they are closest geographically.

The park also holds 152 conservation easements on approximately 6400 acres (2560 hectares) of land. The easement boundary for the park encompasses about 1,400 square miles (3640 square kilometers) and stretches approximately 60 miles (96 kilometers) from the Penobscot Ship Channel to the boundary between Hancock County and Washington County (see Figure 3.2).

3.1.1: Mount Desert Island Unit

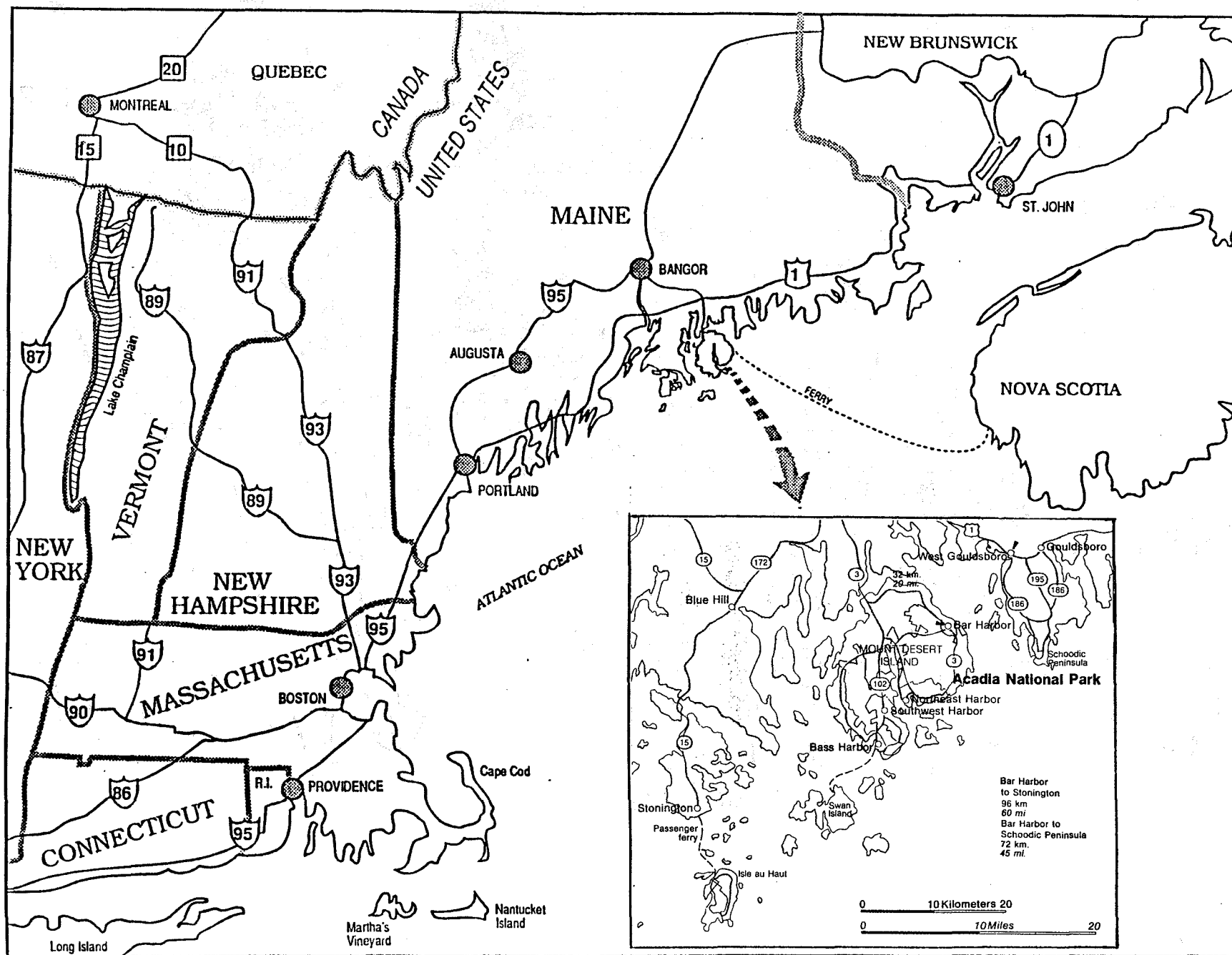
Mount Desert Island is approximately 69,120 acres (27,648 hectares) in land area, of which about 29,600 acres (11,840 hectares) is in National Park Service ownership (see Figure 3.3). This constitutes approximately 43% of the land area of Mount Desert Island.

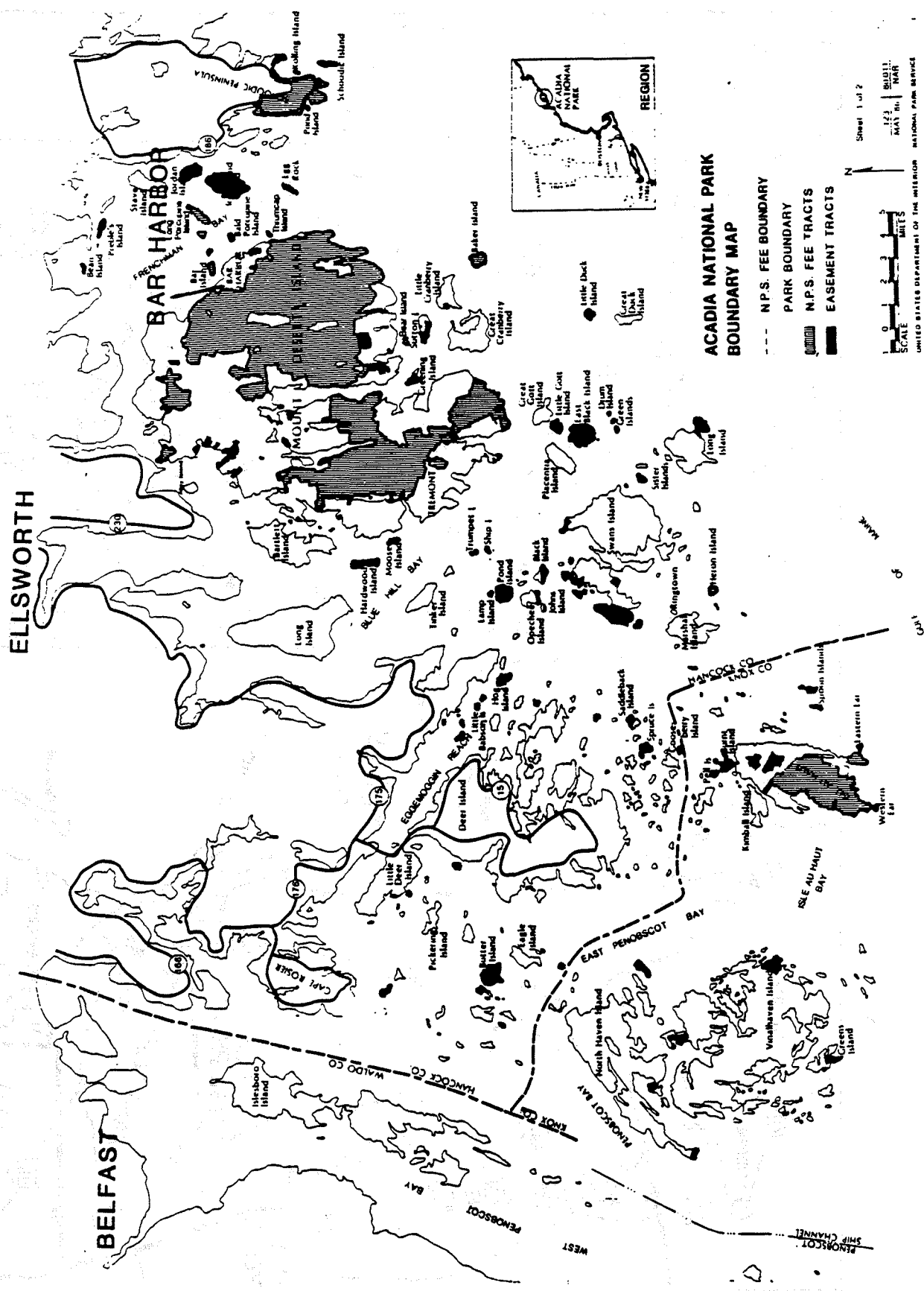
The island lies between 44° 13' and 44° 27' north latitude and between 68° 10' and 68° 26' west longitude. The unit is centered on Universal Transverse Mercator (UTM) Zone 19 coordinates 4912000m N and 555000m E. Elevations range from sea level to 1530 feet (466 meters) on Cadillac Mountain.

The island lies entirely in Hancock County and is broken down into five townships (Bar Harbor, Mount Desert, Southwest Harbor, Tremont and Trenton). There are 16 town centers, villages or other population centers on the island. In 1989, there were approximately 12,000 year round residents and 35,000 summer residents or tenants occupying approximately 4,500 year-round houses and 2,000 seasonal houses. The 1987 assessed value for all structures on the island was \$532,000,000.00, with 72% being residential and 23% being commercial properties.

Mount Desert Island is well traversed with primary and secondary roads. There is an extensive network of carriage paths and fire roads which are driveable by type 5 or smaller engines. Many of these roads are gated to the public but may be utilized by park staff for administration and protection purposes. An extensive trail system also provides access to the park by foot.

FIGURE 3.1: Regional Map





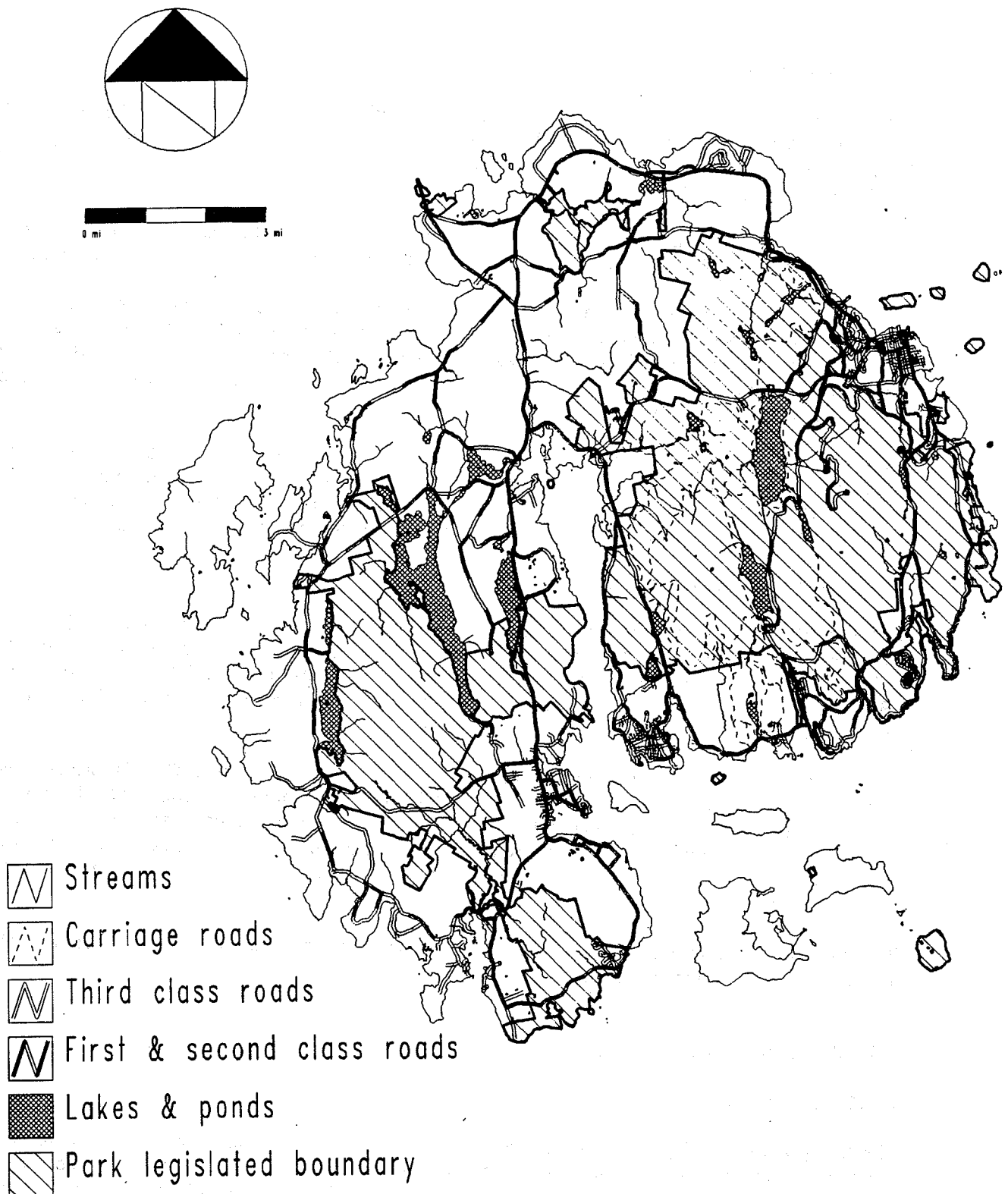


FIGURE 3.3: Mount Desert Island Unit Map

3.1.2: Isle au Haut Unit

Isle au Haut is an offshore island located about 6 1/4 miles (10 km) east of Stonington, Maine in the Gulf of Maine (Atlantic Ocean). The island is located between 44° 00' and 44° 05' north latitude and at 68° 38' west longitude. The island is centered on UTM Zone 19 coordinates 4878000m N and 527000m E.

Elevations range from sea level to 543 feet (163 meters) on Mt. Champlain. About 57% of the island's 6,000 acres (2,400 hectares) are in National Park Service ownership (see Figure 3.4).

Isle au Haut lies entirely within Knox County and the Township of Isle au Haut. The village of Isle au Haut is the principal settlement on the island and three small hamlets make up the rest of the island's population centers. The island has approximately 20 year-round houses and 60 seasonal houses inhabited by approximately 55 year-round residents and 300 summer residents. The park operates a seasonal ranger station near the village of Isle au Haut.

Transportation to Isle au Haut is by boat. A single road, which generally follows close to the island's shoreline is the only motor vehicle route on the island. This is an unimproved dirt road for most of its length (including that portion within the unit's boundaries). A section of the road in the village of Isle au Haut is paved. Trails provide additional foot access to the island's interior.

3.1.3: Schoodic Peninsula Unit

Schoodic Peninsula is located on the eastern shore of Frenchman Bay (see Figure 3.5). National Park Service ownership is concentrated near the southern tip of the peninsula in the vicinity of 44° 20' north latitude and 68° 05' west longitude. The unit is centered on UTM Zone 19 coordinates 4911000m N and 575000m E. Elevation ranges from sea level to 440 feet (134 meters) on Schoodic Head.

The unit lies entirely within Hancock County and is part of two townships (Gouldsboro and Winter Harbor). The villages of Winter Harbor, Prospect Harbor and Corea lie to the north of the unit. A United States Navy installation is located within the boundaries of the unit near the southern tip of the peninsula. This installation has approximately 50 structures and 250 resident base personnel. The installation has its own fire department. The park operates a seasonal ranger station near the southern tip of the peninsula.

Paved and unpaved roads provide adequate fire response to the unit. Trails provide additional foot access into the interior of the unit.

3.2: RESOURCES DESCRIPTION

3.2.1: Topography

The topography of the park varies greatly. It ranges from ocean beaches and rock-bound coast to steep mountains up to 1530 feet (460 meters) in elevation. Marshes, rolling hills, lakes and ponds are also numerous. Many of the mountains have steep cliffs and bare rock faces. The topographic features of the park are depicted on the United States Geological Survey (USGS) 7.5 minute topographic maps. A complete listing of the USGS maps which include the park are listed in Table 3.1.

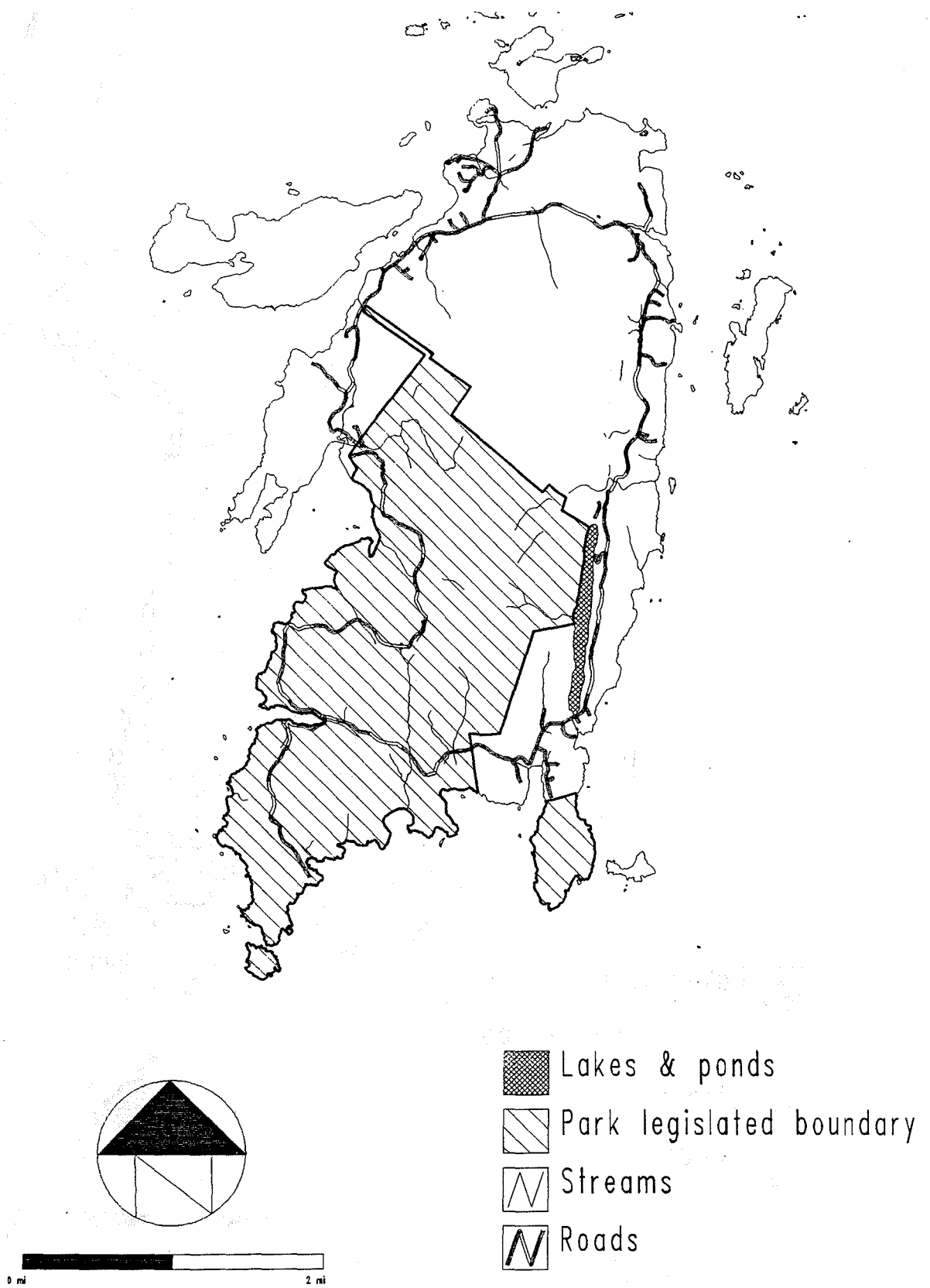


FIGURE 3.4: Isle au Haut Unit Map

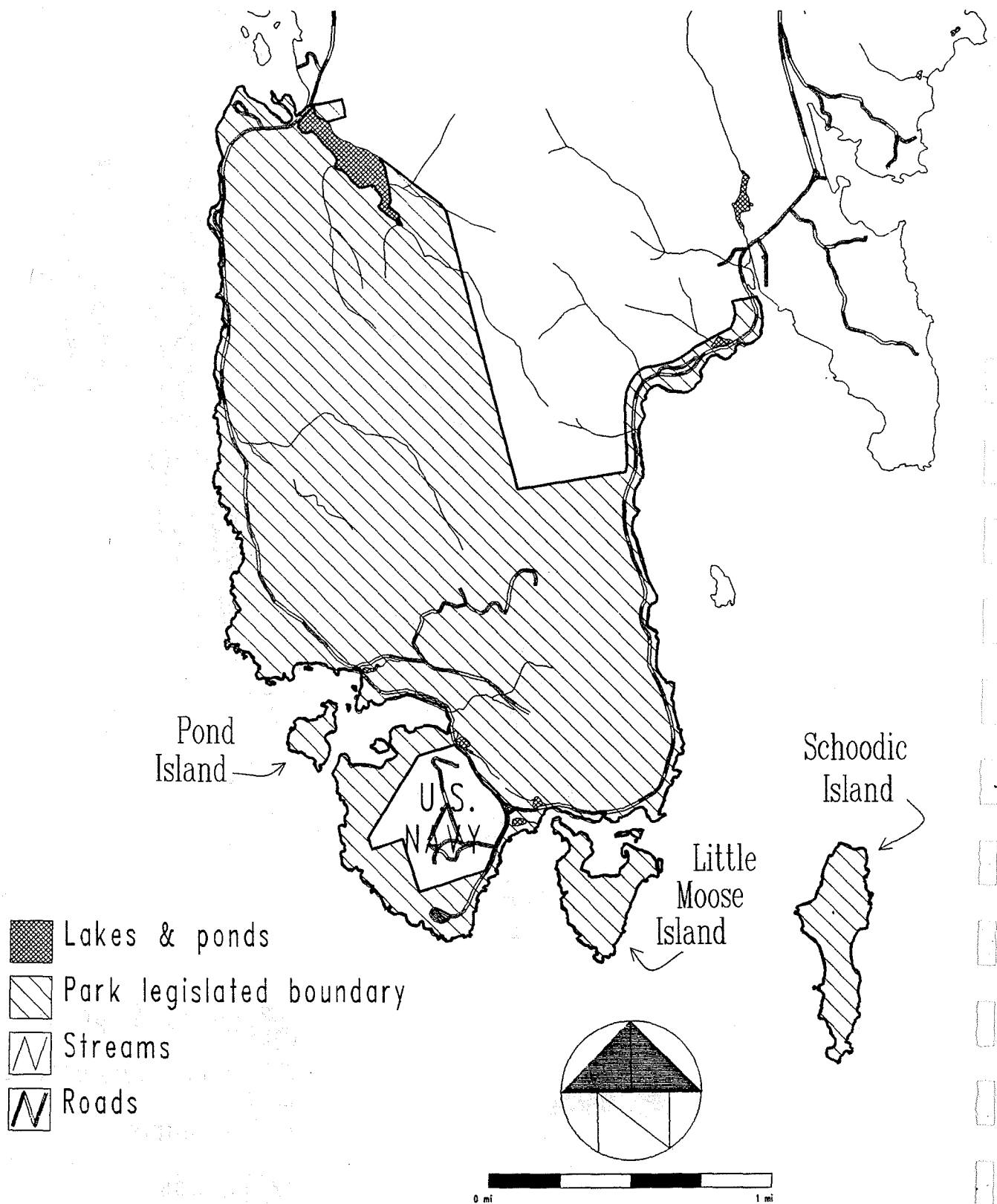


FIGURE 3.5: Schoodic Peninsula Map

**TABLE 3.1: United States Geological Survey (USGS) 7.5 Minute
Quadrangle Topographic Maps Depicting Park Land and Easement Features**

Quadrangle Name		
Baker Island	Hewett Island	Salisbury Cove
Bar Harbor	Isle au Haut East	Sargentville
Bartlett Island	Isle au Haut West	Schoodic Head
Bass Harbor	Isleboro	Seal Harbor
Bucksport	Johns Island	Searsport
Blue Hill	Leadbetter Island	Southwest Harbor
Brooklin	Matinicus	Stinson Neck
Camden	Newbury Neck	Swans Island
Cape Rosier	North Haven East	Vinalhaven
Castine	North Haven West	Winter Harbor
Deer Isle	Petit Manan Point	
Frenchboro	Rockland	

3.2.2: Geology

This discussion of the park's geology and geological history is based upon *The Geology of Mount Desert Island, A Visitor's Guide to the Geology of Acadia National Park* by Gilman et al. (1988).

The geological history of the park lands fall into three separate periods. These three periods are 1) when the region's bedrock was deposited, 2) when glaciers shaped many of the landforms seen today and 3) the post-glacier period of today, where modern processes continue to work.

Various types of igneous, sedimentary and metamorphic rock are found in the park. These are the result of periodic occurrences of volcanic activity, uplifting, erosion and glaciation.

The earliest rock formations found in the park date back approximately 550 million years, where they started as mud on the ocean floor during the Cambrian Period. The youngest rocks date back approximately 380 million years ago when they were formed during the Devonian period. These are intrusive igneous rocks that were created when magma was forced into joints and fractures in the existing bedrock.

Glaciation has played the major role in shaping the park's present-day landforms. Though the region probably experienced several advances and retreats of continental glaciers during the Ice Age, the last glacier, named the Wisconsin Glacier, obliterated all traces of earlier glacial activity. The Wisconsin glacier started its advance approximately 25,000 years ago and retreated approximately 10,000 years ago.

The actions of these glaciers are responsible for the polished, rounded appearance of the northern slopes of the park's mountains and hills. The glaciers are also responsible for the angular rocks and steep cliffs found on the southern slopes of those same mountains and hills. The glaciers deposited large volumes of debris. These range from large individual glacial erratics such as Bubble Rock to deposits of fine sand and gravels located in moraines like the one upon which the Jordan Pond House is built. The massive weight of the glaciers caused the earth's crust to sink and the relative level of the ocean to rise approximately 230 feet. This caused widespread flooding of lowlands and deposition of marine deposits such as marine clays.

In the post-glacial period of today, geological processes are still at work. The ocean continues to erode the rocks found at shoreline. Water, seeping into joints and fractures and then freezing help to break blocks of bedrock away.

These geological processes have had a significant influence on the development of the soils found in the park.

3.2.3: Soils

Glacial soils predominate within Acadia National Park, with lesser deposits of postglacial erosion. In areas where coniferous forests have developed, thick deposits of organic material occur. Numerous bog areas such as Big Heath, the Heath, and Sunken Meadow are situated in low areas gouged out by the glacier. In most areas where organic soils exist, they are acidic. Exceptions occur in burned areas, where little or no organic material remains.

Soils at five sites on Mount Desert Island were characterized by Davis in 1961. These sites were Bass Harbor Head, Black Woods, Beech Hill, Otter Point, and Western Mountain. Davis (1961) tabulated soil characteristics on the five study sites and chemical analyses were completed for each site. Soils were shallow and rested on granitic bedrock generally overlain by granitic till. Soils were well drained to exceptionally well drained except on Western Mountain where seepage was noted. Soils are generally iron-podsols with well-developed fibrous mor humus layer and a gray spodic layer. Western Mountain was a variant of an iron humus podzol. Soils studied were extremely acidic. Roots were concentrated above the spodic horizon. Organic matter was concentrated in the mor humus layer, whereas intermediate concentration were found in the A2 soil layer. Phosphorous was low in the humus and very low in the mineral soil below. Calcium, magnesium, potassium, and manganese paralleled organic matter content. Vegetation appeared to recycle these minerals rapidly. Iron and aluminum were leached from the humus and concentrated in the B horizon below the A2. Mycelia fungus was abundant in the mor layer. Earthworms were not found. Charcoal was always found just above the A2 layer.

3.2.4: Climate

Acadia National Park lies in a region of cool moist climate. Temperature extremes at Bar Harbor range from -16°F (-9°C) in winter to 105°F (41°C) in summer, with a mean annual temperature over the 41 year period from 1940 to 1980 of approximately 46°F (8°C). Precipitation over this period averaged about 49 inches (123 cm) annually and snowfall about 5 feet (1.5 m). Due to the close proximity of Acadia National Park to the Atlantic Ocean and the location of the park with respect to southerly to southwesterly winds, fog near the coast is common.

Climate is believed to exert a profound influence on the distribution of spruce-fir forests in Maine (Davis 1961). This climate also has a strong influence on the moisture content of the park's forest fuels. The cool, moist conditions of coastal Maine suggest that fires should not spread erratically in the park much of the time. Unusual weather conditions may, however, favor the spread of fire and result in catastrophic fires, especially during periods of short-term, intense drought.

The National Park Service has collected weather data for the National Weather Service (NWS) at Acadia National Park since 1926. The station is currently located at park headquarters, on McFarland Hill, in the Town of Bar Harbor. Previously, the station was located at the visitor center in Halls Cove and the old park headquarters at the corner of Main Street and Park Street in the village of Bar Harbor. The station is presently located at 44° 23' north latitude; 68° 15' west longitude at an elevation of 470 feet (132 meters). The park has also periodically collected weather data from both the Isle au Haut and Schoodic units since 1982. The park now collects daily weather data for both units through the use of remote automated weather stations (RAWS). In addition to collecting NWS weather observations, the park also collects fire weather observations and generates National Fire Danger Rating System (NFDRS) indices from those observations. An automatic meteorological station, maintained in conjunction with the park's air quality monitoring program by the branch of natural resources, is also located at park headquarters and generated hourly weather data averages. All park NWS and fire weather records are maintained in the fire management office.

Mean monthly temperature, rainfall and snowfall data for the park's weather station are found in Table 3.2. Temperatures ranged from -16°F to +105°F (-27°C to 41°C). Rainfall ranged from 35.26 inches (89.6 cm) in 1965 to 73.54 inches (186.8 cm) in 1983. The yearly average rainfall, by decade, at Bar Harbor is found in Table 3.3.

TABLE 3.2: Climatic Data Summary for Bar Harbor, Maine
1940 to 1980
Patterson et al. (1983a)

<u>MONTH</u>	<u>MEAN MAX. TEMP (°F)</u>	<u>MEAN MIN. TEMP (°F)</u>	<u>MEAN TEMP (°F)</u>	<u>MEAN RAIN (INCHES)</u>	<u>MEAN SNOW (INCHES)</u>
JANUARY	32.2	14.4	23.3	4.55	16.1
FEBRUARY	33.1	14.9	24.0	4.06	17.5
MARCH	41.2	24.5	32.9	4.09	10.8
APRIL	52.0	33.3	42.7	3.87	2.5
MAY	63.8	42.3	53.1	4.16	0.1
JUNE	72.3	50.8	61.6	3.24	0.0
JULY	77.3	56.6	67.0	3.07	0.0
AUGUST	76.3	55.8	66.1	2.7	0.0
SEPTEMBER	67.9	49.4	58.7	4.02	0.0
OCTOBER	58.3	41.1	49.7	4.39	0.2
NOVEMBER	47.6	32.5	40.1	5.72	2.3
DECEMBER	<u>36.5</u>	<u>19.4</u>	<u>28.0</u>	<u>5.17</u>	<u>11.3</u>
AVERAGES:	54.9	36.3	45.6		
TOTALS:				49.04	60.8

TABLE 3.3: Yearly Average Rainfall; by Decade for Bar Harbor, Maine
Patterson et al. (1983a) and unpublished data

<u>DECADE</u>	<u>AVERAGE YEARLY RAINFALL</u>
1940-1949	43.25 inches (109.86 cm)
1950-1959	52.49 inches (133.32 cm)
1960-1969	48.23 inches (122.50 cm)
1970-1979	52.68 inches (133.81 cm)
1980-1989	53.20 inches (135.13 cm)

Snowfall ranged from 13.9 inches (35.3 cm) in 1953 to 109.6 inches (278.4 cm) in 1962. A mean of only 0.1 inch (0.3 cm) fell in May and 0.2 inch (0.5 cm) in October during this period. Ninety-two percent of the snowfall fell during December through March, but even during these months the ground is often bare. No snowfall occurred in the months of June-September during the period 1940 to 1992.

The prevailing-wind direction data found in Table 3.4 were obtained from National Weather Service records.

TABLE 3.4: Prevailing Wind Directions; Bar Harbor, Maine
Patterson et al. (1983a)

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Annual</u>
NW	NW	NW	SW	SW	SW	SW	SW	SW	SW	SW	NW	SW

Coastal forests of Maine have cooler summers, warmer winters, a narrower range of temperature extremes and a longer frost-free season than forests found further inland. The degree to which coastal areas are cooler in summer and warmer in winter has been found to be directly proportional to the difference between inland air temperature and sea-water temperature.

Annual precipitation is 3 to 7 inches (7.6 to 17.8 cm) higher in coastal Maine, but summer precipitation is probably lower. Lautzenheiser (1959) as cited in Davis (1966) indicates that this is due to a suppression of thunderstorm activity by the cooling of maritime effects, local sea breezes and more general winds. During the winter precipitation is much heavier on the coast due to "northeasters", storms that follow the coastline as they move to the northeast. Snowfall in coastal Maine is the lowest in the state.

Though the summer months tend to be slightly drier than the rest of the months of the year, there is no annual dry season in the park. Lautzenheiser (1959) as cited in Davis (1966) indicates that periods of droughts are infrequent in coastal Maine, but when they do occur they are usually in late summer or early fall. These short-term, intense droughts are usually characterized by very little rainfall over the course of three to five weeks. As an example of this type of drought, the park received 0.70 inches on rainfall against a forty year average of 2.70 inches in the month of August, 1993. In October, 1947, the park received 0.08 inches of rainfall against a forty year average of

4.39 inches. This is the driest month on record and resulted in numerous, large wildfires throughout coastal Maine (Patterson et al. 1983a), including the 1947 Bar Harbor Fire. These periods of low rainfall make the duff on the floor of spruce-fir forests extremely flammable (Davis 1966). It is during these periods that the park's wildfire danger increases dramatically.

During the summer, winds blow from the south through the southwest about 50% of the time (Davis 1961). These winds are warmer than surface waters of the Gulf of Maine, resulting in frequent fog along the coast. The fog dissipates a few miles inland. Fog probably decreases evaporation in coastal areas, thereby compensating somewhat for lower summer precipitation.

3.2.5: Vegetation

Spruce-fir forests are common in Acadia National Park. Red spruce (*Picea rubens*) is the predominant species and occurs throughout the park. White spruce (*Picea glauca*) occurs primarily along the shoreline but can also be found in other localities, especially in exposed areas subjected to strong moisture-laden winds. Black spruce (*Picea mariana*) occasionally occurs in bog areas in association with eastern larch (*Larix laricina*). Balsam fir (*Abies balsamea*) is common in the park but is less prevalent than spruce.

Other coniferous species occur in scattered patches in the park. These include jack pine (*Pinus banksiana*), red pine (*Pinus resinosa*), pitch pine (*Pinus rigida*), eastern white pine (*Pinus strobus*), northern white cedar (*Thuja occidentalis*) and eastern hemlock (*Tsuga canadensis*).

Northern hardwoods, including beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*) and northern red oak (*Quercus rubra*) are also found in the park. Other pioneer hardwoods, especially quaking aspen (*Populus tremuloides*) and bigtooth aspen (*Populus grandidentata*), paper birch (*Betula papyrifera*) and gray birch (*Betula populifolia*), are quite abundant in areas burned by the 1947 Bar Harbor Fire.

A complete listing of the plant species found in the park is maintained by the park's branch of natural resources.

Davis (1961) concluded in his studies of the spruce-fir forests in coastal Maine that the cool, moist, maritime influence is more responsible for spruce-fir distribution in Maine than are soil conditions and bedrock. Abundant and well distributed precipitation and the 44° northerly latitude provide the moisture and cool temperatures necessary for the development of the spruce-fir type.

The park is host to over 50 federally or state listed sensitive, threatened or endangered plant species. The park has also identified 8 sensitive biological communities, comprising about 2,300 acres (920 hectares). Listings of these species and communities are maintained by the park's branch of natural resources.

Fire appears to have played a major role in the vegetation composition of major portions of the park. Downed woody fuels reach heavy concentrations in several locations throughout the park (e.g., Otter Point, Bass Harbor Head and areas of Isle au Haut). Spruce, which is a shallow-rooted species, is subject to blowdown. Dense tree canopies can support destructive wildfires during drought and other times when weather factors combine to present adverse burning conditions.

3.2.6: Fauna

Numerous species of birds, mammals (land and marine), reptiles, amphibians, insects, fish (fresh and salt water) are present in Acadia National Park and adjacent coastal waters. Park inventory data and research information is numerous on some species and non-existent on others.

Many federally or state listed sensitive, threatened or endangered species of animals pass through the park and two federally listed endangered species, the bald eagle (*Haliaeetus leucocephalus*) and the peregrine falcon (*Falco peregrinus*), nest in the park.

Beaver (*Castor canadensis*) colonies are present in the park, especially in the areas burned by the 1947 Bar Harbor Fire. The park's resource management plan states that the number of active beaver colonies within the 1947 fire area have been in decline when compared to the number of active colonies in the 1960' and 1970's (*Acadia National Park Resource Management Plan* 1991). The colonies that are still active may increase fuel loadings in their areas of impact, especially of the smaller size classes of fuels, through the downing of hardwood trees. The significance of this fuel loading in terms of increased fire behavior is probably minimal. The attraction of human spectators to this beaver activity on the other hand may cause an increase in fire occurrence in the area.

Site-specific effects of fire on Acadia fauna have not been specifically researched and documented as such. There is a fair amount of analogous support for the hypothesis that fire can significantly alter wildlife habitat in the park. The increase in beaver and white-tail deer (*Odocoileus virginianus*) populations following the 1947 Bar Harbor Fire and their subsequent decline is an example of this support. Most of the extensive literature on wildfire effects deal with it's effects on plants and soil.

Wildlife populations may respond in a variety of ways to disturbance by fire. Often there is remarkably little change in populations despite wide fluctuations in the environment (Bendell 1974).

3.2.7: Insects and Disease

Spruce budworm (*Choristoneura fumiferana*), gypsy moth (*Lymantria dispar*) and hemlock looper (*Lambdina fiscellaria*) insect infestations have occurred in the park. Beech bark disease (*Nectria coccinea* var. *fraginata*) and white pine blister (*Cronartium ribicola*) are disease vectors also found in the park. These insects and disease can cause damage and mortality to trees within the park. Though current mortality rates are quite low (Connery-Hazen 1993), potentially large outbreaks of these vectors may occur in the future with increased tree mortality rates. These vectors, along with wind blowdown and old-age tree mortality, do contribute to increased fuel loadings throughout the park.

3.2.8: Recreational Resources

Acadia National Park, the only national park in northeast, is heavily used by visitors and local residents. Visitor use is heaviest between Memorial Day and Labor Day weekends and the park serves as a destination vacation point. Visitation during the spring and fall "shoulder" seasons has seen a dramatic increase since the early 1980's. The park's annual visitation for 1992 was estimated at more than 2.634 million visits (*Acadia National Park Fact Sheet* 1993).

An extensive trail system (130 miles, 208 km) has been developed in the park, primarily on Mount Desert Island. A system of carriage roads (51 miles, 82 km) is also located on Mount Desert Island and provides hiking, horseback riding and bicycling opportunities as well as access for fire protection and other park management purposes. Rock climbing occurs at the south face of "The Precipice" south of Bar Harbor and on other rock faces throughout the park. Cross country skiing and snowmobiling are popular during the winter months.

The park maintains two guarded swimming beaches, one at Sand Beach (saltwater) and the other at Echo Lake (freshwater). Canoeing and boating is also popular. The park maintains several freshwater boat launches on lakes and ponds. Land access to a United States Coast Guard maintained saltwater courtesy mooring for large boats at Valley Cove is made across park lands.

Salt-water sea kayaking and small boating activities are increasing, especially to the park's offshore islands. This increased human use may bring about a corresponding increase in fire occurrence at these locations through visitor smoking and illegal campfires.

The National Park Service maintains developed campgrounds at Blackwoods and Seawall on Mount Desert Island and at Duck Harbor on Isle au Haut. Picnic areas are located at Thompson Island, Bear Brook, Fabbri, Seawall and Pretty Marsh on Mount Desert Island. A picnic area is also located at Fraser Point in the Schoodic Peninsula unit. Camp and picnic fires are allowed only at these facilities, in designated fire rings. Camping and the establishment of camp and picnic fires at any other location within the park is prohibited. The use of illegal campfires outside of designated fire rings and smoking while on trails and carriage roads increase the risk of fire occurrence within the park.

3.2.9: Archeological Resources

The most common archeological sites within the park are Native American shell heaps. These are generally found near the shoreline and are an indication of Native American activity dating back more than 6,000 years. The most important of these and is also the location of the second French settlement in North America. This site lies half on park lands and half on private lands to which the park holds a conservation easement. A complete listing of the location of all known archeological sites is maintained in the fire management office.

3.2.10: Cultural Resources

Acadia National Park was established in part to preserve the cultural resources and values found within it. The park has a wide range of historic structures and cultural landscapes within its boundaries.

The park has over 170 structures. Twenty-seven of these structures are listed on the National Register of Historic Places and more than 40 additional structures are being considered for listing.

The park's carriage road and loop road system are significant cultural landscapes. The carriage road system, including its bridges, are considered the finest remaining example of broken stone horse carriage roads in the United States (Rieley and Brouse 1989).

An extensive discussion of the cultural resources of the park can be found in the "Description of the Environment" section of the GMP environmental assessment.

3.2.11: Park Facilities

As noted in the GMP environmental assessment, the park has numerous park facilities to serve the public and its management needs. These include a visitor center, 2 information centers, an entrance station, a headquarters complex, 46 housing units, 2 ranger stations, 8 restroom facilities, 3 campgrounds, 6 picnic areas and 3 concessions facilities.

The park also maintains 130 miles of hiking trails, 21 miles of gravel access roads, 51 miles of carriage roads and 68 miles of paved roads. Along with these roads and trails, the park maintains numerous bridges, culverts and adjunct structures.

3.2.12: Adjacent Landowners

The private lands adjacent to the park boundaries are experiencing a significant increase in both residential and commercial development. Where there once were buffers of woodlands and

farmlands, now there are homes and businesses. Many of these structures are built directly in the forest to give them a "woods" setting. This siting of structures in wildland fuels is known as the wildland/urban interface or the interface.

The wildland/urban interface has increased substantially since the 1947 Bar Harbor Fire. Many of the homes and other structures adjacent to or in the vicinity of the park boundary are worth hundreds of thousands to over a million dollars each. The risk of a wildfire damaging or destroying these structures is significant. The risk to the park's wildlands from a structure fire is also increased by the proximity of these structures. Increased populations adjacent to the park boundary may increase the wildfire ignition potential since approximately 98% of the park's wildfires are human caused (Patterson et al. 1983a).

3.2.13: Cooperating Agencies

In terms of wildland fire management, the park mutually cooperates through formal or informal agreement with numerous agencies from all three levels of government, federal, state and local, along with local volunteer fire departments. These agencies include:

- 1) United States Fish and Wildlife Service: general fire management support and training.
- 2) United States Navy (Naval Security Group Activity, Winter Harbor): presuppression and suppression operations, information sharing and training.
- 3) United States Coast Guard (Group Southwest Harbor): suppression operations on offshore islands.
- 4) Maine Forest Service: presuppression and suppression operations, arson investigations, information sharing and training.
- 5) Hancock County Firefighters' Association (county mutual aid organization): presuppression and suppression operations, information sharing and training.
- 6) Local Fire Departments (Bar Harbor, Gouldsboro, Isle au Haut, Northeast Harbor, Otter Creek, Seal Harbor, Somesville, Southwest Harbor, Tremont, Trenton and Winter Harbor): presuppression and suppression operations, information sharing and training.

The park does not maintain structural or vehicular firefighting capabilities and relies solely on the local fire departments to provide these services to the park. The park firefighting staff will provide, within the scope of their training and certification, requested support services to these agencies for the purpose of structural and vehicular firefighting.

3.3: PARK DESCRIPTION REFERENCES

Listed below are many of the documents that describe various resources and aspects of the park (See also Appendix A).

- 1) *Acadia: The Story Behind The Scenery*, Rothe, 1987. A general overview of the park and it's resources.

- 2) *Development Concept Plan Environmental Assessment, Isle au Haut; Acadia National Park*, National Park Service, 1989. The planning document for the Isle au Haut unit of the park, a development concept plan that contains sections on the resources, history and needs of the unit.
- 3) *Fire Regimes of the Coastal Maine Forests of Acadia National Park*, Patterson et al, 1983. An extensive study of the fire history and fire ecology of the park, including inventory data on forest stands and fuel loadings. Also includes an extensive listing of literature pertinent to fire management at the park.
- 4) *Field Guide to Acadia National Park, Maine*, Butcher, 1977. A general field guide to the natural history of the park.
- 5) *General Management Plan; Acadia National Park*, National Park Service, 1992. Defines the basic management philosophy that guides management decisions in the park for the next 10 to 15 years and directs the development that will be required to support that philosophy.
- 6) *Draft General Management Plan Environmental Assessment; Acadia National Park*, National Park Service, 1991. The park's general management plan planning document, containing an extensive sections on the resources, history and needs of the park.
- 7) *The Geology of Mount Desert Island: A Visitor's Guide to the Geology of Acadia National Park*, Gilman et al, 1988. An overview of the geology of the park.
- 8) *Historical Resource Inventory For Acadia National Park*, Greene et al, 1992. A review and summary of the historical resource inventory efforts in Acadia National park since the 1880's and an bibliography of resource management and research documents related to those efforts.
- 9) *Inventory of Structures; Acadia National Park*, Arbogast, 1984. Inventory and description of all park structures.
- 10) *Land Protection Plan; Acadia National Park*, National Park Service, 1988. Defines the criteria for protection of non-Federal lands within the park boundary, lists land acquisition priorities and establishes the criteria for acquisition of conservation easements.
- 11) *Rare Vascular Plants of Acadia National Park and the Mount Desert Island Region of Maine*, Greene, 1990. A listing of rare vascular plant species of state, regional and federal significance at Acadia National Park.
- 12) *Resource Management Plan; Acadia National Park*, National Park Service, 1991. A description of the cultural and natural resources contained within the park and a listing of current or potential management activities related to those resources.
- 13) *Statement for Interpretation; Acadia National Park*, National Park Service, 1990. Contains basic information on the resources and interpretive facilities of the park.
- 14) *Statement for Management; Acadia National Park*, National Park Service, 1986. Includes an inventory of the condition of the park's resources and an analysis of the problems facing those resources.

- 15) *Water Resources Management Plan Scoping Report; Acadia National Park*, National Park Service, 1990. Contains a summary of the park's water related resources, studies related to those resources and a listing of current and potential water resource related issues.
- 16) *Vegetation Maps; Acadia National Park*, National Park Service, 1979. Maps of the species stands and forest types on Mount Desert Island and Isle au Haut, taken from 1979 infrared aerial photographs. This information is in both hard copy and computerized format.

Other sources of information that describe various resources and aspects of the park can be found in the following locations.

- 1) **Fire Management Library:** contains all park weather records since 1926 and various forest and fuel loading inventories. Located in the fire management office.
- 2) **Interpretive Library:** contains extensive publications and photographs related to the park's resources and history. Located in the interpretation division offices.
- 3) **Resource Management Library:** contains publications, reports and inventories related to the park's resources. Located in the branch of natural resources offices.
- 4) **Geographic Information System (GIS):** a computer based mapping program (ArcInfo, ver. 3.4D+, Environmental Systems Research Institute, Inc., 1991) which contains maps and databases on all park wildfires since 1937 and various other resource and inventory related topics. This system is managed by the branch of natural resources.

SECTION 4: PARK FIRE MANAGEMENT OBJECTIVES

The fire management plan recognizes the need to manage wildland fire at multiple levels. These levels include prevention, education, research, presuppression, suppression and prescription.

The fire management objectives for Acadia National Park support the policies of the United States Department of the Interior and the National Park Service and are directly related to the objectives of the park's general management plan and resource management plan (See Section 1 and 2 of this plan).

The fire management objectives for Acadia National Park are:

- 1) To protect human life and property both within and adjacent to park lands from the negative consequences of wildfire.
- 2) To protect the park's natural and cultural resources and scenic values from the undesirable impacts and effects of wildfire and wildfire suppression activities.
- 3) To quickly detect and aggressively suppress all wildfires that occur in the park with a minimum of resource damage.

- 4) To prevent the spread of wildfire across park boundaries through aggressive presuppression and suppression activities and operations.
- 5) To prevent unplanned human-caused ignitions through an active fire prevention and public education program.
- 6) To research, develop and implement a program of fuels and vegetation management designed to reduce the size and spread of wildfires through the application of mechanical means and/or management ignited prescribed fire.
- 7) To research the feasibility of developing and implementing a program of vista and cultural landscape management through the use of management ignited prescribed fire that will help maintain the scenic vistas and cultural landscapes of the park.
- 8) To develop a more complete understanding of the historical and ecological role, behavior and effects of wildland fire through applied research.
- 9) To promote a unified interagency approach to the management of wildland fire through the involvement of the State of Maine and local fire agencies in the development and implementation of complementary fire plans and programs.

SECTION 5: FIRE MANAGEMENT STRATEGIES

The fire management strategies to be utilized by the park in achieving its fire management objectives are detailed in the following section.

5.1: OVERALL STRATEGY

The park will use the specific strategies listed below to achieve the park's fire management objectives. The policies of the National Park Service, as set forth in NPS-18 (*Wildland Fire Management Guideline*), and the United States Department of the Interior, as found in Departmental Manual (DM) 910, will be adhered to in the implementation of these strategies.

5.2: SPECIFIC STRATEGIES

5.2.1: Fire Suppression

The park will make every effort to suppress all wildfires through aggressive initial attack actions. All available park and local firefighting resources (as specified in separate memorandums of understanding) will be utilized as necessary to limit damage to the values at risk, minimize the burned area, prevent the escape of wildfires and prevent the spread of wildfire across park boundaries.

The incident commander of any wildfire is expected to combine aggressive tactics with sensitivity towards the park resources and concern for the safety of firefighting personnel, park employees, park visitors and park neighbors threatened by the wildfire. The incident commander may utilize

direct or indirect tactics, in combination with any of the three suppression strategies as defined in NPS-18, Wildland Fire Management Guideline and listed below.

- 1) **Confine:** To restrict the wildfire within predetermined boundaries, established either prior to, or during the fire. These identified boundaries (streams, lakes, rockfaces, roads, etc) will confine the fire, with no action being taken to put the fire out. (Burn-out techniques may be utilized to strengthen these natural or existing human-made boundaries.)
- 2) **Contain:** To restrict a wildfire to a defined area, using a combination of natural and constructed barriers that will stop the spread of the fire under the prevailing and forecasted weather conditions, until out.
- 3) **Control:** To aggressively fight (suppress) a wildfire through the skillful use of personnel, equipment and aircraft to establish firelines around a fire to halt the spread and to extinguish all hot spots, until out.

Though all three suppression strategies are available to the incident commander, the "control" strategy is the preferred course of action for wildfires occurring in Acadia National Park. The use of confine and control strategies may be warranted when life and property are not endangered. These strategies may be used in the suppression of wildfires on park-owned offshore islands if life, property, cultural features or important biological features are not lost or damaged by their implementation.

5.2.2: Fuels Management

The park will seek annual funding to conduct mechanical fuel reduction, to investigate the use of prescribed fire for fuel reduction, to investigate the use of prescribed fire and mechanical means for the creation and maintenance of fuel breaks and to develop a program for the management and monitoring of fuels through cooperative relationships with educational institutions and other agencies. These activities will be coordinated with the branch of natural resources.

5.2.3: Research and Monitoring

The park will continue to seek funding to develop and maintain a long-term fuel and vegetative monitoring program, to research the use of prescribed fire for fuels management and for vista and cultural landscape management and to develop a better understanding of fire behavior and the ecological role of fire in the park through cooperative relationships with educational institutions and other agencies.

5.2.4: Fire Prevention and Cooperation

The park will develop a prevention and education program to minimize unplanned human ignitions and to promote a better understanding of wildland fire's role in natural ecosystems. The park will also establish a program to address the prevalent and increasing wildland/urban interface issues that are found in and adjacent to the park.

The park will continue to coordinate fire management operations with outside agencies in order to promote a unified approach to wildland fire management for the park and it's neighbors.

5.3: PARK-WIDE CONSTRAINTS ON STRATEGY OPTIONS AND TACTICS

The following are constraints and restrictions on the use of the strategies and tactics listed above. The only time these constraints and restrictions may be disregarded by the authority of the incident commander of any wildfire is when life is immediately threatened or in peril by that wildfire and other actions will not eliminate that threat or peril.

These constraints and restrictions may be waived with the express prior approval of the superintendent of Acadia National Park if, in consultation with the appropriate resources advisors, it is determined that these actions are necessary to preserve and protect unique or valuable natural or cultural resources threatened with damage or destruction from a wildfire or where the possibility of a wildfire crossing park boundaries exists. In general though, these constraints and restrictions will apply to all wildland fire management operations, including wildfire suppression operations.

- 1) Construction of fireline, especially on slopes, is to be kept to a minimum. Wherever possible, natural and existing human-made firebreaks will be utilized.
- 2) Construction of fireline in ecologically sensitive and archaeologically or culturally significant areas is prohibited.
- 3) The use of large, mechanized equipment (bulldozers, skidders, etc) to construct fireline is prohibited.
- 4) The operation of vehicles off existing roads and paths is prohibited except in the case of non-sensitive grasslands, where the use of vehicles is allowed.
- 5) The use of retardant is to be kept to a minimum and is prohibited in ecologically sensitive areas. All retardant used in the park will be of a fugitive color type, designed to fade rapidly following application.
- 6) Confine and contain tactics will only be used when fuels, terrain and fire behavior allow for such actions, when structures and adjacent properties are not threatened or when firefighter safety would preclude the use of a control strategy.

A listing and map of ecologically sensitive and archeologically and culturally significant areas is maintained in the fire management office and is included in the "Incident Commander Briefing Notebook", which is also maintained in the fire management office.

SECTION 6: FIRE MANAGEMENT UNITS (FMU'S)

6.1: DELINEATION OF FIRE MANAGEMENT UNITS

As described in Section 3 of this plan, the park consists of three distinct geographic areas, the Mount Desert Island unit, the Isle au Haut unit and the Schoodic Peninsula unit. There are also ten small, offshore islands in National Park Service ownerships. For planning purpose, these offshore islands will be considered part of the unit to which they are geographically closest, but most likely, fire suppression response to these islands would be dispatched and coordinated from the Mount Desert Island unit.

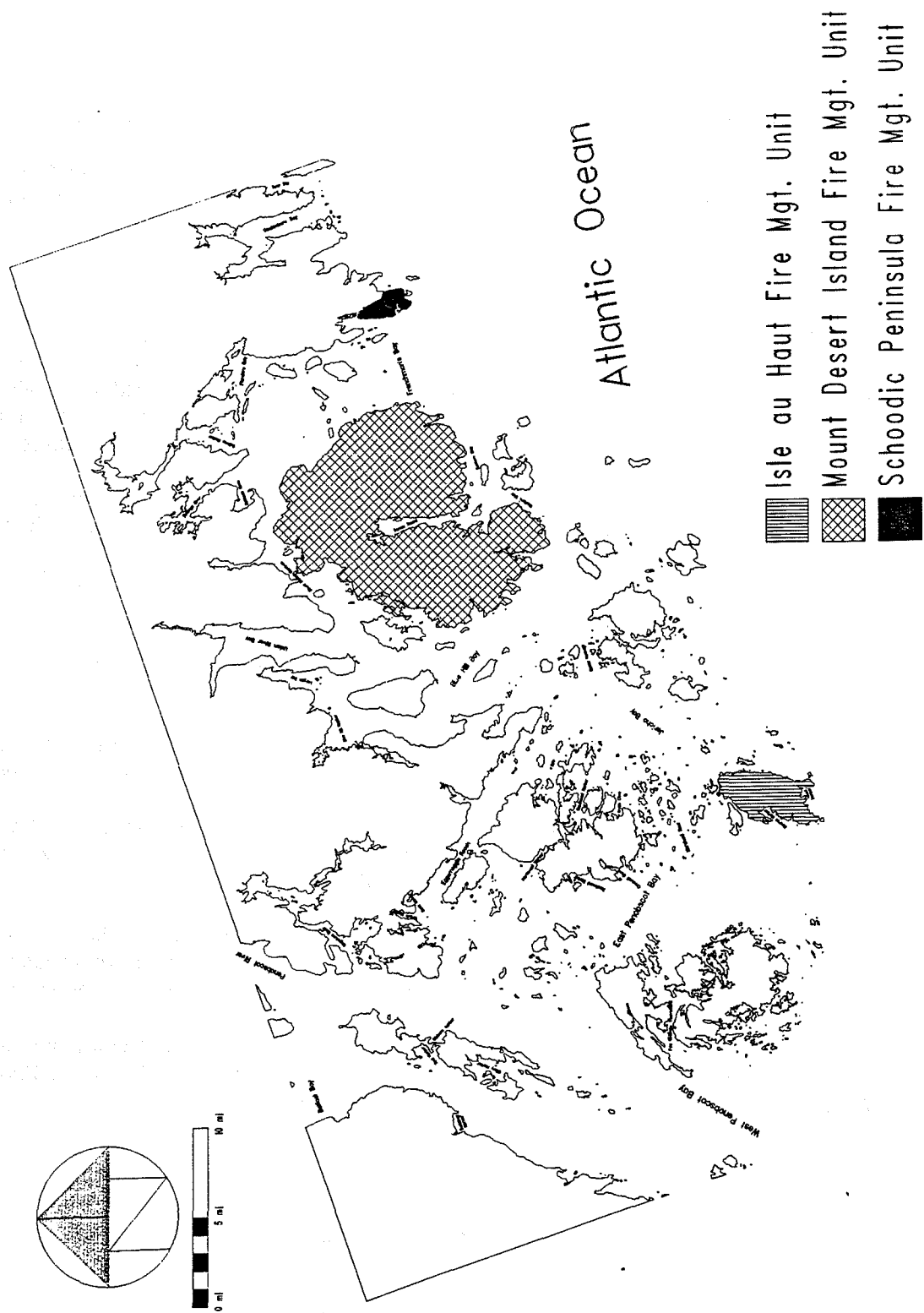


FIGURE 6.1: Fire Management Units Map

All three units share similar topography, climate, fuel type, expected fire behavior and fire history. Since there is currently no prescribed fire program in the park, all three units share the same fire management and fire suppression objectives.

The units are separated geographically and travel time between the units is over one hour. Vehicle travel between the Mount Desert unit and the Schoodic Peninsula unit is approximately one hour. Boat travel between the Mount Desert unit and the Isle au Haut unit is approximately one and one-half hours. The initial attack response is different for each unit (see Section 8.7.2) due to their location and staffing levels.

The park will be divided into three separate FMU's for the purpose of fire management planning. These units will be the same as the geographic units of the park, as discussed above. They will be separated due to their geographic location and varied initial attack response. The units, along with their associated offshore islands, will be known as the Mount Desert Fire Management Unit, the Isle au Haut Fire Management Unit and the Schoodic Peninsula Fire Management Unit (see Figure 6.1).

6.2: FACTORS COMMON TO ALL FMU'S

Since all three units share many fire related factors and are separated solely due to their geographic proximity and initial attack response, those related factors will be discussed together. Fuels and fire history for each unit will be discussed separately.

6.2.1: FMU's and Park Fire Suppression Objectives

The park's fire suppression objectives are discussed in Sections 4. and 8.7. of this plan. These objectives and the strategies (see Section 5.) used to implement them apply equally to all three FMU's.

6.2.2: Expected and Potential Fire Behavior

- 1) Conifer: The predominant species in these stands (NFDRS Model H and FBS Model 8) is red spruce (*Picea rubens*). These stands cover approximately 14,000 acres (5,600 hectares) of park lands. During a normal fire year, fire would likely spread through the dead and downed wood fuels and conifer regeneration as ground and surface fires. Torching of individual trees and spotting would also be expected. During an extreme fire year, large scale crown fires can be expected to move rapidly over large areas. With steep slopes, strong winds and an abundance of ladder fuels, independent crown fires could develop. Fireline intensity would easily exceed the capability of hand crews to suppress a fire during an extreme fire year.
- 2) Windthrown Conifer: These stands (NFDRS Models G, K or J and FBS Models 10, 11 or 12) are caused by increases in dead and downed fuels through mortality and windthrow (blowdown) and cover approximately 1,100 acres (440 hectares). Fireline intensity would be expected to be greater than that found in FBS Model 8. Rapidly spreading fires with high intensities capable of generating firebrands and spot fires would be common in either a normal or extreme fire year. Fire in these fuel types generally continue until a fuel break or change in fuels occurs. Fireline intensity would quickly and easily exceed the capability of hand crews to suppress a fire.
- 3) Jack Pine/Pitch Pine/Huckleberry: Jack pine (*Pinus banksiana*), pitch pine (*Pinus rigida*) and huckleberry (*Gaylussacia baccata*) stands are scattered throughout the

park and cover approximately 640 acres (256 hectares). Huckleberry is usually found on open mountain tops and slopes. During a normal fire year in these stands (NFDRS Model O and FBS Model 4), fire can spread through the surface fuels and shrub strata with ease and can occur at higher dead fuel moisture contents because of the flammable nature of the live vegetation. The huckleberry shrub layer is often 2 to 4 feet (.6 to 1.2 meters) high and often forms a continuous horizontal fuel bed under the pines. Flame lengths of 6 to 12 feet (1.8 to 3.6 meters) could occur, along with torching of individual pine trees and spotting. Fires burning on steep slopes and with strong winds would result in active crown fires during either a normal or extreme fire year. Rates of spread and fireline intensity would be high and would easily exceed the capabilities of hand crews to suppress a fire.

- 4) Pioneer and Northern Hardwoods: Stands of pioneer hardwoods and northern hardwoods (NFDRS Model R and FBS Model 8 after leaf out and NFDRS Model E and FBS Model 9 after leaf fall) comprise approximately 17,000 acres (6,800 hectares) of park lands. Many of these stands are the result of the 1947 Bar Harbor Fire and are now in transition, as red spruce and other conifers begin to move up through the understory. In another fifty years, the majority of these stands will probably have transitioned into a red spruce overstory. During a normal fire year, fire in these stands can be expected to spread primarily through the surface litter of dead, dry leaves. Some understory conifer trees may torch out and generate spotting. Under most conditions, fires are of low fireline intensity and short duration. Flame lengths of 2 feet (0.6 meters) or less are common and rate of spread are influenced principally by wind, topography and percent of crown cover present. During an extreme fire year, greater fire intensities can be expected, with severe loss of duff and humus layers. Fires in this fuel type can usually be controlled by hand crews.
- 5) Grassland: Grasslands (NFDRS Model L and FBS Model 1) comprise approximately 50 acres (20 hectares) of park lands. Fire in short grasslands consume the fine herbaceous fuels that have cured or nearly cured. Such fires are of low to moderate fireline intensity and short duration. During a normal fire year, fires in this fuel type spread very rapidly, usually under the influence of wind and topography. Flame lengths of 1 to 4 feet (0.3 to 1.2 meters) are common depending on fine fuel moisture content, height of the grass, and wind. In an extreme fire year, fire intensity and rate of spread would be expected to remain similar to that observed in a normal fire year, but fire occurrence would be expected to increase significantly. Grass fires can normally be controlled or stopped by hand crews using proper tactics, but the rapid rate of spread can present serious entrapment risks to firefighting personnel.

Expected and potential fire behavior of various fuels present in the park are also discussed extensively in *Fire Regimes of the Coastal Maine Forests of Acadia National Park* by Patterson et al. (1983).

6.2.3: Fire Effects

- 1) Vegetation: Red spruce (*Picea rubens*), white spruce (*Picea glauca*) and black spruce (*Picea mariana*) are all present, but red spruce predominates. All three species of spruce have a very low resistance to fire due to their thin bark, shallow root system, flammable foliage and stand configuration. The current fire regime appears to coincide with the maturation cycle of the spruce forest. Large and

intense fires occur when heavy fuel loads, unusually dry weather conditions and an ignition source come together.

Following a major fire, such as the 1947 Bar Harbor Fire, mature spruce forests killed by the fire are quickly replaced by a combination of spruce, birch and aspen regeneration. Initially, the shade intolerant birch and aspen outcompete the shade tolerant spruce, which remains in the understory for 40 years or more. As the relatively short lived birch and aspen die off, the spruce understory is released and moves into the overstory.

The fire hazard of spruce stands (see Table 6.1) during the first twenty years following a fire (Phase #1) is rather high due to the combination of remaining dead spruce (ground and aerial fuels) and young trees. Over the next fifty years (Phase #2), birch, aspen and spruce compete for available sunlight, moisture and nutrients, with spruce gradually outliving the other species. Fire danger during this period is low. Over the next fifty years (Phase #3), healthy spruce dominate the stand and the fire hazard remains moderate. At approximately 110 years, the spruce begin to decline and are subject to windthrow. During the next twenty to forty years (Phase #4), large quantities of dead and downed fuel accumulate due to windthrow, crown break-up and a slow rate of fuel decomposition. During this period the fire hazard is very high, and the stage is again set for a major fire. Should a fire occur, the cycle begins anew (Phase #1). If a fire does not occur, young spruce continue to fill the void created by blowdowns. The fire hazard during this period (Phase #5) remains high due to the combination of young spruce and heavy downed and dead woody fuel loadings. As the downed woody fuels decompose, the stand will eventually assume the properties described in Phase #3, and a gradual increase in age class diversity may occur.

TABLE 6.1: Spruce Succession and Associated Fire Hazard
National Park Service (1989)

<u>PHASE</u>	<u>TIME SINCE DISTURBANCE</u>	<u>VEGETATION</u>	<u>FIRE HAZARD</u>
1	0 - 20 years	Dead spruce (ground and aerial), young spruce, birch and aspen regeneration	High
2	20 - 70 years	Birch, aspen and spruce	Low
3	70-110 years	Healthy spruce	Moderate
4	110-150 years	Windthrown spruce	Very high
5	110-170 years	Windthrown spruce with spruce regeneration	High

Pitch pine (*Pinus rigida*) is a fire-dependent species with a high resistance to fire. Young trees are able to sprout prolifically following fire. Current pitch pine stands may be expected to be replaced by spruce or hardwoods on the better sites in the absence of fire. In general, pitch pine would be expected to slowly increase in numbers and distribution as fire incidence increased.

Jack pine (*Pinus banksiana*) is also a fire-dependent species whose regeneration is enhanced by fire disturbance. In the absence of fire, seedlings of other, more shade-tolerant tree species are likely to become established and replace the overstory jack pine trees as they die.

Most northern hardwoods have a low resistance to fire and would not be expected to prosper following fire. An exception may be American beech (*Fagus grandifolia*) which has the ability to sprout from the root. Pioneer species such as the aspens and birches would also be expected to vegetate fire disturbed areas through resprouting and regeneration.

- 2) **Fuels:** Few studies have examined the effects of fire on fuels in the northeast. Data presented for logged-over spruce-fir in the Great Lakes region show that a total average fuel loading of approximately 32 tons/acre fell into the following four size classes: 8% in less than 1/4 inch diameter, 14% in 1/4 inch to 1 inch diameter, 20% in 1 inch to 3 inch diameter and 58% in greater than 3 inch diameter. An additional 20 tons/acre of larger material was removed from these recently harvested stands. Prescribed fires reduced loadings by 25% overall and by size class as follows: 8% for foliage and less than 1/4 inch diameter, 81% in 1/4 inch to 1 inch diameter, 27% in 1 inch to 3 inch diameter and 3% in greater than 3 inch diameter.

Fires in similar fuels in the park may produce similar patterns of fuel reduction. A spruce-fir stand (#AC14) located on private property on Isle au Haut was inventoried by Patterson in 1980. This stand had been selectively cut in 1975. Patterson found that the stand had a total average fuel loading of 27.79 tons/acre, which fell into the following four size classes: 17% in less than 1/4 inch diameter, 15% in 1/4 inch to 1 inch diameter, 20% in 1 inch to 3 inch diameter and 48% in greater than 3 inch diameter. Paterson also recorded a standing woody fuel (live and dead) load of 46.31 tons/acre. It is not known how much material was removed from the site during the cutting process. Based upon Patterson's 1980 inventory of other spruce-fir stands in the park in which he found an average of 90.85 tons/acre of standing live and dead fuels, it can be estimated that the selectively cut stand had approximately 44 tons/acre of material removed from the site.

Fuel distributions in the park are probably less uniform than in logged-over areas. The resulting burn patterns on park lands would probably be less predictable than that found in fuel reduction studies of logged-over areas.

- 3) **Soils:** Fire effects on soils can have definite impacts on such soil factors as texture, depth, permeability, drainage, slope and the frequency and severity of fire. Fire can alter both the physical and chemical characteristics of soils. Fire effects on vegetation and other factors can also combine with existing soil characteristics to create erosion. This can then significantly impact vegetative reproduction and water regimes.

Deep, coarse textured soils with good permeability and drainage and found on shallow slopes are significantly less likely to be impacted by the effects of fire (Wells 1979). The percent of duff reduction and the percent of mineral soil exposed is directly proportional to the severity of the fire (Wells 1979). In these soils, periodic fires remove surface fuels and release nutrients (cations and basic compounds such as potassium hydroxide) which help neutralize the soils. Good

permeability and drainage of the soils help limit erosion. The result is exposure of bare mineral soil which quickly revegetates.

Fine textured and shallow soils located on steep slopes are the most likely to be impacted by fire. The effects of fire on these types of soils are generally negative. Fires burning in these soils combine with post-fire erosion to expose bedrock which is slow to revegetate or may not revegetate at all within human time frames.

TABLE 6.2: Fire Susceptibility Classes of Acadia National Park
Soil Associations Occurring In Part On 8% Or Greater Slopes
Patterson et al. (1983a).

<u>CLASS</u>	<u>DEPTH TO BEDROCK (inches)</u>	<u>SOIL SERIES ASSOCIATIONS & SLOPE</u>
II	60	Lyman-Marlow, 3-15%
II	61	Lyman-Marlow, 3-15%
IV	62	Lyman-Marlow, rockyphase, 15-45% (20 inches)
II	63	Lyman-Marlow, 3-15%
II	64	Lyman-Marlow, rockyphase, 0-15%
IV	65	Lyman-Marlow, rockyphase, 0-15%
II	67	Rockland-Lyman, rockyphase, 3-45% (20 inches)
III	76	Marlow-Lyman, stonyphase, 15-45%
II	78	Peru-Marlow, stonyphase, 8-15%
III	87	Berkshire-Lyman, stonyphase, 15-25%
II	90	Herman-Lyman, 8-15%
II	92	Herman-Lyman, stonyphase, 3-15%
II	93	Herman-Lyman, stonyphase, 15-45%
I	95	Herman-Waumlsek, 8-15%
I	96	Herman-Waumlsek, stonyphase, 3-15%
I	101	Waumlsek-Herman, stonyphase, 8-15%
IV	121	Buxton-Suffield, 15-25% (K=.49)
II	125	Buxton-Lyman, 3-15% (K=.49)
II	139	Elmwood-Swanton, 0-15% (K=.32)

Patterson et al. (1983a), categorized soils found in the park with regard to their susceptibility of fire damage. Soils were divided into four classes, with class I being least susceptible to fire damage and class IV being the most susceptible.

TABLE 6.3: Summary of Soil Series Descriptions for Acadia National Park
Patterson et al. (1983a)

<u>SERIES</u>	<u>SLOPE (%)</u>	<u>DEPTH TO BEDROCK (inches)</u>	<u>DRAINAGE</u>	<u>PERMEABILITY</u>	<u>SURFACE TEXTURE</u>	<u>SUBSOIL & TEXTURE</u>	<u>K VALUE (EROD- IBILITY)</u>
Berkshire	0-25	60	well	moderate	fsl,l	fsl	0.20
Buxton	0-25	60	mod. well to somewhat poor	very low	sil	sicl	0.49
Colton	0-45	60	excessive	very rapid	ls,lfs,sl	s	0.17
Elmwood	0-15	60	mod. well	slow	sl,fsl	fs,sicl	0.32
Hermon	3-35	60	somewhat excessive	rapid	sl	l,s	0.17
Lyman	3-35	20	somewhat excessive	mod. rapid	l	l	0.20
Marlow	3-35	60	well	mod. slow	fsl,l	fsl	0-24
Peru	3-15	60	mod. well	slow	l	fsl	0-24
Rockland	8-35	20	excessive	mod. rapid	ls,sl,fsl,sil	ls,sl,fsl,sil	--
Suffield	3-35	60	well	slow, very slow	vf,sl,sil	sicl	0-49
Waumlsek	3-15	60	mod. well	mod. rapid	sl	ls	0.17

Texture Symbols: f = fine, s = sand or sandy, l = loam or loamy, si = silt or silty, c = clay, co = coarse, v = very

This analysis was based upon slope, drainage, permeability, depth to bedrock, surface texture and K value (a measure of erodibility with values ranging from 0 [nonerodible] to 1.0 [extremely erodible]). A list of soil associations that occur, at least in part, on slopes of 8 % or greater is found in Table 6.2. It was assumed that the erosion potential is much reduced on soils of 10 % slope or less.

Patterson defined the four susceptibility classes as:

Class I - associations occurring on slopes of less than 15 % but with low K values, coarse texture, good permeability and drainage and greater than 60 inches (150 centimeters) of soils above bedrock. Least susceptible to fire damage.

Class II - associations occurring on slopes of less than 15 % but with some series that are either shallow to bedrock (less than 20 inches [50 centimeters]) or finer textured with higher K values. Susceptible to fire damage.

Class III - associations on slopes less than 15 % but with soils that show good drainage and that are generally between 20 (50 centimeters) and 60 inches (150 centimeters) deep. Erodibility is generally low. More susceptible to fire damage.

Class IV - soils on slopes greater than 15 % with high K values or with less than 20 inches (50 centimeters) to bedrock. These soils often consist of little more than organic litter and moss. Fire may consume the soil and leave exposed rock that revegetates very slowly. Highly susceptible to fire damage.

Table 6.3 provides a summary of soil series descriptions for the listed associations. Patterson subjectively rated the data in this table for the potential of fire damage to these soils. The classes are a function of both the degree to which post-fire erosion would occur and the rapidity with which revegetation would take place.

- 4) **Water Resources:** Fire influences water regimes both at the burn site and downstream. Fire reduces interception and infiltration and increases soil moisture storage, snow accumulation, overland flow and surface and mass erosion at the burn site. Erosion effects depend on the relative susceptibility of the soils as previously discussed and the characteristics of rainfall and snowmelt. Soil water regimes may stabilize within a few years in areas of low risk soils, but the exposed rocky slopes (higher risk soils) in many sections of the park are sites where the effects of fire on both soil and water regimes would be evident for many years.

Downstream effects are directly related to the on-site effects. The greater the on-site effect, the greater the expected downstream effect. These effects include channel scouring and increased sediment transport, which in turn increases turbidity and nutrient loading. Ponds and lakes may experience a temporary increase in turbidity and aquatic productivity due to the transport of sediment and nutrients released by a fire. The length of this temporary increase would be determined by the length of time it takes for the burn site to regenerate.

- 5) **Wildlife:** Fire effects on the wildlife found in the park are not well understood or documented. Descriptions of long and short-term ecosystem responses to burning are almost completely lacking, particularly for the northeastern United States.

Data collected elsewhere in the United States suggest that few animal species are directly affected by fire due to their mobility. Most animal species can escape a

fire by flying, running, swimming or hiding in sufficiently insulated areas. Many populations of wildlife do not change in density or abundance following fire. Bendell (1974) notes that 80% of animal and bird populations remained about the same following fires. Birds in particular and large mammals show little change in abundance after fire, although some species may be either favorably or detrimentally affected by habitat changes resulting from fire. An exception to this would be during nesting and fledging periods when species mobility, especially for the young, is restricted. Increased mortality can probably be expected during these periods.

Fire may or may not have little long-term effect on most bird and mammal species that occur in the park. Short-term adjustments in abundances and distributions can be expected to occur. Alteration in vegetative species composition, and thus the wildlife habitat, would be the greatest long-term fire effect on wildlife populations. Species most likely to be effected include: white-tailed deer (*Odocoileus virginianus*), beaver (*Castor canadensis*), otter (*Lutra canadensis*), varying (snowshoe) hare (*Lepus americanus*), red squirrel (*Tamiasciurus hudsonicus*), ruffed grouse (*Bonasa umbellus*), spruce grouse (*Canachites canadensis*) and cavity-nesting birds. White-tailed deer, beaver, otter, varying hare, ruffed grouse, and cavity-nesters would be expected to increase due to an increase in browse, edge-effect, and an abundance of snags following a fire. Red squirrel and spruce grouse, which prefer mature conifer forests, may decline depending on the extent and intensity of the burn.

Bald eagles (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*) periodically nest in the few remaining large white pines found in various sections of the park. Because periodic fires favor white pine establishment (Patterson 1993), the absence of fire and the trend toward replacement by spruce may affect future nesting populations of these species.

An extensive discussion of fire effects can be found in *Fire Regimes of the Coastal Maine Forests of Acadia National Park* by Patterson et al. (1983).

6.2.4: Fire Weather Cycle

The cool, moist maritime climate at all three units tends to create meteorological conditions that reduce the potential for fire ignitions. The winds can be highly variable and differs by season. In the winter, winds tend to blow from the northwest. These winds bring in cold Arctic air masses that combine with storms moving up the coastline from the southwest to create heavy precipitation. This precipitation, either in the form of ice, snow or rain, greatly reduces fire danger during the winter months. In summer, the prevailing winds are out of the south and southwest. These southerly winds blow over the cooler surface waters of the Gulf of Maine, which increases the moisture content of the air and lowers the ambient temperature to near the dew point. The result is higher relative humidity, fog and some precipitation.

Except during periods of severe drought, these moisture laden winds tend to maintain fire danger at low to moderate levels during the drier summer months. In the spring and fall, there is less temperature difference between the land and sea and generally lower humidities and less fog. Dry cold fronts with strong winds aloft, coming out of the northwest and off of the continental land mass bring cold, dry air and, most important for fire management concerns, strong, shifting winds during and for a period of time after the passage of the front.

This type of weather front probably occurred in fall of 1879 when the last major fire on Isle au Haut burned over most of Mt. Champlain. The passage of a dry cold front during the 1947 Bar Harbor Fire produced hurricane-force winds that produced major fire runs involving stand replacing, independent crown fires over large areas of eastern Mount Desert Island.

The park receives a fairly even amount of precipitation during the year. The winter months tend to be the wettest and the summer months are the driest, but there are no periods of extreme dryness or wetness. Though this precipitation is fairly well spaced on the average, short periods of intense drought do occur. These period of little precipitation can last three to four weeks or more. During the six week period of September and October, 1947, preceding the 1947 Bar Harbor Fire, the park received approximately 0.25 inches of precipitation. During these periods of time, the probability of fire occurrence and the likelihood of larger fires increases dramatically. Periods of drought can occur during anytime of the year and are usually ended by significant precipitation events.

Both the park's climate and fire weather were analyzed by Patterson et al. in *Fire Regimes of the Coastal Maine Forests of Acadia National Park*. Climate and weather extremes are also discussed in Section 3.2.4. of this plan.

6.2.5: Fire Season

The park's fire season runs from April 1 to October 31. It is during this period that the fire weather conditions, risk and other burning conditions are normally high enough to permit ignition, spread and damage from wildfire. The fire season is based upon a combination of analyses by Patterson et al. (1983a), the Maine Forest Service and FIREPRO.

In his analysis of weather and fire occurrence, Patterson et al. (1983a), concluded that the park's fire season should run from April 1 through early September (Labor Day). This is based upon an analysis of 33 years of fire records and 40 years of weather data. It is also predicated on an outdated visitor use pattern. In 1983 and before, the vast majority of park visitors came during the period from the middle of June through Labor Day. In the past ten years, this pattern has changed significantly. Increasing numbers of visitors are arriving during the park's "shoulder" seasons of May, September and October.

The Maine Forest Service has determined that the region's fire season runs from the third week in March through the second week in November. This is based upon fire records for a larger geographic area than the park and dating back to 1900.

FIREPRO analysis indicates a fire season of July 25 through October 31. This analysis is based upon fire occurrence within the park over the past ten years.

Since both the Patterson study and the Maine Forest Service analyses cover a much greater period of time than the FIREPRO analysis, is felt that a fire season longer than that indicated by FIREPRO is warranted to accurately reflect the periods of potential wildfire occurrence within the units of the park. FIREPRO funding for park fire operations will continue to be based upon the fire season indicated by the FIREPRO analysis unless overridden by the Branch of Fire and Aviation Management.

6.3: MOUNT DESERT ISLAND FIRE MANAGEMENT UNIT

The Mount Desert Island FMU is the largest unit of the park, with approximately 29,600 acres (11,840 hectares) of land. This unit occupies approximately 43% of the land mass of Mount Desert Island. The first sections of the unit were added to the park in 1916.

It is the most populated unit of the park, with approximately 12,000 year round residents and an additional 35,000 seasonal residents. The unit received 84.05% (2.214 million visits) of the total park visitation for 1992.

6.3.1: Fuels

Though the size of Mount Desert Island allows for a wide diversity of fuels, in both type and age, some generalities will be made in discussing fuels. These discussions will focus on the size class for each fuel type that predominates within the unit. Fuels found on the rest of Mount Desert Island tend to mirror that found within the unit. The one exception is grasslands, which make up a slightly larger component of the fuels outside the unit.

The fuel types found in the Mount Desert Island Fire Management unit are summarized from park vegetation maps (1979) in Table 6.4 and illustrated in Figure 6.2.

TABLE 6.4: Distribution of Fuels in the Mount Desert Island Fire Management Unit

<u>FUEL TYPE</u>	<u>ACRES</u>	<u>HECTARES</u>	<u>% OF TOTAL UNIT AREA</u>
Spruce	11,909	4,764	39.8
Hardwoods	16,854	6,742	56.4
Jack & Pitch Pine	300	120	1.0
Grass	20	255	0.1
Other Not Identified	<u>814</u>	<u>326</u>	<u>2.7</u>
TOTALS:	29,897	12,207	100.0

The average dead and downed woody fuel loadings for these fuels, as inventoried by Patterson et al. (1983a) in 1980 can be found in Table 6.5.

- 1) Spruce and Associated Conifers: Even-aged red spruce (*Picea rubens*) stands, ranging from 120 to 180 years old make up about 40% of the current vegetation in the unit. This age distribution is probably the result of 19th century logging, which occurred extensively throughout the island, the fires that burned over portions of the island and then the removal of those lands from timber production as residential land use increased. Balsam fir (*Abies balsamea*), white spruce (*Picea glauca*) and northern white cedar (*Thuja occidentalis*) are also present, either in

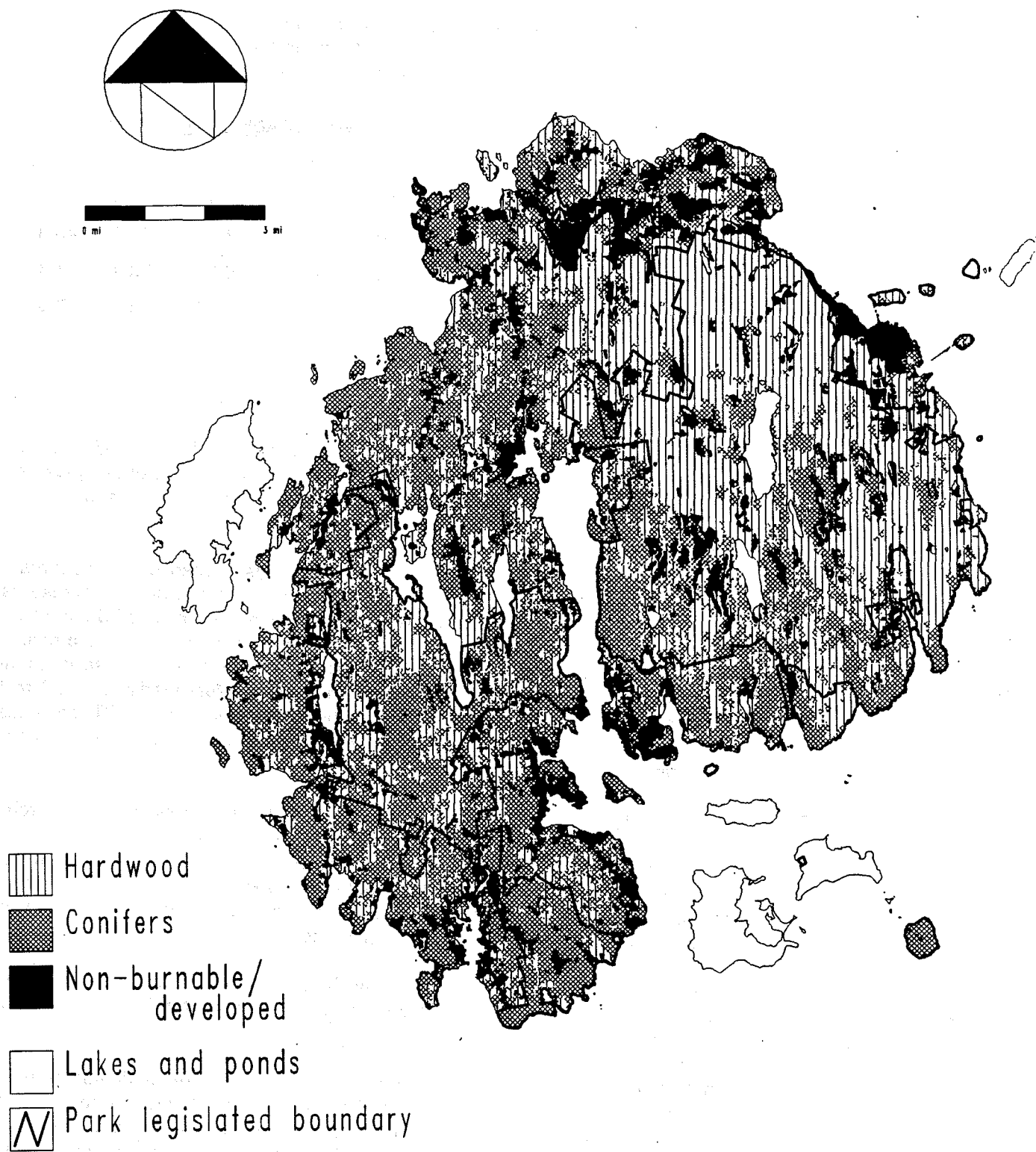


FIGURE 6.2: Fuels Map for the Mount Desert Island FMU

TABLE 6.5: Average Dead and Downed Woody Fuels of the
Mount Desert Fire Management Unit
Patterson et al. (1983a)

FUEL TYPE (NFDRS MODEL)	FUEL LOADINGS (Tons/Acre)				
	<1/4"	1/4"-1"	1"-3"	>3"	Total
Spruce (H)	1.22	1.07	1.46	5.40	9.15
Spruce Blowdown (G)	0.30	2.88	3.87	42.42	49.47
Jack & Pitch Pine (Q)	0.40	0.52	0.55	5.84	7.31
Hardwoods (E/R)	0.82	1.74	1.47	3.04	7.07

small, individual stands or mixed in with the red spruce. Larch (*Larix laricina*) and black spruce (*Picea mariana*) can be found in wetland area. Most of these stands are classified NFDRS Model H & FBS Model 8. NFDRS Model H is currently used to project fire danger for the unit.

There are also several areas of higher fuel loadings caused by blowdowns. The number and size of these areas can be expected to continue to increase as the spruce stands age. After blowdown of the spruce, the mass of downed woody fuels remain for a long period of time due to slow decomposition. As a result, fuel loadings and the associated fire hazard can be expected to increase dramatically in the next few decades. Dead and downed woody fuel loadings of 60 to 80 + tons/acre can be expected at some locations in future years. These areas are classified as NFDRS Models G, K or J and FBS Models 10, 11 or 12 depending on their fuel composition and fuel loadings.

- 2) Jack Pine/Pitch Pine/Huckleberry: Jack pine (*Pinus banksiana*) and pitch pine (*Pinus rigida*) comprise approximately 1% of the current vegetation in the unit. These stands tend to be characterized by open overstories and low dead and downed woody fuel loadings. The vegetation is extremely flammable though, due to huckleberry (*Gaylussacia baccata*) shrubs in the understory, the volatile live pine needles and a thick ground cover of pine needles.

There are several stands of jack pine in the unit. Many of these stands are 70 + years old. Some stands, such as the Cadillac Mountain stand, have been found to be expanding in area (Conkey et al. 1991).

Pitch pine reaches the northern limit of it's range in the park and is therefore important as an ecological indicator of environmental change. Pitch pine stands such as the one found along Ocean Drive, near Sand Beach, were rejuvenated as a result of the 1947 Bar Harbor Fire. The existing pitch pine stand at that time was replaced with a new stand after the fire. Regeneration of pitch pine in that stand is sporadic (Patterson et al. 1983a).

The jack pine/pitch pine/huckleberry habitat appears to be fire-dependent. In the absence of fire or other type of disturbance, these stands may be eventually replaced by spruce.

- 3) Pioneer and Northern Hardwoods: Pioneer and northern hardwood species, including quaking aspen (*Populus tremuloides*), bigtooth aspen (*Populus grandidentata*), white birch (*Betula papyrifera*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), yellow birch (*Betula alleghaniensis*), American beech (*Fagus grandifolia*) and northern red oak (*Quercus rubra*), occupy about 56% of the unit. Dead and downed woody fuel loads in these stands tend to be low.

Northern hardwood stands which do not require disturbance for establishment generally occur on deeper, moister soils and at lower elevations. These stands do not carry fires at high fireline intensities. For this reason, northern hardwood stands can, in many cases, provide effective fuel breaks for fires burning in much more flammable conifer stands and grasslands.

Large stands of aspen and birch dominate the eastern side of the Island. These stands were established as a direct result of the 1947 Bar Harbor Fire. Conifer regeneration, especially red spruce dominates the understory in most of these stands. These aspen and birch stands are approximately 45 years old and can be expected to decline in the next 10 to 20 years as the areas burned in the 1947 fire revert to the spruce and other coniferous species that were present prior to that fire.

- 4) Grasslands: Abandoned fields and meadows make up about 0.1% of the unit's vegetation. Although fuel loadings are low, grasslands may be easily ignited when cured. These cured grasses, especially the long grasses, can support high rates of spread, substantial flamelengths and high fireline intensities.

6.3.2: Fire History

Several methods have been used to determine when fires occurred and the causes of those fires in both the pre-settlement and post-settlement periods (before and after approximately 1760 AD) in the Mount Desert FMU. Modern fire records, historical accounts, and dendrochronological studies were used to determine when and where fires occurred during the past two centuries (Patterson et al. 1983a). For earlier times, charcoal and pollen fragments taken from lake bottom sediments (Lake Wood and the Bowl) were used to reconstruct vegetation and fire patterns to approximately 9,000 years BP (Patterson and Backman 1988, Patterson and Sassaman 1988, Patterson 1991). Based on this research, the fire history of the Mount Desert FMU can be divided into two periods: (1) the pre-settlement period (9000 BP to 1760 AD); and (2) the post-settlement period (1760 AD to present).

- 1) Pre-settlement Period: Pollen analysis suggests that the species composition of the pre-settlement forest changed over time. Prior to 2,000 years BP, eastern hemlock (*Tsuga canadensis*) and northern hardwoods predominated in the areas around the Bowl and Lake Wood. Around 2,000 years BP, hemlock and sugar maple (*Acer saccharum*) virtually disappeared from the forest. Red spruce (*Picea rubens*) became dominate as it and northern white cedar (*Thuja occidentalis*) replaced the hemlock and sugar maple. An increase in grey birch (*Betula populifolia*) and paper birch (*Betula papyrifera*) also occurred at this time.

Charcoal analysis indicates very little fire activity in the area surrounding Lake Wood during pre-settlement time. The area around The Bowl shows an increase in the fire frequency rate after 2,000 years BP to one major fire every 200 to 500 years. This rate increases to one major fire every 100 to 250 years after European settlement. The samples collected for the analysis are lacking the large charcoal peaks indicative of a major catastrophic fire such as the 1947 Bar Harbor Fire. (Patterson 1993).

Natural fire ignitions (lightning) are, and most likely were in the past, of little importance in the unit, accounting for less than 2% of all fires in the park between 1936 and 1991 (Patterson 1993). This lack of lightning fires is attributed to the humid conditions common during the summer months, the affects of the ocean on thunderhead development, the infrequency of dry lightning storms and the heavy rains that usually occur during thunderstorms.

Native Americans inhabited parts of the unit during this early period. Pollen studies of the Bowl indicate that periodic fires may have maintained birch as a greater component of the forest than today (Patterson et al. 1983a). These fires may have been started by Native Americans in order to perpetuate birch for their use, but this conclusion is purely speculative (Patterson 1991). Assuming that weather patterns during this period were similar to those of today, most fire ignitions, whether accidental or intentional, can be attributed to Native Americans.

Whether these periodic fires, or a combination of periodic fires and greater natural age diversity of the stands prevented major, high intensity fires, remains unknown. Evidence suggests that major fires, associated with major changes in vegetation composition, occurred around 5,000 years BP, 3,000 years BP and 2,000 to 500 years BP (Patterson 1993). It is possible that large catastrophic fires occurred in early times, but prior to the period for which research data is available.

Additional lake bottom sediment cores spanning several thousand years should be collected and analyzed. This information would be very helpful in confirming the pre-settlement fire history and developing strategies for coping with current and future fuel conditions.

2)

Post-settlement Period: In 1604, Samuel Champlain explored the Maine coast and gave Mount Desert Island it's name. Champlain wrote in his journal that "The mountain summits are all bare and rocky...I name it Isles des Monts Desert." French Jesuits established the first French mission in America on Fernald Point, near the entrance to Somes Sound. Shortly thereafter, a British force destroyed the mission and for the next 150 years, the entire region became a contested "no-man's-land". After the defeat of the French at Quebec in 1759, settlers began to move onto the island. Early occupations were farming, fishing, lumbering, quarrying and shipbuilding.

In the mid 1800's, artists and journalists began to publicize the scenic beauty of the island. Hotels were built to accommodate the increasing number of visitors and large tracts of land were purchased by wealthy families and individuals for summer estates. By 1900, large scale logging on the island was in decline as the tourist and summer resident industry grew. This preservation of the forest, in combination with past land use practices, allowed for the growth of the even-aged spruce stands that dominate large parts of the unit, especially on the western side of the island.

TABLE 6.6: Summary of Major Fires on Mount Desert Island
Patterson et al. (1983a)

Year	Description of Fire
1848	Fire started by small boy swept over hundreds of acres on northeastern Mount Desert Island
1864	Fire which may have started in lumber camp on south shore of Jordan Pond and swept up south slopes of Pemetic and Penobscot Mountains burning vegetation and soil.
1889	Large fire burned on Cadillac Mountain; perhaps the worst fire of the period.
1889	Fire spread from the eastern shore of Jordan Pond to the top of Pemetic Mountain.
1896	Six hundred acres (240 hectares) burned for three days west of Otter Creek.
1896 or 1898	Vegetation suggests extensive fire on north ridge of Cadillac Mountain.
1901	Fire burned from Aunt Betty's Pond to North Bubble Mountain, burning about 1,000 acres (400 hectares).
1930	Fire burned several days in small growth in Aunt Betty's Pond - Sargent Mountain area.
1947	The Bar Harbor Fire of 1947. Over 17,000 acres (6,800 hectares) were burned.

Though historical documentation is incomplete, contemporary accounts of the time indicate that large fires (500+ acres) burned during this period. These were, for the most part, probably the result of land clearing practices, blueberry production enhancements and logging operations and the heavy fuel loadings that were typically associated with logging operations of the day. Table 6.6 is excerpted from *Fire Regimes of the Coastal Maine Forests of Acadia National Park* by Patterson et al. (1983).

An analysis of NPS fire records for all units of the park for 36 years during the period 1937 to 1992 (records for the years 1956 to 1974 are incomplete or missing) indicates that the unit averages 5.2 fires per year with an average of 6.1 acres (2.4 hectares) burned per year. Most of the acreage burned occurred during the period of 1937 to 1942. The reason for this is unknown. Weather records and fire reports do not indicate any direct relationship. If these years are excluded, the averages drop to 3.8 fires per year with an average of 3.1 acres (1.2 hectares) burned per year. This analysis excludes the 10,000 acres (4,000 hectares) of NPS owned lands burned in the 1947 Bar Harbor Fire. A review of ignition sources show that the majority of fires are caused by smoking (see Table 6.7).

**TABLE 6.7: Ignition Sources of Fires in Acadia National Park
(1937 to 1955, 1975 to 1992)**

Patterson et al. (1983a) and unpublished data

<u>IGNITION SOURCE</u>	<u>% OF TOTAL IGNITIONS</u>
Smoking	58
Incendiary/Arson	20
Campfires	9
Debris Burning	4
Lightning	2
Other	<u>7</u>
Total	100

TABLE 6.8: Fire Occurrence By Month For Acadia National Park; 1937 to 1992*

Patterson et al. (1983a) and unpublished data

<u>MONTH</u>	<u># OF FIRES</u>	<u>% OF TOTAL FIRES</u>
January	1	0.4
February	1	0.4
March	5	2.1
April	27	11.1
May	30	12.4
June	32	13.2
July	52	21.5
August	73	30.2
September	10	4.1
October	7	2.9
November	4	1.7
December	<u>0</u>	<u>0.0</u>
Total:	242	100.0

*Fire records are missing for the years 1956 to 1960 and 1969 to 1974.

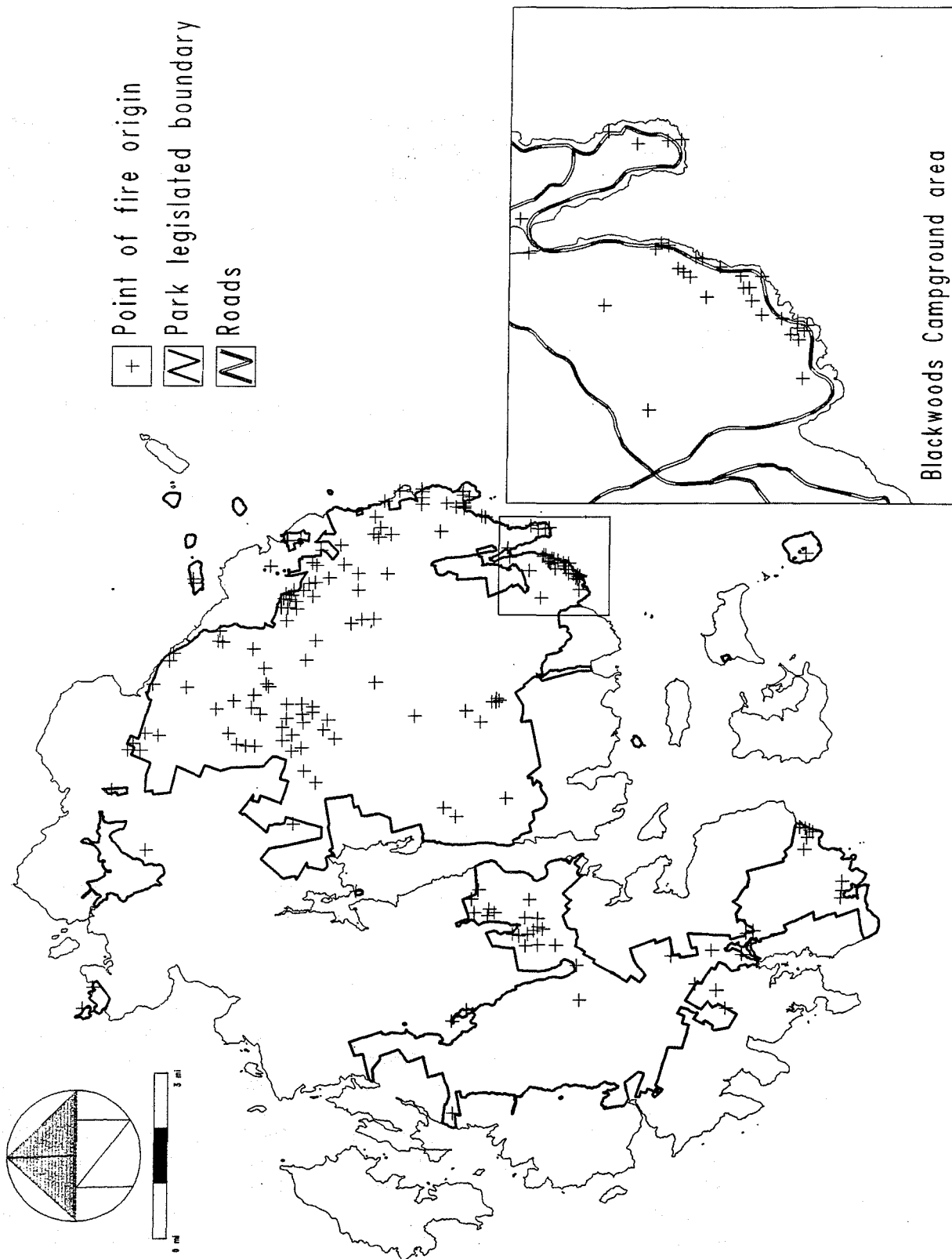


**FIGURE 6.3: Fire Occurrence Map for the Mount Desert Island FMU
1937 to 1993**
(Displaying only those fires that have a documented location)

Since human ignitions are the main source of all fire ignitions, the number of fires may increase with increasing visitation. An analysis of the fire records for all units of the park shows that 30.2% of all park fires occurred in August and 21.5% occurred in July. See Table 6.8 for a complete listing of fire occurrence by month. A map of the unit's historic fire occurrence locations (during NPS ownership) can be found in Figure 6.3.

The majority of park fires are very small in size. Only one fire has exceeded a class C (up to 100 acres) size. See Table 6.9 for a breakdown of fires for all units of the park by fire class size.

TABLE 6.9: Fire Class Size For Acadia National Park; 1937 to 1992*
Patterson et al. (1983a) and unpublished data

<u>FIRE CLASS SIZE</u>	<u># OF FIRES</u>	<u>% OF TOTAL FIRES</u>
A (up to 1/4 acre)	137	66.8
B (1/4 to 10 acres)	63	30.7
C (10 to 100 acres)	4	2.0
D (100 to 300 acres)	0	0.0
E (300 to 1,000 acres)	0	0.0
F (1,000 to 5,000 acres)	0	0.0
G (5,000 acres or more)	<u>1</u>	<u>0.5</u>
Totals:	205	100.0

* Fire records are missing for the years 1956 to 1960 and 1969 to 1974.
Acreage figures for an additional 51 fire records are missing.

The 1947 Bar Harbor Fire is the only class G (5,000 acres or more) size fire that has occurred in the park during National Park Service ownership. In September of 1947, the unit received 60.0% of it's normal rainfall and most of this fell in the first half of the month. In October, only 0.08 inches of rain fell or 1.8% of normal. October, 1947 is the driest month on record for the State of Maine. This short but intense period of drought, combined with the time of year (after leaf fall) and high winds led to the largest fire known to have burned in the unit in post-settlement time. It was one of several fires that burned throughout coastal Maine during the month of October and made 1947 known as "the year that Maine burned".

The fire began on private lands adjacent to the unit on October 17, 1947 (see Figure 6.4). In the first three days, the fire burned approximately 169 acres (68 hectares). On October 21st, strong winds moved the fire beyond control lines and burned an additional 2,000 acres (800 hectares) and another 2,300 acres (920 hectares) on October 22nd. The passage of a dry cold front on October 23rd was accompanied by winds in excess of 60 mph.

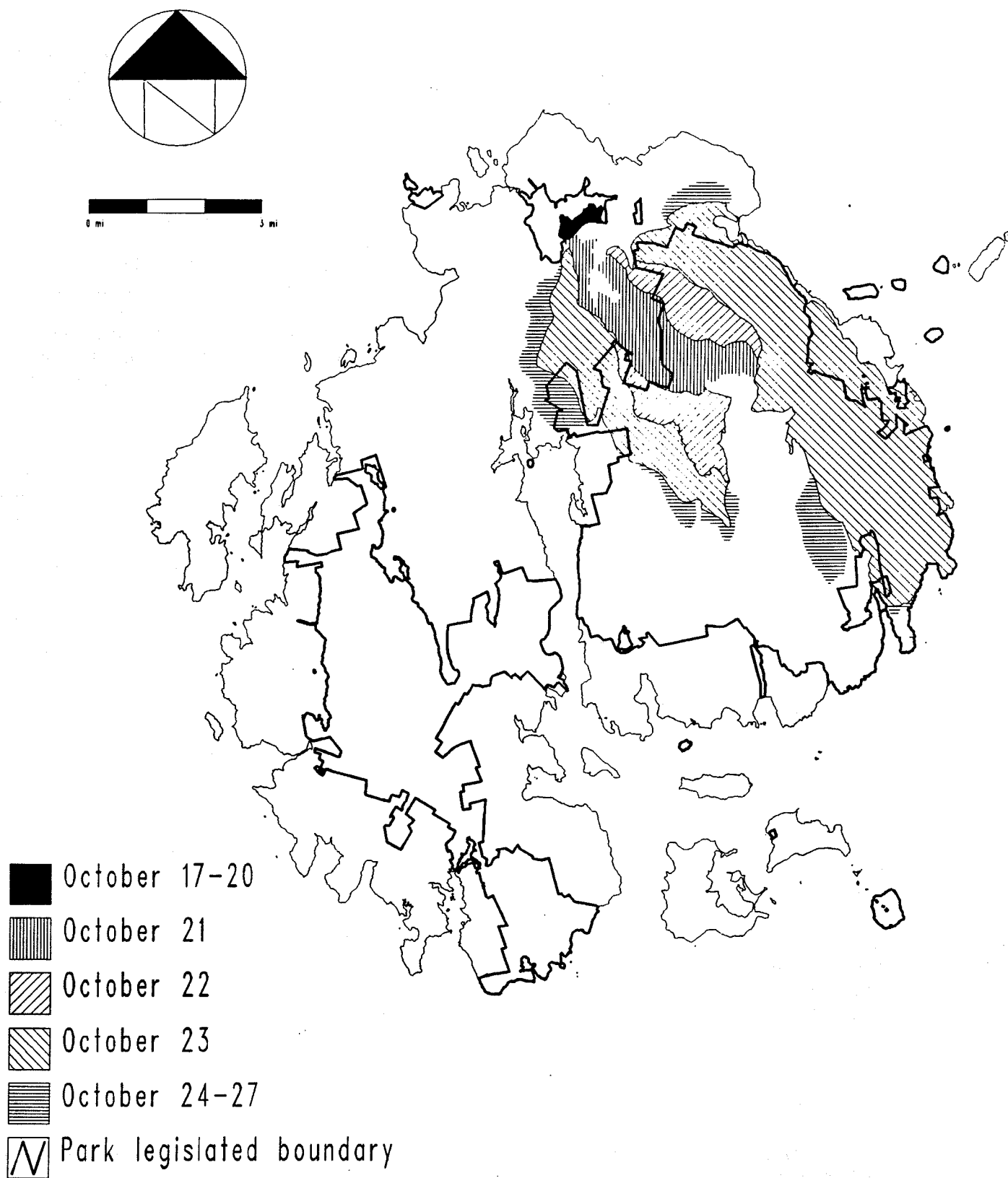


FIGURE 6.4: 1947 Bar Harbor Fire Map

In less than 5 hours, the fire travelled 6 miles, burned over 11,500 acres (4,600 hectares) of mostly mature spruce forest, destroyed 67 summer estates of the wealthy, 170 permanent homes and 5 large hotels. Three people lost their lives in the fire. The fire was finally declared under control on October 27th, after it had reached the ocean, and was declared out on November 14th.

The 1947 Bar Harbor Fire burned approximately 17,188 total acres (6,875 hectares) of land, over 10,000 acres (4,000 hectares) of that land was in NPS ownership. The fire also caused 23 million dollars (in 1947 dollars) in property damage. The fire altered the unit's landscape by removing the dominant spruce forest and provided the disturbance necessary to establish today's birch and aspen forest. It consumed much of the thin soils that clung to the mountain slopes and exposed large areas of bare rockface. The fire also helped to move the local economy away from catering to the wealthy summer residents since the majority of mansions were not rebuilt. That economy was replaced with one that was more tourist oriented. The timing of this event coincided with a national trend towards increased tourism in the post-World War II period.

The fire's impact on local fire suppression operations was significant. The fire led to the establishment of several local community fire departments in Hancock County and to the creation of the Hancock County Firefighters' Association, the county's mutual fire aid organization. It also led to the acquisition of additional firefighting equipment in many local fire departments and better communications and increased cooperation between those departments. The fire also led to increased awareness of the threat of wildfire among the island's residents that is still evident today.

6.4: ISLE AU HAUT FIRE MANAGEMENT UNIT

The Isle au Haut FMU is located on the island of Isle au Haut and comprises approximately 57% of the 6,000 acre (2,400 hectare) island. The island's topography is comprised of one north-south running ridgeline that slopes down in all directions to the ocean.

The first sections of this unit were added to the park in 1943. The Isle au Haut unit received 0.22% (5,841 visits) of the total park visitation for 1992. This low number of visits is due to the unit's remoteness and restrictions on day use and overnight camping.

In discussing current and future fire management operations of the unit, it is important to consider the fire history and fuel distribution of the entire island. The island's geography and the unit's geographic relationship to the rest of island make it important not to separate the unit from the rest of the island when considering fuels, potential fire behavior and initial attack response. Due to the island's small size, remoteness and small initial attack forces, a fire of any significance anywhere on the island is a threat to the unit and would receive an immediate response from the park.

6.4.1: Fuels

The fuel types found in the Isle au Haut FMU are summarized from park vegetation maps (1979) in Table 6.10 and illustrated in Figure 6.5.

The average dead and downed woody fuel loadings for these fuels, as inventoried by Patterson et al. (1983a) in 1980 can be found in Table 6.11.

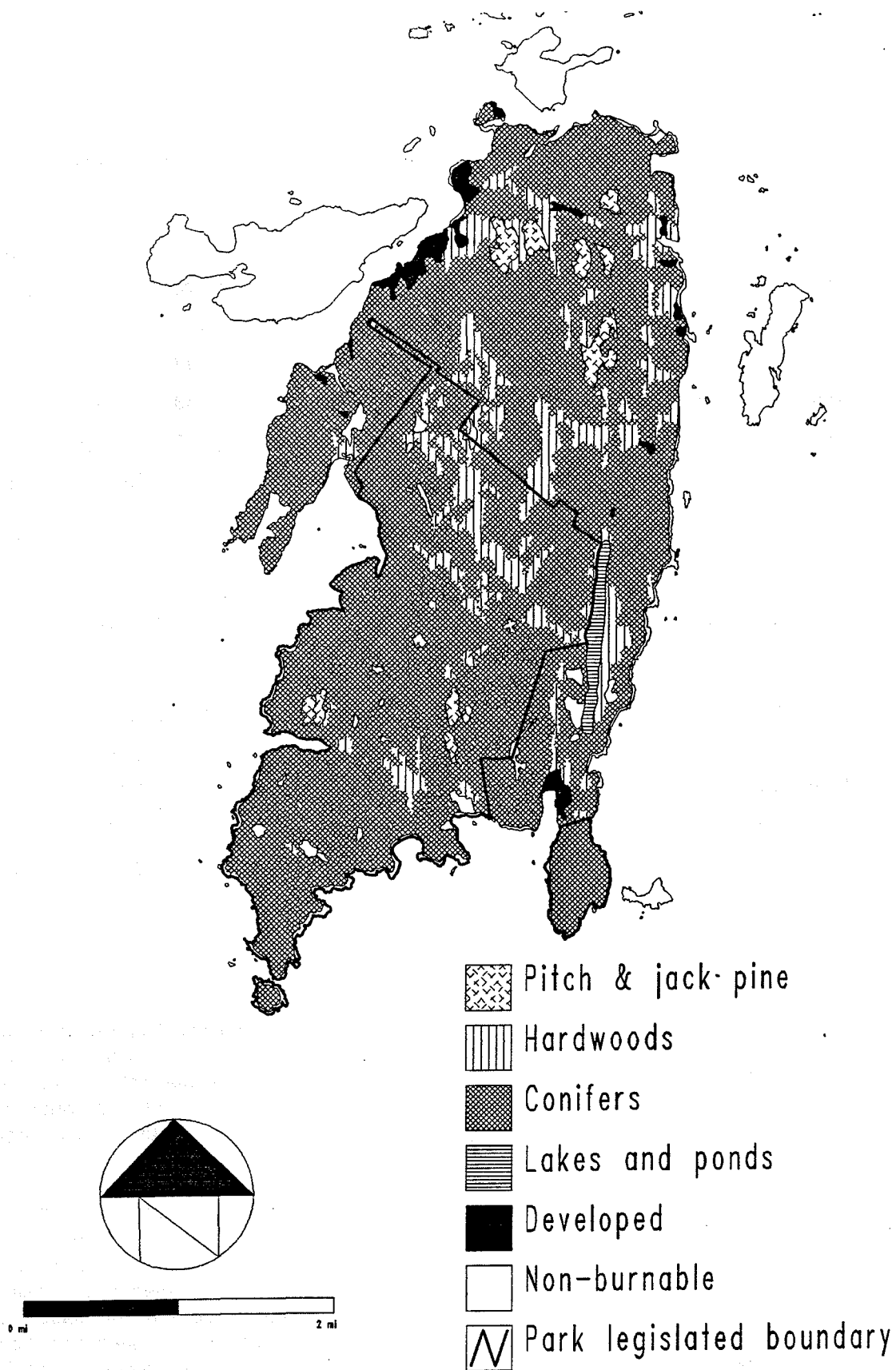


FIGURE 6.5: Fuels Map for the Isle au Haut FMU

TABLE 6.10: Distribution of Fuels in the Isle au Haut Fire Management Unit
(Park & Non-Park Lands)

COVER TYPE	PARK		NON-PARK		TOTALS		% OF TOTAL
	Acres	Hectares	Acres	Hectares	Acres	Hectares	
Spruce	2,523	1,009	2,158	863	4,681	1,872	79.7
Hardwoods	289	116	457	183	746	299	12.7
Jack & Pitch Pine	40	16	107	43	147	59	2.5
Grass	<u>44</u>	<u>18</u>	<u>255</u>	<u>102</u>	<u>299</u>	<u>120</u>	<u>5.1</u>
Totals:	2,896	1,158	2,977	1,191	5,873	2,349	100.0

TABLE 6.11: Average Dead and Downed Woody Fuels of the Isle au Haut Fire Management Unit
Patterson et al. (1983a)

FUEL TYPE (NFDRS MODEL)	FUEL LOADINGS (Tons/Acre)				
	<1/4"	1/4"-1"	1"-3"	>3"	Total
Spruce (H)	1.53	1.23	1.67	7.69	12.12
Spruce Blowdown (G)	4.77	4.21	5.51	13.30	27.79
Pitch Pine (Q)	0.35	0.59	0.06	0.09	1.09

- 1) **Spruce and Associated Conifers:** Even-aged red spruce (*Picea rubens*), between 110 and 120 years old, makes up about 78% of the current vegetation on Isle au Haut. Balsam fir (*Abies balsamea*), white spruce (*Picea glauca*) and northern white cedar (*Thuja occidentalis*) are also present, either in small, individual stands or mixed in with the red spruce. NFDRS Model H is currently used to project fire danger and FBS Model 8 is used to estimate fire behavior.

The fuel loading situation on Isle au Haut is changing as the spruce forest matures. The effects of logging, sheep grazing and the 1879 fire during the 19th century have resulted in numerous even-aged stands. Many of these stands are aging and becoming more susceptible to windthrow, a common problem with these shallow rooted species, especially in coastal areas. After blowdown, the mass of downed woody fuels remains for a long period of time due to slow decomposition. As a result, fuel loadings and the associated fire hazard will increase dramatically in the next few decades. Most of the spruce stands now represented by NFDRS Model H and FBS Model 8 will progress to NFDRS Models G, K or J and FBS Models 10, 11 or 12 as fuels accumulate. Dead and downed woody fuel loadings of 60 to 80+ tons/acre can be expected at some locations in future years. This process

has already begun in isolated pockets on the island and is expected to accelerate over the next 10 to 20 years.

In normal precipitation years, the larger fuel class sizes (greater than 3 inches) may not be expected to dry out to the point where they are readily available to fire, but during periods of drought these fuels may become available and increase fire severity substantially. The finer fuels (3 inches or less) that are also associated with these blowdowns may be expected to increase the risk of fire ignition and spread even during normal precipitation years.

- 2) Pitch Pine/Huckleberry: Pitch pine (*Pinus rigida*) makes up about 2% of the current vegetation of the island. Dead and downed woody fuel loadings in these stands are generally low (1 ton/acre), but the vegetation is extremely flammable due to huckleberry (*Gaylussacia baccata*) shrubs in the understory and a thick ground cover of pine needles. The pitch pine/huckleberry habitat appears to be fire-dependent. In the absence of fire or some other disturbance mechanism, these stands may be eventually replaced by spruce or hardwoods on the better soil sites.
- 3) Northern Hardwoods: Northern hardwood species, including red maple (*Acer rubrum*), yellow birch (*Betula alleghaniensis*), and American beech (*Fagus grandifolia*) occupy about 12% of Isle au Haut. Dead and downed woody fuel loads in these stands are low. Northern hardwood stands generally occur on deeper, moister soils, at lower elevations and, with the exception of periods of severe drought, do not tend to carry fire at high fireline intensities. For this reason, northern hardwood stands can, in many cases, provide effective fuel breaks for fires burning in much more flammable conifer stands and grasslands.
- 4) Grasslands: Either active or abandoned fields and meadows, located mostly on the northern half of the island, make up about 5% of Isle au Haut's vegetation. Fuel loadings are low, but grasslands may be easily ignited when cured. These cured grasses, especially the long grasses, can support high rates of spread, substantial flamelengths and high fireline intensities.

6.4.2: Fire History

As with the Mount Desert FMU, several methods have been used to determine when fires occurred and what were the causes of those fires in both the pre-settlement and post-settlement periods (before and after approximately 1760 AD) on Isle au Haut. Modern fire records, historical accounts, and dendrochronological studies were used to determine when and where fires occurred during the past two centuries (Patterson et al. 1983a). For earlier times, charcoal and pollen fragments taken from the bottom sediments of Long Pond were used to reconstruct vegetation and fire patterns back to approximately 1400 AD (Patterson and Backman 1988, Patterson and Sassaman 1988). Based on this research, the fire history of the Isle au Haut FMU can be divided into two periods: (1) the pre-settlement period (1400 to 1760 AD); and (2) the post-settlement period (1760 AD to present).

- 1) Pre-settlement Period: Although few fires have occurred on Isle au Haut in recent years, Isle au Haut has had a long history of fire. Pollen and charcoal analysis suggests that the species composition of the pre-settlement forest was basically the same as today and that periodic fires occurred prior to the arrival of European settlers. Lacking in this data are large charcoal peaks indicative of a major catastrophic fire such as the 1947 Bar Harbor Fire. The data suggest that although the species composition of the forest was similar to today's, the age class diversity

may have been greater, and fires may have been more frequent but less intense than in post-settlement times.

Natural fire ignitions (lightning) are, and most likely were in the past, of little importance on Isle au Haut. Unlike interior sections of Maine, lightning accounts for only 2% of all fires in the park. The lack of lightning fires is attributed to the general suppression of thunderstorm activity along the coast and the often humid conditions common during the summer.

Native Americans camped on Isle au Haut during this early period. In their shell heaps and burial sites are found the remains of deer, otter, mink, muskrat and waterfowl (Manville 1964). Assuming that weather patterns during this period were similar to those of today, fire activity, whether accidental or intentional, can be attributed to these Native Americans. Whether these periodic fires, or a combination of periodic fires and greater natural age diversity of the stands prevented major, high intensity fires, remains unknown. It is possible that large catastrophic fires occurred in earlier times, but prior to the period for which research data is available.

Additional lake bottom sediment cores spanning several thousand years should be collected and analyzed. This information would be very helpful in confirming the pre-settlement fire history and developing strategies for coping with current and future fuel conditions.

- 2) Post-settlement Period: In 1604, Samuel Champlain explored the Maine coast and named Isle au Haut, which means "High Island". It was not, however, until 1792 that Peletiah Barter and his two brothers settled on the island. By 1800, Isle au Haut had around 50 residents, and by 1864, its population increased to 300. Since that time the number of permanent residents has declined to the about 50 residents, while the summer population is about 300.

Early occupations were fishing, lumbering, and sheep raising. Subsistence farming and the harvesting of fish, lobsters, blueberries, and pulpwood have been practiced on Isle au Haut for many years and continue to be important today. It is reported that as many as 400 sheep grazed, unfenced, on Isle au Haut in the 19th century and caused much damage to the low vegetation. As a result of extensive grazing, there was little underbrush, and people could walk anywhere through the open woodlands (Patterson et al. 1983a).

Summer visitors buying land in the 1880's led to a decrease in sheep grazing which allowed extensive regeneration.

In the fall of 1879, a fire believed to have been started by blueberry pickers burned over the summit of Mt. Champlain and continued burning for about six weeks until extinguished by snow and rain. This fire was severe enough to burn off all of the soil to bedrock. A smaller fire is reported to have burned in 1894 south of Duck Harbor; and in 1949, a fire burned northeast of Long Pond. All of these fires have been corroborated by fire scars, tree ring analysis, or charcoal in the duff. Concern over increasing fuels and the need for fire control prompted the construction of the County Road in 1952. One lightning caused fire was reported in 1963.

The patterns of logging and sheep grazing in the 19th century significantly altered the spatial coverage and age distribution of Isle au Haut's vegetation. The result

has been many even-aged stands of 110-120 year old red spruce that have grown to maturity in the 20th century. Many of these stands are approaching the age when they will become more susceptible to windthrow, a common problem with the shallow rooted spruce. After blowdown, the mass of downed fuel tends to accumulate because spruce decomposes at a slow rate. The cool, moist coastal climate of Isle au Haut also contributes to a slower decay rate of dead trees. The larger fuel class sizes (greater than 3 inches) may not be expected to dry out to the point where they are readily available to fire in a normal precipitation year, but during periods of drought these fuels may become available and increase fire severity substantially. The finer fuels (3" or less) that are also associated with these blowdowns may be expected to increase the risk of fire ignition and spread even during normal precipitation years. As a result, fuel loadings and the fire hazard on Isle au Haut should increase dramatically within the next few decades.

The island's post-settlement fire regime mirrors that of other areas of coastal Maine, including the Mount Desert and Schoodic Peninsula FMU's. This regime appears to coincide with the maturation cycle of the spruce forest. A few, small fires generally occur over a long period of time (100+ years), followed by an infrequent but large and intense stand replacing fire as the forest reaches old age (at about 125 years).

6.5: SCHOODIC PENINSULA FIRE MANAGEMENT UNIT

The Schoodic Peninsula FMU is located on a peninsula east of Mount Desert Island. It is bordered on the west by Frenchman's Bay, on the south by the Atlantic Ocean and on the east by Schoodic Harbor. It is made up of approximately 2,000 acres (800 hectares) of land.

The first sections of the unit were added to the park in 1934. The Schoodic Peninsula Unit received 15.73% (414,389 visits) of the total park visitation in 1992. Approximately 60% of the visits to the Schoodic Peninsula unit were non-recreation visits. The majority of these non-recreation visits are the result of vehicle traffic to and from the United States Navy installation located within the unit.

6.5.1: Fuels

The fuel types found in the Schoodic Peninsula FMU are summarized from park vegetation maps (1979) in Table 6.12 and illustrated in Figure 6.6.

TABLE 6.12: Distribution of Fuels in the Schoodic Peninsula Fire Management Unit

<u>FUEL TYPE</u>	<u>ACRES</u>	<u>HECTARES</u>	<u>% OF TOTAL UNIT AREA</u>
Spruce	1,200	480	62.6
Hardwoods	400	160	20.8
Jack Pine	300	120	15.6
Grass	<u>20</u>	<u>255</u>	<u>1.0</u>
TOTALS:	1,920	1,015	100.0

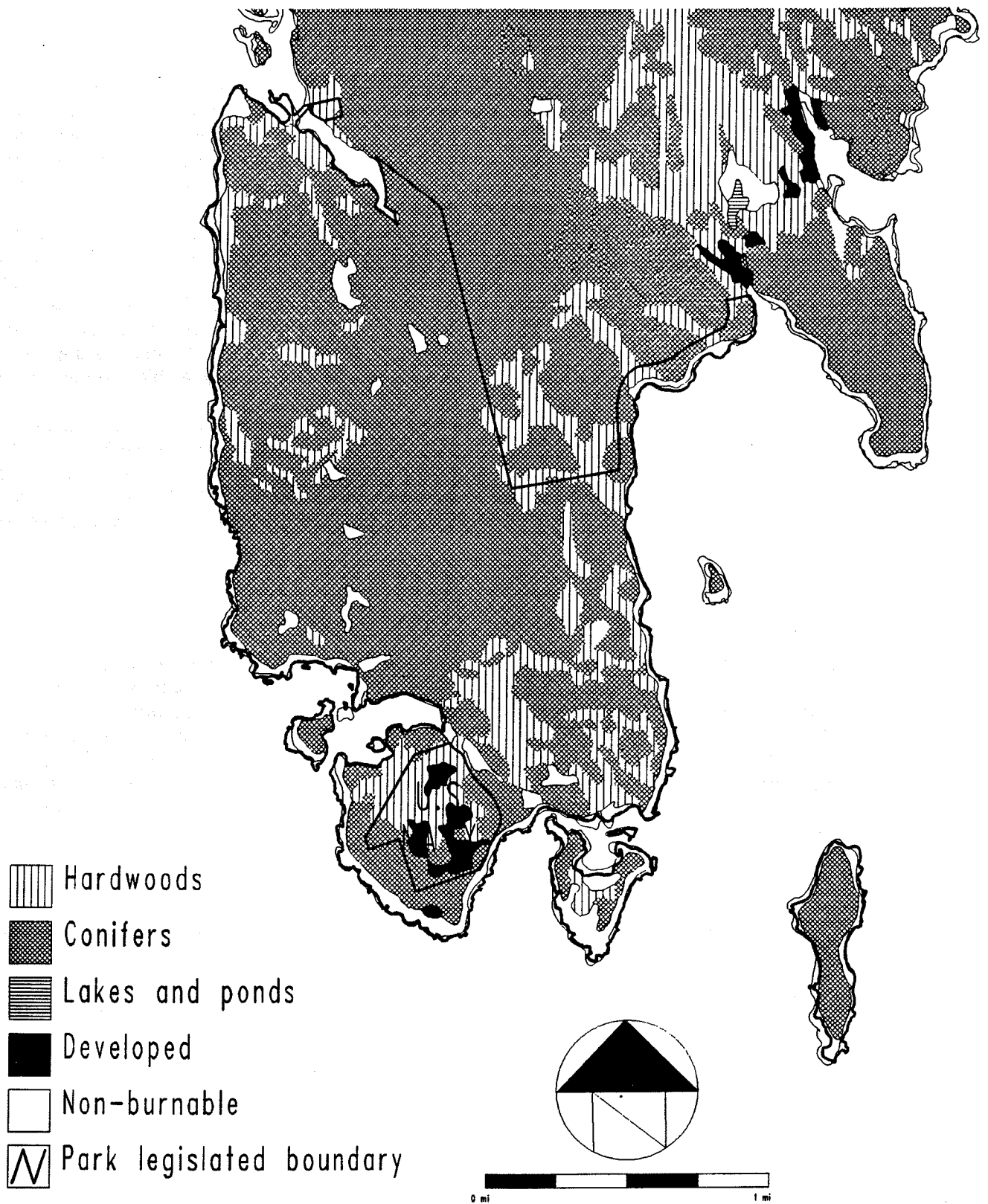


FIGURE 6.6: Fuels Map of the Schoodic Peninsula FMU

The average dead and downed woody fuel loadings for these fuels, as inventoried by Patterson et al. (1983a) in 1980 can be found in Table 6.13.

TABLE 6.13: Average Dead and Downed Woody Fuels of the Schoodic Peninsula Fire Management Unit
Patterson et al. (1983a)

FUEL TYPE (NFDRS MODEL)	FUEL LOADINGS (Tons/Acre)				
	<1/4"	1/4"-1"	1"-3"	>3"	Total
Spruce (H)	1.22	1.07	1.46	5.40	9.15
Jack & Pitch Pine (Q)	0.40	0.52	0.55	5.84	7.31

- 1) Spruce and Associated Conifers: Even-aged red spruce (*Picea rubens*), between 120 and 140 years old, makes up about 60% of the current vegetation in the Schoodic Peninsula unit. Balsam fir (*Abies balsamea*), white spruce (*Picea glauca*) and northern white cedar (*Thuja occidentalis*) are also present, either in small, individual stands or mixed in with the red spruce. NFDRS Model H is currently used to project fire danger and FBS Model 8 is used to estimate fire behavior.

As the spruce forest ages, fuel loadings can be expected to increase through windthrow and other mortality factors. The even-aged nature of these stands, most likely the result of 19th century logging and fires, will probably cause a large scale increase in fuel loadings over much of the unit in the next 10 to 20 years. These accumulations of dead and downed woody fuels should remain for a long period of time due to the slow decomposition of spruce in the coastal Maine climate.

The fire hazard associated with these fuel buildups will increase dramatically in the next few decades. Most of the spruce stands now represented by NFDRS Model H and FBS Model 8 will progress to NFDRS Model G, K or J and FBS Model 10, 11 of 12 as fuels accumulate. Dead and downed woody fuel loadings of 60-80+ tons/acre can be expected in certain areas of the unit in coming years. This has already occurred in small sections of the forest, especially where the stands are subjected to high winds.

- 2) Jack Pine: Jack pine (*Pinus banksiana*) comprises about 15% of the current vegetation of the unit. Many of these trees date to the 1860's and regeneration in the absence of disturbance such as fire is minimal (Conkey et al. 1991). These stands are comprised of widely scattered individual jack pine and occasional red spruce trees. The understory vegetation includes patches of huckleberry (*Gaylussacia baccata*) and blueberry (*Vaccinium vacillans* and *Vaccinium corymbosum*).

Dead and downed woody fuel loadings in these stands are generally low (less than 1 ton/acre), but the vegetation can be extremely flammable due to huckleberry shrubs in the understory and the presence of lichens and pine needles on the forest floor. In the absence of fire or some other disturbance mechanism, these stands will probably be replaced by spruce.

- 3) Hardwoods: Hardwood species (mainly birches and aspens) and alder (*Alnus* sp.) shrubs occupy approximately 20% of the unit. Dead and downed woody fuel loads in these stands are low. These stands are generally found on deeper, moister soils and at lower elevations. Except during periods of severe drought, these stands do not tend to carry at high fireline intensities. For this reason, these hardwood stands can, in many cases, provide effective fuel breaks for fires burning in much more flammable conifer stands.
- 4) Grasslands: Open fields and meadows comprise less than 1% of the unit's vegetation. Though fuel loadings are low, the grasses may be easily ignited when cured. These cured grasses, especially the long grasses, can support high rates of spread, substantial flamelengths and high fireline intensities. Even though grasses make up a small percentage of the unit's vegetation, their relatively high ignition potential makes them a fuel of concern.

6.5.2: Fire History

As with the Mount Desert and Isle au Haut FMU's, several methods have been used to determine when fires occurred and what were the causes of those fires in both the pre-settlement and post-settlement periods (before and after 1760 AD) in the Schoodic Peninsula FMU. Modern fire records, historical accounts, and dendrochronological studies were used to determine when and where fires occurred during the past two centuries (Patterson et al. 1983a).

Unlike the Mount Desert and Isle au Haut FMU's, no charcoal and pollen analysis of lake bottom sediments was carried out to determine the presettlement fire history. No isolated watershed fitting the necessary sampling criteria exists in the unit, but there may be small bogs that could be utilized for such an analysis. Sediment cores spanning several thousand years should be collected and analyzed from these bog bottoms. This information would be very helpful in confirming the pre-settlement fire history and developing strategies for coping with current and future fuel conditions.

For planning purposes, it will be assumed that the unit shares a similar pre-settlement fire history with the Mount Desert FMU. Both units share a similar coastal location, climate, geology, topography and most likely had similar vegetation, fuels and Native American habitation.

Based on this research, the unit's fire history can be divided into two periods: (1) the pre-settlement period (1400 - 1760 AD); and (2) the post-settlement period (1760 AD - present).

- 1) Pre-settlement Period: Since no pollen and charcoal analysis was conducted for the unit, it's pre-settlement fire history will be considered the same as the Mount Desert FMU's pre-settlement fire history. Refer to Section 6.3.2.(1) of this plan for a discussion of the unit's pre-settlement fire history.
- 2) Post-settlement Period: Samuel Champlain's exploration of the Maine coast in 1604 eventually lead to the settlement of the region by colonists. Active settlement of the region did not begin until the 1760's, after the British defeat of the French at Quebec.

These early settlers were mainly occupied with fishing, sheep raising and subsistence farming. Selective lumbering of selective white pines was probably carried out, along with forest clearing generally associated with the establishment of farms. Extensive logging of the area probably occurred during the 19th century.

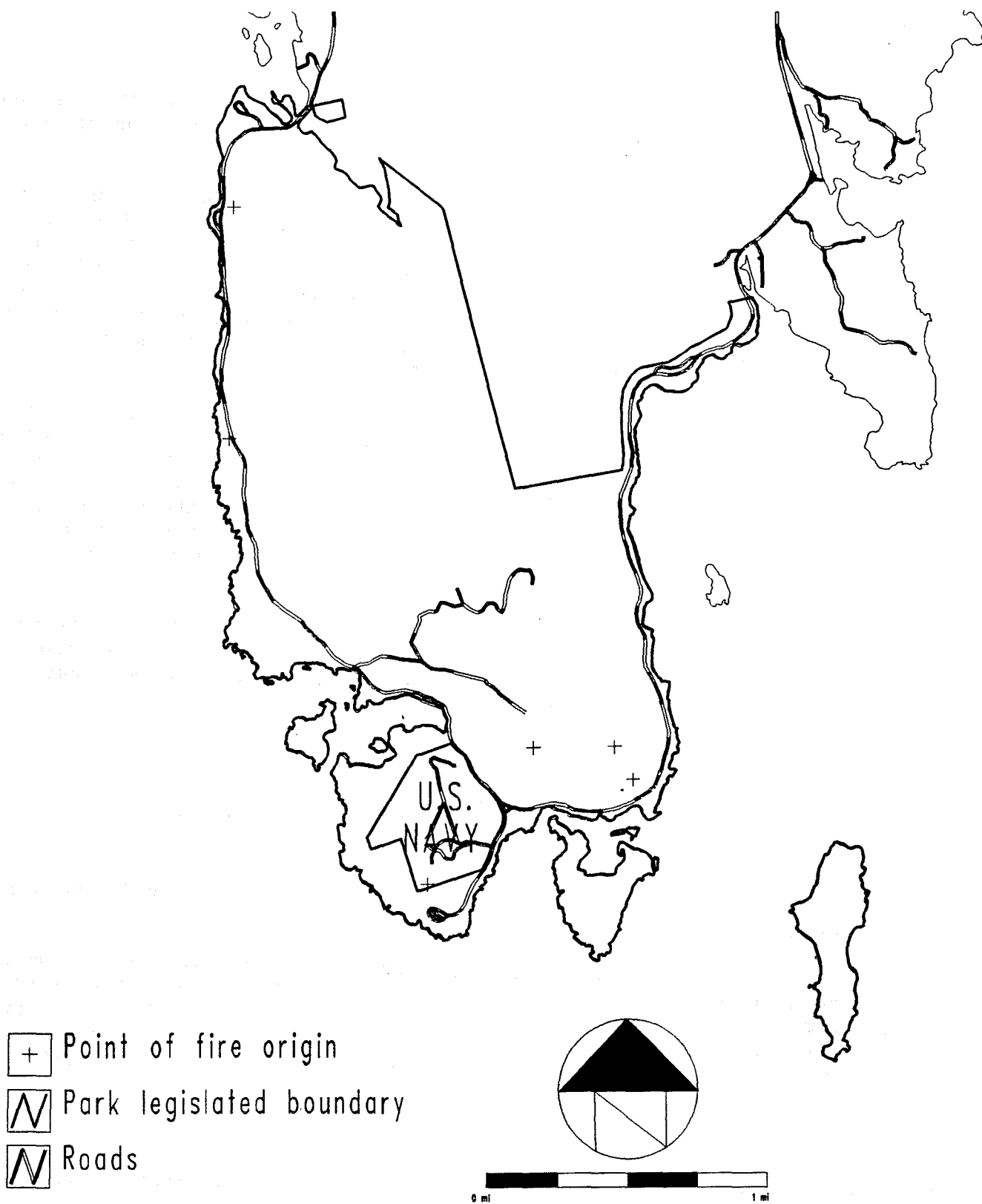


FIGURE 6.7: Fire Occurrence Map for the Schoodic Peninsula FMU
 1937 to 1993
 (Displaying only those fires that have a documented location)

This logging, along with a shift away from farming in the late 1800's to early 1900's allowed for the regeneration, first of grasses and shrubs, then of the trees that comprise the unit's forest today.

There are no accounts of fires in the unit through the 19th century, but many of the trees have fire scars and charcoal can be found below the duff layer of the soil in many areas (Patterson et al. 1983a). Park fire records since 1937 list only 6 small fires, all human caused. There are no records for the years 1956, 1958 to 1961, 1966, 1967 and 1969 to 1974, but it is not known whether this is a result of no fires or missing records. No large fires are known to have burned inside the unit since it's establishment in 1934. A map of the unit's historic fire occurrence (during NPS ownership) can be found in Figure 6.7.

The patterns of logging in the 19th century, along with the absence of fire, has significantly altered the spatial and age distribution of unit's vegetation. The result has been the decline of the jack pine and the creation of many even-aged stands of 120 to 140 year old red spruce. Many of these spruce stands are approaching the age when they will become susceptible to windthrow. Increases in blowdowns, coupled with the slow decomposition rate of spruce in coastal Maine should cause fuel loadings and the fire hazard in the Schoodic Peninsula FMU to increase dramatically within the next few decades.

The post-settlement fire regime for the unit can be expected to coincide with the maturation cycle of the spruce forest. A few small fires generally occur over a long period of time (100+ years), followed by an infrequent but large and intense fire as the forests reaches old age (at about 125 years).

SECTION 7: FIRE MANAGEMENT AND RESPONSIBILITIES

This section of the fire management plan identifies the members of the park's wildland fire management team and their roles and responsibilities.

Park employees will only engage in those wildfire and prescribed fire activities for which they are currently qualified and as specified in the National Wildfire Coordinating Group's (NWCG) *Wildland Fire Qualification Guide*, PMS 310-1, 1984, the *National Park Service Wildland Fire Qualification and Certification System* (WFQCS), 1986, and the National Park Service memorandum, dated November 29, 1989, from the Associate Director for Operations and titled *NPS Prescribed Fire Qualifications*.

7.1: PARK MANAGEMENT

Those park management positions that provide general or specific supervision and oversight of the park's fire management program are listed below.

7.1.1: Superintendent

The superintendent of Acadia National Park is responsible to the regional director, North Atlantic Region, for planning and directing all park operations, activities and programs, including fire management. Under the Code of Federal Regulations (36 CFR 1.5), the superintendent has the

authority to close areas of the park and to prohibit campfires and smoking during periods of elevated fire danger. The superintendent has delegated all fire management responsibilities to the deputy superintendent.

7.1.2: Deputy Superintendent

The deputy superintendent is responsible for the day to day supervision and management of all park operations, activities and programs, including fire management. The deputy superintendent provides general guidance and review for the park's fire management program. The deputy superintendent has delegated full authority for the fire management program to the chief ranger of the protection division.

7.1.3: Chief Ranger

The chief ranger of the protection division has the overall responsibility for the planning and implementation of the park's fire management program. The chief ranger provides specific review of the fire management program. The chief ranger has delegated all planning and operational aspects of the fire management program to the fire management officer.

7.2: FIRE MANAGEMENT OFFICE

Those park positions that have specific, day-to-day fire management program responsibility are located in the park's fire management office, a unit of the protection division. These positions are under the supervision of the fire management officer and are listed below (See also Appendix C for organizational chart and listing of employee names).

7.2.1: Fire Management Officer (FMO)

The FMO is a permanent, full-time position and is directly responsible to the chief ranger for the planning, management, implementation and coordination of the park's wildland fire management program. The FMO is responsible for the development of the park's fire management plan, for management of program budgets, for identifying and coordinating fire-related research projects and for supervision of the park's fire prevention, training, detection, presuppression, suppression and fuels management programs. The FMO provides direct supervision of the fire control officer, fire researchers and fire research aids and is the primary contact with all outside fire agencies. The FMO should be qualified as an incident commander type III, a strike team/task force leader and a prescribed fire burn boss II.

7.2.2: Fire Control Officer (FCO)

The FCO is a permanent, full-time position and is directly responsible to the FMO for coordination of the park's wildland fire training program, for management of all fire equipment, for directing initial attack of wildfires, for management of the weather data collection program and for management of the wildland fire qualification system. The FCO also provides supervision to the fire cache manager, fire control aid and the hazard fuels crew. The FCO should be qualified as an incident commander type III, a strike team/task force leader and a prescribed fire burn boss II.

7.2.3: Fire Program Clerk (FPC)

The FPC is a permanent, full-time position and is responsible for providing clerical and administrative support for all aspects of the fire management program. This includes general clerical work, time-keeping, travel arrangements and accounting, budget tracking, weather data collection and

maintenance of training and qualification records. The FPC also provides administrative support to the protection division and is supervised by the staff park ranger for the protection division. The FPC should be trained in basic incident command system (ICS) operations (I-220) at a minimum.

7.2.4: Fire Cache Manager (FCM)

The FCM is a seasonal, full-time position and is directly responsible to the FCO for the management of the park's fire cache. This includes the testing, care and maintenance of all equipment, the issuance of equipment and supplies and the inventorying and tracking of those supplies and equipment. The FCM also directs initial attack operations. The FCM should be qualified as an incident commander type IV and an advanced firefighter/squad boss.

7.2.5: Fire Control Aid (FCA)

The FCA is a seasonal, full-time position and is directly responsible to the FCO and assists the FCM in the management of the park's fire cache, including the testing, maintenance and repair of all equipment, the issuance of equipment and supplies and the inventorying and tracking of those supplies and equipment. The FCA carries out detection and presuppression activities and participates in initial attack operations. The FCA should be qualified, at a minimum, as a firefighter type II.

7.2.6: Fire Control Aid (FCA) - Isle au Haut Unit

The FCA-Isle au Haut is a seasonal, full-time position and is directly responsible to the supervisory park ranger-Isle au Haut and serves as a park ranger. The FCA-Isle au Haut is responsible for the management of the unit's fire cache, including the testing, maintenance and repair of all equipment, the issuance of equipment and supplies and inventorying and tracking of those supplies and equipment. The FCA-Isle au Haut carries out prevention, detection and presuppression activities and directs initial attack operations. The FCA-Isle au Haut should be qualified as an incident commander type IV and an advanced firefighter/squad boss.

7.2.7: Hazard Fuels Crew Work Leader

The hazard fuels crew work leader is a seasonal, full-time position and is directly responsible to the FCO and provides the on-site direction of the hazard fuels crew in their daily work activities. This is a project funded position that may not be filled each year. The work leader should be qualified as an advanced firefighter/squad boss.

7.2.8: Hazard Fuels Crew Member

Hazard fuels crew members (up to five in number) are seasonal, full-time positions and are directly responsible to the hazard fuels crew work leader. Crew members carry out hazard fuels reduction projects, serve as initial attack firefighters and during periods of very high or extreme fire danger provide detection and presuppression services. Crew member positions are project funded positions that may not be filled each year. Crew members should be qualified at the firefighter type II level.

7.2.9: Fire Researchers

Fire researchers are seasonal positions and are directly responsible to the FMO for the conduct of fire related research. These positions are project funded and may not be filled each year. The number of positions will depend upon the number of research projects funded.

7.2.10: Fire Research Aids

Fire research aids are seasonal positions and are directly responsible to the fire researcher to which they are assigned. They assist the fire researcher in the conduct of fire related research. These positions are project funded and may or may not be filled depending upon research needs and available funding.

7.3: OTHER PARK POSITIONS

Due to the park's large acreage and the small size of its fire management staff, many aspects of the park's fire management program, including suppression operations, require the participation and assistance of other positions and divisions for successful implementation. Those positions and divisions that provide assistance to the park's fire management program on a regular or frequent basis are listed below.

7.3.1: District Rangers

Acadia National Park is divided into two districts (east and west). The east district includes the eastern portion of the Mount Desert Island unit and incorporates the areas of highest visitor use. The west district includes the western portion of the Mount Desert Island unit, the Isle au Haut unit and the Schoodic Peninsula unit. Each district is administered by a district ranger.

The district rangers are directly responsible to the chief ranger for all protection activities that occur in their districts. They are responsible for assisting the FMO in the implementation of all aspects of the fire management plan as it relates to their respective districts. The district ranger, through their staffs, provide fire detection patrols, insure proper care of all fire suppression equipment prepositioned in their districts, outside of the park fire cache, and provide size-up and initial attack services. The district rangers implement the fire prevention portion of this plan as directed by the chief ranger in consultation with the FMO (trail closures, open fire bans, public notices, fire danger signs, etc.), make district staff and resources available to meet the park's fire step-up plan as needed and direct initial attack operations. It would be preferred that each district rangers be qualified as an incident commander type III, but is not required as part of their official position description.

7.3.2: Supervisory Park Ranger - Isle au Haut

The supervisory park ranger-Isle au Haut is directly responsible to the west district ranger for all aspects of park operations in the Isle au Haut unit. Due to the remoteness of the island, this position manages all park activities there, including the daily implementation of fire prevention, detection, presuppression and suppression activities. The supervisory park ranger-Isle au Haut serves as the primary park contact with the Isle au Haut Volunteer Fire Department, insures the testing, repair and maintenance of all fire suppression equipment and is responsible for directing initial attack operations on the island. It would be preferred that the supervisory park ranger-Isle au Haut be qualified as an incident commander type III, but is not required as part of the official position description.

7.3.3: Patrol Rangers

Patrol rangers assist their respective district rangers in carrying out all phases of the each district's fire responsibilities as stated in Section 7.3.1. above. Fire detection will be a standard part of the patrol rangers' normal protection patrol activities. In most cases, the patrol ranger will be the first responding park unit at the scene of a wildfire and will be responsible for size-up of that fire. They

will also be responsible for coordinating initial attack operations until relieved by a higher fire-qualified individual. It would be preferred that each permanent patrol rangers be qualified as an incident commanders type IV and advanced firefighter/squad boss and that each seasonal patrol rangers be qualified as a firefighter type II, but is not required as part of their official position descriptions.

7.3.4: Park Dispatchers

As part of their normal duties, dispatchers will take reports and record all information they receive regarding wildfires. They will follow the wildfire procedures listed in the dispatchers' fire procedures notebook, which is maintained at the dispatch desk. They will insure that the proper personnel are notified and will provide requested information. The dispatchers will make telephone requests for additional resources as directed by the incident commander. Park dispatchers should be trained in basic incident command system (ICS) operations (I-220) at a minimum.

7.3.5: Branch of Natural Resources

The branch of natural resources of the resource preservation division is responsible for the management of the park's research, monitoring and mitigation programs, including those related to fire and vegetation management. The branch also maintains the resource management plan, which identifies the personnel and financial resources required to address fire-related issues. Branch employees will coordinate and assist in fire and vegetation research, monitoring and mitigation with the FMO. Branch employees may be called upon to assist in fire presuppression and suppression operations as needed and as qualified.

7.3.6: Interpretation Division

The interpretation division will provide timely information to park visitors concerning fire prevention, fire research projects and fire danger. Division employees may be called upon to assist in fire presuppression and suppression operations as needed and as qualified.

7.3.7: Maintenance Division

The maintenance division will assist in the maintenance and repair of fire equipment. The division will provide operators for the park's water tender and assist in engine and pump operations. Division employees may be called upon to assist in fire presuppression and suppression operations as needed and as qualified.

7.3.8: Other Park Personnel

By direction of the superintendent, any member of the park staff may be directed to assist in the park's fire management program.

7.4: RESOURCES ADVISORS

7.4.1: Natural Resources Advisor

The superintendent will appoint a qualified member of the park staff to serve as a natural resources advisor. This position will provide advice and guidance to the incident commander of a wildfire on matters of natural resource policy, procedures, endangered and threatened species, sensitive areas and critical habitats.

7.4.2: Cultural Resources Advisor

The superintendent will appoint a qualified member of the park staff to serve as a cultural resources advisor. This position will provide advice and guidance to the incident commander of a wildfire on matters of cultural resource policy, procedures, historic structures and sensitive archeological and other cultural features.

7.5: AGENCY AND INTERAGENCY COORDINATION

National Park Service offices and positions and outside agencies that provide support and assistance to the park's fire management program are listed below.

7.5.1: North Atlantic Regional Director

The regional director is responsible to the director of the National Park Service for all park management operations in the North Atlantic Region, including fire management. The regional director has delegated the operational aspects of the region's fire programs to the regional fire management officer.

7.5.2: North Atlantic Regional Fire Management Officer (RFMO)

The regional fire management officer is supervised by the chief of the resource protection and visitor management division. The RFMO is responsible for all aspects of the region's fire management program. The RFMO provides oversight of and direct support to the park's fire management program, reviews fire management plans and programs, coordinates interagency activities and mobilizations and conducts fire reviews.

7.5.3: The Maine Forest Service

The Maine Forest Service's Division of Forest Fire Control is responsible for providing wildfire prevention, detection and suppression services on all lands in the State of Maine. The Division of Fire Control maintains fire suppression equipment, rotary and fixed wing aircraft, type II incident management teams and type II handcrews. These resources are available to the park through a memorandum of understanding (see Appendix D). The park is located in the Maine Forest Service's Downeast District, with headquarters at Jonesboro, Maine (see Appendix E for district map and personnel list).

7.5.4: The Hancock County Firefighters' Association

The Hancock County Firefighters' Association is the county-wide mutual aid association for all fire fighting agencies in Hancock County. All local fire departments, the Maine Forest Service's Division of Forest Fire Control, the United States Navy (Naval Security Group Activity, Winter Harbor) and the National Park Service (Acadia National Park) are members of the association. Local firefighting resources are available through a memorandum of understanding with this organization (see Appendix F).

7.5.5: United States Navy

The United States Navy maintains the Naval Security Group Activity, Winter Harbor within the Schoodic Peninsula Unit of the park. This base has a structural fire department to meet the fire suppression needs of the base. These firefighting resources are available to the park through the

memorandum of understanding with the Hancock County Firefighters' Association and through a separate interagency agreement between the park and the United States Navy (see Appendix G).

7.5.6: United States Coast Guard

The United States Coast Guard maintains a group headquarters in the town of Southwest Harbor. Stationed at the base are one 65 foot, one 44 foot and one 41 foot patrol craft each. The base also has several smaller watercraft on trailers for overland transport. These resources are available to the park for visitor evacuation and transport of firefighting personnel and equipment to and from offshore islands during emergency fire suppression operations.

7.5.7: Local Fire Departments

There are eleven separate local fire departments that have jurisdiction within the park's ownership boundary. These fire departments are Bar Harbor, Gouldsboro, Isle au Haut, Northeast Harbor, Otter Creek, Seal Harbor, Somesville, Southwest Harbor, Tremont, Trenton and Winter Harbor. The park does not have separate written agreements with each department. Mutual aid assistance between the park and these departments is provided for in the memorandum of understanding with the Hancock County Firefighters' Association (see Section 7.4.4. above).

7.5.8: Northeast Fire Compact

Acadia National Park, through the North Atlantic Regional Office, is a participating member of the Northeast Forest Fire Compact. Through this compact, federal and state fire management agencies have agreed to share fire suppression resources.

Mobilization and dispatch of fire suppression resources is handled through the Eastern Interagency Fire Coordination Center (EIFCC) in Milwaukee, Wisconsin. All requests for these resources are made through the regional fire management officer. Resources available through this source include type I and type II incident management teams, type I and type II handcrews, aircraft and logistical and support services.

Procedures for requesting assistance are found in the annual *North Atlantic Region Wildland Fire Mobilization Plan*. A copy of this plan is maintained in the fire management office.

7.5.9: National Inter-Agency Agreement

The National Park Service is a participating member of the "Interagency Cooperative Fire Agreement" between the United States Forest Service, United States Department of Agriculture, and the Bureau of Indian Affairs, the Bureau of Land Management, the United States Fish and Wildlife Service and the National Park Service, United States Department of the Interior. A principle objective of this agreement is the cooperative and cost-effective sharing of fire resources during national and regional emergencies. Through additional agreements between the United States Forest Service, state and private forestry organizations and state wildland fire agencies, many of the states also participate in this agreement.

A wide variety of fire suppression resources and logistical and support services are available to units of the National Park Service through this agreement. All requests for these resources are made to the Eastern Interagency Fire Coordination Center (EIFCC) in Milwaukee, Wisconsin through the regional fire management officer.

Procedures for requesting assistance are found in the annual *North Atlantic Region Wildland Fire Mobilization Plan*. A copy of this plan is maintained in the fire management office.

SECTION 8: WILDFIRE PROGRAM

The wildfire program for Acadia National Park encompasses fire prevention programs and initiatives, normal and emergency presuppression operations, fire detection, pre-attack planning, suppression operations and rehabilitation.

8.1: FIRE PREVENTION

The fire prevention program detailed in this section is based on the identification of specific threats of ignitions which pose the greatest potential to cause unacceptable damage or loss. After an evaluation of the risks, hazards and values involved was made, fire prevention problem areas were identified and prioritized and actions were developed to address the highest priority problem areas.

8.1.1: Objectives

Acadia National Park's fire prevention program will strive:

- 1) To prevent the start of human caused wildfire ignitions.
- 2) To prevent the spread of wildfire on park lands, onto adjacent lands and onto park lands.
- 3) To reduce the risk of damage or destruction to park structures and adjacent landowner structures from wildfire.

8.1.2: General Actions

The following general actions will be carried out as part of the fire prevention program.

- 1) All park employees will have a basic understanding of the park's fire prevention program and be capable of providing a basic explanation of it to interested parties.
- 2) All uniformed park employees in their daily contact with park visitors and neighbors shall, as appropriate, call attention to the need for care in their actions with fire.
- 3) All park employees shall take immediate corrective action to eliminate or reduce the wildfire risk associated with any hazardous condition or activity they encounter.
- 4) Interpretive programs and the park's traveler's radio system will incorporate, where appropriate, a fire prevention message concerning the risk of wildfire ignition from human activities (smoking, campfires and open burning).
- 5) Fire danger rating signs will be maintained and broadcast of the current fire danger rating on the park's radio communications system will be made by the fire management office on a daily basis in order to inform park employees and the public of the fire danger for the day.
- 6) Posters, press releases, and other messages will be used by the fire management office to provide the public with fire prevention messages.

- 7) By order of the superintendent under the authority of 36CFR 1.5, areas of the park may be closed to the public, smoking may be banned on all park trails and campfires may be prohibited in the park during periods of very high or extreme fire danger, as specified in the park's step-up plan. During these closures, the fire management office will notify the public through the issuance of press releases and the posting of signs at all trail heads, campgrounds and picnic areas.
- 8) The fire management officer will coordinate the park's fire prevention program with the fire prevention programs of the Maine Forest Service and the local fire departments to insure that activities are complimentary and reinforce each other.
- 9) The fire control officer will inspect, annually in May, all designated fire rings to insure their ability to minimize the risk of an escaped fire.
- 10) The fire management officer will insure that wildland/urban interface risk reduction actions are taken for park structures through a program of hazard fuels identification and reduction. The fire management office will also issue press releases and provide information to park staff and adjacent landowners concerning wildland/urban interface risks and conduct wildland/urban interface risks analysis for adjacent landowners as requested.
- 11) Park employees will insure compliance with all park regulations and emergency restrictions pertaining to fire prevention. The level of enforcement action will be commensurate with the individual authority of the employee and will be the minimum necessary to gain compliance. No violation posing a threat of wildfire will be ignored.

8.1.3: Fire Prevention Plan

The fire prevention plan analysis, on which this fire prevention program is based is found in Appendix H. This analysis contains the detailed prevention actions identified for specific wildfire problems in the park. The analysis will be reviewed annually and updated if changes occur that alter the identified risks, hazards or values.

8.2: POTENTIAL FIRE BEHAVIOR

Though the park is comprised of three units, separated geographically by several miles, the vegetative composition, fuels, topography and weather conditions are similar. It can be expected that fire behavior would be similar in all three units.

8.2.1: Conifer

The predominant species in these stands (FBS Model 8) is red spruce (*Picea rubens*). In these stands, which cover approximately 10,000 acres (4,000 hectares), fire would likely spread through the dead and downed woody fuels and conifer regeneration where present. Torching of individual trees and spotting would be likely during normal fire year conditions. With steep slopes, strong winds and an abundance of ladder fuels, independent crown fires could develop. During extreme fire years, fire line intensity would easily exceed the capability of hand crews to suppress.

8.2.2: Windthrown Conifer

These stands (FBS Models 10, 11 and 12) are caused by increases in dead and downed woody fuels through mortality and windthrow (blowdown) and cover approximately 1,100 acres (440 hectares). Fireline intensity would be expected to be greater than that found in FBS Model 8. Rapidly spreading fires with high intensities capable of generating firebrands and spot fires could be common. Fire in these fuel types generally continue until a fuel break or change in fuels occurs. Fireline intensity could quickly and easily exceed the capability of hand crews to suppress.

8.2.3: Pitch Pine/Huckleberry

Pitch pine (*Pinus rigida*) and huckleberry (*Gaylussacia baccata*) stands are scattered throughout the park. Huckleberry is usually found on open mountain tops and slopes. In these stands (FBS Model 7), fire can spread through the surface fuels and shrub strata with ease and can occur at higher dead fuel moisture contents because of the flammable nature of the live vegetation. The huckleberry shrub layer is often 2 to 4 feet high and frequently forms a continuous horizontal fuel bed under the pines. Surface fire flame lengths of 6 to 12 feet could occur, causing torching of individual pine trees and spotting. Fires burning on steep slopes and with strong winds could result in active crown fires. Rate of spread and fireline intensity would be high and could easily exceed the capabilities of hand crews to suppress.

8.2.4: Hardwoods

Hardwood stands (FBS Model 8 & 9) comprise approximately 17,000 acres (6,800 hectares) of park lands. Many of these stands are the result of the 1947 Bar Harbor Fire and are now in transition, as red spruce begins to move up through the understory. Fire in these stands can be expected to spread primarily through the surface litter of dead, dry leaves. Individual hardwood trees where concentrations of woody fuels are encountered and some understory conifer trees may torch out and generate spotting. Under most conditions, fires would be of low fireline intensity and short duration. Flame lengths of 2 feet or less are common, with rates of spread influenced principally by wind and topography. Fires in this fuel type can usually be controlled by hand crews.

8.2.5: Grassland

Fire in short grasslands (FBS Model 1) consume the fine herbaceous fuels that have cured or are nearly cured. Such fires are of low to moderate fireline intensity and short duration. Fires in this fuel type spread very rapidly, usually under the influence of wind and topography. Flame lengths of 1 to 4 feet are common depending on fine fuel moisture content, height of the grass, and wind. Grass fires can normally be controlled or stopped by hand crews using proper tactics, but the rapid rate of spread can present serious entrapment risks to crews.

8.3: PRESUPPRESSION

Presuppression planning and implementation is the foundation for an effective wildfire suppression program. Presuppression includes those activities undertaken in advance of fire occurrence to help ensure more effective fire suppression; includes over-all planning, recruitment and training of fire personnel, procurement and maintenance of firefighting equipment and supplies, fuel treatment, and creating, maintaining, and improving a system of fuelbreaks, roads, water sources, and control lines (Society of American Foresters, 1990).

Presuppression activities help insure that the right suppression resources are at the right place at the right time. Presuppression operations will include those routine activities that occur prior to

each fire season in order to prepare for that season as well as those incremental actions that may be taken during the fire season as the fire danger increases. It will also include those fuel management activities conducted to reduce the risk of or minimize the impact of wildfire.

8.3.1: Annual Training Activities

The fire management officer and the fire control officer will serve as the primary instructors for wildland fire courses in the park. These individuals are qualified to instruct all S-100 level courses and with the approval of the regional fire management officer, specific S-200 level courses.

Training may be held at any time of the year, appropriate for the target audience. Training will be conducted in basic firefighting skills (S-110/130/190) and basic ICS operations (I-220) as necessary to provide the park with a sufficient number of firefighter type II qualified employees to meet its needs. Other training will be conducted as the need is identified. A wildland fire training needs assessment will be conducted annually as part of the FIREPRO budget formulation process.

8.3.2: Annual Preparedness Activities

- 1) Review the fire management plan, memorandums of understanding and fire programs for upcoming year.
Responsibility: FMO
Due date: January 30
- 2) Conduct meetings with the Maine Forest Service's Division of Forest Fire Control and local fire department fire chiefs to determine local fire strategies for upcoming fire season and discuss any changes in agreements, operations or regulations.
Responsibility: FMO
Due date: February 28
- 3) Check all radios.
Responsibility: chief ranger, FCO, district rangers
Due date: February 28
- 4) Update employee fire qualifications (training, experience, fitness).
Responsibility: FCO, FPC
Due date: February 28 and within 7 days of the completion of any training or fire assignment.
- 5) Inventory and re-stock fire caches.
Responsibility: FCO, FCM
Due date: March 1 and August 1 and after each fire.
- 6) Activate NFDRS station and check RAWs units two weeks prior to fire season; daily observations taken at 1300 hrs EST and entered into WIMS system throughout the fire season.
Responsibility: FCO, FPC
Due date: March 15
- 7) Secure arduous duty medical examinations for identified fire personnel (every 3 years for permanent and long term seasonal employees whose primary duties are wildland fire operations).
Responsibility: FCO
Due date: March 31

- 8) Administer physical fitness test (step test or 1.5 mile run) to all wildland qualified fire personnel.
Responsibility: FCO
Due date: March 31 (and as personnel come on-duty)
- 9) Brief park management and division chiefs of proposed fire management activities for the upcoming year.
Responsibility: chief ranger, FMO
Due date: March 31
- 10) Complete hiring for all seasonal positions.
Responsibility: FMO, FCO, FPC
Due date: March 31
- 11) Service and test all pumps, engines and other fire equipment.
Responsibility: FCO, FCM
Due date: April 1 and weekly throughout the fire season.
- 12) Mount slip-on units on 4x4 vehicles prior to the beginning of each fire season.
Responsibility: FCO, Supervisory Park Ranger-Isle au Haut
Due date: April 1 (unless freezing weather is still present)
- 13) Complete the park "Wildfire Readiness Checklist"
Responsibility: FMO
Due date: April 1
- 14) Prepare daily situation reports; transmit to the Branch of Fire and Aviation Management as instructed in the *National Park Service Wildland Fire Computer System User's Guide*.
Responsibility: FPC
Due date: daily, April 1 - Oct. 31
- 15) Identify park personnel for participation on regional fire crews.
Responsibility: deputy superintendent, chief ranger, FMO
Due date: April 30
- 16) Identify park fire training needs for the upcoming fiscal year for inclusion in the upcoming fiscal year FIREPRO budget submission.
Responsibility: FMO, FCO
Due date: May 31
- 17) Formulate and submit FIREPRO budget requests for the coming fiscal year to the Branch of Fire and Aviation Management.
Responsibility: FMO, FPC
Due date: June 30
- 18) Ensure that all fire reports have been entered into the National Park Service Wildland Fire Computer System.
Responsibility: FMO, FCO, FPC
Due date: July 15 and December 31

- 19) Inventory and order forms and fire prevention materials needed for upcoming fiscal year.
Responsibility: FMO
Due date: August 15

8.3.3: Patrols and Detection

During periods of low, moderate or high fire danger (as derived from the National Fire Danger Rating System), specific fire patrols and detection activities will not be conducted. Fire patrols and detection activities will be added as the fire danger increases and as specified in the park step-up plan, found in Appendix M of this plan.

8.3.4: Hazard Fuels Management

The intent of the hazard fuels management program is to research, develop, and implement a strategy of fuels and vegetation management designed to reduce the size and spread of wildfires while maintaining, as nearly as possible, natural ecosystems and habitats. Although most of the wildland fuels in the park can be considered dangerous especially during dry, windy periods, much of the interior of the park is inaccessible to or little used by the vast majority of park visitors. Since humans cause approximately 98% of park fires (Patterson et al. 1983a) these remote fuels present little risk of fire occurrence. On the other hand, certain fuels, because of their physical properties, location on the landscape, and proximity to human use pose a much greater risk. Hazard fuels in the park are primarily spruce, pitch pine, jack pine and huckleberry located on dry aspects (S, SW, W, NW and flat ground), steep slopes (9-35%) or adjacent to human use areas such as campgrounds, roads, trails and park boundaries, as well as fuels located adjacent to structures.

Hazard fuels management is concentrated on minimizing the risk of fire ignitions in high risk areas (human use corridors) and around park structures through the mechanical removal of significant accumulations of finer fuels (up to 3 inches in diameter) and the creation of boundary fuel breaks at strategic locations. The primary objectives are to reduce the quantity of fine flashy fuels in close proximity to high visitor use areas and to reduce the rate of spread and fireline intensities of fires moving across park boundaries and around structures in order to increase the ability to control those fires.

Hazard fuels project funding requests are submitted to FIREPRO annually. Each year that project funding is available, a hazard fuels crew will be employed to carry out mechanical fuel reduction projects. These projects will be identified and prioritized by the fire management officer. Crews will cut and remove concentrations of the finer (up to 3 inches in diameter) dead and down fuels and trim tree branches to a height of 10 feet above the ground to reduce ladder fuels where it is deemed necessary in order to reduce the risk of fire spread. Aerial overflights may be used to identify areas of potential hazard fuels buildup. In visitor use areas and corridors, the treatment area will generally be restricted to 50 feet on each side of roads and trails and from campsites. For the creation of boundary fire breaks, reduction work will be restricted to those areas designated by the fire management officer, in consultation with the chief of the branch of natural resources. Hazard fuels reduction around structures will adhere to the standards established in the park's "Hazard Fuels Reduction/Structural Protection Project, 1992" (see Appendix I).

Slash generated by these actions may be piled and burned during the winter or wet spring months, chipped and broadcast back onto the site or removed from the site, depending on specific site conditions and requirements. Large fuels (3 inches or greater) will not, as a rule, be removed from a site. These large fuels seldom dry out enough in the coastal Maine climate to present a fire hazard, do not present an ignition hazard and are normally not the fuels that carry a fire.

Up to 400 acres (160 hectares) of the highest risk hazard fuels can be reduced by this method annually. Most of these fuel locations will be in areas where other means of fuel reduction would not be appropriate (near structures and high visitor use areas).

Pre- and post-treatment monitoring is conducted as part of each fuel reduction project to document and assess the project's effectiveness and is discussed in Section 12.2.1.

Research into the effectiveness of mechanical fuel reduction and the potential use of prescribed fire for fuel reduction is needed and is discussed in Section 12.1.2. of this plan.

8.4: EMERGENCY PRESUPPRESSION

Emergency presuppression activities allow the park to provide adequate firefighting resources for periods of elevated fire danger. These actions are outlined in the park step-up plan and may be paid for through special emergency FIREPRO funding.

8.4.1: Step-Up Plan

The step-up plan for Acadia National Park (with a supplemental section for the Isle au Haut unit) outlines the park's response to the five stages of fire danger. The five stages, or staffing classes (SC), of the step-up plan are based on the National Fire Danger Rating System (NFDRS) burning index (BI) (Deeming 1977) and were calculated for the park utilizing 34 years (1937-1979) of fire records (Patterson et al. 1983a). Staffing class IV and V represent, respectively, the 90th and 97th percentile of historic BI's for the park (See Table 8.1). The actual distribution of these values can be found in the FIRDAT analyses, which are maintained in the fire management office. The step-up plan for Acadia National Park is based upon the following NFDRS parameter: NFDRS fuel model H (conifers); slope class 2; climate class 3; herbaceous type P (perennial).

The Acadia National Park step-up plan is located in Appendix M.

TABLE 8.1: Staffing Class, Adjective and Burning
Index Ranges
Patterson et al. (1983a)

<u>STAFFING CLASS</u>	<u>NFDRS ADJECTIVE</u>	<u>BI RANGE</u>
I	Low	0 - 2
II	Moderate	3 - 6
III	High	7 - 13
IV	Very High	14 - 17
V	Extreme	18 +

8.4.2: Funding

Special FIREPRO funding for emergency presuppression actions taken as part of a pre-established step-up plan is authorized in NPS-18 (*Wildland Fire Management Guideline*), Section IV, Chapter 1. All requests for such funding will be made, in writing, by the FMO to the regional fire management officer immediately upon the determination that such funding is necessary for the park to initiate

actions in the step-up plan. Requests for this funding may only be made if the fire danger is at the staffing class IV or V (very high or extreme) stage.

8.5: FIRE DETECTION

The objective of the fire detection program for Acadia National Park is to quickly detect any wildfires which occur and to effect a timely and appropriate initial attack response to those fires.

There is no routine, organized fire detection program for the park. During periods of low to high fire danger, the park relies on observations from normal patrol operations, all park employees and reports of fire from other sources. State aerial detection flights by the Maine Forest Service cover areas the park during periods of increased fire danger. The park step-up plan provides for increase detection through the use of patrols, staffing of the Beech Mountain fire tower and use of contract aerial reconnaissance as the fire danger increases.

8.6: PRE-ATTACK PLAN

Pre-attack planning involves the identification and evaluation of firefighting resources (personnel, equipment and geographic sites) necessary to successfully suppress wildfires in the park.

8.6.1: Personnel

The park maintains sufficient initial attack forces to meet it's current wildfire suppression needs. Additional resources are available through memorandums of understanding and the resource ordering system. A complete listing of all fire-qualified park employees is maintained in the fire management office.

8.6.2: Fire Suppression Equipment

The park is adequately equipped with fire suppression equipment and supplies for initial attack on most class A (up to 1/4 acres in size), class B (between 1/4 acre and 10 acres in size) and class C (between 10 acres and 100 acres in size) fires. Most of these resources are stored at the main fire cache which is located, along with the fire management office, in the Mount Desert unit at park headquarters, on McFarland Hill, in the Town of Bar Harbor. This includes one type 6 engine, a 200 gallon slip-on pump unit, a 750 GPM trailer mounted pump, a 500 GPM trailer mounted pump, a 5,500 gallon tender with a 500 GPM mounted pump and several portable pumps. The fire cache at the Isle au Haut Ranger Station includes two 200 gallon slip-on pump units, a 750 GPM trailer mounted pump, portable pumps, several backpack pumps, handtools and a helispot kit. The park also maintains a small fire cache at the Seawall ranger station (Mount Desert unit), equipped with hand tools, portable pumps and several backpack pumps. Handtools for twenty firefighters and several backpack pumps are maintained at the Schoodic Peninsula unit ranger station. A complete inventory and location listing of all wildfire suppression equipment maintained in the park is found in Appendix J.

Equipment is also available from the State of Maine and local fire departments. A listing of equipment available from the Maine Forest Service can be found in the *Maine State Fire Plan*, located in the fire management office. A complete inventory of firefighting equipment available to the park from the local fire department of Hancock County is found in Appendix K.

8.6.3: Water Sources

Water sources (pumper chances) have been identified and mapped. This information is maintained in the fire management office. The park currently has one dry fire hydrant, located at the Tarn, and has identified sites for an additional 17 dry fire hydrants. Funding requests have been submitted for installation of these hydrants.

8.6.4: Helibases and Helispots

For any air operation involving helicopters, the park will use the Bar Harbor-Hancock County Airport in Trenton as it's primary helibase. A secondary helibase may be established in the Stonington area to support operations on Isle au Haut. Helispots for park use have been identified and mapped. A map of these locations, along with identified aerial hazards, is maintained in the fire management office. Where identified helispots are located on private property the park will obtain prior written approval from the landowner for the use of their property during emergencies. These permissions are on file in the fire management office. During emergency operations, previously unidentified helispots may be used as the situation demands. Every effort will be made during the emergency to obtain the verbal permission of the landowner for the use of the helispot if it is located on private property.

8.6.5: Logistics and Support

Resources for the support of fire suppression operations have been identified and inventoried. These resources include housing, feeding and sanitary facilities for firefighters and transportation services. This listing is maintained in the fire management office.

8.6.6: Incident Commander Briefing Notebook.

An "Incident Commander Briefing Notebook" is being developed by the fire management office. This notebook will contain that information necessary for assumption of incident management responsibilities by an incident management team from outside the park. This information includes delegation of authority, park fire suppression policies, allowed strategies and tactics, strategy and tactic constraints, identification of critical and sensitive natural or cultural park features, firefighting resource inventories, logistics and support inventories, communications resources inventory, pre-season risk analysis and a draft escaped fire situation analysis (ESFA). This notebook will be maintained in the fire management office and updated as necessary to insure it's accuracy.

8.6.7: Acadia National Park Geographic-Based Fire and Natural Resource Management Simulation System (AGEOFRSS)

AGEOFRSS is a fire behavior simulation computer program. The system is based upon BEHAVE algorithms. It includes a collection of fuel models that simulate fire behavior and is coupled to a modeling system that allows the user to graphically project fire behavior through a GIS map of the park. This system incorporates, slope, aspect and fuel models of the park into the fire behavior predictions. Since this system is based upon BEHAVE algorithms, it can only model surface fires. The system cannot simulate or predict crown fires.

AGEOFRSS allows the user to play "what if" games and graphically observe the resulting predicted fire behavior. The system is a useful modeling tool for gaining a feel for the predicted fire behavior of various fuels in the park under various conditions.

This software system is currently maintained on the Apple MacIntosh computer in the planning office and is available to fire personnel on a limited basis.

8.6.8: Readiness Checklist

To insure park readiness prior to the fire season, the "Wildfire Readiness Checklist" found in Appendix L will be completed by the fire management officer by April 1 of each year.

8.7: FIRE SUPPRESSION

The objectives of the fire suppression program are:

- 1) To protect human life and property both within and adjacent to park lands from the negative consequences of wildfire.
- 2) To protect the park's natural and cultural resources and scenic values from the undesirable impacts and effects of wildfire and wildfire suppression activities.
- 3) To quickly detect and aggressively suppress all wildfires that occur in the park with a minimum of resource damage.
- 4) To prevent the spread of wildfire across park boundaries through aggressive suppression operations.

The incident commander is expected to balance aggressive fire suppression strategies and tactics with minimal resource damage in order to achieve these objectives. Acceptable suppression strategies include confinement, containment and control, with control being the preferred strategy through either the direct or indirect method of attack. These suppression strategies and tactics and park-wide constraints on them are discussed in Section 5.

8.7.1: Reporting and Dispatch

Fundamental to the rapid suppression of wildfires in their early stages is the timely detection of those fires and the quick response of suppression forces.

All reports of wildfires will be immediately relayed to the park dispatcher. The park dispatcher will implement and follow the "Wildfire Reporting Procedures" (See Appendix N) as found in the "Park Dispatch Procedures Notebook" which is maintained at the dispatch desk. The fire management officer, the fire control officer or the ranking fire management office staff member on duty at the time will be notified immediately. The local fire department with jurisdiction for the lands involved and the Maine Forest Service's Division of Forest Fire Control will also be notified immediately.

Dispatch of firefighting resources will follow the procedures found in the "Wildfire Reporting Procedures" (See Appendix N).

8.7.2: Initial Attack

Upon discovery and notification of a wildfire, the first responding fire qualified employee will begin directing initial attack. These actions may include size-up and actual suppression actions. This employee will continue to serve as the incident commander until relieved by a higher fire-qualified employee. When more than one agency (National Park Service, Maine Forest Service's Division of Forest Fire Control and/or local fire departments) is involved in fire suppression operations, a unified command will be established, thereby allowing joint decision making among the agencies.

Since the firefighting resources stationed at each unit are different, the initial attack response will also be different.

- 1) Mount Desert unit: At least two fire-qualified employees and either the slip-on pump unit or the type 6 engine will respond to all wildfires, depending on the location of the fire. Response to offshore islands will be by the closest available boat transport. This transportation may be by the park, the Coast Guard, the local harbor master, commercial ferry service or local commercial or private boat operators. At least three fire-qualified employees and one portable pump will be dispatched to any offshore island fire.
- 2) Schoodic Peninsula unit: Initial attack response will be provided by the Winter Harbor, Gouldsboro or United States Navy fire departments, depending on the location of the fire. The slip-on pump unit stationed at park headquarters will be immediately dispatched to the fire if needed. Projected travel time for this unit is one hour. Response to offshore islands will be by the closest available boat transport. This transportation may be by the park, the Coast Guard, the local harbor master, commercial ferry service or local commercial or private boat operators.
- 3) Isle au Haut unit: Initial attack response will include a slip-on pump unit, one handcrew tool box and all available fire-qualified employees on the island. The fire management office will organize and have standing by a squad of six firefighters and transportation for possible dispatch to Isle au Haut.

If it appears that the fire can not be contained with the initial attack resources available, the incident commander will immediately request additional assistance as identified in Section 8.7.3. (extended attack) of this plan.

8.7.3: Extended Attack

The historical occurrence of extended attack fires in the park is quite small, with most fires being usually less than 0.5 acres (0.2 hectares) in size (Patterson et al. 1983a). However, the potential for large fires and the need for extended attack capabilities does exist. This is especially true for the Isle au Haut unit, where initial attack forces are minimal and additional firefighting forces have a minimum response time of two hours. To keep all wildfires to the smallest size possible, especially in the Isle au Haut unit, it is critical to the success of the fire suppression effort that the incident commander identify the need for and request additional firefighting resources early in the fire incident.

Emergency wildfire suppression resources for Acadia National Park can be obtained from throughout the United States and Canada by contacting the regional fire management officer. The procedures for these resources are identified in the *North Atlantic Region Annual Wildland Fire Mobilization Guide*.

The "closest available forces" concept will apply to all park fire suppression operations. Based upon this concept, it is most probable that firefighting resources from the State of Maine would be the first requested to assist the park. An exception would be if Maine firefighting resources are already over-taxed due to other fire incidents. In that instance, firefighting resources from outside of the State of Maine may be requested. Resources not normally available from within the State of Maine may be requested from outside the State at any time.

The firefighting resources of the Maine Forest Service and the local fire departments of Hancock County are directly available to the park under mutual aid procedures established under separate memorandums of understanding (See Appendix D & Appendix F). Requests for these resources do not require a formal resource order and do not need to be coordinated through the regional fire management officer. The regional fire management officer should be kept informed of all request for extended attack resources.

Should the need for extended attack arise, the incident commander will:

- 1) Prepare the fire complexity assessment.
- 2) Prepare the escaped fire situation analysis.
- 3) Identify needed resources on the "Resource Order Form" (ICS Form 260).
- 4) Request needed resources through the regional fire management officer. In the case of resources controlled by the Maine Forest Service or local fire departments of Hancock County, the incident commander can request those resources directly.
- 5) Prepare for the arrival of resources. Complete the delegation of authority memorandum if an incident management team is involved.
- 6) Continue suppression efforts on those sections of the fire where available resources can work safely and effectively.

In situations where the fire's complexity exceeds the qualification level of the incident commander present or where the fire extends beyond 48 hours in time or exceeds 100 acres in size, an incident management team will be requested through the regional fire management officer.

8.7.4: Air Operations

The park has made use of aircraft, especially helicopters (rotary-wing), in the past to provide fire detection patrols, fire suppression capabilities and logistics support. It is expected that this reliance on aircraft will continue as the need arises.

United States Department of the Interior (DOI) regulations and National Park Service policy require that all aircraft used for agency business, including emergency wildfire operations, and all flight operations involving National Park Service personnel adhere to DOI Office of Aircraft Services (OAS) regulations (350-354 DM). A complete collection of OAS regulations is maintained in the fire management office.

All aircraft and pilots involved in National Park Service wildfire operations must have OAS or United States Forest Service certification. These aircraft and pilots may be private vendors on the OAS Basic Ordering Agreement (BOA) contract rental list (maintained in the fire management office) or associate aircraft.

The Maine Forest Service's six rotary-wing aircraft and one float equipped fixed-wing aircraft are OAS certified as associate aircraft. The rotary wing aircraft are fire suppression capable and all these aircraft may be available for park use under a memorandum of understanding (See Appendix D).

Military aircraft dispatched as part of a resource order may also be used. Non-certified aircraft (civilian or military) may only be used to save human life and when no other means are available.

Park aircraft policies and operational procedures will be codified in a separate aviation management plan.

8.7.5: Evacuation

In some instances, evacuation of park visitors, employees and neighbors may be necessary to protect life and maintain incident control and order. All evacuations will be conducted by the protection division and at the direction of the incident commander. Any evacuation will be closely coordinated with local fire departments, law enforcement agencies and other disaster relief agencies.

Due to the remoteness of the Isle au Haut unit, the following special evacuation procedures will apply. Upon determination that a wildfire will exceed the capability of initial attack forces, the Isle au Haut Company ferry will be instructed by the superintendent to terminate ferry transportation of park visitors to the National Park Service pier at Duck Harbor. Visitors and campers on the Island will be advised of the emergency situation and, if the situation warrants, will be given instructions and assistance to relocate to the nearest facility to be transported from the island (town dock in the Village of Isle au Haut or park dock at Duck Harbor). The most expedient method of transport for park visitors and island residents will be used, depending upon the level of the emergency and will include the Isle au Haut Company ferry, the park boat, the United States Coast Guard vessels, other agency vessels and private vessels that are willing and able to transport passengers safely and efficiently from Isle au Haut. The priority for vessel utilization (subject to rapid availability) is listed above, with the Isle au Haut Company ferry being the first priority for use and private vessels being the last priority for use.

A list of identified vessel (both passenger boat and barge) operators is maintained in the fire management office.

8.8: REHABILITATION

Regeneration is the natural regrowth of plants destroyed by fire. Rehabilitation is the artificial replacement of human-constructed facilities or natural resources after their destruction or removal. The policy of Acadia National Park is to encourage regeneration and minimize the use of rehabilitation for the park's natural resources. Before any major rehabilitation is undertaken, an evaluation of the burned area and an assessment of alternatives and impacts will be conducted. This assessment will be coordinated by the FMO and the chief of the branch of natural resources.

The following list of minor rehabilitation projects will be implemented following any wildfire. Items #1 through #4 will be completed by the incident command team prior to their release from the wildfire incident.

- 1) All litter and trash will be removed from the fire site, fire camps and staging areas.
- 2) All firelines constructed will be refilled and water bars installed where necessary to prevent erosion.
- 3) Hazard trees along roads and trails will be removed.
- 4) Photodocumentation points will be established and post-fire monitoring will be initiated on any fire over 10 acres in size to evaluate regeneration and determine short-term and long-term fire effects. Monitoring will be continued by park staff.

- 5) Additional research needs will be identified as applicable by the fire management officer. Funding requests to conduct identified research will be made and research implemented as funding allows. This research should support those research programs and projects identified in Section 12 of this plan.

8.9: FIRE MOBILIZATIONS

The park will provide qualified fire personnel, as requested by the regional fire management officer, for fire mobilization to other areas of the United States and Canada. These requests will be based upon the annual park fire mobilization commitment. This commitment will be submitted to the regional fire management officer each spring by the park fire management officer and approved by the park superintendent. Fire mobilization commitments will balance the needs of the park to maintain park operations with the needs of regional and national suppression operations.

Fire mobilizations will be coordinated by the fire management office. All mobilizations will be approved by the park superintendent.

In order to provide for the safety and physical well-being of park employees who have been on extended fire assignments (more than 14 days), those employees will be provided with 8 hours of administrative leave within the first 24 hours of their return to the park. Employees whose lieu days fall within this 24 hour period will not be granted administrative leave. This is in accordance with National Park Service policy, as found in NPS-18 (*Wildland Fire Management Guideline*), Section III, Chapter 8, Exhibit 8.

Mobilization procedures are found in the annual *North Atlantic Region Wildland Fire Mobilization Plan*. A copy of this plan is maintained in the fire management office.

8.10: RECORDS AND REPORTS

All suppression and prescribed fire research burn activities will comply with the reporting requirements of NPS-18 (*Wildland Fire Management Guideline*), Section IV, Chapter 5. Historic weather, fire and other pertinent records will be permanently maintained in the fire management office.

The records and reports listed in Table 8.2 will be utilized as indicated for the implementation of the park's fire management program. These records will be maintained in the fire management office. Additional records, as listed in NPS-18 (*Wildland Fire Management Guideline*), Section IV, Chapter 5, Exhibit 8, will be utilized as needed.

8.10.1: Planning and Fiscal Reports

Fire management planning and fiscal activities will be conducted and reported according to procedures found in NPS-18 (*Wildland Fire Management Guideline*), Section III, Chapter 1 and Section IV, Chapter 1 and further detailed in the *National Park Service Fire Management Compendium*, the *National Park Service Wildland Fire Management Computer System User's Guide* and through Branch of Fire and Aviation Management memorandum and directives.

TABLE 8.2: Fire Management Records and Reports

<u>REPORT/RECORD</u>	<u>FREQUENCY</u>	<u>RESPONSIBILITY</u>	<u>DISTRIBUTION</u>
DI-1202	Per incident	IC	FMO/SACS
Fire Weather Records	Daily from observation & WIMS	FPC	Files
Fire Management Plan Review	Annual	FMO	Files/NARO/NPS-Fire
Fire Management Plan Revision	Every three (3) years	FMO	Files/NARO/NPS-Fire
FIREPRO Budget Submission	Annual	FMO/FPC	NARO/SACS
Park Situation Report	Daily during fire season	FCO/FPC	Posted in Fire Mgt. Office
National Situation Report	As requested	FCO/FPC	Requester
NFDRS Fire Danger/Staffing Class	Daily during fire season	FCO/FPC	Posted on fire danger signs and by radio broadcast
EFSA	Per wildfire	IC	FMO/Supt.
RX Research Burn Plan/NPS Complexity Analysis	Per RX burn	PBB	FMO/Supt.
Job Task Books	After each training experience	FCO/Position Trainee	No distribution
Fire Qualifications Cards	Annual	FCO/FMO	To park files and employee

Abbreviations:

FMO: Fire Management Officer
 FCO: Fire Control Officer
 FPC: Fire Program Clerk
 IC: Incident Commander
 PBB: Prescribed Burn Boss

NARO: North Atlantic Regional Office
 SACS: Shared Applications Computer System
 NPS-Fire: NPS Fire Director

SECTION 9: MANAGEMENT IGNITED PRESCRIBED FIRE PROGRAM

National Park Service policy, as stated in NPS-18 (*Wildland Fire Management Guideline*), provides for the use of fire as a management tool.

Fire is used as a tool to accomplish resource management objectives. These objectives include, but are not limited to: replacing natural fire, maintaining historic scenes, reducing hazardous fuels, eliminating exotic/alien species, and preserving endangered species.

A management ignited prescribed fire program is not currently in operation at Acadia National Park. At some future point in time, park management may determine that such a program is necessary to accomplish specific resource management objectives. These objectives include, but are not limited to, fuel reduction, vista management, perpetuation of fire-dependent species and maintenance of historic scenes and landscapes.

The implementation of a management ignited prescribed fire program will be preceded by research as outlined in Section 12 of this plan. This research will determine the appropriateness of fire as a management tool in accomplishing specific objectives. The park may elect to conduct research burns in order to make these determinations as allowed for in NPS-18 (*Wildland Fire Management Guideline*). The implementation of a management ignited prescribed fire program will also be preceded by the completion of an environmental assessment, in compliance with NEPA requirements and National Park Service policy, as stated in NPS-18 (*Wildland Fire Management Guideline*).

All research burns will comply with the applicable operational standards for conducting a management ignited prescribed fire as described in NPS-18 (*Wildland Fire Management Guideline*). A complete prescribed fire burn plan will be written for each research burn and maintained as a permanent record in the fire management office.

Prescribed fire research burn plans will be reviewed by the fire management officer, the chief ranger, the chief of the branch of natural resources and the deputy superintendent and approved by the superintendent. Copies of these plans will be forwarded to the regional fire management officer, the Maine Forest Service district ranger for the Downeast District and the fire warden and fire chief for the town in which the burn will occur.

SECTION 10: PRESCRIBED NATURAL FIRE PROGRAM

National Park Service policy, as stated in NPS-18 (*Wildland Fire Management Guideline*), provides for the use of fire as a natural process. Where fire is an integral component of the ecosystem, it may be managed as a prescribed natural fire to help perpetuate the natural processes of that ecosystem.

Research into the fire history of Acadia National Park by Patterson et al. (1983a) indicates that fire is an infrequent, but cyclic visitor to the park, with a fire return interval of 100 to 150 years during the post-settlement period. Analysis of 37 years of park fire records indicate that less than 2% of fires within the park are natural (lightning caused) ignitions.

Patterson et al. (1983b) states that for Acadia National Park there is:

little likelihood that prescribed natural fire will ever be a viable fire management option for either Cape Cod or Acadia. Lightning fires rarely occur and when they do they are usually extinguished by heavy rain. Perhaps, more important, the parks are not configured in such a way that would allow safe application of prescribed natural fire; both have very high visitor use that is often widely dispersed, and both are relatively small and have complex boundaries with extensive inholdings and adjacent private property.

The use of prescribed natural fire is not considered appropriate or practical at Acadia National Park at this time. Future research into the park's ecosystems and long-term fire history may shed new light into the natural role of fire in those ecosystems. Any new information of this nature may require reevaluation of the role of prescribed natural fire at Acadia National Park at that time.

SECTION 11: AIR QUALITY AND SMOKE MANAGEMENT

Visibility and clean air are among the most important natural resource values in Acadia National Park. In order to protect air quality related values from the effects of smoke, the park will comply with all applicable legal requirements including the Clean Air Act (42 U.S.C. 1857 et seq.), the Maine State Code (Chapter 102) and local regulations.

As a class I area under the Clean Air Act, the park will comply with Section 169A of that act, which specifies a national goal of "remedying of any existing and preventing any future manmade visibility impairment." In addition, the State of Maine has adopted regulations protecting selected integral vistas in the park including the 360 degree view from Cadillac Mountain. Protection of the scenic resources at Acadia National Park is especially important during periods of high visitor use in the summer, when visibility conditions are frequently poorest. Although it is recognized that fire, and therefore smoke, is a natural process, prolonged or severe periods of smoke can create unacceptable conditions for visitors as well as adjacent communities. State regulations regarding smoke management are primarily directed at preventing a nuisance condition.

Smoke management considerations are not anticipated to become a major factor in the fire management program at Acadia National Park unless a large-scale prescribed fire program is implemented in the future. However, small scale prescribed burns needed to assess fire prescription parameters or specific biological requirements of certain species, or for selected management objectives such as vista maintenance and training, will be undertaken in accordance with the provisions of this plan. These burns, though small in scale, must also take into account smoke management concerns.

For any management ignited prescribed fire, the park will submit a copy of the burn plan to the Maine Forest Service district forest ranger and obtain a Maine Forest Service open burning permit from the local town fire warden. The park is required to adhere to all State regulations pertaining to air quality, as specified in NPS-18 (*Wildland Fire Management Guideline*). This includes the State's open burning regulations. Park fire management personnel will maintain communications with State officials on the status of ongoing fires and appropriate management actions will be taken in the event a management ignited prescribed fire develops into a nuisance smoke situation.

Detailed written considerations will be incorporated into prescribed burn plans to address smoke management concerns. Specific criteria to be considered include impacts to developed areas, campgrounds, road travel and scenic vistas. Techniques and considerations needed to achieve

smoke management objectives will also be addressed. This will include an assessment of acceptable burning conditions relating to wind direction and speed, atmospheric stability, likelihood of inversion conditions, size of burn, fuel characteristics and estimated volume of smoke. There will also be a discussion of actions to be taken when smoke dispersion deteriorates to the point that air quality objectives can no longer be achieved. At that point the fire will be declared outside of its prescription and suppression actions initiated.

Detailed guidance for smoke management practices can be found in the National Wildfire Coordinating Group Publication #PMS 420-1; *Prescribed Fire Smoke Management Guide*. A copy of this publication is on file in the fire management office.

SECTION 12: FIRE RESEARCH AND MONITORING

Since all wildland fires at Acadia National Park will be "managed", there is a need for sound scientific information on which to base fire management decisions. Fire research and monitoring conducted in the park will provide that information.

Various units and areas of Acadia National Park have been the subject of fire related research over the years. This research has included fire history, fuel loading, fire ecology, fire effects, fire-dependent species and weather monitoring. A listing and description of existing fire related research information and inventory data (through 1991) can be found in Appendix B.

As the park's fire management program grows and expands, especially in the area of hazard fuels management, it becomes more important to have a good understanding of the park's natural systems and how fire interacts with those systems. To provide this information, new research projects will be initiated, current inventory and monitoring programs will be maintained and new inventory and monitoring programs will be implemented.

All new research projects and inventory and monitoring programs will be coordinated with the chief of the branch of natural resources. New projects and programs will be identified in the park's resource management plan. Every effort will be made to incorporate these projects and programs into the park's overall resources monitoring program. All projects and programs will be geographic information system (GIS) based where applicable and appropriate and important locations and points will be identified and recorded with a geographic positioning system (GPS).

All research projects and inventory and monitoring programs will meet applicable National Environmental Policy Act (NEPA) compliance requirements and all other applicable federal and state laws. Categorical exclusions will be written for research projects and inventory and monitoring programs when appropriate and required by NEPA regulations.

12.1: RESEARCH

New research initiatives will be implemented to fill existing gaps in the park's knowledge of fire's role, behavior and effect in the park's natural systems, of fuels and fuel loadings and of fire as a tool for managing fuels, vistas and cultural landscapes and maintaining natural systems.

12.1.1: Current Research Projects

The following fire related research project is being conducted in the park at this time.

- 1) Fire Behavior and Fire Effects on Vegetation (ACAD-N-024.000): Information on fire behavior, the effects of fire on fuel loadings and plant communities and the use of prescribed fire as a management tool for the northeastern part of the United States is limited. This project conducts research in these areas through the use of small prescribed research burns. This research will determine the accuracy of standard fuel types in predicting fire behavior when applied to park fuel types, determine the effect of fire on those fuels and plant communities and determine the feasibility of using prescribed fire to meet various park resource management objectives, including vista management, cultural landscape management, hazard fuels reduction and perpetuation of fire dependent species.

12.1.2: Proposed Research Projects

The following research projects have been identified and respective project statements have been included in the park's resource management plan (see Appendix O).

- 1) Fire Interactions: Water, Biota and Soils (ACAD-N-025.000): Little information is available on fire's interaction with wildlife, water and soils in northeastern United States ecosystems and no information specific to the ecosystems of Acadia National Park. This project would gather and analyze basic information on local wildlife populations (e.g., distribution, behavior, abundance and reproduction) and their inter- and intraspecific relationships, interactions and habitat requirements. This information would serve as baseline information against which to measure population changes caused by fire. Similar data would also be collected after research burns to document fire effects on wildlife populations. Data would also be collected prior to and after research burns to quantify the changes in charcoal and cation release affecting acid deposition and nutrient release affecting eutrophication. Basic data on the effects of fire on soils in the park, including organic matter content, erodability and ability to support vegetative regeneration would be collected and analyzed.
- 2) Study Long-Term Fire History (ACAD-N-062.000): This project would continue the work initiated by Patterson into the long-term fire history of the park. Additional pond bottom core samples would be taken in appropriate locations of the park or adjacent to the park and analyzed for charcoal and pollen content in order to gain a better understanding of the fire and vegetative species composition histories of the park over several thousand years. An in-depth analysis of historic photographs and additional literature and record reviews would be conducted to enhance knowledge of the park's post-settlement fire history and changes in vegetative species composition.
- 3) Fuel Model Mapping (Part of ACAD-N-034.000): This project would determine fuel models for the park's vegetation and develop a GIS based map and relational database for that information. This information could either be derived from the park's existing GIS based vegetation maps (1979) or preferably, included as a component of a new series of vegetation maps of the park.

12.2: INVENTORY AND MONITORING

Monitoring of fire related activities is necessary to increase the park's knowledge of fire effects on the park ecosystems, conditions that affect fire behavior and vegetative changes that may alter the effects and behavior of fire. All wildland fires, both prescribed and wildfire, will be monitored for fire behavior and fire effects.

12.2.1: Current Inventory and Monitoring Programs

- 1) Weather Data Collection: The park has manually collected daily weather data on Mount Desert Island since 1926. This information is currently collected at the park headquarter, located on McFarland Hill, in the Town of Bar Harbor. This station also collects fire weather data during the fire season. The park has also collected weather data at various times from both the Schoodic Peninsula and Isle au Haut units. In 1992, a remote automatic weather station (RAWS) unit was re-established for the Isle au Haut unit and a new RAWS unit was established for the Schoodic Peninsula unit. These RAWS units automatically collect daily weather data and fire weather data during fire season. The information from all three weather stations are entered into the Weather Information Management System (WIMS) computer program for archival storage and generation of National Fire Danger Rating System (NFDRS) fire danger indices. Starting in 1992, the Keetch/Byram Drought Index (KBDI) for the McFarland Hill station was calculated. Starting in 1994, the KBDI will also be calculated for both the Isle au Haut and Schoodic Peninsula units. These records and all future records will be maintained in order to have a reliable database of weather data for the park.
- 2) Fire Records: The park has annual fire atlases or individual fire reports for fires dating back to 1937. These records, through 1992, are also stored in the park's geographic information system (GIS). These records and all future records will be maintained in the fire management office in order to have a reliable database of fire occurrence and size in the park. All wildland fires will be reported according to the procedures specified in NPS-18 (*Wildland Fire Management Guideline*).
- 3) Hazard Fuels Reduction Monitoring: Hazard fuels reduction project areas are inventoried for stand composition and dead and downed woody fuel loadings immediately prior to and after fuel reduction work is completed. Selected areas are then sampled on a five year basis.
- 4) Long-Term Vegetation and Fuel Monitoring (ACAD-N-051.000): The park lacks baseline information on the vegetative composition and fuel loading changes of its natural systems over time. Forest stand composition and fuel loadings were first inventoried in the park in 1980 as part of the Patterson's work on the fire ecology and history of the park. This was considered a one-time project and the inventorying plots were only established temporarily. In 1992, funding was received to relocate a selected number of these plot locations, establish them permanently, make them recoverable and re-evaluate them. During 1992 and 1993, Patterson relocated, marked and inventoried 12 plots. Additional plots will be re-established and evaluated during 1994, if funding permits. In addition to the stand composition and fuel loading data collected in 1980, live-fuel moisture monitoring transects have also been established. Comparison of data collected in 1980 and in the early 1990's is in progress. In the future, plots will be inventoried every ten years and analyzed for indications of change in stand composition, stand health and fuel loadings.

12.2.2: Proposed Inventory and Monitoring Programs

- 1) Long-Term Photodocumentation (In-House): Along with actual sampling for stand composition and fuel loading to document change over time, photographs can graphically indicate change over time. Photos are especially useful in portraying this change to lay persons and managers. This project would establish fixed and permanent photodocumentation points from which photographs of representative vegetation and landscapes would be taken. This project may incorporate the work of Barnicle (1984), which rephotographed scenes first photographed after the 1947 Bar Harbor Fire. Photographs would be taken at ten year intervals and compared to previous photographs at the same location and monitored for changes.
- 2) Hazard Fuels Photo Guide (In-House): A quick and simple field method for estimating fuel loading is needed for use in identifying potential hazard fuels reduction projects. A photo guide of sample fuel loadings in various fuel models would be created through inventorying and photographing specific stands.

SECTION 13: PUBLIC SAFETY

Public safety is a primary consideration in all aspects of the park's fire management program. The protection of human life from the dangers of fire will be given top priority during all fire operations.

The fire management officer will provide information to all divisions concerning the daily fire conditions (NFDRS fire danger rating), scheduled prescribed fire research burns and potentially hazardous fires. The fire management officer will advise and make recommendations to the superintendent through the chief ranger concerning potentially hazardous fire situations.

The incident commander on all wildfires and the prescribed burn boss on all prescribed fire research burns will insure that those fires are monitored and evaluated for safety. If necessary, areas of the park may be closed due to hazardous fire conditions (intense burning, rapid fire spread, hazardous fuels, dense smoke, etc.). The protection division will be responsible for enforcing all closures.

The fire management officer will inform the public of daily fire conditions through the use of fire danger ratings signs. Press releases to local newspapers, radio stations and television stations will be issued during extended periods of very high or extreme fire danger. All divisions will inform the public of potential fire dangers, special closures and fire regulations during the course of their public contacts.

SECTION 14: PUBLIC INFORMATION AND EDUCATION

It is critical to the success of the park's fire management program that the public be provided with accurate and timely information concerning the fire management program, current fire situations and conditions and the role of fire in the natural systems of the park. In addition, the general management plan calls for the dissemination of scientific data and research findings to the public.

Wildfire is an extremely infrequent visitor to Acadia National Park. Annual fire occurrence is very low and the vast majority of those fires are quite small. Still, the park has about 35,000 acres (14,560 hectares) of land, most of which is forested. These forests represent a tremendous fuel source and under the right climatological conditions can support large-scale wildfire, such as the 1947 Bar Harbor Fire. Though wildfire is infrequent, it does occur and may occur catastrophically.

To help prevent such wildfires and to promote public support of the park's fire management program, the park will implement the activities listed below. Though various park employees and divisions have specific responsibility for providing fire related information to the public, all park employees can and must assist in this endeavor. All park employees should be familiar with National Park Service fire management policy, the park's fire management program, fire prevention messages and current fire situations so that if they are approached by park visitors or neighbors, the employee may provide accurate information in support of the park's fire management program.

14.1: ROLE OF FIRE IN NATURAL SYSTEMS

Ecological concepts upon which the park's fire management program is based will be incorporated into interpretive presentations, exhibits and written material where appropriate. The public must be informed of fire's natural role and how both the National Park Service wildland fire policy and the park's fire management program incorporate those concepts. The chief of interpretation will coordinate the inclusion of this information with the chief of the branch of natural resources and the fire management officer.

14.2: FIRE PREVENTION

Fire prevention information and messages will be provided as specified in the fire prevention section (Section 8.1.) of this plan. In general, a variety of educational methods will be used to help reduce the occurrence of wildfire (fire danger rating signs, handouts, posters, press releases, Smokey Bear visits, interpretive programs, etc.) and inform the public of wildland/interface hazards and risks. Fire danger rating signs will be located at Thompson Island information center, Blackwoods campground, Seawall campground, Frazer Point picnic area, Duck Harbor campground and the Isle au Haut ranger station. Fire prevention programs will be coordinated by the fire management officer.

14.3: FIRE MANAGEMENT OPERATIONS

Park fire management operations, including prevention messages, research burns, training and noteworthy presuppression and suppression actions will be accompanied by timely press releases and contacts with the media where appropriate. Temporary interpretive signs will be developed and posted at the site of research burns in order to inform the public of the objectives and accomplishments of those burns. Every opportunity will be taken to present a highly visible fire management program to the public. This information will be provided by the fire management officer.

14.4: EMERGENCY INFORMATION

During periods of very high or extreme fire danger or during major wildfire incidents, the public will be kept informed daily and as needed through press releases and media contacts, broadcast on the park's traveler's radio system, posting of permanent and temporary fire danger signs, posting of

signs banning open fires and smoking on the park's trails and roads or implementing area closures and personal contacts. Dissemination of this information will be coordinated by the fire management officer in conjunction with the park's public information officer or the incident information officer.

SECTION 15: ARCHEOLOGICAL, CULTURAL AND HISTORIC RESOURCES

Acadia National Park has many archeological, cultural and historic resources.

Most of the park's archeological resources are native American shell heaps. The vast majority of these have never been excavated or surveyed for their archeological significance. In order to protect these sites, their location is not public information. A complete listing of these sites is maintained in the fire management office for fire management purposes.

The park has several historic buildings (see Appendix P) and other structures, many of which are included on the National Register of Historic Places or are being considered for inclusion on that list.

The cultural resources of the park include the carriage road system and the motor road system and their associated structures (bridges, etc.). These systems, along with many of the historic structure of the park were purposely created to form cultural landscapes that emphasize the scenic beauty of the area.

A wildfire burning over the park's archeological sites does not, in most cases, endanger those sites. A fast moving wildfire, combined with the depth of these sites should have little permanent impact on them. On the other hand, fire suppression actions taken by fire suppression forces could have a devastating impact on those sites. The possibility of disturbance or destruction of these sites, especially during fireline construction, makes it imperative that these sites be protected. Fireline construction will be prohibited in most cases in these areas (see Section 5.3. of this plan).

A wildfire can have devastating impact on both the historic and cultural resources of the park. Every effort will be made to protect these features and cultural landscapes from damage or destruction from wildfire. As in the case of archeological features, it is also necessary to protect the park's cultural landscapes from unwanted damage and destruction from fire suppression actions. Fireline construction in areas identified as culturally significant will be prohibited in most cases (see Section 5.3. of this plan).

A listing of archeologically and culturally sensitive or significant areas is maintained in the fire management office and is included in the "Incident Commander Briefing Notebook".

SECTION 16: FIRE CRITIQUES AND ANNUAL REVIEW PLAN

16.1: FIRE REVIEW

An informal fire critique will be conducted for all class A (up to 1/4 acre in size) wildfires. A formal, written fire review will be conducted for all class B or larger (above 1/4 acre in size) wildfires. The post-burn portions of the prescribed burn plan and a written summary of the burn will be completed

for each prescribed fire research burn conducted in the park. The procedures listed in NPS-18 (*Wildland Fire Management Guideline*), Section III, Chapter 9 will be adhered to for all fire reviews.

16.2: PROGRAM REVIEW

As a FIREPRO funded park, the fire management program is subject to periodic fire management program review. The schedule for these reviews are established by the Branch of Fire and Aviation Management. These reviews will include both an expenditures audit and an analysis of the relative success of FIREPRO in addressing park program management needs. Specific guidance on this review is found in NPS-18 (*Wildland Fire Management Guideline*), Section III, Chapter 9.

Review of park fire management programs will be included in any operations evaluation of the park.

16.3: ANNUAL PLAN REVIEW

The fire management plan will be reviewed annually prior to the fire season and minor changes may be made. Copies of any amendments will be forwarded to the regional fire management officer, North Atlantic Region and the NPS fire director, Branch of Fire and Aviation Management.

The fire management plan will be revised every three (3) years. Internal park review of the plan will be made by all division chiefs, the deputy superintendent and the superintendent. The plan will be reviewed by the regional fire management officer, North Atlantic Region and the NPS fire director, Branch of Fire and Aviation Management and approved by the regional director, North Atlantic Region. The revised fire management plan will be submitted to the Branch of Fire and Aviation Management at least thirty (30) days prior to the start of the park's fire season.

SECTION 17: CONSULTATION AND COORDINATION

General fire management consultation will be made with the North Atlantic regional fire management officer and the staff fire specialists in the Branch of Fire and Aviation Management at the National Interagency Fire Center at Boise.

Consultation and coordination with the Maine Forest Service's Division of Forest Fire Control, the Hancock County fire coordinator, the Hancock County Firefighters Association and appropriate local fire departments and town fire wardens will be made for the purpose of coordinating operations and fostering mutually beneficial relationships.

17.1: PRESCRIBED FIRE RESEARCH BURNS

Prescribed fire research burn plans will be reviewed by the fire management officer, chief ranger, chief of the branch of natural resources and deputy superintendent and approved by the superintendent. Copies of these plans will be forwarded to the North Atlantic regional fire management officer, the Maine Forest Service district ranger for the Downeast District and the fire warden and fire chief for the town in which the burn will occur.

APPENDIX A

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APPENDIX B

HISTORICAL INVENTORY OF FIRE-RELATED RESEARCH AND MONITORING PROGRAMS AT ACADIA NATIONAL PARK

October 1993

EXCERPTED FROM:

HISTORICAL RESOURCE INVENTORY FOR ACADIA NATIONAL PARK

PART-1 FINAL REPORT

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FIRE

SUMMARY

Patterson et al. (1983a) is the most intensive and extensive study of fire ecology and history for Acadia National Park. This work includes a history of fire 1848-1979, analysis of causes and frequency of fires, baseline inventories of fuel loads in representative cover types for Mount Desert Island and Isle au Haut, and an extensive bibliography. Winter (1984) summarizes fire history for coastal Maine and Acadia National Park from 9000BP to the present.

Fire records have been kept by the park since 1937 and note size, cause, and location of all reported fires (Acadia National Park 1947, 1964, 1968, 1990). On average six fires burn each year with over fifty percent of them burning .25 acres or less (Winter 1984). Smoking was the primary cause of fire. The largest and most studied fire in Park history was Mount Desert Island's fire of 1947 that burned 8320 acres of Park lands, and 8862 acres outside Park boundaries. Since that time there have been no fires larger than 20 acres.

Mount Desert Island

Pre-historic fires have been studied by Backman (1984), Patterson and Backman (1988) and, Patterson and Sassaman (1988) using charcoal profiles of pond sediments. These studies document major fires in the area of The Bowl circa 1600, 1700, and 1820; and Sargent Mountain Pond circa 1700 and 1850. Other fires occurring prior to 1937 are noted in:

Moore and Taylor (1927)—report a major fire in 1848 on the northeast side of the island, a fire in 1864 by Jordan Pond, and an extensive fire in 1889 on Cadillac Mountain;

Skutch (1929)—records the earliest stages of succession following fires on Young's Mountain in 1924 and 1925;

Patterson (1988)—documents a fire on Norumbega Mountain circa 1930 by using soil samples.

The history of fire since 1937 is documented in individual or annual fire reports (Acadia National Park 1947, 1964, 1968, 1990). Patterson et al. (1983a) also lists, maps, and states the cause of all fires 1937-79, noting that most were caused by smoking.

The largest and most studied fire in park history occurred in 1947 on Mount Desert Island, burning 8320 acres of park lands and an additional 8862 acres outside the park. Studies noting the effects of this fire include:

Reports of daily fire movements and control measures:

Anonymous 1947, Arnold et al. 1948, Barnicle 1984, Butler 1978, Favour 1947, Heath and Sleeper 1947, Savage 1947;

Research on the impact of fire on flora:

Barnicle 1984, Collins 1990, Foley 1987, Griffin and Richards 1957, Patterson 1988, Racine 1982, Smith 1960;

Studies on the impact of fire on fauna:

Dubuc 1987, Dubuc et al. 1989, Manville 1960, Racine 1982.

The most extensive study of fire ecology for Mount Desert Island is Patterson et al. (1983a). This work includes a history of fire 1848-1979, analysis of the cause and frequency of fires, and baseline inventories of fuel loads in representative cover types. Data from this study will be used to aid in the development of a Fire Management Plan for Mount Desert Island. that is now in progress (Jones pers. comm.).

Isle au Haut

Pre-historic fires have been studied by Backman (1984) using charcoal profiles from Long Pond, and indicate fires burned in that area circa 1630 and in the mid-1950's.

The largest fire on record occurred in 1879 "burning more than half the island" (Moore and Taylor 1929, Winter 1984, Bobinchock 1990). Two small fires (unspecified size) burned in 1894 and 1949 (Bobinchock 1990), another in 1963 was caused by lightning (Acadia National Park 1990). A complete fire history for Isle au Haut has not been organized as such but could be compiled from individual fire reports (Acadia National Park 1947, 1964, 1968, 1990).

The most extensive study of fire ecology for Isle au Haut is Patterson et al. (1983a). This work includes a partial history of fire 1879-1979, analysis of the causes and frequency of fires, and baseline inventories of fuel loads in representative cover types. This study found fire danger on Isle au Haut high and increasing. Downed dead fuel loadings in 1980 were 10+ tons, acre and expected to rise to 60+ tons, acre by 2000-2010. A Fire Management Plan has been completed for Isle au Haut (Bobinchock 1990) and is based in part on Patterson et al. (1983a).

Schoodic Peninsula

Pre-historic fires have been studied by Patterson (1988) using soil sampling and reveal a fire of unknown size on Schoodic between 1860 and 1870. Recent fire reports indicate small fires in 1952 and 1953 (Acadia National Park 1990). A complete fire history for Schoodic has not been organized as such but could be compiled from individual fire reports (Acadia National Park 1947, 1964, 1968, 1990).

No research was found regarding the impact of fire on natural resources at Schoodic.

A Fire Management Plan for Schoodic is in progress (Jones pers. comm.).

Smaller Park Islands (owned and easements)

A small fire on Baker's Island was reported in 1968 (Acadia National Park 1968). A complete fire history for outer islands has not been organized as such but could be compiled from individual fire reports (Acadia National Park 1947, 1964, 1968, 1990).

GIS USABLE DATA

The following maps are available showing:

- Daily movements of the 1947 Mount Desert Island fire (Anonymous 1947);
- Pre-1947 fire vegetation (Moore and Taylor 1927);

- Post-1947 fire vegetation on GIS (Jones pers. comm.);
- Locations of all fires reported on Mount Desert Island 1937-1979 (Patterson et al. 1983a);
- Foley's (1987) study sites where she assessed the impact of fire, air pollution and drought on red spruce, white pine and red oak.
- Distribution of fuel types, and high risk areas on Isle au Haut (Bobinchock 1990)

Garman (1986, 1989) and Garman et al. (1987) describe how to use GIS as a spatial tool for quantification and presentation of fire data to aid the fire management process. Fuel model topography statistics, and map areas of high fire risk are on a MacIntosh computer at Park Headquarters.

INVENTORY AND MONITORING

It is essential that the Park maintain accurate fire records in order to assess the ecological impacts of fire.

Priorities

- Continue collecting detailed data (fire boundaries and natural resource casualties) at fire sites and add data to GIS basemap.
- Continue collecting detailed fire weather data from all Park locations.
- Monitor fuel loadings (Patterson et al. 1983a).

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Notes size and cause of all fires reported 1938-47. Reports on activities in fire detection, equipment purchased, training given, and occasionally property loss. The majority of fires were caused by smokers.

GIS: No

Location: Mount Desert Island: Seawall, Blackwoods, Cadillac Mountain. Isle au Haut. Schoodic Peninsula.

Storage Area: RM - Insect box

Keywords: Forestry, Fire, Insects, Mammals, Fauna, Deer, Flora, Fungi, Blister Rust, Plant Disease

Acadia National Park. 1964. Annual forestry and forest insect reports, vol. 2. Unpub. 1953-1964.

Annual reports on fire occurrence, suppression, and prevention activities. Notes the fire danger level for each year.

GIS: No

Location: Mount Desert Island: Seawall, Blackwoods, Cadillac Mountain. Isle au Haut. Schoodic Peninsula.

Storage Area: RM - Insect box

Keywords: Forestry, Fire, Insects, Fauna, Flora, Fungi, Blister Rust, Plant Disease

Acadia National Park. 1968. Fire report summary - 1964-1968. Unpub.

38 fires were reported between 1964-68. 26 were caused by smoking, 1 by lighting (on Isle au Haut). Twenty-two acres burned in all -- an average of 6 acres per year. Visitors to the park caused most of the fires. They also detected and reported the most fires.

GIS: No

Location: Mount Desert Island, Baker Island, Isle au Haut, Schoodic Peninsula

Storage Area: Fire Management Office - Box: Historic Fire Reports

Keywords: Fire, History

Acadia National Park. 1990. Yearly forest fire reports. Unpub. 1937-57, 1962-73, 1985-90.

Yearly summaries of fires 1937-57, 1962-73 noting location, size, and cause of each fire for each year, and individual fire reports for 1962-1989. Fire at Baker Island in 1968.

GIS: Notes locations of fires.

Location: Mount Desert Island, Baker Island, Isle au Haut, Schoodic

Storage Area: Fire Management Office - Historic Fire Reports; files P1 1201's.

Keywords: Fire

Anonymous. 1947. Map of Fire - 1947.

Shows day by day progress of the Mount Desert Island 1947 fire.

GIS: Shows the area burned by the 1947 Mount Desert Island fire.

Location: Mount Desert Island

Storage Area: ANP Library box 974.1(f) #24

Keywords: Fire, Map

Arnold, F.N., W.L. Savage, and R.B. Moore. 1948. The Mount Desert Island fire of October 17-November 14, 1947 with particular reference to Acadia National Park, Maine. Unpub. Includes conditions under which the 1947 MDI fire started, spread, and was suppressed; cost of suppression; extent of timber loss, buildings burned, and roads and trails destroyed.

GIS: No

Location: Mount Desert Island

Storage Area: ANP Library box 974.1(f) #1

Keywords: History, Planning, Fire

Backman, A.E. 1984. 1000 year record of fire-vegetation interactions in the northeastern United States: a comparison between coastal and inland Maine. Unpub. M.S. Thesis, Univ. of Mass., Amherst. 99 pp.

Using charcoal profiles Backman dates fires at The Bowl, MDI circa 1600, 1700 and 1820 -- the latter may reflect slash burning associated with logging. At Sargent Mountain Pond, charcoal records show fire circa 1700 and 1850. At Long Pond, IAH, charcoal records reveal fires circa 1630, and a small fire in the mid-1950's.

GIS: No

Location: Mount Desert Island, The Bowl, Sargent Mountain Pond. Isle au Haut, Long Pond.

Storage Area: HCOA

Keywords: Fire, Flora, History, Abundance, Pollen, Vascular

Barnicle, K.S. 1984. Impacts of the 1947 Bar Harbor fire and post-fire salvage operations on the vegetation of Acadia National Park, Mount Desert Island, Maine. Unpub.

Briefly describes logging history and its contribution to conditions leading to the 1947 fire. Notes 8542 acres of forest, 24 acres of shrubs, and 184 acres of grasslands burned.

Comments on effects of clean-up operations on regenerating vegetation. Discusses impact of the 1947 MDI fire on Red spruce, White pine, Jack pine, Pitch pine, Beech, Aspen, Maples and Birch.

Management suggestions: Identify sites particularly sensitive to post-fire clean-up operations and exclude them from such operations.

GIS: No

Location: Mount Desert Island

Storage Area: ANP Library box 974.1(f) #9+ #25

Keywords: History, Planning, Flora, Fire, Forest, Vascular

Bobinchock, L. 1990. Fire management plan, Acadia National Park, Isle au Haut Unit. (Unpublished Draft). 91 pp.

Describes 3 fires that burned on IAH between 1879-1949: one that burned over the summit of Mt. Champlain for about six weeks; a smaller one in 1894 south of Duck Harbor; and a third in 1949 northeast of Long Pond. This report indicates no fires occurred since 1949.

Presents a human-caused fire risk analysis comparing visitors to residents and reveals visitors caused more fires than island residents.

Notes 82% of vegetation is even-aged spruce 100-110 years old and presenting significant fire management problem. Downed-dead woody fuel loading is 10.38 tons, acre and will increase to 60-80+ tons, acre over next 10-20 years. Gives breakdown of percent cover of vegetation types around the island, includes flammability and fuel loading, fire behavior and impact of fire for each type.

GIS: Map shows distribution of fuel types, and hazard fuel distribution and risk areas on Isle au Haut.

Location: Isle au Haut: Duck Harbor Mountain, Great Meadow, Head Harbor, Duck Harbor Trail, Duck Harbor, Horseman Point.

Storage Area: RM - Fire; HCOA.

Keywords: Fire, Fire Management, Flora, Archaeology, Rare species, Fauna, Abundance, Distribution, Birds, Vegetation ecology, Peregrine Falcon

Butler, J. 1978. Wildfire loose: The week Maine burned. Durrell Publications, Kennebunkport, Maine.

Contains many pictures of areas that were burned in the 1947 fire. It is mostly a story of the fires in Maine.

GIS: No

Location: Mount Desert Island

Storage Area: ANP Library: 974.145 Bu; COA Library SD 421.32 M2 B87

Keywords: Fire, Forests, History

Collins, D.A. 1990. Analyzing beaver lodge activity levels on Mount Desert Island. Unpub. 10 pp.

Field work: Spring 1990.

Notes that majority of beaver sites on the island are in areas burned by 1947 fire.

GIS: No

Location: Mount Desert Island

Storage Area: RM - Beaver box

Keywords: Mammals, Beaver, Fauna, Abundance

Dubuc, L.J. 1987. Ecology of river otters on Mount Desert Island, Maine. Unpub. M.S. thesis, Univ. of Maine, Orono. 76 pp.

Field work: August 1985-March 1987, summer and winter field seasons.

Discusses the role of the 1947 MDI fire and beaver activity in creating habitats suitable for otter on MDI. Notes an increase in both species since the fire.

GIS: A map shows watersheds burned in 1947 MDI fire.

Location: Mount Desert Island

Storage Area: RM - Mammals; ANP Library 599.74 Du

Keywords: Fauna, Mammals, River Otter, *Lutra canadensis*, Beaver, Beaver Management, Distribution, Hydrology

Dubuc, L.J., R.B. Jr. Owen, W.B. Krohn, and C.J. Schell. 1989. Otters, fire, and the ocean: An unusual relationship at Acadia. *Park Science* 9(2): 16.

Field work: 1985-87, summer and winter seasons.

Discusses the role of the 1947 MDI fire and beaver activity in creating habitats suitable for otter on MDI. Notes an increase in both species since the fire.

GIS: No

Location: Mount Desert Island

Storage Area: HCOA

Keywords: Fauna, Otter, Mammals, Fire

Favour, P. 1947. Annual forestry report: Acadia National Park. Unpub.

Ten reportable fires occurred in 1947. This report notes size and cause of each. Historically, the primary cause of fire on MDI is smoking. The catastrophic fire of 1947 burned 17,188 acres on Mount Desert Island: 8750 acres of which were on park land. This fire is believed to have begun in an open dump.

GIS: Shows where the 1947 fire burned.

Location: Mount Desert Island: Sargent Mountain

Storage Area: RM - Insect box; ANP Library box 580(b) #46

Keywords: Flora, Forest, Fire, Insects, Mammals, Deer, Flora, Fungi

Foley, M.K. 1987. Ecosystem disturbance and forest development in Acadia National Park. Unpub. Ph.D. thesis, Boston Univ., Mass. 238 pp.

Field work: 1982-1983.

Quantifies the impact of air pollution, drought and fire on tree growth rates in forest ecosystems by studying red spruce, white pine and red oak at 10 sites on MDI and IAH. Develops a model of forest growth that could be used to project the effects of future disturbance.

Describes the procedure for analyzing the affect of disturbance on tree growth using tree ring and intervention analyses. Trees studied showed very little growth response to drought or fire. Only one site had significant growth response to the 1947 MDI fire, and only one showed significant response to the drought in 1960. Both were white pine sites. Notes that areas not burned by 1947 MDI fire are primarily 100-140 year old red spruce.

GIS: Map shows site locations of the study.

Location: Mount Desert Island: Parkman Mountain, Pemetic Mountain, west side of Eagle Lake. Four locations on Isle au Haut.

Storage Area: RM - Air quality box

Keywords: Flora, Air Quality, Fire, Forests, Management, Ozone, Permanent plots, Distribution, Pollution, Hydrology, Vascular

Garman, S.L. 1986. Computerized Acadia National Park fire and resource management decision aid system (AFRMDAS). Unpub.

This paper explains how AFRMDAS is set up and how to use it for resource management.

GIS: No

Location: Methods

Storage Area: RM Files A4415

Keywords: Fire, Modelling, Planning, Management, Methods

Garman, S.L. 1989. Programmer's reference manual: Acadia National Park fire and natural resource management simulation system. Version 1.0. 89 pp.

A technical computer manual. Describes use of this software for use in fire and natural resources management.

GIS: No

Location: Methods

Storage Area: RM - Fire Box

Keywords: Fire, Management, Computer Software

Garman, S.L., W.A. III Patterson, and J.T. Finn. 1987. Fire management planning in ANP using a geographical information system. Univ. of Mass., Amherst. Unpub.

A paper describing how to use GIS as a spatial analysis tool for the delineation, quantification and presentation of fire danger to aid in the fire management process. On computer are: fuel

model topography statistics, a map illustrating the interaction between fuel types and landscape, and critical areas of high fire risk danger.

GIS: Not immediately accessible but, this paper describes how he used a GIS system to model conditions on Isle au Haut. All roads, campgrounds, vegetation types, slope and aspect for Isle au Haut were digitized on a MacIntosh computer that is now in Isabell Manselli's former office.

Location: Isle au Haut

Storage Area: RM (Len Bobinchock's office) - Fire Ecology, Fuels management box

Keywords: Fire, Management, Planning, Methods

Griffin, R. and C. Richards. 1957. Forest fire succession. Unpub.

Field work: 21 August 1957.

A total of ten .004 acre plots were set down near Thunder Hole, Otter Point area, five in a burned area (1947 fire) and five in an unburned area nearby. The vegetation was measured in each plot. The percent frequency and abundance of each species (trees, shrubs, and herbs) in the plots is estimated.

GIS: No

Location: Mount Desert Island

Storage Area: ANP Library box 574.5 #22

Keywords: Fire, Flora

Hadley, B.L. 1950. Healing Acadia's Burn. National Parks Magazine 24(102): 83-87.

General discussion of logging at ANP after the 1947 fire. Not much useful information.

GIS: No

Location: Mount Desert Island

Storage Area: ANP Library box 974.1(d) #28

Keywords: Fire, Forest utilization

Heath, J. and D.A. Sleeper. 1947. The Bar Harbor Fire, 1947. Unpub. 8 pp.

Gives the fire marshall's report on the fire of 1947. Describes areas that were bulldozed and cut as fire breaks.

GIS: No

Location: Mount Desert Island

Storage Area: ANP Library box 974.1(d) #29

Keywords: Fire

Johnson, M.S. 1936. Report on beaver flow, Acadia National Park extension. Unpub. 3 pp.

In response to a proposal to cut 50 acres around Bass Harbor Marsh, Johnson recommended that beaver flows continually be protected from human interference, including clearing in the name of fire hazard reduction.

GIS: No

Location: Mount Desert Island: Aunt Betty Pond, Bass Harbor Marsh, Marshall Brook, Buttermilk Brook.
Storage Area: ANP Library box 599a #95; RM - Mammals, Beaver
Keywords: Fauna, Mammals, Beaver, Resource Management Plan, Planning, Abundance

Manville, R.H. 1960. Recent changes in the mammal fauna of Mount Desert Island, Maine.
Journal of Mammalogy 41(3): 415-416.

Notes changes in 15 mammal species since the fire of 1947.
GIS: Notes some observation and collection localities of mammals.
Location: Mount Desert Island: Great Head, Otter Point, Jordan Pond, Northeast Harbor, Sieur de Monts Spring, Seawall Baker Island
Storage Area: HCOA
Keywords: Fauna, Fire, Mammals, Deer

Moore, B. and N. Taylor. 1927. Vegetation of Mount Desert Island, Maine and its environment.
Lancaster, PA. Lancaster Press, Brooklyn Botanic Garden, Memoir 3. 151 pp.

Notes fires: in 1848 burning over 100's of acres on northeastern MDI; 1864 - fire on south shore of Jordan Pond and up south slope of Pemetic and Penobscot Mountains, the fire may have started in a lumber camp; 1889 - large fire on Cadillac Mountain; 1886 or 1898 - vegetation suggests an extensive fire burned on north ridge of Cadillac Mountain.
Includes an excellent forest-cover map (useful in locating stands existing prior to the 1947 fire) of Mount Desert Island and with spruce, mixed conifer, fir, pitch pine, hardwoods, northern hardwoods-spruce, cedar, burns, marsh, bog, rock, and white pine community types.
GIS: Map of pre-fire vegetation.
Location: Mount Desert Island
Storage Area: ANP Library box 580(b) #11; ANP Library 581 Mo
Keywords: Flora, Geology, Forest, Ecology, Map, Soils, Fire, Map, Lichen, Vascular, Climate

Patterson, W.A., III. 1988. Fire and the jack pine of Acadia National Park, Maine. Unpub.

Field work: 21-24 June 1988.
Evaluates the role of fire in the establishment and maintenance of Jack pine populations. Using soil sampling he documents a fire on Norumbega Mountain in the late 1920's and a fire of unspecified size on Schoodic Head circa 1860-70.
GIS: No
Location: Mount Desert Island, Schoodic Peninsula, Huguenot Head, Cadillac Mountain, Whalesback, Norumbega Mountain, McFarland Hill, Schoodic Head
Storage Area: RM - Fire, Fuels Management; ANP Library box 580(b) #58
Keywords: Fungi, Flora, Jack Pine, *Pinus banksiana*, Fire, Disease, Vascular

Patterson, W.A. III and A.E. Backman. 1988. Fire and disease history of forests. Pp. 603-632 in Huntley, B. and T.I. Webb (Editors). Vegetation History. Kluwer Academic Publishers.

Used pollen and charcoal studies at Sargent Mountain Pond and The Bowl on MDI, as well as at Long Pond on Isle au Haut, to determine dates of fire episodes, changes in vegetation between episodes, and the effects of disease on patterns of vegetation.

GIS: No

Location: Mount Desert Island: Sargent Mountain Pond, The Bowl; Isle au Haut: Long Pond.

Storage Area: HCOA; RM - Fire, Fuels Management

Keywords: Fire, History, Pollen, Charcoal

Patterson, W.A. III and K.E. Sassaman. 1988. Indian fires in the prehistory of New England. Pp. 107-135 in Nicholas, G.P. (Editor). Holocene human ecology in northeastern North America. New York, Plenum Press.

Discusses the use of fire by Indians in New England and the lasting impact fire had on vegetation patterns. Includes charcoal and pollen profiles for The Bowl and Sargent Mountain Pond on MDI, and Long Pond on IAH to determine dates of fires and types of vegetation growing at those times. Not much data specifically pertinent to ANP.

GIS: No

Location: Mount Desert Island: Sargent Mountain Pond, The Bowl; Isle au Haut: Long Pond.

Storage Area: HCOA; RM - Fire, Fuels Management

Keywords: Fire, History, Pollen, Archaeology, Charcoal

Patterson, W.A., III, K.E. Saunders, and L.J. Horton. 1983. Fire regimes of the coastal Maine forests of Acadia National Park. Boston, MA. U.S. Dept. Int., Natl. Park Serv., NAR, Office of Scientific Studies.

Summarizes major fires in the park between 1848-1947, and lists the cause of all fires reported between 1937-79. Most fires were caused by smoking. Discusses the correlation between logging of small spruce and increased incidents of fire on MDI mid-1800's to early 1900's.

Baseline inventories of fuel loads in representative forest cover types were conducted by sampling standing and downed fuels at 26 sample stands. These are reported in tons, acre, and include written descriptions of the fire danger for each stand.

GIS: Maps all fires on MDI and IAH 1939-79. Map showing 26 sample stand locations on MDI and IAH. Text includes species composition, abundance and fire history. See page 4-2 for map.

Location: Mount Desert Island: Otter Point, Eagle Lake, Conners Nubble, Bubble Pond, Cadillac Mountain, Ocean Drive, The Bowl, Pemetic Mountain, Sargent Mountain, Gilmore Meadow, Sand Beach area, Dorr Mountain, Norumbega Mountain, Long Pond, Western Mountain, Hodgdon Pond, Lake Wood, Fawn Pond, Day Mountain. Isle au Haut: Bowditch Trail, Duck Harbor Path, Herrick Trail, Western Head, Pat's Brook, Jerusalem Mountain, Champlain Mountain. Schoodic Peninsula: Schoodic Head.

Storage Area: RM - Fire; ANP Library box 904 PA; ANP Library 904 Pa

Keywords: Fire, Fire management, Flora, Forests, Soils, History, Planning, Climate, Weather, Forest utilization, Inventory, Permanent plots, Abundance, Distribution, Vascular, Old Growth

Patterson, W.A. III, K.E. Saunders, L.J. Horton, and M.K. Foley. 1983. Fire management options for coastal New England forests: Acadia National Park and Cape Cod National Seashore. Pp. 360-365. Proceedings - Symposium and Workshop on Wilderness fire, Missoula, Montana.

Brief discussion of the history of fire at ANP; the contribution of fuel accumulation and drought in catastrophic fires; and the recommendation of controlled, scheduled burning to decrease likelihood of major fire and to increase vegetational diversity.

GIS: No

Location: Mount Desert Island, The Bowl, Isle au Haut

Storage Area: HCOA

Keywords: Fire, Fire management

Racin, B.J. 1982. Fire succession and the effects of beavers in Acadia National Park. Unpub. 19 pp.10

Field work: 1982.

Studies the effects of fire and beaver on succession of vegetation between Witch Hole Pond and Breakneck Ponds, and west of Connor's Nubble. Includes a general discussion of succession with more specific information on vegetation found in two transects studied 35 years after the 1947 fire.

GIS: No

Location: Mount Desert Island: Transect between Witch Hole Pond and Breakneck Ponds; Conner's Nubble.

Storage Area: RM - fire and beaver.

Keywords: Fire, Fauna, Mammals, Beaver, *Castor canadensis*, Flora, Vegetation ecology, Vascular

Savage, W. 1947. Preliminary report--1947 Mt. Desert Island Fire, October 17-31, 1947. Unpub.

Narrative log of the 1947 fire and the fire fighting procedures. Includes "mop-up" instructions.

GIS: No

Location: Mount Desert Island

Storage Area: ANP Library box 974.1(f) #2

Keywords: Fire, History, Planning

Skutch, A. 1929. Early stages of plant succession following forest fires. *Ecology* 10(2): 177-190.

Field work: 16-24 August 1924; 17 July 1925 and 16-24, 30 August 1925, 8 and 17 July 1926, 8 June 1928 at the Young's Mountain location; and 13 July 1924, 12 August 1925, June 1928 one mile west of the above mentioned fire.

This study compares succession following two fires on MDI in the 1920's with a fire on Blue Mountain Peak (7000 feet) in Jamaica. Skutch found the same, or closely related species dominated vegetation succession at all three locations. Detailed observations at sites are presented.

GIS: Fire in 1924 on western side of Young's mountain -- location described in words, no map. 1925 fire one mile west of above location.

Location: Mount Desert Island: Young's Mountain

Storage Area: ANP Library box 580(b) #18

Keywords: Flora, Forest, Fire, Fungi, Moss, Liverwort, Lichen, Vegetation Ecology

Smith, R.G. 1960. A forest recovers. *American Forests* 66: 28-30, 53-54.

Field work: 1959.

This article assesses vegetation on Mount Desert Island twelve years after the fire of 1947. Notes succession after the fire.

GIS: No

Location: Mount Desert Island

Storage Area: HCOA

Keywords: Fire, Forests, Recovery, Geology, Vegetation ecology

Winter, L. 1984. Fire management in Acadia National Park. Unpub

Notes taken from a lecture given by W.A. Patterson, January 1984. Reports 204 fires burned on MDI 1937-1983; an average of 6 annually, with the majority caused by humans and five caused by lightening. More than 50% of the fires burned 0-.25 acres. A fire in 1879 burned much of IAH. Cautions that fire danger will peak on Isle au Haut in twenty to thirty years (2004-2014) as a result of spruce blow downs and drying. Gives general history of fire in coastal Maine from 9000 BP to the present, and comments on the impact of weather and Indians on fire frequency, noting that large fires are often associated with logging.

GIS: No

Location: Isle au Haut, Mount Desert Island

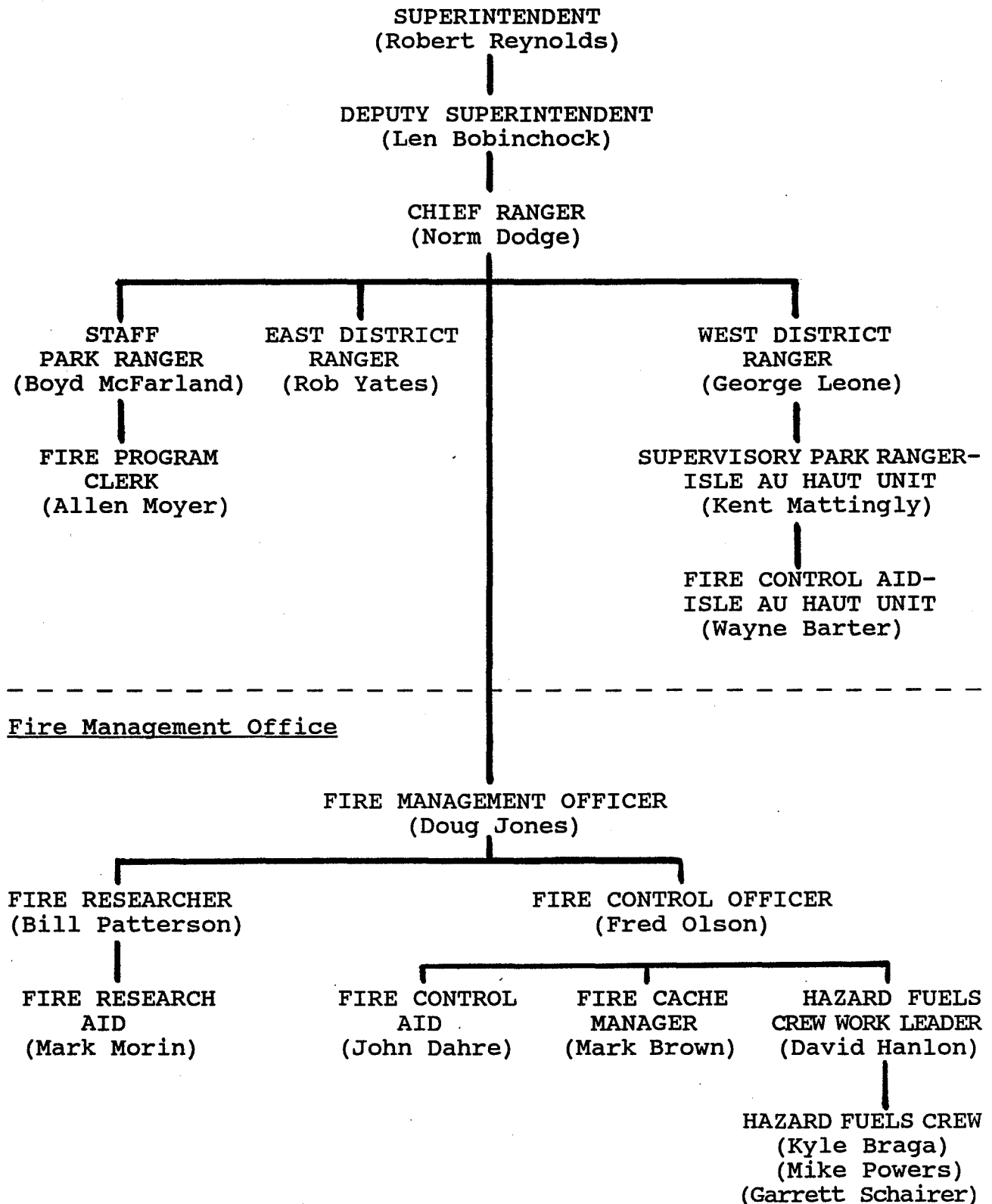
Storage Area: ANP Library box 574.5 #43

Keywords: Fire, Fire Management

APPENDIX C

FIRE MANAGEMENT PROGRAM ORGANIZATIONAL CHART

FIRE MANAGEMENT PROGRAM ORGANIZATIONAL CHART
Acadia National Park
1993



APPENDIX D

**MEMORANDUM OF UNDERSTANDING
BETWEEN
THE NATIONAL PARK SERVICE
AND
THE MAINE FOREST SERVICE**

October 1993

MEMORANDUM OF UNDERSTANDING

BETWEEN

UNITED STATES DEPARTMENT OF THE INTERIOR,

NATIONAL PARK SERVICE,

AND

MAINE DEPARTMENT OF CONSERVATION,

FOREST SERVICE

Article I. Background and Objectives

This Agreement for wildland fire protection cooperation is entered into this 5th day of April, 1993 by and between the United States Department of the Interior, National Park Service, acting through the Superintendent of Acadia National Park, hereinafter referred to as the National Park Service and the Maine Department of Conservation, Forest Service, hereinafter referred to as the Maine Forest Service.

Whereas authority for the execution of agreements between the National Park Service and other agencies and instrumentalities for mutual aid and assistance in wildland fire protection is contained in Public Law 84-46; The Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 U.S.C. 1856), The Disaster Relief Act of May 22, 1974 (88 Stat. 143; 42 U.S.C. 5121), Public Law 100-428, as amended by Public Law 101-11, April 7, 1989; The Wildfire Suppression Assistance Act of 1989, National Park Service Acts as amended (67 Stat. 495; 16 U.S.C. 1b) and the United States Department of Interior Departmental Manual (590 DM and 910 DM); and

Whereas authority for the execution of agreements between the Maine Forest Service and other agencies and instrumentalities for mutual aid and assistance in wildland fire protection is contained in Maine Title 12, Part 11, Chapter 807; and

Whereas, the National Park Service has accepted responsibility for the protection and management of certain lands and other resources in the State of Maine that make up Acadia National Park and Saint Croix Island International Historic Site; and

Whereas, the Maine Forest Service has been created under the laws of the State of Maine to protect and perpetuate the forest and wildland resources of the State of Maine; and

Whereas, the National Park Service and the State of Maine share concurrent legislative jurisdiction over the lands that make up Acadia National Park and Saint Croix Island International Historic Site, pursuant to Maine State P & S Law c.94, enacted March 24, 1986; and

Whereas, it is the mutual desire of the National Park Service and the Maine Forest Service to work in harmony for the common purpose of protecting from the ravages of uncontrolled wildfires the forest and other wildland resources within the State of Maine for the best interest of the people of Maine and the United States;

NOW, THEREFORE, this Agreement is designed to set forth in specific manner a cooperative protection agreement which will be equally beneficial to both parties, as follows:

Article II. Statement of Work

1. The National Park Service agrees:

- a. To cooperate with the Maine Forest Service in the protection from wildfire of all National Park Service administered lands that make up Acadia National Park and Saint Croix Island International Historic Site in the State of Maine.
- b. To make available in wildfire emergencies and upon the request of the Maine Forest Service, such National Park Service facilities, equipment and personnel under the administrative control of Acadia

National Park as would normally be used to control wildfires, provided that they are not needed at that time for fire suppression operations by the National Park Service.

- c. To make available, by National Park Service consent and upon request of the Maine Forest Service for wildland fire presuppression activities, such National Park Service facilities, equipment and personnel under the administrative control of Acadia National Park as would normally be used in wildland fire presuppression work, provided that they are not needed by the National Park Service at that time for other National Park Service responsibilities and operations.
- d. To make available for wildfire detection, fire presuppression, fire suppression, search and rescue, evacuation, and other emergency operations and upon the request of the Maine Forest Service, such aircraft that may be in the service of the National Park Service and under the administrative control of Acadia National Park within the State of Maine, provided that they are not needed at that time for National Park Service responsibilities and operations. National Park Service supplied aircraft and aircraft personnel will operate under the rules, regulations and requirements of the Office of Aircraft Services, United States Department of the Interior, at all times. All passengers and cargo in National Park Service supplied aircraft will be transported at all times according to Office of Aircraft Services rules and regulation as found in the United States Department of the Interior Departmental Manual 351 DM 1.
- e. To initiate at the time of any assistance request, Federal requisition documents necessary to obtain reimbursement for Maine Forest Service costs directly related to said assistance and as specified and allowed for in other sections of this Agreement.

2. The Maine Forest Service agrees:

- a. To cooperate with the National Park Service in the protection from wildfire all National Park Service administered lands that make up Acadia National Park and Saint Croix Island International Historic Site in the State of Maine.
- b. To make available in wildfire emergencies and upon the request of the National Park Service, such Maine Forest Service, facilities, equipment and personnel as would normally be used to control wildfires, provided that they are not needed at that time for fire suppression operations by the Maine Forest Service.
- c. To make available, by Maine Forest Service consent and upon request of the National Park Service for wildland fire presuppression activities, such Maine Forest Service, facilities, equipment and personnel as would normally be used in wildland fire presuppression work, provided that they are not needed by the Maine Forest Service at that time for other Maine Forest Service responsibilities and operations.
- d. To make available for wildfire detection, fire presuppression, fire suppression, search and rescue, evacuation, and other emergency operations and upon the request of the National Park Service, such aircraft that may be in the service of the Maine Forest Service, provided that they are not needed at that time for Maine Forest Service responsibilities and operations. Maine Forest Service supplied aircraft and aircraft personnel will operate under State rules, regulations and requirements governing their use and operation. Maine Forest Service aircraft utilized by the National Park Service will also meet all applicable rules, regulations and requirements of the Office of Aircraft Services, United States Department of the Interior, that pertain to "Associate Aircraft" as found in the United States Department of the Interior Departmental Manual 351 DM 4. All National Park Service passengers and cargo will be transported at

all times according to Office of Aircraft Services rules and regulations as found in the United States Department of the Interior Departmental Manual 351 DM 1.

- e. To use the minimum fire suppression actions necessary to protect life and property on lands administered by the National Park Service or over which the National Park Service holds an easement or other legal interest as part of Acadia National Park and Saint Croix Island International Historic Site. Every effort should be made to insure the protection of the natural, ecological, scenic and cultural values for which these lands and easements were acquired and to minimize permanent damage to said lands and easements.

3. The National Park Service and the Maine Forest Service mutually agree:

- a. That the scope of this agreement applies only to all National Park Service lands and firefighting resources that are under the administrative control of the Park Superintendent for Acadia National Park and Saint Croix Island International Historic Site and to all lands within the State of Maine for which the Maine Forest Service has firefighting responsibilities and to all firefighting resources under the control of the Director of the Maine Forest Service.
- b. To cooperate in the prevention, presuppression and suppression of wildfires in the State of Maine, with particular emphasis on lands administered by the National Park Service as part of Acadia National Park and Saint Croix Island International Historic Site and areas adjacent to those lands.
- c. To provide protection from wildfire all lands administered by the National Park Service as part of Acadia National Park and Saint Croix Island International Historic site in the State of Maine.
- d. To promote a unified approach by all interested parties to the problems related to the prevention of wildfires within and

adjacent to lands administered by the National Park Service as part of Acadia National Park and Saint Croix Island International Historic Site in the State of Maine.

- e. To cooperate in the formulation and application of practical plans and programs for the prevention, presuppression and suppression of wildfires.
- f. To conform with the National Wildfire Coordinating Group (NWCG) program, including the Wildland Fire Qualification Guide 310-1. Whenever either party conducts NWCG certified training courses, the sponsoring party will provide the other party with the opportunity to attend said training courses if trainee positions beyond the needs of the sponsoring party are available.
- g. To provide by consent of each party such facilities, equipment and personnel required to assemble a combined NWCG rated fire crew as requested by interagency fire coordinators, provided that they are not needed by either party at that time for other responsibilities and duties.
- h. To keep each other informed of fire weather information and related fire prevention and fire preparedness requirements. When either party determines that an emergency closure may be required, the other party will be informed as to the intended time and conditions of the closure so as to facilitate coordination of the actions to be taken.
- i. To promptly furnish each other with the information necessary for fire statistical report purposes.
- j. To designate, within fifteen (15) working days of the effective date of this Agreement, an employee to act as liaison for each party for the purpose of administering this Agreement.
- k. To meet jointly when necessary, for the discussion of matters related to the application of this Agreement, and to

provide for other meetings at administrative levels for the discussion of matters relevant to the prevention, suppression and suppression of wildfires.

1. Annually in February, the employees designated as liaison for the National Park Service and the Maine Forest Service will meet to:

- (1) Exchange information necessary for the coordination of prevention, suppression and suppression plans, including such items as detection, communications, training, equipment, crew dispatch, reports, etc..

- (2) Provide information on the availability of aircraft for use by each party for the coming year. The National Park Service will provide the Maine Forest Service with a current listing of Office of Aircraft Services, United States Department of the Interior, certified contract aircraft within the State of Maine that are available for National Park Service hire. The Maine Forest Service will provide the National Park Service with a listing of Maine Forest Service aircraft and pilots available for use by the National Park Service that are currently certified by the Office of Aircraft Services, United States Department of the Interior.

- (3) Establish an "Aircraft Cost Reimbursement Fee Schedule" for the reimbursable costs associated with the operation of aircraft in the service of the Maine Forest Service and available for use by the National Park Service. This schedule will set forth the fees that the National Service will be charged for their use of Maine Forest Service aircraft during the coming year. This schedule will be updated annually and attached to this Agreement as an amendment.

(4) Submit to his or her immediate superiors recommendations for any needed revisions, deletions or additions to this Agreement.

m. Either party may initiate suppression actions on wildfires endangering lands administered by the National Park Service as part of Acadia National Park and Saint Croix Island International Historic Site.

n. The party receiving the initial report of a wildfire shall determine the jurisdiction involved. The receiving party shall then take immediate suppression action if the fire falls within its jurisdictional area. If the fire falls outside the jurisdictional area of the receiving party, that party will immediately notify the second party and offer suppression assistance. In all cases, the receiving party shall immediately notify the second party and the appropriate local agency (town fire department) of the reported fire and of the actions taken by the receiving party. As a general rule, during the initial attack phase of any fire suppression operation, if the fire is burning on National Park Service administered lands, the National Park Service shall have command responsibility for the fire upon arrival. If the fire is burning on privately owned lands, the Maine Forest Service or local jurisdiction (pursuant to Maine Title 12-8901.2B and 12-9201) shall have command responsibility for the fire upon arrival.

o. In the event of a wildfire burning simultaneously on both private lands and lands administered by the National Park Service or if the objectives of a suppression operation on any lands considered within the scope of this Agreement can best be met through joint command, it is mutually agreed that the entire suppression operation shall be directed through a unified command, utilizing common objectives. The operation may be directed by a single incident commander, agreed to by representatives of both parties. As a general rule, the incident commander on such fires will be

from the agency which has the greatest acreage of resources threatened by the fire at the time of the decision. If a single incident commander is designated, an agency representative from the second party will be appointed to assist the incident commander. The agency representative will provide information, guidance and advice to the incident commander concerning agency specific policies and regulations related to the incident and the involved wildland resources. Any delegation of command authority to an incident commander for extended attack of wildfires burning on National Park Service administered lands will be done by the Park Superintendent through a written delegation of authority.

- p. The National Park Service and the Maine Forest Service shall share responsibility for the conduct of investigations as to the cause of any wildfires that occur on National Park Service administered lands. For individual fires, this responsibility may be assumed by one of the two parties through the mutual agreement of the both parties. Both parties retain the discretionary authority to prosecute any individuals found to have caused a wildfire. Prosecution will be made under the appropriate State and Federal laws; except that the Maine Forest Service will initiate action in State Court for the enforcement of any State law and the National Park Service will initiate action in Federal Court for the enforcement of any Federal law.
- q. In any action taken within the scope of this Agreement, fire fighting personnel in the employ of the National Park Service will adhere to all applicable National Park Service rules, regulations and standards governing wildland fire suppression operations and safety. Fire fighting personnel in the employ of, contracted by or requested by the Maine Forest Service will adhere to all applicable State rules, regulations and standards governing wildland fire suppression operations and safety. This rule will apply regardless of the land ownership on which the fire is burning.

- r. Each party will assume the costs of their respective wildfire control actions for the first twenty-four (24) hour period. Under unusual circumstances where prolonged assistance extending beyond the first twenty-four (24) period may be necessary, the party requesting assistance will reimburse the party providing assistance for costs directly related to that assistance, subject to the availability of funds and provided that said assistance was specifically requested by the Incident Commander and, in the case of the National Park Service, only the costs of those Maine Forest Service resources used on National Park Service lands will be reimbursed to the Maine Forest Service. Those costs that are reimbursable under the terms of this Agreement include the actual costs of supplies and materials (food, gasoline, oil, extinguishing agents, etc.) and personnel incurred by the assisting party. Repair or replacement of equipment damaged or destroyed while operating under the terms of this Agreement will be negotiated on a case by case basis by the employees designated as liaison for the National Park Service and the Maine Forest Service. This section does not apply to the reimbursement of costs for the use of aircraft, said reimbursement being addressed in the following section of this Agreement.
- s. If agreed to by both parties at the time a request for aircraft is initially made, costs associated with this Agreement may be reimbursed. If National Park Service contract aircraft are utilized by the Maine Forest Service, the Maine Forest Service will assume the contract costs of those aircraft for the period of time that the National Park Service supplied aircraft are under Maine Forest Service control. If Maine Forest Service supplied aircraft are utilized by the National Park Service, the National Park Service will reimburse the Maine Forest Service according to an "Aircraft Cost Reimbursement Fee Schedule" established and agreed upon annually and attached to this Agreement as an amendment.

- t. Requests for reimbursement of costs will include an itemized listing of all costs and must be submitted by the party providing assistance to the party requesting assistance within thirty (30) days of the completion of each individual assistance activity as specified and allowed for in other sections of this Agreement.
- u. The Comptroller General of the United States and the Treasurer of the State of Maine or any duly authorized representative shall, until the expiration of three years after each payment under this Agreement, or for the time periods for the particular records specified in the Federal Procurement Regulations (41 CFR Part 1-20), have access to and the right to examine any directly pertinent book, documents or records of the signatory involving payments authorized under this Agreement.
- v. By execution of this Agreement, both parties hereto expressly waive any and all claims against each other party for compensation for any loss, damage, personal injury or death occurring in consequence of the performance of this Agreement.
- w. Nothing in this Agreement shall be construed as limiting or affecting in any way the authority of the National Park Service in connection with the proper administration and protection of all lands and other resources under its jurisdiction within the State of Maine that make up Acadia National Park and Saint Croix Island International Historic Site, in accordance with the purpose for which the lands contained therein were acquired.
- x. Nothing in this Agreement shall be construed as abrogating the legal responsibility of the Maine Forest Service to provide wildfire protection for all the lands of the State of Maine, including those administered by the National Park Service as part of Acadia National Park and Saint Croix Island International Historic Site.

- y. Each and every provision of this Agreement is subject to the laws and regulations of the State of Maine and the United States of America as applicable.

Article III. Term of Agreement

The term of this Agreement shall be for five (5) years from the day and year first above written. It is understood that when mutually agreed upon by the National Park Service and the Maine Forest Service, nothing shall preclude the extension of this Agreement for another five (5) year period by the execution of a written agreement between the National Park Service and the Maine Forest Service, incorporated by reference into this Agreement.

Article IV. Key Officials

The Superintendent of Acadia National Park and his or her authorized representative, and the Director of the Maine Forest Service and his or her authorized representative shall be responsible for administering this Agreement.

Article V. Property Management

Neither party is obligated to acquire, maintain or dispose of any property, real or personal, under the terms of this Agreement.

Article VI. Anti-Deficiency

Nothing contained herein shall be construed as binding the National Park Service or the Maine Forest Service to expend in any one fiscal year any sum in excess of appropriations made by Congress or the Maine Legislature or administratively allocated by both agencies for the purpose of this Agreement for the fiscal year, or to involve the National Park Service or the Maine Forest Service in any contract or other obligation for the further expenditure of money in excess of such appropriations or allocations.

Total reimbursements made in any one calendar year under the terms of this Agreement may not exceed five-hundred-thousand dollars (\$500,000.00) without the expressed prior written approval of the National Park Service Fire Director, Branch of Fire and Aviation Management, in the case of National Park Service reimbursements to the Maine Forest

Service, or the expressed prior written approval of the Director, Maine Forest Service, in the case of Maine Forest Service reimbursements to the National Park Service.

Article VII. Reports

Each party will provide the other party with fire reports and copies of all vital correspondence directly related to this Agreement. Reports and correspondence will be directed to the signatories of this Agreement or their representatives and will be provided within fifteen (15) working days of the date of said report or correspondence.

Article VIII. Termination

This Agreement shall become effective when signed by the parties hereto and shall continue in force unless termination by mutual agreement or by either party upon sixty (60) days written notice to the other party of their intent to do so.

Article IX. Amendments

Amendments to this Agreement may be proposed by either party and shall become effective upon the signing by both parties of an amendment memorandum.

Article X. Required Clauses

1. During the performance of this Agreement, the parties agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The parties will take affirmative action to insure that applicants are employed without regard to their race, color, religion, sex or national origin.
2. No member or delegate to Congress or resident Commissioner shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Agreement if made with a corporation for its general benefit.

Signatures

This Agreement constitutes the full, complete and entire agreement between the National Park Service and the Maine Forest Service. No modification or amendments of this Agreement shall be binding on any part hereto unless such modification or amendment shall be in writing, executed in duplicate by the National Park Service and the Maine Forest Service, attached to this Agreement and incorporated in and by references made a part of this Agreement.

In witness whereof, the parties have set their hands and seals the day and year first above written.

Witness:

United States Department of the Interior
National Park Service

Pauline Blanchard

by *Robert W. Reynolds*
Robert W. Reynolds, Superintendent
Acadia National Park

4/5/93

Date

Witness:

Maine Department of Conservation
Forest Service

Jane Collier

by *Susan J. Bell*
Susan J. Bell, Director
Maine Forest Service

4/8/93

Date

Designation of Authorized Representatives for the Administration
of this Agreement for 1993

(Agreement # MU1700-3-9002; Memorandum of Understanding between the United States Department of the Interior, and the Maine Department of Conservation, Forest Service, dated April 5, 1993)

1) Authorized Representative for the National Park Service:

Douglas C. Jones

Name

Fire Management Officer

Title

Acadia National Park

P. O. Box 177

Bar Harbor, Maine 04609

Address

(207) 288-3360

Telephone

2) Authorized Representative for the Maine Forest Service:

Thomas Parent

Name

State Supervisor,

Division of Forest Fire Control

Title

Maine Forest Service

State House Station #22

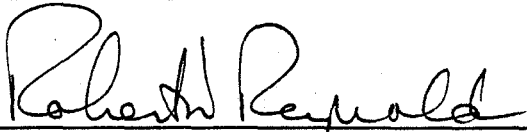
Augusta, Maine 04333

Address

(207) 289-4990

Telephone

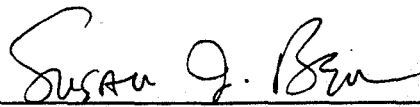
Approved By:



Robert W. Reynolds
Superintendent
Acadia National Park

APR 05 1993

Date



Susan J. Bell
Director
Maine Forest Service

4/8/93

Date

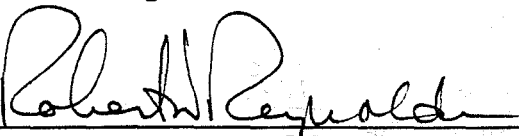
Maine Forest Service Aircraft Cost Reimbursement Fee Schedule
for 1993

(Agreement # MU1700-3-9002; Memorandum of Understanding between the United States Department of the Interior, and the Maine Department of Conservation, Forest Service, dated April 5, 1993)

Fee Schedule:

<u>Aircraft Type</u>	<u>Hourly Rate</u>
Helicopter (Bell Huey UH-1)	\$650.00
Fixed Wing (Single Engine)	\$ 88.00

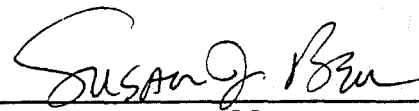
Approved By:



Robert W. Reynolds
Superintendent
Acadia National Park

APR 05 1993

Date



Susan J. Bell
Director
Maine Forest Service

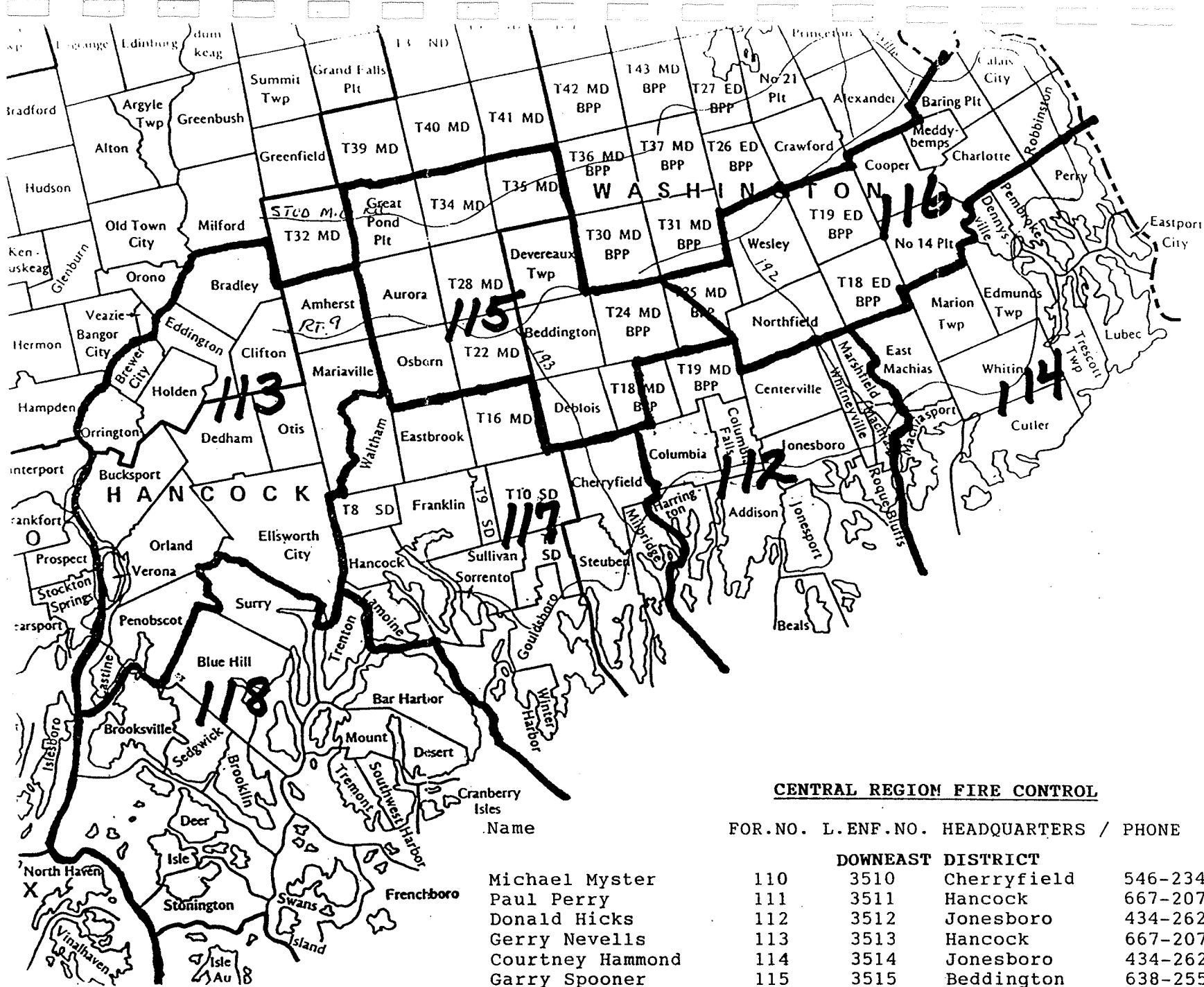
4/8/93

Date

APPENDIX E

DOWNEAST DISTRICT, MAINE FOREST SERVICE PERSONNEL LIST AND DISTRICT MAP

October 1993



CENTRAL REGION FIRE CONTROL

FOR.NO.	L.ENF.NO.	HEADQUARTERS / PHONE	HOME PHONE
DOWNEAST DISTRICT			
110	3510	Cherryfield	546-2346 422-3864
111	3511	Hancock	667-2070 667-6641
112	3512	Jonesboro	434-2621 483-4183
113	3513	Hancock	667-2070 326-4875
114	3514	Jonesboro	434-2621 483-4425
115	3515	Beddington	638-2551 454-3155
116	3516	Wesley	255-8917 924-7581/3128
117	3517	Cherryfield	546-2346 963-4052
118	3518	Hancock	667-2070 338-2970
			589-4344
		Wilma Laughlin	119 -Campsite Rd, Beddington 638-2551 638-2192
		Derrik Balaam	Loboror Wesley 255-8917 454-3155

APPENDIX F

**MEMORANDUM OF UNDERSTANDING
BETWEEN
THE NATIONAL PARK SERVICE
AND
THE HANCOCK COUNTY FIREFIGHTERS' ASSOCIATION**

October 1993

COPY

Agreement # MU1700-3-9003

MEMORANDUM OF UNDERSTANDING

BETWEEN

UNITED STATES DEPARTMENT OF THE INTERIOR,

NATIONAL PARK SERVICE,

AND

THE HANCOCK COUNTY FIREFIGHTERS' ASSOCIATION

Article I. Background and Objectives

This Agreement for fire protection cooperation is entered into this 28th day of July, 1993 by and between the United States Department of the Interior, National Park Service, acting through the Superintendent of Acadia National Park, hereinafter referred to as the National Park Service and the Hancock County Firefighters' Association, hereinafter referred to as The Association.

Whereas authority for the execution of agreements between the National Park Service and other agencies and instrumentalities for mutual aid and assistance in fire protection is contained in Public Law 84-46; The Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 U.S.C. 1856-1856d), The Disaster Relief Act of May 22, 1974 (88 Stat. 143; 42 U.S.C. 5121-5203), Public Law 100-428, as amended by Public Law 101-11, April 7, 1989; The Wildfire Suppression Assistance Act of 1989, National Park Service Acts as amended (67 Stat. 495; 16 U.S.C. 1b) and the United States Department of Interior Departmental Manual (590 DM and 910 DM); and

Whereas, the National Park Service has accepted responsibility for the protection and management of certain lands, structures, improvements and other resources in the State of Maine that make up Acadia National Park; and

Whereas, the National Park Service maintains equipment and qualified personnel for the suppression of wildland fires; and

Whereas, the National Park Service and the State of Maine share concurrent legislative jurisdiction over the lands that make up Acadia National Park, pursuant to Maine State P & S Law c.94, enacted March 24, 1986; and

Whereas, The Association has been created under the laws of the State of Maine and represents the thirty-five (35) organized fire departments of Hancock County, Maine, joined together by separate agreement (titled "Memorandum of Understanding Between Organized Fire Departments of Hancock County" and dated July 21, 1992), in order to provide for the mutual assistance of it's member fire departments in fire prevention, fire suppression and other emergencies; and

Whereas, the organized fire departments that constitute The Association have been created under the laws of the State of Maine in order to provide wildland and structural fire protection within their areas of local jurisdiction; and

Whereas, it is the mutual desire of the National Park Service and The Association to work in harmony for the common purpose of protecting from the ravages of fire and other emergencies, the lands, structures, improvements and other resources within Hancock County for the best interest of the people of Hancock County and the United States;

NOW, THEREFORE, this Agreement is designed to set forth in specific manner a cooperative protection agreement which will be equally beneficial to both parties, as follows:

Article II. Statement of Work

1. The National Park Service agrees:

- a. To cooperate with the Association in the protection of all lands, structures, improvements and other resources that are found in Hancock County from the effects of fire and other emergencies.
- b. To make available in fire and other emergencies and upon the request of the Association, such National Park Service facilities, equipment and personnel under the administrative control of Acadia National Park as would normally be used to control fires or other emergencies, provided that they are not needed at that

time for fire suppression or emergency operations by the National Park Service.

- c. To initiate at the time of any assistance request, Federal requisition documents necessary to obtain reimbursement for Association or member fire departments' costs directly related to said assistance as specified and allowed pursuant to Article II.3.q of this Agreement.

2. The Association agrees:

- a. To cooperate with the National Park Service in the protection of all National Park Service administered lands, structures, improvements and other resources that make up Acadia National Park and are found in Hancock County from the effects of fire and other emergencies.
- b. To make available in fire and other emergencies and upon the request of the National Park Service, such Association and member fire departments' facilities, equipment and personnel under the Association's administrative control as would normally be used to control fires or other emergencies, provided that they are not needed at that time for fire suppression or emergency operations by the Association's member fire departments.
- c. To initiate at the time of any assistance request, the requisition documents necessary to obtain reimbursement for National Park Service costs directly related to said assistance as specified and allowed pursuant to Article II.3.q of this Agreement.
- d. To use the minimum fire suppression actions necessary to protect life and property on lands in Hancock County that are administered by the National Park Service or over which the National Park Service holds an easement or other legal interest as part of Acadia National Park. Every effort should be made to insure the protection of the natural, ecological, scenic and cultural values for which these lands, structures, improvements and easements were acquired and to minimize

permanent damage to said lands, structures, improvements and easements.

3. The National Park Service and The Association mutually agree:

- a. To cooperate in the prevention of and response to fires and other emergencies in Hancock County,
- b. To provide mutual assistance in the prevention of and response to fires and other emergencies in Hancock County, commensurate with the qualification levels of the personnel involved and the capabilities of the equipment available under the terms of this Agreement.
- c. To promote a unified approach by all interested parties to the problems related to emergency preparedness and the prevention of fires in Hancock County.
- d. To cooperate in the formulation and application of practical plans and programs for the prevention and suppression of fires and the response to other emergencies.
- e. To cooperate in the training of personnel and the drilling of personnel and equipment in fire and other emergency response operations.
- f. To cooperate in the conduct of investigations as to the cause of any fires or other emergencies that fall under the terms of this Agreement.
- g. To recognize the County Coordinator, an officer of The Association, or his or her designee as the point of contact for any mutual aid assistance requested under the terms of this Agreement. All requests for assistance shall be communicated directly to the County Coordinator. The County Coordinator will be notified within two (2) hours when any piece of equipment identified on The Association's mutual aid equipment list is taken out of service.
- h. To have all fire equipment identified on The Association's mutual aid equipment list equipped with two-way radios capable of

communicating on the Hancock County fire frequency (154.250 MHz).

- i. To promptly furnish each other with the information necessary for statistical report purposes.
- j. To designate, within fifteen (15) working days of the effective date of this Agreement, an employee to act as liaison for each party for the purpose of administering this Agreement.
- k. To meet jointly when necessary, for the discussion of matters related to the application of this Agreement, and to provide for other meetings at administrative levels for the discussion of matters relevant to the prevention and suppression of fires and response to other emergencies.
- l. Annually in February, the employees designated as liaison for the National Park Service and The Association will meet to:
 - (1) Exchange information necessary for the coordination of emergency preparedness, prevention, and suppression plans, including such items as detection, communications, training, equipment, dispatch, response, reports, etc..
 - (2) Submit to the Key Officials of this Agreement recommendations for any needed revisions, deletions or additions to this Agreement.
- m. The National Park Service may initiate suppression action on wildfires and The Association's member fire departments having local jurisdiction may initiate fire suppression actions on fires involving wildlands, structures, improvements, vehicles and other resources located within the boundaries of Acadia National Park
- n. The party receiving the initial report of a fire shall determine the jurisdiction involved. The receiving party shall then take immediate suppression action if the fire falls within it's qualification level and jurisdictional area. If the fire falls outside the jurisdictional area of the

receiving party, that party will immediately notify the second party and offer suppression assistance. In all cases, the receiving party shall immediately notify the second party, whether it be the National Park Service or the member fire department with jurisdiction, of the reported fire and of any and all actions taken by the party receiving the initial report. As a general rule, during the initial attack phase of any fire suppression operation, if the fire is a wildfire burning on National Park Service administered lands, the National Park Service shall have command responsibility for the fire upon arrival. If the fire is a structure or vehicle fire burning on National Park Service administered lands or is any type of fire burning on privately owned lands, the member fire department with jurisdiction shall have command responsibility for the fire upon arrival.

- o. In the event of a wildfire burning simultaneously on both private lands and lands administered by the National Park Service or if the objectives of a suppression operation on any lands considered within the scope of this Agreement can best be met through joint command, it is mutually agreed that the entire suppression operation shall be directed through a unified command, utilizing common objectives. The operation may be directed by a single incident commander, agreed to by representatives of the National Park Service and the member fire department with jurisdiction. As a general rule, the incident commander on such fires will be from the agency which has the greatest acreage of resources threatened by the fire at the time of the decision. If a single incident commander is designated, an agency representative from the second party will be appointed to assist the incident commander. The agency representative will provide information, guidance and advice to the incident commander concerning agency specific policies and regulations related to the incident and the involved wildland resources. Any delegation of command authority to an incident commander for

extended attack of wildfires burning on National Park Service administered lands will be done by the Park Superintendent through a written delegation of authority.

- p. In any action taken within the scope of this Agreement, wildland fire fighting personnel in the employ of the National Park Service will adhere to all applicable National Park Service rules, regulations and standards governing wildland fire suppression operations and safety. Fire fighting personnel in the employ of, contracted by or requested by the Association and its member fire departments will adhere to all applicable State laws, rules, regulations and standards governing fire suppression operations and safety. This rule will apply regardless of the land ownership on which a fire is located. The personnel of each party will be covered at all times by the workers compensation laws and regulations of their respective parties for the purpose of this Agreement.
- q. The party requesting assistance will reimburse the party providing assistance for costs directly related to that assistance, subject to the availability of funds and provided that said assistance was specifically requested by the Incident Commander and dispatched by the County Coordinator and, in the case of the National Park Service, only the costs of those Association resources used on National Park Service lands will be reimbursed to The Association's member fire departments. Those costs that are reimbursable under the terms of this Agreement are the actual costs of fuel, oil, food, expendable extinguishing agents and medical supplies expended by the party providing assistance. Those costs not reimbursable under the terms of this Agreement include the services of personnel, tools or equipment or the repair or replacement of equipment and tools.
- r. Requests for reimbursement of costs will include an itemized listing of all costs and must be submitted by the party providing assistance to the party requesting assistance within thirty (30)

days of the completion of each individual assistance activity as specified and allowed for in other sections of this Agreement.

- s. The Comptroller General of the United States, the Treasurer of The Association, the financial officer for the member fire department involved or any duly authorized representative shall, until the expiration of three years after each payment under this Agreement, or for the time periods for the particular records specified in the Federal Procurement Regulations (41 CFR Part 1-20), have access to and the right to examine any directly pertinent books, documents or records of the signatory involving payments authorized under this Agreement.
- t. By execution of this Agreement, both parties hereto expressly waive any and all claims against each other party for compensation for any loss, damage, personal injury or death occurring in consequence of the performance of this Agreement.
- u. The personnel of each party hereto shall not be considered to be agents of the party requesting assistance hereunder, and that personnel of the Association or it's member fire departments shall not be considered to be employees of the Federal Government for any reason when rendering assistance as provided herein.
- v. Nothing in this Agreement shall be construed as limiting or affecting in any way the authority of the National Park Service in connection with the proper administration and protection of all lands and other resources under it's jurisdiction within Hancock County that make up Acadia National Park, in accordance with the purpose for which the lands contained therein were acquired.
- w. Nothing in this Agreement shall be construed as abrogating the legal responsibility of The Association's member fire departments to provide fire protection for the lands, structures, improvements and other resources within their jurisdictional boundary, including those administered by

the National Park Service in Hancock County as part of Acadia National Park.

- x. Each and every provision of this Agreement is subject to the laws and regulations of the State of Maine and the United States of America as applicable.

Article III. Term of Agreement

The term of this Agreement shall be for five (5) years from the date on which this Agreement was entered into. It is understood that when mutually agreed upon by the National Park Service and The Association, nothing shall preclude the extension of this Agreement for another five (5) year period by the execution of a written agreement between the National Park Service and The Association, incorporated by reference into this Agreement.

Article IV. Key Officials

The Superintendent of Acadia National Park and his or her authorized representative, and the President of The Association and his or her authorized representative shall be responsible for administering this Agreement.

Article V. Property Management

Neither party is obligated to acquire, maintain or dispose of any property, real or personal, under the terms of this Agreement.

Article VI. Anti-Deficiency

Nothing contained herein shall be construed as binding the National Park Service, The Association or it's member fire departments to expend in any one fiscal year any sum in excess of appropriations made by Congress, The Association's Board of Directors or the member fire departments' local jurisdiction governing body or administratively allocated in any one fiscal year by the National Park Service, The Association or member fire departments for the purpose of this Agreement, or to involve the National Park Service, The Association or it's member fire departments in any contract or other obligation for the further expenditure of money in excess of such appropriations or allocations.

Total reimbursements made by the National Park Service to The Association and it's member fire

departments in any one calendar year under the terms of this Agreement may not exceed ten-thousand dollars (\$10,000.00) without the expressed prior written approval of the Park Superintendent, Acadia National Park.

Article VII. Reports

Each party will provide the other party with fire reports and copies of all vital correspondence directly related to this Agreement. Reports and correspondence will be directed to the signatories of this Agreement or their representatives and will be provided within fifteen (15) working days of the date of said report or correspondence.

Article VIII. Termination

This Agreement shall become effective when signed by the parties hereto and shall continue in force unless termination by mutual agreement or by either party upon sixty (60) days written notice to the other party of their intent to do so.

Article IX. Amendments

Amendments to this Agreement may be proposed by either party and shall become effective upon the signing by both parties of an amendment memorandum.

Article X. Required Clauses

1. During the performance of this Agreement, the parties agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The parties will take affirmative action to insure that applicants are employed without regard to their race, color, religion, sex or national origin.
2. No member or delegate to Congress or resident Commissioner shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Agreement if made with a corporation for its general benefit.

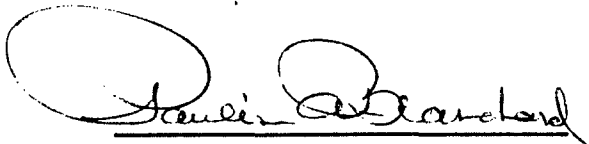
Signatures

This Agreement constitutes the full, complete and entire agreement between the National Park Service and The Association. No modification or amendments of this Agreement shall be binding on any part hereto unless such modification or amendment shall be in writing, executed in duplicate by the National Park Service and The Association, attached to this Agreement and incorporated in and by references made a part of this Agreement.

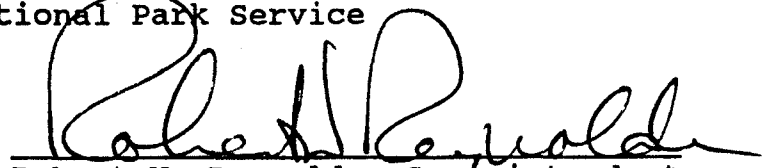
In witness whereof, the parties have set their hands and seals the day and year first above written.

Witness:

United States Department of the Interior
National Park Service



by

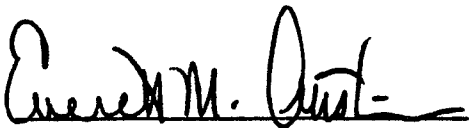

 Robert W. Reynolds, Superintendent
 Acadia National Park

JUL 28 1993

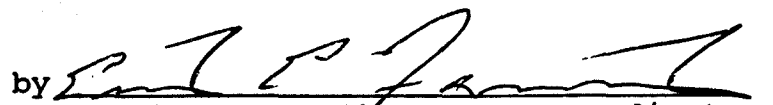
Date

Witness:

Hancock County Firefighters' Association



by


 Everett Farnsworth, County Coordinator
 Hancock County Firefighters' Association

8-2-93

Date

Designation of Authorized Representatives for the Administration
of this Agreement for 1993

(Agreement # MU1700-3-9003; Memorandum of Understanding between the
United States Department of the Interior, and the Hancock County
Firefighters' Association, dated July 28, 1993)

1) Authorized Representative for the National Park Service:

Douglas C. Jones

Name

Fire Management Officer

Title

Acadia National Park

P. O. Box 177

Bar Harbor, ME 04609

Address

(207) 288-3360

Telephone

2) Authorized Representative for the Hancock County Firefighters'
Association:

Everett Farnsworth

Name

County Coordinator

Title

Ellsworth Fire Department

Ellsworth Fire Station

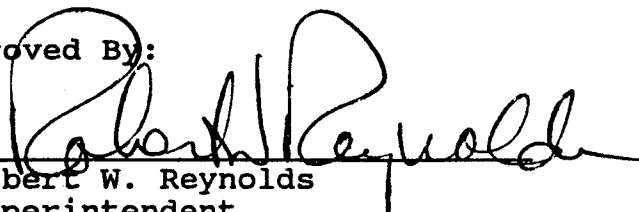
Ellsworth, ME 04605

Address

(207) 667-8666

Telephone

Approved By:


Robert W. Reynolds
Superintendent
Acadia National Park


Everett Farnsworth
County Coordinator
Hancock County Firefighters'
Association

JUL 28 1993

Date

8-2-93
Date

APPENDIX G

**INTERAGENCY AGREEMENT
BETWEEN
THE NATIONAL PARK SERVICE
AND
THE UNITED STATES NAVY
NAVAL SECURITY GROUP ACTIVITY, WINTER HARBOR**

October 1993

INTERAGENCY AGREEMENT IA 1700-9-8001
BETWEEN
NATIONAL PARK SERVICE, ACADIA NATIONAL PARK
AND
UNITED STATES NAVY, NAVAL SECURITY GROUP ACTIVITY, WINTER HARBOR

Article I. Background and Objectives

The Schoodic Peninsula Section of Acadia National Park encompasses 2,000 acres of Park land and 6 miles of paved roads plus parking areas and trails. It is located approximately 50 miles from the main section of Acadia National Park on Mount Desert Island, a travel time of approximately 1 1/4 hours dependent on conditions. The frequency of traffic accidents is significant often involving serious injuries requiring immediate emergency action, medical treatment and transport, clearance of travel lanes and detailed accident investigation. Additionally, severe storms cause blockage of roads due to washouts or debris such as snow, beach rocks or fallen trees across the travel lanes. Forest fires, though infrequent, require immediate action to prevent their becoming major conflagrations endangering both parklands and facilities of both the Navy and the National Park Service. In summer, visitation by the general public is high, but in winter travel through the park is largely comprised of local traffic and, particularly of those persons associated with the Naval Security Group Activity which is located on the peninsula surrounded by Park land.

During the summer months, approximately May to October, the National Park Service assigns a law enforcement ranger and a maintenance person to the area full-time but in the off-season no personnel are assigned there and response time from Mount Desert Island is long.

The United States Navy (NSGAWH) is concerned with and desirous of assisting the National Park Service in providing for the orderly operation of the Park and promoting the safety and welfare of Park visitors as well as those associated with Base operations. Navy personnel are highly trained and competent to provide various services specified herein to the Park and the public in accordance with this Agreement under authority of the Economy Act of 1932, 31 USC 1535.

Article II Statements of Work

A. In the absence of a National Park Service ranger the U.S. Navy (NSGAWH) hereby agrees to do the following:

1. Obtain such wrecker and tow service as may be necessary for stranded motorists or those involved in accidents. Accidents involving serious personal injuries or death, or arising from flagrant traffic violations, will be referred immediately to park rangers and/or local Maine law enforcement authorities for assistance or advice.
2. Administer such first aid or other emergency services as may be immediately necessary and proper to persons involved in accidents on park lands, including the use of base medical staff, ambulance and medical facilities.

3. Take such initial actions as may be necessary to keep roads passable in the event of storm, including the removal of snow, debris and downed trees from the road and marking hazards such as washouts and boulders.

4. In the event of forest fire, take initial action for the suppression of the fire. Appropriate level of response to be determined by the base fire staff. National Park Service Headquarters, Mt. Desert Island, will be informed of any such action immediately.

5. Promote safe driving habits of the persons associated with base operations. Should an incident, such as operating under the influence, warrant detention or arrest, base officials should call upon the Hancock County Sheriff's Office for assistance.

6. Provide law enforcement assistance in the following circumstances involving U.S. Armed Forces personnel and other personnel who become subject to the Naval Security Group jurisdiction:

a. In the event of the request for assistance from a park ranger involved in a law enforcement action.

b. On personal observation of a misdemeanor that presents an immediate danger to the safety or property of the public.

c. In response to situations which may arise which affect the orderly administration and operation of Navy facilities and mission.

d. In the event of the commission of a felony.

7. Perform all routine snow plowing, sanding and salting of the 6 miles of paved road around the peninsula on a reimbursable basis.

8. Provide one trash dumpster and collect trash from it and from 5-10 cans on a regular basis from May through Labor Day on a reimbursable basis.

For purposes of sub-chapter I of Chapter 81 of Title 5, United States Code, relation to compensation to Federal employees for work injuries, Navy personnel when acting under the stipulations of this agreement will be considered to be performing within the scope of their employment, and their recourse for Worker's Compensation shall be provided by the United States Navy.

For purposes of the tort claim provisions of Title 28, United States Code, Navy personnel when acting under the stipulations of this agreement will be considered to be acting as the agent and "borrowed servant" of the National Park Service which shall assume primary responsibility for torts arising from their actions.

B. The National Park Service, Acadia National Park agrees to do the following:

1. From approximately May through October assign one law-enforcement commissioned park ranger to the Schoodic area on a full-time basis to ensure public safety and provide such first aid, fire protection and visitor services as shall be necessary.

2. Perform all routine maintenance to the roadways, excepting, snow removal, beyond that necessary to reopen the roads following storms or emergencies.

3. Transfer funds to the Navy (NSGAWH) each fall for providing routine snow removal approximately \$4,000/year, this amount subject to adjustment based upon actual cost of providing this service. Cost is based upon Navy's direct cost: Labor and materials only, to provide the service. Unexpended funds shall be returned to Acadia in spring.

4. Reimburse the Navy (NSGAWH) for its cost to provide the trash collection services required under paragraph A-8 above, up to \$800/year the actual cost is based upon the cost of modifying Navy's trash contract to include this service.

Article III Term of Agreement

The terms and stipulations of this Interagency Agreement may be reviewed and/or revised at the initiative of either of the two parties. Unless revised or cancelled the agreement shall remain in effect for a period of five years from the date of signature. At the end of that period the agreement will expire unless reaffirmed or rewritten.

Article IV Key Officials

Key officials to this agreement are as follows:

National Park Service
Superintendent
Acadia National Park
P.O. Box 177
Bar Harbor, Maine 04609
(207) 288-5456

U.S. Navy
Commanding Officer
Naval Security Group Activity,
Winter Harbor, Maine 04693-0900
(207) 963-7396

Article V Payment

One payment will be made annually for each service (trash collection and plowing) via SF 1080's issued in response to an SF 2276, Request for Contractual Procurement to show the cost of the trash collection and a Work Order Request showing the anticipated cost of plowing.

Article VI Termination

Either party may terminate this agreement by providing 90 days written notice to the other.

Signatures:

We, the undersigned, have authority to and do hereby acknowledge this Interagency Agreement between the National Park Service, Acadia National Park and the Naval Security Group Activity, Winter Harbor.

For the National Park Service:

[Signature]
 Superintendent
 Acadia National Park

6/1/89
 Date

For the U. S. Navy:

[Signature]
 Commanding Officer
 Naval Security Group Activity
 Winter Harbor, Maine

24 May 89
 Date

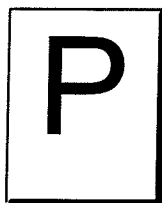
[Signature]
 Contracting Officer
 North Atlantic Region

6/12/89
 Date

APPENDIX H

WILDFIRE PREVENTION ANALYSIS AND PLAN

October 1993



reface

The Acadia National Park Wildfire Prevention Plan was developed by the park fire management officer and approved by the superintendent. It is a two-fold document: an analysis of the park's RISKS, HAZARDS and VALUES, and an operational plan that outlines protection of the park's resources from wildfire.

The plan attempts to identify wildfire prevention priority areas, actions and responsibilities consistent with Acadia National Park's management planning goals.

Implementation of this plan needs to consider: first, the use of appropriate fire personnel and resources; secondly, the education and application of park personnel and resources; thirdly, the documentation for additional resources through the park fire management planning process.

It is an adaptable document, lending itself to review and update as necessary.

It is also a dynamic document, whose shortfalls can be addressed through the review of park priorities, available resources, personnel performance and budget constraints.

C

ontents

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Appendix: Compartment Matrix Ratings

I

ntroduction

- Acadia National Park will implement this wildfire prevention plan, as an integrated element of the park's fire management program through the park's fire management plan. Wildfire prevention programs will be directed toward ignitions which pose the greatest potential to cause unacceptable damage or losses.
- To properly direct wildfire prevention efforts it is important to accurately identify problems or potential problems. To identify priority wildfire prevention programs one must assess the following components:
- 1. RISKS: Risks are defined as those uses or human activities which have the potential to result in a wildfire ignition. When assessing the risk of a given area, only the risk should be examined. Wherever there are concentrations of people or activity, the potential for a human-caused ignition exists. After assessing the risks within an area, it is helpful to look at historical fires to validate the risk assessment. Historical fires alone, however, are not an accurate reflection of the risks within a given area. The objective of this effort is to determine the degree of risk within areas of an administrative unit.
- 2. HAZARDS: Hazards are defined as the fuels and topography of an area. The objective in examining hazards is to determine the potential for a "large" fire to result from a human-caused ignition. This can be more simply put as determining the degree of difficulty in suppressing a fire once it is ignited. It is important to examine hazards without regard for anything else.
- 3. VALUES: Values are defined as natural or developed areas where loss or destruction by wildfire would be unacceptable.
- Once risks, hazards, and values are evaluated, it is possible to determine when, where, and how to implement effective fire prevention programs. By comparing an area's potential for ignition (risks), its potential to burn after ignited (hazard), and the values which are threatened by a wildfire (values), the fire prevention plan can be prepared. This plan will concentrate on the highest priority wildfire prevention problems within the area. It may not be necessary to have an extensive fire prevention effort in an area with a number of risks where the hazard is minimal and there are no real values threatened. In contrast, it will be important to have a comprehensive effort in an area where there is substantial risk, a high hazard, and high values threatened.
- The wildfire prevention plan addresses what needs to be done in each compartment based on the types of activities and uses. It defines what actions will take place, when, and who is responsible. Wildfire prevention activities generally fall within one of four broad categories. These categories include:

1. Education: Education is aimed at changing people's behavior by awareness and knowledge. This can be done through printed materials, mass media (radio, T.V., etc.), one-on-one contacts or group presentations. Information can also be delivered through signs, displays, fairs, parades, etc.

2. Engineering: Engineering is an activity designed to reduce or eliminate fire risks (e.g. spark arrester) and hazards (e.g. clearance around a home).

3. Enforcement: Enforcement is used to gain compliance with fire regulations and ordinances.

4. Administration: Those activities such as planning, budgeting and training.

This wildfire prevention plan selects the most cost effective mix of activities to mitigate potential fire problems within each fire prevention area. It identifies implementation levels which can be incorporated into the park's fire management plan.



Wildfire Prevention Planning

Purpose

This wildfire prevention plan will analyze the potential of wildfire impacts and provide planned actions, on a priority basis, for implementation by Acadia National Park.

Objective

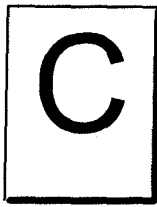
1. Protection of high value resources from wildfire.
2. Focus fire prevention activities, cost efficiently, in identified priority areas of the park.
3. Minimize losses, by effective implementation of the tasks identified in this wildfire prevention plan.

Responsibility

The superintendent is responsible to approve this wildfire prevention analysis and plan as the park's methodology to protect valuable resources from loss by wildfire.

The park fire management officer is responsible to integrate this operational plan into the park's fire management plan and ensure that the actions called for are implemented. The superintendent has the authority to assign individual responsibilities within the compartments.

The positions listed in the "Tasks" section of this plan are those identified as being accountable for completion of the particular activity.



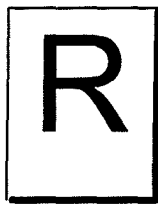
Conducting The Assessment

The first phase, and perhaps the most important, is to assess the risks, hazards and values. The assessment consists of three distinctly different steps. It is important that each step be conducted independently with no attempt to blend or combine any of them.

For each component, a relative rating of HIGH, MEDIUM, or LOW is assigned within each wildfire prevention area. These ratings are relative and not absolute.

Existing resources were also used in the assessment evaluation. At Acadia National Park, these included:

1. History of person-caused fire occurrence.
2. Current and anticipated staffing.
3. Previous park fire prevention plans.
4. Park resource management specialists and fire management personnel expertise.
5. Previous fire management plans.

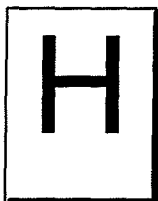


Risk Assessment

Assessing the risk consists of evaluating the potential for wildfire ignition. Consideration, at this time, is NOT given to how or if a fire would spread or burn once ignited. Concentrations of lightning and human activities that could start fires are identified.

For the purpose of the Acadia National Park Wildfire Prevention Plan, the following risks were identified:

- | | |
|---------------------------------|-----------------------------------|
| 1. Wildland Urban Interface | 16. Party Areas |
| 2. Wildland Rural Intermix | 17. Horseback Riding |
| 3. Power Equipment | 18. Concessions |
| 4. Construction Projects | 19. Transportation Corridors |
| 5. Maintenance Projects | 20. Fireworks |
| 6. Sewage Treatment Plant | 21. Target Shooting Ranges |
| 7. Water Companies | 22. Children With Matches |
| 8. Hazard Tree and Fuel Removal | 23. Incendiary |
| 9. Power Lines | 24. Adjacent Human Use/Habitation |
| 10. Campground Developed | 25. Debris and/or Slash Burning |
| 11. Picnic Areas | 26. Aerial Sightseeing |
| 12. Water-Based Recreation | 27. Cultural Activities |
| 13. Trail/Hikers | 28. Electronic Sites |
| 14. OHV/Non-Motorized | 29. Lightning |
| 15. Rock Climbing | |



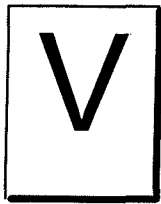
Hazard Assessment

In fire prevention terminology, the word "hazard" is used to describe the relationship between fuels and topography and must not be confused with how hazard is defined in other disciplines.

The hazard assessment deals with identifying areas of like fire behavior based on fuels and topography. Given a normal fire season, how intense, and at what rate of spread would a wildfire burn? What is the resistance to control? Under average fire season conditions, fire intensity is largely a product of fuels and topography.

Hazard criteria used by Acadia National Park are:

<u>Hazard Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	



Value Assessment

Assessing values is a subjective process. During this process, an interdisciplinary approach was used. Specialists from the park participated in developing the value component.

A value component is determined and assigned to each fire prevention area.

Areas of obvious value are labeled HIGH. Other areas which have some value, but are less in relative comparison, are labeled as MEDIUM. Everything else is considered LOW.

These values were viewed as areas where wildfire would be unacceptable.

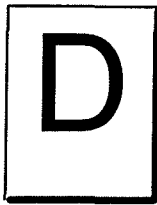
Value considerations for Acadia National Park are:

HIGH: Areas adjacent to high and moderate density human habitation or containing historic structures or significant park facilities.

MEDIUM: Areas adjacent to low density human habitation or containing minor park facilities.

LOW: Areas with no adjacent human habitation or park facilities.

1. Sensitive Biotic Communities
2. Park Facilities
3. Concession Facilities
4. Watershed
5. Scenic Byways
6. Visual and Scenic Resources
7. Cultural and Historic Resources
8. Threatened & Endangered Species
9. Critical Wildlife Habitat
10. Soils
11. Political/Social
12. Recreation Opportunities
13. Developed Recreation Sites
14. Improvements
15. Adjacent Communities and/or Property



eveloping Compartments

In establishing final fire prevention compartment boundaries, the risk areas receive the greatest consideration. Fire prevention programs usually treat risks, so it is logical that the final compartment boundaries be determined primarily by risk, but values and hazards will also be considered.

Once risk areas are identified and assigned, the risk overlay was placed on the hazard overlay. The hazard rating was then assigned to the risk overlay. These were also identified as high, medium or low.

The same process was completed with the value overlay. The value judgement required some interpolation*, by assigning the value that best represented the total compartment.

Final compartment boundaries were also modified in order to provide for the efficient management of the various compartments. In some cases, areas of differing risks, values or hazards were combined into one compartment. This was done where the specific fire prevention actions to be carried out would be the same. In these cases, the higher risk, value and/or hazard rating was assigned to the final compartment.

This new overlay represents the final compartment map.

Each compartment was then analyzed by a compartment matrix that displays the individual compartment risk, hazard and values. Additional valuable compartment information is provided, such as historical fire cause and specific fire prevention actions.

*Interpolation: using the risk boundary as the final compartment boundary presents some difficulty when assigning subsequent hazard and value ratings. Usually, some interpolation is required. It is important to assign the value and hazard ratings that best represent the overall compartment.

READINESS CHECKLIST

Asterisks indicate those items which will most likely affect all parks.

1. Fire Organization

- * a. Fire management plan current.
- * b. Park fire organization chart completed.
- * c. Supervision adequate/qualified.

2. Administration

- * a. Physical fitness/step tests completed.
- * b. Fire qualification cards up to date.
- * c. Physical fitness program established.
- * d. Appropriate training conducted.
- e. Quarters up to safety codes.
- * f. Interagency agreements current.
- g. Accident reporting procedures in place.
- * h. Preparedness plan current.
- i. Property accountability procedures in place.

3. Facilities/Equipment

- * a. Weather stations maintained.
- * b. Tools maintained.
- * c. Saw and pump kits ready to use.
- * d. Personal protective equipment ready.
- * e. Operators trained in defensive driving.
- f. Hose testing/hose rack in place.
- g. Red tag system established for unsafe equipment.
- h. Engines adequately maintained/equipped.
- i. Preventive maintenance conducted on engines.
- j. Replacement schedule established for equipment.
- k. Roads, trails, signs posted.
- l. Lookouts operational.
- m. Fire caches in order.

WILDLAND FIRE MANAGEMENT
NPS-18
Readiness Checklist

GUIDELINE
Section III
Chapter 7
Exhibit 5
Page 2

4. Fire Operations

- * a. Pre-season risk analysis conducted.
- b. Communication equipment ready.
- c. Communication plan in place for:
 - * 1) Initial attack
 - * 2) Extended attack.
- * d. Fire weather procedures established.
- * e. Fire suppression plan current, as required.
- * f. Dispatch plan current.
- * g. Prevention plan current.
- * h. Pre-attack plan current.
- * i. Structural protection plan current.
- * j. Step-up plan current.
- * k. Detection procedures current.
 - 1. Communication procedures current.
 - 2. Reporting procedures current.
- * l. Aircraft use:
 - * 1. Facilities adequate; helispots marked.
 - 2. Fugitive retardant available.
 - 3. Helitack training, drills current.
 - 4. Flight routes established.
 - 5. Restricted airspace indicated.
- m. Local interagency cooperation arranged.
- n. Fire investigation procedures established.
- * o. Prescribed natural fire/prescribed burn escape; fire transition to wildfire procedures current.

5. Significant Park Specific Issues

PROJECT STATEMENT SHEET

ACAD-N-024.000

PS Page: 0032

PROJECT NUMBER: ACAD-N-024.000

TITLE: FIRE BEHAVIOR & FIRE EFFECTS ON VEGETATION

FUNDING STATUS: FUNDED: 8.50 UNFUNDED: 10.00

SERVICEWIDE ISSUES: N07 NAT FIRE REGM N20 BASELINE DATA

CULTURAL RESOURCE TYPE CODE: N/A

10-238 PACKAGE NUMBER:

PROBLEM STATEMENT:

Little information exists on fire behavior and the effects of fire on fuel loadings in the plant communities in the northeastern part of the United States. Additionally, information on the use of prescribed fire as a management tool in these communities is lacking. Thus, the ability to accurately predict fire behavior and fire effects on fuel loadings in the Park's plant communities and to determine the suitability of prescribed fire as an appropriate management tool is not present.

Though fire is an infrequent visitor to the Park, the possibility of a catastrophic fire does exist due to the high concentrations of fuels present. In order to implement an effective and efficient fire management program, this type of information is needed. Other fuels management options (e.g., mechanical and chemical) must also be evaluated specific to Park resources and issues prior in order to provide for the successful implementation of a fuels reduction program.

DESCRIPTION OF RECOMMENDED PROJECT OR ACTIVITY:

The park recommends that basic research be conducted in fire behavior and the effects of fire on fuel loadings in various plant communities in the Park. This would be accomplished through the use of management ignited research burns to observe and measure fire behavior and to determine pre- and post-burn fuel loadings. Small scale, management ignited research burns should be carried out under carefully controlled conditions and permanent monitoring plots established to determine the short and long-term effects on vegetation and fuel loadings and to evaluate the usefulness of prescribed fire as a management tool for the Park.

BUDGET AND FTEs:

-----FUNDING-----				
	Source	Act Type	Budget (\$1000s)	FTEs
Year 1:	FIRE-\$	RES	5.00	0.2

Proposal Date: 93

PROJECT STATEMENT SHEET

ACAD-N-024.000

PS Page: 0033

Year 2: FIRE-\$ RES 3.50 0.2

Year 3:

Year 4:

Total: 8.50 0.4

-----UNFUNDED-----
Source Act Type Budget (\$1000s) FTEs

Year 1:

Year 2:

Year 3: FIRE-\$ RES 5.00 0.0

Year 4: FIRE-\$ RES 5.00 0.0

Total: 10.00 0.0

(OPTIONAL) ALTERNATIVE ACTIONS/SOLUTIONS AND IMPACTS: N/A

COMPLIANCE CODE(s): EXCL

EXPLANATION: 516 D.M. 6, APP. 7.4(E) (19)

Proposal Date: 93

E

valuating The Plan

The Wildfire Prevention Plan should be evaluated annually to ensure effective implementation of the planned actions. Effectiveness of the overall wildfire prevention program will involve different evaluation techniques over a longer period of time.

The following questions are provided to assist in the evaluation process:

A. Have the priority areas or actions changed? If so, the Wildfire Prevention must be amended to address changes in priority areas and/or the redefinition of the fire prevention tasks.

B. Are the task actions funded? If so, was the action completed? If not, the responsibilities and completion dates must be reevaluated and redefined.

C. Have the task actions been successful? If not, the actions, responsibilities and completion dates must be re-evaluated and redefined as appropriate.

This evaluation holds management and the plan accountable for the effectiveness of the park's wildfire prevention program.

F

ire Prevention - Tasks

The following tasks have been identified as elements for this fire prevention program. These items require annual coordination to ensure a balanced, cost-effective fire management program. These tasks are designed to mitigate the highest potential losses due to wildfire.

Implementation of these tasks is dependent on the level of funding available. Each item has the budget level indicated to identify when the action would be taken. The following describes the different funding levels:

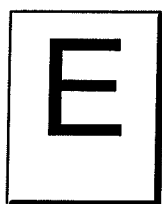
MINIMUM LEVEL (Level 1) = The prevention program necessary to accomplish the mandated and awareness activities. This level consists of all the prevention activities that a unit identifies as "must be done".

HISTORICAL LEVEL (Level 2) = The prevention program that best represents the average prevention output for the period of years that the fire occurrence data is being considered.

PLAN LEVEL (Level 3) = This is the level of prevention activities that has been described in the prevention planning process which focuses on preventing large and damaging fires and reducing cost + net value change.

RESPONSIBILITY DEFINITIONS:

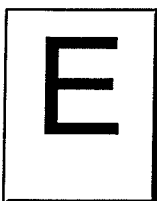
FMO	Fire Management Officer
FCO	Fire Control Officer
FPC	Fire Program Clerk
FCM	Fire Cache Manager
FCA	Fire Control Aid



EDUCATION Tasks

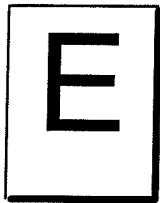
P=Plan
H=Hist

#	M=Min	Responsibility	Due Date	Task
1	HM	FMO	On-going	Provide Fire Safe and wildland/urban interface videos to other agencies and associations.
2	HM	FMO	On-going	Provide adjacent landowners with Fire Safe and wildland/urban interface materials as requested.
3	P	FMO/FCO	On-going	Conduct wildland/urban interface risk assessments to adjacent landowners.
7	HM	FMO/FCO	On-going	Provide training for local fire departments in wildfire suppression skills and wildland/urban interface operations and prevention.
13	HM	FMO	On-going	Coordinate fire prevention program efforts with fire prevention cooperators (Maine Forest Service and local fire departments).
14	HM	FMO	On-going	Continue involvement with interagency fire prevention campaigns.
16	HM	FMO/FCO	On-going	Utilize effective fire information procedures and systems during wildfire incidents while stressing the importance of increased fire prevention efforts.
19	HM	FMO	On-going	Provide fire prevention information to the park's visitor information radio sytem as needed.
20	HM	FMO	On-going	Provide local written media with timely news releases.
25	HM	FMO	October 1	Participate in Fire Prevention Week.
33	P	FMO	March 1	Develop and update annually a fire prevention sign plan that describes: sign locations (highway, roadside, etc.) sign standards (size, configuration), types of messages (seasonally), maintenance responsibility, procurement procedures.
34	HM	FMO	June 1	Install fire prevention signing and posters at points of significant interest.
35	HM	FPC	On-going	Calculate, broadcast on the park communications radio system and post NFDRS fire danger rating daily.
37	HM	FCM	On-going	Repair and maintain existing signs.
38	HM	FMO	On-going	Design and produce cause specific signing.
39	HM	FCO	On-going	Establish fire patrol routes and implement when needed and as identified in the park's "Step-Up Plan".
44	HM	FMO	On-going	Evaluate agency printed materials (brochures, flyers, etc.) to determine if adequate fire prevention considerations are being displayed.



EDUCATION Tasks

P=Plan H=Hist M=Min		Responsibility	Due Date	Task
#				
45	P	FMO	On-going	Develop a review system to ensure fire management input into reprints/new printing of all documents.
48	HM	FMO	On-going	Review existing publications (evaluate, update, and re-publish) as needed.
57	HM	FMO	On-going	Participate in a fire awareness program and career day activities at local primary and intermediate schools.
62	HM	FMO/FCO	On-going	Continue the use of Smokey as a prevention tool.
66	HM	FMO	On-going	Participate in educational programs to maintain high visibility of the Fire Prevention effort. These are programs such as: Smokey Bear (CFFP). Provide Smokey Bear suit for use to fire prevention cooperators.
67	HM	FCO	On-going	Participate in educational programs to maintain high visibility of the Fire Prevention effort. These are programs such as: Parades.
72	HM	FCO	On-going	Conduct other fire prevention activities, such as providing group tours of the Fire Cache.
76	HM	FMO	On-going	Implement a park communication system to ensure that employees know existing and predicted conditions such as protection strength, fire weather, fire activity and planned activities.
87	HM	FMO	On-going	Conduct Smokey Bear appearances, programs and other uses as per the National Smokey Bear Standard Guidelines.



ENGINEERING Tasks

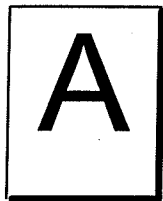
P=Plan
H=Hist

#	M=Min	Responsibility	Due Date	Task
96	M	FCM	June 1	Complete physical inspections of all powerlines in hazardous fire areas.
97	HM	FCO	June 1	Inspect all picnic and campground fire pits and grates.
98	HM	FMO	On-going	Establish fuelbreaks in the high risk/hazard areas.
101	P M	FMO	On-going	Fire management will provide input into all recreation area and/or campground development projects.
102	HM	FCO	On-going	Inspect agency facilities for fire hazards and hazard reduction needs.
104	HM	FMO	On-going	Evaluate the use of prescribed fire to reduce hazards in high use/value areas.
112	H	FMO	On-going	Provide fire safe inspections of park facilities.



ENFORCEMENT Tasks

P=Plan H=Hist # M=Min		Responsibility	Due Date	Task
117	HM	FMO/FCO	On-going	Provide investigative services to provide adequate fire cause determination.
118	P M	FCO	June 1	All initial attack personnel will receive observation/point of origin/cause determination training (Introduction to Fire Investigation).
120	HM	FMO/FCO	On-going	Investigate all human caused fires and process trespass actions when appropriate.
127	HM	FMO	On-going	Coordinate all special fireworks activities with cooperators.
133	HM	FMO	On-going	Coordinate all fire restrictions and closures with cooperating agencies.
134	HM	FMO	On-going	Establish and implement fire restriction and closures (i.e. campfires, fireworks) as needed and under the authority of the superintendent.
142	P	FCO	May 1	Individuals responsible for spark arrester inspections will be provided training and spark arrester guides.
144	HM	FCO	On-going	Spark Arrester guides are made available as reference guides.



ADMINISTRATION Tasks

P=Plan

H=Hist

#	M=Min	Responsibility	Due Date	Task
150	HM	FMO	On-going	High fire danger or above normal conditions which include, but are not limited to, the following, will require additional planning: Spring/Fall Seasons, Low Fuel Moisture, Extreme Burning Index, Dry Lightning, Depleted Initial Attack capabilities (Resource Drawdown), Going Fires, and Red Flag Weather Conditions. The above indicators will require consideration of the following measures: Additional staffing, Pre-positioning of resources, Increased detection, Patrols, and Media Applications as identified in the park's "Step-Up Plan".
158	HM	FMO	On-going	Participate with interagency fire prevention committees.
161	HM	FCO	On-going	Provide a catalog of training and informational aids, materials, documents, etc., and provide for distribution.
162	HM	FMO	March 1	Maintain an updated Wildfire Prevention Plan for the entire planning unit.
165	HM	FMO	March 1	Complete the Fire Prevention Workload Analysis.

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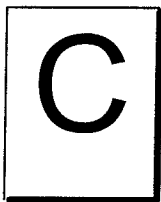
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Compartment Master Index

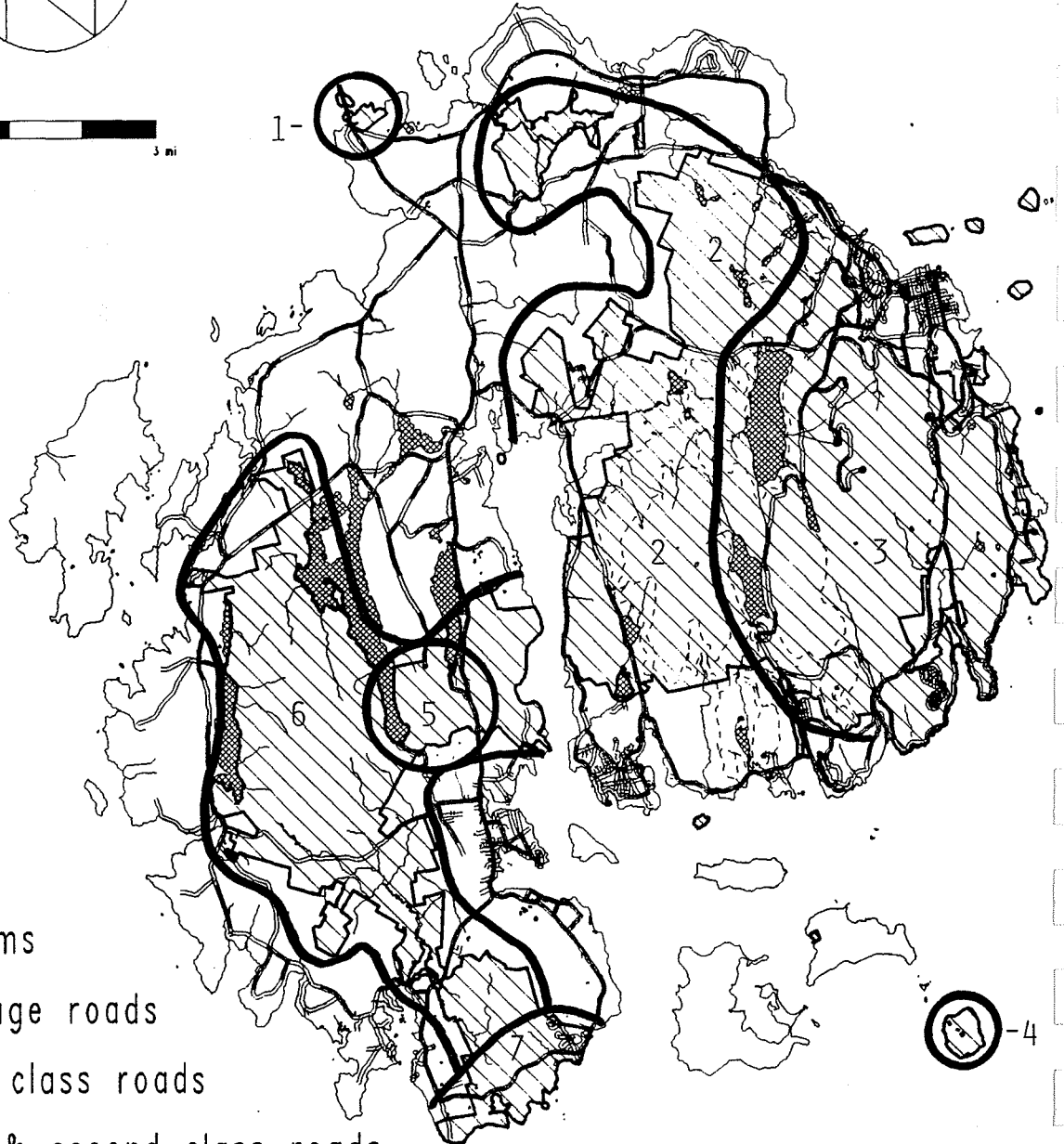
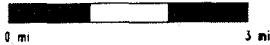
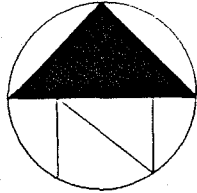
<u>Comp #</u>	<u>Name</u>	<u>Risk</u>	<u>Hazard</u>	<u>Value</u>	<u>Zone</u>
01MDI	THOMPSON ISLAND	H	M	M	01
02MDI	SARGENT MOUNTAIN	H	H	H	01
03MDI	BAR HARBOR	H	H	H	01
04MDI	BAKER ISLAND	L	M	M	01
05MDI	BEECH MOUNTAIN	H	H	H	01
06MDI	WESTERN MOUNTAIN	M	H	M	01
07MDI	SEAWALL	M	M	H	01
08IAH	SHORE	H	H	H	02
09IAH	RIDGE	L	H	L	02
10SP	SHORE	H	M	M	03
11SP	SCHOODIC HEAD	L	H	L	03
12SP	SCHOODIC POINT	H	M	H	03

FIRE PREVENTION COMPARTMENTS

MOUNT DESERT ISLAND FIRE MANAGEMENT UNIT

Acadia National Park

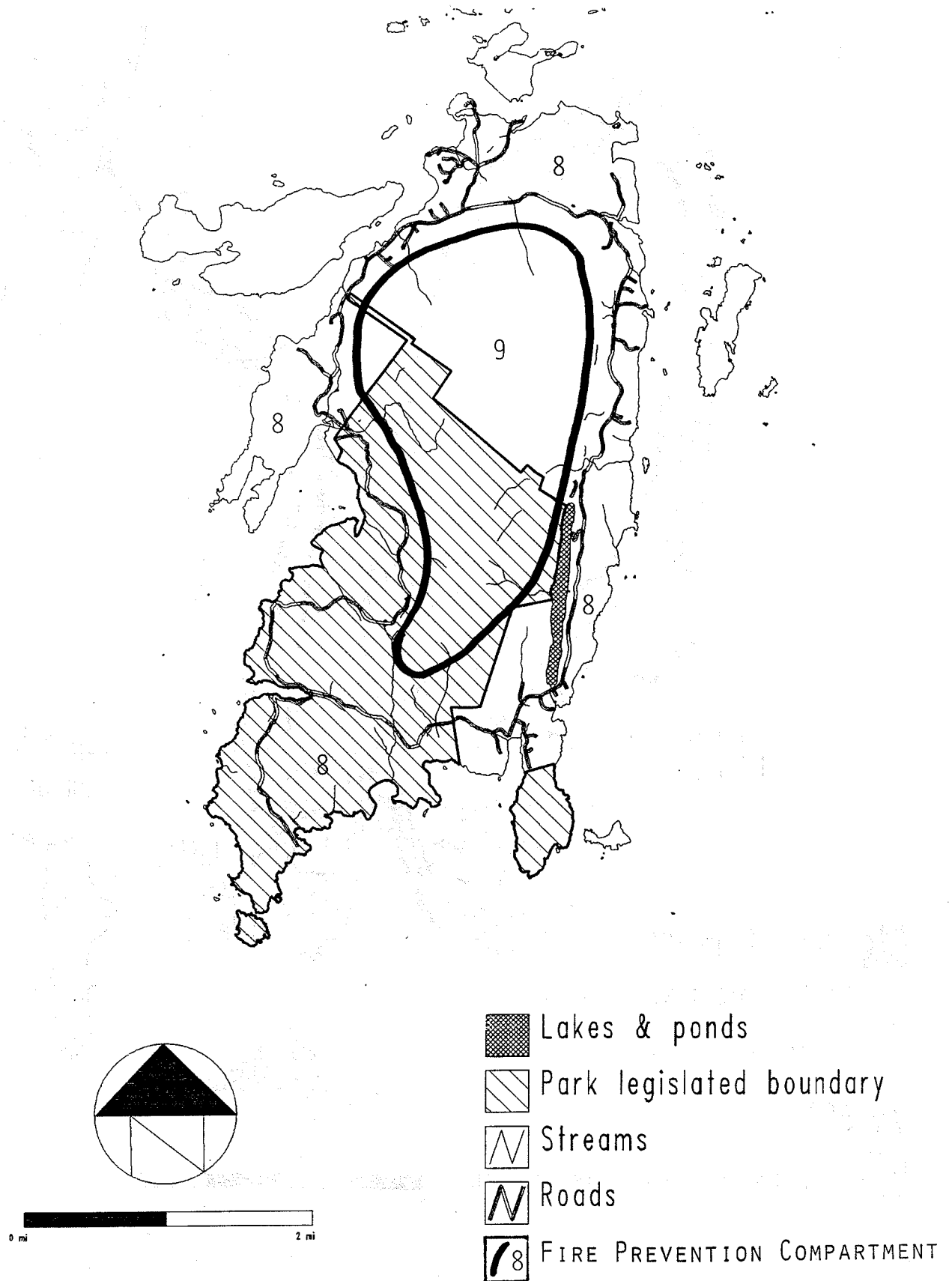
(March, 1993)



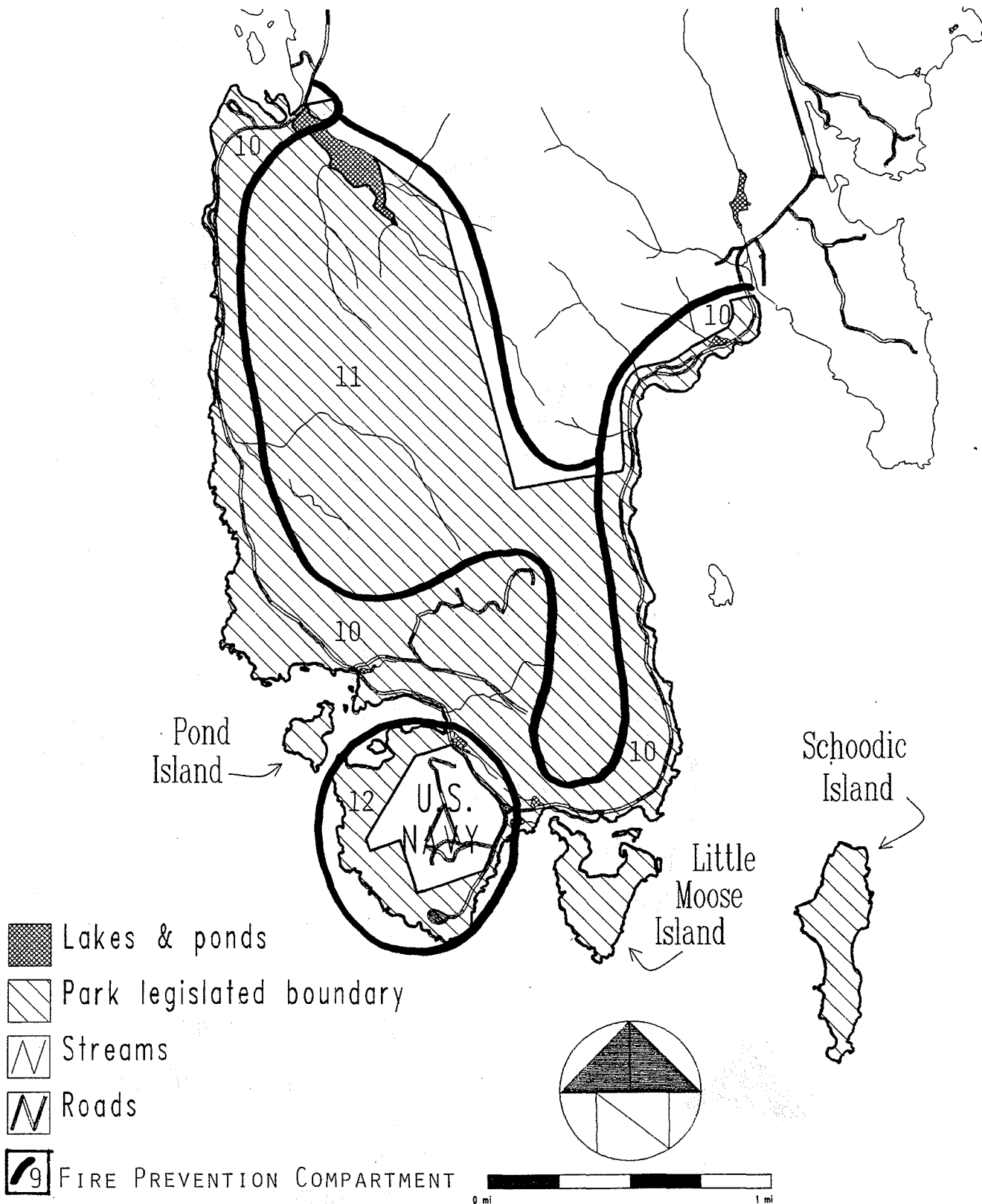
-  Streams
-  Carriage roads
-  Third class roads
-  First & second class roads
-  Lakes & ponds
-  Park legislated boundary
-  FIRE PREVENTION COMPARTMENT



FIRE PREVENTION COMPARTMENTS
ISLE AU HAUT FIRE MANAGEMENT UNIT
Acadia National Park
(March, 1993)



(March, 1993)



Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

01MDI: THOMPSON ISLAND

H M M

RISK COMPONENT: H

Urban Development

Wildland Urban Interface
Wildland Rural Intermix

Recreation

Campground Developed
==> Picnic Areas
Water-Based Recreation
Trail/Hikers
OHV/Non-Motorized
Rock Climbing
==> Party Areas
Horseback Riding

Other

==> Transportation Corridors
Fireworks
Target Shooting Ranges
Children With Matches
==> Incendiary
Adjacent Human Use/Habitation
Debris and/or Slash Burning
Aerial Sightseeing
Cultural Activities
Electronic Sites
Lightning

Industrial Operations

==> Power Equipment
Construction Projects
==> Maintenance Projects
Sewage Treatment Plant
Water Companies
==> Hazard Tree and Fuel Removal
==> Power Lines

Commercial Development

Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary	1					
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

01MDI: THOMPSON ISLAND

(Part 2)

HAZARD COMPONENT: M

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: M

==> Sensitive Biotic Communities	==> Park Facilities
Concession Facilities	Watershed
==> Scenic Byways	Visual and Scenic Resources
Cultural and Historic Resources	Threatened & Endangered Species
Critical Wildlife Habitat	Soils
Political/Social	Recreation Opportunities
Developed Recreation Sites	==> Improvements
==> Adjacent Communities and/or Property	

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk

Hazard

Value

02MDI: SARGENT MOUNTAIN

H

H

H

RISK COMPONENT: H

Urban Development

- Wildland Urban Interface
- ==> Wildland Rural Intermix

Industrial Operations

- ==> Power Equipment
- ==> Construction Projects
- ==> Maintenance Projects
- Sewage Treatment Plant
- ==> Water Companies
- ==> Hazard Tree and Fuel Removal
- ==> Power Lines

Recreation

- Campground Developed
- Picnic Areas
- ==> Water-Based Recreation
- ==> Trail/Hikers
- ==> OHV/Non-Motorized
- Rock Climbing
- ==> Party Areas
- ==> Horseback Riding

Commercial Development

- Concessions

Other

- ==> Transportation Corridors
- ==> Fireworks
- Target Shooting Ranges
- ==> Children With Matches
- ==> Incendiary
- ==> Adjacent Human Use/Habitation
- ==> Debris and/or Slash Burning
- ==> Aerial Sightseeing
- ==> Cultural Activities
- Electronic Sites
- ==> Lightning

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking	1					
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

02MDI: SARGENT MOUNTAIN

(Part 2)

HAZARD COMPONENT: H

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: H

==> **Sensitive Biotic Communities**
Concession Facilities
==> Scenic Byways
==> Cultural and Historic Resources
Critical Wildlife Habitat
==> Political/Social
==> Developed Recreation Sites
==> Adjacent Communities and/or Property

==> Park Facilities
==> Watershed
==> Visual and Scenic Resources
Threatened & Endangered Species
==> Soils
==> Recreation Opportunities
==> Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

03MDI: BAR HARBOR

H H H

RISK COMPONENT: H

Urban Development

- ==> Wildland Urban Interface
- ==> Wildland Rural Intermix

Recreation

- ==> Campground Developed
- ==> Picnic Areas
- ==> Water-Based Recreation
- ==> Trail/Hikers
- ==> OHV/Non-Motorized
- ==> Rock Climbing
- ==> Party Areas
- ==> Horseback Riding

Other

- ==> Transportation Corridors
- ==> Fireworks
- ==> Target Shooting Ranges
- ==> Children With Matches
- ==> Incendiary
- ==> Adjacent Human Use/Habitation
- ==> Debris and/or Slash Burning
- ==> Aerial Sightseeing
- ==> Cultural Activities
- ==> Electronic Sites
- ==> Lightning

Industrial Operations

- ==> Power Equipment
- ==> Construction Projects
- ==> Maintenance Projects
- ==> Sewage Treatment Plant
- ==> Water Companies
- ==> Hazard Tree and Fuel Removal
- ==> Power Lines

Commercial Development

- ==> Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment	2					
Campfire	5					
Debris Burning						
Smoking	5					
Railroad						
Incendiary	3					
Children						
Other	9					

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

03MDI: BAR HARBOR

(Part 2)

HAZARD COMPONENT: H

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: H

==> Sensitive Biotic Communities
==> Concession Facilities
==> Scenic Byways
==> Cultural and Historic Resources
==> Critical Wildlife Habitat
==> Political/Social
==> Developed Recreation Sites
==> Adjacent Communities and/or Property

==> Park Facilities
==> Watershed
==> Visual and Scenic Resources
==> Threatened & Endangered Species
==> Soils
==> Recreation Opportunities
==> Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

04MDI: BAKER ISLAND

L

M

M

RISK COMPONENT: L

Urban Development

Wildland Urban Interface
==> Wildland Rural Intermix

Recreation

Campground Developed
Picnic Areas
==> Water-Based Recreation
==> Trail/Hikers
OHV/Non-Motorized
Rock Climbing
Party Areas
Horseback Riding

Other

Transportation Corridors
Fireworks
Target Shooting Ranges
Children With Matches
==> Incendiary
==> Adjacent Human Use/Habitation
Debris and/or Slash Burning
Aerial Sightseeing
Cultural Activities
==> Electronic Sites
==> Lightning

Industrial Operations

Power Equipment
Construction Projects
==> Maintenance Projects
Sewage Treatment Plant
Water Companies
Hazard Tree and Fuel Removal
Power Lines

Commercial Development

Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire	1					
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

04MDI: BAKER ISLAND

(Part 2)

HAZARD COMPONENT: M

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: M

Sensitive Biotic Communities
Concession Facilities
Scenic Byways
==> Cultural and Historic Resources
Critical Wildlife Habitat
Political/Social
Developed Recreation Sites
==> Adjacent Communities and/or Property

Park Facilities
Watershed
==> Visual and Scenic Resources
Threatened & Endangered Species
Soils
==> Recreation Opportunities
Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

05MDI: BEECH MOUNTAIN

H H H

RISK COMPONENT: H

Urban Development

- Wildland Urban Interface
- ==> Wildland Rural Intermix

Recreation

- Campground Developed
- Picnic Areas
- Water-Based Recreation
- ==> Trail/Hikers
- OHV/Non-Motorized
- Rock Climbing
- ==> Party Areas
- Horseback Riding

Other

- Transportation Corridors
- Fireworks
- Target Shooting Ranges
- Children With Matches
- ==> Incendiary
- ==> Adjacent Human Use/Habitation
- Debris and/or Slash Burning
- Aerial Sightseeing
- Cultural Activities
- Electronic Sites
- ==> Lightning

Industrial Operations

- ==> Power Equipment
- Construction Projects
- ==> Maintenance Projects
- Sewage Treatment Plant
- ==> Water Companies
- ==> Hazard Tree and Fuel Removal
- Power Lines

Commercial Development

- ==> Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary	2					
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

05MDI: BEECH MOUNTAIN

(Part 2)

HAZARD COMPONENT: H

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: H

Sensitive Biotic Communities
==> Concession Facilities
==> Scenic Byways
==> Cultural and Historic Resources
==> Critical Wildlife Habitat
==> Political/Social
==> Developed Recreation Sites
==> Adjacent Communities and/or Property

Park Facilities
==> Watershed
==> Visual and Scenic Resources
==> Threatened & Endangered Species
==> Soils
==> Recreation Opportunities
==> Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk

Hazard

Value

06MDI: WESTERN MOUNTAIN

M

H

M

RISK COMPONENT: M

Urban Development

- ==> Wildland Urban Interface
- ==> Wildland Rural Intermix

Recreation

- Campground Developed
- ==> Picnic Areas
- ==> Water-Based Recreation
- ==> Trail/Hikers
- ==> OHV/Non-Motorized
- Rock Climbing
- ==> Party Areas
- ==> Horseback Riding

Other

- ==> Transportation Corridors
- Fireworks
- Target Shooting Ranges
- ==> Children With Matches
- ==> Incendiary
- ==> Adjacent Human Use/Habitation
- ==> Debris and/or Slash Burning
- Aerial Sightseeing
- Cultural Activities
- Electronic Sites
- ==> Lightning

Industrial Operations

- ==> Power Equipment
- Construction Projects
- ==> Maintenance Projects
- Sewage Treatment Plant
- Water Companies
- ==> Hazard Tree and Fuel Removal
- ==> Power Lines

Commercial Development

- Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

06MDI: WESTERN MOUNTAIN

(Part 2)

HAZARD COMPONENT: H

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: M

==> Sensitive Biotic Communities
Concession Facilities
==> Scenic Byways
Cultural and Historic Resources
Critical Wildlife Habitat
==> Political/Social
==> Developed Recreation Sites
==> Adjacent Communities and/or Property

Park Facilities
Watershed
==> Visual and Scenic Resources
Threatened & Endangered Species
Soils
==> Recreation Opportunities
==> Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

07MDI: SEAWALL

M M H

RISK COMPONENT: M

Urban Development

- Wildland Urban Interface
- ==> Wildland Rural Intermix

Recreation

- ==> Campground Developed
- ==> Picnic Areas
- Water-Based Recreation
- ==> Trail/Hikers
- ==> OHV/Non-Motorized
- Rock Climbing
- ==> Party Areas
- Horseback Riding

Other

- ==> Transportation Corridors
- ==> Fireworks
- Target Shooting Ranges
- ==> Children With Matches
- ==> Incendiary
- ==> Adjacent Human Use/Habitation
- ==> Debris and/or Slash Burning
- Aerial Sightseeing
- Cultural Activities
- ==> Electronic Sites
- Lightning

Industrial Operations

- ==> Power Equipment
- Construction Projects
- ==> Maintenance Projects
- Sewage Treatment Plant
- Water Companies
- ==> Hazard Tree and Fuel Removal
- ==> Power Lines

Commercial Development

Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire	2					
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

07MDI: SEAWALL

(Part 2)

HAZARD COMPONENT: M

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: H

==> Sensitive Biotic Communities
Concession Facilities
==> Scenic Byways
==> Cultural and Historic Resources
Critical Wildlife Habitat
==> Political/Social
==> Developed Recreation Sites
==> Adjacent Communities and/or Property

==> Park Facilities
Watershed
==> Visual and Scenic Resources
Threatened & Endangered Species
Soils
==> Recreation Opportunities
==> Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

08IAH: SHORE

H H H

RISK COMPONENT: H

Urban Development

- ==> Wildland Urban Interface
- ==> Wildland Rural Intermix

Recreation

- ==> Campground Developed
Picnic Areas
- ==> Water-Based Recreation
- ==> Trail/Hikers
- ==> OHV/Non-Motorized
Rock Climbing
- ==> Party Areas
Horseback Riding

Other

- ==> Transportation Corridors
Fireworks
Target Shooting Ranges
- ==> Children With Matches
- ==> Incendiary
- ==> Adjacent Human Use/Habitation
- ==> Debris and/or Slash Burning
Aerial Sightseeing
- ==> Cultural Activities
- ==> Electronic Sites
- ==> Lightning

Industrial Operations

- ==> Power Equipment
Construction Projects
- ==> Maintenance Projects
Sewage Treatment Plant
Water Companies
- ==> Hazard Tree and Fuel Removal
- ==> Power Lines

Commercial Development

Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

08IAH: SHORE

(Part 2)

HAZARD COMPONENT: H

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: H

Sensitive Biotic Communities
=> Concession Facilities
=> Scenic Byways
=> Cultural and Historic Resources
Critical Wildlife Habitat
=> Political/Social
=> Developed Recreation Sites
=> Adjacent Communities and/or Property

==> **Park Facilities**
Watershed
==> Visual and Scenic Resources
Threatened & Endangered Species
==> Soils
==> Recreation Opportunities
==> Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

09IAH: RIDGE

L H L

RISK COMPONENT: L

Urban Development

Wildland Urban Interface
Wildland Rural Intermix

Recreation

Campground Developed
Picnic Areas
Water-Based Recreation
==> Trail/Hikers
OHV/Non-Motorized
Rock Climbing
Party Areas
Horseback Riding

Other

Transportation Corridors
Fireworks
Target Shooting Ranges
Children With Matches
==> Incendiary
Adjacent Human Use/Habitation
Debris and/or Slash Burning
Aerial Sightseeing
Cultural Activities
Electronic Sites
==> Lightning

Industrial Operations

Power Equipment
Construction Projects
Maintenance Projects
Sewage Treatment Plant
Water Companies
Hazard Tree and Fuel Removal
Power Lines

Commercial Development

Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

09IAH: RIDGE

(Part 2)

HAZARD COMPONENT: H

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: L

Sensitive Biotic Communities
Concession Facilities
Scenic Byways
Cultural and Historic Resources
Critical Wildlife Habitat
==> Political/Social
Developed Recreation Sites
==> Adjacent Communities and/or Property

Park Facilities
Watershed
==> **Visual and Scenic Resources**
Threatened & Endangered Species
==> Soils
==> Recreation Opportunities
Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

10SP: SHORE

H

M

M

RISK COMPONENT: H

Urban Development

Wildland Urban Interface
Wildland Rural Intermix

Recreation

Campground Developed
==> Picnic Areas
==> Water-Based Recreation
==> Trail/Hikers
==> OHV/Non-Motorized
Rock Climbing
==> Party Areas
Horseback Riding

Other

==> Transportation Corridors
Fireworks
Target Shooting Ranges
Children With Matches
==> Incendiary
Adjacent Human Use/Habitation
Debris and/or Slash Burning
Aerial Sightseeing
Cultural Activities
Electronic Sites
Lightning

Industrial Operations

==> Power Equipment
Construction Projects
==> Maintenance Projects
Sewage Treatment Plant
Water Companies
==> Hazard Tree and Fuel Removal
==> Power Lines

Commercial Development

Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

10SP: SHORE

(Part 2)

HAZARD COMPONENT: M

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: M

	Sensitive Biotic Communities	==>	Park Facilities
	Concession Facilities		Watershed
==>	Scenic Byways	==>	Visual and Scenic Resources
	Cultural and Historic Resources		Threatened & Endangered Species
	Critical Wildlife Habitat		Soils
==>	Political/Social	==>	Recreation Opportunities
==>	Developed Recreation Sites	==>	Improvements
==>	Adjacent Communities and/or Property		

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk Hazard Value

11SP: SCHOODIC HEAD

L H L

RISK COMPONENT: L

Urban Development

Wildland Urban Interface
Wildland Rural Intermix

Recreation

Campground Developed
Picnic Areas
Water-Based Recreation
==> Trail/Hikers
OHV/Non-Motorized
Rock Climbing
Party Areas
Horseback Riding

Other

Transportation Corridors
Fireworks
Target Shooting Ranges
Children With Matches
==> Incendiary
Adjacent Human Use/Habitation
Debris and/or Slash Burning
Aerial Sightseeing
Cultural Activities
Electronic Sites
==> Lightning

Industrial Operations

Power Equipment
Construction Projects
Maintenance Projects
Sewage Treatment Plant
Water Companies
Hazard Tree and Fuel Removal
Power Lines

Commercial Development

Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

11SP: SCHOODIC HEAD

(Part 2)

HAZARD COMPONENT: H

Criteria

Low

Medium

High

Conifer stands on slopes of less than 20%
Conifer stands on slopes of 20% or greater
Jack pine and pitch pine stands on any slope
Blueberry and huckleberry
Hardwood stands on any slope
Grasses on any slope

X

X

X

X
X
X

VALUE COMPONENT: L

Sensitive Biotic Communities
Concession Facilities
Scenic Byways
Cultural and Historic Resources
Critical Wildlife Habitat
==> Political/Social
Developed Recreation Sites
==> Adjacent Communities and/or Property

Park Facilities
Watershed
Visual and Scenic Resources
Threatened & Endangered Species
Soils
==> Recreation Opportunities
Improvements

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

Risk

Hazard

Value

12SP: SCHOODIC POINT

H

M

H

RISK COMPONENT: H

Urban Development

- ==> Wildland Urban Interface
- Wildland Rural Intermix

Recreation

- Campground Developed
- Picnic Areas
- ==> Water-Based Recreation
- ==> Trail/Hikers
- OHV/Non-Motorized
- Rock Climbing
- ==> Party Areas
- Horseback Riding

Other

- ==> Transportation Corridors
- Fireworks
- Target Shooting Ranges
- ==> Children With Matches
- ==> Incendiary
- ==> Adjacent Human Use/Habitation
- Debris and/or Slash Burning
- Aerial Sightseeing
- Cultural Activities
- ==> Electronic Sites
- ==> Lightning

Industrial Operations

- ==> Power Equipment
- ==> Construction Projects
- ==> Maintenance Projects
- Sewage Treatment Plant
- Water Companies
- ==> Hazard Tree and Fuel Removal
- ==> Power Lines

Commercial Development

- Concessions

Number of Fires By Statistical Cause And Size Class (Rounded)

Cause	A	B	C	D	E	F+
Lightning						
Equipment						
Campfire						
Debris Burning						
Smoking						
Railroad						
Incendiary						
Children						
Other						

Acadia National Park

Compartment Matrix For Wildfire Prevention Area:

12SP: SCHOODIC POINT

(Part 2)

HAZARD COMPONENT: M

<u>Criteria</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Conifer stands on slopes of less than 20%		X	
Conifer stands on slopes of 20% or greater			X
Jack pine and pitch pine stands on any slope			X
Blueberry and huckleberry			X
Hardwood stands on any slope	X		
Grasses on any slope		X	

VALUE COMPONENT: H

Sensitive Biotic Communities
Concession Facilities
==> Scenic Byways
Cultural and Historic Resources
Critical Wildlife Habitat
==> Political/Social
==> Developed Recreation Sites
==> Adjacent Communities and/or Property

Park Facilities
Watershed
==> Visual and Scenic Resources
Threatened & Endangered Species
Soils
==> Recreation Opportunities
==> Improvements

APPENDIX I

HAZARD FUELS REDUCTION/STRUCTURAL PROTECTION PROJECT

October 1993

1. 10. 1941

2. 10. 1941 (1941) 10. 10. 1941 (1941) 10. 10. 1941 (1941)

3. 10. 1941

HAZARD FUELS REDUCTION/STRUCTURAL PROTECTION PROJECT

Acadia National Park
August 28, 1991 (Revised June 24, 1992)

OBJECTIVE:

The objective of this project is to provide sufficient defensible space around Acadia National Park owned structures to aid in their protection from wildland fire and to aid in the protection of Park wildlands from structure fires.

JUSTIFICATION:

The construction of structures in close proximity to the naturally occurring fuels normally found in wildland areas is known as the wildland/urban interface or the interface. This proximity puts both the structures and the wildlands at risk. The structure can be threatened by a wildland fire and the wildlands can be threatened by a structure fire.

Acadia National Park has over 135 structures (see Attachments #1, 2 & 3) scattered throughout the approximately 42,250 acres within it's boundaries. These structures include irreplaceable historic structures, Park facilities and employee housing. Their replacement value runs into the millions of dollars. The vast majority of these structures lie within the wildlands of the Park and are surrounded by natural vegetation. This vegetation includes conifer and hardwood stands, brush and grass.

Protection of individual Park structures during a wildland fire may be difficult to accomplish. The structures are scattered and generally lack adequate water supplies for fire protection. Access to many of these structures is limited and would be dangerous during a wildland fire. Manpower and equipment for structural defense is also limited. Park structures on offshore islands must be left to their own defenses since response time is extremely long. Many of the Park's structures are constructed of flammable materials and are poorly designed to withstand a wildland fire on their own.

Creation of defensible space around a structure can greatly improve it's chances of surviving a wildland fire and assist firefighters in the structure's protection during a wildland fire. Under this project hazardous fuel accumulations are removed from around selected Park owned structures in order to increase their survivability during a wildland fire.

PROJECT STAGES:

1. INVENTORY:

An inventory is conducted of all Park structures with regards to their wildland/urban interface risk. The inventory documents the structure materials and construction, types and volumes of surrounding fuels, topography and other interface factors. Photodocumentation of the existing fuel conditions at representative structures is made during the inventory process. (See Attachments #4, 5 & 6)

2. PRESCRIPTION:

A prescription is written for each structure or group of structures. This prescription is based upon an evaluation of the information collected during the inventory stage. The prescription serves as explicit directions for the crew conducting the fuel removal activities. It also serves as documentation of the decision-making process that determines the prescription. (See Attachments #7 & 8)

The evaluation considers several factors. These include the values at risk and the structure's fire risk. The values at risk look at the relative value of the structure to the Park and it's mission. Does the structure have historic significance or value, is it a major Park facility or is it considered expendable? The fire risk of the structure is also evaluated by determining what type of materials are present in it's construction, their flammability, the structure's ignition potential, it's current use and any unusual fire hazards that might exist.

Consideration is given to the impact that fuel removal would have upon historic or cultural landscapes, scenic vistas and views, natural systems and vegetative regeneration. All applicable local, state and federal regulatory compliances are adhered to. The prescription form serves as the review document for those compliances. These compliances include, but are not limited to;

1. NEPA: when necessary, prescriptions are reviewed to insure NEPA compliance. In developed areas, the routine maintenance and repairs to non-historic structures, facilities, utilities, grounds and trails and the routine maintenance and repairs to cultural resources sites, structures, utilities and grounds where the action would not adversely affect the cultural resource are categorically excluded from NEPA compliance (516 DM 6, Appendix 7, (7.4) (C) (3 & 4)).

2. Section 106: prescriptions for historic structures or where cultural landscapes may be impacted are reviewed to insure compliance with Section 106 of the National Historic Preservation Act.
3. ESA, Section 7: prescriptions are reviewed to insure compliance to insure protection of endangered species and their habitat.
4. NRPA: prescriptions for structures adjacent to streams, wetlands and shorelines are reviewed for compliance.
5. State Laws: general tree cutting and tree cutting adjacent to stream regulations are complied with. (A copy of these regulations is on file in the Park Fire Management Office)
6. Local Town Ordinances: applicable local town ordinances are complied with. (Copies of these ordinances are on file in the Park Fire Management Office)

Only those vegetative fuels considered capable of sustaining or increasing fire behavior are removed. These include, but are not limited to continuous stands of conifers, dense stands of understory shrubs, tall grasses and cured fuels. Hardwood species are not considered flammable fuels unless their proximity to a structure would provide a ladder for a fire to travel to that structure. Hardwood leaves and compacted needles in sufficient quantity may be considered a flammable fuel. Gardens, mowed lawns and non-coniferous landscape shrubs and trees are not considered flammable fuels.

The prescriptions utilize the fuel reduction standards adopted below. Prescriptions can range from a decision to do no fuel reduction to one of total fuel removal based upon the factors and compliances involved and listed.

Structures are prioritized for fuel reduction treatment. Generally, historic structures are given first priority, then major Park facilities, housing units, other Park facilities and finally incidental structures.

Prescriptions are reviewed by the applicable Park staff, including the compliance specialist, and where required, outside review and approval are obtained to insure compliance with all applicable local, state and federal regulations.

All prescriptions are reviewed and signed by the Park Fire Management Officer. If compliance reviews are required, the prescription is also signed by the applicable Division Chief. If the prescription is for a significant historic or otherwise sensitive structure, the prescription is also reviewed and signed by the Superintendent.

3. FUEL REDUCTION:

Mechanical fuel reduction treatment is conducted out by a hazard fuels crew. This crew carries out the work detailed in the prescription for each structure or group of structures to create the defensible space indicated in that prescription.

This work may include the cutting and pruning of trees and shrubs and the removal of ladder fuels and cured fuels. Removed vegetation and fuels is chipped and broadcast outside the safety zone or removed from the site.

Photodocumentation of fuel conditions after reduction treatment is made at representative structures.

4. PROJECT MAINTENANCE:

Each structure is inspected annually and new fuel loadings are removed in order to maintain the defensible space around those structures.

Park structures are reinventoried and new prescriptions created every ten (10) years.

STANDARDS ADOPTED:

The National Fire Protection Association and the United States Forest Service have established guidelines for the protection of structures in the wildland/urban interface. These guidelines can be found in the pamphlet titled "Protecting Your Home From Wildfire" by Robert M. Swinford, et. al., 1987.

The guidelines state that a safety zone of at least 30 feet on each side of a structure should be established and that the zone may extend up to 100 feet on the down slope side of the structure. This safety zone should be clear of all highly flammable fuels, dead fuels and ladder fuels. Additionally, beyond the safety zone, dead fuels and ladder fuels should be removed and forest canopies should be thinned to make them discontinuous.

LIST OF ATTACHMENTS:

- #1 List of Park Structures by Structure Number
- #2 List of Park Structures by Structure Name
- #3 List of Historic Park Structures
- #4. Hazard Fuels Reduction/Structures Inventory Instructions
- #5 Hazard Fuels Reduction/Structures Inventory Form
- #6 Hazard Fuels Reduction/Structures Site Map
- #7 Structural Protection Prescription Form Instructions
- #8 Structural Protection Prescription Form

HAZARD FUELS REDUCTION/STRUCTURES INVENTORY

ACADIA NATIONAL PARK

INSTRUCTIONS

A. Complete the HAZARD FUELS REDUCTION/STRUCTURES INVENTORY form.

1. Determine if the structure(s) should be treated as a single structure or as a group of structures. Consider:
 - a. The number of structures present.
 - b. The distance between the structures.
 - c. The continuity of fuel types between the structures.
2. Determine the size of the area to be included in the inventory.
 - a. Measure 100 feet out from each side of the structure or from the walls that make up the outer perimeter of the group of structures.
 - b. For structures that are not square or rectangular, establish an imaginary perimeter that is square or rectangular and measure 100 feet out from each side of that perimeter.
3. Inventory the fuels and vegetation around the structures.
 - a. For the total inventory area, determine what percentage of that area is covered by each type listed below in "b" through "g".
 - b. Structure(s); determine if the structure is constructed primarily of wood, masonry, concrete, steel or other materials and note it's general flammability. Note any materials present that might be unusually flammable (propane or oil tanks, gasoline pumps, etc.).
 - c. Non-Flammable Surfaces; determine if pavement, sidewalks, bare rock faces, water or other non-flammable surfaces cover the inventory area.
 - d. Woody; determine the species composition, measure the basal area (BA), estimate the percent of crown closure (CC), estimate the average stand height, estimate the dead and downed woody (D&D W) fuel volume (low, medium or high) and estimate the volume of ladder fuels present (low, medium or high).

- e. Brush & Shrubs; estimate the percentage of crown closure, estimate the average height and note if the brush and shrubs are deciduous, evergreen or mixed.
 - f. Grass; determine the grass height and note whether it is a mowed lawn, mowed field or an unmowed field.
 - g. Other; identify and describe any other significant items in the inventory area.
 - h. Landscaping; note if landscaping is present and give a brief description.
 - i. Overhanging Vegetation; note if vegetation overhangs the building and give a brief description.
4. Make comments on the reverse side of the inventory form.
- a. Record any thing of special interest or concern.
 - b. Make a brief recommendation as to what the fuel reduction prescription for the structure(s) should be and why.
- B. Map the structure(s) and inventory area on the HAZARD FUELS REDUCTION/STRUCTURES SITE MAP form.
- 1. Include the location of the structure(s), outbuildings, other improvements, pavement, landscaping, fuel types and any other features deemed important to the inventory and prescription process.
 - 2. Note the scale to which the map is drawn or if the map is not to scale.
 - 3. Note the % slope.
 - 4. Note on the map which side of structure(s) is downslope and upslope.
 - 5. Note true north on the map.

HAZARD FUELS REDUCTION/STRUCTURES INVENTORY

Acadia National Park

STRUCTURE #: _____ STRUCTURE NAME: _____

LOCATION: _____

SECONDARY
STRUCTURE #: _____ STRUCTURE NAME: _____

FUELS & VEGETATION DATA
(Circle choice or complete blank)
% of Total
Area

STRUCTURES: _____ Construction: Wood/Masonry/Concrete/Steel/
Other: _____
Flammability: Low/Moderate/High
Flammable Hazards: No/Yes; _____

NON-FLAMMABLE
SURFACES: _____ Pavement/Sidewalk/Rock/Water/Other; _____

	Species Comp.	%	Total BA (%)	CC (%)	Ave. Height	D&D W Fuels	Ladder Fuels
<u>WOODY:</u> _____	_____	_____	_____	_____	_____	Low	Low
	_____	_____	_____	_____	_____	Medium	Medium
	_____	_____	_____	_____	_____	High	High

	CC (%)	Average Height	Type:
<u>BRUSH & SHRUBS:</u> _____	_____	_____	Deciduous/Evergreen/Mixed

	Average Height	Type:
<u>GRASS:</u> _____	_____	Mowed Lawn/Mowed Field/Unmowed

OTHER: _____ Describe: _____

LANDSCAPING: No/Yes Describe: _____

OVERHANGING VEGETATION: No/Yes Describe: _____

COMMENTS: (Note comments and make prescription recommendations on reverse)

INVENTORY CONDUCTED BY: _____ DATE: _____

STRUCTURE #: _____ STRUCTURE NAME: _____

DRAWN BY: _____ DATE: _____

This image shows a full page of dot grid paper. The background is white, and it is covered with a regular pattern of small, solid black dots. These dots are arranged in a precise square grid, with equal spacing between them both horizontally and vertically. There are no margins, text, or other markings on the page.

SCALE: _____ % SLOPE: _____

ACAD
09/91

STRUCTURAL PROTECTION PRESCRIPTION FORM INSTRUCTIONS

INITIAL PRESCRIPTION: write the initial prescription for fuel reduction.

- 1) Create a fuel break of approximately 30 feet on each side of the structure, ie.; mowed grass or cleared brush.
- 2) Are there ladder fuels near or touching the structure, ie.; over hanging limbs or vegetation growing on building.
- 3) Is there a continuous fuel loading and what type of fuel is present, ie.; evergreen or hardwoods.
- 4) What kind of crown closure is there and what level is desirable
- 5) Is there any vegetation that could be a risk factor, ie. cured grass or heavy dead and downed woody fuels.
- 6) What is the value of the structure, ie.; historic or expendable.
- 7) Is the site a cultural landscape.
- 8) Is there a scenic view or vista involved and can it be altered.
- 9) What is the fire risk to the structure and are fuels present.
- 10) What is the flammability of structure and it's materials.

COMPLIANCES: check each structure for compliance requirements.

- 1) NEPA/Section 106 - All historic structures and areas and cultural landscapes must be reviewed for Sect. 106 and NEPA compliance. Check for compliance review by the Chiefs of Resource Management, Interpretation and Maintenance if needed.
- 2) ESA - If the prescription may affect endangered species (at Acadia NP this means mostly marsh and bog plants), check for compliance review by the Chief of Resource Management.
- 3) NRPA - When a prescription is written for any structure adjacent to a stream, wetland or shoreline, check for a compliance review by the Chief of Resource Management.
- 4) State Laws - Any general tree cutting and tree cutting adjacent to streams, regulations will be complied with. (A copy of these regulations is on file in the Park Fire Management Office)
- 5) Local Town Ordinances: All applicable local town ordinances will be complied with. (Copies of these ordinances are on file in the Park Fire Management Office)

APPENDIX N

WILDFIRE REPORTING PROCEDURES

THE

AMERICAN

WILDLAND FIRE REPORT
Acadia National Park

Date:_____ Time:_____ Dispatcher:_____

If you receive a report by radio, phone, or in person of a WILDLAND FIRE do the following:

ASK THE REPORTING PARTY THESE QUESTIONS:

1. Exact location of fire:_____

Landmarks:_____

2. Was the fire seen by them or reported to them by another party?:

3. Did they see smoke or flames, close up or at a distance?:_____

4. Estimate of fire size:_____

5. Estimate of the direction of fire spread:_____

6. Type of fuels and vegetation involved:_____

7. Are there any lives or structures threatened or involved?:

8. Do they know who or what caused the fire?:_____

9. Has the local fire department been notified?:_____

10. Can they or someone else meet with a Park Ranger to show them the exact location of the fire. If so, where can they meet?:

11. WHAT IS THEIR NAME?:_____

ADDRESS?:_____

WHERE CAN THEY BE REACHED; IN PERSON OR BY PHONE?:

* KEEP THE REPORTING PARTY ON THE LINE IF POSSIBLE *

12. Go to the "WILDLAND FIRE DISPATCH" instructions (next page). (06/92)

WILDLAND FIRE DISPATCH

- 1) Notify the on-duty Fire Management Office staff (in the order listed below) and supply them with the information from the "WILDLAND FIRE REPORT":

<u>Personnel</u>	<u>Radio #</u>	<u>Home Phone</u>	<u>Residence</u>
Doug Jones Fire Mgt. Officer	281	667-4581	87D Mill Rd. Lamoine
Fred Olson Fire Control Officer	282	288-8892	Kitteridge Brook Road (Fire Road 714) Town Hill
Mark Brown Fire Cache Mgr.	283	None	Apt. 9A, McFarland Hill Apartments Bar Harbor
Dave Hanlon Fuel Crew Leader	285	288-8089	Dermott House Eagle Lake Road Bar Harbor

2. Notify the appropriate district patrol ranger.

- 1) Give them the information from the "WILDLAND FIRE REPORT".
- 2) Have the district patrol ranger respond to the location of the reported fire.
- 3) Have them provide size-up information on the fire:

- Exact location of the fire
- Any values (life and property) threatened
- Fuel type
- Topography
- Wind direction and speed
- Estimated size of the fire
- Estimated rate of spread
- Estimated direction of spread
- Observed fire behavior (flame length and smoke column behavior)
- Hazards and/or special conditions
- Point of origin
- Possible cause
- Any suspicious persons and/or vehicles in the area

3. Notify the local fire department that has jurisdiction and advise them of the fire and the park's response. See the "FIRE TELEPHONE DIRECTORY".
4. Notify the Maine Forest Service District Office at Cherryfield. If there is no answer, contact the Regional Office at Old Town. See the "FIRE TELEPHONE DIRECTORY".

WILDLAND FIRE DISPATCH

PAGE 2

5. Notify the appropriate District Ranger:

Rob Yates East District	240	244-3030	Seawall Ranger Station Route 102A Manset
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George Leone West District	210	276-5523	Jordan Pond Road Seal Harbor
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6. Notify the Chief Ranger:

Norm Dodge	201	288-3133	Route 3 Hulls Cove
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7. Notify the Deputy Superintendent:

Len Bobinchock	102	667-6385	Route 184 Lamoine
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8. Stand by to receive instructions from the Incident Commander (this will usually be a member of the Fire Management Office staff).

9. KEEP THE RADIO FREE OF UNNECESSARY RADIO TRAFFIC.

10. Refer to the "FIRE TELEPHONE DIRECTORY" and the "PARK FIRE MOBILIZATION DIRECTORY" for additional agencies and personnel that the Incident Commander may direct you to contact.

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APPENDIX O

RESOURCE MANAGEMENT PROJECT REQUESTS

31.10.1941

1. 1. 1942 - 1. 1. 1943

PROJECT STATEMENT SHEET

ACAD-N-025.000

PS Page: 0034

PROJECT NUMBER: ACAD-N-025.000

TITLE: FIRE INTERACTIONS: WATER/BIOTA/SOILS

FUNDING STATUS: FUNDED: 0.00 UNFUNDED: 200.00

SERVICEWIDE ISSUES: N07 NAT FIRE REGM N20 BASELINE DATA

CULTURAL RESOURCE TYPE CODE: N/A

10-238 PACKAGE NUMBER:

PROBLEM STATEMENT:

The subject of fire on MDI is a sensitive issue due to the catastrophic fire that occurred in 1947. Since then, fuels have built up in unburned areas and habitats have changed as a result of the 1947 fire. These have had a significant impact on faunal and floral communities. In addition, past and potential catastrophic and other fires may have had a significant impact on soil and waters within the park. Research is needed to quantify the changes in charcoal and cation release (affecting acid deposition) and nutrient release affecting eutrophication. Soils on MDI are generally very shallow and are very susceptible to erosion. Basic data on the rate of vegetative regeneration is needed. In addition, it is also important to understand the effect of fire on organic matter in soil. Severe fires can adversely affect the amount of organic matter in soil because it is a major factor in nutrient cycling. While general information on these interactions exists, there is little information available for the northeast and none specific to ACAD. This information will help guide a the park's fire management program. This becomes especially important if the Park chooses to initiate a prescribed fire program.

DESCRIPTION OF RECOMMENDED PROJECT OR ACTIVITY:

The Park recommends that additional information be acquired through literature review and research on fire effects on biotic, water, and soil resources to guide management decisions regarding fire. This information will serve as a basis for maintaining the integrity of rare or threatened wildlife and soil and water resources in the event of fire, and may provide guidance on mitigating fire effects on these resources. Research results can also be supplied to other parks in the northeast with similar biotic communities.

BUDGET AND FTEs:

-----FUNDED-----

Source	Act Type	Budget (\$1000s)	FTEs
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Proposal Date: 93

PROJECT STATEMENT SHEET

ACAD-N-025.000

PS Page: 0035

Year 1:

Year 2:

Year 3:

Year 4:

Total:	=====	0.00	0.0
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-----UNFUNDED-----

	Source	Act Type	Budget (\$1000s)	FTEs
Year 1:	NRPP	RES	50.00	0.0
Year 2:	NRPP	RES	50.00	0.0
Year 3:	NRPP	RES	50.00	0.0
Year 4:	NRPP	RES	50.00	0.0

Total:	=====	200.00	0.0
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(OPTIONAL) ALTERNATIVE ACTIONS/SOLUTIONS AND IMPACTS: N/A

COMPLIANCE CODE(s): EA

EXPLANATION: NEPA: CONTROVERSIAL PROJECT ON MDI

Proposal Date: 93

PROJECT STATEMENT SHEET

ACAD-N-034.000

PS Page: 0053

PROJECT NUMBER: ACAD-N-034.000

TITLE: ACQUIRE NEW VEG. MAP AND GIS THEMATIC DATA FOR ANP

FUNDING STATUS: FUNDED: 0.00 UNFUNDED: 15.00

SERVICEWIDE ISSUES: N20 BASELINE DATA

CULTURAL RESOURCE TYPE CODE: N/A

10-238 PACKAGE NUMBER:

PROBLEM STATEMENT:

A vegetation data set/map for ACAD acquired from 1979 photography is currently being used by Park, Region, WASO, and contractor researchers/resource managers. This map/data set is also included in the Park's GIS. Over the past 12 years map users have observed coding discrepancies and changes to species composition and densities in some locations. In 1991 ACAD provided 5,000 dollars to the Soil Conservation Service to participate in a statewide project to acquire new color infrared photography, which the Park will be able to purchase at a reduced cost in 1991-1992. An updated vegetation map has become highly desirable as the number of vegetation related research and natural resource management projects increases, (i.e., biological effects of air pollution, fire and fuel modeling, post 1947 fire succession effects on beaver/otter populations, alpine plant community survey, wetlands inventory). Continued use of the 1979 vegetation map will, at times, perpetuate the use of erroneous data.

DESCRIPTION OF RECOMMENDED PROJECT OR ACTIVITY:

The Park recommends purchasing new photography for MDI, Schoodic Peninsula, and IAH; and contracting for photo interpretation, remote sensing, and data conversion into a new vegetation map and thematic data base for the Park's ARC-INFO. If approved, guidance will be sought from the Regional GIS Coordinator and GIS unit in Denver to assist in the development of an acceptable work plan for remote sensing and project cost.

BUDGET AND FTEs:

-----FUNDING-----
 Source Act Type Budget (\$1000s) FTEs

Year 1:

Year 2:

Year 3:

Proposal Date: 93

PROJECT STATEMENT SHEET

ACAD-N-034.000
PS Page: 0054

Year 4:

Total:	=====	0.00	0.0
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-----UNFUNDED-----

	Source	Act Type	Budget (\$1000s)	FTEs
Year 1:	RG-NS-RES	PRO	15.00	0.0

Year 2:

Year 3:

Year 4:

Total:	=====	15.00	0.0
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(OPTIONAL) ALTERNATIVE ACTIONS/SOLUTIONS AND IMPACTS: N/A

COMPLIANCE CODE(s): EXCL

EXPLANATION: 516 DM6 APP.7.4E(2) DLY RM&RESRCH

Proposal Date: 9/

PROJECT STATEMENT SHEET

ACAD-N-051.000
PS Page: 0090

PROJECT NUMBER: ACAD-N-051.000

TITLE: HAZARD FUELS MONITORING

FUNDING STATUS: FUNDED: 46.00 UNFUNDED: 0.00

SERVICEWIDE ISSUES: N07 NAT FIRE REGM N20 BASELINE DATA

CULTURAL RESOURCE TYPE CODE: N/A

10-238 PACKAGE NUMBER:

PROBLEM STATEMENT:

Acadia National Park consists of three units totalling over 35,000 acres of land. The vast majority of this acreage is forested. Development of abutting properties is increasing, leading to a greater wildland/urban interface problem. The 1947 Bar Harbor Fire, which burned over 17,000 acres of forested lands (10,000 acres within the park), is an indication of the fire situations that can occur in the fuel models present at Acadia.

Little is known about the specific hazard fuels that exist in the park. The park has mechanically treated areas of high risk hazard fuels over the past two years to investigate it's usefulness in reducing hazard fuels. More basic research is needed to understand the fuels present in the park and how treatment affects those fuels. Is treatment actually reducing risk or is it increasing that risk through disturbance and increased reproduction?

In order to understand the park's fuels, long-term monitoring plots need to be established to provide baseline data and to monitor natural and treatment induced changes in fuel loading and composition. A system to prioritize hazard fuels data is needed to aid in the process of deciding where to carry out hazard fuels reduction. Additionally, the park needs to investigate the use of fire as a hazard fuels reduction tool and as a tool for perpetuating fire dependent plant species.

DESCRIPTION OF RECOMMENDED PROJECT OR ACTIVITY:

Establish permanent hazard fuels monitoring plots in both treated and untreated areas to monitor long-term fuel loadings in various fuel models and to track regeneration and vegetative changes related to fuel reduction efforts. Create a GIS based analysis system for prioritizing hazard fuels reduction projects. Conduct

a research burn to explore the potential use of fire as a hazard fuels reduction tool.

Proposal Date: 92

PROJECT STATEMENT SHEET

ACAD-N-051.000

PS Page: 0091

FTE: 0.3

PROJECT COST:

Personnel: (- 25.0

Supplies & Services: pp2 3.0

Transportation: -pp2 2.0

TOTAL: hh# (- 30.0 (Funded)

BUDGET AND FTEs:

-----FUNDED-----				
	Source	Act Type	Budget (\$1000s)	FTEs
Year 1:	REG-OTHER	MON	25.00	0.5
Year 2:	REG-OTHER	MON	21.00	0.3
Year 3:				
Year 4:				
Total:			46.00	0.8

-----UNFUNDED-----				
	Source	Act Type	Budget (\$1000s)	FTEs
Year 1:				
Year 2:				
Year 3:				
Year 4:				
Total:			0.00	0.0

(OPTIONAL) ALTERNATIVE ACTIONS/SOLUTIONS AND IMPACTS: N/A

COMPLIANCE CODE(s): EXCL

EXPLANATION: 516 DM6 APP.7.4E(2) DLY RM&RESRCH

Proposal Date: 92

PROJECT STATEMENT SHEET

ACAD-N-062.000

PS Page: 0114

PROJECT NUMBER: ACAD-N-062.000

TITLE: STUDY LONG TERM FIRE HISTORY

FUNDING STATUS: FUNDED: 0.00 UNFUNDED: 75.00

SERVICEWIDE ISSUES: N07 NAT FIRE REGM N20 BASELINE DATA

CULTURAL RESOURCE TYPE CODE: N/A

10-238 PACKAGE NUMBER:

PROBLEM STATEMENT:

Critical to making informed decisions concerning the future direction of the park's fire management program is the need for an accurate fire history of the park. Recent studies have investigated both the pre- and post-settlement fire history of the Park. Pre-settlement fire history for a few, isolated watersheds within the park have been determined through analysis of pond bottom sediment core samples. While very informative, the fire history derived from these samples applies to only a very small portion of the park's land area. The park's post-settlement fire history has been determined through a records and literature review. Though a significant amount of the park's fire history has been determined through prior studies, there is a need to complete this process for those areas of the park and time periods not adequately addressed in previous studies.

DESCRIPTION OF RECOMMENDED PROJECT OR ACTIVITY:

This project would continue basic research into the pre-settlement fire history of the park through collection and analysis of pond bottom sediment cores from selected watersheds within or adjacent to the park. Analysis of historic photographs and additional literature and record reviews would be conducted to enhance knowledge of the park's post-settlement fire history.

BUDGET AND FTEs:

-----FUNDED-----			
Source	Act Type	Budget (\$1000s)	FTEs
Year 1:			
Year 2:			
Year 3:			
Year 4:			

Proposal Date: 93

PROJECT STATEMENT SHEET

ACAD-N-062.000

PS Page: 0115

Total:	0.00	0.0
--------	------	-----

-----UNFUNDED-----				
	Source	Act Type	Budget (\$1000s)	FTEs
Year 1:	SVC-OTHER	RES	12.50	0.0
	UNIV-COLL	RES	12.50	0.0
		Subtotal:	25.00	0.0
Year 2:	RG-NS-RES	RES	25.00	0.0
Year 3:	RG-NS-RES	RES	25.00	0.0
Year 4:				

Total:	75.00	0.0
--------	-------	-----

(OPTIONAL) ALTERNATIVE ACTIONS/SOLUTIONS AND IMPACTS: N/A

COMPLIANCE CODE(s): EXCL

EXPLANATION: 516 DM 6 APP 7.4 E (19)

Proposal Date: 93

APPENDIX P

STRUCTURES INVENTORY

October 1993

1972-1973

1974-1975

12/08/91

HISTORICAL PARK STRUCTURES

ACADIA NATIONAL PARK

BUILDING NUMBER	BUILDING NAME
--------------------	------------------

163	Baker Island Oil House
162	Baker Island Garage
158	Baker Island Lightkeepers House
298	Baker Island Gilley House
36	Blue Duck Ships Store
236	Carroll Farm House
291	Carroll Farm Privy
1	Brown Mountain Gate House
61	Dane Farm (Wildwood Stables)
35	Isleford Historical Museum
25	Jordon Pond Carriage House
110	Pretty Marsh Picnic Shelter
111	Pretty Marsh Picnic Shelter
46	Seal Cove Blacksmith Shop
6	Seawall Campground Ranger Station
5	Sieur De Mont NC/APT
64	Sieur De Mont Spring Canopy
11	Storm Beach Cottage
72	Thunder Hole Gift Shop

ALPHABETICAL
BUILDING CHART

ACADIA NATIONAL PARK

REAL PROPERTY ACCOUNTABILITY SYSTEM

FOR REPLY DUE: AUGUST 15, 1991

BUILDING BUILDING NAME
NUMBER AND LOCATION

TRACT
NUMBER

0

160 BAKER ISLAND (GILLEY PRIVY)

162 BAKER ISLAND GARAGE

158 BAKER ISLAND LIGHTKEEPERS
HOUSE

163 BAKER ISLAND OIL HOUSE

298 BAKER ISLAND-GILLEY HOUSE

189 BEAR BROOK PICNIC AREA
RESTROOM

299 BEAR ISLAND LIGHT HOUSE AND
LIGHT

63 BEECH MOUNTAIN FIRE TOWER

232 BLACKWOODS CAMPAGROUND PRIVY

230 BLACKWOODS CAMPGROUND
AMPITHEATER

231 BLACKWOODS CAMPGROUND
AMPITHEATER

167 BLACKWOODS CAMPGROUND FEE
BOOTH

122 BLACKWOODS CAMPGROUND RESTROOM

120 BLACKWOODS CAMPGROUND RESTROOM

97 BLACKWOODS CAMPGROUND RESTROOM

119 BLACKWOODS CAMPGROUND RESTROOM

99 BLACKWOODS CAMPGROUND RESTROOM

118 BLACKWOODS CAMPGROUND RESTROOM

BUILDING CHART
ACADIA NATIONAL PARK
REAL PROPERTY ACCOUNTABILITY SYSTEM
FOR REPLY DUE: AUGUST 15, 1991

BUILDING BUILDING NAME
NUMBER AND LOCATION

TRACT
NUMBER

100 BLACKWOODS CAMPGROUND RESTROOM

98 BLACKWOODS CAMPGROUND RESTROOM

121 BLACKWOODS CAMPGROUND RESTROOM

96 BLACKWOODS CAMPGROUND RESTROOM

68 BLACKWOODS CAMPGROUND STORAGE
SHED

250 BLACKWOODS CAMPGROUND TRAILER
#1

254 BLACKWOODS CAMPGROUND TRAILER
#19

251 BLACKWOODS CAMPGROUND TRAILER
#2

149 BLACKWOODS CAMPGROUND
TRANSFORMER BLDG

36 BLUE DUCK SHIPS STORE

1 BROWN MOUNTAIN
GATEHOUSE-LODGE

23 BROWN MOUNTAIN GATEHOUSE
GARAGE

280 CADILLAC MOUNTAIN GIFT SHOP

54 CADILLAC MOUNTAIN PUMP HOUSE

283 CADILLAC MOUNTAIN RADIO
BUILDING

130 CADILLAC MOUNTAIN RADIO
BUILDING (OLD)

236 CARROLL FARM HOUSE

291 CARROLL FARM PRIVY

BUILDING CHART
ACADIA NATIONAL PARK
REAL PROPERTY ACCOUNTABILITY SYSTEM
FOR REPLY DUE: AUGUST 15, 1991

**BUILDING BUILDING NAME
NUMBER AND LOCATION**

**TRACT
NUMBER**

61 DANE FARM - WILDWOOD STABLES
196 EAGLE LAKE PUMP HOUSE
184 ECHO LAKE CABIN
183 ECHO LAKE DRESSING ROOMS
284 FABBRI MEMORIAL RESTROOM
302 FEE BOOTH (LARGE) SCHOONER
HEAD
301 FEE BOOTH (SMALL) SCHOONER
HEAD
60 FRAZER POINT PUMP HOUSE
206 FRAZER POINT RESTROOM
303 GILLEY HOUSE
176 HARDEN FARM COMPLEX
177 HARDEN FARM COMPLEX
143 HULLS COVE RESIDENCE
27 HULLS COVE RESIDENCE GARAGE
201 HULLS COVE STORAGE BUILDING
200 HULLS COVE VISITOR CENTER
186 ISLE AU HAUT CABIN - ELI CREEK
202 ISLE AU HAUT SHELTER #1
203 ISLE AU HAUT SHELTER #2
204 ISLE AU HAUT SHELTER #3
285 ISLE AU HAUT SHELTER #4
286 ISLE AU HAUT SHELTER #5

BUILDING CHART
ACADIA NATIONAL PARK
REAL PROPERTY ACCOUNTABILITY SYSTEM
FOR REPLY DUE: AUGUST 15, 1991

BUILDING NUMBER AND LOCATION

TRACT NUMBER

238 ISLE AU HAUT STORAGE SHED

237 ISLE AU HAUT TOOL SHED

300 ISLE AU HAUT TOOL SHED #2

35 ISLESFORD HISTORICAL MUSEUM

25 JORDAN POND CARRIAGE HOUSE

279 JORDAN POND DORM (NEW)

8 JORDAN POND GATEKEEPERS HOUSE

70 JORDAN POND HOUSE GIFT SHOP

70 JORDAN POND HOUSE RESTAURANT

76 JORDAN POND TOOL SHED

67 JORDAN STREAM PUMP HOUSE

290 JORDAN STREAM PUMP HOUSE

193 MCFARLAND ADMINISTRATION BUILDING

194 MCFARLAND EDUCATION/KITCHEN BUILDING

195 MCFARLAND FIRE CACHE

198 MCFARLAND HILL AUTO SHOP

192 MCFARLAND HILL DORMITORY

197 MCFARLAND HILL GYMNASIUM

199 MCFARLAND HILL MAINTENANCE BUILDING

295 MCFARLAND HILL WASHSTAND

293 MCFARLAND OIL STORAGE BUILDING

BUILDING CHART
ACADIA NATIONAL PARK
REAL PROPERTY ACCOUNTABILITY SYSTEM
FOR REPLY DUE: AUGUST 15, 1991

BUILDING NUMBER AND LOCATION

**TRACT
NUMBER**

294 MCFARLAND STORAGE BUILDING
(SIGN)

269 MCFARLAND TRAILER #16

272 MCFARLAND TRAILER #17

255 MCFARLAND TRAILER #6

256 MCFARLAND TRAILER #7

110 PRETTY MARSH PICNIC SHELTER

111 PRETTY MARSH PICNIC SHELTER

151 SAND BEACH MEN'S DRESSING ROOM

29 SAND BEACH RESIDENCE

141 SAND BEACH RESIDENCE

117 SAND BEACH RESTROOM

229 SAND BEACH WELL COVER

150 SAND BEACH WOMEN'S DRESSING
ROOM

24 SCHOODIC POINT RESIDENCE
GARAGE

209 SCHOODIC POINT RESIDENCE PUMP
HOUSE

106 SCHOODIC POINT RESTROOM

289 SCHOODIC POINT RESTROOM PUMP
HOUSE

4 SCHOODIC PT RANGER STATION

46 SEAL COVE BLACKSMITH SHOP

66 SEAWALL CAMPGROUND MAINTENANCE

BUILDING CHART
ACADIA NATIONAL PARK
REAL PROPERTY ACCOUNTABILITY SYSTEM
FOR REPLY DUE: AUGUST 15, 1991

BUILDING NUMBER AND LOCATION

TRACT NUMBER

59 SEAWALL CAMPGROUND PUMP HOUSE

65 SEAWALL CAMPGROUND PUMP HOUSE

6 SEAWALL CAMPGROUND RANGER
STATION

181 SEAWALL CAMPGROUND RESTROOM

102 SEAWALL CAMPGROUND RESTROOM

104 SEAWALL CAMPGROUND RESTROOM

178 SEAWALL CAMPGROUND RESTROOM

103 SEAWALL CAMPGROUND RESTROOM

179 SEAWALL CAMPGROUND RESTROOM

105 SEAWALL CAMPGROUND RESTROOM

180 SEAWALL CAMPGROUND RESTROOM

292 SEAWALL CAMPGROUND
STORAGE/TOOL SHED

267 SEAWALL CAMPGROUND TRAILER #
18

182 SEAWALL PICNIC AREA RESTROOM

135 SEAWALL RANGER RESIDENCE

28 SEAWALL RANGER RESIDENCE
GARAGE

5 SIEUR DE MONT NC/APT

95 SIEUR DE MONT RESTROOM

64 SIEUR DE MONT SPRING CANOPY

44 SIEUR DE MONT TOOL SHED

BUILDING CHART
ACADIA NATIONAL PARK
REAL PROPERTY ACCOUNTABILITY SYSTEM
FOR REPLY DUE: AUGUST 15, 1991

BUILDING NUMBER AND LOCATION

TRACT NUMBER

11 STORM BEACH COTTAGE

26 STORM BEACH COTTAGE GARAGE

210 THOMPSON ISLAND INFORMATION
RESTROOM

187 THOMPSON ISLAND PICNIC AREA
RESTROOM

281 THOMPSON'S ISLAND INFORMATION
CENTER

72 THUNDER HOLE GIFT SHOP

JUSTIFICATION: for altering the initial prescription.

- 1) Will removal of trees detract from the aesthetics of the site.
- 2) Will reduction activities disturb or damage archaeological sites.
- 3) Are there endangered species in at the site.
- 4) Is there no immediate need for fuel reduction.
- 5) May reduction activities cause erosion impacts on nearby streams and ponds.

FINAL PRESCRIPTION: write the final prescription to be implemented in the field.

- 1) Based upon the decision making process listed above, write a final prescription that will be used by the hazard fuel crew as directions for completing the on-site fuel reduction work.

APPROVALS: obtain all applicable approvals.

- 1) The Park Fire Management Officer will review and sign all prescription forms.
- 2) The appropriate Division Chief(s) will review and sign those prescriptions that require compliance reviews.
- 3) The Superintendent will review and sign those prescriptions that involve significant historic or otherwise sensitive structures.

STRUCTURAL PROTECTION PRESCRIPTION FORM

ACADIA NATIONAL PARK

STRUCTURE #: _____ COMPLETED BY: _____
STRUCTURE NAME: _____ DATE: _____
LOCATION: _____

INITIAL PRESCRIPTION: _____

COMPLIANCES AND REVIEWS

COMPLIANCE REVIEW
REQUIRED (YES/NO)

1.) Section 106:	_____	_____
2.) NEPA:	_____	_____
3.) NRPA:	_____	_____
4.) ESA:	_____	_____
5.) SCENIC/VISTA CONCERN:	_____	_____
6.) STATE ORDINANCES:	_____	_____
7.) LOCAL ORDINANCES:	_____	_____

JUSTIFICATION FOR PRESCRIPTION MODIFICATION: _____

FINAL PRESCRIPTION: (SEE ATTACHED MAP) _____

APPROVALS:

REVIEWS: (CHECK IF REQUIRED)

FIRE MGT. OFFICER DATE

SUPERINTENDENT DATE

CHIEF OF R.M. DATE

CHIEF OF INTERP. DATE

CHIEF OF MAINT. DATE

ACADIA
02/12

APPENDIX J

FIRE EQUIPMENT INVENTORY FOR ACADIA NATIONAL PARK

October 1993

U.S. DEPARTMENT OF AGRICULTURE

WATER RESOURCES DIVISION

WASHINGTON, D.C.

WATER RESOURCES DIVISION

ACADIA NATIONAL PARK FIRE CACHE INVENTORY
1993

McFarland Hill Ranger Station (East District)

- (1) Mini Pumper, 1986 Ford F-350, 4x4. 200 gallon water tank with a 300GPM pump with a foam unit and aux. generator.
- (1) Water Tender, 5,500 gallons with dedicated tractor. Unit has it's own 500GPM pump for independent filling.
- (1) Wajax 200 gallon, slip-on pumper unit. Mounted on a 1992 Chevy 1- ton, 4x4 pickup truck during the fire season, and trailer mounted the remaining year.
- (6) Portable backpack pumps; Mark III and Gorman Rupp types
- (1) Portable 3000 watt generator
- (12) Chainsaws: 16" & 20" bar length
- (3) Motorized brush cutters
- (1) Leaf blower
- (1) Fold-A-Tanks; 600 gallons
- (1) Fold-A-Tank; 1,000 gallon
- (2) Harodikes - 150 gallon
- (25) Bladder bag type, backpack hand pumps
- (2) Drip torches
- (1) Fusses, case

Hose, Fittings, Nozzles, Accessories

1000' of 3" lined hose with 2 1/2" fittings, (NH) threads

1500' of 2 1/2" lined hose, (NH) threads

5000' of 1 1/2" lined and unlined hose, mixed (NH & NPSH) threads

(100+) Brass, aluminum, and plastic nozzles and fittings
Sizes: 3/4" - 4 1/2"

Handtools

- (8) 5 person fire tool kits

(2) 10 Person fire tool kits

(40) assorted handtools as: shovels, pulaskis, mcleods, firerakes

Air Operations

(5) Flights suits

(6) Flight gloves, pair (medium & large)

(4) SPH-4 fight helmets

(1) Lead line w/swivel hook

(2) Cargo nets

(2) Windsocks

PPE

(35) FSS yellow packs, complete

(15) FSS red bags

(34) 1-quart canteens w/cases

(4) 1-quart canteen carry case

(9) Hard hats, plastic

(5) FSS yellow belt pack

(34) Fire shelters w\ case & liner

(10) FSS sleeping bags with stuff sacks

(11) Gloves, pair, small

(14) Gloves, pair, medium

(29) Gloves, pair, large

(10) Gloves, pair, x-large

(25) Goggles, rubber

(16) Goggles, plastic

(9) Safety glasses, plastic

(36) Headlamps (D-cell batteries)

(64) 'D' cell batteries (tested 5/93)

Nomex shirts

- (12) small
- (29) medium
- (15) large
- (3) x-large

Nomex pants (old style)

- (1) 28" waist
- (5) 32" waist
- (2) 34" waist

Nomex pants (new style)

- (14) 28" waist
- (15) 30" waist
- (10) 32" waist
- (7) 34" waist
- (5) 36" waist
- (4) 38" waist
- (3) 40" waist

Storm Beach/Sand Beach Residence Garages (East District)

- (1) 750 GPM trailer-mounted, 1991 Darley/Chrysler pump. Stored at Storm Beach
- (1) 500 GPM trailer-mounted, 1942 Chrysler pump (pump is not mechanically reliable, but is serviceable if needed). Stored at Sand Beach

Seawall Campground

- (1) Mark III portable backpack pump kit
- 500' of 1 1/2" hose
- (2) five-person fire tool kits

Blackwoods Campground

- (1) five-person fire tool kit

Schoodic Peninsula Unit/Ranger Station

- (2) ten-person fire tool kits

Isle Au Haut Unit/Ranger Station

- (2) 200-gallon Western Fire slip-on pumper units. One unit is mounted on a 4 x 4 pick-up truck seasonally. The other is trailer-mounted

- (1) 750 GPM trailer-mounted, 1990 Darley/Chrysler pump

- (3) Portable backpack pumps (two Mark III's, one Gorman Rupp)

- (2) 10-person fire tool kits

2000' of 3" hose with 2 1/2" fittings

1000' of 1 1/2" hose, lined and unlined

PPE

- (2) FSS yellow packs, complete

- (10) 1-quart canteens w/cases

- (2) 2-quart canteen carry case

- (8) Hard hats, plastic

- (7) Fire shelters w\ case & liner

- (5) Gloves, pair, small

- (5) Gloves, pair, medium

- (5) Gloves, pair, large

- (5) Gloves, pair, x-large

- (15) Goggles, plastic

- (23) Headlamps (D-cell batteries)

- (50) 'D' cell batteries (tested 5/93)

Nomex shirts

- (1) small
- (2) medium
- (2) large
- (1) x-large

Nomex pants (old style)

- (1) 28" waist
- (2) 32" waist
- (1) 34" waist

1986 FORD MINI PUMPER INVENTORY

F-350 4X4, V-8 gasoline engine

Tank: 200 gallons

Pump: Waterous 300 GPM @ 150 psi

Fittings: 3" NH suction
2 1/2" NH discharge

Hose: 150' of 3/4" booster line w/automatic reel
1,000 ' of 1 1/2" lined hose, NPSH
500" of 2 1/2" lined hose, NH

Foam System: CAFS w/20 gallon tank and 200 psi max. air compressor

Generator: ONAN 3,500 watt w/ (2) floodlights

Winch: Ramsey 14,000 lbs max. w/ 150' of 3/8" cable

Chain Saw Kit: (1) Stihl 026 w/tools

Handtool Kit: 5 person (2 shovels, 2 pulaskis, 1 McLeod, 2 bladder bags

Pump Kit: Mark 3 w/tools

Fire Extinguishers: (2) CO2, (2) dry chemical

Fittings and Appliances, Assorted: 3/4" to 4 1/2"

1992 CHEVY 4X4 TRUCK INVENTORY

WAJAX 250 GAL SLIP-ON UNIT WITH B1-11 PUMP
EQUIPPED WITH:

200' 1 INCH NPSH UNLINED HOSE WITH FORESTER NOZZLE
200' 1-1/2" NPSH STA-FLO HOSE WITH FOG NOZZLE
10' 1-1/2" NPSH SUCTION HOSE
1 B1-11 PUMP KIT

EQUIPMENT LOCATED IN TRUCK BODY TOOL BOX

3 PULASKIS
3 BLADDER BAGS
1 COMO TOOL
1 SHOVEL
1 FIRE EXTINGUISHER
1 FIRST AID KIT
1 WOOL BLANKET
1 PACK SACK WITH NOMEX AND HARD HAT
2 4 QUART CANTEENS
EXCESS EQUIPMENT FROM B1-11 PUMP KIT:
1 COLLAPSIBLE BUCKET
1 GATED WYE VALVE
1 HOSE CLAMP

1 SET JUMPER CABLES
1 MECHANICS TOOL BOX
1 SET SAFETY TRIANGLES
1 ORANGE SAFETY VEST

EQUIPMENT LOCATED IN CAB BEHIND SEAT

SPOT FIRE SIGNS
1 SET BINOCULARS
ROAD FLARES (6)
WINCH CONTROLS
MAPS
1 TOW ROPE
1 FIRST AID JUMP KIT
1 12VOLT SPOT LIGHT
1 JACK AND LUG WRENCH

10 PERSON HELITACK KITS

KIT NO.	QUANT.	ITEM	
1	10	APPROVED HARD HATS	
2	10	1 QUART CANTEENS	
3	10	PAIR GLOVES, 2SM, 4MED, 3LG, 1XLG	
4	10	PAIR GOGGLES	
5	10	PAIR EAR PLUGS	
6	10	HEADLAMPS	
7	40	"D" SIZE BATTERIES	
8	3	PULASKIS	
9	3	SHOVELS/RHINEHARTS	
10	2	FIRE RAKES	
11	2	BASTARD FILES W/ HANDLES	
12	2	BLADDER BAGS	
13		30 FEET CHUTE CORD	
14	10	FUSSES	
15	2	ROLLS FLAGGING (1 SPOT FIRE)	
16	1	INCIDENT KIT 1 FIRE LINE HANDBOOK 3 ANP RADIO CALL LISTS 1 COMPASS 1 TIME/NOTEBOOK 2 PENCILS FIRST AID KIT	

APPENDIX K

FIRE EQUIPMENT INVENTORY
FOR
NEIGHBORING FIRE DEPARTMENTS

October 1993

1. 10/10/1914

2. 10/10/1914

3.

4. 10/10/1914

5.

6. 10/10/1914

7. 10/10/1914

8. 10/10/1914

9. 10/10/1914

10. 10/10/1914

11. 10/10/1914

12. 10/10/1914

Town: Bar Harbor

County: Hancock

Date: February 93

PERSONNEL:

<u>Position</u>	<u>Name</u>	<u>Home Phone</u>	<u>Work Phone</u>	<u>Comments</u>
TW	Royal Higgins	288-3746	288- ~~5554~~ 5533	
FC	Same			
DTW	John Cunningham	288-4551	288- ~~5554~~ 5533	

RESOURCES:

<u>Item</u>		<u>Qty</u>	<u>Comments</u>
Mobile Radios	Freq 154.10, 155.955	10	Fire Dept
Portable Radios	Freq 154.31	7	Fire Dept
Fire Trucks			
Tank Trucks	63 LaFrance, 1000gpm, 300gal	1	
	72 Int, 2x4, 750gpm, 500gal, w/winch	1	Town Hill Station
	85 Ford, 4x4	1	
	79 Ford, 1000gpm, 750gal	1	
	84 Ford, 1000gpm, 750gal	1	
Portable Pumps	AC, Pacific Y	1	
	AC, Ditch Pumps	4	
	WC, Gorman/Rupp 300	1	
Hose	1 1/2" IP	6500'	
	2 1/2" IP	12000'	
	3" NS	4200'	
	5"	1200'	
Backpack Pumps		15	
Handtools		34	
Dozers	See District Fire Plan		Harold McQuinn (288-5021) Staples Const. (288-4604)
Skidders	See District Fire Plan		Harold McQuinn (288-5021)
Other	See District Fire Plan		Harold McQuinn (288-5021)
Feeding	Through Fire Department		

Town: Cranberry Isle
 County: Hancock
 Date: March 1993

PERSONNEL:

Position	Name	Home Phone	Work Phone	Comments
TW	Roy Hadlock	244-3132		
FC	Wesley Bracey	244-5804		
Other	Wilfred Bunker	244-3575		Ferry Service

RESOURCES:

Item		QTY	Comments
Moblie Radios	Freq Southwest Harbor	1	
portable radios			
Fire Trucks	68 GMC 500gal	1	
	Pickup, 4x4 20gpm, 175gal	1	Loan M.F.S.
Portable Pumps	AC, Hale 250gpm	1	
	AC, Dicta pump	1	
Hose	1 1/2" IP	1250	
Back pumps		5	
Hand tools		15	
Special Note			

Need to contact barge service Beal & Bunker about new ferry schedule- Also they have a landing barge. Check on capacities, how much water does it draft, availability and if there willing to haul fire equipment.

MAINE FORESTRY DEPARTMENT
TOWN FOREST FIRE PLAN

DATE: 1-4-92
TOWN OF: Deer Isle

INFORMATION ON FIRE FIGHTING PERSONNEL

Title	Name	Mailing Address	Tel. Home	Business
Town Warden	Richard Haskell	P.O. Box 625 Deer Isle ME 04627	348-2843	367-2361
Fire Chief	"	"	"	"
Asst Chief	Tommy Hansen	Deer Isle 04627	348-6627	348-2311
" + TW	John Wreck	"	348-6092	367-2328
" + TW	Brent Morey	Little Deer Isle, ME 04650	348-6133	359-4600

INFORMATION ON ORGANIZED FOREST FIRE FIGHTING CREWS

Crew Leaders	Address & Tel. No.	Availability	# In Crew
1.			
.			

INFORMATION ON FOREST FIRE FIGHTING RESOURCES

Items	Description	Qty.	Owner & Tel. No. / Discription
radios - Mobile	(Freq.) 154.010 154.250	5	Deer Isle Fire Dept
- Portable	(Freq.) Same as above	10	" " " "
Portable Pumps (show capacity)	350 GPM	1	
	750 GPM	1	
Trucks (indicate tank capacity; 2x4, 4x4, 6x6; year of mfg.; make; on or off road vehicle)	78 ENT 4X2 2500 Gal	1	
Fire Trucks (pumpers; show above information)	55 4X2 500 Gal	1	
	75 Pierce 4X2 750 Gal	1	
	85 Ford 4X2 1000 Gal	1	
Hose (type, size, thread, # of feet)	4" stock	2,520'	
	1 1/2" NPT	1,000'	
	1 3/4" NPT	700 FT	
	2" NPT	1,000 FT	
Hand Tools (type & quantity)	assorted Hand Tool	10	
	Back Pumps	13	
Specialized Equip. (bulldozers, skidders, ATV's, low bed trailers) indicate make, model, year of mfg., special ptations	Calby Wood 348-2356 (2) C-45 w/Trailer		
	Sam Hardy No Phone. Deer Isle SD-350 w/Trailer		
	Edward Davis 367-5508 Dodge w/Trailer		
	Memorial ambulance	348-2300	
	Feeding - Carby Harold 348-2843 - Bonnie Hansen 348-6666		
	List on Boat on file at station - ask our Dispatchers to Call		
Feeding & Misc.			

Town: Ellsworth
 County: Hancock
 Date: March 1993

PERSONNEL:

<u>Position</u>	<u>Name</u>	<u>Home Phone</u>	<u>Work Phone</u>	<u>Comments</u>
TW	Everett Farnsworth	667-9781	667-8666	
FC	Same			
AFC	Bob McKenny	667-7836	667-8666	

RESOURCES:

<u>Item</u>		<u>Qty</u>	<u>Comments</u>
Mobile Radios	Freq 154.300, 153.980	9	
Portable Radios	Freq same	12	
Fire Trucks	87 Ford, 1 ton, 4x4, 250gpm, 175gal	1	
	53 Dodge Power Wagon, 4x4, Army	1	
Tank Trucks	57 Mack, 750gpm, 200gal	1	
	72 Int, 750gpm, 500gal	1	
	79 GMC, 250gpm, 1250gal	1	
	87 Pierce, 1250gpm, 200gal	1	
	85 Amer LaFrance, 1000gpm, 200gal	1	w/100' ladder
Portable Pumps	AC, floating pump, 100gpm	1	
	AC, trailer mounted, Chrysler 500gpm	1	
	MARK #3	1	
	WC, Gorman/Rupp 250gpm	2	
Hose	4" Stortz, Quick Connect	3000'	
	2 1/2" NS	9700'	
	1 1/2" IP	5000'	
	1 3/4" IP	1000'	
Backpack Pumps		18	
Handtools		15	
Dozers	D-4 Cat	1	City of Ellsworth (667-8666)
Skidders			
Other	Portable Tank, 1400gal	1	
Feeding	Boggy Brook School (50 to 100 men)		Bryant Langley (667-9729) or home (422-3023)

FORESTRY DEPARTMENT
TO... FOREST FIRE PLAN

DATE: JAN 1993
TOWN OF: GOULDSBORO

INFORMATION ON FIRE FIGHTING PERSONNEL

Title	Name	Mailing Address	Tel. Home	Business
Town Warden	EARLE COWPERTHWAIT JR	P.O. BOX 113 PROSPECT HARBOR		963-2350
Fire Chief	ALDEN TRACY JR	HC 60 BOX 21 PROSPECT HARBOR	963-7039	667-5541
ASST. FIRE CHIEF	ADIN REED	P.O. BOX 574 GOULDSBORO ME 0407	963-2645	
ASST FIRE CHIEF	JIM SANDERS	P.O. BOX 87 PROSPECT HARBOR	963-2598	
DEP. TOWN WARDEN	ALDEN TRACY JR	HC 60 BOX 21 PROSPECT HARBOR	963-7039	667-5541

INFORMATION ON ORGANIZED FOREST FIRE FIGHTING CREWS

Crew Leaders	Address & Tel. No.	Availability	# In Crew
1.	SEVERAL WITH GREEN CARDS CAN PUT TOGETHER		
2.	A CREW IN A SHORT TIME		

INFORMATION ON FOREST FIRE FIGHTING RESOURCES

Items	Description	Qty.	Owner & Tel. No. / Discription
Radios - Mobile	(Freq. 155) 225 / 154310 / 154250	8	GOULDSBORO FIRE DEPT.
- Portable	(Freq. 155) 775	7	GOULDSBORO FIRE DEPT.
Portable Pumps (show capacity)	DARLEY 500 GPM	1	
	GERMAN RUPP 250 GPM	1	
	GERMAN RUPP 250 GPM	1	
	GERMAN RUPP 70 GPM	1	GOULDSBORO FIRE DEPT.
Tank Trucks (indicate tank capacity; 2x4, 4x4, 6x6; year of mfg.; make; on or off road vehicle)	79 CHEVY 1800 GAL / 250 GPM	1	731 ON ROAD
	66 GMC 1300 GAL / 250 GPM	1	732 OFF ROAD
	65 GMC 450 GAL / 250 GPM	1	733 OFF ROAD
	98 FORD UTILITY 4x4	1	741 TRUCK NUMBERS ON ROAD
Fire Trucks (pumpers; show above information)	92 FORD 1000 GAL / 1000 GPM	1	722 ON ROAD
	93 FORD 750 GAL / 750 GPM	1	721 ON ROAD
Hose (type, size, thread, # of feet)	1 1/2" J.P.	2500'	
	2 1/2" N.S.	1500'	
	4" "	2000'	
Hand Tools (type & quantity)	BACK PUMPS 5 GAL	10	
	RAKES	10	
	BROOMS	12	
	AXES	6	
Specialized Equip. (bulldozers, skidders, ATV's, low bed trailers) indicate make, model, year of special adaptations	D-3 CAT	1	ELMER TRACY JR 963-2324
	D-3 CAT	1	PAUL JOY 963-2052
	D-3 - D-6	2	CLAIR WHITTEN 963-5823
	2400 GAL DUMP TRUCK	1	GOULDSBORO FIRE DEPT.
Feeding & Misc.	GOULDSBORO FIRE AUXILIARY		
	CONTACT NUMBER LUTES		546-3447

MAINE FORESTRY DEPARTMENT
TOWN REST FIRE PLAN

DATE: JANUARY 1993
TOWN OF: ISLE AU HAUT

INFORMATION ON FIRE FIGHTING PERSONNEL

Title	Name	Mailing Address	Tel. Home	Business
Town Warden	KENT MATTINGLY	BOX 36, IAH, 04645	335-2511	335-5551
Fire Chief	LEE SMALL	IAH, 04645	335-5301	335-5301
DEP. FIRE CHIEF	DAN MACDONALD	IAH, 04645		
DEP. FIRE CHIEF	DON FURROW	IAH, 04645		

INFORMATION ON ORGANIZED FOREST FIRE FIGHTING CREWS

Crew Leaders	Address & Tel. No.	Availability	# In Crew
1.			
2.			

INFORMATION ON FOREST FIRE FIGHTING RESOURCES

Items	Description	Qty.	Owner & Tel.No./ Discription
Radios - Mobile	(Freq.) 154.310	1	IAH FIRE TRUCK 335-5301
- Portable	(Freq.) 164.725 + STATE FCO	3	ACADIA NATIONAL PARK
BASE	"	1	" 335-5551
BASE	154.310	1	IAH FIRE DEPT.
Portable Pumps (show capacity)	HALE 350 GPM 3" DS.	1	IAH FIRE
	PACIFIC MARK II	2	PARK
	GORMAN PUMP 30 G.P.M.	1	PARK
Trucks (indicate tank capacity; 2x4, 4x4, 6x6; year of mfg.; make; on or off road vehicle)	58 INT 4x4 200 GAL	1	IAH FIRE
	OLD 1000 GAL TANKER NOT PRESENTLY OPERATIONAL	1	IAH FIRE
Fire Trucks (pumpers; show above information)	'87 CHEVY 4x4 SLIP-ON 250 GAL.	1	IAH FIRE
	90 FORD CREW 4x4 SLIP-ON 200 GAL	1	PARK
Hose	1 1/2" LINED N.S.	2100'	PARK
	1 1/2" UNLINED N.S.	1600'	"
Hose (type, size, thread, # of feet)	1 1/2" LINED N.S.	500'	IAH FIRE
	3" N.S.	450'	"
	1" UNLINED N.S.	600'	PARK
	3" w/ 2 1/2" FITTINGS LINED N.S.	2000'	"
Hand Tools (type & quantity)	SIX MAN FIRE BOXES (SEE ATTACHED)	3	PARK
Specialized Equip. (bulldozers, skidders, ATV's, low bed trailers) indicate make, model, year of special cations	DARLEY TRAILER PUMP 750 GPM	1	PARK
	WALAX/PACIFIC TRAILER		
	200 GAL TANK w/ PUMP	1	PARK
	BACK HOE, LARGER, NEW	1	BILL STEVENS 335-5571
	BACK HOE, SMALL, OLD	1	PAT TULLY 335-2161
	LARGE BOAT: I.A.H. CO.	2	367-5193
	FISHERMAN'S BOAT		JACK MACDONALD 335-2201
	CHAINSAWS	2	PARK
Funding & Misc.	HELIPORT - NEXT TO CHURCH WEST SIDE OF ISLAND		

Town: Mt.Desert
 County: Hancock
 Date: March 1993

PERSONNEL:

Postion	Name	Home Phone	Work Phone	Comments
TW	Lloyd Norwood	276-3690	276-3922	
FC	Dana Haynes	276-3615		Northeast Harbor
FC				Otter Creek
FC	Steve Pinkham	276-3766		Seal Harbor
FC	Barry Thomas	244-7372		Somesville

RESOURCES:

Item		QTY	Comments
Mobile Radios	Freq 154.980,154.310	11	
Portable Radios		3	
Fire Trucks	53 Chevy 500gpm	1	Otter Creek
Tank Trucks	INT 200 gpm 800gal	1	same
	50 Ford 500gpm 350gal	1	Seal Harbor
	64 INT 4x4 500gpm 500gal	1	same
	54 Jeep 4x4 25gpm,75gal	1	same
	84 Ford 750gpm,750gal	1	Somesville
	72 INT 500gpm,500gal	1	same
	all wheel/winch	1	same
	88 Chevy 1000gpm,2650gal	1	same
	Chevy 1000gpm,800gal	2	Northeast Harbor
Portable Pumps	AC,Hale 250gpm	1	same
	AC,Pacific Y 70gpm	1	Otter Creek
	AC,Pacific Y 70gpm	1	Seal Harbor
	WC,250gpm	1	Somesville
Hose	2 1/2" NS.	11000'	
	1 1/2"IP	6900'	
Back pumps		25	
Hand tools		24	
Dozers	JD-350 w/trailer	1	Winston Stanley 276-5198
Other	Portable Tank 1000gal	1	

Town: Southwest Harbor

County: Hancock

Date: March 1993

PERSONNEL:

Position	Name	Home Phone	Work Phone	Comments
TW,FC	Wilbert Terry	244-3474	244-3200	
AFC/DTW	Jack Martel	244-7451		
	Berten Willey	244-3633		

RESOURCES:

Item	QTY	Comments
Mobile Radios Freq 154.025	15	
Portable Radios	20	
Fire Trucks		
53 Willys 4x4	1	
88 Ford 4x4 350gpm,250gal	1	
Tank Trucks		
75 LaFrance 750gpm,750gal	1	
69 Ford 750gpm 750gal	1	
48 Ford 500gpm 125 gal	1	
80 Chevy all wheel,400gpm,250gal	1	
Portable Pumps AC,Gorman/Rupp 250gpm	3	
Hose		
2 1/2" NS	4400'	
1 1/2" NS	2500'	
Back pumps	6	
Hand tools	11	
Dozers		
C-450,JD-450 w/trailers		John Goodwin 244-3914

Town: Stonington
 County: Hancock
 Date: March 1993

PERSONNEL:

Position	Name	Home Phone	Work Phone	Comments
TW,FC	Danny Coombs		367-2694	
AFC	Bruce Jones	367-2668		
	Mell Haywood			

RESOURCES:

Item		QTY	Comments
Mobile Radios	freq 154.430,154.250	5	
Portable Radios		7	
Fire Trucks	75 INT 1000gal	1	
	47 Mack 250gal	1	
Tank Trucks	67 jeep 4x4 250 gal	1	
	57 GMC 6x6 1000gal	1	
	86 Ford 4x2 2000gal	1	
Portable Pumps	AC, 250gpm	1	
Hose	2 1/2" NPT	1300'	
	1 1/2" IPT	2800'	
Back pumps		8	
Hand tools	Spades	4	
	Brdoms	6	
	Bushwackers	5	
	Chainsaws	1	
	Helmets/gloves	for 30 men	

Town: Swan's Island
 County: Hancock
 Date: Jan. 15, 93

PERSONNEL:

Position	Name	Home Phone	Work Phone	Comments
TW	Gerold Lamoine	526-4184	526-4336	
FC	Stephen Harriman	526-4126	526-4181/4273	
AFC	Gerald LeMoine	526-4150	526-4336	
	Helen Harriman	526-4126	526-4181	Command ctr coord.

RESOURCES:

Item	QTY	Comments
Mobile Radios freq	1	Ambulance(town 526-4125)
Portable Radios freq 154.175	3	swans island FD 526-4155
Fire Trucks		
87 GMC 1000gpm 1000gal	1	
77 GMC 1000gpm 3500gal	1	
54 Dodge 6x6 500gpm 2000gal		
Tank Trucks		
4x4 140gpm 275gal slip-on	2 units	
Portable Pumps		
AC, 250 gpm	2	
Hose		
4" stortz	400'	
2 1/2" NST	1000'	
1 1/2" IPS	1200'	
Back pumps	13	
Hand tools		
spades	3	
axes	2	
chainsaws	1	Steve Harriman 526-4126
Dozers		
small	3	Robert Tozier 526-4478
Other		
Backhoes	3	Bill Banks 526-4305
Lowbed trailers	3	Bud Staples 526-4305
Tank Trailer 1000gal (on/off road)	FD	
portable deluge gun 4" LDH	FD	
1500 watt Generator/110 volt	FD	
76 Ambulance Command Center		town 526-4125/4155

Feeding Odd Fellows Hall (for 100) 526-4289

Town: Tremont
 County: Hancock
 Date: March 1993

PERSONNEL:

Position	Name	Home Phone	Work Phone	Comments
TW,FC	Bradley Reed	244-7137	244-5595	
AFC,DTW	Ben Harper	244-3045	244-7200	
	Harold Cummings	244-3638	244-5595	

RESOURCES:

Item	QTY	Comments
Mobile Radios freq 154.250,154.310	2	
Portable radios	6	
Fire Trucks	60 Jeep 4x4 250gpm hale 200gal tank	1
Tank Trucks	48 REO 200gpm 750 gal 64 Chevy 750 gpm 1000gal 76 Ford 750gpm 750 gal 91 GMC 1000gpm 1500gal	1 1 1 70gpm,PTO w/200'booster 1
Portable Pumps	AC, Gorman/Rupp 250gpm AC, Hale 250gpm	1 1
Hose	2 1/2" NST 1 1/2" IPT	3500' 2500'
Back pumps		12
Hand tools	rakes	5
Dozers	JD-450 w/trailer JD-750,JD-400 w/trailer	3 Doug Gott 244-7461/5120 1 each
Other	Portable tank 2500gal	

INFORMATION ON FIRE FIGHTING PERSONNEL

Title	Name	Mailing Address	Tel. Home	Business
Town Warden	Kelton Muise	RR 1, Box 293A, Trenton	667-9490 /	288-5776
Fire Chief	Same	as	above	
A.F.C. & D.T.W.	John Pratt	RR 1, Box 264A, Trenton	667-3401 /	244-5531

INFORMATION ON ORGANIZED FOREST FIRE FIGHTING CREWS

Crew Leaders	Address & Tel. No.	Availability	# In Crew
1.			
2.			

INFORMATION ON FOREST FIRE FIGHTING RESOURCES

Items	Description	Qty.	Owner & Tel.No./ Discription
Radios - Mobile	(Freq.154.250 & 154.965	9	Trenton Fire Dept.
- Portable	(Freq.154.250 & 154.965	10	Trenton Fire Dept.
Portable Pumps (show capacity)	250 gpm Gorman Rupp	1	Trenton Fire Dept.
Tank Trucks (indicate tank capacity; 2x4, 4x4, 6x6; year of mfg.; make; on or off road vehicle)	'75 Int. 1250 gal.cap. w/500 gpm pump	1	Trenton Fire Dept.
	'82 Chev. 2000 gal.cap. w/750 gpm pump	1	Trenton Fire Dept.
Fire Trucks (pumpers; show above information)	'88 Chev. 750 gal.cap. w/1000 gpm pump	1	Trenton Fire Dept.
Hose (type, size, thread, # of feet)	4" Startz	1700'	Trenton Fire Dept.
	2 1/2" NS	1500'	Trenton Fire Dept.
	1 1/2" IP	1000'	Trenton Fire Dept.
Hand Tools (type & quantity)	Fire Rake	2	
	Spades	2	
	5 gal. Back pack Tanks	7	
Specialized Equip. (bulldozers, skidders, ATV's, low bed trailers) indicate e, model, year of ., special aptations	J.D. 450 Dozer & 2 Excavators - Michael Keene 667-3513 15' Fiberglass Boat w/ 25 HP motor - Floyd Ober 667-4451		
Feeding & Misc.			

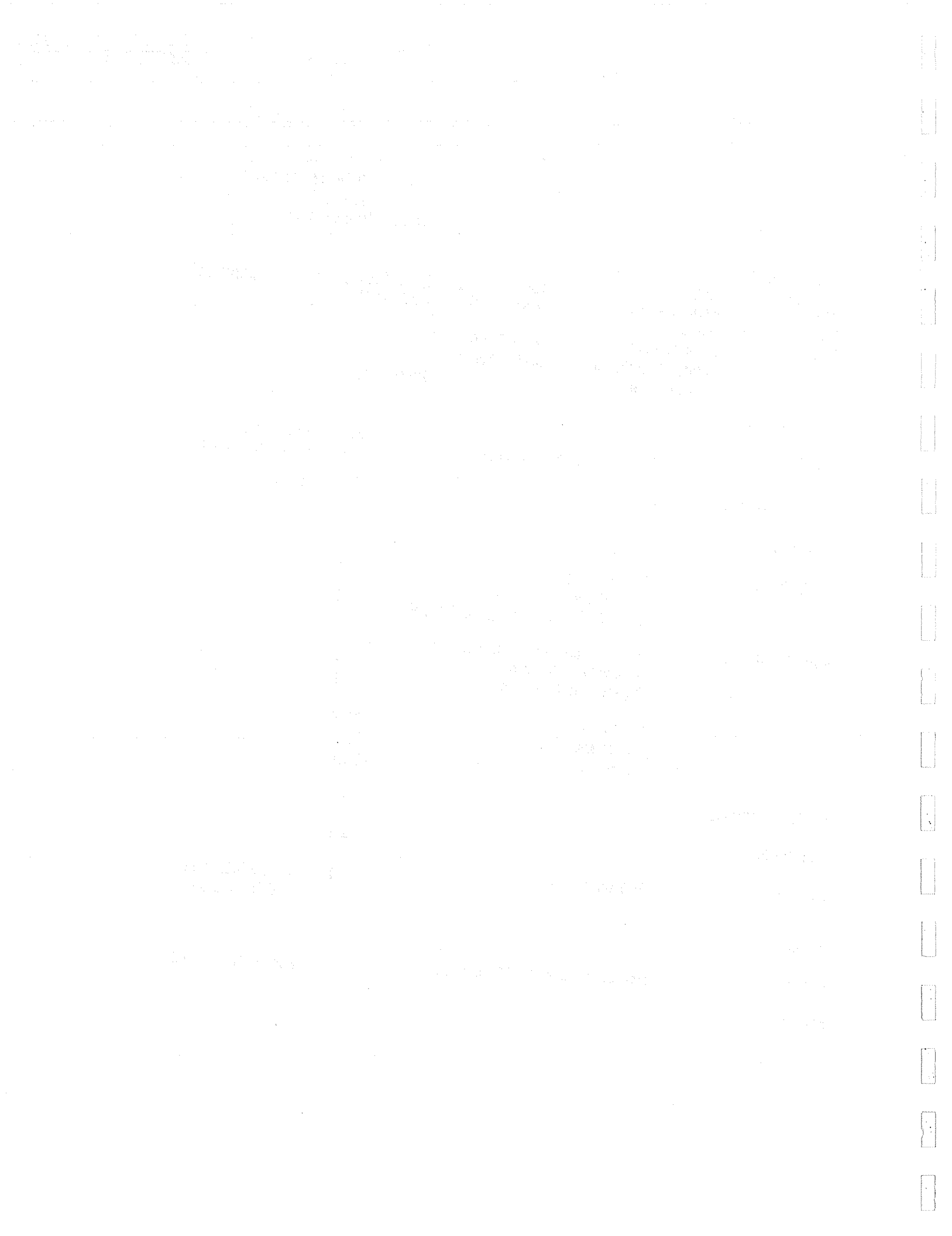
Town: **Winter Harbor**
 County: **Hancock**
 Date: **March 1993**

PERSONNEL:

<u>Position</u>	<u>Name</u>	<u>Home Phone</u>	<u>Work Phone</u>	<u>Comments</u>
TW	Robert Webber	963-2254	667-3435	
FC	Same			
DTW	Danny Backman	963-7489		
	Gordon Harrington	963-5820		
	Town Office		963-2235	

RESOURCES:

<u>Item</u>	<u>Qty</u>	<u>Comments</u>
Mobile Radios	2	Fire Department
Portable Radios	2	Same
Fire Trucks		
Tank Trucks	1	88 Chevy, 1300gal
	1	Int, 250gpm, 2200gal
	1	Amer. LaFrance, 750gpm, 500gal
Portable Pumps	1	AC, Gorman/Rupp, 50gpm
	1	AC, Darley 500gpm
	1	WC, Pacific Y 70gpm
Hose	1200'	4" Stortz
	1500'	2 1/2" NS
	1000'	1 1/2" IP
Backpack Pumps	11	
Handtools	40	
Dozers	1	A. R. Whitten & Sons (963-5823)
Skidders		
Other	1	Portable Tank, 2000gal dump
Feeding		Winter Harbor FD



APPENDIX L

WILDFIRE READINESS CHECKLIST

1921-1922

1923-1924



STEP-UP PLAN

Acadia National Park
March, 1992

<u>STAFFING CLASS</u>	<u>NFDRS ADJECTIVE</u>	<u>BI RANGE</u>
I	LOW	0 - 2
II	MODERATE	3 - 6
III	HIGH	7 - 13
IV	VERY HIGH	14 - 17
V	EXTREME	18+

SC 1 and II: Fire Danger; Low and Moderate

- 1) Normal operations for all divisions.
- 2) National Fire Dander Rating System (NFDRS) fire danger rating adjective forecast is broadcasted on the Park radio at 0900 hours local time. Employees responsible for changing the rating on the fire danger rating signs are advised of the current rating. Employees are informed of any change in the fire danger rating after the daily weather observations are taken at 1300 local time.
- 3) Minimum level of detection required, relying on observations during normal patrol functions or reports of fire from other sources.

SC III: Fire Danger; High

- 1) Fire Management Office maintains at least one staff member on duty daily to insure condition and availability of suppression equipment and to direct initial attack as necessary.
- 2) Protection personnel are advised of fire danger by the Fire Control Officer to insure availability for assignment as needed.
- 3) Reconnaissance may be scheduled by the Fire Management Officer when ignition component is "high", particularly in locations of high risk.
- 4) Open communications are maintained with the Maine Forest Service Division of Forest Fire Control and local fire departments.

- 5) The Regional Fire Management Officer will be notified by the Fire Management Officer if the fire danger remains in MC III (High) for more than four days.

SC IV: Fire Danger; Very High

- 1) The Beech Mountain Fire Tower may be manned if visibility allows for effective fire detection.
- 2) Fire Management Office will maintain at least one staff member on duty 0900 to 1800 hours.
- 3) The Fire Management Officer and the Fire Control Officer may be authorized to take their emergency response vehicles to their residence in order to provide for a timely response to any emergency callout.
- 4) All protection personnel are in radio contact with the Park dispatch office during working hours. At least one permanent member of the division is on call during off-duty hours.
- 5) The location of all maintenance crews is monitored by the Fire Control Officer. All maintenance crews and pump operators are alerted for potential fire call during and after working hours.
- 6) Other divisions continue normal operations unless requested by the Fire Management Officer (through the Chief Ranger and Deputy Superintendent) to assume fire related duties.
- 7) Protection personnel lieu days may be canceled by the Chief Ranger.
- 8) The Regional Fire Management Officer will be informed of the current fire danger stage through the situation report section in the NPS Wildland Fire Management Computer System by the Fire Program Clerk.
- 9) Information may be obtained regarding the availability of equipment and manpower from local departments and the Maine Forest Service Division of Forest Fire Control by the Fire Control Officer.
- 10) Air patrols may be initiated by the Fire Management Officer on a daily basis. Aircraft may be assigned to the Park under Office of Aircraft Services (OAS) contract during this period.

- 11) Emergency presuppression funding request may be made to the Regional Fire Management Officer by the Fire Management Officer.

SC V: Fire Danger; Extreme

- 1) The Beech Mountain Fire Tower may be manned if visibility allows for effective fire detection.
- 2) Either the Fire Management Officer or the Fire Control Officer will be on duty daily from 0800 to sunset daily.
- 3) Additional fire patrols will be added and will be on duty from 1000 to sunset.
- 4) The Fire Management Officer and the Fire Control Officer will be authorized to take their assigned emergency response vehicles to their residence in order to provide for a timely response to any emergency callout.
- 5) All protection personnel will be in radio contact with the Park dispatch office during working hours.
- 6) The location of all maintenance crews is monitored by the Fire Control Officer. All maintenance crews and pump operators are alerted for potential fire call during and after working hours.
- 7) Interpretive and administrative divisions will be available for duty during duty hours, nights, and weekends when so requested by the Fire Management Officer and through the Deputy Superintendent.
- 8) Protection personnel lieu days may be canceled by the Chief Ranger.
- 9) The Regional Fire Management Officer will be informed of current fire danger stage through the situation report section in the NPS Wildland Fire Management Computer System by the Fire Program Clerk.
- 10) Information will be obtained regarding availability of equipment and manpower from local departments and the Maine Forest Service Division of Forest Fire Control by the Fire Control Officer.
- 11) Air patrols may be initiated by the Fire Management Officer on a daily basis during peak burning periods. Aircraft may be assigned to the Park under Office of Aircraft Services (OAS) contract during this period.

- 12) Temporary area closures and bans may be instituted by the Superintendent. All open camp and picnic fires may be prohibited except for gas or propane stoves. Smoking may be prohibited on all Park trails, fire roads and carriage roads. Fire roads and other areas of the park may be closed.
- 13) All protection personnel may be placed in on-call or emergency standby status by the Chief Ranger.
- 14) Procedures will be initiated to obtain additional resources as needed to support presuppression efforts through the Regional Fire Management Officer.
- 15) Maintenance crews including pump operators will be organized for emergency duty after hours, nights and on weekends by the Chief of Maintenance in coordination with the Fire Control Officer.
- 16) Emergency presuppression funding request will be made to the Regional Fire Management Officer by the Fire Management Officer.

ADDITIONAL STEP-UP PROCEDURES FOR ISLE AU HAUT UNIT

Due to the remote nature of the Isle au Haut Unit and the extended time it would take to get additional firefighting resources to the island, additional step-up actions are necessary to insure adequate initial attack response. Personnel in the Isle au Haut Unit will employ all applicable phases and actions of the above Step-Up Plan. In addition, the following measures will apply to the Isle au Haut Unit:

SC IV: Fire Danger; Very High

- 1) Daily contact is maintained with town authorities to inform them of the fire danger and to determine the strength and readiness of their personnel and equipment by the Supervisory Park Ranger - Isle au Haut.
- 2) Lieu days may be canceled for all Unit personnel by the Chief Ranger.
- 3) Fire suppression equipment may be pre-positioned at Duck Harbor, particularly backpack pumps, by the Fire Control Aid - Isle au Haut.
- 4) All arriving visitors, both campers and day users, are advised of the fire danger either in person or by other appropriate means by the Isle au Haut Unit staff.

- 5) At least one Isle au Haut Unit employee is in 24 hour radio contact with Park Headquarters.

SC V: Fire Danger; Extreme

- 1) Lieu days may be canceled for all personnel and emergency stand-by pay authorized by the Chief Ranger.
- 2) All open fires, including charcoal fires, may be prohibited at Duck Harbor Campground by order of the Superintendent.
- 3) Depending on extent and severity of fire danger, Duck Harbor Campground may be closed by order of the Superintendent.
- 4) All hiking trails may be closed by order of the Superintendent.
- 5) Fire suppression personnel and/or equipment may be pre-positioned on Isle au Haut by the Fire Management Officer.
- 6) One employee will remain at the Ranger Station at all times with fire equipment ready to respond to a report of fire.
- 7) Fire detection patrols will be conducted continuously, in so far as possible, by the Isle au Haut staff and presuppression personnel.

1. The first part of the report deals with the general situation of the country and the progress of the work. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The second part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The third part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The fourth part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The fifth part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The sixth part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The seventh part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The eighth part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The ninth part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work. The tenth part of the report deals with the results of the work and the conclusions drawn from it. It is a very interesting and informative document, which gives a clear picture of the state of affairs in the country and the progress of the work.

APPENDIX M

STEP-UP PLAN