

**National Park Service
U.S. Department of the Interior**

**Acadia National Park
Bar Harbor, Maine**



Acadia National Park Wildland Fire Management Plan

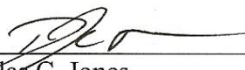
December 2009

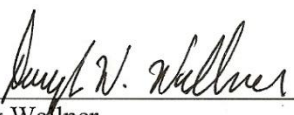


NPS Photograph by Douglas C. Jones

WILDLAND FIRE MANAGEMENT PLAN 2009

ACADIA NATIONAL PARK Bar Harbor, Maine

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1. INTRODUCTION

1.1. PURPOSE OF THE WILDLAND FIRE MANAGEMENT PLAN

United States Department of Interior (DOI) wildland fire management policy requires that every DOI area with burnable vegetation must have an approved wildland fire management plan (FMP) (620 DM 1.4B). In addition, National Park Service (NPS) *Director's Order #18; Wildland Fire Management (DO-18)*, requires that all park units with vegetation capable of sustaining wildfire develop a wildland fire management plan approved by the park superintendent. The underlying purpose of the FMP is to provide decision support to aid fire managers in making informed decisions regarding operational procedures and values to be protected and/or enhanced

This FMP replaces the 1993 Acadia National Park Wildland Fire Management Plan and provides guidance on a wide range of wildland fire management activities in Acadia National Park including prevention, education, preparedness, prescribed fire, fuels management and fire suppression activities. Values considered in the FMP include the protection of Park property, structures and improvements, cultural and historic sites, protection of neighboring private property and protection of endangered and threatened species and habitats of concern. The actions and activities proposed under this FMP do not differ substantively from the actions and activities conducted under the 1993 FMP.

The overall goal of FMP is to plan, direct and implement actions that help to accomplish the mission of the NPS in managing and protecting the lands and other resources of Acadia National Park. The FMP establishes the fire management goals, objectives, policies and operational programs necessary to effectively manage wildland fire within the Park and to provide wildland fire management assistance to neighboring communities and property owners. The FMP serves as a detailed action plan for the implementation of those programs and activities by the Park staff.

This FMP identifies the risk of wildland fire to communities bordering the Park, addresses that risk through treatment programs and incorporated input and advice from Federal, state, and local agencies, neighboring landowners and the local communities. These actions and collaboration allow this FMP to serve as a Community Wildfire Protection Plan (CWPP) for each of those communities.

This FMP complies fully with DOI and NPS requirements and will continue in effect until rescinded. The FMP is subject to annual reviews for policy and terminology currency and to a major review and/or revision at a minimum of a five-year interval, or when significant changes in program direction are proposed.

This FMP was written using the *Interagency Fire Management Plan Template, April 9, 2009*.

1.2. GENERAL DESCRIPTION OF ACADIA NATIONAL PARK

Acadia National Park is located in the mid-coast region of Maine, approximately 45 miles southeast of the city of Bangor, Maine (see Figure 1). The Park currently includes approximately 36,171 acres of land (see Figure 2), including 30,907 acres on Mount Desert Island (MDI); 2,363 acres on the Schoodic Peninsula located five miles east of MDI; and 2,901 acres on Isle au Haut (IAH), an island located 15 miles southwest of MDI. The Park also includes all or part of 14 outlying coastal islands and several small freshwater islands. The acreages for these islands are included with the above units that the islands lie closest to. About 50% of both MDI and IAH are under Federal ownership. All lands administered as Acadia National Park lie within Hancock and Knox counties.

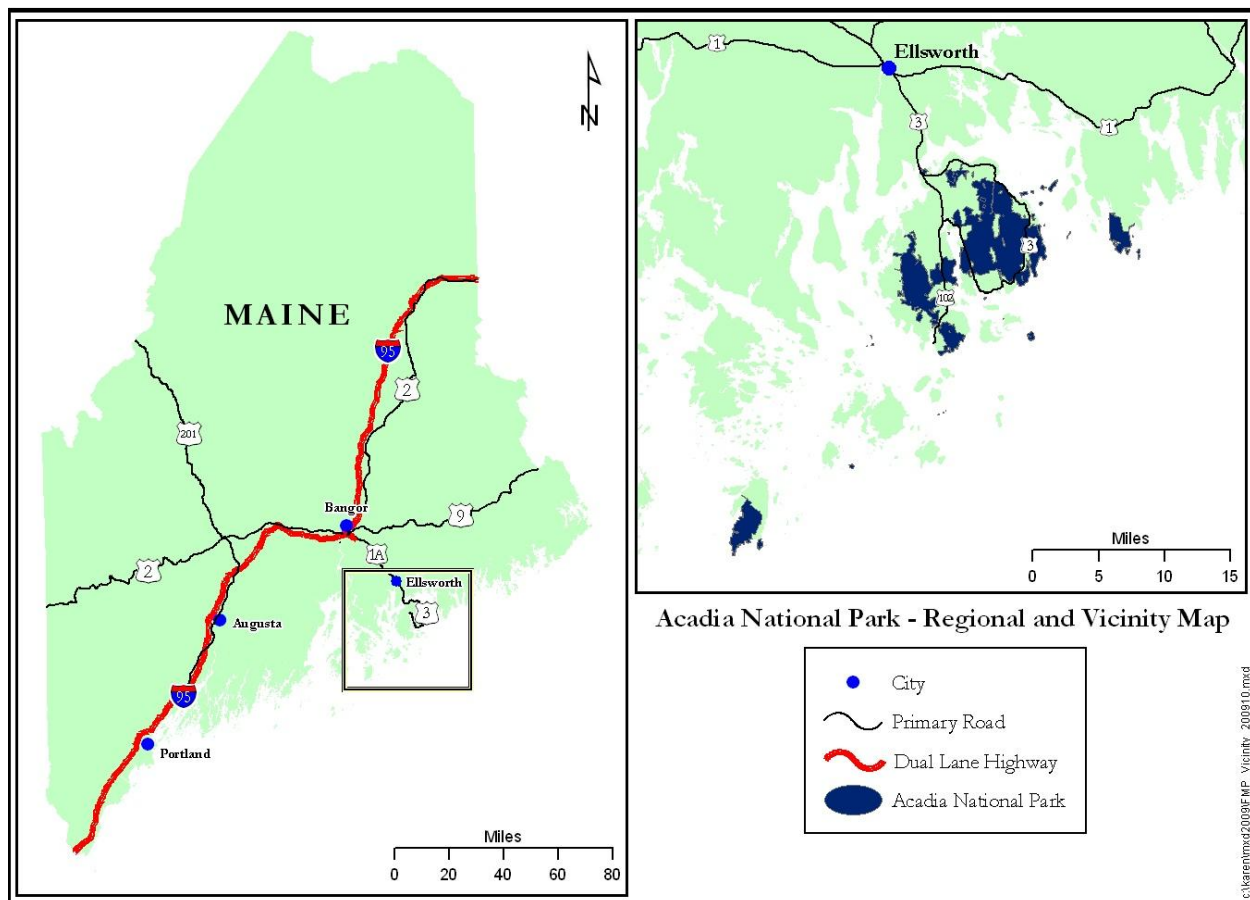


Figure 1: Acadia National Park Vicinity Map

The Park has approximately 115 miles of land boundaries, not including fresh and salt water shorelines. Much of the Park is bordered by houses and other structures intermingled with forests and other wildland fuels on privately-owned properties. This zone or area is commonly referred to as the wildland/urban interface. This juxtaposition of Federal lands, private property,

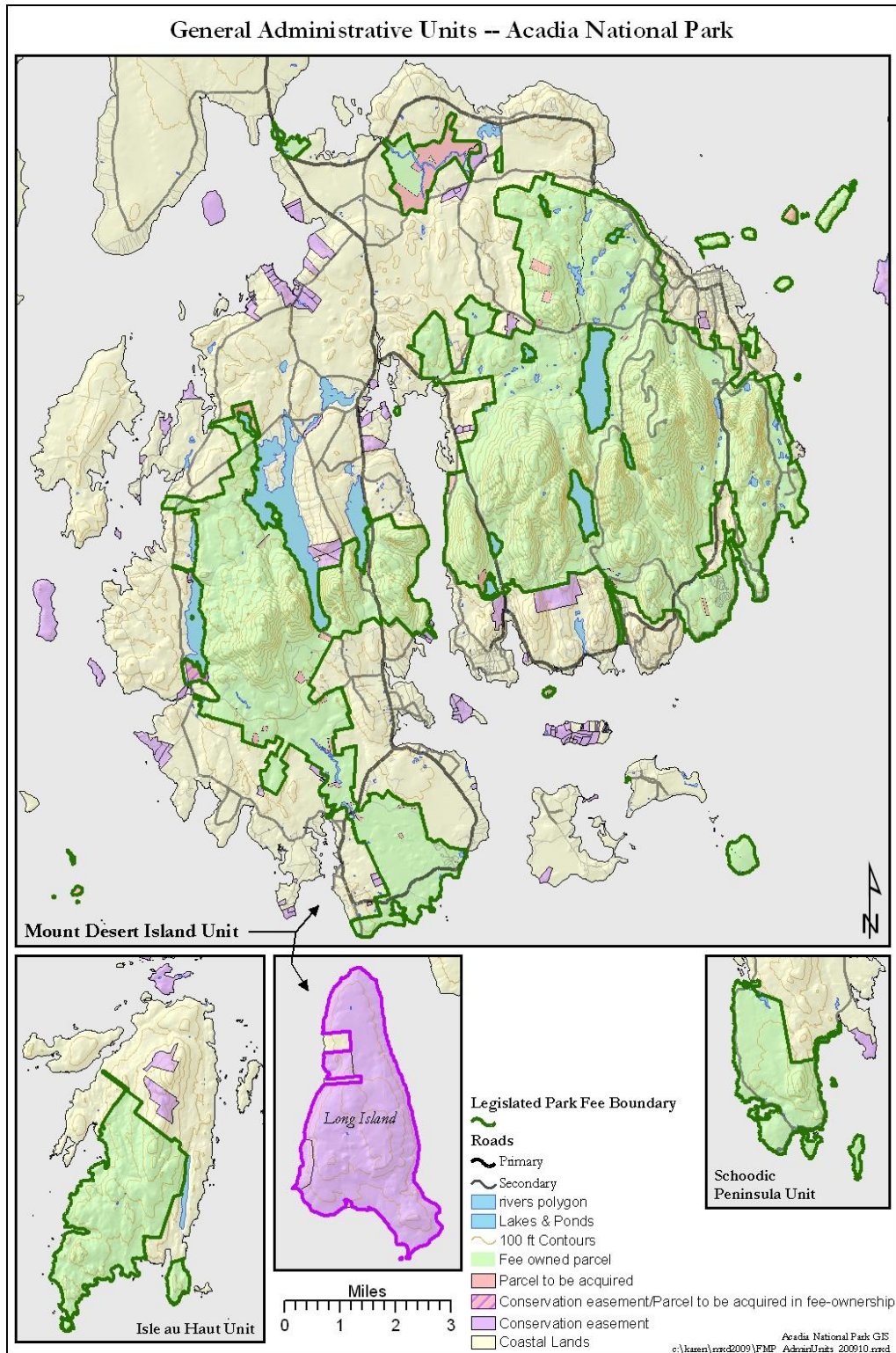


Figure 2: Acadia National Park Map

multiple jurisdictions, wildland fuels and structures (values at risk) presents a challenge to fire managers in developing and conducting a fire management program that both protects those values at risk from a wildfire and yet also lets fire play its natural role in the wildlands.

The NPS also manages more than 200 conservation easements on coastal islands in the Penobscot Bay and Frenchman Bay areas, comprising approximately 12,500 acres. One of these easements protects 4,313 acres of land on Long Island, located in Blue Hill Bay. This easement covers 98% of the island's acreage and gives the NPS broad rights to promote and manage public use on Long Island.

Because the rights granted to the NPS under the terms of the Long Island conservation easement are so significant and public use of the island brings with it an associated risk of wildfire, the Park has approval from the Northeast Regional Director, the Northeast Regional Solicitor and the NPS Fire Program Management Center to treat the Long Island easement lands as Federally owned for the purposes of fire management. These approvals are on file in the fire management office. This FMP applies to the easement lands of Long Island and to all lands held in fee ownership by the United States Government and administered by the NPS as Acadia National Park. With the exception of the Long Island easement, this FMP does not apply to any other Park conservation easements.

1.3. PARK HISTORY

Archeological evidence suggests Native Americans occupied MDI at least seasonally for several thousand years prior to the arrival of Europeans. French explorers and missionaries landed in the MDI region during the early 17th century. British settlers took control of the area by the mid-18th century. The area that became the State of Maine remained part of Massachusetts until 1820. MDI became a tourist destination during the mid-19th century, as popularized by the paintings and stories of the "rusticators," who were artists and writers that glorified the rustic beauty of the island. A group of local citizens, led by Charles W. Eliot and George Dorr, established the Hancock County Trustees of Public Reservations, which subsequently acquired 5,000 acres on MDI and offered the land to the Federal Government to preserve the natural landscape from growing development interests.

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 includes the 1982 act establishing a boundary for the Park's Isle au Haut unit (PL97-335) and the 1986 act establishing a permanent boundary for the rest of the Park (PL99-420).

Private individuals donated the vast majority of the lands that comprise Acadia National Park. These donations and the NPS's management of them have provided the Park with a legacy of both private and public stewardship for the lands and resources of Acadia National Park.

1.4. PARK FIRE ECOLOGY AND FIRE HISTORY

Ecological and meteorological evidence indicates that lightning-caused fires were a major environmental force shaping the vegetation of North America for millions of years prior to human habitation (USDA, 2000). Fire-adapted ecosystems developed, as did individual plant species dependent upon or adapted to wildland fire. According to fire ecologist Dr. Cecil Frost (1998), "...fire once played a role in shaping all but the wettest, the most arid, or the most fire-sheltered plant communities of the United States." Research conducted at Acadia National Park (Patterson, *et al*, 1983) indicates "a pattern of infrequent but catastrophically large fires in the conifer forest of the Maine coast".

Several research methods have been used to determine when fires occurred within the Park and surrounding areas and the causes of those fires. 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*, 1983). For earlier times, charcoal and pollen fragments taken from lake bottom sediments (Lake Wood and The Bowl on MDI and Long Pond on IAH) 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 Park 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).

This research indicates that during the pre-European settlement period, major, stand-replacing fires occurred at a rate of once every 200 to 500 years and during the post-settlement period at a rate of once every 100 to 250 years (Patterson 1993). NPS fire records for the past 35 years (1974-2008) indicate that the Park experiences, on average, less than four wildfires burning a total of less than one acre per year. An analysis of these records also indicates that humans cause approximately 87% of these fires, lightning causes about 4% of them and 9% are of unknown causes.

1.5. PARK MISSION

The proclamations and acts identified in Section 1.3 established broad objectives for managing Park resources and identified values to be protected. These include the preservation of scenic, natural, scientific and cultural resources and values of the Park.

"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 its 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 mission statement, found in the *Acadia National Park Strategic Plan* (1997) states:

“The National Park Service at Acadia National Park protects and conserves outstanding scenic, natural and cultural resources for present and future generations. These resources include a glaciated coastal and island landscape, biological diversity, clean air and water and a rich cultural heritage. Acadia National Park also offers opportunities for high-quality non-consumptive recreation, education and scientific research.”

2. POLICY, LAND MANAGEMENT PLANNING AND PARTNERSHIPS

The intent of this chapter is to establish the linkage between higher level planning documents, legislation, and policies and the actions described in the FMP.

2.1. WILDLAND FIRE MANAGEMENT POLICY

Specific high level planning documents, legislation, organizations and associated policies and actions provide guidance and direction to fire management operations and activities described in the FMP. This guidance and direction comes at the national, department, agency and park level. These items are discussed in detail in the sections that follow.

2.1.1. Federal Interagency Wildland Fire Management Policy

The five Federal land management agencies (NPS, U.S. Fish & Wildlife Service, Bureau of Land Management, Bureau of Indian Affairs and U.S. Forest Service) involved in wildland fire management are governed by a single, comprehensive Federal fire management policy set forth in three main policy and policy implementation documents. These are:

1. *National Fire Plan* (August 2000)
2. *Review and Update of the 1995 Federal Wildland Fire Management Policy* (January 2001)
3. *Guidance for Implementation of Federal Wildland Fire Management Policy* (February 2009)

The *National Fire Plan* (NFP) was developed in 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future. The NFP addresses five key areas: firefighting, rehabilitation, hazardous fuels reduction, community assistance and accountability. The NFP provides guidance and support for wildland fire management programs of the Federal land management agencies.

This FMP meets the policy and direction contained in the NFP because it emphasizes the following primary goals found in the *Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems – A Cohesive Strategy* (2000):

- Improving fire prevention and suppression
- Reducing hazardous fuels
- Restoring fire-adapted ecosystems
- Promoting community assistance

The *Review and Update of the 1995 Federal Wildland Fire Management Policy* is the primary wildland fire management policy document for the Federal land management agencies. The *Guidance for Implementation of Federal Wildland Fire Management Policy* was developed and approved under the authority of the Fire Executive Council and sets forth direction for the consistent implementation by the Federal land management agencies of the Federal fire policy established in the *Review and Update of the 1995 Federal Wildland Fire Management Policy*.

The *Guidance for Implementation of Federal Wildland Fire Management Policy* stresses the necessity of cooperation and participation of all Federal, state, tribal and local government agencies and organizations in wildland fire management. Planning, implementation, and monitoring are to be accomplished on an interagency basis with the involvement of all partners. This FMP meets the criteria established in the policy guidance by adhering to the following nine guidelines for consistent policy implementation among the Federal land management agencies:

1. Wildland fire management agencies will use common standards for all aspects of their fire management programs to facilitate effective collaboration among cooperating agencies.
2. Agencies and bureaus will review, update and develop agreements that clarify the jurisdictional inter-relationships and define the roles and responsibilities among local, state, tribal and Federal fire protection entities.
3. Responses to wildland fire will be coordinated across levels of government regardless of the jurisdiction at the ignition source.
4. Fire management planning will be intergovernmental in scope and developed on a landscape scale.
5. Wildland fire is a general term describing any non-structure fire that occurs in the wildland. Wildland fires are categorized into two distinct types:
 - a. Wildfires; unplanned ignitions or prescribed fires that are declared wildfires.
 - b. Prescribed fires; planned ignitions.
6. A wildland fire may be concurrently managed for one or more objectives and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in fuels, weather, topography; varying social understanding and tolerance; and involvement of other governmental jurisdictions having different missions and objectives.
7. Management response to a wildland fire on Federal land is based on objectives established in the applicable land and/or resource management plan and/or the FMP.

8. Initial action on human-caused wildfire will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety.
9. Managers will use a decision support process to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions and document decisions and rationale for those decisions.

This FMP also meets those criteria by adhering to the following nine guiding principles and policy statements found in the *Guidance for Implementation of Federal Wildland Fire Management Policy*:

1. Firefighter and public safety are the first priority in every wildland fire management activity.
2. The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
3. Fire management plans, programs, and activities support land and resource management plans and their implementation.
4. Sound risk management is a foundation for all fire management activities.
5. Fire management programs and activities are economically viable, based upon values to be protected, costs and land and resource management objectives.
6. Fire management plans and activities are based upon the best available science.
7. Fire management plans and activities incorporate public health and environmental quality considerations.
8. Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
9. Standardization of policies and procedures among Federal wildland fire management agencies is an ongoing objective.

2.1.2. United States Department of the Interior Wildland Fire Management Policy

This FMP incorporates and adheres to DOI policy as outlined in *Department Manual 620 DM 1* by giving full consideration to the use of wildland fire as a natural process and tool during the land management planning process and by providing the following:

- Wildland fires, whether on or adjacent to lands administered by the Department, which threaten life, improvements or are determined to be a threat to natural and cultural resources or improvements under the Department's jurisdiction, will be considered emergencies and their suppression given priority over other Departmental programs.
- Bureaus shall cooperate in the development of interagency preparedness plans to ensure timely recognition of approaching critical wildland fire situations; to establish processes for analyzing situations and establishing priorities and for implementing appropriate management responses to these situations.
- Bureaus will enforce rules and regulations concerning the unauthorized ignition of wildland fires and aggressively pursue violations.

2.1.3. National Park Service Wildland Fire Management Policy

The broad policy guidance for NPS wildland fire management programs is found in *National Park Service Management Policies, 2006*. This guidance is expanded upon and detailed in *NPS Director's Orders #18; Wildland Fire Management (DO-18)*. *DO-18* requires that all parks with vegetation capable of sustaining fire develop a FMP that will meet the specific resource management objectives for that park and ensure that firefighter and public safety are not compromised. *DO-18* identifies fire as the most aggressive natural resource management tool employed by the NPS.

DO-18 identifies three paramount considerations for each park's fire management program. They are:

- Protect human life and property both within and adjacent to park areas;
- Perpetuate, restore, replace, or replicate natural processes to the greatest extent practicable; and
- Protect natural and cultural resources and intrinsic values from unacceptable impacts attributable to fire and fire management activities.

2.1.4. Compliance With Regulatory Acts

a. National Environmental Policy Act (NEPA)

National Environmental Policy Act compliance for this FMP was accomplished through consultation with interested external parties and a series of internal scoping sessions. These activities lead to a determination that the actions and activities proposed under this FMP do not differ significantly from the actions and activities conducted under the 1993 FMP. Thus a categorical exclusion for this FMP (see Appendix A) was issued in December 2009.

b. Endangered Species Act (ESA)

In accordance with the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.), the effects of any agency action that may affect endangered, threatened, or proposed species must be evaluated in consultation with either the U.S. Fish & Wildlife Service or National Marine Fisheries Service, as appropriate. Dr. Mark McCollough of the Maine Office of the U.S. Fish and Wildlife Service was consulted by Park biologist Judith Hazen Connery on June 1, 2009 by electronic mail regarding potential effects of proposed fire management operations on species protected under the Endangered Species Act. Dr. McCollough confirmed that with the recent de-listing of both bald eagles and peregrine falcons, formal consultation is not necessary because no Federally-listed species or critical habitats are found in or directly adjacent to Acadia National Park.

c. National Historic Preservation Act (NHPA)

Section 106 of the National Historic Preservation Act, as amended (36 CFR 800), requires Federal agencies to consider the affects of projects they fund, permit or license on historic properties that are listed or eligible for listing in the National Register of Historic Places. Park Cultural Resources Program Manager Rebecca Cole-Will notified the State Historic Preservation Office, as well as historic preservation contacts of the Federally-recognized tribes in Maine of the planning effort on June 3, 2009. The State Historic Preservation Office responded by letter, agreeing with her determination that implementing the revised FMP would have no effects on properties listed or eligible for listing in the National Register of Historic Places.

2.2. LAND AND RESOURCE MANAGEMENT PLANNING

The following Park planning documents provide guidance in developing the goals and objectives for this FMP and in developing the implementation strategies for achieving those goals and objectives.

2.2.1. Acadia National Park General Management Plan

The *Acadia National Park General Management Plan* (1992) mandates that the NPS carry out interrelated strategies for the protection and management of Park resources. The Park's primary resource management goal is to perpetuate the natural, cultural and scenic resources of the Park. The plan's resource management objectives related to fire management are:

- Protect and manage the park's natural resources, giving priority to those that are exceptionally fragile or significant.
- Improve the natural and cultural resource information base through expanded inventory, monitoring, research and improved data base management and GIS (geographic information system) systems.
- Protect, preserve, and restore, as appropriate, the cultural heritage of Acadia National Park, including archeological, historic, curatorial, and cultural landscape resources, through expanded cultural resource programs.

The *General Management Plan* specifically directs the Park to "manage fire." As stated in the *General Management Plan*, 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 *General Management Plan* further directs the NPS to "reduce the threat of fire" in cooperation with adjacent landowners and communities in order to enhance Park values. It 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.”

2.2.2. Acadia National Park Resource Management Plan

The *Acadia National Park Resource Management Plan* (1998) calls for an integrated approach to protecting and managing the Park’s natural and cultural resources. It states:

“Resource management at ACAD (*the Park*) is focused on protecting the integrity of natural resources, preserving cultural heritage and maintain quality visitor experiences. Consistent with current Park strategic planning documents, resource management program activities emphasis: a) development of knowledge about and identification of threats to Park ecosystems, cultural resources and visitor experiences; b) application of scientific study in formulating solutions to Park issues; c) participation with other entities in the implementation of appropriate management actions to meet Park stewardship responsibilities; d) compliance with applicable Federal, State and local laws and; e) communication of the results of our work with others to achieve the Park’s mission.”

The *Resource Management Plan* identifies the specific need for continued research into the role and effect of fire on northeastern plant communities and the effectiveness of fuel reduction methods on those communities.

2.3. PARTNERSHIPS

Various individuals, groups and organizations were given the opportunity to assist in the development of this FMP through the internal and external scoping activities and consultation required under the NEPA planning process. They were given an opportunity to identify issues and concerns and many did participate in this process through formal and/or informal means.

2.3.1. Internal Partnerships

a. Park Interdisciplinary Team

At the start of the NEPA compliance process for this FMP, a Park interdisciplinary team (IDT) was created to guide its development. This team consisted of the Park's fire management officer, assistant fire management officer/park ranger, fire prevention specialist, natural resource/NEPA specialist, botanist and cultural resource program manager. The IDT reviewed the existing 1993 FMP and current NPS wildland fire management policy guidance, evaluated existing conditions, identified issues, concerns and potential impact and developed the wildland fire management goals and objectives found in this FMP. The IDT also reviewed and made comments on the draft FMP.

b. Acadia National Park Staff

Other Park staff members were given the opportunity to participate in both the internal scoping activities and to review and make comments on the draft FMP.

c. Acadia National Park Advisory Committee

The Acadia National Park Advisory Committee was consulted during the external scoping process.

d. Northeast Regional Office of the National Park Service

Northeast Regional Office staff members participated in both the internal scoping activities and/or review of the draft FMP. These included the regional fire management officer, the regional prescribed fire specialist and a regional biologist. The regional environmental compliance specialist was involved in the determination that the actions and activities proposed under this FMP do not differ to any great extent from the actions and activities conducted under the 1993 FMP and that a categorical exclusion for this FMP was appropriate.

2.3.2. External Partnerships

a. Other Federal Agencies

As required by the Endangered Species Act, the U.S. Fish and Wildlife Service was consulted regarding potential effects of the FMP on endangered, threatened or proposed species. The Service's New England Zone fire management officer also provided informal assistance in development of the FMP.

b. Federally-Recognized Tribes

As required by Section 106 of the National Historic Preservation Act, the Federally-recognized tribes of Maine listed below were consulted during the external scoping process.

- Aroostook Band of Micmacs
- Houlton Band of Maliseet Indians
- Passamaquoddy Tribe at Pleasant Point
- Passamaquoddy Tribe at Indian Township
- Penobscot Nation

c. State Agencies

As required by Section 106 of the National Historic Preservation Act, the Maine State Historic Preservation Office was consulted during the external scoping process.

The Maine Forest Service and the Maine State Planning Office were also consulted during the external scoping process.

d. Local Agencies

The fire chiefs for the eleven local fire departments that assist the Park with wildland fire activities were consulted during the external scoping process. These fire departments are:

- Bar Harbor Fire Department
- Blue Hill Volunteer Fire Department
- Cranberry Isles Fire Department
- Gouldsboro Fire Department
- Isle au Haut Fire Department
- Mount Desert Township Fire Department
- Southwest Harbor Fire Department
- Swans Island Fire Department
- Tremont Volunteer Fire Department
- Trenton Volunteer Fire Department
- Winter Harbor Fire Department

e. Educational Institutions

Dr. William Patterson, III, fire ecology professor with the Department of Forestry and Wildlife Management, University of Massachusetts was consulted during the external scoping process.

3. FIRE MANAGEMENT UNIT CHARACTERISTICS

A fire management unit (FMU) is a land management area defined by the objectives, management constraints, topographic features, access, values to protect, political boundaries, fuel types, fire regimes, etc that set it apart from the characteristics of another FMU. Each FMU may have distinct management objectives and pre-selected strategies designed to accomplish

those objectives. The identification of FMUs within a park represents the cornerstone of fire management planning. The process of creating distinct FMUs divides the larger park landscape into smaller geographic areas, allowing them to be more easily described in terms of the characteristics they possess and helps frame associated planning guidance based upon those characteristics.

The Park is divided into three FMUs (see Figure 3); the Mount Desert Island FMU, the Isle au Haut FMU and the Schoodic Peninsula FMU. The three FMUs are based upon their geographic separation from each other, their staffing levels and their differing initial response capabilities.

The NPS administered offshore islands and the easement lands on Long Island (located in Blue Hill Bay) are incorporated into the FMU they are geographically closest.

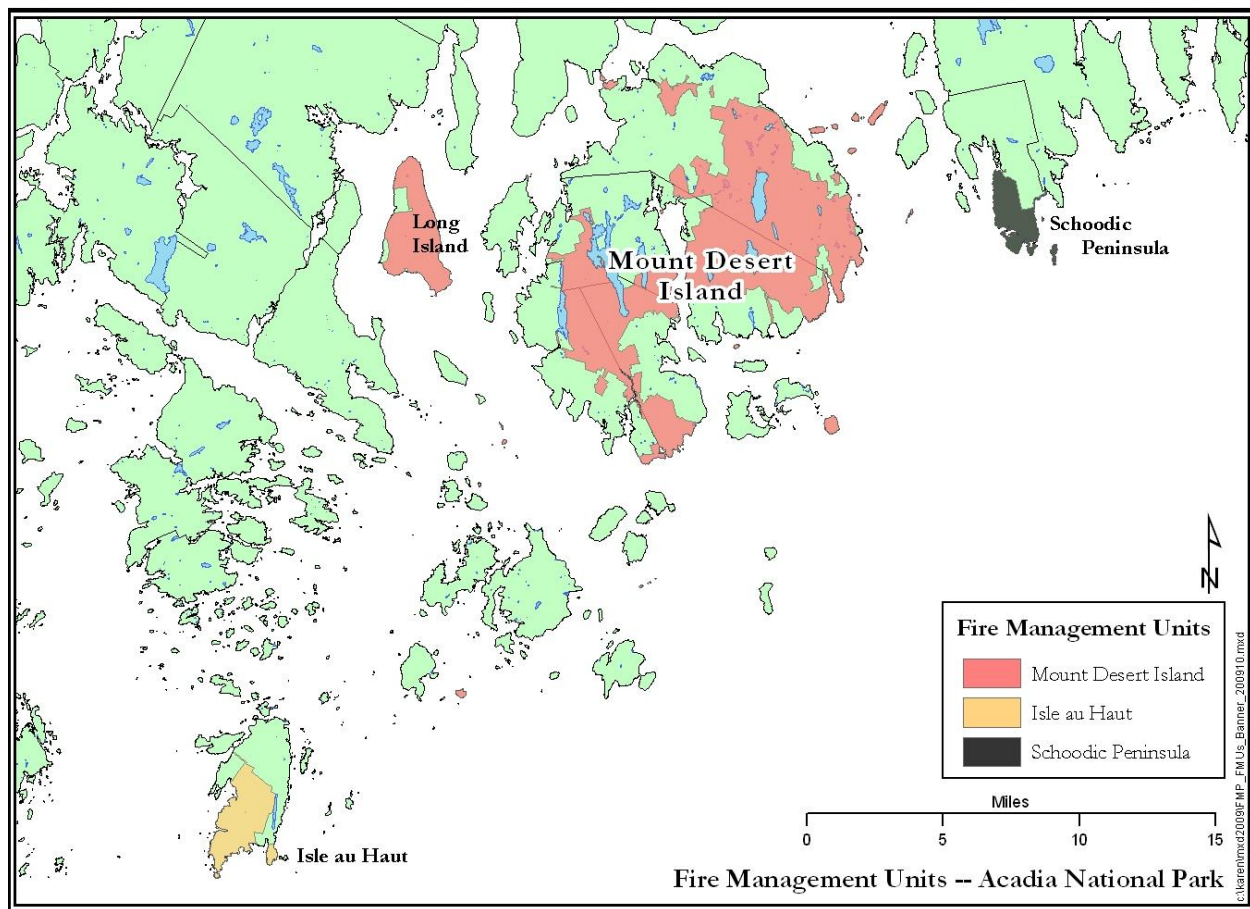


Figure 3: Acadia National Park Fire Management Units Map

All three FMUs share similar topography, climate, fuel type, expected fire behavior and fire history. All three units share the same fire management and fire suppression objectives.

3.1. PARK-WIDE MANAGEMENT CONSIDERATIONS

This section documents overall wildland fire management program guidance and characteristics that are common to all three FMUs of the Park. The goals and objectives listed below are common to all three FMUs. These goals and objectives are unchanged from the 1993 FMP.

3.1.1. Wildland Fire Management Goals and Objectives

The goals for the Park's wildland fire management program are:

- Protect life and property
- Protect human health and safety
- Protect natural resources and natural communities
- Protect rare species and habitats
- Protect cultural resources
- Perpetuate fire dependent species and habitat
- Enhance scientific knowledge
- Educate the public about wildland fire

The objectives to meet these goals:

- Initial action on all unplanned ignitions will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety and the values to be protected (including on adjacent non-Federal lands).
- Manage all wildfire incidents based on the ecological, social and legal consequences of the fire and in accordance with accepted interagency standards, using appropriate management strategies and tactics and maximizing efficiency via interagency coordination and cooperation.
- Conduct a hazard fuels treatment program to reduce the likelihood of the start and spread of a wildfire, the movement of wildfire across Park boundaries and the destruction of Park and adjacent private structures from a wildfire.
- Work with Park neighbors and nearby landowners to aid them in protecting their properties from the negative effects of wildfire. Promote awareness of the threat of wildfire in the wildland/urban interface and how to protect against those threats.
- Use prescribed fires to achieve management and resource objectives for cultural landscape management, hazard fuels reduction, and where appropriate, for the perpetuation of fire dependent species and habitats and to protect native natural communities from invasive and exotic species.
- Conduct a monitoring program with recommended standard monitoring levels commensurate with the scope of the wildland fire management program and use the information gained to continually evaluate and improve the wildland fire management program.
- Integrate knowledge gained through research and monitoring into future wildland fire management decisions and actions.

- Maintain the highest standards of professional and technical expertise in planning and safely implementing an effective wildland fire management program.
- Incorporate minimum impact suppression tactics policy into all wildfire suppression activities, to the greatest extent feasible and appropriate.
- Maintain agreements with state and local agencies and other entities in order to facilitate close working relationships and mutual cooperation regarding wildland fire management activities.
- Educate employees and the public about the history, scope and effects of wildland fire.

3.1.2. Wildland Fire Management Strategies

The Park will use the specific strategies listed below to implement and achieve the goals and objectives of the FMP.

- All wildfires will be aggressively suppressed using the full range of strategies and tactics available to an incident commander, taking into consideration firefighter and public safety, Park resources and values to be protected, estimated cost of suppression, availability of firefighting resources, weather conditions, the type and amount of fuel load, post-fire resource stabilization and rehabilitation needs and the ecological, social and legal consequences of the fire.
 - The purpose of initial action on all wildfires is to suppress the fire at the lowest cost with the fewest negative consequences to firefighter and public safety and the values to be protected, including those on adjacent non-Federal lands.
 - The highest standards of professional and technical expertise will be maintained in planning and safely implementing an effective wildland fire management program.
 - All wildfire incidents will be managed based on the ecological, social and legal consequences of the fire and in accordance with accepted interagency standards, using appropriate management strategies and tactics, and maximizing efficiency via interagency coordination and cooperation.
 - The circumstances under which a fire occurs and the likely consequences on firefighter and public safety and welfare, natural and cultural resources and values to be protected, will dictate the appropriate response to the fire. Initial action on all wildfires will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety, while minimizing the negative environmental and cultural impacts from the wildfire and the response to it.
 - Wildfire operations will be conducted in cooperation with local fire departments and the Maine Forest Service. Agreements will be maintained with state and local agencies and other entities in order to facilitate close working relationships and mutual cooperation regarding wildland fire management activities.

- All wildfire suppression activities will adhere, to the greatest extent feasible and appropriate, to the Minimum Impact Suppression Tactics (MIST) guidelines as outlined in Section 4.2.1.o. The intent of MIST is to use the least amount of forces necessary to effectively achieve the wildland fire management protection objectives consistent with resource management objectives. MIST takes into account the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response.
- Prescribed fire will be used where appropriate to maintain cultural landscapes, manage hazard fuels and to perpetuate fire dependent species and habitats and protect native natural communities from invasive and exotic species. Debris piles may be burned where appropriate. All prescribed fires and debris burning will be conducted in accordance with the procedures found in *NPS Reference Manual 18; Wildland Fire Management (RM-18)* and in Section 4.4.1.
 - Prescribed fires will be used to maintain grass fields such as found on Baker Island and historic scenic vistas located along the Park's carriage and motor roads. Prescribed fire may also be used to maintain stands of jack pine trees if the Park determines that this activity is appropriate and necessary. The vast majority of these prescribed fires will be less than one acre in size and none would be expected to exceed ten acres in size (Baker Island). Monitoring will be conducted to insure that prescribed fire burn objectives are being met and that invasive species are not being encouraged by the use of prescribed fire.
- Mechanical hazard fuels treatments will be carried out to 1) reduce the likelihood of the start and spread of human-caused wildfires in high visitor use areas, 2) reduce the likelihood of wildfires across Park boundaries and 3) protect Park and adjacent private structures from wildfires by creating defensible spaces near structures.
 - Concentrations of hazard fuels adjacent to high visitor use areas, such as hiking trails, parking areas, etc. will be identified and mechanically removed to reduce the risk of these fuels catching fire through human activities. (see Section 4.4.2.a.)
 - Fuel breaks will be maintained to reduce the likelihood of a wildfire moving across Park boundaries and into groups of Park facilities, such as the campgrounds and the Park headquarters complex. These fuel breaks reduce the rate of spread of a surface fire moving across the surface of the ground at the fuel break, thus giving control forces additional time to stop the spread of the fire. The fuel breaks are not expected to stop a crown fire moving through the canopy of the trees and forest. Fuel breaks will only be established and maintained in those areas where there is a likelihood that a wildfire would move across the Park boundary or into or out of areas containing groups of Park facilities. Fuel breaks will not be established

- where natural fuel breaks (lakes, streams, wetlands, etc) or human-made barriers (roads, etc) are adjacent to or near the area being protected. (see Section 4.4.2.b.)
 - Defensible space will be maintained around selected individual Park structures. Defensible space is the area around a structure that can be treated in such a way as to reduce the chance that wildland fire reaching the structure. This will be accomplished through regular mowing and removing hazard fuels, to the greatest extent possible, from around each structure to a distance of no less than 30 feet. These actions will be based upon the nationally recognized Firewise wildland/urban interface protection standards and may be modified where appropriate to maintain historical and culturally significant scenes and landscaping. (see Section 4.4.2.c.)
- NPS staff will work with Park neighbors and nearby landowners to aid them in protecting their properties from the adverse effects of future wildfires by promoting awareness of the threat of wildfire in the wildland/urban interface, and suggesting techniques and strategies to protect against those threats.
 - Programs for wildland/urban interface assistance to Park neighbors and communities and fire prevention will be conducted. The wildland/urban interface assistance program will include on-site evaluations of homeowner properties and recommendations for improving the survivability of their properties.
 - Employees and the public will be educated about the history, scope, and effects of wildland fire through news releases, presentations and other means.
- A monitoring program will be conducted, with recommended standard monitoring levels commensurate with the scope of the wildland fire management program. Information gained will be used to continually evaluate and improve the wildland fire management program.
- Research will be conducted to increase the knowledge base concerning wildland fire ecology and the effects of wildfire on Park species and ecosystems.

3.1.3. Constraints Common to All Fire Management Units

The following are constraints and restrictions on the use of the strategies 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 written prior approval of the superintendent 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.

- Construction of fireline, especially on slopes, is to be kept to a minimum. Wherever possible, natural and existing human-made firebreaks will be utilized.
- Construction of fireline in ecologically sensitive and archaeologically or culturally significant areas is prohibited.
- The use of large, mechanized equipment (bulldozers, plows, skidders, etc) to construct fireline is prohibited.
- 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.
- The use of retardant is to be kept to a minimum and is prohibited in ecologically sensitive areas identified by the natural resources advisor (see Section 4.1.4.a.). All retardant used in the Park will be of a fugitive color type, designed to fade rapidly following application. Class A foam may be used, but will not be applied within ten feet of any stream or other water body. Class A foam concentrate will not be allowed to enter any water body.

3.1.4. Characteristics Common to All Fire Management Units

Characteristics described in this section are relevant to all three Park FMUs. Characteristics specific to a particular FMU will be discussed in the appropriate section (3.2, 3.3 and 3.4) describing the attributes for that particular FMU.

a. Climate

The Park lies in a coastal region of cool moist climate. During the period 1983 through 2008, temperatures ranged from average lows of 16 °F in January to average highs of 77 °F in July and August (see Figure 4). Temperature extremes of -16 °F in the winter to 105°F in the summer have been recorded. Annual total precipitation over this same period averaged about 54 inches (see Figure 5).

Average annual snowfall during the period was approximately 61 inches. Snowfall occurred from October through May, with December through March seeing the most snow. Even during those months, there were periods of no snow cover on the ground; increasing the possibility of wildfires. No snowfall occurred in the months of June through September.

The prevailing-wind direction information found in Table 1 was developed from National Weather Service records from 1940 through 1980 (Patterson *et al*, 1983).

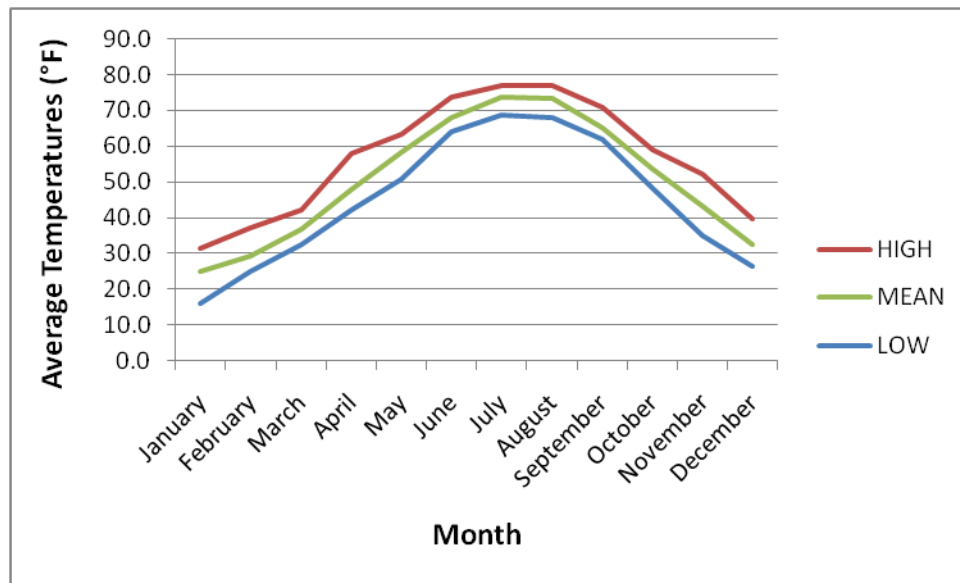


Figure 4: Average Temperatures; Bar Harbor, Maine; 1983-2008

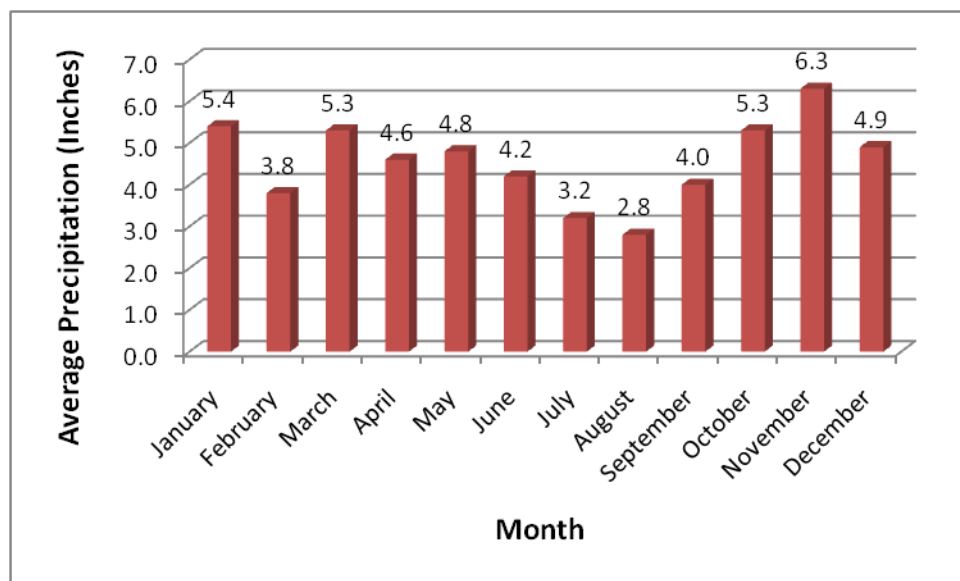


Figure 5: Average Annual Precipitation; Bar Harbor, Maine; 1983-2008

MONTH												ANNUAL
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
NW	NW	NW	SW	SW	SW	SW	SW	SW	SW	SW	NW	SW

Table 1: Prevailing Wind Directions; Bar Harbor, Maine; 1940-1980

Daily weather records for Mount Desert Island date back to the latter part of the 19th century. The NPS has collected weather data for the National Weather Service (NWS) at the Park since 1926 (see Section 3.1.4.1. for information on the Park's fire weather cycle and Section 4.2.1.i. for information on the Park's fire weather program).

The weather data cited in Figure 4 and Figure 5 above is from the Park's McFarland Hill Weather Station for the 25 year period from 1983 through 2008. It includes data from the original manual observation station (NWS #170701) and the current remote automated weather station (NWS #170791) that replaced the original station in 2003. The data was analyzed using FIREFAMILY PLUS software.

Coastal areas of Maine have cooler summers, warmer winters, a narrower range of temperature extremes and a longer frost-free season than areas 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 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. Though total (liquid) precipitation is higher, 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, in the month of August 1993 the Park received 0.70 inches of rainfall against the 1983-2008 average of 2.80 inches. 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.* 1983), 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.

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.

b. Topography

The topography of the Park varies greatly. It ranges from ocean beaches and rock-bound coast at sea level to steep mountains up to 1530 feet in elevation. Marshes, rolling hills, lakes and ponds are also numerous. Many of the mountains have steep cliffs and bare rock faces.

c. Soils

Soils within the Park are generally derived from and are locally underlain by glacial till. Bedrock typically occurs on peaks and crests of ridges on the steeper hillsides. Many of the steepest hillsides have highly erodible soils with evidence of past avalanches and scarring. Muck soils dominate the lowlands along the wetlands where more level terrain allows the appropriate conditions for developing these soils. The remaining soils are generally well drained to excessively well drained, supporting numerous intermittent streams that drain the upper slopes. Soil descriptions are based on the Natural Resource Conservation Service *Soil Survey of Hancock County Area, Maine* (USDA, 1998).

Park lands on the eastern side of Mount Desert Island, the western mountains of Mount Desert Island, the southern portion of Isle au Haut and all of the Schoodic Peninsula are covered by soils of the Schoodic-Rock Outcrop-Naskeag association. Schoodic soils are found on ridges and summits. These soils are very shallow, nearly level to very steep and excessively well drained. The surface is very gravelly, fine sandy loam that is easily blown away once exposed. Rock outcrop consists of exposed bedrock on the crest of ridges and mountains and on steep side slopes of the mountains. Naskeag soils are found in depressions between shallow till ridges. These soils are moderately deep to bedrock, range between nearly level and gently sloping and are poorly drained. The surface layer of Naskeag soil is fine sandy loam and gravelly loamy sand. The subsoil is gravelly loamy sand.

The western side of Mount Desert Island, except for the western mountains, is covered by soils of the Lyman-Scantic-Hermon complex. These soils are formed in glacial till. Lyman soils are shallow, gently sloping to very steep, and somewhat excessively drained. Scantic soils are very deep, nearly level to gently sloping, poorly drained soils formed in marine or lake sediments. Scantic soils are not particularly erosive, but because of their high clay and

silt content, they could impair water quality if they were to erode into adjacent streams or lakes. Herman soils that are very deep, on varying slopes, and are somewhat excessively drained, were formed in glacial till. Both Lyman and Herman soils are sandy loams that are subject to erosion.

d. Hydrology

Located on the mid-coast of Maine, the Park has numerous water resources within and adjacent to its boundaries. The Park has approximately 41 miles of saltwater shoreline. It also has 23 lakes and ponds, totaling approximately 2,600 acres, and 41 named streams fully or partially within its boundaries. (*Acadia National Park Water Resources Management Plan*, 2000)

Many wetland communities occupy the Park's coastal and interior lowlands. Wetland types present in the Park include marine aquatic beds, intertidal shellfish flats, salt marshes, freshwater marshes, forested wetlands and peatlands. These wetlands, totaling approximately 4,100 acres, provide habitat for native wildlife and for many of the Park's plant species of concern. Four of the major wetlands located within the Park are Northeast Creek, Great Meadows and Bliss Field, all located within the Town of Bar Harbor and Marshall Brook/Bass Harbor Marsh, located within the Towns of Tremont and Southwest Harbor. (NPS, 2000)

e. Air Resources

The Park is known for the many spectacular vistas of its mountains and the adjacent Maine coast. One of the main reasons for the establishment of the Park was to preserve the scenic beauty of the area and these vistas. The Park is designated a mandatory Class I air quality area under the Clean Air Act, which places stringent constraints on pollution emitting facilities affecting Park resources. The act also places constraints on Park management activities that could affect air quality by requiring the NPS to comply with all Federal, State and local air pollution control laws and regulations.

The Park is downwind from large urban and industrial areas to the south and west. These areas include the northeastern and midwestern United States and eastern Canada. Periodically, high concentrations of air pollutants blow into the Park from these areas. Summer ozone levels occasionally exceed Federal health standards and the effects of atmospheric deposition are a major concern in the Park. Acid precipitation (rain, snow, and fog) can also be a major influence on lake and stream chemistry, cause nutrient enrichment in estuaries and affect sensitive vegetation and animal species.

f. Vegetation

A variety of plant communities are found within the Park. These include small remnants of old growth spruce forests that harbor mosses and ferns, deciduous woodlands dominated by paper birches, and wetlands of various sizes and types. Shrub communities are found on

many of the rocky outcrops within the Park. Over 980 species of native plants and 200 species of non-native plants are found in the Park. About 20 species of non-native plants are highly invasive and if unchecked, could threaten resource values. Additional vegetation information can be found in the Park GIS system.

Spruce-fir forests are common in the 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, and generally does not persist for more than 40 to 50 years in the canopy.

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*), bigtooth aspen (*Populus grandidentata*), paper birch (*Betula papyrifera*) and gray birch (*Betula populifolia*), are abundant in areas burned by the 1947 Bar Harbor Fire. Disturbance oriented grasses and sedges, such as lesser brown sedge (*Carex adusta*) are also found in the Park.

Some plant habitats found within the Park are rare and especially fragile. These include the raised coastal bog near Seawall called Big Heath, groups of plants found on offshore islands, estuaries, interior wetlands, and summits, and pockets of old growth trees and other rare forest types.

Jack pine, a fire dependent species, is found primarily on the eastern, southern and western flanks of Schoodic Head and on the southeastern slope of Cadillac Mountain. These areas are important because jack pine stands are unusual in Maine and they reflect Maine's position in a biogeographic transition zone between the northern hardwood forest to the south and the boreal forest to the north. They are also important because many of the individual trees within the stands are extremely old for jack pine. Some of these trees have been core dated to over 150 years old (Patterson, 1993). Jack pine usually reach maturity at 60 years and then begins to deteriorate (Harlow, et al, 1958). As a fire dependent species, jack pine usually requires the heat from a fire to open a majority of its seed cones and to provide an ash seedbed for successful seed germination.

Spruce bark beetle (*Dendroctonus rufipennis*), 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. These vectors, along with wind blowdown and old-age tree mortality, contribute to increased fuel loadings throughout the Park.

g. Wildlife

The Park supports a great diversity of animals commonly found in the coastal region of downeast Maine. Over 270 species of birds are resident in the Park. Some Park islands support important populations of breeding seabirds and coastal habitats such as tidal bars, seawalls and associated wetlands, and mud flats have historically served as important resting and feeding sites for migrating shorebirds. A number of mammals are found throughout the Park, including whitetail deer (*Odocoileus virginianus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), beaver (*Castor canadensis*) and many species of small mammals. Black bear (*Ursus americanus*) and moose (*Alces alces*), though uncommon, are occasionally found in the Park.

Federally listed endangered and threatened species are determined by the U.S. Fish and Wildlife Service under authority of the Endangered Species Act of 1973 and are listed in the *Federal Register*. Endangered and threatened animal species listed by the State of Maine are determined by the Maine Department of Inland Fisheries and Wildlife under the authority of the Maine Endangered Species Act of 1975. Bald eagles (*Haliaeetus leucocephalus*), a State of Maine listed state threatened species, inhabit the Park and nest on some of the Park's offshore islands. Bald eagles were de-listed from the Federal Endangered Species Act in 2007. After an extensive re-introduction effort, the Park now supports a productive peregrine falcon (*Falco peregrinus*) population. Peregrine falcons were de-listed from the Federal Endangered Species Act in 1999. However, breeding populations are still listed by the State of Maine as a state endangered species.

h. Cultural Resources

Along with its natural resources, the Park protects many important cultural resources. The Park Loop Road, the carriage road system and the hiking trail system are all significant cultural features that are also historically significant to the Park's creation and development. A number of properties, including the Park Loop Road, the carriage road system, the Rockefeller Building, the Isleford Historical Museum and the Blue Duck Ship Store have been deemed historically significant and are eligible for or are listed on the National Register of Historic Places. In total, the Park includes 27 structures listed on the National Register and preserves ten historic structures, 48 historic buildings, 45 historic bridges and 37 historic markers. In addition, the Park has five historic landscapes and 36 historic cultural landscapes, including important ones representing the work of nationally known landscape architects Frederick Law Olmstead, Jr. and Beatrix Farrand (NPS, 1996).

The Park protects over 110 archeological sites, including several Native American archeological sites. The Park also preserves more than 1.3 million artifacts, including tools

and furnishings from early European settlement, archives and photographs relating to the Park's history, and natural history specimens from the early 1900s.

i. Park Facilities

The Park has numerous facilities and structures, including over 100 miles of paved roads, 53 miles of historic gravel carriage roads, 19 miles of other gravel roads, 115 miles of hiking trails, a visitor center, two information centers, a nature center, a museum, the Schoodic Education and Research Center (SERC), two campgrounds, and one backcountry campground. The Park also has over 230 other buildings that support Park operations. These include Park headquarters, Park offices, ranger stations, fire caches, an entrance station, maintenance facilities, comfort stations, housing units and the individual buildings that make up SERC.

Facilities at the Park include several gated gravel roads. These roads are generally not open to motorized public access but may be used by the public for hiking, biking, cross-country skiing and in some cases snowmobiling. Though most of these roads are used by the Park for various management functions such as maintenance access, law enforcement patrols and search and rescue operations, they are commonly referred to as "fire roads." Due to their location and condition, only eight of these roads are currently of use to the fire management program. These roads may provide access to water pump sites, access to interior areas of the Park and may serve as a fire control line during a wildfire. The "fire roads" that serve one or more of these functions for the fire management program in the Mount Desert Island FMU are Bar Island Fire Road, Compass Harbor Fire Road, Hemlock Fire Road (from Sieur de Monts Springs parking lot to the intersection with the Strath-Eden Trail), Man-Of-War Brook Fire Road, Valley Cove Fire Road, Marshall Brook Fire Road, and Hio Fire Road. In Isle au Haut FMU, the Western Head Fire Road may also serve fire management purposes.

j. Visitor Use

The Park is one of the most visited units in the National Park System. It is the only unit designated as a national park located in the northeastern United States and is heavily used by both visitors and local residents. The Park receives approximately two million visitors a year, with 70% of the visitation occurring between June and September. Visitation during the Park's shoulder seasons continues to grow in both number and duration.

The Park offers numerous recreational and educational opportunities to visitors. Resource-based recreational activities include camping, picnicking, hiking, horseback and carriage riding, bicycling, kayaking, canoeing, cross-country skiing, snowshoeing, fishing, rock climbing, birding, wildlife viewing and sightseeing. The Park's motor road system provides opportunities for vehicle based sightseeing throughout the Mount Desert Island and Schoodic Peninsula units of the Park. Rock climbing occurs at Otter Cliffs, the south wall of Champlain Mountain and on other rock faces throughout the Park.

Visitors can also participate in a variety of interpretive activities, including guided walks, amphitheater presentations, environmental education programs and outreach activities. SERC, located at the former U.S. Navy base in the Schoodic Peninsula unit, provides formal day and overnight environmental education programs to participants of all ages.

The Park maintains two guarded swimming beaches, one at Sand Beach (saltwater) and the other at Echo Lake (freshwater). Canoeing, kayaking, boating and fishing are popular on the Park's many lakes and ponds. Salt-water sea kayaking is also popular along the Park's shorelines. The Park has two major campgrounds; Blackwoods and Seawall on Mount Desert Island, a small campground for equestrian users at Wildwood Stables on Mount Desert Island and a back-country campground at Duck Harbor on Isle au Haut. The Park also has five picnic areas on Mount Desert Island and one picnic area on the Schoodic Peninsula.

k. Wildland/Urban Interface

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 locating of structures among wildland fuels is known as the wildland/urban interface or the interface.

The wildland/urban interface has increased substantially since the 17,000-acre Bar Harbor Fire in 1947. Many of the homes and other structures adjacent to or in the vicinity of the Park boundary are each worth hundreds of thousands of dollars or more. 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 95% of the Park's wildfires are human caused.

This juxtaposition of Park boundary, private property, multiple jurisdictions, wildland fuels and structures (values at risk) presents a challenge to fire managers in developing and conducting a fire management program that both protects those values at risk from a wildfire and still lets fire play its natural role in the wildlands.

l. Fire Weather Cycle

The cool, moist maritime climate tends to create meteorological conditions that reduce the potential for fire ignitions. The winds can be highly variable and differ 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 (see Figure 5 in Section 3.1.4.a.). 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 periods 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 increase dramatically. Periods of drought can occur during anytime of the year and are usually ended by significant precipitation events.

These cycle weather patterns produce fire weather conditions typical of the coastal Maine region. The average 10-hour fuel moistures (see Figure 6) tend to be lowest during early April, prior to leaf out, and late August and early September, when the average precipitation is usually lower than the rest of the months of the year. This lower precipitation in the summer months also produces the lowest average 1000-hour fuel moistures (see Figure 7).

The Keetch-Byram Drought Index is a good indicator of the potential for ground fires in the spruce and pine duff found in the Park. KBDI is a soil/duff drought index that ranges from 0 (no drought) to 800 (extreme drought) and is based on the soil capacity in 8 inches of water. As with the 1000-hour fuel moistures, the average KBDI tends to be highest in late August and early September (see Figure 8).

The charts below were created for developing the Park NFDRS Pocket Card (see Section 4.2.1.1.) using FIREFAMILY PLUS software. 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 3.1.2.4.a, of this plan.

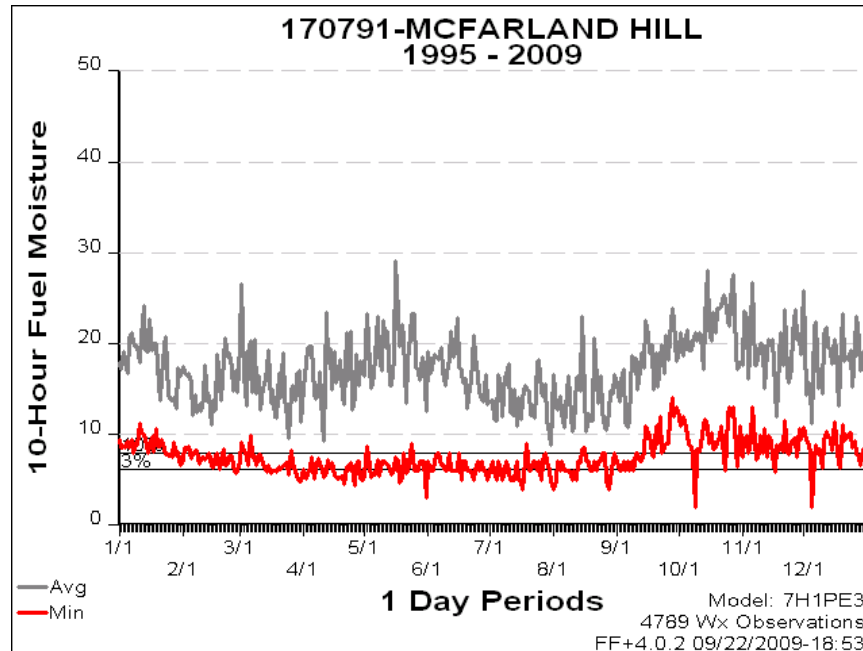


Figure 6: 10-Hour Fuel Moistures; 1995-2009

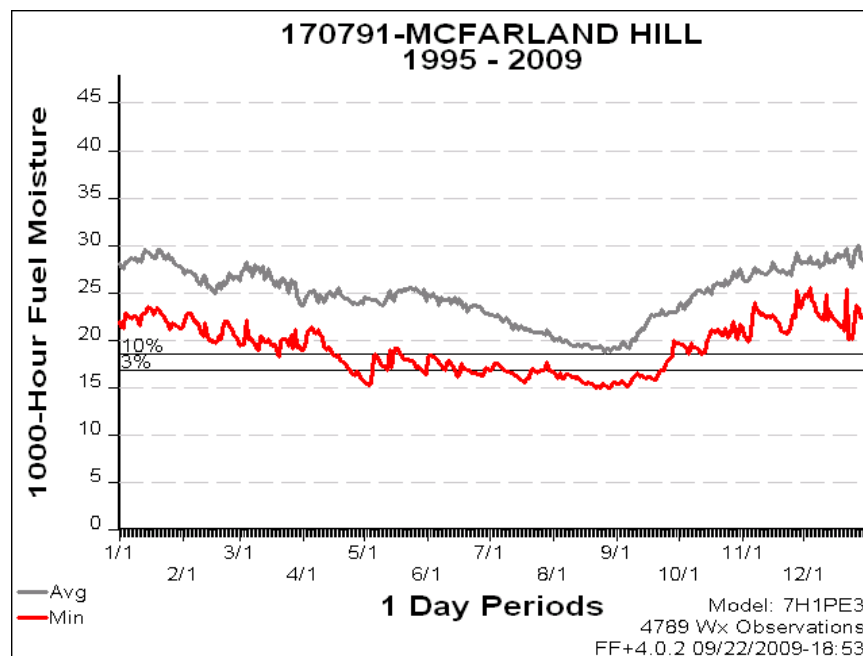


Figure 7: 1000-Hour Fuel Moistures; 1995-2009

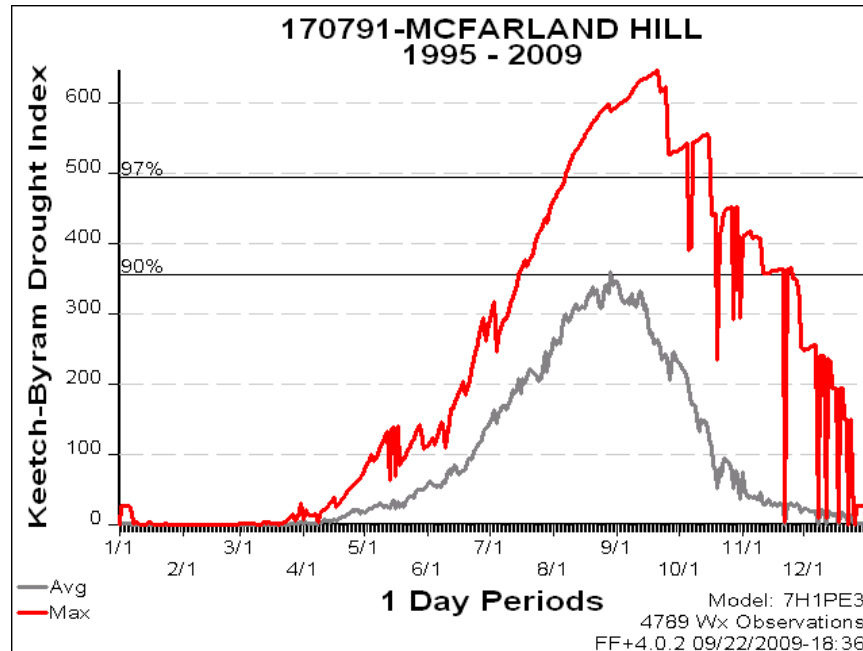


Figure 8: Keetch-Byram Drought Index; 1995-2008

m. Fire Season

The Park's fire season runs from April 1 to October 31. It is during this period that the fire weather conditions, fuel conditions and ignition potential are normally favorable enough to permit the start and spread of wildfires. The fire season is based upon a combination of analyses by Patterson *et al.* (1983) and the Maine Forest Service.

In his analysis of weather and fire occurrence, Patterson *et al.* (1983), 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. Since that time, this pattern has changed. 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 dating back to 1900 and for a larger geographic area than the Park.

The Park's fire season was determined by taking into account these two studies, the current visitor use patterns and the fact that approximately 95% of the Park's fires are human caused.

n. Fire Occurrence

A review and analysis of Park fire records for the 35 year period from 1974 through 2008 was conducted utilizing the FIREFAMILY PLUS software system. This period of time was selected because it provides insight into the Park's most recent fire occurrence patterns, reflecting current and recent Park and adjacent land conditions and uses. Additionally, the fire reports for this period of time are more likely to be accurate and in keeping with the current NPS wildland fire reporting procedures.

Over the period from 1974 through 2008, the Park had 117 reported fires and averaged 3.3 fires per year (see Figure 9). During the past ten year period (1999 to 2008) this rate has dropped to 2.5 fires per year. Over 79% of these fires are 0.25 acres or less in size (Size Class A), an additional 20% were between 0.26 acres and 9.9 acres in size (Size Class B) and only one fire was between 10.0 acres and 99.9 acres in size (Size Class C). This one Size Class C fire occurred on the Long Island easement property in 1991 and was 44 acres in size.

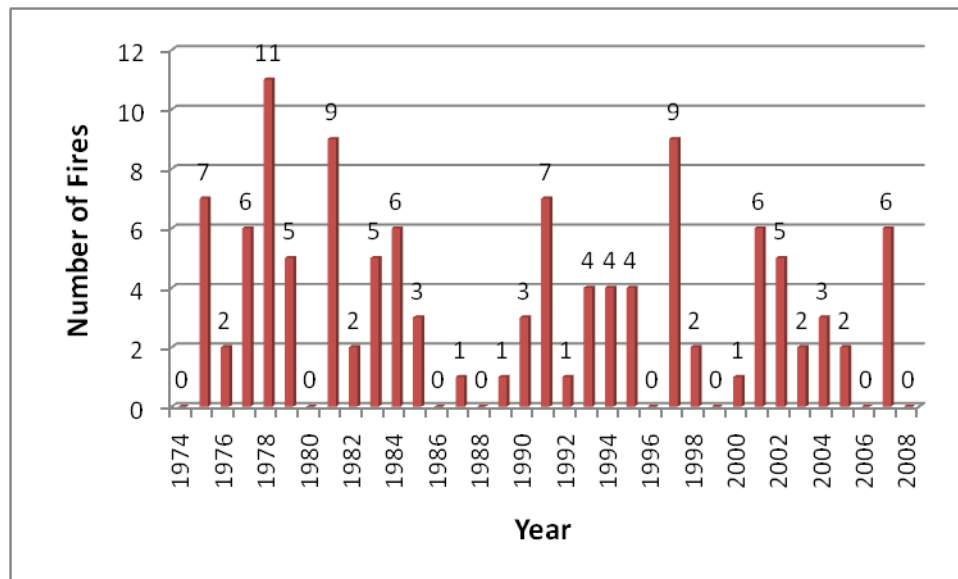


Figure 9: Number of Fires by Year; 1974-2008

Campfires were responsible for 39% of the fires reported (see Figure 10), followed by smoking at 21% and arson at 14%. Lightning, the Park's only natural ignition source, accounted for approximately 4% of the fires reported, though there is some evidence that lightning has caused more fires that go unreported because those fires go out on their own or because of rainfall associated with the lightning event (natural outs).

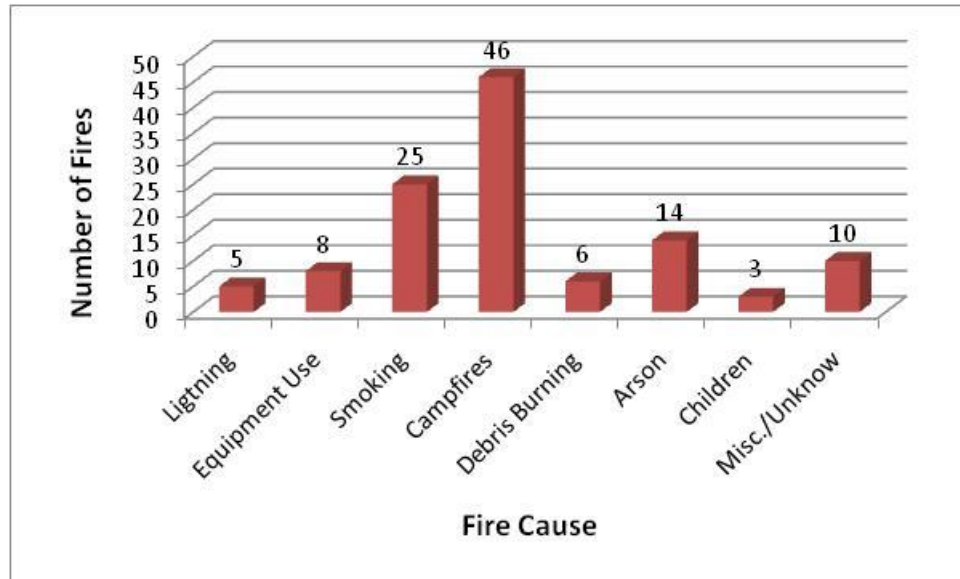


Figure 10: Number of Fires by Cause; 1974-2008

Fifty percent of all Park fires occurred during the peak visitation months of July (26%) and August (24%) (see Figure 11). The shoulder visitation months of May, June and September account for another 31% of the fires. Since lightning accounts for only 4% of all fires, the presence of human ignition sources is critical to the start of most fires in the Park. As Park visitation increases and decreases, the number of Park fires increase and decrease.

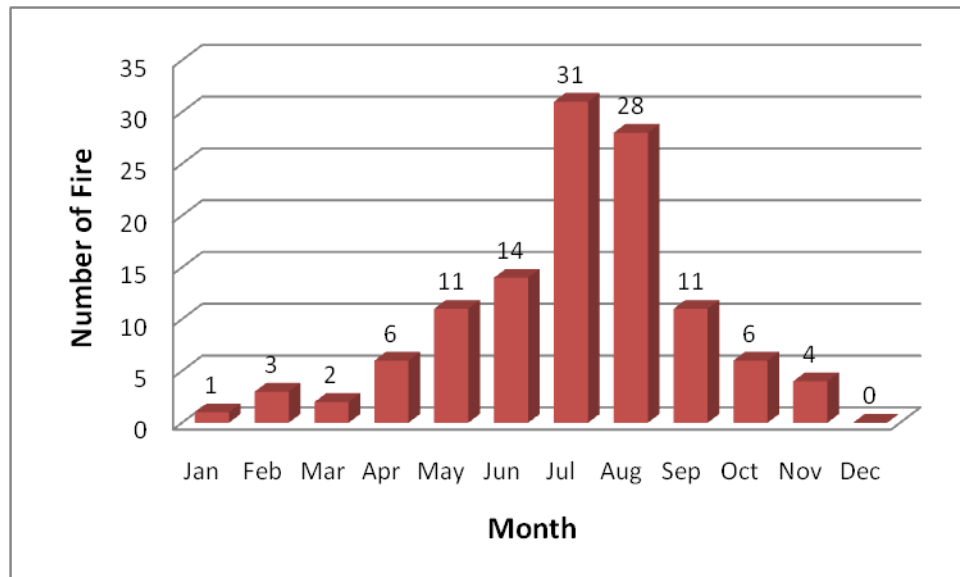


Figure 11: Number of Fires by Month; 1974-2008

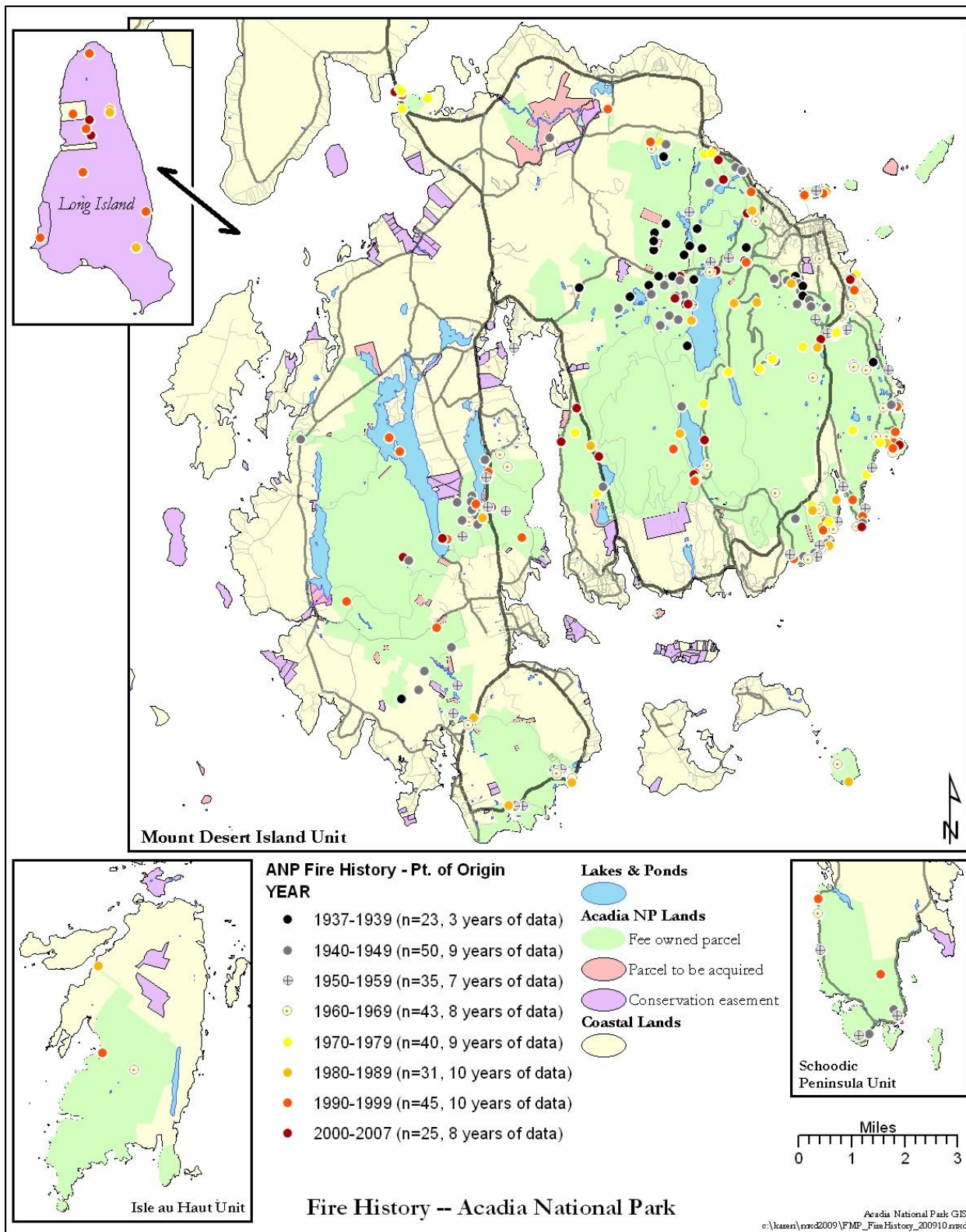


Figure 12: Acadia National Park Fire Locations Map; 1937-2007

With the largest amount of acreage and the greatest number of Park visitors, the Mount Desert Island FMU would be expected to have the greatest number of fires. Figure 12 shows that this is true. According to Park fire records, the Isle au Haut FMU has only had 3 small fires since it was incorporated into the Park in 1943 and the Schoodic Peninsula FMU has only had 8 small fires since it was incorporated into the Park in 1934.

o. Fire Regime and Fire Regime Condition Class.

Fire regime refers to the character of fire occurring over long time periods of time and the fire effects that characterize ecosystems. Descriptions of fire regimes are general and broad because of the enormous variability of fire in time and space. The fire regime concept helps bring about a relationship between fire behavior and fire ecology. It provides a simplified means of communicating information about the role of fire among both technical and non-technical audiences (Brown and Smith, 2000). Five natural fire regimes have been developed and are based upon the average number of years between fires (fire frequency) combined with the severity (amount of vegetation replacement). These five regimes are:

- I. 0-35 year frequency, low to mixed severity (<75% overstory replaced)
- II. 0-35 year frequency, high severity (>75% overstory replacement)
- III. 35-100 year frequency, low to mixed severity (<75% overstory replacement)
- IV. 35-100 year frequency, high severity (>75% overstory replacement)
- V. 200+ year frequency, high severity (>75% overstory replacement)

Overall, the landscape encompassed by the Park is classified as Fire Regime V, with a few small areas classified as Fire Regime IV (*LANDFIRE Rapid Assessment*, 2009).

Fire Regime Condition Class (FRCC) refers to how similar a landscape's current fire regime is compared to the natural or historic role that fire has had on the landscape. FRCC is broken down into three categories. Each landscape is determined to fall within one of these categories.

- FRCC 1 Landscapes that are within the natural (historical) range of variability ("reference fire regime") of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.
- FRCC 2 Landscapes that have moderately departed from the reference fire regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.
- FRCC 3 Landscapes that exhibit significant departure from the reference fire regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.

Currently Long Island, some portions of Mount Desert Island and most of the Schoodic Peninsula are classified as FRCC 3 and the rest of the Park landscape is classified as FRCC 2 (*LANDFIRE Rapid Assessment*, 2009).

p. Landscape Fire and Resource Management Planning Tools Project (LANDFIRE)

LANDFIRE is a multi-partner program tasked with producing consistent and comprehensive maps and data describing vegetation, wildland fuels, fire behavior, fire regimes and fire regime condition classes on a landscape basis across the United States. Once completed, LANDFIRE will produce data products that include layers of vegetation composition and structure, surface and canopy fuel characteristics and historical fire regimes. Current LANDFIRE information available for the Park landscape is preliminary and is located in the LANDFIRE Rapid Assessment section. More detailed data for the Park landscape is currently being developed by LANDFIRE and should be available in 2010. When that data becomes available, this section and the section above should be revised accordingly.

q. Fuel Models

Though the size of the Park allows for a wide diversity of fuels, in both type and age, certain fuels predominate and some generalities can be made in discussing them. All three FMUs have similar fuels present, though the distribution and percentage of those fuels do vary. Fuels found adjacent to Park lands tend to mirror those found within the Park. The one exception to this is grasslands, which make up a larger component of the fuels found outside of the Park.

The following fuel model information (see Figure 13) was developed from aerial photography taken of the Park in May 1997. Interpretation of this photography was completed by the United States Geological Survey (USGS) Midwest Environmental Sciences Center for the USGS-NPS Vegetation Mapping Program in October 2003. In August 2006 the North Carolina State University Center for Earth Observations completed a crosswalk conversion of the vegetation information into corresponding fuel models. This vegetation and fuels information can be found in the Park GIS system.

The acreage totals presented in this discussion represent the total fuel acreages and water areas within the legislative boundaries of the Park and the Long Island conservation easement. The total acreages for each FMU and the Park will differ from the current fee simple ownership acreages discussed in Sections 1.2, 3.2, 3.3 and 3.4.

The predominant fuels (see Table 2 and Figure 14) found in the Park are:

- **Short Grass (1 foot):** Abandoned fields and meadows make up about 1,022 acres (2.5%) of the Park's fuels. Although fuel loadings are low, grasslands may be easily ignited when cured. These cured grasses, especially the taller grasses, can support high rates of spread, substantial flame lengths and high fireline intensities.

These areas are generally classified as National Fire Danger Rating System (NFDRS) Model L and National Forest Fire Laboratory (NFFL) Model 1.

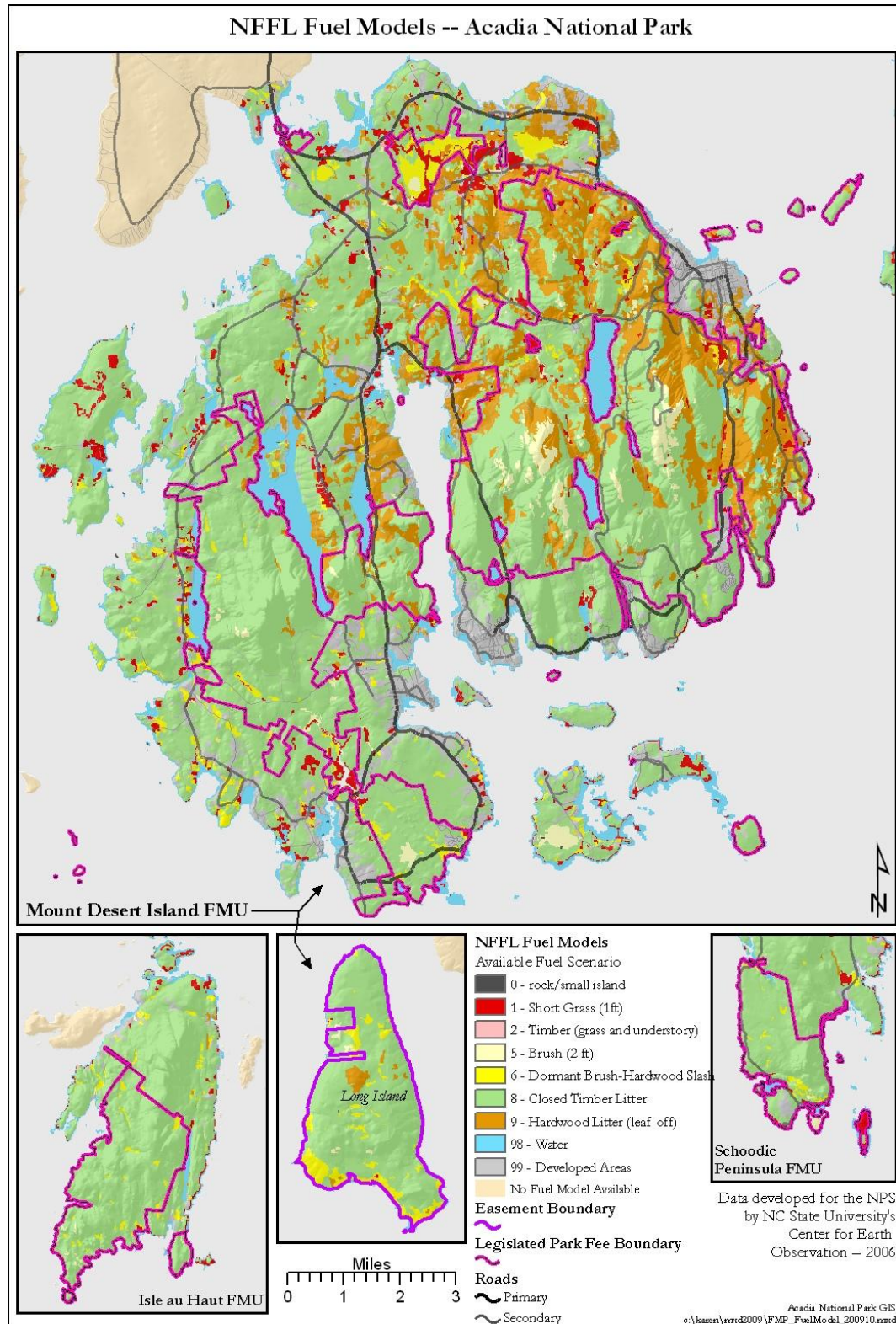


Figure 13: Acadia National Park Fuel Models Map

FUEL TYPES	NFFL FUEL MODEL	ACRES	PERCENT
Short Grass (1 foot)	1	1,022	2.5
Brush (2 feet)	5	1,180	2.8
Dormant Brush	6	1,487	3.6
Conifers	8	29,374	70.9
Hardwoods	9	7,438	18.0
Other	-	6	0.0
Water/Non-Burnable	-	926	2.2
TOTALS		41,433	100.0

Table 2: Acadia National Park Fuel Model Acreages and Percentages

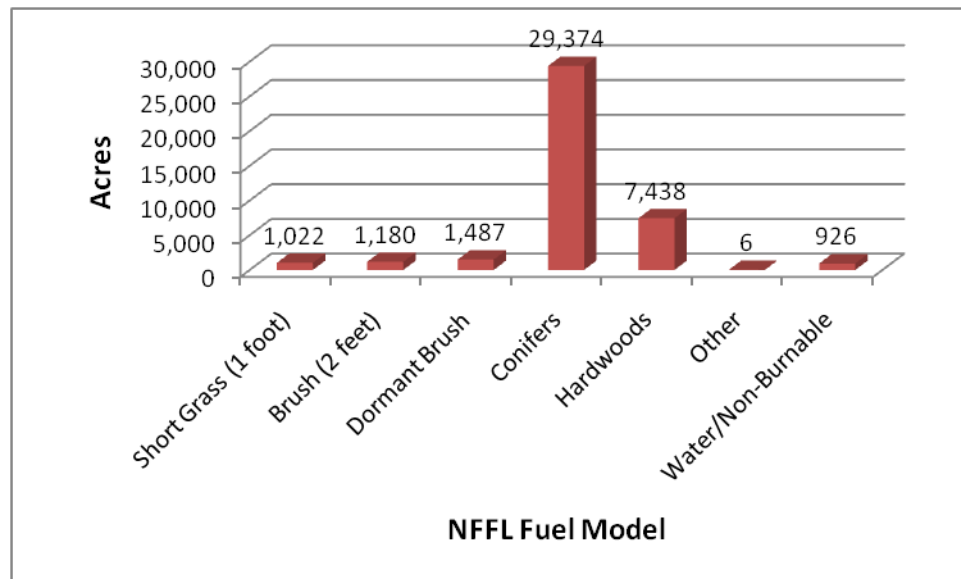


Figure 14: Acadia National Park Fuel Model Acreages

- **Brush (2 feet):** This fuel model comprises approximately 1,180 acres (2.8%) of the fuels in the Park. Much of this fuel model is made up of huckleberry (*Gaylussacia baccata*) and low bush blueberry (*Vaccinium vacillans* and *Vaccinium corymbosum*), along with numerous other low shrub species in much smaller numbers. This fuel model can be extremely flammable though, due to the volatility of the huckleberry and other shrub species present.

These areas are generally classified as NFDRS Model F and NFFL Model 5.

- **Dormant Brush:** This fuel model comprises approximately 1,487 acres (3.6%) of the fuels in the Park and is composed of a divergent number of species. The fuel model includes areas of alder (*Alnus incanas*) usually found in wetter areas and Jack pine and pitch pine found on drier sites in the Park. The fuel model also includes younger and/or decaying stands of quaking aspen, bigtooth aspen, white birch and yellow birch.

There are several stands of jack pine in the Park. Many of these stands are 100+ years old. Some stands, such as the Cadillac Mountain stand, have been found to be expanding in area (Conkey et al. 1991). 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.

These areas are generally classified as NFDRS Model Q and NFFL Model 6.

- **Closed Timber Litter:** Even-aged red spruce stands, ranging from 140 to 200 years old, along with much smaller numbers of other conifers make up about 29,374 acres (70.9%) of the fuels in the Park. This age distribution of the spruce stands is probably the result of 19th century logging, which occurred extensively throughout the area, the fires that burned over portions of the area and then the removal of those lands from timber production as residential land use increased. Eastern white pine, balsam fir, white spruce and northern white cedar are also present, either in small, individual stands or mixed in with the red spruce. Larch and black spruce can be found in wetland area.

These stands are classified NFDRS Model H & NFFL Model 8.

NFDRS Model H is the primary fuel model used to predict the daily fire danger rating for the Park since it represents the largest component of the Park's fuels and under extreme weather conditions, has the greatest potential for large-scale catastrophic fires.

There are several small areas of higher fuel loadings from windthrow (blowdowns) caused by wind, insects and/or disease. These areas comprise a very small percentage of the fuels in the Park. Due to the small size of and widely scattered disposition of these stands, they are included as part of Fuel Model 8 in Figure 13. For fire behavior modeling, these areas should generally classified as NFDRS Models G, K or J and NFFL Models 10, 11 or 12 depending on their fuel composition and fuel loadings.

- **Hardwoods:** Stands of northern hardwood species, including quaking aspen, bigtooth aspen, white birch, red maple, sugar maple, yellow birch, American beech and northern red oak, occupy about 7,438 acres (18.0%) of the Park. Dead and downed woody fuel loads in these stands tend to be low.

Most northern hardwood species found in the Park do not require disturbance for establishment and generally occur on deeper, moister soils and at lower elevations. These stands do not tend to 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 MDI FMU. These stands were established as a direct result of the 1947 Bar Harbor Fire. Conifer regeneration, especially red spruce dominates the understory in many of these stands. These aspen and birch stands are approximately 60 years old and in some cases have already started to decline and the spruce and other coniferous species present have started to dominate. This decline can be expected to accelerate 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 in most areas prior to that fire.

These areas are generally classified as NFDRS Model R and NFFL Model 8 after leaf out (summer) and NFDRS Model E and NFFL Model 9 after leaf fall (winter).

r. Expected and Potential Fire Behavior

Due to the similar climate, weather conditions and fuel types, expected and potential fire behavior can be expected to be similar within the three FMUs.

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

- **Short Grass (1 foot):** (NFDRS Model L and NFFL Model 1); Fire in short grasslands consume the fine herbaceous fuels that have cured or are 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 one to four feet 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.
- **Brush (2 feet) and Dormant Brush:** (NFDRS Model O or Q and NFFL Model 5 or 6); Jack pine, pitch pine, huckleberry and low bush blueberry stands are scattered throughout the Park. Huckleberry and blueberry are usually found on open mountain tops and slopes. During a normal fire year in these stands, 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 two to four feet high and often forms a continuous horizontal fuel

- bed under the pines. The blueberry shrub layer is usually one to two feet high and is generally found in more open areas. Flame lengths of six to twelve feet 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.
- **Closed Timber Litter:** (NFDRS Model H and NFFL Model 8); The predominant species in these stands is red spruce. 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.

The windthrown conifer stands (NFDRS Models G, K or J and NFFL Models 10, 11 or 12) stands are caused by increases in dead and downed fuels through mortality and windthrow (blowdown). Fireline intensity would be expected to be greater than that found in NFFL 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.

- **Hardwoods:** (NFDRS Model R and NFFL Model 8 after leaf out [summer] and NFDRS Model E and NFFL Model 9 after leaf fall[winter]); Many of these hardwood 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 two feet 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.

s. Fire Effects

Due to the similar climate, weather conditions, fuel types and expected and potential fire behavior, fire effects can be expected to be similar within the three FMUs.

- **Vegetation:** Red spruce, white spruce, black spruce and other conifer species 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 out-compete 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 3) during the first twenty years following a fire (Phase #1) is rather high due to the combination of remaining dead spruce 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 windthrow. 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.

Pitch pine is a fire-adapted 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 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 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.

PHASE #	TIME SINCE DISTURBANCE	VEGETATION	RELATIVE FIRE HAZARD
1	0 - 20 years	Dead spruce, 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

Table 3: Spruce Succession and Associated Fire Hazard

- 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 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.

- **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.

- **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. Improper application of fire retardants and/or Class A foam may have short-term effects on water quality and aquatic productivity.

- **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, beaver, 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 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).

3.2 FIRE MANAGEMENT UNIT – MOUNT DESERT ISLAND

The Mount Desert Island FMU is the largest unit of the Park, with approximately 35,220 acres of land, including adjacent offshore islands and the 4,313 acres of conservation easement lands on Long Island (Section 1.2.). This unit occupies approximately 43% of the approximate 70,000 acre land mass of Mount Desert Island. Mount Desert Island is the sixth largest island in the continental United States and the second largest island on the eastern seaboard of the United States. The first sections of the unit were added to the Park in 1916.

The Mount Desert Island FMU is also the most populated FMU within the Park, with approximately 10,500 year-round residents in 5,000 households and an additional 4,400 seasonal residents in 2,100 households. The Mount Desert Island FMU received 91.8% (1,906,215 visits) of the total Park visitation (2,075,855 visits) for 2008.

3.2.1. Fuels

The fuel types found in the Mount Desert Island FMU are summarized in Table 4 and Figure 15 below and illustrated in Figure 13 above. The characteristics of these fuels and their potential fire behavior are discussed in Sections 3.1.4.q and r above.

FUEL TYPES	NFFL FUEL MODEL	ACRES	PERCENT
Short Grass (1 foot)	1	825	2.3
Brush (2 feet)	5	1,120	3.1
Dormant Brush	6	1,309	3.6
Conifers	8	24,768	68.4
Hardwoods	9	7,433	20.6
Other	-	6	0.0
Water/Non-Burnable	-	729	2.0
TOTALS		36,190	100.0

**Table 4: Mount Desert Island FMU Fuel Model
Acreages and Percentages**

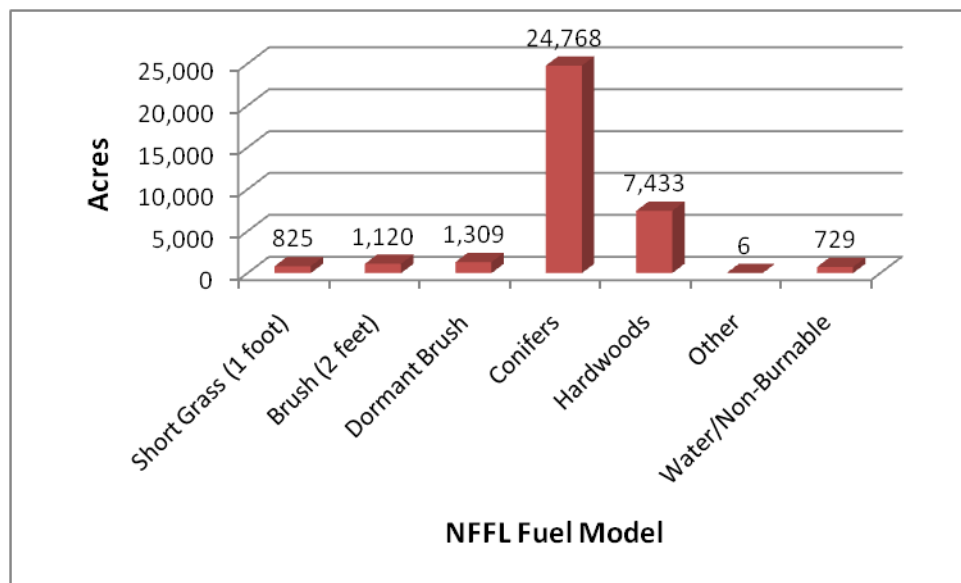


Figure 15: Mount Desert Island FMU Fuel Model Acreages

3.2.2. 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 Island FMU. Modern fire records, historical accounts and endrochronological studies were used to determine when and where fires occurred during the past two centuries (Patterson *et al*, 1983). 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 (before present) (Patterson and Backman, 1988; Patterson and Sassaman, 1988; Patterson, 1991). Based on this research, the fire history of the Mount Desert Island 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).

a. 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 and northern hardwoods predominated in the areas around The Bowl and Lake Wood. Around 2,000 years BP, hemlock and sugar maple virtually disappeared from the forest. Red spruce became dominant as it and northern white cedar replaced the hemlock and sugar maple. An increase in gray birch and paper birch 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).

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*, 1983). 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.

Natural fire ignitions (lightning) are, and most likely were in the past, of little importance in the unit, accounting for 4% of all fires in the Park between 1974 and 2008. 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.

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 managing current and future fuel conditions.

b. Post-Settlement Period

In 1604, Samuel Champlain explored the Maine coast and gave Mount Desert Island its 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. Farming and lumbering activities significantly altered the vegetative composition of the unit by reducing forested areas and increasing agricultural areas.

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.

Though historical documentation is incomplete, contemporary accounts of the time indicate that large fires (500+ acres) burned during the 1800's (see Table 5). 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.

The 1947 Bar Harbor Fire is the only Class G (5,000 acres or more) size fire that has occurred in the Park during NPS ownership. In September of 1947, the Park received 60% of its 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".

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 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.
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 were burned.

**Table 5: Summary of Major Fires on Mount Desert Island
(Patterson *et al*, 1983)**

The fire began on private lands adjacent to the unit on October 17, 1947 (see Figure 16). The cause of the fire was never definitively determined. In the first three days, the fire burned approximately 169 acres. On October 21st, strong winds moved the fire beyond control lines and burned an additional 2,000 acres and another 2,300 acres on October 22nd. The passage of a dry cold front on October 23rd was accompanied by winds in excess of 60 mph.

In less than 5 hours, the fire travelled 6 miles, burned over 11,500 acres of mostly mature spruce forest, destroyed 67 summer estates, 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 of land; over 10,000 acres of that land was in Federal ownership. The fire also caused 23 million dollars (in 1947 dollars) in property damage. The fire altered the FMU's landscape by removing the dominant spruce forest and provided the disturbance necessary to establish the current 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.

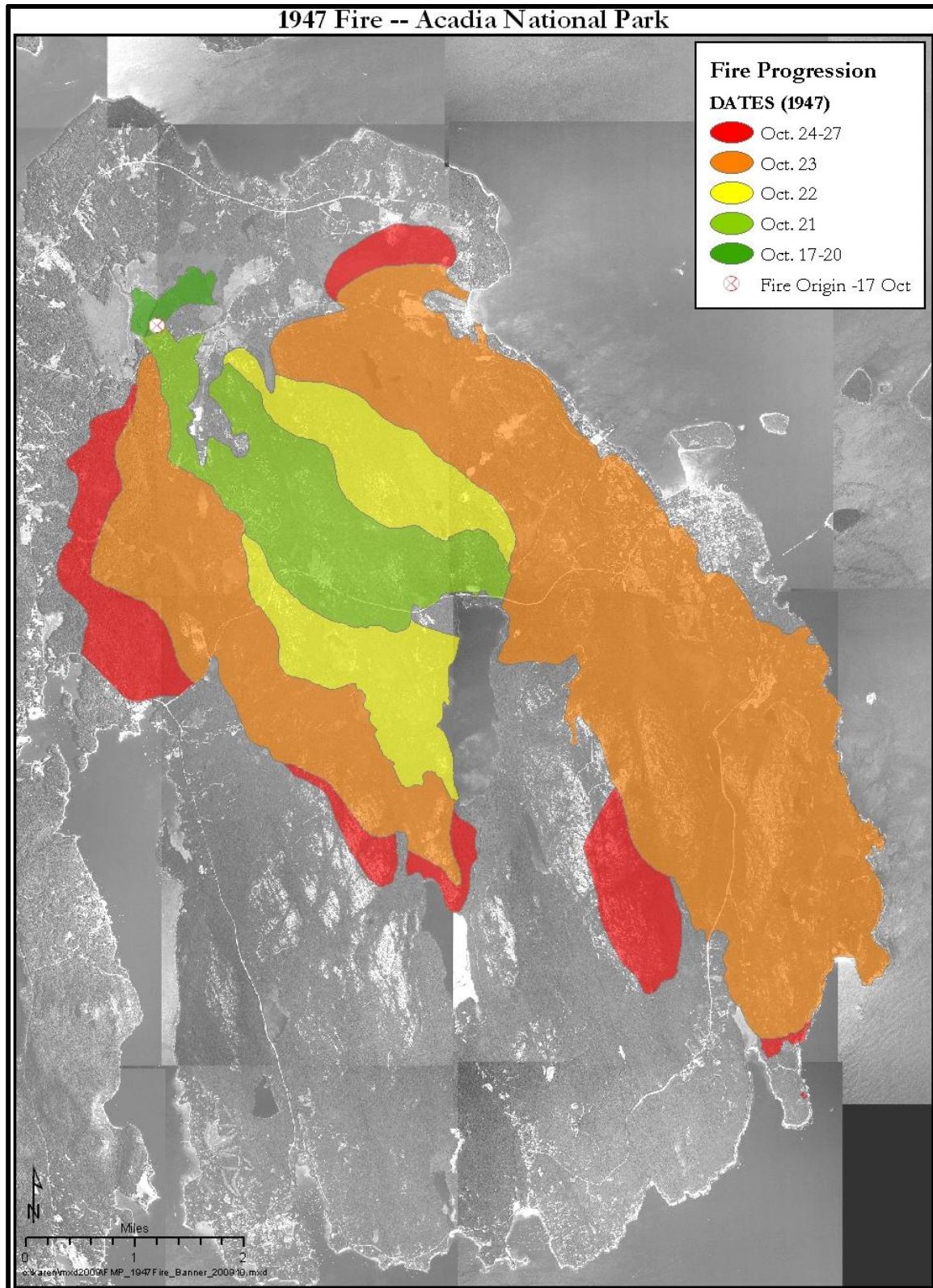


Figure 16: 1947 Bar Harbor Fire Map

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 and regional fire suppression capabilities and 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 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 increased awareness of the threat of wildfire among the island's residents that is still evident today. The 1947 Bar Harbor Fire, along with the other fires that burned in Maine that fall, lead directly to the creation of the Northeastern Forest Fire Protection Commission. This was the first multi-state fire compact in the nation, whose purpose is to provide mutual assistance to its members in the face of large, catastrophic wildfires.

3.2.3. Local Fire Department Capabilities

Along with the wildland fire response provided by the NPS, additional fire response is provided to the Mount Desert Island FMU by eight local fire departments.

- Bar Harbor Fire Department (paid and volunteer)
- Blue Hill Volunteer Fire Department (volunteer)
- Cranberry Isles Fire Department (volunteer)
- Mount Desert Township Fire Department (paid chief and volunteer)
- Southwest Harbor Fire Department (volunteer)
- Swans Island Fire Department (volunteer)
- Tremont Volunteer Fire Department (volunteer)
- Trenton Volunteer Fire Department (volunteer)

The departments located in Mount Desert Island FMU; Bar Harbor, Mount Desert, Southwest Harbor, Tremont and Trenton can provide mobile apparatus response throughout the FMU. Four of these departments provide fire response to offshore islands with NPS ownership; Bar Harbor to Bar Island and the Porcupine islands, Blue Hill to Long Island, Cranberry Isles to Little Cranberry (Islesford) and Swans Island to Heron Island. The Maine Forest Service may also provide wildland fire response on any of these islands.

The NPS has individual agreements for fire protection services with each of these departments and the Maine Forest Service (see Appendix C). All of these departments are members of the Hancock County Firefighter's Association and are signers of the Association's mutual aid agreement. The NPS is also a member of the Association and is a participant in the mutual aid pact through a separate agreement with the Association.

3.3. FIRE MANAGEMENT UNIT – ISLE AU HAUT

The Isle au Haut FMU is located on the island of Isle au Haut and comprises approximately 2,901 acres (48%) of the 6,000 acre 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 FMU has approximately 80 year-round residents in 32 households and an additional 250 seasonal residents in an unknown number of households. The Isle au Haut FMU received 0.3% (5,208 visits) of the total Park visitation (2,075,855 visits) for 2008. This low number of visits is due to the FMU's remoteness and restrictions on the number of visitors who may use the unit for day use and overnight camping.

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

3.3.1. Fuels

The fuel types found in the Isle au Haut FMU are summarized in Table 6 and Figure 17 below and illustrated in Figure 13 above. The characteristics of these fuels and their potential fire behavior are discussed in Sections 3.1.4.q and r above.

FUEL TYPES	NFFL FUEL MODEL	ACRES	PERCENT
Short Grass (1 foot)	1	61	1.9
Brush (2 feet)	5	19	0.6
Dormant Brush	6	97	3.0
Conifers	8	3,000	93.0
Hardwoods	9	0	0.0
Other	-	0	0.0
Water/Non-Burnable	-	50	1.5
TOTALS		3,227	100.0

**Table 6: Isle au Haut FMU Fuel Model
Acreages and Percentages**

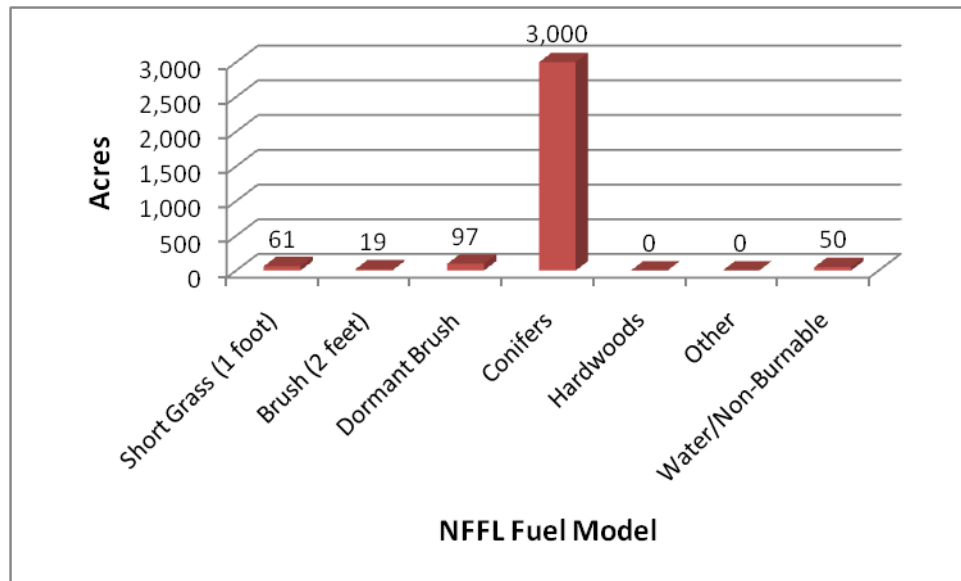


Figure 17: Isle au Haut FMU Fuel Model Acreages

3.3.2. Fire History

As with the Mount Desert FMU, several methods have been used to determine when fires occurred and what the causes of those fires were 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*, 1983). 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).

a. 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 4% 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.

b. 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.

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*, 1983).

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 may increase dramatically within the next few decades.

Park fire records between 1937 and 2008 list only 3 small fires in the FMU, all human caused. Seven years of fire records, between 1940 and 1990 are missing, 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 its acquisition in 1943.

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).

3.3.3. Local Fire Department Capabilities

Along with the wildland fire response provided by the NPS, additional fire response is provided to the Isle au Haut FMU by the Isle au Haut Fire Department. This is a volunteer fire department with a small amount of equipment and personnel. Department response is limited and mutual aid response comes through an agreement with the Stonington Fire Department. Any mobile apparatus response from off island must come by chartered barge since there is no commercial vehicle ferry service to the island. The Maine Forest Service may also provide wildland fire response to the island. The NPS has agreements for fire protection services with the department and the Maine Forest Service (see Appendix C).

3.4. FIRE MANAGEMENT UNIT – SCHOODIC PENINSULA

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 contains approximately 2,363 acres of land within its boundaries, including adjacent offshore islands.

The first sections of the unit were added to the Park in 1934. The Schoodic FMU received 7.9% (164,432 visits) of the total Park visitation (2,075,855 visits) for 2008. The FMU contains a former United States Navy installation now being managed by the NPS and the Acadia Partners for Science and Learning as the Schoodic Environmental Education and Research Center (SERC). SERC can accommodate up to 350 day use and 190 overnight guests.

3.4.1. Fuels

The fuel types found in the Schoodic Peninsula FMU are summarized in Table 7 and Figure 18 below and illustrated in Figure 13 above. The characteristics of these fuels and their potential fire behavior are discussed in Sections 3.1.4.q and r above.

FUEL TYPES	NFFL FUEL MODEL	ACRES	PERCENT
Short Grass (1 foot)	1	136	6.7
Brush (2 feet)	5	41	2.0
Dormant Brush	6	81	4.0
Conifers	8	1,606	79.7
Hardwoods	9	5	0.3
Other	-	0	0.0
Water/Non-Burnable	-	147	7.3
TOTALS		2,016	100.0

**Table 7: Schoodic Peninsula FMU Fuel Model
Acreages and Percentages**

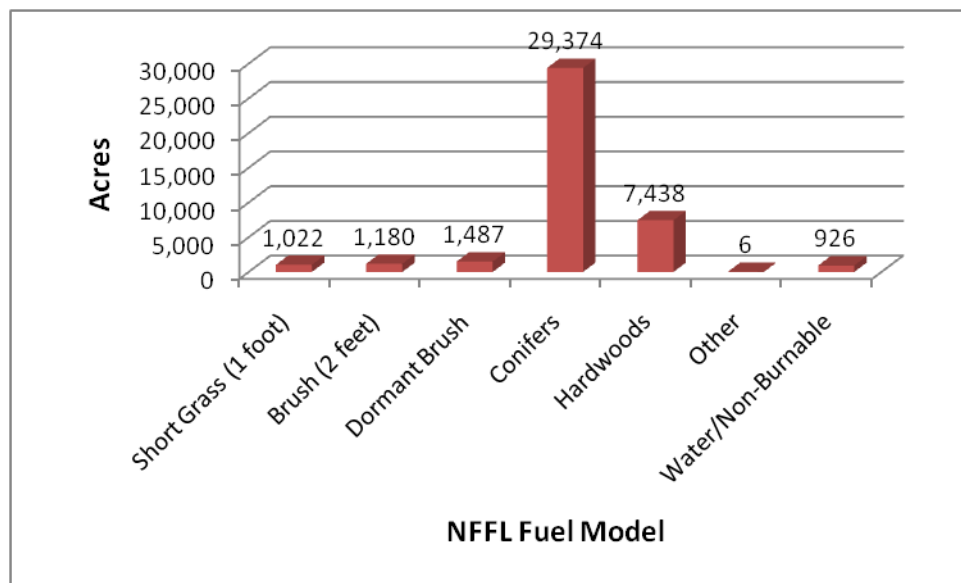


Figure 18: Schoodic Peninsula FMU Fuel Model Acreages

3.4.2. 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 the causes of those fires were 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*, 1983).

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 pre-settlement 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).

a. Pre-Settlement Period

Since no pollen and charcoal analysis has been conducted for this FMU, its pre-settlement fire history will be considered the same as that for the Mount Desert FMU, discussed in Section 3.2.2.a above.

b. 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. This logging, along with a shift away from farming in the late 1800's to early 1900's allowed for the regeneration of the trees that comprise the FMU'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*. 1983). Park fire records between 1937 and 2008 list only 8 small fires in the FMU, all

human caused. Seven years of fire records, between 1940 and 1990 are missing, 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 its acquisition in 1934.

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).

3.4.3. Local Fire Department Capabilities

Along with the wildland fire response provided by the NPS, additional fire response is provided to the Schoodic Peninsula FMU by two local fire departments.

- Gouldsboro Fire Department (volunteer)
- Winter Harbor Fire Department (volunteer)

Both of these departments can provide mobile apparatus response to the FMU. The Maine Forest Service may also provide wildland fire response to the FMU.

The NPS has individual agreements for fire protection services with both of these departments and the Maine Forest Service (see Appendix C). Both departments are members of the Hancock County Firefighter's Association and are signers of the Association's mutual aid agreement. The NPS is also a member of the Association and is a participant in the mutual aid pact through a separate agreement with the Association.

4. WILDLAND FIRE OPERATIONAL GUIDANCE

The intent of this chapter is to document the procedures used in the FMP to implement the wildland fire management program. Information pertaining to this program implementation is either provided directly in the FMP or a reference is cited as to where this type of information can be found.

4.1. FIRE MANAGEMENT PROGRAM ORGANIZATION, PLANNING AND FUNDING

This section identifies those members of the Park and regional staff with wildland fire management program responsibilities related to the Park's fire management program. The section also identifies the interagency long-range fire planning process and fire management program funding processes.

4.1.1. Park Management

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

a. Superintendent

The Acadia National Park superintendent is responsible to the regional director, Northeast 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.

b. 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 authority for the fire management program to the chief (chief ranger) of the resource and visitor protection division.

c. Chief Ranger

The chief of the resource and visitor 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, program management and operational aspects of the fire management program to the fire management officer.

4.1.2. 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 resource and visitor protection division. These positions are under the supervision of the fire management officer and are listed below. All positions in the fire management office are either base funded or project funded through the NPS Fire Management Program Center. Funding for project funded positions must be requested annually through the NPS fuels program budgeting process.

a. Fire Management Officer (FMO) and North Country Area FMO

The FMO is a base funded 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 the program manager for the Park's fire management program, 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, preparedness, suppression and fuels management programs. The FMO provides supervision of the fire management office staff, with the exception of the fire control aid for the Isle au Haut FMU. The FMO should be qualified as an Incident Commander Type 3 (ICT3), a Task Force Leader (TFLD), a Strike Team Leader Crew (STCR) and/or a Strike Team Leader Engine (STEN) and a Prescribed Fire Burn Boss Type 2 (RXB2).

The FMO also serves as the area FMO for the North Country Area Fire Management Park Group (NOCOPG). The North Country Area is comprised of eleven NPS units in northern New England and northern New York State; Acadia National Park, Appalachian National Scenic Trail (in Maine, Massachusetts, Connecticut and New York), Fort Stanwix National Monument, Marsh-Billings-Rockefeller National Historical Park, Martin Van Buren National Historic Site, Roosevelt-Vanderbilt National Historic Sites, Saint Croix Island International Historic Site, Saint-Gaudens National Historic Site, Saratoga National Historical Park, Weir Farm National Historic Site and Women's Rights National Historical Park. The area FMO provides the first level of assistance and coordination for all aspects of the fire and aviation management programs of these parks.

b. Fire Program Management Assistant (FPMA)

The FPMA is a base funded permanent, full-time position directly responsible to the FMO for providing clerical and administrative support for all aspects of the fire management program. This includes general clerical work, time-keeping, travel arrangements, budget tracking, weather data collection and fire danger indices program management, fire reporting, resource mobilization and maintenance of training and qualification records. The FPMA also provides these services for the fire management programs of the other North Country Area parks. The FPMA provides limited administrative assistance to the resource and visitor protection division. The FPMA should be qualified as an expanded dispatch support dispatcher (EDSD).

c. Fire Prevention Specialist (FPS)

The FPS is a base funded permanent, full-time position directly responsible to the FMO for developing, managing, coordinating and implementing of the Park's wildland fire prevention and education programs. These programs include fire prevention and education programs and activities for the Park, the local community, the news media and the general public. They include a wildland/urban interface (WUI) educational outreach program to local homeowners and local governments that integrates FIREWISE program concepts, identifies hazards and provides mitigation techniques and standards. The FPS also provides these services for the

fire management programs of the other North Country Area parks. The FPS should be qualified as a Public Information Officer Type 2 (PIO2).

d. Fire Operations and Fuels Technician (FFT)

The FFT is a base funded permanent, subject-to-furlough position directly responsible to the FMO for coordinating the Park's fire suppression and fuels management programs. This includes managing the Park fire caches and associated equipment at all three FMUs, directing initial action on wildfires, coordinating the fire monitoring program, overseeing the day-to-day operation of the Park's fuels management program and providing direct supervision to the fire control aid, the hazard fuels crew work leader and the hazard fuels crew members. The FFT also manages the North Country Area fire cache (part of the Mount Desert Island FMU fire cache) and provides equipment and fuels management assistance to the other North Country Area parks. The FFT should be qualified as an Incident Commander Type 4 (ICT4), a Single Resource Boss Crew (CRWB) and/or a Single Resource Boss Engine (ENGB) and a Prescribed Fire Burn Boss Type 3 (RXB3).

e. Fire Control Aid (FCA)

The FCA is a base funded seasonal position directly responsible to the FFT. The FCA assists the FFT in the managing the Park's fire caches, 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 preparedness activities and participates in initial action operations. The FCA should be qualified as a Firefighter Type 2 (FFT2).

f. Fire Control Aid (FCA) - Isle au Haut FMU

The FCA-Isle au Haut is base funded as a seasonal position, but the position duties are shared by the Isle au Haut ranger staff. This staff is supervised by the supervisory park ranger for the Isle au Haut unit. All Isle au Haut ranger staff members assist in managing the FMU'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 Isle au Haut ranger staff carries out prevention, detection and preparedness activities and participates in initial action operations. At least one Isle au Haut park ranger should be qualified as an Incident Commander Type 5 (ICT5) and a Firefighter Type 1; Advanced Firefighter/Squad Boss (FFT1) and the rest of the ranger staff should be minimally qualified as Firefighter Type 2 (FFT2).

g. Hazard Fuel Crew Work Leader

The hazard fuel crew work leader is a project funded seasonal position and is directly responsible to the FFT and provides the on-site direction of the hazard fuel crew in their daily work activities. This is a project funded position that may not be filled each year. Ideally the

hazard fuel crew leader should be qualified as an Incident Commander Type 5 (ICT5), but minimally qualified at least as a Firefighter Type 2 (FFT2).

h. Hazard Fuel Crew Members

The three hazard fuel crew members are project funded seasonal, full-time positions and are directly responsible to the hazard fuels crew work leader and supervised by the FFT. Crew members carry out hazard fuels reduction projects, serve as firefighters and during periods of very high or extreme fire danger provide detection and preparedness services. Crew member positions are project funded positions that may not be filled each year. The hazard fuel crew members should be qualified as Firefighter Type 2 (FFT2).

i. NECC Fire Dispatcher

The NECC Fire Dispatcher is a base funded permanent, subject-to-furlough position at the Northeastern Interagency Coordination Center (NECC), located at the Maine Forest Service Southern Region Office in Augusta, Maine. The position FTE is provided by the NPS and the position funding is provided by the U.S. Forest Service through an interagency agreement at the regional level. The NECC Fire dispatcher provides radio dispatch services to the Maine Forest Service and resource dispatch services for NECC. The NECC FD should be qualified as an expanded dispatch support dispatcher (EDSD).

4.1.3. Other Park Positions and Divisions

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.

a. Resource and Visitor Protection Division Rangers

The normal patrol activities for supervisory park rangers and patrol rangers include fire detection and initial action on wildfires. In most cases, the patrol ranger will be the first responding NPS employee at the scene of a wildfire and will be responsible for size-up of that fire. They may also be responsible for coordinating initial action on a wildfire until relieved by a higher fire-qualified individual. It is preferred that each ranger be qualified as an Incident Commander Type 5 (ICT5) and should at least be qualified as a Firefighter Type 2 (FFT2), but this is not required as part of their official position descriptions.

b. 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 response procedures listed in the dispatcher procedures notebook, which is maintained in the dispatch office. Dispatchers 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.

c. Resource Management Division

The resource management division is responsible for the management of the Park's research, monitoring and mitigation programs, including those related to vegetation management. Division employees assist the FMO with fire research, monitoring and mitigation. Division employees may be called upon to assist in fire preparedness and suppression operations as needed and as qualified. It is recommended that some of the resource management division staff be qualified as Resource Advisors (READ).

d. Interpretation Division

The interpretation division assists the FPS with providing timely information to Park visitors concerning fire prevention, fire research projects and fire danger. Division employees may be called upon to assist in fire preparedness and suppression operations as needed and as qualified. It is recommended that some of the interpretation division staff be qualified as Public Information Officer Type 3 (PIO3).

e. Maintenance Division

The maintenance division assists in the maintenance and repair of fire equipment. The division may assist in engine and pump operations. Division employees may be called upon to assist in fire preparedness and suppression operations as needed and as qualified.

f. 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. It is desirable for all Park staff to obtain incident command training not only for fire management purposes but also for all-hazard activities.

4.1.4. Park Resources Advisors

a. 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.

b. 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.

4.1.5. Northeast Region Fire Management Office

The Northeast Region Fire Management Office provides the first level of assistance for the Park's fire management program. All requests to the NPS Fire Management Program Center (FMPC) in Boise, Idaho are made through the regional fire management office,

a. Regional Fire Management Officer

The regional fire management officer (RFMO) has delegated authority for the management of the region's fire management program. The RFMO is responsible for planning, training, technical assistance, budget prioritization, coordination, and interagency issues for units of the NPS in the Northeast Region. The RFMO assures that the regional fire management program is conducted in accordance with established policy and procedures and that fire management dedicated funds are used appropriately.

The RFMO represents the parks in the Northeast Region to the NPS Fire Management Program Center, the Eastern Area Coordination Center (EACC), and other regional and national fire management organizations.

The RFMO may chair or otherwise serve on review panels and critiques related to Park fire management activities.

b. Regional Wildland Fire Specialist

The regional wildland fire specialist provides technical assistance to the Park on fire suppression, equipment, training, qualifications and medical program matters

c. Regional Fire Communications Specialist

The regional fire communications specialist provides public education, communications and information assistance to the Park.

d. Regional Fire Ecologist

The regional fire ecologist provides technical assistance to the Park on fire ecology, prescribed fire and fuels treatment matters. The regional fire ecologist also supervises the regional fire effects monitoring crew and is responsible for scheduling or coordinating monitoring activities in the parks of the region.

e. Regional Fire Monitoring Crew

The regional fire effects monitoring crew works with the Park FFT to provide the Park with data collection and processing services identified in the fire effects monitoring plan. Scheduling and coordination of monitoring activities is provided by the regional fire ecologist, in conjunction with the RFMO.

4.1.6. Fire Planning

The Federal land management agencies (U.S. Forest Service, NPS, U.S. Fish and Wildlife Service, Bureau of Land management and Bureau of Indian Affairs) are currently implementing a new interagency, landscape level fire planning system known as Fire Program Analysis (FPA). The purpose of the FPA is to provide land managers with a common interagency process for fire management planning and budgeting to evaluate the effectiveness of alternative fire management strategies through time, to meet land management goals and objectives over a broad area or region.

Under FPA, the United States is divided into fire planning units (FPU) that have similar fuel types and fire regimes. Within these FPU, the interagency partners, including Federal and state agencies, work together to identify planning issues, goals and objectives and to develop budget solutions to address them. FPA will be used to inform the fire management budgeting process for the fire management programs of the Federal land management agencies. The Park and the other North Country Area parks, along with other NPS units and other Federal land management agencies units are part of the New England-New York FPU (FPU #EA_NH_001). The New England-New York FPU includes all the New England states and all of New York State with the exception of Long Island and New York City.

The FMO represents the Park and the other North Country Area parks in the FPA process.

4.1.7. Fire Management Program Funding

Funding for the Park fire management program comes directly from the NPS Fire Management Program Center (FMPC) in Boise, Idaho. These funds are appropriated annually by Congress specifically for wildland fire management purposes within the U.S. Department of Interior. The salary and support funds for the Park's fire management program permanent employees are base funded from these annual appropriations. Additional project funds can also be requested from these annual appropriations.

Formerly this budgeting was done through the NPS FIREPRO program. FIREPRO has been replaced by a combination of FPA and a NPS specific budgeting process currently being developed. Annual operating program budget requests are currently made through the regional fire management office to the FMPC. Funding for fuels projects, both prescribed fire and mechanical, are made through the National Fire Plan Operations and Reporting System (NFPORS).

4.2. MANAGEMENT OF UNPLANNED IGNITIONS

One of the fire management objectives (see Section 3.1.1.) of this FMP is that initial action on all unplanned ignitions will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety and the values to be protected (including on adjacent non-Federal lands). A second objective is to manage all wildfire incidents based on the ecological, social and legal consequences of the fire and in accordance with accepted interagency standards, using appropriate management strategies and tactics and maximizing efficiency via interagency coordination and cooperation. These objectives will guide all planning, procedures and response to unplanned fires within the Park.

4.2.1. Preparedness

Preparedness is the work accomplished prior to fire occurrence that ensures that the FMP objectives related to unplanned ignitions are effectively implemented. Preparedness activities include: fire preparedness planning, interagency assistance agreements, personnel training and qualification, physical fitness, equipment preparation and maintenance, weather data collection, National Fire Danger Rating System (NFDRS) indices computation, public information, step-up procedures and detection. The overall objective of a good preparedness program is to have a well-trained and equipped fire management organization that is able to effectively manage most fire situations.

The *Interagency Standards for Fire and Fire Aviation Operations* (“The Red Book”) provides additional, specific information on preparedness activities. The *Red Book* is revised annually and serves as supplemental NPS policy to *RM-18*. The *Red Book* can be found online at http://www.nifc.gov/policies/red_book.htm.

a. Preparedness Planning

Preparedness planning for the Park is an on-going process. Planning includes updating annual operations plans and agreements, developing and updating procedures, updating step-up plans and ensuring that information relating to the wildland fire decision support system (WFDSS) is current and available. Information and guidance on preparedness planning and review can be found in Chapter 10 of the *Red Book* and the annual preparedness plan can be found in Appendix B.

b. Assisting Agencies and Interagency Coordination

The Park’s fire management program receives assistance from and/or provides assistance to several other agencies and organization. This reflects the cooperative nature of wildland fire activities and the need by all agencies and organization to be cost efficient in those activities.

- **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, Blue Hill, Cranberry Isles, Gouldsboro, Isle au Haut, Mount Desert Township, Southwest Harbor, Swans Island, Tremont, Trenton and Winter Harbor. The Park has separate cooperative agreements with each of these departments (see Appendix C). These local fire departments respond to all fire incidents (structural, vehicle and wildfire) that occur on Park lands within their jurisdictions.

Each town has an appointed town fire warden whose is responsible for issuing Maine Forest Service burning permits and for all wildfire suppression actions within their respective towns. For most towns, the fire department chief also serves as the town fire warden.

- **Hancock County Firefighter's 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 and the NPS are members of the association. Local firefighting resources are available through a memorandum of understanding with this organization (see Appendix C).

- **Maine Forest Service**

The Maine Forest Service's Division of Forest Protection is responsible for providing wildfire prevention, detection and suppression services on all lands in the State of Maine. The Maine Forest Service maintains fire suppression equipment, rotary and fixed wing aircraft, a Type II incident management teams and Type II handcrews. These resources are available to the Park through a memorandum of understanding (see Appendix C). The Park is located in the Maine Forest Service's Downeast District, with headquarters at Jonesboro, Maine. The Maine Forest Service will respond to wildland fire incidents within the Park at the request of Park staff or the local town fire warden.

- **United States Coast Guard**

The U.S. Coast Guard maintains a base in Southwest Harbor. The base has patrol craft and smaller watercraft loaded on trailers that 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.

- **Northeastern Forest Fire Protection Commission**

The Northeastern Forest Fire Protection Commission, also known as the Compact, is comprised of New York State, the New England states and the eastern provinces of Canada. The purpose of Compact is to provide its member states and provinces with the means to cope with wildfires that might be beyond the capabilities of a single member through information, technology and resource sharing (mutual aid) activities.

Though the NPS is not currently a member of the Compact, it does work cooperatively with the Compact and its members and supports many of their activities. Through a regional cooperative agreement, the NPS provides funding assistance and position support (see NECC Fire Dispatcher in Section 4.1.2.i.) for the Northeastern Interagency Coordination Center (NECC), located at the Maine Forest Service Southern Region Office in Augusta, Maine. NECC is managed by the Compact and serves as a sub-regional coordination center to the Eastern Area Coordination Center (EACC) located in Minneapolis, Minnesota.

All Park and North Country Area wildland firefighting resources are mobilized and dispatched through NECC for out-of-state mobilizations. Any requests by the Park and other North Country Area parks for outside firefighting resources are also made through NECC.

- **National Inter-Agency Agreement**

The NPS is a participating member of the "Interagency Cooperative Fire Agreement" between the U.S. Forest Service from the United States Department of Agriculture and the Bureau of Indian Affairs, the Bureau of Land Management, the U.S. Fish and Wildlife Service and the NPS from the 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 U.S. 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 NPS through this agreement.

- **National Wildfire Coordinating Group (NWCG)**

The National Wildfire Coordinating Group (NWCG) is made up of the U.S. Forest Service from the United States Department of Agriculture; the Bureau of Land Management, NPS, Bureau of Indian Affairs, and the U.S. Fish and Wildlife Service from the United States Department of the Interior; and State forestry agencies through the National Association of State Foresters. The purpose of NWCG is to provide national leadership and establish, implement, maintain and communicate policy, standards, guidelines and qualifications for wildland fire program management. NWCG coordinates programs of the participating wildfire management agencies so as

to avoid wasteful duplication and to provide a means of constructively working together. The group provides a formalized system to develop and establish national standards of training, qualifications, equipment and other operational functions. NWCG training and qualification standards apply to all NPS fire management operations.

c. Training and Qualifications

DOI and NPS policy requires that all NPS personnel engaged in specific wildland fire suppression and prescribed fire operations meet the qualification and certification standards set forth by NWCG in the current version of the *NWCG Wildland Fire Qualification Guide* (PMS 310-1). The Park will strictly conform to these standards and requirements in qualifying and certifying Park personnel for wildland fire duties. Individuals will not be assigned to duties for which they lack the required training, experience and/or certification.

These qualification standards require participation in NWCG approved training courses. Non-NWCG approved training courses may not be substituted to meet the standards for a specific wildland fire qualification.

The Park will support training, skill development and certification to meet or exceed NWCG standards for Park staff with specific fire management duties. The FMO is responsible for identifying and organizing the training required to meet the needs of Park wildland firefighters. The FMO will evaluate training needs for Park personnel with their input. Approval from the FMO and the employee's supervisor are required for participation in fire training. Park staff who receive fire training may be required to participate in local, regional or national fire management activities and assignments as a condition of their training.

Staff with advanced training and certification may be required to apply their training in fire management situations and/or complete additional training to maintain their certification. Specific training needs will vary with the type and level of certification held by Park staff.

Annually, firefighting personnel who are qualified for arduous duty positions are required to complete an eight-hour wildland firefighter safety refresher training program.

Additional information and guidance on training and qualifications can be found in Chapter 13 of the *Red Book*.

d. Physical Fitness

The Park, as required by DOI and NPS policy, will adhere to the requirements of the Federal Interagency Wildland Firefighter Medical Qualifications Standards Program (MSP). All Park employees and casual hires that are qualified for arduous duty positions are required to participate in the MSP and must be medically cleared prior to attempting the Work Capacity Test (WCT) at the arduous level. Park firefighting personnel involved in wildland fire operations are required to meet NPS standards for physical fitness as set forth in the current

version of the *Red Book*. NPS personnel not meeting fitness and training requirements may assist in support capacities, but will not be permitted on the fireline

Additional information and guidance on physical fitness requirements and procedures can be found in Chapter 13 of the *Red Book*.

e. Personnel

The Park maintains sufficient firefighting qualified individuals to meet its current needs for taking initial action on a wildfire. These firefighting resources come from both the fire management office and other Park division. Any Park personnel interested in serving as an incidental (“militia”) firefighter will be encouraged to do so and will be supported through training and experience opportunities. Additional resources are available through memoranda of understanding, cooperative agreements and the resource ordering system. A complete listing of all fire-qualified Park personnel is maintained in the fire management office.

NPS personnel will only engage in those wildfire and prescribed fire activities for which they are currently qualified and as specified in the NWCG’s *Wildland Fire Qualification Guide*, *PMS 310-1*. NPS personnel will be properly equipped with all personal protective equipment (PPE) as required by DOI and NPS policy and as listed in Chapter 7 of the *Red Book*.

f. Equipment

The Park is adequately equipped with wildland fire suppression apparatus, equipment and supplies for initial action 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 Mount Desert Island FMU Fire Cache which is located, along with the fire management office, at Park headquarters on McFarland Hill in the Town of Bar Harbor. This fire cache houses one Type 5 engine, one Type 7 slip-on pump unit, one Type 2 water tender and two 750 GPM trailer mounted pumps. The Isle au Haut FMU Fire Cache houses one Type 7 slip-on pump units and one 750 GPM trailer mounted pump. The Schoodic Peninsula FMU Fire Cache houses one Type 7 slip-on pump unit. Each fire cache also houses a quantity of personal protective equipment, hand tools, portable pumps and backpack pumps. The Mount Desert Island FMU Fire Cache also serves as the North Country Area Fire Cache and supports all North Country Area parks and firefighters. A complete inventory and location listing of all wildfire suppression equipment is maintained in the Park fire management office.

All firefighting equipment and supplies will be inventoried prior to the start of the fire season and maintained in a ready state. Apparatus, portable pumps, chainsaws and other motorized equipment will be tested on a regular basis.

g. Water Sources

Vehicle accessible water sources (pumper chances) have been identified and mapped. This information is maintained by the fire management office and the Park GIS specialist and can be found in the *Mount Desert Island Dry Hydrants* notebook.

h. Aviation Resources

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

DOI regulations and NPS policy require that all aircraft used for NPS business, including emergency wildfire operations, and all flight operations involving NPS personnel adhere to DOI Aviation Management Directorate (AMD – formerly Office of Aircraft Services [OAS]) regulations (350-354 DM). A complete collection of AMD regulations can be found online at <http://amd.nbc.gov/>.

All aircraft and pilots under the control of the NPS and involved in Park wildfire operations must be AMD certified. These aircraft and pilots may be private vendors under AMD rental agreement or cooperator aircraft.

The Maine Forest Service's pilots, six rotary-wing aircraft and one float equipped fixed-wing aircraft are AMD certified as cooperator pilots and aircraft. The Park must request recertification by AMD annually for these pilots and aircraft. The rotary wing aircraft are fire suppression capable and all these aircraft may be available for Park use under the memorandum of understanding with the Maine Forest Service.

Military aircraft dispatched as part of a resource order or under the control and direction of the Maine Forest Service 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 can be found in the *Acadia National Park Aviation Management Plan, 2009*.

- **Helispots**

For any air operation involving helicopters, the Park will use the Bar Harbor-Hancock County Airport in Trenton as its primary helibase. Helispots and landing zones for Park use have been identified and can be found in the *Helicopter Helispots in the Acadia National Park Region* notebook.

i. Fire Weather Data Collection and Forecasts

The NPS has collected weather data for the National Weather Service (NWS) at the Park since 1926. The McFarland Hill Station (currently NWS Station #170791 and prior to June 7, 2003 NWS Station #170701) 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 Hulls Cove and the old Park headquarters building at the corner of Main Street and Park Street in the village of Bar Harbor. Since June 7, 2003, weather observations at the McFarland Hill station have been collected through the use of a remote automated weather station (RAWS) unit that periodically transmit its data to the computer based Weather Information Management System (WIMS) maintained by the USDA National Information Technology Center. An automated 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 generates hourly weather data averages.

The Park has also utilized a RAWS unit to automatically collect weather data at the Isle au Haut Unit (NWS Station #171501) since 2008. Weather data for both RAWS stations is collected year-round.

The uncorrected weather observations from both RAWS stations can be observed on the Internet at the University of Utah's MesoWest website (<http://mesowest.utah.edu>). This data is downloaded directly from the periodic RAWS satellite transmission and does not include any post-transmission corrected data. The corrected historic weather data is maintained in WIMS. All hard-copy Park fire weather records are maintained by the fire management office or if older than 20 years in the Park's curatorial office.

The National Weather Service Forecast Office located at Caribou, Maine provides a daily fire weather forecast during fire seasons. These forecasts can be obtained on their website at <http://www.erh.noaa.gov/car/fire.htm>. Spot weather forecasts may also be obtained from this office for wildfire suppression and prescribed fire operations.

j. National Fire Danger Rating System

During the fire season, the Park's daily fire danger rating adjective and indices are generated by WIMS using the National Fire Danger Rating System (NFDRS). These indices include the Burning Index (BI) (see Figure 19), the Energy Release Component (ERC) (see Figure 20) and the Keetch-Byram Drought Index (KBDI) (see Figure 8 in Section 3.1.4.1.) These outputs provide a broad-based fire danger forecast for the Park and surrounding area. These indices determine the Park's daily staffing (preparedness) level and implementation of the Park's step-up plan (see Appendix D).

The BI and ERC charts below were created for developing the Park NFDRS Pocket Card (see Section 4.2.1.1.) using FIREFAMILY PLUS software.

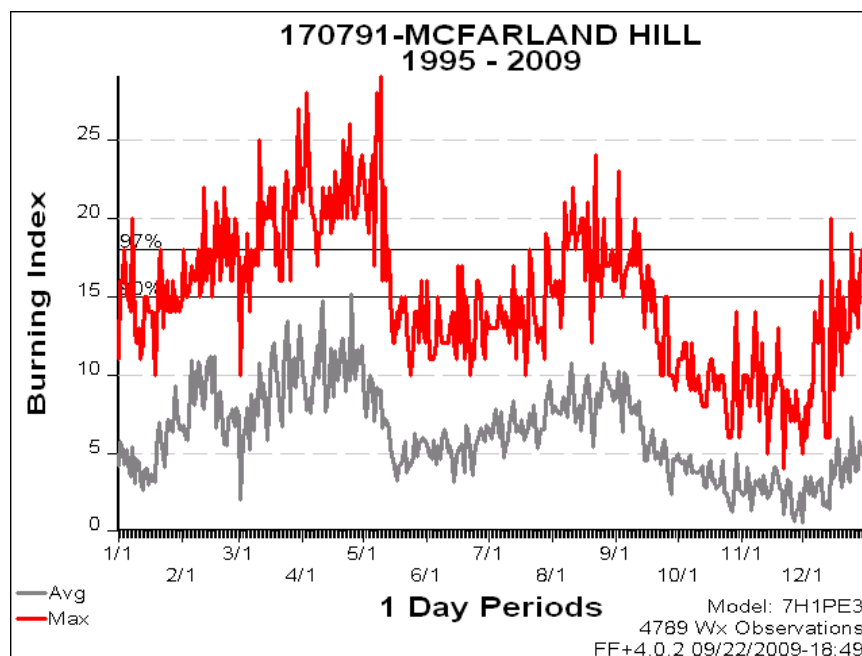


Figure 19: Burning Index; 1995-2009

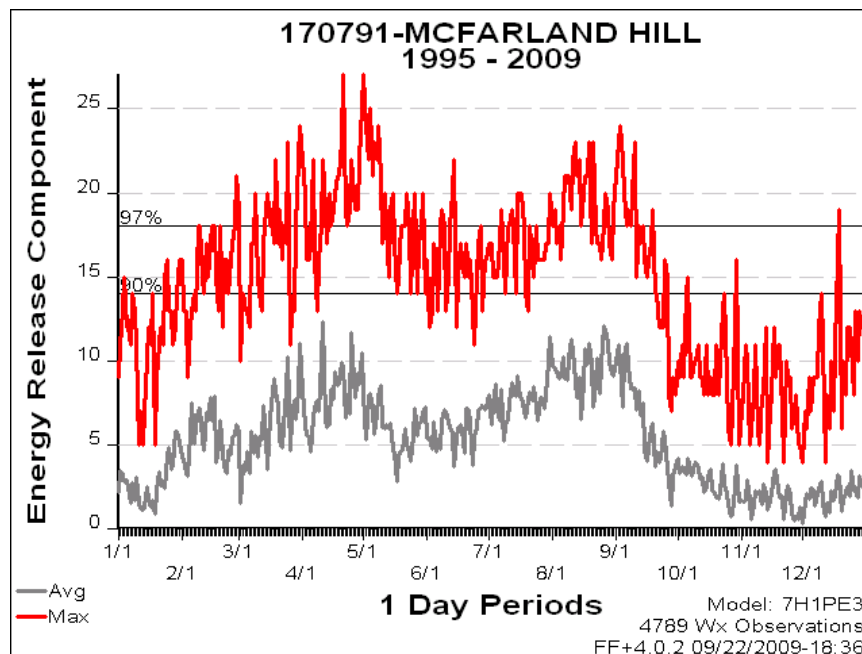


Figure 20: Energy Release Component; 1995-2009

During the fire season, the daily fire danger rating will be posted for public view on display signs at the Thompson Island Information Center, the McFarland Hill Ranger Station, the Isle

au Haut Ranger Station, the Blackwoods Campground Entrance Station and the Seawall Campground Entrance Station and is broadcasted at 0900 hours local time daily by Park dispatch on the primary Park radio frequency.

k. Step-Up Plan

The Park's step-up plan (see Appendix D.) has been developed to provide an effective planning tool for establishing adequate personnel and equipment needs during periods of varied fire danger. The step-up plan takes into consideration a wide range of fire weather conditions, ranging from normal to severe.

The step-up plan describes additional staffing, preparedness and detection activities that may be put in place as the local fire danger rating increases from low to extreme. These activities are "stepped-up" as fire danger increases to ensure that appropriate detection and firefighting resources are available to protect public safety and Park resources. These levels relate to the expected difficulty of controlling a wildfire at each level. Staffing levels are based on the NFDRS current fire danger rating and next day forecast.

The step-up plan has five staffing levels which correspond to the five NFDRS fire danger adjective ratings; Low (1), Medium (2), High (3), Very High (4) and Extreme (5). Specific breakpoints are established for each level using FIREFAMILY PLUS software. Table 8 illustrates these staffing level burning index (BI) breakpoints for the pre-dominant fuel models (H and R) found in the Park, along with Fuel Model G and their corresponding NFDRS indices. All parks are required to monitor Fuel Model G for both BI and energy release component (ERC) to use as a comparative fuel model at the national level. Staffing Level 4 represents the 90th percentile breakpoint and Staffing Level 5 represents the 97th percentile breakpoint.

NFDRS ADJECTIVE	FUEL MODEL:	H	R	G	G
	STAFFING LEVEL	BI	BI	BI	ERC
LOW	1	0-3	0-7	0-8	0-6
MODERATE	2	4-6	8-15	9-17	7-12
HIGH	3	7-13	16-31	18-34	13-27
VERY HIGH	4	14-17	32-39	35-41	28-33
EXTREME	5	18+	40+	42+	34+

Table 8: Staffing Level Breakpoints

The staffing levels for the step-up plan are primarily determined utilizing the BI levels for Fuel Model H. This is the fuel model that can typically be expected to generate higher levels of fire behavior than the other fuel models present. The breakpoints for the other fuel models may be used to inform the staffing level if conditions warrant it. The Keetch-Byram Drought

Index (KBDI) will also be monitored and the staffing level may be increased if the KBDI exceeds 350.

The FMO will monitor the fire danger indices on a daily basis during the fire season and may increase the staffing level by one level for unusual events that would increase the potential for wildfires or increase the risk to values to be protected from wildfires.

At Staffing Levels 4 and 5, the FMO may establish emergency preparedness accounts according to procedures found in *RM-18*. These accounts may be used to extend the shifts of firefighters or to bring on additional firefighters. During extended periods of elevated fire danger (Staffing Levels 4 & 5), the FMO may request severity funding from the regional FMO for the same purposes and to preposition additional firefighting resources in the Park.

Fire conditions that typify each staffing level are listed below:

- **Staffing Levels 1 and 2 (Low and Moderate)**

Fires will present at low to moderate level of control difficulty. Fires occurring at these levels may be controlled with existing forces (Park staff and local fire departments). Wind speed and direction will determine speed of fire spread. Fine fuels are may be wet or re-drying. Prescribed fire is usually viable management options.

- **Staffing Level 3 (High)**

Fires will present a moderate level of control difficulty. Light fuels are becoming dry. Heavy fuels are drying. Mop-up may be more difficult and time-consuming. Prescribed fire use may be management options with sufficient support and appropriate weather conditions.

- **Staffing Levels 4 and 5 (Very High and Extreme)**

Fire will present a moderate to high level of control difficulty. Initial action and reinforcing crews may have difficulty controlling a fire at this level. All fuels are dry. Air temperature is high and humidity is low. Strong gusty winds are possible. Spotting may occur. Prescribed fire is not usually appropriate under these conditions. Emergency preparedness funds may be used at these staffing levels to fund increased fire preparedness activities.

1. NFDRS Fire Danger Pocket Card

The fire danger pocket card is used to communicate Park specific information on fire danger to firefighters. The prime objective of the fire danger rating is to provide a measure of the seriousness of local burning conditions. The pocket card provides a visual reference of those conditions and how they compare to previous fire seasons. The Park's pocket card (see

Appendix E) has been developed according to NWCG guidelines and is provided to all Park firefighters. Park firefighters are trained on the use of the pocket card annually at the Park's firefighter safety refresher. The pocket card is updated every other year.

m. Fire Detection and Dispatch

The objective of the fire detection program for the Park is to quickly detect any wildfires which occur and to affect a timely and appropriate initial action on 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 staff, other Park employees and reports from the public and other agencies. Reports may come in to Park dispatch, from local fire and police departments or through the state-wide E911 emergency reporting system. State aerial detection flights by the Maine Forest Service cover areas the Park during periods of elevated fire danger. During periods of very high and extreme fire danger, the Park step-up plan provides for the use of dedicated fire detection patrols and the use of contract aerial reconnaissance.

Upon receipt of a report of a wildfire within the Park, the Park dispatch office will notify the fire management office and the local fire department that has jurisdiction for the area of the Park where the fire is located. Specific wildland fire dispatching procedures can be found in the *Wildland Fire Dispatch Procedures* maintained in the Park dispatch office.

n. Fire Size-Up

Size-up activities related to a wildfire are performed by the first firefighting personnel to arrive on the scene. Key information must be gathered and transmitted to Park dispatch and to additional firefighting personnel responding to the initial report of the wildfire.

Information to be gathered during size-up includes the following:

- Exact location of the fire (lat/long or UTM coordinates)
- Any values (life and/or property) at risk
- Fuel types (currently burning present and in the immediate future)
- Topography (steep, flat, rolling, etc)
- Weather (wind speed, direction, relative humidity, temperature)
- Estimated size of the fire (acres)
- Observed fire behavior (flame length, direction fire is moving, rates of spread, etc)
- Hazards (power lines, gas lines, etc) and/or special conditions
- Access (best routes into the scene and routes of egress)
- Point of origin
- Possible cause
- Any suspicious persons and/or vehicles in or observed leaving the area
- Resources needed

o. Initial Action

Upon discovery and notification of a wildfire, the first responding fire qualified employee will begin directing initial action on the fire. These actions may include size-up and actual suppression actions. This employee will continue to serve as the incident commander (IC) until relieved by a higher fire qualified employee. All fires will be managed under the Incident Command System (ICS). When more than one agency (NPS, Maine Forest Service 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. In the event that no qualified NPS IC is available to serve in the unified command structure, the superintendent will designate a resource advisor (RA) to assist and advise the IC on the appropriate response on Park lands to wildland fire consistent with the goals and objectives set forth in this FMP.

Park firefighters will participate in initial action, to the extent practicable, on wildland fires that occur both on and adjacent to Park lands. Fires that occur outside of the Park which have the potential to threaten Park land may be suppressed utilizing Park resources in concert with local and state cooperators. Due to the remote nature of the Isle au Haut FMU and the limited firefighting resources on Isle au Haut, Park firefighters will take initial action on any wildfire on Isle au Haut, including all private lands.

Regardless of whether a cooperator or Park staff initiate suppression operations on fires occurring within the Park, the following principles will apply:

- When determining the proper response actions, public and firefighter safety are to receive the highest priority consideration.
- The ecological, social and legal consequences of the fire will be considered in determining the proper response actions.
- Suppression operations will be managed in the most cost-effective manner possible.
- The Incident Management System (ICS) will be utilized to manage wildland fires on the Park.
- Regardless of agency affiliation, the IC will be the individual best qualified to assume the duties of that position.
- All wildfire suppression operations will follow Minimum Impact Suppression Tactics (MIST) guidelines to the greatest extent possible. These include:
 - Keep fire engines and water tenders on existing roads.
 - Restrict the use of heavy equipment such as bulldozers, skidders or plows for constructing firelines. Heavy equipment will be used for fireline construction only in extreme situations, when high value resources in and adjacent to the

- Park are at risk, and then only with the authorization of the superintendent or their designee.
- Use existing natural fuel breaks and human-made barriers, such as streams or roads, and wet line or cold trailing the fire edge in lieu of handline construction whenever possible (cold trailing is a method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand for heat to detect any fire, digging out every live spot and trenching any live edge).
- Firelines will be located outside of highly erosive areas, steep slopes, and other sensitive areas.
- Keep fireline widths as narrow as possible when they must be constructed.
- Avoid ground disturbance within known natural and cultural resource locations.
- Use soaker hose, sprinklers or foggers in mop-up; avoid boring and hydraulic action.
- Minimize tree cutting.
- All suppression actions will utilize the appropriate management response derived from the fire management objectives.
- Protect air and water quality by complying with the Clean Air Act, the Clean Water Act and all other applicable Federal, state, and local laws and requirement.

Since the firefighting resources stationed within each FMU are different, the initial action response within those units will also be different.

- **Mount Desert Island FMU**

At least two fire qualified employees and either the Type 5 engine or the Type 6 slip-on unit 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 U.S. Coast Guard, the local harbormaster, commercial ferry service, commercial or private boat operators or AMD certified aircraft. At least three fire qualified employees and one portable pump will be dispatched to any offshore island fire.

- **Isle au Haut FMU**

Initial action response will include the Type 7 slip-on unit 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 from the Mount Desert Island FMU to Isle au Haut. Projected travel time between the two FMUs is at least two hours and probably longer. This transportation may be by the Park, the U.S. Coast Guard, commercial ferry service, commercial or private boat operators or AMD certified aircraft.

- **Schoodic Peninsula FMU**

Initial action response will include the Type 7 slip-on unit and all available fire qualified employees in the FMU. The Winter Harbor and/or Gouldsboro fire departments will also be contacted and requested. Additional firefighting apparatus, equipment and personnel may be dispatched from the Mount Desert Island FMU. Projected travel time between the two FMUs is at least one hour. Response to offshore islands will be by the closest available boat transport. This transportation may be by the Park, the U.S. Coast Guard, commercial ferry service, commercial or private boat operators or AMD certified aircraft.

If it appears that the fire cannot be contained with the firefighting resources available, the IC will immediately request additional assistance as identified in the “Extended Action” section below.

p. Extended Action and Large Fire Management

The historical occurrence of extend action and large 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.* 1983). However, the potential for large fires and the need for extended action capabilities do exist. This is especially true for the Isle au Haut FMU, where Park and local firefighting resources are limited and additional off-island firefighting personnel have a minimum response time of two hours and off-island equipment has an even greater response time.. 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 IC identify the need for and request additional firefighting resources as early in the fire incident as possible.

The "closest available forces" concept will apply to all Park fire suppression operations. Based upon this concept, local fire departments and the Maine Forest Service will be the first outside agencies requested to assist the Park in fire suppression operations. 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 C). Requests for these resources do not require a formal resource order and do not need to be coordinated through the Northeastern Interagency Coordination Center (NECC).

Emergency wildfire suppression resources for the Park can be obtained from throughout the United States and Canada by placing resource orders through NECC. The regional FMO shall be kept informed of all requests for extended action resources.

On the rare occasion that the need for extended action arises, the IC, in coordination with the FMO and superintendent, will:

- Complete the delegation of authority (see Appendix F)
- Utilize the Wildland Fire Decision Support System (WFDSS) process (see Section 4.2.1.q.)
- Order appropriate firefighting resources
- Prepare for the arrival of ordered resources
- Assist with the transition to the next appropriate management level based on incident complexity
- 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 IC present or where the fire extends beyond 48 hours in time or exceeds 100 acres in size, an appropriate level incident management team will be requested through NECC.

Additional information on the management of fires requiring extended action can be found in the *Red Book*.

q. Wildland Fire Decision Support System

When a fire escapes initial action, new strategies and tactics must be developed in order to safely and effectively manage the fire. This selection process is accomplished through the application of the Wildland Fire Decision Support System (WFDSS). WFDSS replaces the Wildland Fire Situation Analysis (WFSA) process and the Wildland Fire Implementation Plan (WFIP) that were formerly used for this purpose.

WFDSS provides fire managers with a web-based decision process and documentation system that incorporates both resource and economic principles into the fire decision process. It allows fire managers to conduct analysis of potential strategies and tactics and to document those analyses and the decision points derived from them. WFDSS integrates various applications used to manage incidents into a single, streamlined analysis and reporting system. WFDSS can be accessed at http://wfdss.usgs.gov/wfdss/WFDSS_Home.shtml.

The IC will ensure that the WFDSS process is used for every wildfire that goes beyond initial action. The development and use of WFDSS will follow the guidelines of the *Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide* and will meet all the requirements of *RM-18*. All WFDSS documents will be maintained as a historical record of the decision making process for that fire.

r. Public Information

The public will be notified of the presence of any wildfire of sufficient size to threaten public safety and/or impact Park operations. Any special restrictions that may affect the public will be emphasized in this notification. Park staff will be supportive of public concerns, providing accurate information about the incident and briefly summarize the actions being taken.

The fire prevention specialist will take the lead in providing this information and for any incident of sufficient size, will serve as the public information officer (PIO) for the incident. The PIO is responsible for the formulation and release of information about the incident to the news media, incident personnel and other agencies. On a very small incident the PIO function may be carried out by the IC or by other Park staff appointed by the IC.

4.2.2. Incident Management

All Park wildland fire incidents will be managed under the Incident Command System (ICS).

NPS 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.

a. Resource Mobilization

The Park will provide qualified fire personnel, as requested by NECC, for fire mobilization to other areas of the United States and Canada. 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 for Park and other North Country Area firefighters will be coordinated by the fire management office.

Policy requirements and guidance for mobilization procedures are found in the *Interagency Standards for Fire and Fire Aviation Operations* ("The Red Book"), the *Northeastern Interagency Coordination Center Mobilization Guide*, the *Eastern Area Coordination Center Interagency Mobilization Guide* and the *National Interagency Mobilization Guide*. Each one of these guides is updated annually and a copy of each can be found in the fire management office.

b. Incident After Action Review (AAR)

All wildfire incidents will have an AAR conducted immediately after the fire is declared out and with all incident personnel present if possible. A written summary of the AAR will be attached to the fire report and filed in the permanent fire record. The IC is responsible for conducting the AAR and completing the written summary. Additional documentation may be included in the fire record at the discretion of the IC.

AARs of wildfire incidents will be used to evaluate the goals, effectiveness and safety of the wildfire response actions taken.

c. Fire Incident Reporting

The Park is required to document all wildland fire actions (both suppression and prescribed fire actions) using the Wildland Fire Management Information System (WFMI) Fire Reporting module and including a map, preferably utilizing a geographic information system. Fire reports will be made utilizing the NPS Wildland Fire Report Form. This form replaces the DI-1202; Individual Fire Report Form previously used. Detailed instructions for completing the report form can be found in the *NPS Wildland Fire Report Form Instructions*.

All fires will be located with a global positioning system (GPS), using the NAD-83 Datum.

The FMO is responsible for reviewing and approving all fire reports. The FPMA is responsible for inputting all approved fire reports into the WFMI system.

Physical copies of all fire-related records and reports will be maintained by the fire management office. Records more than 20 years old are maintained by the Park's curatorial office.

4.2.3. Emergency Stabilization

Emergency stabilization is the immediate post wildfire actions needed to minimize the threat to life and health and to prevent unacceptable degradation to natural and cultural resources. The Park's natural and cultural resources advisors will be involved in identifying any resources that require emergency stabilization and in developing and implementing any emergency stabilization actions required (see the *Interagency Burned Area Emergency Response Guidebook*).

Required repair of damage resulting from suppression actions will be completed before fire crews and resources are released from assignment to incident. These repairs include stabilizing or removing fire lines and installing water bars to prevent erosion. Costs for these types of damage will be borne by the incident as a part of emergency suppression costs and are not considered to be part of emergency stabilization and rehabilitation.

4.3. BURNED AREA REHABILITATION

Wildland fires can cause long-term damage to natural and cultural resources as well as to facilities. The extent of this damage may be such that evaluation and repair is needed to restore resources to pre-fire conditions. Rehabilitation and restoration efforts beyond the emergency stabilization actions discussed in Section 4.2.3 above will be undertaken to protect and sustain ecosystems, public health and safety and to help communities protect infrastructure. The preferred method of repair is through the natural recovery process. This may not be possible in all situations. For these cases, specific program guidance for burned area emergency

stabilization and rehabilitation is found in *Departmental Manual Part 620 Chapter 3 (620 DM 3)*, the *Interagency Burned Area Emergency Response Guidebook* and *RM-18*.

Where longer term stabilization and rehabilitation efforts beyond emergency stabilization are required, a burned area rehabilitation plan will be developed and implemented according to the guidance found in the references listed above. Specific burned area rehabilitation funding for this purpose may be requested from the NPS Fire Management Program Center through the regional fire management officer. Long-term recovery and restoration are the responsibility of the Park, to be funded through the Park's normal operating budget.

Additional policy information and guidance for the implementation of emergency stabilization and rehabilitation can be found at the DOI Emergency Stabilization and Burned Area Rehabilitation website at <http://www.fws.gov/fire/ifcc/Esr/home.htm>.

4.4. MANAGEMENT OF PLANNED FUEL TREATMENTS

Fuels management includes all activities associated with the management of wildland fuels through the use of prescribed fire, non-fire treatments and community assistance. The Park will use all three activities in its fuels management program. The program will adhere to the guidance found in the "Fuels Management" Chapter of *RM-18*.

4.4.1. Prescribed Fire

Prescribed fires are fires intentionally set by fire managers to achieve identified objectives when predetermined (prescribed) weather and fuel conditions are met. Igniting fires under predetermined prescriptions allows fire managers to exert substantial influence over the rate of fire spread, level of fuel consumption and fire intensity.

The Park has been using prescribed fire successfully to achieve resource management goals and objectives since 1992. These prescribed fires have historically been used to maintain selected scenic vistas within the Park and for research purposes. All prescribed fire activities have been carried out in a safe and effective manner. The use of prescribed fire will remain an important part of the Park fire management program.

The objectives of the Park prescribed fire program are to:

- Maintain cultural landscapes such as vistas and open fields
- Manage hazard fuels
- Protect native natural communities from invasive and exotic species
- Perpetuate fire dependent species and habitats where appropriate
- Eliminate vegetative materials through debris pile burning

All prescribed fire projects will have a burn plan approved by the superintendent. Each burn plan will be prepared using a systematic decision-making process and contain measurable objectives and predetermined and contingency actions must be described in the event the prescription is exceeded. All burn plans will address the need for alerting neighbors and appropriate public officials to the planning and timing of the burn. All prescription parameters, acceptable ranges and objectives are clearly stated in the burn plan.

All prescribed fire activity will comply with applicable Federal, state and local air quality laws and regulations.

Fire effects monitoring will be used to evaluate the degree to which burn objectives are accomplished. Long-term monitoring is required to document that overall programmatic objectives are being met and undesired effects are not occurring.

a. Long-Term Prescribed Fire Strategy

The long-term prescribed fire strategy at the Park is to use prescribed fire, where appropriate, to maintain cultural landscape features such as the developed scenic vistas along the Park carriage road and motor road systems and open fields such as at the Jordan Pond House and on Baker Island and may be used to reduce wildland fuel loadings through pile or area burning. Prescribed fire may also be used to maintain fire dependent species and/or habitat such as jack pine stands if at a future date it is determined that this is a desired condition. This strategy involves the cyclic routine burning of these areas to maintain open areas, encourage native cover and control the growth and spread of woody plants into the vistas and fields.

Several vistas and other open areas have been identified for maintenance with prescribed fire (see Appendix G). Some of these vistas and other areas are currently being maintained with prescribed fire and others have been identified as candidates for the use of prescribed fire. This list of potential burn units was developed from a survey done in 1998 (Herberger) and from personal observations by the fire management staff. Additional burn units may be added to the list of current and potential burn units in Appendix G as more Park vistas are restored and as the need to maintain fire dependent species and habitat develops.

b. Annual Prescribed Fire Preparedness and Planning

Annual activities to prepare for and implement the prescribed program include preparedness, planning, administration and operational activities (pre-burn preparation, etc.). These activities fall within the normal work schedule of the fire management program.

Park fire management staff will select and prioritize burn units for prescribed burn application. The FMO will prepare an annual prescribed fire schedule. The schedule will list the burn units proposed for burning during the coming year and approximate dates (burn window) for prescribed fire application. The annual schedule will be completed by the end of March each year.

Prescribed burn plans will be completed for each unit scheduled for prescribed fire application. Burn plans will be completed and submitted for review at least two months before the proposed burn window. An omnibus burn plan may be used in place of unit specific burn plans where the burn objectives are the same. Burn units in close proximity of Park boundaries will have unit specific burn plans.

Annual Park staffing and training needs will be determined based on planned prescribed fire activity. At a minimum, fireline staff must be currently qualified at the Firefighter Type 2 (FFT2) level.

Prescribed fire equipment and supplies will be inventoried and equipment and supply needs will be determined. Annual prescribed fire operations include burn unit preparation, prescribed fire application, pre-fire, fire and post-fire monitoring, weather monitoring, smoke management, record keeping and reporting.

c. Required Prescribed Fire Burn Personnel

The type and number of positions required to conduct a prescribed fire is determined by the complexity analysis for the specific burn. At a minimum, it can be expected that any prescribed fire at the Park will require the following positions.

- Prescribed Fire Burn Boss Type 3
- Holding Specialist
- Ignition Specialist
- Fire Behavior and Weather Monitor
- Firefighters

A qualified individual may not fill more than one of these positions at the same time.

d. Prescribed Fire Behavior and Effects Monitoring

Fire monitoring will be used to evaluate the degree to which burn objectives are accomplished. Long-term monitoring is required to document that overall programmatic objectives are being met and undesired effects are not occurring. Evaluation of fire effects data will be the responsibility of the fire management staff.

Monitoring data will be collected on the appropriate FMH forms identified below and found in the *NPS Fire Monitoring Handbook* or other forms recommended in the park's fire monitoring plan.

The burn boss is responsible for ensuring that smoke monitoring data is collected and recorded. Smoke monitoring data will be used to evaluate the success of the prescribed fire project.

Current weather and forecast weather for the period of the proposed prescribed fire will be monitored. On-site weather data will be collected, recorded and relayed to the burn boss as frequently as needed to maintain a good understanding of the fire situation. See Section 4.2.1.i. for additional information on weather data and forecasts.

Fire weather data will be collected hourly during ignition operations and while active fire behavior is present. Weather data will be collected with increasing frequency when weather conditions or the fire situation are predicted to change or are changing. On-site weather will be recorded on the FMH-1; Weather Data form.

The FMH-3; Smoke Monitoring Data form will be used to record fireline visibility, road visibility, smoke volume and dispersal and any complaints.

The FMH-2; Fire Behavior Data form will be used to record fire behavior which will be monitored on a continuous basis during the ignition and active burn phases of prescribed fire operations.

All areas subject to prescribed fires will be monitored using the protocols described in the *NPS Fire Monitoring Handbook* and/or in the *Acadia National Park Fire Effects Monitoring Plan* (see Appendix H). Monitoring techniques used may include vegetation sampling, photo documentation, visual survey, fuel moisture analysis, fuel loading determination and other appropriate techniques.

e. Prescribed Fire Project After Action Review (AAR)

All prescribed fires will have an AAR conducted immediately after the fire is declared out and with the prescribed fire personnel present. A written summary of the AAR will be attached to the prescribed fire plan and filed in the permanent project record. The burn boss is responsible for conducting the AAR and completing the written summary. Additional documentation may be included in the project record at the discretion of the burn boss.

AARs of prescribed fire projects will be used to evaluate the goals, effectiveness and safety of the prescribed fire program.

f. Prescribed Fire Reporting

The FMO will ensure that all reports and other documentation required by *RM-18* and other NPS policies are completed in a timely manner.

Each prescribed fire will have an individual fire report completed for it. This report and all additional required and, as appropriate, optional documentation is the responsibility of the

burn boss or their designee. These documents constitute a permanent record of the prescribed fire. The individual fire report data will be entered into the Wildland Fire Management Information (WFMI) System by the Park fire program management assistant and will be archived in the Park fire management office.

Prescribed fires that have escapes, injuries, other serious incidents, or exceed prescriptions will be reviewed and evaluated as described in the “Wildland Fire and Program Review” Chapter of *RM-18*.

g. Historic Prescribed Fire Treatment Map

A historic prescribed fire treatment map is maintained by the Park GIS specialist in the Park GIS system. This map documents the location size and date of all prescribed fires conducted in the Park. The FMO is responsible for ensuring that this data is communicated to the GIS specialist for inclusion in the map.

h. Prescribed Fire Burn Plan

Prescribed fire burn plans must follow the format and information requirements listed in *RM-18*. Information that must be in the plan includes description of the prescribed fire area, geographic attributes, description of project boundaries, vegetation types, fuel model, fuels characteristics, vicinity and project maps, goals and objectives, risk management analysis and hazard rating, project complexity, organization and staffing, ignition and holding actions, public and firefighter safety, monitoring, mop-up operations, contingency requirements, protection of sensitive features, smoke management, media releases and public notice postings. The plan must also list the key weather, fuel and fire behavior parameters needed to achieve desired results and identify ranges of acceptable parameters to obtain desired fire behavior and effects.

Park prescribed fire burn plans list pre-planned requirements (prescriptions) for initiating and continuing prescribed burn ignitions and operations. These prescriptions include:

- Identify the maximum manageable area (MMA) for the fire
- Minimum number of fire crew
- Specific skill certification requirements for the fire crew
- Other fire-related staff requirements
- Range of possible ignition dates
- Pre-ignition site preparation requirements
- Equipment needed on-site

- Allowable weather parameters
- Fuel model(s) used in predicting expected fire behavior

i. Debris Disposal

Fire may be used to dispose of natural vegetative and cut lumber debris deemed infeasible or impractical to remove mechanically. The debris may be generated from routine Park maintenance activities, construction activities, removal of hazard trees, discarded building and administrative materials. Any material being burned for debris disposal must be classified as permissible to burn under applicable Federal, State, Tribal and local regulations.

Burning of this debris in non-wildland fuel environments (parking lot, storage yard, gravel pit, etc.) or when the ground is wet or covered with snow is not considered a prescribed fire under NPS policy. Debris burned in a vegetative environment where there is the possibility of escape is a prescribed fire under NPS policy and requires a prescribed burn plan. All debris burning will adhere to the applicable policy and procedure requirements found in *RM-18*.

j. Exceeding Prescribed Fire Burn Plan Prescriptions

There may be prescribed fires where the implemented prescribed fire is unsuccessful. A prescribed fire will be considered unsuccessful when it exceeds the prescriptions listed in the prescribed fire burn plan. When prescriptions are exceeded, an appropriate management response will be formulated and implemented.

k. Air Quality and Smoke Management

Acadia National Park is known for the many spectacular vistas of its mountains and the adjacent Maine coast. One of the main reasons for the establishment of the Park was to preserve the scenic beauty of the area and these vistas. The Park is designated a mandatory Class I air quality area under the Clean Air Act (42 USC 7401 et seq.), which places stringent constraints on pollution emitting facilities affecting Park resources. Class I air quality areas have the strictest air quality regulations and restrictions. The act also places constraints on Park management activities that could affect air quality by requiring the NPS to comply with all Federal, state and local air pollution control laws and regulations.

Authority for regulating the release of criteria pollutants has been delegated to the states. The Bureau of Air Quality Control, Maine Department of Environmental Protection (Maine DEP) is responsible for determining the impacts of releases of criteria pollutants from prescribed fire use, and where appropriate, permitting the release of smoke from prescribed fire.

The Bureau of Air Quality Control has established open burning guidelines (06-096 Chapter 102) to monitor and control air quality. The Board of Environmental Protection, the advisory board for the Maine DEP has found that open burning activities contribute to the degradation of air quality. The Board has ruled that a reduction of particulate pollutants by limiting open

burning will lead to an improvement in air quality and provide protection to the public's health, safety and welfare.

In keeping with the regulations as established for the State of Maine, prescribed burning is permitted, provided that:

1. An open burning permit is obtained from the local state forest ranger, local fire prevention official or state appointed fire warden.
2. The burning is conducted according to the terms and conditions of such permit.
3. The existing wind speed, wind direction and atmospheric conditions safe burning promote conditions.

The following guidelines will be followed when planning a prescribed burn and addressing wildfire:

- Smoke sensitive areas, including transportation corridors and buildings will be identified and addressed within the prescribed fire burn plan. The direction of the wind vector selected will be such that smoke and other particulate matter are transported away from sensitive areas.
- Burning is permitted when visibility exceeds four miles and when the fire weather forecast indicates the presence of an unstable air mass. A minimum transport wind speed of four mph is required.
- No burning will occur if Bureau of Air Quality Control or any other governing agency has issued an air pollution health advisory, alert, warning or emergency.

Within the confines of meeting prescribed burn objectives, firing techniques, such as backing and flanking methods, will be used whenever possible. Individual exposure to excessive inhalation of particulate matter should be minimized by rotating burn team members in and out of smoke areas. As a guideline, carbon monoxide exposure time by individual burn team members will be limited to two hours per day.

Public notification of possible short term air quality impairment will be provided when necessary.

4.4.2. NON-FIRE TREATMENTS

The Park has utilized non-fire manual treatments to manage hazard fuels since 1990. These programs continue under this FMP.

The objectives of the Park non-fire hazard fuels program are to:

- Reduce the likelihood of the start and spread of human-caused wildfires in high visitor use areas

- Prevent the movement of wildfires across Park boundaries and other specified areas
- Protect Park structures from wildfires by creating defensible space

These objectives are met by using manual fuel reduction treatment techniques to remove undesired live and dead fuels. These manual techniques include the use of hand operated power tools (chainsaws, etc.) and hand tools to cut, clear or prune herbaceous and woody plant species and the use of power chippers to reduce the volume of cut fuels. NPS approved chemical herbicides, applied to cut stumps, can also be used where appropriate to reduce the likelihood of stump sprouting.

To achieve the objectives above, a hazard fuel crew is used to carry out three separate non-fire fuel management treatment programs. Funding for the hazard fuel crew activities must be requested annually through the National Fire Plan Operations and Reporting System (NFPORS). This annual funding request includes all estimated costs for the crew's work on the three programs described below.

a. Hazard Fuel Reduction Program

The hazard fuel reduction program seeks to identify and manually remove concentrations of hazard fuels adjacent to high visitor use areas, such as hiking trails, parking areas, etc. to reduce the risk of these fuels catching fire through human activities. These hazard fuels are dead tree branches, limbs, twigs and trunks less than four inches in diameter brought to the ground by disease, insect damage and/or wind damage. It is these finer fuels that can be expected to provide a receptive fuel bed for a fire ignition and to carry the fire once it starts. The objectives of the hazard fuel reduction program are to:

- Provide for public and firefighter safety
- Reduce high loadings of fine fuel in high visitor use areas to separate ignition sources (visitors) from receptive fuel beds
- Reduce the likelihood of a fire spreading in high fuel loading areas

Hand tools and chainsaws are used in these treatments. NPS-approved herbicides can be used where appropriate to stump treat cut hardwood stems to reduce their likelihood of re-sprouting. The cleared fuels can be spread adjacent to the site, chipped and spread on-site, chipped and removed from the site or piled and burned on-site or burned at another site within the Park. This work is carried out by the hazard fuel crew.

Projects are identified annually as conditions (storm damage, insect damage, etc.) create high concentrations of finer fuels in high visitor use areas. Funding for the hazard fuel reduction program must be requested annually through NFPORS as part of the annual hazard fuel crew funding request. All hazard fuel treatment projects will be documented in the Park GIS system and reported in NFPORS as part of the hazard fuel crew NFPORS project funding report.

b. Fuel Break Program

The fuel break program created and maintains strategically place fuel breaks to reduce the likelihood of a wildfire moving across Park boundaries and into groups of Park facilities, such as the campgrounds and the Park headquarters complex. These fuel breaks, including 51 miles of boundary fuel break, were established between 2001 and 2009 and are maintained on a three year rotation by the hazard fuel crew. The objectives of the fuel break program are to:

- Provide for public and firefighter safety
- Remove ladder fuels to prevent fire from spreading into the forest canopy
- Prevent fire from burning through the forest canopy
- Protect the structures within the Park and along the Park boundary from wildfires that would otherwise burn, or would be more difficult to suppress, without the treatment
- Keep fires on the surface where they can be most effectively fought

The specifications for these fuel breaks were developed by conducting fire behavior analysis of hardwood leaf litter and conifer fuel types utilizing the fire behavior software program *PC Behave*. These fuel breaks reduce the rate of spread of a surface fire moving across the surface of the ground at the fuel break, thus giving control forces additional time to stop the spread of the fire. This is accomplished by removing hazard fuels from along the vegetated sections of the Park boundary (see Figure 21) or around groups of Park facilities. The fuel break is not expected to stop a crown fire moving through the canopy of the trees and forest.

These fuel breaks consist of two sections. The first section involves removing dead and downed fuels and live fuels less than four inches diameter breast height (dbh) from an area ten feet wide immediately adjacent to the Park boundary and extending into the Park or immediately adjacent or near to the Park facility. Remaining live trees are limbed to approximately twelve feet from the base of tree. The second section is directly adjacent to the first section and extends an additional 40 feet into the Park or away from the Park facility. In the second section, dead and downed fuels are removed, some live fuels are removed to create a discontinuous canopy and remaining live trees are limbed to approximately twelve feet from the base of tree. NPS-approved herbicides may be used where appropriate to stump treat cut hardwood stems to reduce their likelihood of re-sprouting. The cleared fuels are spread adjacent to the site, chipped and spread on-site, chipped and removed from the site or piled and burned on-site or burned at another site within the Park.

Fuel breaks are only established and maintained in those areas where there is a likelihood that a wildfire would move across the Park boundary or into or out of areas containing groups of Park facilities. Fuel breaks are not established where natural fuel breaks (lakes, streams, wetlands, etc) or human-made barriers (roads, etc) are adjacent to or near the protected area.

Funding for the maintenance of these fuel breaks must be requested annually through NFPORS as part of the annual hazard fuel crew funding request. All fuel break treatment

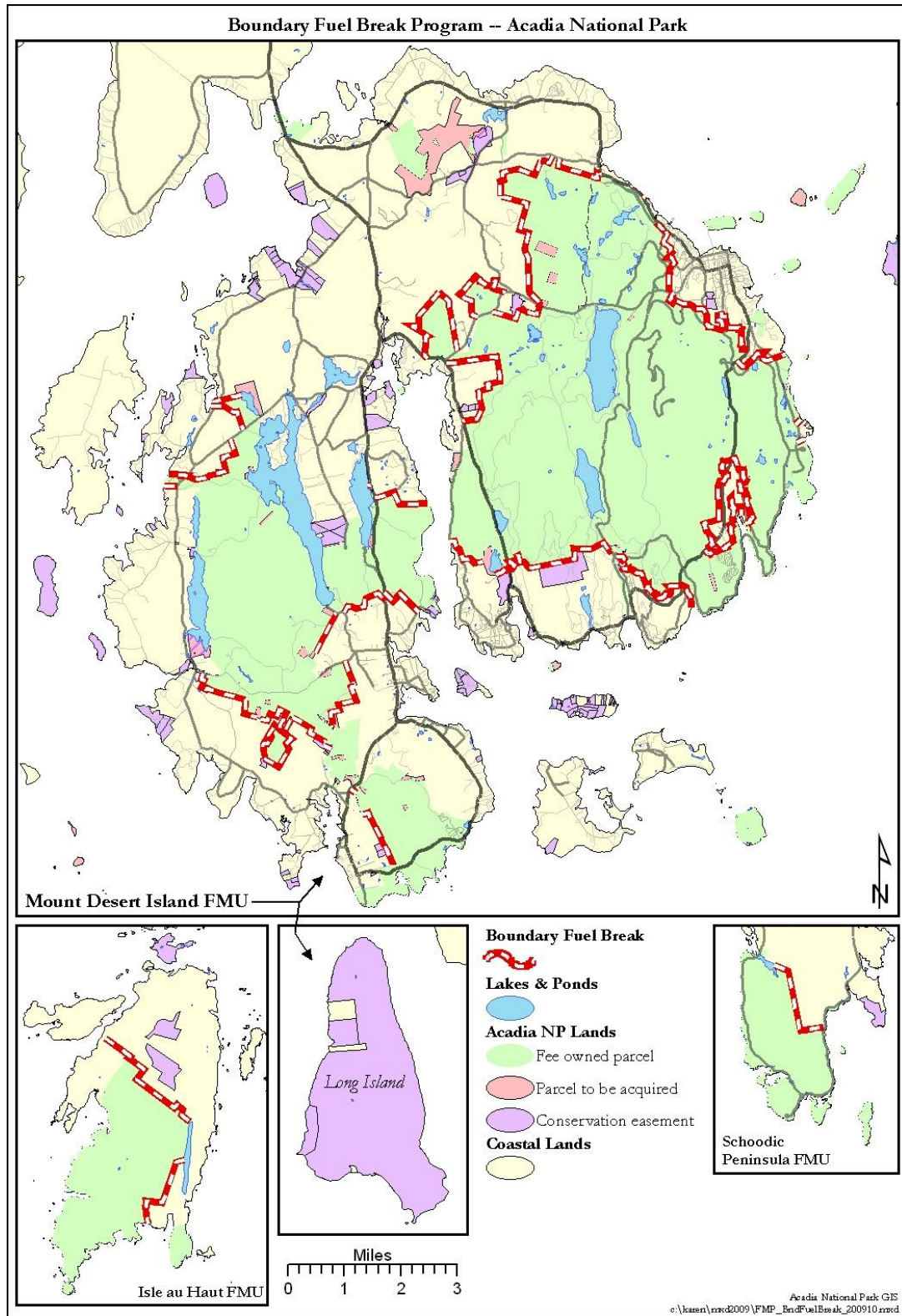


Figure 21: Acadia National Park Boundary Fuel Break Program Map

projects will be documented in the Park GIS system and reported in NFPORS as part of the hazard fuel crew NFPORS project funding report.

c. WUI Defensible Space Program

Using the nationally recognized Firewise standards, the WUI defensible space program creates and maintains defensible space around selected individual Park structures not protected by the fuel breaks described above. Defensible space is the area around a structure that can be treated in such a way as to reduce the chance that wildland fire reaching the structure. The hazard fuel crew is used to carry out this work. The objectives of the WUI defensible space program are to:

- Provide for public and firefighter safety
- Create sufficient defensible space around Park structures that little or no suppression efforts need to be carried out during a wildfire to protect the structures

This is accomplished through the regular mowing of existing lawns and the removal of hazard fuels, to the greatest extent possible, from around each structure to a distance of no less than 30 feet. Hazard fuels removed are dead, down, and diseased timber, ladder fuels, non-ornamental shrubs, undergrowth and fallen limbs and non-ornamental trees of less than four inches dbh (diameter at breast height). Remaining live trees are limbed to approximately twelve feet from the base of tree. These standards, based upon the Firewise standards, are modified where appropriate to maintain historical and culturally significant scenes. Additional information on Firewise standards can be found at Firewise Communities website at www.firewise.org.

Funding for the WUI defensible space program must be requested annually through NFPORS as part of the annual hazard fuel crew funding request. All defensible space projects will be documented in the Park GIS system and reported in NFPORS as part of the hazard fuel crew NFPORS project funding report.

d. Non-Fire Treatment Reporting

All fire funded fuel management treatment projects will be reported in NFPORS. Non-fire funded management activities that have fuel reduction as an indirect benefit will also be reported.

4.4.3. WUI COMMUNITY ASSISTANCE

DOI policy directs the NPS to “jointly collaborate and coordinate WUI community assistance (CA) programs with states, state foresters, local and state emergency management, the U.S. Forest Service, and the Federal Emergency Management Agency, as appropriate. CA programs include activities or treatments performed usually on non-NPS property (inholdings and/or communities, subdivisions, etc., immediately adjacent to NPS lands) to mitigate the risks to

adjacent properties from wildland fires that originate on NPS lands. CA programs also include community workshops for prevention and educational activities on non-NPS lands.

CA treatments are stand-alone. That is, they are not conducted as part of an NPS project. The treatments are developed through a community mitigation plan or Community Wildfire Protection Plan (CWPP) on lands outside the Park and are supported with CA funding. Emphasis and priority is given to the communities identified through the state process as wildland urban interface (WUI) communities-at-risk. CA funds may be used to fund the following types of programs and activities:

- Wildland fire prevention activities and related materials
- Development of CWPPs, including risk assessments and mitigation plans
- WUI community workshops and defensible space demonstrations
- Hazardous fuels reduction treatments on Federal and non-Federal lands in the WUI (covered under a CWPP or equivalent)

The Park fire management office will work with eligible local cooperators to identify potential CA projects, seek funding for those projects and provide cooperative management of them. Specific guidance on administering CA projects is found in the “Fuels Management” Chapter of *RM-18*.

4.5. PREVENTION, EDUCATION AND MITIGATION

Historically the goal of wildland fire prevention programs has been to prevent unwanted human-caused wildfires. While the ultimate goal of preventing loss of life, property and natural and cultural resources has remained the same, current proactive fire management programs prevent fires and reduce hazardous fuels not only to reduce unwanted ignitions, but also to minimize damages and personnel exposure to unsafe conditions and situations.

Public education on the natural role of fire on the landscape and the prevention of unwanted wildland fires has become increasingly important as communities, including those surrounding the Park, make inroads into wildland areas. The Park’s prevention and education program will seek to address both of these areas.

NPS policy does not require the Park to conduct a wildland fire prevention risk analysis or to develop a fire prevention plan. As stated in *RM-18* and the *Interagency Standards for Fire and Fire Aviation Operations* (“The Red Book”), only those NPS units that experience more than 26 human-caused fires per ten-year period are required to have an analysis and plan. In the period 1999 through 2008, the Park experienced 25 human-caused wildfires. The sections below will constitute the fire prevention plan for the Park. Chapter 6 of *RM-18* provides additional guidance on wildland fire prevention and education programs. If this rate of wildfire increases in

the future, a wildland fire prevention risk analysis will then be conducted and a fire prevention plan will be developed.

4.5.1. Fire Prevention, Education and Community Assistance Programs

An active fire prevention and education program will be conducted in conjunction with other agencies to increase awareness of fire prevention, communicate fire danger information, develop understanding of the dangers and benefits of wildland fire, protect human life and property and prevent damage to cultural resources, natural resources and real property and increase the public's awareness of the wildland/urban interface. Fire prevention activities will be based upon fire history, including ignition sources, and current and projected conditions. The fire prevention specialist will coordinate the Park's fire prevention and education program.

A program of public education regarding potential fire danger will be conducted. Visitor contacts, signs, bulletin board materials, handouts and interpretive programs may be utilized to increase visitor and Park neighbor awareness of fire hazards. Fire danger rating signs at the Thompson Island Information Center, the McFarland Hill Ranger Station, the Isle au Haut Ranger Station, the Blackwoods Campground Entrance Station and the Seawall Campground Entrance Station will be maintained and updated with the current National Fire Danger Rating System (NFDRS) fire danger level daily during the fire season.

An integral part of the fire prevention program is the need for all employees, cooperators, contractors and concessionaires to be mindful of their own activities that could lead to unwanted ignitions. Setting a good example will aid the Park's credibility with its neighbors. Public contact staff will look for opportunities to integrate fire prevention and safety messages into informal and formal visitor contacts.

It is essential that Park employees and cooperators be well informed about fire prevention and the objectives of the fire management program. Employees and cooperators must be kept informed about changes in existing conditions throughout the fire season.

During periods of elevated or prolonged fire danger, fire prevention messages concerning the fire danger will be delivered to the visiting public and Park neighbors. These messages may be informal contacts by interpretive, maintenance or law enforcement staff. Press releases may be sent to area media outlets, information may be placed on the Park's website, temporary signs may be posted at visitor contact points and trail heads, and other means as necessary and appropriate, including interpretive programs, may be used to communicate this information. Emergency restrictions regarding fires or area closures may become necessary. Such restrictions, when imposed, will usually be consistent with those implemented by cooperators.

Concepts of the Park's prescribed fire program will be incorporated, as appropriate, in Park publications, web pages, brochures and handouts. When prescribed fires are being conducted in the Park, signs at visitor contact points may be used to supplement visitor contacts. These signs will be used to direct, inform, guide and caution visitors about prescribed fire activities. The

Park may also post information on its website and may share information with interested parties by electronic mail or whatever means are most effective.

Prior to, during and after a prescribed fire, Park employees will relate to the public the beneficial effects of prescribed fires as opposed to unplanned human-caused fires. Information will be included to emphasize the potential severity of human-caused wildfires and how to prevent them.

Park staff will work with local fire departments, the Maine Forest Service, and other agencies with fire management responsibilities, to identify prevention needs, and develop and conduct programs to meet those needs and provide community education and assistance.

a. Wildland/Urban Interface Assessment Program

An assistance program to adjacent landowners will provide information on the wildland/urban interface (WUI) and Firewise mitigation techniques. As part of this program, landowners will be offered an opportunity to have their properties evaluated by Park fire management staff. These assessments will identify potential interface risks to the property and provide the landowner with a list of mitigation measures that can be implemented to reduce those risks to their property. These assessments will be conducted utilizing the NPS Wildland Hazard Assessment Methodology (WHAM) software program.

b. Rural Fire Assistance Program

The Rural Fire Assistance Program (RFA) is a grant program whose purpose through financial and technical assistance is to augment rural fire department firefighter safety and wildland fire protection capabilities and enhance wildland fire protection coverage on DOI lands. Grants may only be used for basic wildland fire safety equipment and tools, communication devices, wildland fire training and community wildfire prevention and education activities.

Subject to annual program guidelines and emphasis, grants may include the direct transfer of RFA funds to a local department for the purchase of authorized equipment and training or items may be purchased for the department and transferred to it under property receipt and training provided directly to them. All property purchased and/or transferred to the department become the property of the department. All fund and equipment transfers are conducted under the authority of a cooperative agreement with the department.

This program is authorized and funded on a year-to-year basis through annual appropriations and is administered by the fire management office.

c. Community Wildfire Protection Plan

Each of the towns that border the Park has been identified in the *Federal Register* as a wildland/urban interface “Community-At-Risk”. This FMP identifies the risk of wildland fire to those neighboring communities, addresses that risk through treatment programs and

incorporated input and advice from Federal, state, and local agencies, neighboring landowners, the local communities. These actions and collaboration allow this FMP to serve as a Community Wildfire Protection Plan (CWPP) for each of those communities.

4.5.2. Public Information

The Park is committed to keeping the public informed of its fire management program and activities. Informational and educational opportunities will be developed to reach as many segments of the public as possible. This may include Park neighbors, local and state government representatives, special interest groups, schools, public organizations and other groups. NPS materials and programs may be available to help deliver information concerning the role fire plays in preserving and protecting the cultural and natural resources of the Park. Regionally appropriate and Park specific information may be developed and disseminated. The Park's fire prevention specialist is responsible for coordinating development and implementation of such programs and activities and for providing support and resources to them.

A "Fire Management" section will be maintained and periodically updated on the Park's public website. This section will include pages on the Park fire management program, fire ecology and wildland/urban interface.

Emergency closures or restrictions by the superintendent may become necessary during periods of elevated or extended fire danger. Such closures will necessitate additional coordination and communication with the public and the media.

4.5.3. Mitigation

Since inadvertent or intentional ignition of wildland fuels by humans is an illegal activity, the Park will investigate, to the best of its capabilities, all human-caused wildfires as soon as possible after discovery. Investigations may range from those conducted by initial action resources to a full-fledged criminal investigation conducted by a qualified arson investigator.

5. MONITORING AND EVALUATION

Monitoring and evaluation are essential elements of the Park's fire management program. They provide the means by which Park personnel are able to determine if applicable sections of the FMP are being implemented as planned and if fire-related goals and objectives are being achieved.

Monitoring and evaluation are part of both the management of unplanned ignitions and planned fuel treatments. Monitoring may be short term, as exemplified in those cases where wildfires require immediate suppression, or may be long term, as a result of the need to closely monitor habitat changes over an extended period. Monitoring is required to ensure that goals and objectives of a prescribed burn and/or mechanical fuel treatment are within acceptable environmental parameters as stated in the prescribed fire burn plan or treatment plan.

The primary goals of fire monitoring and evaluation are to:

- Record basic information for all fires
- Document post-fire effects and burned area rehabilitation needs
- Follow trends in fuels and plant communities
- Improve fire planning and fire management

5.1. MONITORING

Monitoring is a critical component of any fire management program that utilizes prescribed fire for management purposes. It is also important for monitoring the long-term health of the ecosystems which the fire management program is involved with.

The prescribed fire monitoring program is utilized to provide insight into the effectiveness of prescribed fires conducted in the Park. Each prescribed fire burn plan has identified burn objectives and has monitoring requirements and protocols that will be implemented as a part of that particular burn. Permanent monitoring plots have been established for selected vista burn units to provide a cost-efficient, representative view of the effectiveness of these prescribed fires.

Monitoring of research burns, such as for fire dependent species, is not part of this monitoring program. Monitoring protocols for research burns will be developed as an integral part of each specific research project.

The fire management program is also interested in the long-term health and composition of its forest stands, which comprise the vast majority of the Park's vegetation. The long-term trends in these stands can provide insights into future species composition changes, regeneration, fuel loading issues and potential increased wildfire risks. A long-term monitoring program for this purpose was developed by Dr. William Patterson III of the University of Massachusetts with the intent of periodic sampling on a 15 to 20 year cycle. Twenty monitoring plots were established and sampled in 1980. These plots were sampled again in the early 1990s.

The Park is developing a new fire effects monitoring plan (to be inserted in Appendix H) to assess accomplishments and to determine the effects of management activities on Park cultural and natural resources and to track long-term trends in its forest stands. This new monitoring program will incorporate existing monitoring protocols and data and will include the four levels of monitoring described in the *NPS Fire Monitoring Handbook*:

The Park's fire monitoring program will follow the NPS policy found in *RM-18* and adhere to the monitoring protocols found in the *NPS Fire Monitoring Handbook*.

5.1.1. Level 1 Monitoring – Environmental/ Planning

Level 1 monitoring provides for gathering the background data needed to make informed strategic and tactical decisions on wildland fires and prescribed fires. This data includes:

- Fire history
- Fire regimes
- Weather patterns and extremes
- Fuel and fire behavior models
- Values to be protected
- Any other information needed to understand the Park's fire situation

This data is found in other sections of the FMP, other Park planning documents, Park weather data, Park fire records and other sources of information.

Level 1 data is managed by the fire management office and will be made available to incident commanders and other fire management staff as needed.

Access to some Level 1 information (location of archeological sites, location of rare or sensitive species or other data that could lead to injury to a sensitive resource) may be restricted to upper level fire managers or fire staff working on-site. Park staff will provide the IC with all available

information or guidance needed to make informed fire management and resource protection decisions.

5.1.2. Level 2 Monitoring - Fire Observation

All fires that have the potential to threaten values to be protected will be monitored by direct observation. This includes both wildfires and prescribed fires.

Level 2 monitoring provides a basic overview of the fire by documenting fire events, fire and smoke behavior, and the fire situation throughout the life of the fire. Data including:

- Weather conditions
- Fire behavior (flame-length, rate of spread, fire intensity, fire residence time, etc.)
- Smoke behavior (volume, density, direction of spread, etc.)

5.1.3. Level 3 Monitoring - Short-Term Change

Level 3 monitoring records information on:

- Fuels and changes in fuel characteristics (fuel types, fuel density, fuel reduction, etc.)
- Short-term vegetation change (within one year of the fire) within a fuel complex/plant community
- Burned area rehabilitation needs related to soil erosion

Any other information on short-term changes in resource condition needed to determine if management objectives of the fire program are being achieved should also be recorded.

For level 3 monitoring to be fully effective in providing park managers with useful comparative data, pre-burn and post-burn monitoring data must be collected. Level 3 monitoring is required for each prescribed fire unit. Specific monitoring protocols and objective will be described in each prescribed fire burn plan.

The intensity of level 3 monitoring may vary. Some burn areas will require intensive and extensive sampling (ex. research fires, fires burning in sensitive species habitat, etc.). Other burn areas will require only limited data collection (ex. hazard fuel reduction areas). In all cases, monitoring intensity will be appropriate to meet management goals, document resource condition and will follow *NPS Fire Monitoring Handbook* guidelines and protocols.

5.1.4. Level 4 Monitoring - Long-Term Change

Level 4 monitoring attempts to identify and document significant changes or trends related to fire or fire absence over long periods of time (>1 year to >10 years). Many fire effects, such as changes in the composition of plant communities, that may not be detectable during short-term monitoring, can be documented using long-term monitoring.

Representative prescribed burn units will receive level 4 monitoring. Other areas will receive level 4 monitoring as appropriate to meet management goals. Level 4 monitoring of burned areas will normally be achieved by continuing level 3 monitoring protocols for an extended period.

5.2. EVALUATION

On-going evaluation of the effectiveness of the fire management program laid out in this FMP is necessary to ensure that the goals and objectives of the program continue to be valid and that the program is achieving those goals and objectives.

5.2.1. Fire Management Plan Review

Annual updates and five-year comprehensive reviews of the FMP are required by *RM-18*. The purposes of these updates and reviews are to keep the FMP current with policy and terminology changes and to evaluate the planned actions in the FMP for effectiveness and continued appropriateness.

a. Annual FMP Update

The annual update is designed to keep the FMP current with policy and to ensure that the fire management program includes a process of adaptive management to incorporate new knowledge, modernization and the best available science. Specific guidance on the annual update process can be found in the “Fire Management Plans” Chapter of *RM-18*. A sample “Annual Wildland Fire Management Plan Review” form can be found in Appendix I.

b. Five-Year Comprehensive FMP Review

The purpose of the five-year review is similar to the annual update, but is more comprehensive and includes an interdisciplinary approach to evaluating the effectiveness and future direction of the fire management program and the FMP. The review includes a broader consideration of new park planning direction, changing environmental and social conditions, new science and feedback from the fire effects monitoring program. Specific guidance on the annual update process can be found in the “Fire Management Plans” Chapter of *RM-18*.

GLOSSARY and ACRONYMS

GLOSSARY

A glossary of common fire management terms can be found on the NWCG website at <http://www.nwcg.gov/pms/pubs/glossary/index.htm>. This glossary is updated periodically.

ACRONYMS

AAR: After Action Review
AMD: United States Department of the Interior Aviation Management Directorate
BI: Burning Index
CA: Community Assistance
CRWB: Crew Boss, Single Resource
CWPP: Community Wildfire Protection Plan
DBH: Diameter Breast Height
DEP: Maine Department of Environmental Protection
DM: United States Department of the Interior Departmental Manual
DO-18: Director's Order 18; Wildland Fire Management
DOI: United States Department of the Interior
EACC: Eastern Area Coordination Center
EPA: Environmental Protection Agency
ERC: Energy Release Component
ESA: Endangered Species Act
EDSD: Expanded Dispatch Support Dispatcher
ENGB: Engine Boss, Single Resource
FCA: Fire Control Aid
FFT: Fire Operations and Fuels Technician
FFT1: Firefighter Type 1 (Advanced Firefighter/Squad Boss)
FFT2: Firefighter Type 2
FIREPRO: National Park Service Normal Fire Year Program
FMH: Fire Monitoring Handbook
FMO: Fire Management Officer
FMP: Fire Management Plan
FMPC: National Park Service Fire Management Program Center
FMU: Fire Management Unit
FPA: Fire Program Analysis
FPMA: Fire Program Management Assistant
FPS: Fire Prevention Specialist
FPU: Fire Planning Unit
FRCC: Fire Regime Condition Class
GIS: Geographic Information System

GPS: Global Positioning System
GMP: General Management Plan
IAH: Isle au Haut
IC: Incident Commander
ICS: Incident Command System
ICT3: Incident Commander Type 3
ICT4: Incident Commander Type 4
ICT5: Incident Commander Type 5
IDT: Interdisciplinary Team
IHS: International Historic Site
IQCS: Incident Qualification and Certification System
KBDI: Keetch-Byram Drought Index
MDI: Mount Desert Island
MIST: Minimum Impact Suppression Tactics
MMA: Maximum Manageable Area.
MSP: Federal Interagency Wildland Firefighter Medical Qualifications Standards Program
NCA: North Country Area
NECC: Northeastern Interagency Coordination Center
NEPA: National Environmental Policy Act
NER: Northeast Region of the National Park Service
NFDRS: National Fire Danger Rating System
NFFL: National Forest Fire Laboratory
NFP: National Fire Plan
NFPORS: National Fire Plan Operations and Reporting System
NHPA: National Historic Preservation Act.
NIFC: National Interagency Fire Center.
NIFMID: National Interagency Fire Management Database
NHP: National Historical Park
NHS: National Historic Site
NOCOPG: North Country Area Fire Management Park Group
NM: National Monument
NP: National Park
NPS: National Park Service
NWCG: National Wildfire Coordinating Group
NWS: National Weather Service
OAS: United States Department of the Interior Office of Aircraft Services
PIO: Public Information Officer
PIO2: Public Information Officer Type 2
PIO3: Public Information Officer Type 3
PPE: Personal Protective Equipment
RAWS - Remote Automatic Weather Station
READ: Resource Advisor
RFA: Rural Fire Assistance Program
RFMO: Regional Fire Management Officer

RM-18: Reference Manual 18; Wildland Fire Management
RMP: Resource Management Plan
ROS: Rate of Spread
ROSS: Resource Ordering and Status System
RXB2: Prescribed Fire Burn Boss Type 2
RXB3: Prescribed Fire Burn Boss Type 3
SERC: Schoodic Education and Research Center
SHPO: State Historic Preservation Office
STCR: Strike Team Leader Crew
STEN: Strike Team Leader Engine
TFLD: Task Force Leader
USDA: United States Department of Agriculture
USGS: United States Geological Survey
UTM: Universal Transverse Mercator
WCT: Work Capacity Test
WFDSS: Wildland Fire Decision Support System
WFIP: Wildland Fire Implementation Plan
WFMI: Wildland Fire Management Information System
WFSA: Wildland Fire Situation Analysis
WHAM: National Park Service Wildland Hazard Assessment Methodology Program
WIMS: Weather Information and Management System
WUI: Wildland/Urban Interface

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APPENDICIES

- A. NEPA Categorical Exclusion**
- B. Annual Preparedness Plan**
- C. Agreements Inventory**
- D. Step-Up Plan**
- E. NFDRS Fire Danger Pocket Card**
- F. Delegation of Authority**
- G. Prescribed Fire Burn Unit List**
- H. Acadia National Park Fire Effects Monitoring Plan**
- I. Annual Wildland Fire Management Plan Review Form**

APPENDIX A

NEPA Categorical Exclusion



National Park Service
U.S. Department of the Interior

Acadia National Park
L7617(ACAD)
Date: 12/15/2009

Categorical Exclusion Form

Project: Revise Acadia National Park Wildland Fire Management Plan

PEPC Project Number: 10004

Project Description: The National Park Service proposes to revise its 1993 Wildland Fire Management Plan (WFMP) for Acadia National Park, Maine, to meet national and agency policy changes in wildland fire management that have been instituted since the original plan was approved. The Wildland Fire Management Plan is an operational document that establishes goals, objectives, and components of a comprehensive wildland fire management program. The revised WFMP would guide all wildland fire management activities within the park for the next five to ten years. Goals of the revised plan include aggressively suppressing wildfires to protect visitors, neighbors and National Park Service staff, reducing hazardous fuels, working with park neighbors to prevent fires and fire damage, and protecting cultural and natural resources associated with the park. The plan would also describe mitigations that would be incorporated in fire management operations to reduce adverse effects on the human environment. The revised WFMP would meet the guidelines set forth in the Acadia National park General Management Plan and the National Fire Plan. In addition, it would comply with the 2009 Guidance for Implementation of Federal Wildland Fire Management Policy, and National Park Service Director's Order 18 - Wildland Fire Management.

Project Location: Hancock and Knox Counties, Maine

Mitigation(s):

- No mitigations identified

Describe the category used to exclude action from further NEPA analysis and indicate the number of the category (see Section 3-4 of DO-12):

B.1 Changes or amendments to an approved plan, when such changes would cause no or only minimal environmental impact.

(See Attached Environmental Screening Form)

On the basis of the environmental impact information in the statutory compliance file, with which I am familiar, I am categorically excluding the described project from further NEPA analysis. No exceptional circumstances or conditions in Section 3-6 apply, and the action is fully described in Section 3-4 of

DO-12.

Park Superintendent / Date:

Sharon Steel 12/15/07

NPS Contact Person:

Stuart West

Title:

Chief Ranger

Phone number:

207-288-8770

APPENDIX B

Annual Preparedness Plan

Annual Preparedness Plan

Acadia National Park
April 2009

January

- Conduct annual update or five-year comprehensive review of the fire management plan.
- Review and update all interagency agreements and cooperator agreements.
- Obtain current year's annual fire weather operations plan for the Caribou, Maine office of the National Weather Service. This plan can be found on the office's Internet site at <http://www.erh.noaa.gov/car/fire.htm>.

February

- Conduct meetings with the Maine Forest Service and local fire chiefs to determine local fire strategies for upcoming fire season and discuss any changes in agreements, operations or regulations.
- Check all fire management assigned radios.
- Update employee fire qualification and certification records.
- Inventory and re-stock fire caches.

March

- Review and update WIMS station information for fire weather stations.
- Complete arduous duty medical exams for all permanent employees identified as park firefighters.
- Complete hiring for all seasonal positions.
- Complete "Pre-Season Risk Analysis" and "Preparedness Planning Checklist" worksheets found in the Preparedness Section of *NPS Reference Manual #18; Wildland Fire Management (RM-18)*
- Brief park management and division chiefs of proposed fire management activities for the upcoming year.
- Complete burn plans and obtain appropriate approvals for the current year's proposed prescribed fires.

April

- Complete annual exchange of fire weather stations RAWS instruments with the NIFC RAWS Depot.
- Bring vehicles and equipment out of winter storage. Service and test all pumps and other fire equipment.
- Complete work capacity tests for all permanent employees identified as park firefighters.

May

No identified activities.

June

- Conduct annual firefighter safety refresher for all park firefighters.
- Complete arduous duty medical exams for all seasonal employees identified as park firefighters.
- Complete work capacity tests for all seasonal employees identified as park firefighters.
- Identify park personnel for participation on regional fire crews.

July

- Identify park fire training needs for the upcoming fiscal year.
- Identify park preparedness budget needs for the upcoming fiscal year.

August

No identified activities.

September

No identified activities.

October

- Conduct post season review of fire preparedness operations.

November

- Winterize and store vehicles and equipment.

December

No identified activities.

APPENDIX C

Agreements Inventory

AGREEMENT INVENTORY ACADIA NATIONAL PARK						
AGREEMENT NUMBER	AGREEMENT TYPE	AGENCY	PURPOSE	EFFECTIVE DATE	RENEWAL OR REPLACE DATE	RENEWAL OR REPLACE YEAR
none	Interpark	North Country Area parks	FM	9/25/2006	9/25/2011	2011
none	Interpark	Appalachian National Scenic Trail	FM	10/2/2006	10/2/2011	2011
1443MU-1700-99-001	MOU	Maine Forest Service	WF	9/9/1999	7/14/2014	2014
1443MU-1700-99-002	MOU	Hancock County Firefighter's Association	WF & SF	6/15/1999	5/19/2014	2014
H1700-06-0003	CA	Bar Harbor Fire Department	WF & SF	4/12/2007	4/12/2012	2012
H1700-06-0004	CA	Blue Hill Fire Department	WF & SF	9/7/2006	9/7/2011	2011
H1700-09-0025	CA	Cranberry Isles Fire Department	WF & SF	10/22/2009	10/22/2014	2014
H1700-06-0006	CA	Gouldsboro Fire Department	WF & SF	1/17/2007	1/17/2012	2012
H1700-06-0007	CA	Isle au Haut Fire Department	WF & SF	4/12/2008	4/12/2013	2013
H1700-06-0008	CA	Mount Desert Fire Department	WF & SF	8/17/2006	8/17/2011	2011
H1700-06-0009	CA	Southwest Harbor Fire Department	WF & SF	4/12/2007	4/12/2012	2012
H1700-06-0010	CA	Swans Island Fire Department	WF & SF	3/2/2007	3/2/2012	2012
H1700-06-0011	CA	Tremont Fire Department	WF & SF	1/17/2007	1/17/2012	2012
H1700-06-0012	CA	Trenton Fire Department	WF & SF	1/17/2007	1/17/2012	2012
H1700-06-0013	CA	Winter Harbor Fire Department	WF & SF	6/29/2007	6/29/2012	2012

FM: Interpark fire and aviation management services and assistance

WF: Wildland fire services and assistance

SF: Structural fire services and assistance

Notes:

- 1) Agreement with the Maine Forest Service should be replaced with a state-wide interagency master agreement involving the NPS, USFWS, USFS and BIA.
- 2) Fire department cooperative agreements that expire must be replaced the new cooperative agreement template. They cannot be renewed. Use the Cranberry Isles CA #H1700-09-0025 as the template.

APPENDIX D

Step-Up Plan

STEP-UP PLAN

Acadia National Park
September 2009

This step-up plan identifies incremental preparedness actions that may be taken in response to increasing fire danger. Other actions not identified in the step-up plan may be taken as deemed appropriate for the current situation.

NFDRS ADJECTIVE	FUEL MODEL:	H	R	G	G
	STAFFING LEVEL	BI	BI	BI	ERC
LOW	1	0-3	0-7	0-8	0-6
MODERATE	2	4-6	8-15	9-17	7-12
HIGH	3	7-13	16-31	18-34	13-27
VERY HIGH	4	14-17	32-39	35-41	28-33
EXTEREME	5	18+	40+	42+	34+

The step-up plan has five staffing levels which correspond to the five NFDRS fire danger adjective ratings; Low (1), Medium (2), High (3), Very High (4) and Extreme (5). Specific breakpoints are established for each level using FIREFAMILY PLUS software. The above table illustrates these staffing level burning index (BI) breakpoints for the pre-dominant fuel models (H and R) found in the Park, along with Fuel Model G and their corresponding NFDRS indices. All parks are required to monitor Fuel Model G for both BI and energy release component (ERC) to use as a comparative fuel model at the national level. Staffing Level 4 represents the 90th percentile breakpoint and Staffing Level 5 represents the 97th percentile breakpoint.

STAFFING LEVELS 1 AND 2: 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 by park dispatch on the primary park radio frequency at 0900 hours local time. Park 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 fire 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.

STAFFING LEVEL 3: FIRE DANGER; HIGH

1. The fire management office maintains at least one staff member on duty daily during normal working hours to insure condition and availability of suppression equipment and to direct initial action as necessary.
2. Protection personnel are advised of the fire danger rating by the fire management officer or the fire operations and fuels technician to insure availability for assignment as needed.
3. Reconnaissance may be scheduled by the fire management officer or the fire operations and fuels technician for high risk area (concentrations of fine fuels in high use areas).
4. Open communications are maintained with the Maine Forest Service and local fire departments.

STAFFING LEVEL 4: FIRE DANGER; VERY HIGH

1. The fire management office will maintain at least one staff member on duty 0900 to 1800 hours daily.
2. The fire management officer or the fire operations and fuels technician may be authorized to take government vehicles to their residence in order to provide for a timely response to any emergency call out.
3. All protection personnel are in radio or telephone contact with the park dispatch office during working hours. At least one permanent member of the division is on call during off-duty hours.
4. The location of all fire-qualified park employees is monitored by the fire program management assistant. All fire qualified park employees are alerted for potential fire call out during and after working hours.
5. Other divisions continue normal operations unless requested by the fire management officer or the fire operations and fuels technician (through the chief ranger and deputy superintendent) to assume fire related duties.
6. Protection personnel lieu days may be canceled by the chief ranger.
7. The regional fire management officer will be notified by the fire management officer if the fire danger remains at Staffing Level 4 or higher for five days or more.

8. Information may be obtained regarding the availability of equipment and manpower from local departments and the Maine Forest Service by the fire program management assistant.
9. An emergency preparedness account may be opened to cover emergency preparedness costs.

STAFFING LEVEL 5: FIRE DANGER; EXTREME

1. Either the fire management officer or the fire operations and fuels technician will be on duty daily from 0800 hours to sunset daily.
2. Additional fire patrols will be added and will be on duty from 1000 hours to sunset.
3. The fire management officer or the fire operations and fuels technician will be authorized to take government vehicles to their residence in order to provide for a timely response to any emergency call out.
4. All protection personnel will be in radio or telephone contact with the park dispatch office during working hours.
5. The location of all fire-qualified park employees is monitored by the fire program management assistant. All fire qualified park employees are alerted for potential fire call out during and after working hours.
6. Employees of other divisions may be made available for duty during duty hours, nights and weekends when so requested by the fire management officer or the fire operations and fuels technician (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 notified by the fire management officer if the fire danger remains at Staffing Level 5 or higher for three days or more.
9. Information may be obtained regarding the availability of equipment and manpower from local departments and the Maine Forest Service by the fire program management assistant.
10. Air patrols may be initiated by the fire management officer on a daily basis during peak burning periods. Aircraft from the Maine Forest Service or through DOI Aviation Management Directorate aviation rental agreements with commercial vendors may be used for this purpose.

11. 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.
12. All fire qualified protection personnel may be placed in on-call or emergency standby status by the chief ranger.
13. An emergency preparedness account may be opened to cover emergency preparedness costs.

ADDITIONAL STEP-UP PROCEDURES 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 action 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:

STAFFING LEVEL 4: FIRE DANGER; VERY HIGH

1. Daily contact by the lead park ranger on Isle au Haut is maintained with town authorities to inform them of the fire danger and to determine the strength and readiness of Isle au Haut Fire Department personnel and equipment.
2. Lieu days may be canceled for all Isle au Haut Unit personnel by the chief ranger.
3. Fire suppression equipment may be pre-positioned at Duck Harbor, particularly backpack pumps, by the Isle au Haut Unit staff.
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 dispatch.

STAFFING LEVEL 5: FIRE DANGER; EXTREME

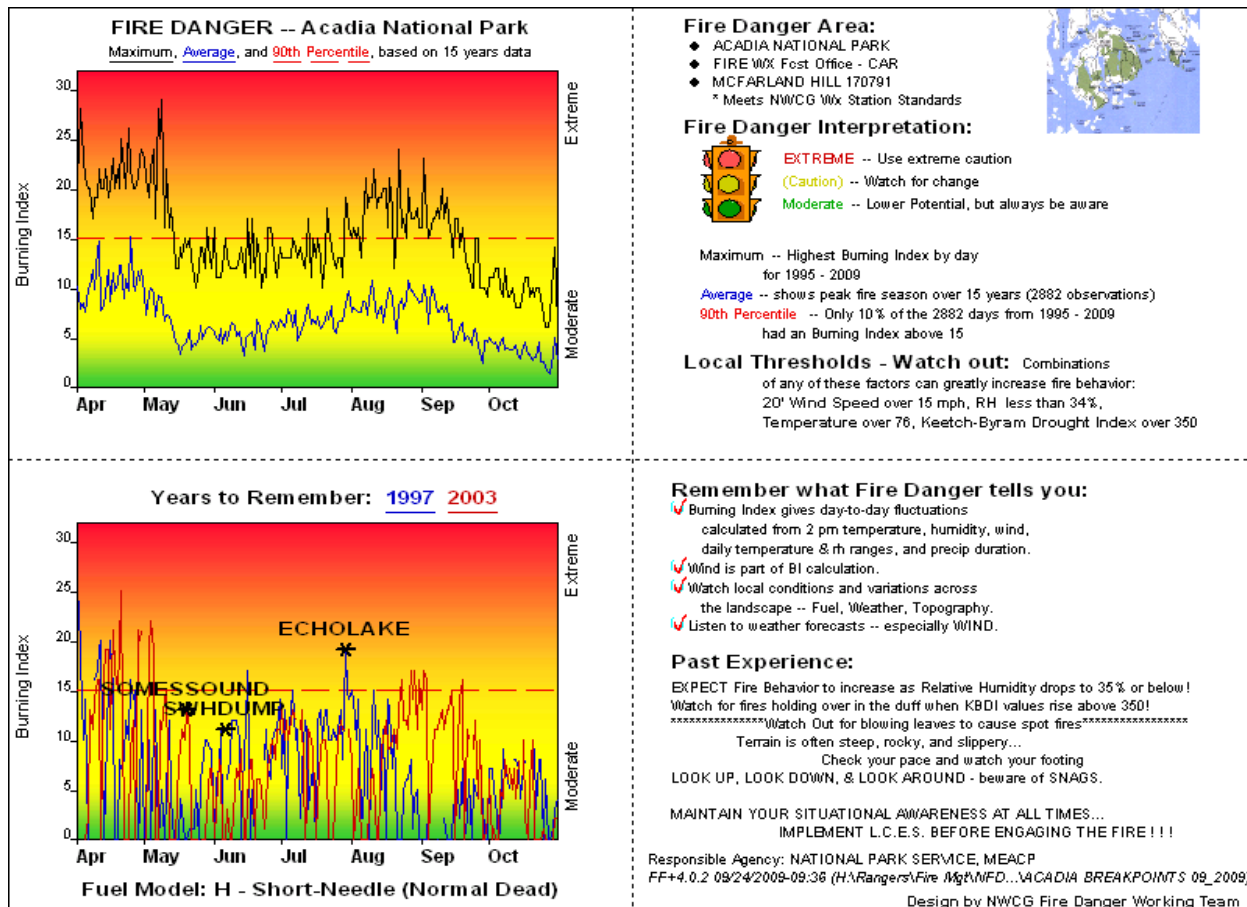
1. Lieu days may be canceled for all Isle au Haut personnel and emergency stand-by pay authorized by the chief ranger.
2. All open fires, including charcoal fires, may be prohibited at Duck Harbor Campground by order of the superintendent.
3. Depending on extent and severity of fire danger, Duck Harbor 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 Isle au Haut 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 pre-positioned suppression personnel.

APPENDIX E

NFDRS Fire Danger Pocket Card

NFDRS Fire Danger Pocket Card



APPENDIX F

Delegation of Authority



United States Department of the Interior

NATIONAL PARK SERVICE

Acadia National Park

P.O. Box 177

Bar Harbor, Maine 04609-0177

IN REPLY REFER TO:

LIMITED DELEGATION OF AUTHORITY

To: _____ (name) _____, Incident Commander

From: Superintendent, Acadia National Park

Subject: Limited Delegation of Authority

As of (time) hours, on this date, (date), I have delegated limited authority to you and your incident management team to manage the _____ (name of fire) _____ fire at Acadia National Park.

As superintendent I have ultimate responsibility for protection of Acadia National Park's resources and the lives of the park's visitors and employees. Your expertise in the area of wildland fire incident management will assist me in fulfilling that responsibility during the present situation. My considerations for management of this fire are:

1. Provide for firefighter and public safety.
2. Manage the fire using the most appropriate combination of strategies that consider safety, cost effectiveness and the probability of success and consequences of failure. The ecological, social and legal consequences of these strategies and their implementation must also be considered
3. Use minimal impact suppression techniques whenever possible to reduce resource damage. Use natural and pre-existing manmade barriers for control lines and for burnout operations whenever possible.

4. Key cultural features requiring priority protection are:

5. Key resource considerations are:

6. Restrictions for suppression actions are:

- No tracked vehicles (bulldozers, etc) without my express written permission except when human life and/ or structures are at immediate risk.
 - Chemical retardant and Class A foam use is authorized as stipulated in the Park's fire management plan.
-
-
-

7. Provide training opportunities for National Park Service and local firefighters to the extent possible.

8. Minimize disruption to visitor access and use of the Park consistent with public safety.

9. Conduct emergency stabilization and restoration actions as determined necessary by the resource advisors.

10. Provide complete documentation of all fire operations (including unit logs, timekeeping, cost accounting, contracts, damage reports and claims, etc.).

As the incident commander, you have full authority and responsibility for managing this fire within the framework of the law and according to National Park Service policy and direction as provided by this office.

_____ (name) _____ has been appointed to serve as liaison officer between you and myself to provide you with additional policy information and direction you may need in managing this fire. The liaison officer will also serve as the communications channel between you and myself.

_____ (name) _____ has been appointed natural resources advisor and _____ (name) _____ has been appointed cultural resources advisor for this fire. They will provide you with the natural and cultural resources information and policy direction necessary for managing this fire. The resource advisors will be consulted in situations where natural and/or cultural resources decisions or tradeoffs are involved unless life safety issues require immediate attention. Any such life safety actions will be documented.

_____ (Superintendent's signature) _____
(Superintendent's name)

APPENDIX G

Prescribed Fire Burn Unit List

ACADIA NATIONAL PARK PRESCRIBED FIRE BURN UNIT LIST			
BURN UNIT NAME	LOCATION	ACREAGE ESTIMATE	DATE LAST BURNED
Jordan Pond House Vista*	Other	1.0	5/10/04
Schoodic Head Jack Pine Stand*	Other	0.1	8/26/92
Ship Harbor Vista	Other	0.1	
Baker Island Pasture	Other	10.0	
Vista #4*	Carriage Roads	0.1	5/4/07
Vista #8B	Carriage Roads	0.2	5/4/07
Vista #53*	Carriage Roads	0.9	
Vista #87*	Carriage Roads	0.2	4/11/06
Vista #89	Carriage Roads	0.4	4/11/06
Vista #93	Carriage Roads	0.2	
Vista #94	Carriage Roads	0.2	
Vista #120	Carriage Roads	0.2	
Vista #132	Carriage Roads	3.7	
Vista #133	Carriage Roads	0.3	
Vista #138*	Carriage Roads	0.3	5/3/00
Vista #158	Carriage Roads	0.1	
Vista #190A	Carriage Roads	0.1	
Vista #204	Carriage Roads	0.5	
Vista #212	Carriage Roads	0.6	
Vista #217B	Carriage Roads	0.2	
Vista #221B	Carriage Roads	0.1	
Vista #228	Carriage Roads	0.1	
Vista #240A	Carriage Roads	0.2	
Vista #240B	Carriage Roads	0.1	
Vista #240C	Carriage Roads	0.2	
'47 Fire Overlook Vista	Motor Roads	0.4	
Duck Brook Bridge Vista	Motor Roads	1.1	
Great Meadow Vista	Motor Roads	0.3	
TOTAL ACRES:		21.9	

* Contains monitoring plot

APPENDIX H

Acadia National Park Fire Effects Monitoring Plan

(Insert *Acadia National Park Fire Effects Monitoring Plan* here when completed.)

APPENDIX I

Annual Wildland Fire Management Plan Review Form

Annual Wildland Fire Management Plan Review

Acadia National Park {insert year of review}

National Park Service Director's Order #18; Wildland Fire Management (DO-18) and Reference Manual 18; Wildland Fire Management (RM-18) provide policy and guidance for National Park Service (NPS) wildland fire management operations and programs. DO-18 states that "Every park area with burnable vegetation must have a fire management plan approved by the superintendent" (DO-18, January 16, 2008 version). Chapter 4 of RM-18 requires each NPS unit with a wildland fire management plan to review and update that plan annually. RM-18 states that "an annual review is essential to insure that the fire management plan continues to conform to current laws, objectives, procedures and strategies" (RM-18; January 1, 2008 version).

The fire management plan review and updates are intended to keep the fire management plan current; changes in terminology, cooperative agreements and modifications of multi-year treatment plans are examples of appropriate annual revisions to a fire management plan using this fire management plan review form.

The updates identified in this document will become effective upon signature by the park superintendent. The updated information will be incorporated into the park's fire management plan. The signed original of this review document will be kept in the park files and a signed copy will be inserted into the fire management plan directly behind the signature page of the fire management plan.

The fire management plan for Acadia National Park was originally approved on {insert date}. A comprehensive revision and NEPA compliance review of this the park's fire management plan is required every five years (RM-18, Chapter 4). That revision and review is required in {insert year (5 years from the original FMP approval year)}.

The following components for the fire management plan were reviewed and updated where necessary. Those updates are identified and described in the sections below.

1. TERMINOLOGY UPDATES AND REVISIONS

- _____ No update required
- _____ Update included here:

2. COMPLIANCE FOR NEPA, NHPA; SECTION 106 AND ESA; SECTION 7

☐ No update required
☐ Update included here:

3. POLICY CHANGES

☐ No update required
☐ Update included here:

4. STEP-UP STAFFING PLAN

☐ No update required
☐ Update included here:

5. DELGATION OF AUTHORITY

☐ No update required
☐ Update included here:

6. WILDLAND FIRE USE

☐ No update required
☐ Update included here:

7. ORGANIZATIONAL RESPONSIBILITIES

☐ No update required
☐ Update included here:

9. AGREEMENTS / COORDINATION / CONTRACTS

☐ No update required
☐ Update included here:

10. MULTI-YEAR TREATMENT PLANS

☐ No update required
☐ Update included here:

11. PRE-ATTACK PLAN

☐ No update required
☐ Update included here:

12. OTHER UPDATES

☐ No update required
☐ Update included here:

This annual fire management plan review was:

Prepared by: _____
Fire Management Officer, Acadia National Park Date

Approved by: _____
Superintendent, Acadia National Park Date

