Wilderness and Backcountry Management Plan and Environmental Impact Statement

ISLE ROYALE NATIONAL PARK
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July 2005

Wilderness and Backcountry Management Plan and Environmental Impact Statement

Isle Royale National Park
Michigan
EXECUTIVE SUMMARY

This document contains the proposed Wilderness and Backcountry Management Plan for Isle Royale National Park and the associated Environmental Impact Statement (EIS). The purpose of this plan is to serve as:

1. A public document that outlines steps for preserving Isle Royale’s wilderness character, natural resources, and cultural resources while also providing for the use and enjoyment of the park’s wilderness and backcountry by current and future generations; and
2. A management document that will provide accountability, consistency, and continuity for managing Isle Royale’s wilderness and backcountry and this park’s place in the National Park Service’s wilderness management program.

The plan addresses issues and provides guidelines for managing the wilderness and backcountry areas of the park, which encompass all areas of Isle Royale outside of the Developed and Open Water Zones. This plan addresses a wide array of management issues, and identifies specific goals, objectives, and decision-making guidelines for administrative actions and visitor use. In many cases this plan formalizes current NPS management practices in Isle Royale’s wilderness and backcountry. However, several modifications and changes are proposed that are intended to bring management practices on Isle Royale into compliance with NPS policies, improve visitor services, or generally improve wilderness and backcountry management in the park. This plan does not propose any changes in the wilderness boundaries set forth in Isle Royale’s 1976 Wilderness Legislation.

Adopting this plan would result in some changes in how the NPS manages wilderness and backcountry in Isle Royale, some of which would be readily apparent to the public, while others would be primarily operational. The NPS would institutionalize a Minimum Requirement process to guide and document decisions on appropriate tools for maintenance activities in the park’s wilderness, appropriate research projects and field methods within wilderness, and appropriate administrative actions within the wilderness. The NPS would aim to make better use of research and monitoring to guide management through the creation and implementation of a coordinated monitoring plan, and would strive to increase staff training and accountability for wilderness management.

The proposed changes that would be most obvious to the public are those that address crowding and visitor distribution, visitor information services, and resource conditions. Several issues are presented with multiple alternatives for goals and management actions, which were developed with extensive public input. These issues are; 1) managing overnight camping and boating in Isle Royale’s wilderness and backcountry, including permitting and information services, 2) managing day use in the park’s wilderness and backcountry, 3) managing campfires, 4) maintaining or removing the fire towers in the park’s wilderness, and 5) maintaining or removing picnic tables from wilderness campgrounds. Chapter 2 outlines the details of all proposed changes, and identifies the NPS preferred alternative for each of these issues.
This draft WBMP proposes several changes in how Isle Royale’s wilderness and backcountry is managed. The preferred alternatives were crafted with an intention of creating one cohesive management program, with management goals for each of several issues being complimentary, not contradictory. The planning team’s intention was to respond to public interest and the concerns of subject matter experts, and incorporate the best science available for guiding preservation of Isle Royale’s resources and values. General goals included improving the quality of wilderness and backcountry experiences for visitors while still providing high public access to the park for appropriate types of recreation. Existing facilities could be used more efficiently, while unnecessary facilities would be removed from the wilderness. Table I outlines the goals and proposed management actions for all of the preferred alternatives.

The preferred alternatives in combination also strive to minimize adverse resource impacts, in many cases improving resource conditions that are currently showing degradation. Because Isle Royale is already a difficult and expensive park to visit, the preferred alternatives were also crafted with an interest in not further restricting general public access to the park. The preferred alternative for managing overnight camping and boating on Isle Royale focused on more efficiently utilizing existing camping facilities through the creation of a backcountry office and advanced permitting. The intent is to expand visitor services for trip planning and reduce campground crowding to improve social and resource conditions in campgrounds. Because this could result in a decrease in visitor access to the backcountry for camping during the busiest weeks of the season, the preferred alternative for managing day use was crafted with an intention to allow an increase in day use throughout the visitor season. Day tours would be managed to concentrate the majority of day visitors close to developed and frontcountry areas of the park and minimize adverse impacts to wilderness character and other critical resources.

The preferred alternatives in combination also aimed to minimize or reduce the impacts of development in the park’s wilderness. Although the preferred alternative for overnight use would add one additional campsite at North Desor campground and a few rustic cabins in Rock Harbor, and the preferred alternative for day use would add 3-5 miles of new trail, no new campgrounds would be constructed other than those approved in the park’s General Management Plan, 2 fire towers would be removed, and campfire rings would be located only where resource conditions could tolerate the associated impacts.

The EIS involves analysis of current conditions in the park and the likely impacts of implementing each of the alternatives, considering impacts to visitor use and experiences, wilderness character, natural resources, cultural resources, socioeconomics, and NPS operations and administration. In general, each of the alternatives would be expected to result in both beneficial and adverse impacts to park resources and values. None of the adverse impacts would be extensive or severe enough to result in impairment of resources or values. The environmental consequences of each alternative are summarized in Table II.
### Table I: Summary of the Preferred Alternatives

<table>
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<tr>
<th>Goals</th>
<th>Actions Common to All</th>
<th>Managing Overnight Use</th>
<th>Managing Day Use</th>
<th>Campfires</th>
<th>Fire Towers</th>
<th>Picnic Tables</th>
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<tr>
<td>The NPS would avoid actions that might have no seeming physical impact but which would detract from wilderness character and the idea of wilderness as a place set apart.</td>
<td>Provide a range of high quality opportunities for wilderness and backcountry experiences and reduce adverse impacts to park resources and values.</td>
<td>Expand opportunities for high quality day activities, while also accommodating future increases in day use and minimizing adverse impacts to park resources and values.</td>
<td>Continue to provide an opportunity for camping with campfires, while also concentrating and minimizing adverse resource impacts.</td>
<td>Improve the park’s wilderness character by removing substantial structures that no longer serve an administrative need.</td>
<td>Adhere to NPS policy for wilderness management while also utilizing effective tools for containing adverse impacts in campsites.</td>
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#### Desired Future Conditions
- Provide a range of quality visitor opportunities
- Reduce the adverse impacts of NPS operations
- Overcrowding would be reduced in campgrounds all season
- Improve camper distribution
- Protect seasonal sensitivities of park resources
- Provide a seasonal range of visitor opportunities, with low use in the spring and fall
- Improve trip planning and information services
- Create additional opportunities, such as a new loop hiking trail, for day visitors.
- Improve social and resource conditions in day use areas by reducing the size of organized day tours.
- Allow for an increase in day visitors to the park.
- Visitors would have the option to camp with campfires
- Visitors would have the choice of camping in areas where fires are permitted, or where fires are not permitted.
- Fire rings would be located only where there no vulnerable natural or cultural resources.
- Administrative impacts to wilderness character would be reduced by removing 2 of the park’s 3 fire towers
- Ojibway Tower would continue to be used to administrative purposes that are compatible with wilderness, such as communications, research, and monitoring
- Isle Royale would be in compliance with NPS policies for wilderness management
- Adverse resource impacts would be effectively concentrated in campsites of minimal sizes.
- Picnic tables would continue to be available for visitor convenience in some wilderness campgrounds.
<table>
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<tr>
<th>Appropriate Management Actions</th>
<th>Managing Overnight Use</th>
<th>Managing Day Use</th>
<th>Campfires</th>
<th>Fire Towers</th>
<th>Picnic Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Low-cost rustic cabins would be added in Rock Harbor</td>
<td>• Establish a mainland-based backcountry office to coordinate information services and permitting</td>
<td>• Explore options for creating a new 3-5 mile day trail near Windigo.</td>
<td>• Adhere to clear protocols for when and where campfires would be appropriate, based on resource conditions.</td>
<td>• Remove Ishpeming and Feldmann Towers, using the minimum tool necessary</td>
<td>• Follow the proper steps to seek a waiver to retain picnic tables within some of the park’s wilderness campgrounds</td>
</tr>
<tr>
<td>• Cross-cut saws would be used increasingly to minimize chainsaw use</td>
<td>• Implement an advanced permitting system for all overnight boaters and campers, allowing more flexibility for boaters not using campsites.</td>
<td>• Redesign Interpretive tours to focus on smaller group activities.</td>
<td>• Remove or add fire rings at different campgrounds as necessary, based on resource conditions.</td>
<td>• Restore the impacted sites to their natural conditions</td>
<td>• Upon receipt of the waiver, maintain existing picnic tables in wilderness campgrounds.</td>
</tr>
<tr>
<td>• Sustainably-harvested, chemically preserved lumber would be used for trails and campgrounds</td>
<td>• Discontinue the practice of issuing permits over the capacity of a campground</td>
<td>• Establish group size limits for day tours, allowing larger groups to split into multiple small groups. Limits set by management zone: Frontcountry: 20 Wilderness Portal, Backcountry and Primitive: 10 Pristine: 6</td>
<td>• Replace existing fire rings with smaller metal rings with adjustable grates.</td>
<td>• Maintain and utilize Ojibway Tower for administrative purposes associated with managing the park’s wilderness.</td>
<td>• Remove picnic tables from campgrounds where docks and shelters are removed (i.e. Siskiwit Bay and Duncan Bay upon full implementation of the GMP)</td>
</tr>
<tr>
<td>• Cross-country camping and anchoring-out would continue, with monitoring of impacts</td>
<td>• Institute a permitting fee to offset the costs associated with the backcountry office</td>
<td>• Extend two small group activities.</td>
<td>• A single communal ring could replace multiple individual campsite rings in some campgrounds</td>
<td>• If the NPS did not approve the waiver, picnic tables would be removed from all campgrounds within wilderness.</td>
<td></td>
</tr>
<tr>
<td>• The Minimum Requirement Decision Tree would apply to all NPS activities in wilderness</td>
<td>• Expand North Desor campground by 1 campsite.</td>
<td>• Increase education about low-impact fires and sensitive resources.</td>
<td>• Include information about the locations of campfire rings for visitors at the time of permitting.</td>
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Table II: Combination of Environmental Effects of all of the Preferred Alternatives

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<td>Visitor Use and Experiences</td>
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<tr>
<td>Visitation could increase from mid June through October. Advanced permitting would better distribute people to available campsites and reduce the frequency of overcrowding and give campers a greater assurance of finding an available campsite and opportunities to visit the park during low use times would be preserved. These are long-term, moderate beneficial impacts to visitor use. Some people may not be able to get a permit for their preferred itinerary and public access may be limited in spring, a long-term, minor adverse impact.</td>
<td>Long-term minor adverse impact to visitor access to tours and group activities due to size limitations. Long-term, moderate, beneficial impact to quality of tours due to smaller group sizes.</td>
<td>Long-term, minor beneficial effect for those who enjoy campfires. Long-term minor adverse effect for those who do not enjoy campfires.</td>
<td>Long-term minor adverse impact to visitor experience from the loss of views from the Feldtmann Tower.</td>
<td>Long-term moderate beneficial impact to visitor experience due to the retention of this modern convenience.</td>
<td>Request a waiver to maintain picnic tables within wilderness campgrounds.</td>
</tr>
<tr>
<td>Proposed Changes</td>
<td>Implement GMP-proposed new campgrounds</td>
<td>Group size limits, with large groups allowed to split up.</td>
<td>Campfires would be rotated to appropriate campgrounds based on the fuel availability and resource conditions.</td>
<td>The Feldtmann and Ishpeming Fire Towers would be removed.</td>
<td>The Ojibway Tower would be retained for administrative uses.</td>
</tr>
<tr>
<td></td>
<td>New Backcountry Office</td>
<td>MV Sandy can carry up to 40 passengers total – split into multiple groups at destination.</td>
<td>Resource conditions at campgrounds would be inventoried prior to installing fire rings.</td>
<td>Resources would be monitored for impacts.</td>
<td></td>
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<tr>
<td></td>
<td>Advanced Permitting</td>
<td>Explore options for adding a new loop trail in Windigo.</td>
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<td></td>
<td>Add 1 campsite at North Desor</td>
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<td></td>
<td>Not more than 5% sharing in summer</td>
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<td></td>
<td>Maintain histories low use in spring</td>
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Visitor Use and Experiences: Visitation could increase from mid June through October. Advanced permitting would better distribute people to available campsites and reduce the frequency of overcrowding and give campers a greater assurance of finding an available campsite and opportunities to visit the park during low use times would be preserved. These are long-term, moderate beneficial impacts to visitor use. Some people may not be able to get a permit for their preferred itinerary and public access may be limited in spring, a long-term, minor adverse impact.

Long-term minor adverse impact to visitor access to tours and group activities due to size limitations. Long-term, moderate, beneficial impact to quality of tours due to smaller group sizes.


Long-term minor adverse impact to visitor experience from the loss of views from the Feldtmann Tower.

Long-term moderate beneficial impact to visitor experience due to the retention of this modern convenience.
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<tbody>
<tr>
<td>Impacts to wilderness character would be long-term, moderate and beneficial. Overcrowding in campgrounds would be reduced. A wide range of opportunities for wilderness experiences would be protected.</td>
<td>Smaller groups are more compatible with wilderness experiences both for group members and others. Minor, short-term beneficial impacts include less noise, crowding and displacement of wildlife. Less trampling could be a long-term minor to moderate impact.</td>
<td>Long-term, minor beneficial effect for those who see campfires as part of wilderness. Long-term minor adverse effect for those who do not. Long-term, minor adverse effects to naturalness.</td>
<td>Long-term major beneficial impact to wilderness and naturalness in the vicinity of the Feldtmann and Ishpeming Towers. Long-term minor beneficial impact to other areas where the Feldtmann Tower is visible.</td>
<td>Long-term, minor moderate adverse impact on wilderness character due to the retention of these modern artifacts. Impact is reversible with the removal of tables.</td>
<td></td>
</tr>
<tr>
<td>Natural Resources</td>
<td>Impacts to natural resources would be long-term, moderate and beneficial compared to current conditions. Reduced overcrowding in campgrounds would reduce adverse biophysical and noise impacts. Maintaining low visitation in spring would minimize adverse impacts to wildlife. Long-term, minor adverse effects include adding one new campsite at North Desor and allowing an increase in fall visitation.</td>
<td>Beneficial impacts to wildlife would be localized and short-term. Beneficial impacts to vegetation and soils would be localized and could be long-term.</td>
<td>Long-term, minor, beneficial impacts to natural resources due to concentration of visitor impacts in campgrounds with fire rings and fewer illegal fires. Long-term, minor adverse impacts because of tree damage, social trails and loss of woody debris. Rotation should mitigate some of these adverse impacts.</td>
<td>Long-term minor, localized, beneficial effects on natural resources in the area of the Feldtmann and Ishpeming Towers.</td>
<td>Long-term, minor to moderate beneficial impact to natural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>Reducing campground overcrowding and maintaining low visitation in the spring would have long-term, minor beneficial impacts on cultural resources. Adding one new campsite at North Desor could have adverse effects on unknown cultural resources. These effects would be long-term and their severity would depend on the significance and integrity of affected resources.</td>
<td>Cultural objects located near the trails would gain a minor to moderate beneficial impact from the smaller groups. Cultural landscapes would see a minor, short-term beneficial impact.</td>
<td>Long-term, minor adverse impacts from social trails created by firewood seekers and from uncontrolled fires.</td>
<td>Long-term, minor, adverse impacts from the removal of the Feldtmann and Ishpeming Fire Towers. Ojibway Tower would remain as an example of fire towers in island history.</td>
<td>Long-term, minor beneficial impact to cultural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
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<tr>
<td>Socio-</td>
<td>Peak season backcountry visitation could decrease. If this resulted in an increase in</td>
<td>Possible minor, long-term adverse impacts if the number of day visitors to the</td>
<td>Long-term, minor, adverse impact to current staff workloads from assessment,</td>
<td>No anticipated socioeconomic effects on local communities or visitors.</td>
<td></td>
</tr>
<tr>
<td>economics</td>
<td>day use, then this would be beneficial for local communities as day visitors spend</td>
<td>the park decreased based on availability of day trips. Possible long-term adverse</td>
<td>monitoring and moving fire rings and restoring the sites.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>more money. Cost per visitor could increase if permitting fees were implemented.</td>
<td>impact to organizations providing day trips, as additional leaders may be</td>
<td></td>
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</tr>
<tr>
<td>Park</td>
<td>Long-term minor adverse impact to park operations. Additional staffing required to</td>
<td>Possible long-term, minor adverse impact to park-wide operations and a moderate</td>
<td>Short-term, major adverse impact to park operations due to the removal of two</td>
<td>Short-term, minor beneficial impact of not having to remove the picnic tables.</td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>start and run a backcountry office. Short-term costs would be moderate, long-term</td>
<td>impact to interpretative staff based on the need for additional staff to provide</td>
<td>fire towers from the Park. Long-term, minor beneficial impact from lower</td>
<td>Long-term, minor adverse impact of maintenance costs associated with tables.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>costs would be minor to moderate. Short-term costs of constructing a new campsite at</td>
<td>multiple leaders for guided tours</td>
<td>maintenance costs.</td>
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<tr>
<td></td>
<td>North Desor would be minor, as would long-term costs for maintenance.</td>
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</table>
How to Comment on this Plan:
In order to be considered in the development of the final Plan and EIS, comments must be received within the 60-day comment period. Public comments will not be available for public review until after the plan and EIS comment period ends. Names and addresses of people that comment on this Plan and EIS will be available to the public upon request. Copies of the Plan and EIS have been sent to public libraries in Houghton, Marquette, and Lansing, MI and Grand Marais and Duluth, MN. The full text of the Plan and EIS are also posted on the Isle Royale Website at http://www.nps.gov/isro. You can submit your comments to us in several ways:

- By mail: Superintendent, Attn: WBMP, Isle Royale National Park, 800 East Lakeshore Drive, Houghton, MI 49931
- By e-mail: isro_wbmp@nps.gov
- By fax (Attn: WBMP): (906) 487-7170
- Hand deliver: Isle Royale National Park Headquarters and Visitor Center, 800 East Lakeshore Drive, Houghton, MI (With label, Attn: WBMP Comments)

Please include your name and mailing address with all comments.

After public review the NPS planning team will evaluate comments from other federal agencies, tribes, organizations, individuals, and businesses regarding the draft plan and incorporate appropriate changes into a Final Wilderness and Backcountry Management Plan and Environmental Impact Statement. The final plan will include substantive comments on the draft document and NPS responses to those comments. After a 30-day no action period, a record of decision approving a final plan will be signed by the NPS regional director. With the signing of the record of decision, the plan can then be implemented, depending on funding and staffing. A record of decision does not guarantee funds and staff for implementing the approved plan.
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CHAPTER 1: INTRODUCTION

1.1 Purpose and Need for this Plan

The purpose of this Wilderness and Backcountry Management Plan (WBMP) for Isle Royale National Park is to outline steps for preserving the park’s wilderness character, natural resources, and cultural resources while also providing for the use of and enjoyment by current and future generations. This involves preventing or reversing degradation of conditions within the park’s wilderness and backcountry, including natural and cultural resources, high quality human experiences, and wilderness character. Additionally this plan will provide accountability, consistency, and continuity for Isle Royale and its place in the National Park Service’s (NPS) wilderness management program.

Future changes in Isle Royale’s recreation and visitation patterns are difficult or impossible to predict, as are trends and changes in technologies available to visitors and land managers. The goal is not to freeze Isle Royale in its current state, but to ensure that these future changes do not result in a degradation of conditions and opportunities. One intent of this management plan is to establish guidelines to help park managers in planning for unpredictable future conditions with proactive efforts to maintain desirable conditions in the park’s wilderness and backcountry, and an ability to be responsive to future changes.

Several factors indicate a need for this wilderness and backcountry management plan:

1. National Park Service Policy requires that each park containing wilderness maintain an up-to-date and approved wilderness management plan that “…will identify desired future conditions, as well as establish indicators, standards, conditions, and thresholds beyond which management actions will be taken to reduce human impacts to wilderness resources” (NPS 2000, § 6.3.4.2). Isle Royale completed a Draft Backcountry Management Plan in 1985, but this plan was never approved or fully implemented, and many of the issues and recommended guidelines are now out of date. Completion and implementation of this new Wilderness and Backcountry Management Plan would bring Isle Royale into compliance with NPS policy requirements.

2. The park’s 1998 General Management Plan (GMP) generally addresses management issues for the wilderness and backcountry, but deferred to a WBMP for identification of specific issues and guidelines for addressing these issues. The GMP specified that the park’s WBMP “would guide management of wilderness resources and ensure consistency in such management over time. The plan would identify a process to determine the appropriate tools to use in wilderness, set priorities for campground and trail maintenance projects, and could incorporate the Visitor Experience and Resource Protection (VERP) implementation plan to address visitor use limits in wilderness, identify research and monitoring needs, outline how VERP will be implemented, and identify staffing needs.” (NPS 1998a, p.29)

3. Preliminary inventory and monitoring of wilderness and backcountry resources indicates a difference between existing conditions and proposed desired conditions. Changes in
backcountry use, management actions, and associated human-caused adverse impacts suggest an underlying need to more proactively manage human activities that directly or indirectly affect wilderness and backcountry conditions. Scoping during the GMP process identified several concerns related to wilderness and backcountry management, including; visitation levels and visitor density in the wilderness and backcountry, resource impacts and crowding in campgrounds, and insufficient visitor information services.

4. The park is lacking clear Isle Royale-specific guidelines to ensure that management actions and tools are appropriate, do not compromise wilderness character and values, and adhere to applicable laws and policies. It is important that these guidelines be developed with input from the public, other government agencies, and NPS partners.

### 1.2 Scope of this Plan

This Wilderness and Backcountry Management Plan addresses issues and provides guidelines for managing the non-developed areas of Isle Royale National Park. This includes all of the management zones outlined in the Park’s GMP, excluding the Open Water Motorized Zone and the Developed Zone, which consist of Rock Harbor, Windigo and the Mott Island Headquarters. Additionally, all visitors included in the overnight permitting system would be included in the scope of this plan. This includes all visitors staying in designated campsites, camping off-trail, staying at docks, and anchoring out.

This plan addresses backcountry as well as wilderness in the Park in order to cohesively manage all of Isle Royale's non-developed areas. Although there is no intention to expand wilderness restrictions, many goals for backcountry and wilderness management are similar. Wilderness issues in the park are rarely limited to the wilderness boundaries. For example, backcountry campgrounds found both within and outside of wilderness are similarly managed. Wilderness and non-wilderness campgrounds on Isle Royale cannot always be distinguished by facilities, types of visitors, or permitted activities. For this reason, it seems most appropriate to manage backcountry and wilderness in Isle Royale with one cohesive plan, and distinct from the management of the park's developed areas and the open motorized waters of Lake Superior.

### 1.3 Goals and Objectives of Wilderness and Backcountry Management for Isle Royale National Park

Isle Royale’s goals and objectives are based on the park’s legislation (see Appendix A and B), NPS policy, and the 1998 GMP and were drafted with input from the public. In the 1931 Congressional Record, NPS Director Albright highlighted some of the intended purposes for establishing Isle Royale as a National Park.

*This type of scenery, utterly distinct from anything now found in our national park system, its primitiveness, its unusual wildlife and interesting flora, its evidences of*
1.3.1 Management Goals
The primary goal for managing Isle Royale’s wilderness and backcountry is to protect its resources while also providing for the enjoyment of current and future generations. As defined in the GMP, one of Isle Royale’s primary management purposes is to preserve and protect the park’s wilderness character for use and enjoyment by future generations as wilderness. Wilderness character is the combination of biophysical, experiential, and symbolic qualities in an untrammeled and natural state that generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.

1.3.2 Objectives
- Manage Isle Royale’s wilderness and backcountry consistent with the preservation of wilderness character wherein nature is the primary influence and human works are minimal and substantially unnoticeable.
- To ensure preservation of wilderness character, use only the minimal tools, facilities and management techniques necessary to meet management objectives.
- Preserve cultural resources in Isle Royale’s wilderness and backcountry and foster their appreciation through appropriate programs of protection, research, education, monitoring, and treatment.
- Manage human use of Isle Royale so visitors have opportunities to experience solitude, remoteness, challenge, self-sufficiency, and discovery as appropriate in wilderness.
- Through interpretation and education, provide public and park staff education designed to promote and perpetuate awareness of, and appreciation for, wilderness character, resources, and ethics.
- Preserve the integrity of Isle Royale’s unique ecological community and its natural processes, while allowing for appropriate wilderness activities including recreation, scientific research, conservation, education, and preservation of cultural resources.
- Work with other agencies, institutions, governments, tribal governments, and the public, both within and outside the Great Lakes region, to foster a better understanding and awareness of wilderness preservation issues and goals at Isle Royale. This includes adverse impacts originating outside of the park as well as within, and on both global and regional scales.

1.4 Laws, Policies, and Authorities
Management of Isle Royale National Park’s wilderness and backcountry must be consistent with the laws, regulations, and policies of the Federal Government. The following summarizes the most relevant laws, policies, and authorities governing management of Isle Royale’s wilderness and backcountry.
1.4.1 Federal Laws and Provisions governing Isle Royale WBMP

The Wilderness Act of 1964 (16 USC §1131 et seq.) secures "for the American people of present and future generations the benefits of an enduring resource of wilderness." By definition, wilderness is “…a tract of undeveloped federal land of primeval character without permanent improvements or human habitation; an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain; where the forces of nature predominate and the imprint of human activities is substantially unnoticeable; which provides outstanding opportunities for solitude or a primitive and unconfined type of recreation.” This act allows for the designation of wilderness areas and establishes management directives that specify the preservation of wilderness character.

The National Environmental Policy Act of 1969 (NEPA) (P.L. 91-190, 42 USC §4321 et seq.) establishes “a national policy which will encourage productive and enjoyable harmony between man and his environment.” NEPA requires all government agencies to develop procedures that ensure open and honest documentation of existing resources and potential effects to these resources as a result of the proposed action. NEPA fosters public involvement as a key element of the decision-making process. NEPA compliance procedures are described in NPS Director’s Order 12, Conservation Planning, Environmental Impact Analysis, and Decision Making and the accompanying Reference Manual (NPS 2001a).

The Endangered Species Act of 1973 (16 USC 1531-1543) requires federal agencies to ensure that management activities authorized, funded, or carried out by the agency do not jeopardize the continued existence of listed endangered or threatened species, or result in the destruction or adverse modification of habitat that is critical to the conservation of the species.

The Clean Air Act of 1977 (42 USC 7401-7626) was established to improve the nation’s air quality and to eliminate certain pollutants linked to problems for human health or the environment. This act establishes National Parks greater than 6,000 acres (such as Isle Royale National Park) as mandatory Class I areas with only minor degradation of air quality allowed. Managers of such lands have direct responsibility to take steps to protect the air quality and related values, including visibility. Executive Order 12088 (1978) requires federal agencies to comply with all provisions of the Act, including State Implementation Plans. This Executive Order establishes procedures and responsibilities to ensure that all necessary actions are taken to prevent, control and abate environmental pollution with respect to federal facilities and activities.

The National Historic Preservation Act of 1966 (Section 106), amended, 1976, 1980, 1992 (16 USC 470) directs the federal government to "preserve the historical and cultural foundations of the nation as a living part of our community life and development in order to give a sense of orientation to the American people.” A key element of the act is the establishment of the National Register of Historic Places (NRHP). Federal agencies are directed to not inadvertently demolish, substantially alter, or allow NRHP listed properties to significantly deteriorate. Section 106 also includes criteria for designating National Historic Landmarks; directives for the Secretary of Interior to nominate properties of international significance as World Heritage Sites; and the establishment of State Historic Preservation Programs and Preservation Officers (SHPO) to direct statewide inventories of historic properties, administer the NRHP, and advise
government agencies regarding compliance with the act. Section 106 requires Federal agencies to take into account the effect of their undertakings on properties listed in or eligible for the National Register.

The Americans with Disabilities Act of 1990 (ADA) (P.L. 101-336) provides comprehensive civil rights protection to individuals with disabilities in the areas of employment, public accommodations, state and local government services, and telecommunications. Wilderness access is treated separately from access to public accommodations. Section 507(c) specifically addresses the issue of federal wilderness access stating, "Congress reaffirms that nothing in the Wilderness Act is to be construed as prohibiting the use of a wheelchair in a wilderness area by an individual whose disability requires use of a wheelchair, and consistent with the Wilderness Act no agency is required to provide any form of special treatment or accommodation, or to construct any facilities or modify conditions of lands within a wilderness area to facilitate such use."

The Clean Water Act (Federal Water Pollution Control Act of 1972, 1977 and 1987 Amendments, and E.O. 11752) is a national policy set forth to protect and enhance the quality of water resources and to prevent, control, and abate water pollution. This act requires a permit for a point source to discharge pollutants into navigable waters and a permit from the U.S. Army Corps of Engineers for any discharge of dredge or fill material into "waters of the U.S." This act prohibits discharge of oil or other hazardous materials in harmful quantities.

The American Antiquities Act of 1906 prevents the excavation and destruction of historic or prehistoric ruins or monuments on government controlled and owned lands. Persons found on government land without permission would be convicted and fined no more than five hundred dollars or would be imprisoned no more than ninety days, or could suffer both fine and imprisonment.

E.O. 11593 "Protection and Enhancement of the Cultural Environment," May 31, 1971 instructs all federal agencies to provide national leadership in historic preservation and to assure the preservation of cultural properties in federal ownership. The order directs all federal agencies to locate, inventory, and nominate all sites, buildings, districts, and objects under their jurisdiction or control that appear to qualify for listing on the National Register of Historic Places.

American Indian Religious Freedom Act of 1978 (AIRFA) (P.L. 95-341; 92 Stat. 469; 42 USC 1996) determines that the policy of the United States is to "protect and preserve for American Indians their inherent right of freedom to believe, express and exercise the traditional religions of the American Indian, Eskimo, Aleut and Native Hawaiians, including but not limited to site access, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites."

The Archaeological Resources Protection Act of 1979 (16 USC 470aa-470ll) defines archeological resources as any material remains of past human life or activities that are of archeological interest and are at least 100 years old. This act provides for the protection of archeological resources located on public and Indian lands, and establishes criteria for issuing
permits for any excavation or removal. Per this act, information concerning the nature and location of archeological resources may be exempt from the Freedom of Information Act.

1.4.2 National Park Service Provisions

The National Park Service Organic Act of 1916 (16 USC 1a-1) creates the NPS, and establishes its purpose: "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." It directs the NPS to promote and regulate the use of the parks by such means and measures as conform to their fundamental purposes. Congress and the courts have interpreted this act with clarification that “when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant” (NPS 2000, § 1.4.3).

The National Parks and Recreation Act of 1978 (P.L. 95-625) addressed planning in the National Parks, directing that long-term planning for parks should address the preservation of park resources, the types and general intensities of development and facilities, visitor carrying capacities, and potential boundary modifications.

Redwoods Act of 1978 (16 USC 1a-1) amends the Organic Act to reemphasize Congressional direction for all NPS lands and states, "the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these areas have been established.”

National Park Service Management Policies, 2001 establishes service-wide policies for preservation, management, and use of park resources and facilities. Establishes direction for the management of NPS wilderness. "The National Park Service will manage wilderness areas for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness. Management will include the protection of these areas, the preservation of their wilderness character, and the gathering and dissemination of information regarding their use and enjoyment as wilderness. The public purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition, as well as for the purposes of recreation, scenic, scientific, education, conservation, and historical use.” More specific guidelines for application of the Wilderness Act in NPS areas are described in Chapter 6 of Management Policies. Topics include wilderness qualification reviews, wilderness management, wilderness use, and public education. Wilderness management policies are based on provisions of the Wilderness Act and the Organic Act, as well as the establishing legislation of individual parks within the national system.

Director’s Order 41 and Reference Manual 41: Wilderness Preservation and Management, 1999 provides clarification and interpretation of the National Park Service’s wilderness policies and establishes specific guidelines to provide accountability, consistency, and continuity to the Service’s wilderness management program. Topics include wilderness management planning, management techniques, Minimum Requirement Concept, interagency coordination, interpretation and education, scientific activities, facilities, signs, fire management, cultural
resources, general public use, persons with disabilities, commercial services, special events, air quality, mineral development and training requirements.

1.4.3 Provisions Specific to Isle Royale National Park

*Isle Royale National Park Act, March 3, 1931 (46 Stat. 1514)* established Isle Royale National Park. The purpose for establishment stated in 16 USC, Subchapter LII, Section 408 follows: “…said area shall be, and is hereby, established, dedicated, and set apart as a public park for the benefit and enjoyment of the people and known as the Isle Royale National Park.” The park was officially established April 3, 1940 after all the land had been acquired.

*Isle Royale Wilderness Designation, October 20, 1976* designated 98 percent of the park’s land area as wilderness (later additions brought the total to 99 percent). Additional areas of the park are currently “potential wilderness.” All designated and potential wilderness areas must be managed according to management directives found in the *Wilderness Act of 1964.*

*Isle Royale National Park Biosphere Reserve, November 20, 1980* designation as a Biosphere Reserve by the United Nations Educational, Scientific and Cultural Organization (UNESCO). As a Biosphere Reserve, Isle Royale National Park is part of a network of outstanding examples of major ecosystems preserved for scientific research, conservation of nature and the service of man. Under the Man and the Biosphere Program, biosphere reserves provide a standard against which the effects of man on the environment can be measured.

*Isle Royale National Park General Management Plan (GMP), August 1998* establishes the guidelines for the overall use, preservation, management, and development of Isle Royale National Park. The GMP articulates a management philosophy and framework for decision-making and problem solving. The GMP provides park purpose, significance and emphasis statements to guide future actions. The GMP divides the park into zones of activity to provide a separation of uses to enhance visitor enjoyment and to preserve the natural and cultural resources of the park in a way that is compatible with the Wilderness Act.

*Isle Royale National Park Superintendent’s Compendium, as amended, May 15, 2000* summarizes park specific rules implemented under the discretionary authority of the park Superintendent. Serves as public notice, identifies areas closed for public use, provides a list of areas requiring either a special use permit or reservation and elaborates on public use and resource protection regulations that pertain specifically to the administration of Isle Royale National Park. The Compendium does not repeat regulations found in 36 CFR and other U.S.C. and CFR titles, which are enforced without further elaboration at the park level.

1.4.4 State Jurisdiction Over Lake Superior Waters

In 1939, the State of Michigan ceded exclusive jurisdiction of Isle Royale including any submerged lands within four and one-half miles of the shoreline of Isle Royale and immediately surrounding islands to the United States. However, as part of this agreement the State of Michigan retained the authority to regulate fishing in the Lake Superior Waters of the park. Commissioned Officers of the National Park Service, Bureau of Indian Affairs, Tribal Fish and Game Officers, and the Michigan DNR all have Jurisdiction and Authority to enforce fishing
regulations in the Lake Superior waters of the Park. The National Park Service and the United States Coast Guard have Jurisdiction & Authority to enforce Marine Safety Regulations such as boat registration, required safety equipment, water pollution regulations, etc.

### 1.5 Plan Review and Update

Wilderness and backcountry management is an iterative process, with ongoing monitoring informing managers of the effectiveness of their actions and identifying when changes are needed to meet management goals and objectives. This calls for some flexibility in the WBMP, but the specific direction and desired future conditions established in the final plan will remain as the management guideline. A WBMP is expected to have a lifespan of 10-15 years, with periodic reviews and assessments throughout that time. Environmental, social, and political conditions change, as does the information available to most effectively manage public lands, and it is not the intent of this plan to freeze conditions. Over time, changing conditions may call for a different management approach to meet Isle Royale’s mission. Within 10-15 years, the WBMP will be assessed as to the need for a thorough revision. Within five years the WBMP will be updated with specific decisions and additions including indicators and standards.

### 1.6 Relationship Between this Plan and Other Isle Royale Management Plans

Isle Royale’s Wilderness and Backcountry Management Plan is to be consistent with existing, updated management plans. Additionally, it outlines detailed goals for resource, social, and managerial conditions within the park’s backcountry and wilderness, which will be relevant for all management plans involving issues and actions affecting the park’s wilderness and backcountry, either directly or indirectly. All of the park’s plans are intended to be complementary and consistent. Full public disclosure and justification would be required where any management plan alters a decision or direction outlined in a previous plan.

Current Isle Royale Management Plans that the WBMP complements:
- General Management Plan (1998)
- Natural Resources Management Plan (1999)
- Comprehensive Interpretive Plan (2000)
- Aviation Management Plan (1997)

Upcoming Management Plans that will be consistent with the WBMP:
- Wilderness and Backcountry Monitoring and Implementation Plan
- Fisheries Management Plan
- Water Resources Management Plan
- Commercial Services Plan
- Historic Properties Management Plan
1.7 The Planning Process

The National Environmental Policy Act of 1969 (NEPA) is a national charter for protecting the environment. It applies to all federal projects or projects that require federal involvement. The purpose of NEPA is to help public officials make decisions that are based on an objective understanding of environmental consequences and to take actions that protect, restore, or enhance the environment. Another important purpose of NEPA is to inform the public of decisions being made that affect public lands. The public is then able to provide feedback to the decision-makers before the plan is implemented. To ensure compliance with NEPA, a specified process for proposed projects must be followed. The steps in this process are presented below.

1.7.1 The Visitor Experience and Resource Protection (VERP) Planning Framework

VERP is a planning framework that was developed by the NPS to help park planners and managers work within the requirements of NEPA and specifically address visitor carrying capacity and make sound decisions about visitor use management. Isle Royale initially implemented this process for the completion of the park’s GMP, and continued with VERP as the guiding framework for the WBMP. The VERP framework consists of 9 primary elements, some of which Isle Royale completed through the park’s GMP:

1. Assemble an interdisciplinary project team
2. Develop a public involvement strategy
3. Develop statements of park purpose, significance, and primary interpretive themes (completed in the GMP); identify planning constraints
4. Analyze park resources and the existing visitor use
5. Describe a potential range of visitor experiences and resource conditions as potential prescriptive management zones (completed in the GMP)
6. Allocate the potential management zones to specific locations in the park (completed in the GMP)
7. Select indicators and specify standards for each zone to established acceptable or desired conditions; develop a monitoring plan
8. Monitor resource and social indicators
9. Take management action to achieve specified standards or desired conditions

One of the key points of VERP is planning for a park’s visitor carrying capacity, as mandated by law in the National Parks and Recreation Act of 1978 (P.L. 95-625). Within VERP visitor carrying capacity is defined as “the type and level of visitor use that can be accommodated while sustaining acceptable resource and social conditions that complement the purpose of a park” (NPS 1997a, p.8). Inherent in this process is an understanding of a park’s purposes, resultant appropriate resource and social conditions, and that management will be an iterative process involving monitoring, evaluation, and taking action to achieve desired conditions. In summary, VERP is:

A planning and management framework that focuses on visitor use impacts on the visitor experience and the park resources. These impacts are primarily attributable to visitor behavior, use levels, types of use, timing of use, and location of use. (NPS 1997a, p.9)
1.7.2 Interdisciplinary Planning Team

An interdisciplinary planning team was formed at the start of the process of developing a WBMP for Isle Royale. This team consists of a core of Isle Royale employees who are managers and subject matter experts with expertise relevant to the WBMP. This group had primary responsibility for all phases of the planning process and plan development. In addition to this core group, assistance and consultation were periodically requested from a planner with the NPS Denver Service Center and researchers from the Interagency Aldo Leopold Wilderness Research Institute, the University of Minnesota, University of Montana, University of Vermont, Virginia Technological University, and Michigan Technological University. The core planning team from Isle Royale included:

- Superintendent
- Assistant Superintendent
- Chief of Maintenance
- Facilities Manager
- Trails Foreman
- Program Analyst
- Chief Ranger
- West District Ranger
- East District Ranger
- Chief of Natural Resources Management
- Lead Biological Sciences Technician
- Natural Resources Specialist, Wilderness Coordinator
- Cultural Resources Program Manager
- Chief of Interpretation

1.7.3 Scoping

Public participation and input are critical aspects of a park planning effort, for identifying issues of concern, reviewing proposals, and informing the planning team and decision-makers. The first phase of public involvement in the NEPA planning process is scoping, which is designed to be an early, open public process to identify the scope, issues, and feasible actions of an environmental document. Scoping for Isle Royale’s WBMP consisted of 4 newsletters sent to a mailing list of nearly 1,400 individuals and organizations with approximately 700 written responses received, postings on the park’s website soliciting email comments, and several public meetings, including 3 focus group meetings on the island in the summer of 2000, and 3 public meetings in 2002 and 2003 held in Duluth, MN and Hancock and East Lansing, MI. In total, approximately 150 individuals were involved in these meetings. Additional public input relevant to the WBMP was gathered through different surveys of park visitors in 1996, 1997, 2000, and 2002 (see section 1.7.5).

The “public” who are included in this scoping are people who value Isle Royale, and may or may not be visitors. This public includes past and future visitors, researchers, people connected to the cultural history of the island, educational groups, students and researchers, local communities, business owners, and past and present employees of Isle Royale or concessions businesses. It also includes people who may never visit the park, but care about protecting Isle Royale into the future.

1.7.4 Prevalent Issues and Concerns Raised by the Public

All written public comments were reviewed by the planning team. Additional comments that have been voiced to park staff throughout the scoping period were documented and shared with
the planning team. All of this input was reviewed for substantive comments to be considered in developing the WBMP and EIS. Substantive comments are defined by NPS policy as those that do one of the following: a) question, with reasonable basis, the accuracy of information in an EIS, b) question, with reasonable basis, the adequacy of environmental analysis, c) present reasonable alternatives other than those presented in the EIS, or d) cause changes or revisions in the proposal. Comments that only agree or disagree with NPS policy are not considered substantive (NPS 2001a, p. 61). Several prevalent issues and concerns with direct relevance to the goals of the WBMP emerged from the public comments and were addressed in this draft plan. These issues include:

Public access to the park
There was mixed public opinion about whether the NPS should be encouraging more annual visitation or less. Specific discrepancies included disagreement over whether or not to encourage more people to visit the park during the lower use times, whether or not to further limit commercial groups, whether or not to include self-contained boating visitors in any use limits, and if the park should limit access during the peak in visitation or simply offer more information about busy times and areas and let people make their own choice of if and when to visit. In addition, a recurring concern was that Isle Royale is already expensive and difficult to access and the NPS should not make it more so. Each of the alternatives for overnight use of the park’s wilderness and backcountry explore different options for addressing these concerns.

Freedom and flexibility of travel within the park
Many people expressed the opinion that maintaining the flexibility to alter travel plans is important for visitor safety and appropriate for unconstrained wilderness experiences. This was considered in drafting the alternatives for overnight use of the wilderness and backcountry, and was also considered in evaluating the implications of each alternative.

Crowding
Generally public comments revealed mixed opinions about crowding in the park. Of particular concern is the issue of overcrowding in campgrounds and a need to double up when there are not enough campsites available for the number of camping parties. Many others expressed the opinion that crowding is not an issue, that meeting and interacting with other people is part of the Isle Royale experience that they value. Similarly, some suggested that the problem is in the NPS creating unrealistic expectations for visitors, and there should be less emphasis on promoting the island as a pristine wilderness. Many others expressed an opinion that current levels of crowding compromise the quality of their trip, resulting in impacts that are not appropriate for wilderness, that socializing and sharing campsites should be a choice not an expectation. More specifically, some people pointed out that the park should address crowding on trails as well as in campgrounds, that the number of visitors may be less important than their behavior, and that they would sacrifice some flexibility in planning a trip to the island if it meant that the park would be less crowded. Each of the alternatives for overnight use of the park’s wilderness and backcountry explore different options for addressing these concerns, and this plan presents a range of alternatives that would offer different social conditions.
Backcountry regulations and policies
Many people offered suggestions for better managing visitation in the park’s wilderness and backcountry, again with some conflicting interests. Some people suggested encouraging more camping off trail and anchoring out to alleviate pressure on campgrounds, while others were concerned that doing this would result in unacceptable impacts to pristine areas. Some people like the idea of implementing a fixed itinerary campsite reservation system for the assurance of finding a private campsite at the end of the day. Others expressed concern that a reservation system would be costly, overly restrictive, difficult to enforce, and create more visitor conflicts. There was general agreement however that regulations and any system for permitting should be kept as simple as possible. These issues were considered in evaluating current wilderness and backcountry policies and incorporated into alternatives for changes. Additionally these concerns will remain a consideration for the WBMP’s implementation plan.

Protection of the park’s resources
A common concern was protection of the park’s resources in general, with additional concern for human impacts on specific wildlife species. Some of the specific concerns included the impact of motorboats on wildlife and water quality, adverse human impacts on loons, and concern for changes in human use that would increase wolf-human encounters and could lead to wolves becoming habituated to people. A general concern was that increased development designed to accommodate visitation demands for a small portion of the season conflicts with protecting the park’s resources. Another concern was that additional information about impacts to resources was needed before people could respond to proposed actions. These concerns were all considered in developing all of the alternatives presented in the WBMP, and are explored in detail in Chapters 10 and 11 of this plan.

Protection of wilderness character
Many people expressed support for the general protection of wilderness character in the park. Some comments suggested that current conditions on Isle Royale compromise wilderness character in terms of loss of opportunities for solitude, too much human contact, excessive development and size of campgrounds, off-trail impacts from camping, regulations that limit spontaneity and flexibility, and the impacts of NPS operations. One suggestion that came of these concerns was to keep the interior of the island difficult to access for a more remote, wilderness feel. This issue was given varying weight in each of the alternatives presented and maintaining wilderness character remains a fundamental management goal for the park.

Options for a range of user groups and diverse visitors
Some people emphasized that Isle Royale is not just wilderness and it is important for the NPS to maintain options for non-wilderness visitors as well. Specific concerns expressed included maintaining access and opportunities for motorboating visitors, and increasing handicapped and elderly accessibility to the park and trails. These concerns were considered in drafting alternatives for overnight use in the wilderness and backcountry, and were a significant consideration for alternatives for managing day use in the park.
There were mixed opinions about separating different user groups, with some suggesting that park managers should increase separation of use by creating hiker-only and paddler-only campgrounds, and others requesting that the park not totally separate users to maintain motorboaters’ access to the main island and trails. The issue of separation of users was primarily addressed in the GMP, but also became a consideration in the WBMP.

Maintaining appropriate facilities and services for visitors
People shared many concerns and suggestions related to the park’s visitor services and facilities. Many agreed that the park should improve information and education services available for visitors, improve the design of campsites to increase privacy, reduce noise, and stop the policy of overbooking campgrounds. In other areas opinions differed. For example, some people felt there should be more campgrounds in the park, or that the existing campgrounds should be expanded, while others felt that no new campgrounds should be added or that existing campgrounds should be smaller. Some suggested that additional ferry or shuttle services should be offered to make it easier to start a trip from trailheads in the middle of the island, while others thought the middle of the island should remain remote and less traveled. These concerns and suggestions were considered throughout the WBMP and incorporated into proposed alternatives.

Cost and feasibility of implementing changes
Some people raised the concerns over the cost and feasibility of implementing different proposed changes. For example, some pointed out that effective implementation will require adequate staffing in the wilderness and backcountry and should remain realistic for staff and the park’s budget, while others emphasized that management of any new permitting system should remain within the park, rather than being contracted out to an off-site organization. The cost and feasibility of alternatives proposed is evaluated in Chapter 11, and will be analyzed in more detail in the upcoming WBMP implementation plan.

1.7.5 Research and Data Collection
Research and data collection have been an essential part of the planning framework, contributing to a better understanding of human impacts, current resource and social conditions, a comparison between current conditions and desired conditions, and implications of proposed changes. The following research and data collection projects have most directly contributed to the development of the WBMP:

Visitor surveys 1996-1997
During the summer seasons of 1996 and 1997 the University of Minnesota surveyed 1,017 island visitors. The detailed surveys asked visitors to comment on their expectations for Isle Royale, perceptions of conditions in the park, and preferences for conditions and management actions (Pierskalla and others 1997, Pierskalla and others 1998).
Campground Monitoring 1996-2002
In 1996 Isle Royale and Virginia Technological University completed a baseline inventory of biophysical impacts in the park’s campgrounds. This project was established for long-term monitoring of changing physical conditions in campgrounds. Monitoring continued with a complete survey of campgrounds in 2002. This project describes current and changing conditions in campgrounds related to human impacts, such as changes in total impacted area of campsites, amount of exposed soil, damage to trees, loss of vegetation, and erosion (Farrell and Marion 1998).

Visitor Surveys of Crowding in Campgrounds and on Trails
In 2000, 268 visitors completed trip diaries, reporting the number of encounters they had with others on trails and waterways, and the frequency of finding campgrounds full or needing to share campsites in overfull campgrounds. At the same time NPS staff collected similar data, and permit data were analyzed for accuracy and effectiveness in reporting visitor distribution and crowding. This project helped to better understand visitor distribution and areas of crowding in the park’s wilderness and backcountry, as well as giving guidance for ongoing monitoring. It was completed in partnership with the University of Montana (Mayo Kiely 2001).

Common Loon Territory Atlas
A detailed atlas of nesting sites and breeding territories for Common Loons in the park was completed between 1998 and 2000. The atlas helped to identify sensitive areas in the wilderness and backcountry. (Kaplan and others 2002).

Effects of Paddlers on Loon Nesting Success
Visitor surveys and field observations along Isle Royale’s inland lakes and Lake Superior paddler routes studied the relationship between paddler behavior and loon nesting success. The study focused primarily on paddler travel patterns and proximity to active loon nests. This project helped to identify nesting loons’ tolerance for paddler encounters, as well as possible management actions to minimize nest failures (Kaplan 2003 in press).

Computer Modeling of Visitor Distribution in Campgrounds
In 2001 and 2002 the University of Vermont worked with Isle Royale staff to create a computer simulation model designed to project campground occupancy at different rates of park visitation. This is a valuable tool for better understanding campground use levels at different times of the season, in different years, with varying visitation levels at each of the park’s entry points, and in specific areas of the park. It also helps to develop a detailed picture of visitors’ travel patterns in the wilderness and backcountry. Ongoing ground-truthing has validated the model’s ability to represent current conditions. Additionally, this model is a useful tool for analyzing the likely implications of management actions that would change visitors’ travel patterns, visitor distribution in the park, or overall park visitation at different points in the season (Lawson and Manning in press 2003, Lawson and others 2003).
Visitors’ Stated Choice Surveys
In 2002, 150 island visitors completed surveys identifying their preferred choices for different possible management actions to address campground crowding. Visitors were asked to consider implications and trade-offs between some of the management options available. This survey asked for people’s preferences between different options for reducing campsite sharing, allowing flexible or fixed itinerary permits, increasing or reducing visitation levels, and either adding new campsites or maintaining existing campground capacities. This survey helped to identify some of the more salient issues that determine people’s preferences for managing camping in Isle Royale’s wilderness and backcountry (Lawson and Manning 2003 in press).

Ongoing Natural and Cultural Resources Monitoring
Other long-term research and monitoring projects offer critical information pertinent to managing Isle Royale’s wilderness and backcountry. These projects include; wolf and moose study, monitoring of eagle and osprey nests, frog and toad monitoring, songbird monitoring, atmospheric studies, terrestrial and aquatic contaminant studies, monitoring and treating invasive exotic species, monitoring rare plants and their communities, monitoring colonial shorebirds, monitoring forest structure and nutrient cycling, fire ecology, monitoring lake ecosystems and species composition, archeological surveys, monitoring cultural sites, listing classified historic structures, and ongoing cultural landscapes inventories.

Research and monitoring will continue to be critical for assessing the effectiveness of management actions at achieving goals and ongoing assessments of changing conditions and if changes are happening in a desired direction.

Survey of feasible campground expansions or additions
In 2002 NPS staff surveyed existing campgrounds and possible locations for new campgrounds. This was based on estimates of campground expansions needed to accommodate peak demand for campsites. Survey guidelines included not adding sites that would diminish the quality of existing sites (in terms of privacy, noise and view), working within the physical limitations of topography and soil type, not adding sites in areas with sensitive and vulnerable resources, maintaining campground sizes that would be consistent with the park’s management zones and adding sites in areas that would best suit visitation needs. Options were explored for adding communal sites for overflow camping, as well as individual campsites.

1.7.6 Impact Topics Included in the Environmental Impact Statement

NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values. (NPS 2000, p.12)
The assessment of impacts from a proposed action must consider three types of impacts: 1) direct effects, or impacts caused at the same time and at the same place as the implemented action; 2) indirect effects, or impacts caused by the alternative but at a latter time, or in a different location than the actions; and 3) cumulative effects, or additive impacts to a particular resource from a past, present, or foreseeable future action. Additionally, there must be an assessment of findings on impairment. Impairment is defined by NPS policies as “an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.” Impairment considers the severity, duration, and timing of the impact as well as the cumulative effects of the impact of concern and others. (NPS 2000, p.12).

The analysis of impacts evaluates the degree to which the human and natural environment will be affected by a proposed action. Impact topics are derived from specific issues of concern directly related to the proposed actions. Not every conceivable impact of a proposed action is substantive enough to warrant analysis. The list of impact topics considered in the EIS were derived from public and agency concerns raised during scoping, federal laws, regulations and orders, and National Park Service policies.

**Visitor use and experience**

The 1916 NPS Organic Act directs the Service to provide for public enjoyment of the scenery, wildlife and natural and historic resources of national parks “in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.” Public enjoyment, education and recreation are emphasized in Isle Royale’s purpose statements. All of the alternatives proposed in the WBMP have the potential to affect visitor use and enjoyment of Isle Royale’s wilderness and backcountry, and will be assessed in the EIS.

**Wilderness Character**

Approximately 99% of Isle Royale National Park is designated by Congress as Wilderness. Moreover, the park’s wilderness character is highlighted in both its purpose and significance statements. NPS Management Policies (NPS 2000) clarified that:

> *In evaluating environmental impacts, the National Park Service will take into account wilderness characteristics and values, including primeval character and influence of the wilderness; the preservation of natural conditions (including the lack of man-made noise); and assurances that there will be outstanding opportunities for solitude, that the public will be provided with a primitive and unconfined type of recreational experience, and that wilderness will be preserved and used in an unimpaired condition.*

Human activities, including management actions and recreation, and some of the actions proposed in the WBMP’s alternatives could impact these aspects of wilderness character and values-- naturalness and wilderness experiences. These impacts will be assessed in the EIS.

**Natural Resources**

*Geology and Soils*

Soils and their microhabitats are known to be affected by recreation use and construction and maintenance of trails and campgrounds. Potential adverse impacts include general disturbance, loss of ground cover, compaction of soil, and erosion. Since some of the proposed actions could
alter the use and maintenance of trails and campgrounds, impacts to geology and soils are included in the EIS.

**Aquatic Resources**
NPS policies require protection of water resources consistent with the federal Clean Water Act. Over 75% of Isle Royale’s acreage is water that includes Lake Superior and many lakes, bogs, ponds, marshes, and streams. Human activities in campgrounds and along trails adjacent to lakes and streams on Isle Royale could impact aquatic resources through soil erosion or introduction of contaminants or invasive exotic aquatic species. Some of the proposed actions in the WBMP could alter human impacts in these areas. Therefore impacts to aquatic resources adjacent to trails and campgrounds are included in the EIS.

**Wetlands and Floodplains**
Presidential Executive Orders mandate floodplain management and protection of wetlands. The park has numerous wetlands, including marshes, bogs, and vegetated lake and pond shores, which support considerable biodiversity. Some of the WBMP’s proposed actions could impact wetlands adjacent to trails and campgrounds through direct human effects of trampling, or indirect effects of erosion or introduction of contaminants.

**Vegetation**
Isle Royale is located at the ecotone or transition zone between the boreal and northern hardwood forest ecosystems. Its vegetative communities and rare plant species are among its most important assets. Some of the WBMP’s proposed actions, including changes in campfire policies and management of backcountry facilities, could have adverse effects on the park’s vegetation.

**Terrestrial Wildlife**
The isolation of Isle Royale’s relatively simple ecosystem limits the potency of human influences. However, human activities are known to impact wildlife species. Possible impacts from recreation and other human activities in the park’s wilderness and backcountry include habitat fragmentation, displacement of wildlife, and habituation to humans. Because some of the proposed actions in the WBMP may alter the patterns of human activities and their resultant effects on wildlife, these impacts are included in the EIS.

**Threatened and Endangered Species**
The federal Endangered Species Act prohibits harm to any species of fauna or flora listed by the U. S. Fish and Wildlife Service (USFWS) as being either threatened or endangered. Such harm includes not only direct injury or mortality, but also disturbing or destroying the habitat on which these species depend. Two federally Threatened species – the bald eagle and the grey wolf – inhabit Isle Royale. The Michigan Department of Natural Resources also publishes a list of species threatened and endangered within the state. NPS policies require that parks manage state and locally listed species “in a manner similar to its treatment of federally listed species, to the greatest extent possible” (NPS 2000 p. 35). Among state-listed animal species occurring on Isle Royale are the moose, common loon, and osprey. Over 75 state-listed plant species are also documented in the park. Changes in human activities proposed in some of the WBMP’s
alternatives have the potential to affect these species or their habitats, thus this topic is included
in the EIS.

Natural Sights and Sounds
NPS management policies call for the preservation of, “to the greatest extent possible, the natural
soundscapes of parks” (NPS 2000, p.44). Additionally, the preservation of wilderness character
and values includes the preservation of natural sights and sounds, minimizing the visual and
noise intrusions of modern human activities. Development, facilities, and tools for park
maintenance and administration can impact the sights and sounds of the park, and some of
the proposed alternatives could alter the current state of natural sights and sounds in Isle Royale’s
wilderness and backcountry. This will be assessed in the EIS.

Cultural Resources
Section 106 of the National Historic Preservation Act of 1966 provides the framework for
Federal review and protection of cultural resources, and ensures that they are considered during
Federal project planning and execution. One of the purposes in Isle Royale’s enabling
legislation is for it to “preserve and protect the park’s cultural…resources…” Isle Royale
contains considerable evidence of both pre-historic and historic human occupation and use dating
back more than 4,500 years. These cultural resources can be affected by recreation and
management actions in the park. Thus, potential impacts to cultural resources will be addressed
in the EIS, specifically impacts to archeological sites, historic structures, cultural objects, cultural
landscapes, and ethnographic resources.

Socioeconomics
Although the alternatives proposed in the WBMP are not expected to have any significant
economic effect on local communities, some of the actions proposed could have economic
implications for private businesses and organizations operating within the park. For example,
changes in day use group sizes and campground access could affect tour organizations and
changes in visitation could affect ferry services or ticket prices. Possible socioeconomic impacts
of proposed alternatives, including the economic effects of possible changes in visitation will be
assessed in the EIS.

Park Operations
Some of the potential actions proposed in the WBMP could have an effect on workloads, staffing
requirements, budget needs, and facility requirements. These will be assessed in the EIS.

1.7.7 Impact Topics Considered but not Analyzed in Detail
NEPA and the Council on Environmental Quality (CEQ) Regulations direct agencies to “avoid
useless bulk…and concentrate effort and attention on important issues” (40 CFR 1502.15). The
National Park Service’s Director’s Order 12 and its accompanying Handbook give additional
guidance for determining appropriate impact topics (NPS 2001a). Analysts must use their
professional judgment in deciding which issues warrant consideration and to what extent.
Certain impact topics that are sometimes addressed in NEPA documents on other kinds of
proposed actions or projects have been judged to not be substantively affected by any of the
WBMP alternatives considered in this EIS. These topics are listed and briefly described below,
and the rationale provided for not considering them in any more detail.
Air Quality
In all of the alternatives presented the NPS would continue to protect and conserve the air quality of the park as a Class I air shed, which are afforded the highest degree of protection under the Clean Air Act. None of the alternatives being considered would substantially alter the park’s air quality, nor would they alter the management of the park’s air shed.

Water Quality
In all of the alternatives presented the NPS would continue to protect and conserve the water quality in the park. Monitoring of water quality would continue to identify associated issues of concern. None of the alternatives being considered would substantially alter the park’s water quality, nor would they propose any changes in the park’s management of water resources.

Waste Management
None of the WBMP alternatives will generate noteworthy quantities of either hazardous or solid wastes that need to be disposed of in hazardous waste or general sanitary landfills. Therefore this impact topic is dropped from additional consideration.

Transportation
Due to Isle Royale’s isolated location in Lake Superior, with the nearest roads, railroads, and airports more than 20 miles away in Ontario, there will be virtually no adverse impacts from the various WBMP alternatives on ground or aerial transportation. The park contains no roads open to motorists. Isle Royale’s harbors and marinas would not be affected by proposals in the WBMP. While a major shipping lane does pass through park waters (between Blake’s Point and Passage Island), none of this plan’s proposals would have any effect on these ships. Therefore, this topic is dismissed from any further analysis.

Public Utilities
Generally speaking, some kinds of projects, especially those involving construction, may temporarily impact above and below-ground telephone, electrical, natural gas, water, and sewer lines and cables, potentially disrupting service to customers. Other proposed actions may exert a substantial, long-term demand on telephone, electrical, natural gas, water, and sewage infrastructure, sources, and service, thereby compromising existing service levels or causing a need for new facilities to be constructed. Due to Isle Royale’s isolation and the complete absence of any such public utilities in the park (except those self-contained systems serving staff and visitors in the few developed areas), none of the WBMP alternatives will cause any of these impacts to any extent, and therefore utilities are eliminated from any additional analysis.

Land Use
Isle Royale National Park is completely surrounded by Lake Superior and does not border any public or private land. Nothing proposed in the WBMP would result in any change in land use patterns. Therefore, this topic is dismissed from any further analysis.
Prime Agricultural Lands
There are no agricultural lands within or bordering Isle Royale, therefore this topic will not be addressed in the analysis of environmental impacts.

Public Services
In general, some kinds of projects or programs subject to NEPA analysis can interfere with the operation of or add to the burden on public services like police, municipal fire-fighting, emergency medical, and search & rescue. Since municipal, county or state-run public services like these are all but absent at Isle Royale, this topic is not considered any further in this EA.

Human Health and Safety
Providing for human health and safety remains a priority for the NPS, and would not be altered by any of the proposed actions in this WBMP.

Fisheries
The WBMP does not address regulations or management of fisheries in park waters, and none of the proposed actions would have foreseeable significant impacts on the park’s fisheries. This issue will be addressed and thoroughly analyzed in Isle Royale’s forthcoming Fisheries Management Plan; therefore this impact topic was not included in analysis of impacts for the WBMP.

Treaties, Tribal Rights, and Sacred Sites
Treaty rights are beyond the scope of this plan. However, any actions taken to implement this plan will conform to laws regarding treaty rights. The NPS will routinely consult with tribes having treaty rights and their representatives on a government-to-government basis. None of the actions proposed in the WBMP would in any way alter the government-to-government relations between the region’s tribal nations and the NPS. Likewise, none of the proposed actions would alter existing treaty rights or agreements between the NPS and tribes.

Environmental Justice/ Protection of Children
Presidential Executive Order 12898 requires Federal agencies to identify and address disproportionate impacts of their programs, policies and activities on minority and low-income populations. Executive Order 13045 requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children. No actions proposed in this WBMP would be expected to have a disproportionate effect on minorities, children, or those living at or below poverty level.

1.7.8 Criteria Used to Evaluate Alternatives
Certain criteria were used in evaluating each of the alternatives proposed in this WBMP. This process will be central in identifying the preferred alternatives and a final action for the park. Each alternative was evaluated for projected impacts and implications of implementation as well as its ability to achieve the specific objectives of the WBMP. The evaluation criteria are based on laws and policies and legislative guidance for Isle Royale. The evaluation criteria judge an alternative’s ability to provide the following:
1. Protection of quality visitor experiences, including opportunities for solitude or a primitive and unconfined type of recreation, and a minimal chance of having to share campsites in overfull campgrounds.
2. Access and freedom of travel for visitors, including flexible travel within the park, freedom to visit the park on a date of choice, and maintaining appropriate access to the park for people wishing to visit.
3. Minimum impact to natural and cultural resources.
4. Public acceptability, including consideration of costs to visitors, transportation companies, and concessionaires.
5. Administrative and implementation feasibility, including the ability to monitor conditions effectively.
6. Adherence to policy, legal guidelines, and the goals of Isle Royale’s GMP.
7. Preservation of the park's wilderness character.
8. Basing management decisions on sound scientific research and public input, incorporating new data and information, as necessary, into a dynamic management program.

1.8 Regional Context

Isle Royale National Park is located in the northwestern section of Lake Superior, within 14 miles of the Ontario (Canada) shoreline, 20 miles of Minnesota, and approximately 45 miles from Michigan’s Upper Peninsula. The island itself is located 620 miles from Detroit, 570 from Lansing, 400 from Milwaukee, 320 from Minneapolis and St. Paul, and 25 from Thunder Bay, Ontario. There are no roads on or leading to the island.

The park may be accessed by ferry, seaplane, or private boat. Concessions operations run the seaplane service and 3 of the 4 ferries. The fourth ferry is operated by the NPS out of Houghton, MI for transport of personnel, cargo, and park visitors. Houghton, MI, Copper Harbor, MI, and Grand Portage, MN serve as the ferry landings on the mainland, with service primarily to Windigo and Rock Harbor on Isle Royale (Appendix C, Map 1). One of the ferries, operating out of Grand Portage, MN, circumnavigates the island, with up to 8 stops along the way to pick up or drop off passengers at docks and trailheads. The closest airports to the park’s ferry services are in Houghton-Hancock, MI, and Grand Marais, MN. No private, state, or other federal lands adjoin Isle Royale, though the park’s northern boundary in Lake Superior abuts the international US-Canadian border.

Isle Royale is one of 13 National Park Units and 23 federal Wilderness areas within the three states of the Lake Superior Region: MI, WI and MN. The US Forest Service’s Boundary Waters Canoe Area Wilderness in northern MN is the largest Wilderness area with 809,772 acres; Isle Royale is the second largest (132,018 acres), and the only National Park in the area with designated Wilderness. There are also many State Parks, recreational waterways, and Canadian National and Provincial Parks within the vicinity of Isle Royale. All of these offer a wide range of recreational opportunities, including highly developed and primitive camping, scenic roads, fishing and hunting, motorized or non-motorized boating, hiking, biking, and off-highway-vehicle use. They also offer a wide range of opportunities for groups of unlimited sizes.
1.9 Park Purpose, Significance, and Emphasis

Statements of purpose, significance, and emphasis outlined in Isle Royale’s 1998 GMP were developed based on the park’s legislation, special designations, and NPS policies, and incorporated public and staff input.

Park purpose statements are based on Isle Royale’s legislation, legislative history, special designations, and NPS policies:
- Preserve and protect the park’s wilderness character for use and enjoyment by present and future generations
- Preserve and protect the park’s cultural and natural resources and ecological processes
- Provide opportunities for recreational uses and experiences that are compatible with the preservation of the park’s wilderness character and park resources
- Provide park-related educational and interpretive opportunities for the public
- Provide opportunities for scientific study of ecosystem components and processes, including human influences and use, and share the findings with the public.

Park significance statements capture the essence of the park’s importance to the nation’s natural and cultural heritage:
- This maritime park, a U.S. Biosphere Reserve, encompasses a remote and primitive wilderness archipelago isolated by the size and power of Lake Superior
- Isle Royale is world renowned for its long-term predator/prey study of wolves and moose. The park offers outstanding possibilities for research in a remote, relatively simple ecosystem where overt human influences are limited
- Park waters contain the most productive native fishery and genetically diverse lake trout populations in Lake Superior

Park emphasis statements flow from the park’s purpose and significance and are used as broad guiding principles for park programs and priority setting:
- Self-sufficiency is a way of life on Isle Royale. Self-sufficiency is as important today for park backpackers, canoeists, and boaters as it was for those who first used and settled the island—Native Americans, European miners, lighthouse keepers, commercial fishermen, and island summer residents.
- Wilderness has many meanings to many people. For Isle Royale National Park the meaning is defined by the Wilderness Act of 1964, which states a wilderness is an area “...affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable, [and] has outstanding opportunities for solitude or a primitive, unconfined type of recreation...”
- Isle Royale rose from the depth of Lake Superior some 11,000 years ago and remains ecologically connected to the lake; the forces of the lake still shape and nurture the landscape. The park offers visitors a chance to experience wildness, seclusion, solitude, and recreation. It restores the human spirit. It is a wilderness to be entered on its own terms. It is an adventure.
• Adventure, simple living, and solitude are important parts of an Isle Royale visit. In order to ensure these kinds of experiences, park users must have the skills and habits that foster an ethic of “Leave No Trace” on the island.
• Isle Royale is a living laboratory where plant and animal life can be studied in a relatively simple ecosystem. The theory of island biogeography is illustrated by both the limited number and variety of species to be found in the park.
• Because of Isle Royale’s generally undisturbed setting, it is an important source of information about the world around us—how the world evolved, how the impacts of civilization have altered natural systems, and what the unmodified environment holds.
• Isle Royale, as a U.S. Biosphere Reserve, is a valuable asset as a natural baseline that reveals the extent of impacts elsewhere, as a site where scientists and students can study natural processes, as a gene pool helping to maintain the diversity of a northern boreal forest and Lake Superior, and as a sanctuary for certain plants and animals that cannot survive outside of isolated wilderness.
• For thousands of years people have lived an episodic existence on Isle Royale. For centuries the presence of pure copper has drawn people to the island. Similarly, people have been drawn by the island’s spectacular scenery and wilderness opportunities to establish resorts and summer housing on the island. An abundant fishery attracted many. Although the remnants of mining activity, commercial fishing, and the resort era are melding into the landscape, wilderness visitors may still find traces of the park’s rich history.
• Isle Royale has a rich maritime heritage. The island serves as a significant navigational reference point, a refuge from storms, and a treacherous obstacle to mariners. For well over a century its lighthouses have guided ships safely through passages. The park’s waters are the final resting place for an array of shipwrecks that provide an underwater museum that includes many types and stages of maritime technology.
• The National Park Service is striving to sustain the native fishery of Isle Royale National Park—perhaps the most exceptional fishery in the Great Lakes region. For centuries Isle Royale’s waters have drawn fishermen—prehistoric people, immigrant commercial fishermen, and today’s sport fishermen. A relic of the past adaptive fishing lifestyle and technology still remains as a reminder of this significant island culture.

1.10 History of Wilderness and Backcountry at Isle Royale

Since its establishment in 1931, Isle Royale National Park has been managed with a focus on backcountry-based recreation in concert with protection of natural and cultural resources.

The wilderness study and recommendation process for Isle Royale began in the mid to late 1960s, including public hearings in 1967. The NPS worked with the public and local and state governments to develop a plan for wilderness designation, and then submitted the plan for Presidential and Congressional approval. President Nixon recommended a large portion of Isle Royale for wilderness designation in 1971. Following Congressional hearings, this recommendation was modified slightly and signed as legislation by Congress in October of 1976.
The original designation included 131,880 acres of designated wilderness and an additional 231 acres as potential wilderness. “All lands which represent potential wilderness additions, upon publication in the Federal Register of a notice by the Secretary of the Interior that all uses thereon prohibited by the Wilderness Act have ceased, shall thereby be designated wilderness” (90 Stat. 2692 P.L. 94-567 §3). In 1983, 138 acres of potential wilderness were converted to designated wilderness. Table 1 outlines the remaining areas of potential wilderness and associated non-conforming uses that temporarily prevent conversion to wilderness. Currently 132,018 acres of the park’s lands, or 99% of its total 133,788 island acres, are designated as wilderness or potential wilderness. None of the park’s 438,008 acres of Lake Superior and submerged lands are designated or managed as wilderness (Appendix C, Maps 2a & 2b).

Table 1: Potential Wilderness Areas on Isle Royale, their Acreage, and their Non-Conforming Uses

<table>
<thead>
<tr>
<th>Location</th>
<th>Acres</th>
<th>Non-conforming use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishermans Home</td>
<td>5</td>
<td>Volunteer in Park agreement allowing residence</td>
</tr>
<tr>
<td>John’s Island</td>
<td>0.8</td>
<td>Special Use Permit</td>
</tr>
<tr>
<td>Wright Island</td>
<td>1</td>
<td>Volunteer in Park agreement allowing residence</td>
</tr>
<tr>
<td>Davidson Island</td>
<td>1</td>
<td>NPS and researcher housing</td>
</tr>
<tr>
<td>Johnson Island</td>
<td>5</td>
<td>Special Use Permit extending life lease use rights</td>
</tr>
<tr>
<td>Amygdaloid Island</td>
<td>11</td>
<td>Ranger station with fuel storage and NPS residence</td>
</tr>
<tr>
<td>West Caribou Island</td>
<td>5.6</td>
<td>Life lease</td>
</tr>
<tr>
<td>Passage Island</td>
<td>3</td>
<td>Boat house and trail to light house for past Coast Guard use</td>
</tr>
<tr>
<td>Edwards Island and neighboring islands</td>
<td>24.8</td>
<td>Life lease</td>
</tr>
<tr>
<td>Newman Island</td>
<td>0.2</td>
<td>Life lease</td>
</tr>
<tr>
<td>Tobin Harbor Islands and portions of main island in vicinity</td>
<td>10</td>
<td>Life leases, Special Use Permit, Artist in Residence Program cabin, and NPS residence</td>
</tr>
<tr>
<td>Captain Kidd Island</td>
<td>20.6</td>
<td>Special Use Permit extending life lease use rights</td>
</tr>
<tr>
<td>Amygdaloid Island, Crystal Cove</td>
<td>5</td>
<td>Volunteer in Park agreement allowing residence</td>
</tr>
<tr>
<td><strong>Total PWA</strong></td>
<td><strong>93</strong></td>
<td></td>
</tr>
</tbody>
</table>

Isle Royale’s wilderness legislation allowed for the continued maintenance of docks and shelters within the park’s designated wilderness, and further allowed for the addition of new docks where determined necessary for visitor safety or administration of the wilderness.

Several small land areas were excluded from wilderness designation because of existing or potential future high human use with associated development that would be inappropriate for wilderness (Table 2). Some of these areas, such as Siskiwit Bay, have not seen the anticipated development and would appear to most people to be indistinguishable from wilderness. All of the campgrounds and docks within these non-wilderness areas fall under the scope of the park’s backcountry management, and with close proximity to designated wilderness are managed with consideration for impacts to wilderness.
Table 2: Acreage of Non-Wilderness Lands in Isle Royale National Park

<table>
<thead>
<tr>
<th>Location</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siskiwit Bay—area including and surrounding the existing campground</td>
<td>100</td>
</tr>
<tr>
<td>Barnum Island</td>
<td>6</td>
</tr>
<tr>
<td>Washington Island- the northeastern tip including historic buildings</td>
<td>31</td>
</tr>
<tr>
<td>Rock of Ages Island</td>
<td>1</td>
</tr>
<tr>
<td>Windigo—area including and surrounding the developed area and campground</td>
<td>400</td>
</tr>
<tr>
<td>Menagerie Island</td>
<td>5</td>
</tr>
<tr>
<td>Malone Bay- area including the ranger station and campground facilities</td>
<td>100</td>
</tr>
<tr>
<td>Moskey Basin—area including and surrounding the existing campground</td>
<td>100</td>
</tr>
<tr>
<td>Rock Harbor—area from Suzy’s cave northeast to within about a mile of Scoville Point</td>
<td>322</td>
</tr>
<tr>
<td>Three Mile—area including and surrounding the existing campground</td>
<td>80</td>
</tr>
<tr>
<td>Mott Island</td>
<td>181</td>
</tr>
<tr>
<td>Daisy Farm—area including and surrounding the existing campground</td>
<td>160</td>
</tr>
<tr>
<td>Area including the Rock Harbor Lighthouse and Edisen Fishery</td>
<td>19</td>
</tr>
<tr>
<td>McCargoe Cove—area including and surrounding the existing campground</td>
<td>120</td>
</tr>
<tr>
<td>Passage Island- the southwestern tip, including the lighthouse</td>
<td>7</td>
</tr>
<tr>
<td>Blake Point- area including navigational aids</td>
<td>5</td>
</tr>
<tr>
<td>Belle Isle—area including and surrounding the campground</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total acreage of non wilderness lands on Isle Royale</strong></td>
<td><strong>1,677</strong></td>
</tr>
</tbody>
</table>
CHAPTER 2: ALTERNATIVES, INCLUDING NO ACTION, AND THE PREFERRED ALTERNATIVES

This chapter presents the details of how the NPS proposes to manage the wilderness and backcountry of Isle Royale. The chapter begins with the philosophical and policy framework for managing the wilderness and backcountry, followed by a description of current conditions and the no action alternative, then actions common to all action alternatives, then a presentation of the range of action alternatives presented. The chapter concludes with a summary of all the preferred alternatives and what they would look like in combination.

In many cases the decisions on how to manage the wilderness and backcountry of Isle Royale have already been decided by federal laws. Other decisions are dictated by NPS policy, and other Isle Royale-specific issues were decided in the park’s GMP. However, there are several important issues requiring further decision. Most of these issues were determined to have only one reasonable solution, which are listed in the “actions common to all action alternatives” section. A few issues have several feasible solutions, and in these cases multiple alternatives were developed to explore options in detail. These are the “action alternatives.” The action alternatives were developed in response to public input and research on several specific issues. Because each of these issues is independent of the others they are presented individually, rather than being combined into fewer more comprehensive alternatives.

When the WBMP is finalized, we propose that the final preferred alternatives, along with the “actions common to all” would become the core of the Isle Royale’s plan for managing the wilderness and backcountry of the park.

The outline below will help guide you to the issues you may be most interested in.

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2.1  Framework for Managing Wilderness and Backcountry at Isle Royale National Park

2.1.1  Wilderness Management Philosophy
Isle Royale’s Wilderness and backcountry will be managed in a means that is consistent with national wilderness policies. The National Park Service would manage all designated and potential wilderness areas of Isle Royale National Park to protect physical wilderness resources as well as wilderness character, consistent with the direction of NPS Management Policies and The Wilderness Act. In order to protect and promote wilderness character, wilderness management must consider the purpose of an action and the spirit in which it was carried out. The Wilderness Act identifies two key components of wilderness character as

- Generally appearing to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; and
- Having outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Providing opportunities for solitude would include managing for visitor experiences with the following characteristics:
- Freedom from the reminders of society
- Privacy and isolation in natural surroundings
- Absence of distractions such as large groups, mechanization, unnatural noise, signs, and other modern artifacts (Federal Register, Vol. 66, No. 10, p. 3713).

However, at its essence wilderness character is unseen and immeasurable; a unique challenge of wilderness management. Wilderness character includes the natural and scenic condition of the land, natural numbers, cycles, and interactions of wildlife, and the integrity of ecological processes. At its core though, wilderness character, like personal character, is much more than a physical condition. The character of wilderness is an unseen presence capable of refocusing our perception of nature and our relationship to it. It is that quality that lifts our connection to a landscape from the utilitarian, commodity orientation that dominates the major part of our relationship with nature to the symbolic realm serving other human needs (Federal Register, Vol. 66, No. 10, p. 3729-3730).

The NPS recognizes the intangible values of wilderness, and in implementing this plan and with future management actions, would with every decision forego actions that might have no seeming physical impact but which would detract from the idea of wilderness as a place set apart, a place where human uses, convenience, and expediency do not dominate; a place where we can know ourselves as part of something beyond our modern society and its creations.

2.1.2 Guidelines from Existing Laws and Policy
Existing laws that direct the management of wilderness and backcountry in the National Park system are the NPS Organic Act, the Wilderness Act, and the National Historic Preservation Act. They provide a framework for policy and directives such as NPS Management Policies, NPS Director’s Orders, and Isle Royale National Park’s General Management Plan. These documents clearly direct certain management actions at Isle Royale. This WBMP will not propose changes to these directions, and they are not included in the action alternatives.
Public use of Motorized and Mechanical Transport.
Consistent with the Wilderness Act and NPS Management Policies for wilderness management (NPS 2000), public use of motorized and mechanical transport, including bicycles and portage wheels, would not be permitted within Isle Royale’s wilderness. This includes all of the park’s inland lakes and hiking trails.

Public use of motorized equipment or any form of mechanical transport will be prohibited in wilderness except as provided for in specific legislation. Operating a motor vehicle or possessing a bicycle in designated wilderness outside Alaska is prohibited [36 CFR 4.30(d)(I)].

Motorboats would continue to be permitted and appropriate in the park’s Lake Superior waters, which is not designated wilderness.

Accessibility
According to the Americans with Disabilities Act, the Wilderness Act, and NPS Management Policies 2001, wheelchairs are appropriate in wilderness only if a wheelchair is a person’s primary mode of locomotion, manual or electric, that is suitable for use in indoor pedestrian areas. This does not include wheelchairs that function like an all terrain vehicle. Persons using wheelchairs would be reasonably accommodated in wilderness without the need to compromise wilderness resources or character.

Emergency Services/Human Health and Safety
Protecting human health and safety remains a priority for Isle Royale managers. Although wilderness is to be experienced on its own terms with inherent risks and challenges, the NPS would continue to provide emergency services for all Isle Royale visitors.

Full implementation of Isle Royale’s GMP (1998) would continue, including the planned removal of the dock and break wall at Siskiwit Bay, removal of the docks at Three Mile and Duncan Bay, relocation of the dock at McCargoe Cove closer to the cove’s entrance, and addition of new overnight docking and campgrounds at John’s Island, Washington Island, Fisherman’s Home, Wright Island, Crystal Cove and McCargoe Cove. Additional assessment of environmental impacts and compliance documentation would be completed before implementing these changes.

Management Zones established in the GMP would be maintained unchanged (Appendix C, Map 6). Table 3 defines these management zones. Regulations for generator use by boating parties, including designated areas closed to on-board generator and air compressor use, would not be changed.

Transportation Services
The objective of Isle Royale’s transportation services is to provide public access for appropriate recreation in the park and transport personnel and cargo necessary for park operations. The GMP established that Isle Royale’s transportation services would not be expanded. No new ferry entry points would be established. Rock Harbor and Windigo would remain the primary entry points,
### Table 3: Park Management Zones and Goals for Resource and Social Conditions (From the 1998 Final General Management Plan for Isle Royale National Park)

<table>
<thead>
<tr>
<th>Zone</th>
<th>Visitor Experiences</th>
<th>Resource Conditions or Character</th>
<th>Appropriate Activities and Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land and Inland Lake Zones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developed</td>
<td>Developed zones are highly developed areas with convenient and accessible facilities. Opportunities for adventure and solitude would be relatively unimportant, while encounters with other visitors and NPS staff would be high.</td>
<td>NPS tolerance for resource degradation would be moderate. Buildings and other structures would be obvious. This zone is confined to small areas without unprotected sensitive natural and cultural resources, and is in non-wilderness.</td>
<td>Visitor and administrative facilities are provided, including visitor centers, educational program areas, residences, and maintenance areas. Primary ferry landings, large docks, marinas, and paved paths are found here.</td>
</tr>
<tr>
<td>Frontcountry</td>
<td>The frontcountry zone offers structured interpretation and education activities. These areas are in a fairly natural setting within a day’s hike or short boat ride from developed facilities. Opportunities offer limited challenge or adventure with little need for outdoor skills. The probability of encountering other visitors is high and encountering NPS staff is moderate.</td>
<td>Sights and sounds of people are evident with intensively managed sites and trails. Facilities generally harmonize with the natural environment. NPS tolerance for resource degradation would be low but this zone generally does not include sensitive natural or cultural resources. This zone includes both non-wilderness and designated wilderness.</td>
<td>This zone is comprised of heavily used areas adjacent to developed zones and surrounding prime park features such as high use cultural and scenic areas. Relatively large campgrounds with shelters and large group sites, hardened trails, and interpretive facilities and signs may be found in this zone. Some trails are designed for accessibility.</td>
</tr>
<tr>
<td>Wilderness Portal</td>
<td>These portal areas provide access and facilities needed to access or manage other zones. Larger docks, ferry landings, and large campgrounds mixing different types of visitors are found here. There are pulses of activity at different times, but solitude and quiet would be available some of the time. Adventure and challenge may be low, but there is some need for self-sufficiency.</td>
<td>NPS tolerance for resource degradation is low, with these areas appearing mostly natural. Included are sensitive natural and cultural resources only if they are well protected. This zone includes both non-wilderness and designated wilderness.</td>
<td>Only non-motorized or non-mechanized activities would be appropriate. Facilities in this zone could include moderate-sized (or the largest, in the case of Daisy Farm) campgrounds with shelters, large group sites, outhouses, trailheads, trails, and moderate-sized docks. Secondary ferry landings and some interpretive activities may be offered. Small signs marking trail directions, campsites, and resource protection needs are appropriate.</td>
</tr>
<tr>
<td>Backcountry</td>
<td>This zone provides a sense of being immersed in a natural landscape, removed from most modern comforts and conveniences. There are possibilities for risk, challenge and adventure, with visitors needing to have outdoor skills and exert themselves. Encounters with others are moderate, with good opportunities for solitude. Some noise is expected.</td>
<td>NPS tolerance for resource degradation is low. This zone includes somewhat primitive trails and campgrounds that are maintained for resource protection, visitor safety and harmony with the natural environment. This zone includes both non-wilderness and designated wilderness.</td>
<td>Only non-motorized or non-mechanized activities are appropriate. This zone includes moderate to high-use trail corridors. Small campgrounds with outhouses and possibly a few shelters and large group sites, small docks, and unpaved trails would be the only facilities. Small signs marking trail directions, campsites, and resource protection needs are appropriate.</td>
</tr>
</tbody>
</table>
### Framework for Managing Wilderness and Backcountry

#### CHAPTER 2: ALTERNATIVES, INCLUDING NO ACTION AND THE PREFERRED ALTERNATIVE

<table>
<thead>
<tr>
<th>Zone</th>
<th>Visitor Experiences</th>
<th>Resource Conditions or Character</th>
<th>Appropriate Activities and Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land and Inland Lake Zones continued</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Primitive</strong></td>
<td>This zone provides a sense of being immersed fully in nature and feels farther away from modern comforts and conveniences. Opportunities for independence, closeness to nature, tranquility, solitude and the application of outdoor skills are common. Possibilities for risk, challenge and adventure are high, requiring a longer time commitment, greater outdoor skills, and a high level of physical exertion. Encounter rates with others is low, with low tolerance for noise, visual intrusions, and social interactions.</td>
<td>NPS tolerance for resource degradation due to human activities is low. Trails and campgrounds are lightly used and maintained in a primitive condition for visitor safety and resource protection in a manner that conforms to natural surroundings. This zone is located entirely within designated wilderness.</td>
<td>Only non-motorized or non-mechanized activities would be appropriate. Facilities are limited to primitive trails and small campgrounds with outhouses and individual tent sites only. Docks are not located in this zone. Creek and wetland crossings may not always have maintained bridges. Small signs marking trail directions, campsites, and resource protection needs are appropriate.</td>
</tr>
<tr>
<td><strong>Pristine</strong></td>
<td>Visitors to the Pristine zone should expect to find a pure wilderness setting free of development. Little or no signs of modern human presence are obvious. A high degree of physical exertion, time commitment, self-sufficiency, and outdoor skill are required. Opportunities for challenge, adventure, independence, solitude, closeness to nature, and tranquility are common. The probability of encountering others is very low, with little or no evidence of visitor impacts.</td>
<td>NPS tolerance for resource modifications or degradation would be very low. This zone offers the most natural conditions and includes areas requiring high resource protection. Much of this zone is difficult to access. Onsite management for visitor safety and resource protection is limited, with greater restrictions implemented off-site, including access and length of stay restrictions. This zone encompasses large areas and is entirely designated wilderness.</td>
<td>Only non-motorized or non-mechanized activities would be appropriate. No facilities are appropriate in this zone, including trails, docks, campsites and signs. Cross-country dispersed camping and hiking are permitted, with regulations to protect resources, including special permitting and area closures.</td>
</tr>
<tr>
<td><strong>Lake Superior Water Zones</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Open Water Motorized</strong></td>
<td>This zone appears predominantly natural, but there is evidence of human use and activity. There are fewer restrictions on visitor activities. The probably of encountering other visitors and seeing or hearing motorized traffic could be high, thus solitude and tranquility are limited. Skill, risk and self-sufficiency are high as lake conditions could be dangerous and unpredictable.</td>
<td>The character of this zone is unpredictable, changing according to Lake Superior and weather conditions. Management actions would be the minimum necessary for visitor safety and resource protection. Most Lake Superior waters within the park are included in this zone.</td>
<td>Boating of all types, fishing and scuba diving are appropriate and could be common.</td>
</tr>
<tr>
<td><strong>Quiet/No-Wake</strong></td>
<td>In Quiet-no-wake zones surroundings are relatively tranquil and natural. Solitude is possible with moderate encounter rates. Tolerance for noise is low.</td>
<td>Tolerance for noise and human-caused resource degradation is low. Relatively protected, calm waters provide increased safety and resource protection. A moderate level of management would be provided for safety and resource protection.</td>
<td>Human-powered and motor-powered watercraft would be found in this zone. Boats would travel at idling speed on flat water and leave no wake larger than prevailing sea conditions.</td>
</tr>
</tbody>
</table>
Framework for Managing Wilderness and Backcountry

with secondary entry points at McCargoe Cove, Belle Isle, Daisy Farm, Chippewa Harbor, and Malone Bay (currently provided by the *Voyageur II*). Water taxi service would continue to be available through the Rock Harbor Lodge.

**Daily Use Fees**
Daily fees would continue to be collected from all visitors, with season passes available.

**Operating Season**
Isle Royale would continue to be open from April 16 through October 31, though exact opening and closing dates may be determined by weather and ice conditions. The island would remain closed to the public in the winter and no employees or other people would reside in the park year-round. The park’s winter closure was implemented through the park Compendium in 1978 primarily to protect visitor and employee safety and the island’s wildlife populations. The park’s visitor center in Houghton would remain open to the public year-round to provide information services.

**Personal Watercraft**
Per the GMP and NPS regulations, use of personal watercraft (jet skis) are not permitted in the park, because of inconsistency with park purpose, significance, and emphasis statements. (NPS 1998, p.27)

**Pets**
Dogs, cats and other mammals may not be brought into or possessed in the park area, except for service dogs [36 CFR p.99 § 7.38 (c)]. Special permitting processes apply for bringing service animals to the island.

**Aircraft Over-flights**
Policies for aircraft over-flights and landings within Isle Royale are guided by the park’s 1997 *Aviation Management Plan* (NPS 1997). This document clarifies the aviation management objectives for the park as; 1) aid in the safe, effective, and efficient management of the NPS, 2) provide emergency response capability, and 3) minimize impacts on park resources, neighbors, and visitors. Floatplane landings are permitted exclusively in portions of Tobin Harbor, Rock Harbor, and Washington Harbor (36 CFR p. 99 § 7.38 (a)), except in emergency response situations facilitated by the NPS. Appropriate uses of over-flights for NPS operations include wildfire monitoring, emergencies, and limited wildlife monitoring where such flights are determined to be the minimum tool. Aircraft over-flights are regulated by the FAA. However, the following flight restrictions apply, as outlined in the Isle Royale Aviation Management Plan:

1. The Federal Aviation Administration (FAA) has issued a 2,000 foot flight level advisory over the island. This should be strictly adhered to by NPS flights unless the mission does not allow this. (example: wildlife observations)
2. Flying directly over the main island should be avoided whenever possible to reduce noise and visual intrusion. An example is point-to-point flights from Mott to Windigo or Minnesota. These flights should fly over Lake Superior waters instead of the island.
3. Helicopter long line missions into the backcountry should be implemented during periods of low visitor use primarily in early spring or late fall.
4. Backcountry landings by rotor or fixed wing aircraft will be limited to emergencies.
5. Each proposed aircraft mission will be reviewed to determine if using aircraft with its related intrusions is the best choice.
6. Aircraft may only land in designated landing areas except in emergency cases.

Native American Treaty Rights
Several bands of Lake Superior Chippewa have rights guaranteed by various treaties in the geographic area in which Isle Royale National Park is located. The National Park Service would honor those legally established rights and cooperate with tribes holding those rights. The NPS would routinely consult with tribes and their representatives on a government-to-government basis in managing our wilderness resources.

Residential Uses
Seventeen families retain life leases, special use permits, and volunteer agreements for residential use within the park boundaries, and in several cases within potential wilderness areas. The WBMP would in no way alter the agreement of these leases and permits. However, upon the expiration of the leases the proper steps would be taken to evaluate the conversion of any associated potential wilderness to designated wilderness in compliance with Isle Royale’s Wilderness Legislation. The potential continuation of non-conforming uses of these areas would be a consideration in a decision for conversion to designated wilderness.

Protection of Cultural Resources
There has been extensive prior human use in most areas now designated as wilderness, resulting in archeological sites, historic structures, cultural landscapes and associated features, objects and traditional cultural properties that are contributing elements to wilderness. It is important to recognize that laws, . . . intended to preserve our cultural heritage, are applicable in wilderness . . . actions involving all cultural resource types in wilderness must comply with cultural resource laws, such as compliance actions and inventory requirements mandated by NHPA [National Historic Preservation Act].(DO-41, §C.4. p.38)

In drafting wilderness legislation Congress specifically included cultural resources as part of wilderness and historic values to be protected. Any impacts on cultural resources would be avoided if at all possible within Isle Royale’s wilderness and backcountry, as protection of these resources are a critical facet of wilderness management. Cultural resources include archeological sites, historic structures, cultural landscapes, and ethnographic resources. Any actions that involve ground disturbance or possible disturbance of cultural structures or landscapes must involve mitigation measures developed by the park in consultation with the Michigan State Historic Preservation Office.

Historic properties eligible for the National Register of Historic Places that have been included in wilderness would be protected and maintained according to the pertinent laws and policies governing cultural resources, using management methods that are consistent with preservation of wilderness character and values. (NPS 1999a § 6.3.8)
Protection of Natural Resources
Isle Royale managers are required by law to protect park resources and values, and are further directed to always seek ways to avoid, or minimize to the greatest degree practicable, adverse impacts on park resources or values. The NPS is required to protect the species listed under the Endangered Species Act and their critical habitats. Policy also requires that NPS managers inventory, monitor and manage state and locally-listed Threatened and Endangered species to the same extent as federally listed species, whenever possible. Under the Clean Air Act, the NPS is required to protect Isle Royale as a Class I Airshed, with only minor degradation of air quality allowed. The NPS Organic Act prohibits any action that would result in impairment of park resources or values.

Natural Light and Night Skies
The NPS recognizes the importance of protecting natural light and night skies and is committed to protecting natural darkness and other components of natural lightscapes in parks (NPS 2000). Therefore, managers would prioritize preventing or minimizing light pollution originating within park boundaries to the greatest extent possible while also providing for human safety within the developed, populated areas of the park.

Fire Management
The WBMP would remain consistent with the park’s Fire Management Plan (2004), recognizing that fires are a natural part of a wilderness ecosystem, and management actions are necessary to ensure both a healthy fire system and human health and safety.

Hunting and Trapping
Hunting and trapping are not permitted within Isle Royale National Park.

2.2.1 Wilderness Boundaries and Management
The NPS would maintain existing wilderness boundaries in Isle Royale National Park, with 131,925 acres of designated wilderness and 93 acres potential wilderness (Appendix C, Maps 2A

2.2 The No Action Alternative
Current and projected conditions provide a baseline for evaluating the changes and impacts of the other action alternatives. The National Park Service would continue the present management direction, guided by the GMP. Recreational use and access patterns would continue to develop, and the agency would respond as necessary on a case-by-case basis. No new services or facilities would be developed, except those described in the GMP.

This alternative represents “no action” on this plan. It does not imply that the National Park Service would take no further management action concerning the park’s backcountry. It places the National Park Service in a reactive role, responding to resource damage and user conflicts as issues arise. For all activities, the National Park Service would respond to changing use patterns as necessary to protect park resources, visitor safety, and visitor experience.
Designated wilderness and potential wilderness would continue to be managed as wilderness, consistent with NPS Management Policies (NPS 2000). Potential wilderness on Isle Royale consists of areas identified as suitable for wilderness designation, but with temporary non-conforming uses such as life leases or residences. The House Report accompanying the Wilderness Act (HR13160) clarifies the intent of designating an area as Potential Wilderness:

*National Park Service wilderness proposals have embodied the concept of “potential wilderness addition” as a category of lands which are essentially of wilderness character, but retain sufficient non-conforming structure, activities, uses, or private rights so as to preclude immediate wilderness classification. It is intended that such lands will automatically be designated as wilderness by the Secretary by publication of notice to that effect in the Federal Register when the non-conforming structures, activities, uses, or private rights are terminated.*

2.2.2 Visitor Use and Experiences, Including Facilities and Services

**Appropriate and Traditional Uses**

National Park Service management policies direct that wilderness areas must be managed to preserve their wilderness character and resources while providing for “appropriate” uses. Appropriate uses are those that require, yet do not degrade, the wilderness character and values, and include activities such as recreation, scientific inquiry, education, and historical use. The Wilderness Act dictates appropriate activities within Isle Royale’s wilderness, but more flexibility is allowed within the park’s non-wilderness backcountry, such as the use of sailboats and motors.

Existing types of recreational activities and visitor uses would continue, as would backcountry regulations (Appendix D). People visit Isle Royale for many different activities, including fishing, boating, backpacking, day hiking, canoeing, kayaking, sailing, scuba diving, observing wildlife, seeking general restorative experiences, learning about the area’s natural and cultural history, and photographing wildlife, flora and natural and historical scenery. All of these activities and more take place in and may be dependent upon the park’s wilderness and backcountry. Activities within the park’s wilderness would continue to be limited to non-mechanized and non-motorized activities.

The current conditions and opportunities for day visitors, and overnight campers and boaters are described in greater detail in the alternatives for managing overnight use of the wilderness and backcountry (§ 2.4.1) and alternatives for managing day use in the wilderness and backcountry (§ 2.4.2). Chapter 3 (§ 3.1) describes in detail visitor use and experiences at Isle Royale visitors.

**Cross-Country Camping and Anchoring Out**

Cross-country, or off-trail, camping and anchoring out would remain an option for visitors seeking opportunities outside of designated campgrounds and docks. These visitors would need to be experienced with the skills required to safely and responsibly anchor out or camp in pristine, off-trail areas. Because of this, the majority of Isle Royale visitors would be encouraged to camp in designated campgrounds. The NPS would retain the right to adjust area closures and limits on where cross-country camping is permitted. Special cross-country or anchoring out
permits would continue to be required, as would regulations to minimize the adverse impacts of dispersed camping (Appendix D-E).

**Fishing**
Fishing would continue to be recognized as an appropriate recreational activity in the park, but specific fishing regulations do not fall within the scope of the WBMP. Fishing regulations within the park’s Lake Superior waters are established by the Michigan Department of Natural Resources. Fishing regulations on the park’s inland lakes and streams are set by the NPS. Assessment fishing is permitted on a very limited basis within Isle Royale. The upcoming Fisheries Management Plan (expected 2005) will address the specifics of fisheries management in the park.

**Concessions and Private Business Operations**
Private companies would continue to provide valued services to Isle Royale visitors. Commercial activity, as well as requests for special events on Isle Royale would continue to be limited to avoid over-commercialization, excessive demand for use, and incompatibility with park goals and objectives. Private companies would continue to provide visitor services, including lodging and food through the Rock Harbor Lodge, and ferry and floatplane services. Details of these services would continue to be managed through concessions contracts.

Other commercial services that would continue under Incidental Business Permits (IBPs) include charter fishing, charter diving, and guided hiking and paddling. The operating requirements of these permits could be adjusted annually to manage the number of people that each permittee could bring to the island on a single visit or cumulatively during the season.

**Permitting and Information Services**

*Backcountry Permits for Campers and Boaters*
There would be no change in the permitting system at Isle Royale. This is described in detail in the No Action Alternative for managing overnight use, §2.4.1.

*Information and Education Services*
The NPS visitor center in Houghton, MI, would continue to provide visitor information and services year-round via phone, email, and in person. Visitor centers in Rock Harbor and Windigo would provide in-person visitor information and services during the island’s operating season. Interpretive and educational services would be available through all NPS visitor centers, with the specific programs varying based on staffing levels. Visitor centers would continue to issue permits, collect fees, aid in trip planning, and offer resources about the park’s natural and cultural history.

Isle Royale’s Comprehensive Interpretive Plan (2000) would continue to guide the interpretive and educational programs for the park.

**Group Size Restrictions**
Group size limits for overnight stays in the wilderness and backcountry would continue to be maintained as no more than 10 people per group and no more than 20 associated individuals in
the park at one time. Night-by-night campground reservations with designated large group sites would continue for parties of 7-10 people. The NPS would continue to maintain 43 designated group campsites throughout the park.

There would continue to be no limitations on group sizes for day trips, as described in the alternatives for managing day use in the wilderness and backcountry, § 2.4.2.

Wilderness and Backcountry Facilities

Campgrounds

Isle Royale would continue to maintain existing campgrounds and new GMP-proposed campgrounds, and would continue a strategy of concentrating camping within designated campgrounds. Managers would maintain the current system of concentrating camping impacts within designated campgrounds with outhouses, water access, and campsites with clearly defined tent pads or shelters. This system has proven effective at “both avoiding and minimizing areal measures of camping-related resource impacts” (Marion and Farrell 2002). Campgrounds would continue to be maintained and rehabilitated with a goal of increasing privacy and natural quiet through the design of campsite spacing and screening with vegetation. Outhouses would continue to be provided at all campgrounds to best manage human waste and visitors would be required to pack out all of their other waste.

Shelters would continue to be maintained, though per the GMP no additional shelters would be added to campgrounds within designated wilderness, and shelters will eventually be removed from the Duncan Bay and Siskiwit Bay campgrounds, after the docks are removed.

Trails

Hiking and portage trails would continue to be maintained to concentrate recreation impacts, minimize erosion and impacts to sensitive resources, and meet standards for primitive or semi-primitive trails. Trails would continue to be rerouted as needed to protect resources such as nesting eagles or loons. Boardwalks would continue to be used to minimize damage to wetlands. However, trail reroutes and the use of stonework and other trail building techniques would continue where feasible to minimize reliance on lumber for trails (see treated lumber section).

Docks

Other than docks planned for removal in the GMP, all existing docks at entry points, campgrounds, and points of interest would be maintained. The GMP determined that docks would be removed from Siskiwit Bay, Three Mile and Duncan Bay and the McCargo Dock would be relocated closer to the mouth of the cove.

Signs

Trail and campground signs would continue to be posted at junctions, with a goal to provide directional information on rustic signs consistent with the surroundings. Sign materials would be compatible with local materials, such as rough-hewn cedar posts. Signs would also be used minimally to post campsite locations and resource protection information (area closures, revegetation sites, etc.). Overlooks, side trails, and other points of interest within designated wilderness would not be posted with directional or educational signs.
No Action Alternative

Ranger Stations
The NPS would continue to maintain ranger stations with residences at Amygdaloid Island, Malone Bay, Rock Harbor and Windigo to provide for visitor safety, resource protection, public service, and support of park operations.

2.2.3 NPS Administration and Operations

Maintenance of the Wilderness and Backcountry

Administrative Use of Motorized and Mechanized Equipment
The NPS would continue to accept administrative use of motorized or mechanized equipment within Isle Royale’s designated wilderness where human life is at risk, or where use of a mechanized tool is determined to be the least intrusive method on wilderness character and values. Within and outside of designated wilderness park management would continue to work toward more sustainable operations, including purchasing water- and energy-conserving systems and machinery. For example, the National Park Service would take a leadership role in using less polluting, quieter boats as current equipment is upgraded or replaced (NPS 1998 p. 27).

The NPS would continue to use chainsaws for trail and campground maintenance within Isle Royale’s wilderness on a limited basis. Chainsaws are used in May and June to clear the large number of fallen and hazard trees following the winter windfall. Chainsaws may be used again for hazard tree removal in September and October. Throughout the operating season chainsaws may be used for bridge construction and maintenance. To date Isle Royale managers have accepted that this is an appropriate use of chainsaws in wilderness to protect the safety of trail crew staff and maintain desired trail and campground standards with concern for visitor safety.

The NPS would continue to use other power tools for maintenance in frontcountry zones and for dock, shelter, and outhouse maintenance in campgrounds along the Lake Superior shoreline. Generators or photovoltaic cells are used for power. A work barge with crane may also be used in dock maintenance at these campgrounds. Campgrounds outside of the developed zone are either within or in close proximity to wilderness.

Appropriate Types of Lumber for Trails, Docks, and Campgrounds

Isle Royale currently lacks a park-wide policy for the best types of lumber to use in backcountry and wilderness maintenance projects, including a decision on whether or not to use new technologies for chemical preservatives that double the lifespan of lumber. Lumber is used primarily for boardwalks over fragile wetlands, and for bridges and docks. In the past, the NPS has used arsenic-treated lumber (CCA) for trail, dock, and campground maintenance, because of the significantly longer lifespan than untreated lumber. However, environmental concerns associated with arsenic leaching into soils and water led the NPS to stop using CCA lumber in National Parks. Some CCA lumber remains on Isle Royale, and untreated lumber and new materials, such as recycled plastic “lumber”, have been used for different projects. Some trail structures are currently built using local materials, such as rocks for stepping stones and drainages, and cedar logs for boardwalk supports, minimal boardwalks and bridges, drainage
No Action Alternative

bars and corduroy. Trails are also continually re-routed to avoid wet areas. However, the great abundance of wetlands and wet areas on the island makes it unfeasible to entirely avoid wet areas when routing trails.

Lumber would continue to be used in trail construction and maintenance on Isle Royale as a means of minimizing human impacts on sensitive resources, as well as in dock construction and maintenance to provide access for visitors and maintenance crews. However, as aging boardwalks, bridges and docks require replacement, decisions on appropriate trail materials would continue to be made on an ad-hoc, project-by-project basis, without park-wide continuity.

**Organization**

All Isle Royale divisions would continue to be involved in wilderness and backcountry management for the park. The Maintenance Division would continue to have primary responsibility for the design, development, maintenance and removal of facilities, including docks, trails, campgrounds, ranger stations, and communications facilities. The Maintenance Division would also play a central role in selecting appropriate materials and equipment for park operations.

The Interpretation and Cultural Resources Division would continue to have primary responsibility for public education, information dissemination, visitor information services, permitting, fee collection, and website design and maintenance. Within this division, Cultural Resources Management would continue to be responsible for the full cultural resources program in the park, including inventorying and monitoring cultural resources, disseminating information, overseeing cultural resources planning, cooperating with local and regional interests, and preserving the park’s cultural resources.

The Protection & Emergency Services Division would continue to play a critical role in visitor education, regulation enforcement, and protecting park resources.

The Natural Resource Division would continue to be primarily responsible for coordinating research, inventorying and monitoring natural resources, assessing environmental consequences of park projects, managing park databases, collaborating with regional and national conservation efforts, and disseminating information about park resources. The wilderness coordinator position has traditionally been within this division.

All of these divisions would continue to be directly involved in wilderness and backcountry management through participation in Isle Royale’s planning teams and Backcountry Management Group (BMG), an inter-divisional advisory group. The BMG consists of representatives from each of the above divisions and meets several times a year with field visits to assess backcountry and wilderness conditions, and make recommendations on needed backcountry and wilderness projects.

**Resource Management and Protection**

Research in Isle Royale would continue to be guided by the park’s Resources Management Plan (1999), but there would be no specific coordinated guidance based on wilderness and backcountry management needs.
Protecting Species of Special Concern
The NPS would continue to take action to protect species of special concern in Isle Royale. Species of special concern on Isle Royale include Federal and State-listed Endangered and Threatened Species, as well as other species with dwindling regional populations. Species of concern that are particularly vulnerable to recreation have direct relevance to this planning effort. This includes the gray wolf, common loon, bald eagle, and coaster brook trout, as well as many sensitive plant communities. Isle Royale managers have and will continue to take actions to minimize or eliminate human impacts to these species. Threatened and Endangered species are discussed in greater detail in Chapter 3, §3.3.6, however there are certain actions that Isle Royale managers have taken in the past and will continue as appropriate to protect sensitive species in the park.

Actions that have proven successful for protecting wolves on Isle Royale include:
- closing the park to public access in the winter,
- closing portions of the park to overnight camping during denning and rendezvous times,
- supporting research on wolf ecology and population viability, and monitoring human impacts on wolves at Isle Royale,
- educating the public about the importance of maintaining a separation between wolves and humans and reporting any interactions they have with wolves in the park.

Actions that have proven successful for protecting bald eagles on Isle Royale include:
- closing or rerouting trails adjacent to eagle nests
- closing campgrounds adjacent to eagle nests while the eagles are actively nesting
- supporting monitoring efforts and research about eagle productivity and associated human impacts on Isle Royale
- educating the public about successful conservation measures that have led to a resurgence of eagles in the park.

Actions that have proven successful for protecting loons on Isle Royale include:
- rerouting portages that are in close proximity to loon nest sites,
- temporarily closing particularly vulnerable loon nesting areas to paddling until chicks have fledged (this has proven successful at the southwestern-most end of McCargoe Cove, where loons appear to be having greater nesting success since the closure was enacted),
- supporting monitoring efforts and research about loon productivity and associated human impacts on Isle Royale,
- educating the public about research findings that indicate loons have a particular sensitivity to human intrusions during their nesting and chick-rearing periods, and how people can minimize adverse impacts on loons.

Actions that are being taken to protect coaster brook trout within Isle Royale waters include:
- working together with the MI DNR to establish and maintain viable coaster populations;
- supporting research and management partnerships with the US Fish and Wildlife Service and the State of Michigan within Isle Royale waters and the Lake Superior Region;
• educating the public about the uniqueness and importance of the Isle Royale populations of coaster brook trout.

Actions that have been taken to protect sensitive plant species and communities on Isle Royale include:
• conducting plant surveys to be aware of vulnerable areas when planning development projects;
• identifying vulnerable areas where recreation use should not be encouraged;
• considering rare plant communities in identifying areas closed to camping;
• surveying sites of proposed development such as trail reroutes, campsites, outhouses, and new buildings to avoid impacting rare plants;
• supporting research and monitoring of rare plants in the park, including mapping of known locations;
• educating the public about the rare plant communities of Isle Royale and actions they can take to minimize recreation impacts.

Isle Royale managers have utilized available information about these sensitive species and other vulnerable resources in making management decisions. This information has been helpful in locating trails and campgrounds, informing the public, and other measures to direct recreation use away from areas that are most vulnerable to human impacts.

**Scientific Activities in Wilderness**

One of the legal purposes of wilderness is to provide opportunities for scientific activities, and these activities would continue to be encouraged and permitted within Isle Royale’s wilderness and backcountry, when consistent with the NPS’s responsibilities to preserve and manage wilderness.

Isle Royale has a standing policy for establishing permanent plots with permanent or long-term physical markers. The intent is to balance the needs of long-term research projects with the desire to minimize associated physical impacts in the park’s wilderness. According to this policy “the long-term significance of a research plot, along with its associated data, is the fundamental reason for nominating it for permanent marking.”

**Monitoring Wilderness Resources**

The Natural Resource Division would continue to oversee and conduct natural resources monitoring projects, including species of concern, air and water quality, and recreation impacts. The division would continue to cooperate with the NPS Great Lakes Network for natural resources inventory and monitoring. Cultural Resources Management would continue to oversee and conduct cultural resources preservation and monitoring projects, and coordinate with local and regional interests. However, there would not be a coordinated, cohesive plan for monitoring wilderness and backcountry resources in the park and applying monitoring information to management efforts.

**Area Closures**

With this WBMP, park managers would retain the right to implement temporary or permanent area closures within the park’s wilderness and backcountry. Closures are implemented on
specific sites to protect sensitive wildlife from human disturbance, larger area closures may be implemented for habitat protection or protection of wildlife with broader area needs, other valid justifications for closures include protecting human health and safety, and protection of sensitive cultural resources. Closures may be for certain activities or for all public access.

### 2.3 Actions, or Changes, that would be Common to all Action Alternatives

The following actions would be taken as part of the implementation of Isle Royale’s WBMP. This would be in conjunction with the preferred alternatives for changing the management of overnight use, day use, campfires, fire towers, and picnic tables in the wilderness and backcountry.

#### 2.3.1 Wilderness Boundaries and Management

All alternatives would maintain existing wilderness boundaries and acreage, including managing PWAs as wilderness.

As part of this WBMP, all PWAs on Isle Royale where non-conforming uses have ceased would be converted to Wilderness through the proper steps. Current non-conforming uses will be evaluated in the park’s upcoming Historic Properties Plan where necessary.

#### 2.3.2 Visitor Use and Experiences, Including Facilities and Services

**Appropriate and Traditional Uses**

This WBMP would not propose changes in current uses or regulations (Appendix D-E) in Isle Royale’s wilderness and backcountry. Appropriate and traditional uses within the park include hiking, backpacking, paddling, sailing, motorboating, sport fishing, commercial fishing with special use permits, scuba diving, charter diving and fishing with incidental business permits, and scientific research. Some of these activities are restricted within the park’s designated wilderness. Although the same types of uses would continue, the levels of visitation could change, as outlined in the alternatives for managing overnight use of the wilderness and backcountry (§2.4.1) and alternatives for managing day use (§2.4.2).

**Cross-country Camping and Anchoring Out**

Cross-country camping and anchoring out would remain an option for visitors seeking opportunities outside of designated campgrounds and docks, continuing current regulations (Appendix D-E) and permitting requirements. Under all of the action alternatives, the NPS would have the option of managing or limiting the number of permits issued for anchoring out or cross-country camping, as necessary to prevent or correct unacceptable impacts to park resources and values.

**Fishing**

Any changes in fishing regulations would be addressed in the park’s Fisheries Management Plan (expected 2005).
Two goals of the fishing and educational programs for Isle Royale would be to raise awareness of fishing regulations and to promote ethical practices when fishing. This would include the use of artificial lures only, proper disposal of fish remains, taking only as few fish as are needed and not more than the legal limit, safe handling of live fish, and preventing the introduction and spread of exotic aquatic species. Educational outreach with the national Leave No Trace guidelines for fishing would be one tool used in this effort.

Concessions and Private Business Operations
Private organizations would continue to provide valued services to Isle Royale visitors. Park-wide changes in permitting for camping and boating presented in the action alternatives for managing overnight use in the wilderness and backcountry would apply to organizations and businesses, as well as individual visitors. Group size limits proposed for organized day tours under the action alternatives for managing day use in the wilderness and backcountry would also apply to private organizations leading day trips in the park.

Permitting and Information Services

Backcountry Permits for Campers and Boaters
Under all alternatives backcountry permits would continue to be required for all parties camping or boating overnight in Isle Royale’s wilderness and backcountry. Parties of 7-10 people would still be required to make advanced reservations for group campsites. However, how and where permits are issued could change, with options presented in the alternatives for managing overnight use of the wilderness and backcountry (§ 2.4.1). These alternatives also present options for improving visitor information services. Under all alternatives, park managers would have the option of adjusting visitation levels or distribution, or modifying human activities as necessary to slow or reverse deteriorating social or resource conditions.

Leave No Trace education and explaining backcountry regulations would remain a critical part of permitting for all visitors.

Information and Education Services
Public education is a critical component of any wilderness and backcountry management program. Education is important for park visitors, the public who do not visit the park, and NPS and partner employees. The WBMP would remain consistent with Isle Royale’s Comprehensive Interpretive Plan (2000) and would serve as guidance for interpretive and educational programs in the future by outlining goals and desired conditions for the future of the park. Education and interpretation would be used as a tool to foster public stewardship and minimize adverse human impacts to park resources and values.

The alternatives for managing overnight use of the wilderness and backcountry present options for improving visitor information and trip planning services in the park.

Group Size Restrictions
There would be no change in group size limits for camping parties. However, in order to preserve the appropriate conditions for solitude and tranquility, campgrounds within the
Actions Common to all Action Alternatives

Primitive Zone would be reserved for those entering the park as “individual” parties. This would provide an opportunity for visitors seeking a higher level of solitude and tranquility. To protect this opportunity, groups of 7-10 would not have the option of camping within these areas, even if they split into multiple parties. Primitive Zone campgrounds are; North Desor, Little Todd, Pickerel Cove, Lane Cove, Intermediate Lake, Wood Lake, Lake Whittlesey, and Duncan Bay once the dock is removed.

The alternatives for managing day use in the wilderness and backcountry present options for changing group size limits for day tours.

Wilderness and Backcountry Facilities
The intention of facilities constructed and maintained within the park’s wilderness and backcountry would be to maintain the minimum structures necessary to protect resources and provide for appropriate recreation access.

Additional facilities in Rock Harbor
All alternatives would include the addition of a small number (2-6) of rustic facilities for low-cost multiple night stays in Rock Harbor. Although these facilities would be added in the Developed Zone, not within the wilderness or backcountry, their addition would be intended in part to alleviate pressure on wilderness and backcountry campgrounds. Additional assessment of environmental impacts and compliance documentation would be completed prior to constructing these new facilities.

Campgrounds
Any changes in campground sizes or new campgrounds are addressed in the action alternatives for managing overnight use of the wilderness and backcountry.

Trails
The trail system and its management would remain unchanged in all proposed alternatives, except for a possible new 3-5 mile section of trail designed for day use near Windigo, as described in Alternative C for managing day use in the wilderness and backcountry.

Signs
There would be no change in the use of signs in the wilderness and backcountry, maintaining a policy of posting only those signs deemed necessary for minimal visitor service and education and resource protection along trails, at campgrounds, and at significant cultural or natural resource sites. The NPS would continue or increase efforts to use rustic, locally compatible materials for signs, such as rough-hewn cedar posts with burned lettering.

Docks
There would be no changes in docks from the current conditions, except for those changes approved in the GMP.

Ranger Stations
Existing ranger stations with residences would be maintained at Rock Harbor, Windigo, Amygdaloid Island, and Malone Bay to provide for visitor safety, resource protection, public
service, and support of park operations. No additional ranger stations or other backcountry-based buildings for NPS employees and administration would be established.

Repeaters and Communications Facilities
Any changes in radio repeaters, communications facilities, or other telecommunications equipment in Isle Royale’s wilderness and backcountry would require appropriate compliance to evaluate feasible alternatives and assess environmental consequences. This would include considering alternatives that would be based outside of the park’s designated wilderness.

2.3.3 NPS Administration and Operations

Minimum Requirement Process
The Minimum Requirement Process with the Minimum Requirement Decision Guide (Appendix F) would be implemented and institutionalized. Isle Royale’s Wilderness Coordinator would maintain a file of all documented decisions using the minimum requirement process that would be available for reference.

All management decisions and activities on Isle Royale must include a well-documented assessment of whether actions would affect wilderness resources or visitors’ experiences, and if so, if the actions are necessary and appropriate, and if there are alternatives to minimize impacts. Part of this minimum requirement process is identifying the minimum tool, which is defined as the least intrusive tool, equipment, device, force, regulation, or practice that would achieve the wilderness management objective safely and with the least impact on wilderness resources. These decisions must be well documented using the Minimum Requirement Decision Guide, and be accompanied by an appropriate environmental compliance document. Assessment of adverse impacts must consider physical resources within wilderness, as well as wilderness character and values, which include: primeval character and influence, the preservation of natural conditions (including a lack of man-made noise), cultural resource values, outstanding opportunities for solitude, opportunities for primitive and unconfined recreation, and the preservation of wilderness in an unimpaired condition (NPS 1999b). Where actions take place outside of wilderness, consideration should also be given to how those actions may have indirect effects on wilderness character and values. This process does not, however, preclude impacting tools; for example, helicopters could be determined to be the minimum tool under certain circumstances.

The minimum requirement concept will be applied as a two-step process that determines:

- Whether the proposed management action is appropriate or necessary for administration of the area as wilderness and does not pose a significant impact to wilderness resources and character; and
- The techniques and types of equipment needed to ensure that impacts to wilderness resources and character is minimized.

...When determining minimum requirement, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only
Actions Common to all Action Alternatives

*those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable (NPS 2000, § 6.3.5).*

The Minimum Requirement Decision Guide would also apply to all research conducted at Isle Royale, which is consistent with NPS policies. Methods and tools proposed for the research must consider impacts to and appropriateness for wilderness. Although research is appropriate for wilderness and is essential for managing and protecting wilderness, some proposed research projects might be better suited to non-wilderness settings or designed with alternative low-impact field methods. Additionally, analysis of existing datasets may be a better option than collecting new field data. These types of considerations will be used in assessing research proposals for Isle Royale’s wilderness, weighing the benefits of what can be learned against the impacts on wilderness resources and values (NPS 2000, § 6.3.6).

**Maintenance of the Wilderness and Backcountry**

*Administrative use of motorized or mechanized equipment*

Administrative use of motorized or mechanized equipment by the NPS must meet the requirements of the Minimum Requirement Decision Guide (see Appendix F), including a recommendation by the Chair of the Backcountry Management Group and the Superintendent’s signature. Acceptable uses would include emergencies where human life is at risk, or where use of a mechanized tool is determined to be the least intrusive method on wilderness character and values. Within and outside of designated wilderness park management would continue to work toward more sustainable operations, including purchasing water- and energy-conserving systems and machinery. For example, the National Park Service would take a leadership role in using less polluting, quieter boats as current equipment is upgraded or replaced (NPS 1998 p. 27).

Isle Royale managers would commit to further reducing the use of chainsaws within wilderness. However, current levels of funding for training and staffing are inadequate to pay for the personnel and expertise that would be necessary to achieve these standards with the exclusive use of hand tools in the park’s wilderness. A future goal would be to increase the use of hand tools in maintaining the trails and campgrounds within Isle Royale’s wilderness. Options for accomplishing this include 1) partnerships with other agencies that may offer a skill base in the use of cross-cut saws and other hand tools that could replace chainsaws, 2) trainings for maintenance crews, leaders, and supervisors in the use and upkeep of cross-cut saws, and 3) evaluation of areas of the park and sections of trails that would be best suited for cross-cut crews. Exceptions would continue to allow for chainsaw use in the case of emergencies involving human health and safety.

The National Park Service would also commit to reducing the impacts of other power tools used for maintenance on trails and in backcountry campgrounds and docks. Within 5 years of completion of this plan, maintenance projects in the wilderness and backcountry would be categorized with appropriate minimum tools for each type of project, thus the minimum tool process would not have to be applied to each individual project.

*Appropriate Types of Lumber for Trails, Docks, and Campgrounds*

Maintenance crews would aim to maintain current trail standards while minimizing the impacts of using local materials for construction and also using the most efficient, least contaminating
materials possible. Lumber treated with chemical preservatives, and those with natural preservatives (such as cedar) have proven to have about twice the lifespan of untreated lumber. Lumber treated with chemical preservatives known to be of environmental concern, such as CCA, would not be used in Isle Royale’s wilderness and backcountry. Technological advances in lumber preservatives have lead to the development of more benign alternatives that are more economically feasible than lumber with natural preservatives. When lumber is necessary for trail construction and maintenance, the most benign chemical treatments would be acceptable for use in the wilderness and backcountry. An additional goal would be to utilize “green” lumber that is commercially managed and harvested with sustainable practices.

Maintenance crews would continue to use local materials, as well, on a limited basis for trail and campground work. Local cedar and other tree species could be utilized for corduroy, water bars, boardwalk footings, and other applications. Local rocks would continue to be used for purposes such as stepping-stones, trail stabilization, drainages, and constructing tent pads.

The amount of bridging, boardwalks and drainage structures would continue to be minimized to the greatest extent feasible through trail reroutes. Remaining signs, boardwalks and bridges within the park’s wilderness and backcountry would all be constructed using a minimal amount of local materials and the most benign chemically treated lumber that is commercially available. This would maximize the lifespan of trail structures, minimizing long term costs of materials and labor. Protecting fragile habitats from trampling, trail widening, and erosion as well as minimizing hazardous trail conditions would remain a primary objective of trail construction and maintenance. The use of the most benign chemically treated lumber would minimize the risk of detrimental contamination of soils and water. Continuing the use of imported lumber would also minimize the local impacts of utilizing native materials for trail construction and maintenance.

- Trail and dock maintenance staff would continually research alternatives for treated lumber to remain abreast of the most environmentally benign options available. This lumber would be used for trail and dock construction and maintenance in the park’s wilderness and backcountry.
- Trail crews would use minimal native materials in lieu of imported lumber where feasible and continue rerouting trails to avoid wet areas and fragile habitats to minimize the need for lumber.
- Trail structures and docks would be designed to be compatible with their surroundings and wilderness character.
- Options for identifying some trail sections as free from treated lumber would be explored.
- Proposals for trail and dock projects would include adequate funding and planning to include removal of any waste lumber as a part of project completion.
- Information would be gathered about threats of adverse impacts from chemicals used in treated lumber as future research became available. As need dictated in the future, mitigation measures would be taken to minimize known threats, including removal of contaminating materials.
Resource Management and Protection
The NPS is required by law and policy to protect natural and cultural resources within National Parks. Specific management decisions are developed within the park for this purpose. With this WBMP, if resource impacts were greater than expected with any natural or cultural resources, managers would combine mitigation actions that modify resources with mitigation actions that alter human behavior, visitor distribution, or numbers and locations of people in the wilderness and backcountry. Resource modifications could include such things as marked routes, signs, constructed trail sections, groomed trails, trail reroutes or closures, designated campsites, campsite closures or relocations, area closures, outhouses, and tent platforms or other structures to protect resources in campgrounds.

Cultural Resources Management
The specific details of how Isle Royale’s cultural resources will be managed are beyond the scope of this WBMP. This will be developed in a forthcoming Historic Properties Management Plan, or comparable document, which will be consistent with the management goals and actions in this WBMP.

Ecological restoration
Whenever facilities are removed in the wilderness or backcountry disturbed areas would be restored with native vegetation with steps taken to prevent the establishment of exotic species. This includes the removal of structures as well as the closure of campsites, trails, and other development impacts. The goal would be for full ecological restoration of the native species and ecological functions.

Exotic plant communities could be associated with cultural landscapes. In areas where exotic vegetation exists as part of a cultural landscape, the vegetation would be evaluated according to its cultural significance and threat to native species. In some cases culturally significant exotic species may be retained on a limited basis, if it is feasible to prevent the species from spreading and competing with native species.

Protection of natural resources

The principle of non-degradation will be applied to wilderness management, and each wilderness area’s condition will be measured and assessed against its own unimpaired standard. Natural process will be allowed, insofar as possible, to shape and control wilderness ecosystems. Management should seek to sustain the natural distribution, numbers, population composition, and interaction of indigenous species. (NPS 2000, §6.3.7)

An overriding goal of managing the natural resources within Isle Royale’s wilderness and backcountry is to ensure ecosystem integrity and prevent impairment of any resources. More specifically, the NPS is also required to manage for the preservation of Threatened and Endangered plants and animals, including restoring and maintaining listed species’ habitats, controlling detrimental visitor access, and re-establishing extirpated populations. State and locally listed species will be managed in a manner similar to the management of federally listed
species, “to the greatest extent possible” with a goal of maintaining natural distribution and abundance. (NPS 2000, §4.4.2.3)

The specific goals and actions for managing natural resources on Isle Royale are discussed in great detail in several resource management plans for the park, and this WBMP would remain consistent with these plans; Natural Resources Management Plan (1999), Fire Management Plan (2004), Water Resources Management Plan (anticipated 2005), and Fish Management Plan (anticipated 2005).

Protecting Species of Special Concern
Efforts to protect species of special concern in the park would continue, with an additional commitment to support future research on sensitive species and their vulnerability to human impacts and apply new information as it becomes available to management decisions for resource protection.

Scientific Activities in Wilderness
Current efforts to provide opportunities for scientific activities within Isle Royale would continue. Additionally, the NPS would expand efforts to use science to improve wilderness management, and as appropriate contribute to national and global conservation efforts. To aid in maintaining a consistency between wilderness protection and fostering scientific exploration, the Minimum Requirement process would apply to all scientific activities proposed for Isle Royale, with a goal to work with researchers to develop scientific techniques that are low-impact and less intrusive. To accomplish this, Isle Royale’s Minimum Requirement Decision Guide would apply to all proposed research activities.

Even those scientific activities (including inventory, monitoring and research) that involve potential impacts to wilderness resources or values (including access, ground disturbance, use of equipment, and animal welfare) should be allowed when the benefits of what can be learned outweigh the impacts on wilderness resources or values. However, all such activities must be evaluated using the minimum requirement concept and include documented compliance that assesses impacts against benefits to wilderness. This process should ensure that the activity is appropriate and utilizes the minimum tool required to accomplish project objectives (NPS 2000, §6.3.6.1)

These objectives and processes would apply to all scientific activities within wilderness, including natural, cultural, and social research, monitoring, and inventories.

Organization
All Isle Royale Divisions would continue to be involved in wilderness and backcountry management for the park.

Wilderness Management Accountability and Training
As directed by NPS Director’s Order 41, all positions having significant wilderness responsibilities will be supported by position descriptions that detail these responsibilities.
Implementation of this WBMP will include incorporating wilderness responsibilities into position descriptions for the following positions:

- Superintendent
- Assistant Superintendent
- Chief of Natural Resources
- Cultural Resources Program Manager
- Chief of Interpretation
- Chief of Maintenance
- Facility Manager
- Chief Ranger
- East and West District Rangers
- Trails Foreman
- Campgrounds Foreman
- Lead Biological Science Technician
- Forestry Technician

Knowledge of and experience with wilderness laws, policies, ethics, and management practices will also be integrated into vacancy announcements for these positions.

Isle Royale will designate one permanent staff member to be the acting Wilderness Coordinator. Where funding allows this would be a specialist position, otherwise it would be a collateral duty. The Wilderness Coordinator will have direct responsibility for the development, coordination, communication, implementation, and accountability for the park’s wilderness program. The Wilderness Coordinator will also serve as a liaison to Regional and National wilderness programs.

Other positions at Isle Royale involve significant work responsibilities that are carried out in the park’s wilderness, or involve significant time working with the park’s wilderness visitors. Wilderness training (described in detail below) will be a priority for these positions, as well.

**Wilderness Training for Key Staff**

Per NPS Director’s Order 41, Isle Royale managers will ensure that each key staff person having responsibility for the management and protection of wilderness resources will receive the wilderness training necessary to ensure awareness, knowledge of, and accountability for, their specific wilderness responsibilities. Training requirements for superintendents and assistant superintendents as well as for any division chiefs or other individuals identified above will be followed as directed in DO 41 in order to preserve the delegation of authority. Isle Royale’s Wilderness Coordinator will work with the National Park Service representative at the Arthur Carhart National Wilderness Training Center to ensure availability of needed training or training materials.

Wilderness training will be incorporated into seasonal training each year for all staff working primarily in the backcountry and wilderness, or working directly with wilderness visitors. This includes but is not limited to trail crew, campground crew, visitor center staff, interpretive rangers, biological science technicians, and commissioned and non-commissioned rangers. It is also recommended that wilderness training and the application of the Minimum Requirement Process be included in supervisor training. Additionally, because all island-based employees live, work, and recreate either adjacent to or in wilderness, a summary of wilderness policies and ethical considerations will be incorporated into staff orientation materials or presentations.
Recommended trainings include national-level wilderness stewardship training for the Superintendent and/or other management squad positions; Regional wilderness stewardship training for the Chief of Natural Resources, Chief Ranger, and Chief of Maintenance; and subject-matter trainings for permanent staff within the Natural Resources Division, Protection Division, and the Interpretation and Cultural Resources Division. Currently those courses are available to NPS employees through the Arthur Carhart National Wilderness Training Center in the form of on-site trainings in various locations, over the Internet, and through distance learning programs such as Tel-Net.

Additionally, it is recommended that at least one member of Trail Crew, Interpretation, Protection, and Natural Resources be up-to-date as a certified Master of Leave No Trace. Leave No Trace training is available from various sources, including independent certified instructors in Leave No Trace.

**Staff Responsibilities and the Backcountry Management Group**

The success of the WBMP would be largely dependent on staff accountability and clear responsibility. Isle Royale’s BMG would continue to meet on a regular basis, including field visits, to discuss wilderness and backcountry management issues, identify issues in need of management attention or change, and make recommendations. This group was established to provide for a unified approach to planning, maintenance, and management of backcountry areas, and this need would continue. The BMG would continue to consist of representatives from park divisions and branches with job responsibilities directly related to management of the park’s wilderness and backcountry. Standing members would continue to include cultural and natural resource management specialists, trails foreman, interpretation and education specialist, and district rangers.

With implementation of this WBMP, Isle Royale’s interdisciplinary Management Team would meet annually to review wilderness management issues, discuss the current Wilderness Status Report, and assess management effectiveness and changes in management actions that may be necessary to achieve the goals of the WBMP. This team consists of the Superintendent, all ISRO division chiefs, and staff representatives from the key programs of each division.

**Interagency Coordination**

Although Isle Royale does not share a border with other federal land agencies, coordination with other agencies will still be important. The Michigan Department of Natural Resources retains jurisdiction over Lake Superior waters within the park’s boundaries. The coastguard would remain a vital partner for many human safety and other issues. The US Fish and Wildlife Service would remain involved in the management of federally listed species and their habitats, as well as acting as an adviser in other issues of species management. The US Geological Survey and Biological Resources Division would remain important partners for research consultation. Isle Royale managers would also coordinate with other park managers in the Lake Superior and Great Lakes Region to meet the broader regional goals for backcountry and wilderness management issues. All of these partner agencies will receive copies of the Draft WBMP for review and input.
Wilderness and Backcountry Management Plan Implementation
Implementation of portions of this plan may be dependent on park budget and staffing. Acceptance of this plan identifies guidance and priorities and future management direction, but does not guarantee the funding that may be required for full implementation.

Monitoring Recreation Impacts
Monitoring current conditions and trends would be critical to the long-term success of wilderness management, in part to determine the effectiveness of management actions for achieving goals and tracking any unintended effects of actions. As part of the implementation of this Wilderness and Backcountry Management Plan, Isle Royale would develop and implement an accompanying monitoring plan. This would include a detailed schedule of what would be monitored, how frequently, and who would take primary responsibility, as well as an outline of an annual status report for wilderness conditions and more thorough 5-year “State of the Wilderness Report” for summarizing monitoring results and management implications. The ultimate goal of this plan would be to assess current conditions against stated goals for resource and visitor conditions and evaluate the effectiveness of management actions to achieve or maintain these goals, as well as evaluating the impacts of management on wilderness conditions. The monitoring plan would be based largely on indicators and standards established in the final WBMP, but would also include general resource monitoring that is pertinent to wilderness and backcountry management. This information would be used to better inform management and direct necessary changes in management actions. This is consistent with NPS Management Policies (NPS 2000, §6.3.6.2), which states “the conditions and long term trends of wilderness resources would be monitored to identify the need for, or effects of, management actions.”

Indicators that would be monitored include, but may not be limited to (to be established in the monitoring plan):

- Frequency of parties sharing campsites in overfull campgrounds
- Rates of trail encounters
- Annual visitation levels and temporal and spatial distribution of visitors
- Density of boats anchoring out in anchorage areas
- Biophysical conditions in campgrounds, including recreation impacts and screening between campsites
- Biophysical impacts of recreation and NPS activities in pristine zones (off-trail)
- Wolf-human encounters
- Loon nesting success, productivity, and population viability.
- Condition assessments of archeological sites and cultural landscapes along trails and within and adjacent to campgrounds.

Cultural resources monitoring for impacts from recreation and management activities would also be monitored as an important facet of wilderness and backcountry management, but these goals and protocols would be developed in conjunction with an Historic Properties Management Plan for Isle Royale.

Isle Royale’s Division of Natural Resource Management would be responsible for the completion and implementation of the monitoring plan for the WBMP, with assistance from the
Actions Common to all Action Alternatives

Adaptive Management and Additional Research Needs
Wilderness and backcountry management is an iterative process that requires adaptive management with some flexibility as new information becomes available. The intent is to retain goals and objectives while allowing for flexibility in actions taken to most effectively achieve those goals. Research and information gathering will continue to be important to better understand the effectiveness and implications of management actions. Management decisions at Isle Royale will be based on the best information available, though desired information is not always available. To date the process of planning for and managing wilderness and backcountry on Isle Royale has identified several research needs that could aid in future management decisions. This list of needs will help to seek out and prioritize future research projects in the park:

Wolf-human interactions
One critical component of protecting wolves on Isle Royale is maintaining minimum wolf-human interactions and preventing the habituation of wolves to humans. Some questions needing to be better understood include: what relationship is there between human travel patterns on the island and wolf travel patterns? Is there a trend in the frequency and nature of wolf-human encounters on the island?

Options for minimizing human impacts on loons
Research supports the conclusion that human behavior, particularly in canoes, can and does have adverse effects on the nesting success of loons on Isle Royale. Given this, what management actions are most effective in minimizing these impacts, while also allowing for appropriate recreation access to the park’s waterways?

Invasive exotic species
Invasive exotic species pose a significant threat to the individual native species, as well as the integrity of terrestrial and aquatic ecosystems on Isle Royale. Fortunately, some of the most serious invasive species known in the Great Lakes Region have not yet become established on Isle Royale. Additional research is needed to identify the most effective means of preventing the introduction and establishment of these invasive species, and if established, the most effective means of eradication or containment.

Ecosystem integrity
Much of Isle Royale’s natural sciences research has focused on individual species. One critical component of wilderness character is naturalness, which speaks to the health, sustainability, and natural state of an ecosystem. Better understanding ecosystem integrity and the effects that human influences have on ecological systems and functions, as well as exploring any differences between the island’s current state and a natural state, are critical for long-term management.
Recreation impacts on cultural resources
Additional research is needed to monitor recreation impacts on cultural resources, and establish guidelines for acceptable levels of impacts, if any can be established within policies for maintaining the integrity of these sites. A thorough inventory of cultural resources that may be vulnerable to recreation impacts is also needed. These issues will be addressed in the upcoming Historic Properties Management Plan for Isle Royale.

Cross country impacts
What are the current impacts in the pristine zone from cross-country travel and camping? How do current impacts compare to desired conditions? Should current levels and distribution of cross-country use be modified, considering impacts to sensitive resources and management goals for these areas?

Aquatic contaminants
What are existing threats of contaminants in campgrounds, from treated lumber, and associated with NPS operations? How might these contaminants be controlled to minimize adverse effects to resources?

Social sciences questions
Although Isle Royale has completed a fairly thorough assessment of social conditions in the park, some important questions remain, including how to best monitor and manage for appropriate levels of trail encounters, how to better understand people’s choices that result in impacts, and how to evaluate the effectiveness of educational efforts and regulations to minimize impacts.

Inventory and monitoring of cultural resources
Limited inventory of the park’s cultural resources has been completed. Additional efforts would focus on identification of cultural landscapes and ethnographic resources in visitor use areas. Research is needed to evaluate the relationship between cultural and natural resources and to provide options for preservation in wilderness. A system to monitor impacts to cultural resources is needed to protect those resources and identify changes over time. Because cultural sites, such as mining remains and fishing camps, can be an important part of the wilderness experience, sites would be monitored to ensure perpetuation of that experience.
The alternatives presented here are based on Isle Royale’s mission, purpose, significance, and objectives for wilderness and backcountry management and present different ways to manage resources and visitor use in the park’s wilderness and backcountry. The alternatives were formulated by the park’s interdisciplinary planning team with public input, consultation with partners and subject matter experts, and thorough review of laws, policy, relevant research, and examples from other National Parks and wilderness areas. The alternatives are divided into 5 categories of issues; 1) overnight use of the wilderness and backcountry, 2) day use of the wilderness and backcountry, 3) campfires, 4) fire towers, and 5) picnic tables in wilderness. These issues and the range of alternatives for addressing them arose during the scoping process. They are addressed individually because each stands alone and deserves specific public comment. The no action alternative for each issue serves as a baseline for comparison.

2.4.1 Description of Alternatives for Overnight Use of Isle Royale’s Wilderness and Backcountry

The majority of people who visit Isle Royale (about 70%) spend one or more nights in the park’s backcountry, either camping, staying aboard a docked boat, or anchoring out. Changes proposed to the way visitation is managed are designed to improve conditions for these visitors, minimize adverse impacts to the park’s resources caused by backcountry activities, and address issues raised by the public relevant to overnight recreation. These public issues and concerns include: 1) public access to Isle Royale, 2) freedom and flexibility of travel within the park, 3) crowding in campgrounds and having to double up in overcrowded campsites, 4) the simplicity of the park’s permitting system and regulations, 5) protection of park resources, 6) protection of wilderness character, and 7) providing options for a range of user groups and diverse interests. Where some of these interests may be in conflict, compromises are necessary. The context of Isle Royale is also important, where the remoteness of the park, logistics necessary for trip planning, and costs of simply reaching the park must be considered.

One of the salient issues raised here is availability of a sufficient number of campsites to accommodate the number of parties staying in a campground for a night. When the number of parties in a campground exceeds the number of campsites, parties are asked and expected to double up, or share campsites, with multiple parties camping in a site designed to hold one party. Although many people report that sharing sites ended up being a positive experience in which they met very nice people, others point out that being forced to share when adequate sites are not available is inappropriate for the types of experiences people expect with a trip to Isle Royale’s wilderness (Isle Royale 2002). People will always have the choice of socializing and meeting new people while camping at Isle Royale; the issue is whether they should be forced to do so. Adverse impacts to people’s experiences such as noise, a loss of privacy and solitude, and the pressures of finding camping space are concerns, as are physical impacts associated with overcrowding in campgrounds. The goal of improving wilderness and backcountry experiences includes reducing the frequency of parties needing to share campsites. However, the goal of not
being overly restrictive or unduly limiting public access to the park suggests that some minimal level of campsite sharing may be necessary.

The alternatives presented in this chapter represent a range of feasible options for achieving these goals for overnight visitation in the park’s wilderness and backcountry. Each of these action alternatives addresses the park’s visitor carrying capacity by establishing goals for social conditions and the number and size of designated campgrounds. All of the alternatives are similar in that they propose managing overnight visitation based on campsite availability and a limited tolerance for parties doubling up in campsites. The goals and potential management actions proposed in each alternative are summarized for comparison at the end of this section (Table 4). Chapter 4 outlines the implications of each of the alternatives for visitor use levels and visitor experiences.

**Alternative A for Managing Overnight Use: No Action, Continuation of Existing Management Direction**

**A.1 General Description**
The National Park Service would maintain its current management direction, continuing with implementation of the GMP but making no other significant modifications to wilderness and backcountry management. Isle Royale would continue a management approach of issuing permits at the start of a trip, allowing for freedom of flexible travel in the park and maximum visitor access within the current transportation system. In effect, backcountry visitation levels would be determined by transportation capacities, as the NPS would not implement any visitation limits other than maintaining existing ferry capacity limits and schedules.

**A.2 Management Goals and Actions**
The current management direction of accommodating all visitors who are able reach the island would continue.

**A.2.1 Visitor Use Levels**
Visitor use levels would not be actively managed other than through continuation of existing ferry schedules and capacities, the existing operational season, and the advanced reservation system for groups of 7-10 people. Visitor use levels in the wilderness and backcountry would be limited only by ferry and seaplane capacities, with no limits on people traveling to the island by private boat. Therefore, visitation could increase up to the point at which ferries sell out, and as much as people are willing to travel to the island with private boats.

**A.2.2 Backcountry Permits**
Backcountry permits would continue to be required for all parties camping, docking, or anchoring out in the wilderness or backcountry. Permits would continue to be issued from several visitor centers in the park and on the mainland, and all parties would be required to register for a permit at the start of their trip. Backcountry permits would continue to be issued to all parties of 1-6 people who could reach the park, regardless of campground capacities and campsite availability, or dock capacities. Groups of 7-10 people would be required to register for group campsite reservations in advance of reaching the park, and group sites would not be booked beyond their availability. With a continuation of the current permitting system for small
parties it would not be possible to give accurate information about use levels at specific campgrounds on specific dates.

**A.2.3 Desired Future Conditions for Social Opportunities and Resources.**
The NPS would continue to monitor social and resource indicators to identify deteriorating wilderness and backcountry conditions. With the knowledge of deteriorating resource conditions managers would have the option of taking actions to slow or reverse deteriorating conditions that would focus on facility design, public education and regulations.

**A.2.4 Facilities and Services**
The NPS would implement GMP-approved changes in docks, campgrounds and trails, but otherwise maintain existing wilderness and backcountry infrastructure, without any additional expansions in campgrounds. The NPS would maintain the flexibility to make adjustments as necessary for resource protection. Such adjustments may include trail reroutes, temporary closures of trails or campgrounds, relocations of campgrounds, or site hardening.

Existing wilderness and backcountry services would continue, including staffing ranger stations; conducting backcountry and wilderness patrols; maintaining trails, campgrounds and docks; staffing visitor centers; and offering park information via phone, Internet, publications, and personal contacts.

**A.2.5 Visitor Distribution Management and Solitude**
Leave No Trace education would continue to be a cornerstone of visitor education at Isle Royale. Continued education on wilderness etiquette as well as more information on the need to share campsites during the peak season might mitigate some of the adverse impacts to visitor experience resulting from deteriorating social conditions. Under this alternative, NPS managers would continue to manage ferry schedules, ferry capacities, and camping party sizes, but otherwise would not actively manage visitor numbers.

Visitors would have the choice to visit the park at more or less busy times of the season, and visit areas of the park that are expected to be more or less heavily used. Visitor Center staff would continue to educate visitors about visitation levels at different times of the seasons, and what general levels of crowding could be expected in different areas of the park throughout the season. This would give visitors an option to choose to come during different times of the season with more or fewer visitors. However, up-to-date accurate use levels at different campgrounds would not be available. If visitation increased significantly during any time of the season, the NPS would not limit or cap visitation levels beyond the capacities of existing transportation services.

**A.2.6 Appropriate Management Actions**
The NPS would continue its current policy of using management actions other than limitations of visitation to address problems. Acceptable management actions would include:

- For deteriorating social conditions such as dock over-crowding, or trail or campground crowding, management actions would continue to focus on better informing the public of visitation levels in different areas of the park and different times of the season. However, with a continuation of the current permitting system it would not be possible to give site and date-specific information on dock or campground crowding. The goal would be to
modify people’s expectations about the social conditions they would find on Isle Royale. Additionally, backcountry staff would focus attention on overcrowded campgrounds to assist people in finding available and appropriate camping space for the night.

- For deteriorating biophysical conditions in campgrounds, the NPS would continue to modify campsite design to better concentrate and minimize impacts. Such modifications may include relocating campsites, revegetating areas, shrinking expanding campsites with physical boundaries such as transplanted trees and buried rocks, and temporarily or permanently closing sites in need of rehabilitation.
- Add monitoring to inform managers.

**Alternative B for Managing Overnight Use: Provide a Broad Range of Quality Backcountry Opportunities and Protect Resources (Preferred Alternative)**

**B.1 General Description**
The NPS would strive to provide a broad range of opportunities for quality wilderness and backcountry recreation with varying degrees of solitude, self-sufficiency and personal challenge. Additionally, overnight recreation would be managed to protect the park’s natural resources, with particular attention given to seasonal sensitivities. Establishing a mainland-based Backcountry Office with advanced permitting would improve information and services available to visitors for trip planning and improve visitor distribution to maintain quality opportunities and reduce adverse impacts from recreation.

**B.2 Management Goals and Actions**
The overriding goal of this alternative is to provide a range of exemplary opportunities for wilderness experiences and minimizing limits on public access to the backcountry, while also reducing adverse impacts to natural and cultural resources in the backcountry and wilderness, minimizing concerns for human safety, and improving trip planning services.

**B.2.1 Visitor Use Levels**
Backcountry overnight visitation would be managed as necessary to meet goals for social conditions in campgrounds:

- Spring (April 16-June 15): preserve historic visitation levels with visitation not exceeding the highest point between 1994-2003, which would limit the number of camping parties to not exceed 20% of park’s total camping capacity (Table 17).
- Summer (June 16- Sept 15): reduce campground crowding during the peak two weeks of the visitor season (between mid-July and mid-August) and allow for a moderate increase in visitation outside of those peak two weeks. With this goal, visitation would be managed as necessary so not more than 5% of parties per night need to double up in overcrowded campgrounds.
- Fall (September 16-October 31): allow for an increase in visitation within the existing ferry schedules and capacities, with only one ferry transporting passengers twice a week to and from the park after September 30. This would retain the fall as a low-use time, but still allow for some increase in visitation.
Campsite occupancy rates and/or frequency of parties doubling-up in campsites would be monitored and averaged on a weekly, or bi-weekly basis, with monitoring to include field surveys, analysis of backcountry permit data, and computer modeling.

B.2.2 Backcountry Permits
A mainland-based central permitting office would be established to improve trip planning services and proactively manage recreation in the park. Under this system, visitors would be required to get backcountry permits in advance of reaching the park. This would allow for better information for advanced trip planning, including how many parties were permitted for each campground, or how many boats were permitted for a dock on a given night. People could then plan their itineraries or the dates of their trips according to where there would be available space. However, some visitors may have to alter their travel plans to find dates or routes with available camping permits, and some people might not be able to get a permit for their campground of choice. Advanced permitting would also allow the park to manage the number of permits issued for compatibility with campsite availability and goals for reducing crowding in campgrounds.

Permits would continue to be issued as flexible itineraries for parties of 1-6 people who were camping, anchoring out, or spending a night at a dock. However, permits would no longer be issued over a campground’s capacity, which would help to alleviate the problem of overcrowding. Campground capacities would be estimated based on advance itineraries. Permits would only be issued for reasonable itineraries, with a goal of minimizing a party’s need to alter their itinerary mid-trip. Reasonable itineraries would be determined based on a party’s experience level and the feasibility of a proposed itinerary. If campsite were not available at all of the campgrounds on a party’s planned itinerary they would need to either change the dates of their trip or modify their itinerary. Flexible itineraries would continue to allow for changes due to weather, injuries, and other unforeseen circumstances, and therefore a low level of campsite sharing would be expected and tolerated.

For groups of 7-10 people permits would remain as site reservations with fixed itineraries. Designated group sites would continue to be reserved to full capacity, and groups would be limited to nightly reservation availability. Throughout much of the season these large groups would have no flexibility for changing their itineraries once they reach the park.

Boaters, who are generally limited in their travel to and from the park by weather and lake conditions, would have 2 permit options. One would offer more certainty of being able to use campsites or shelters during their trip, the other would offer more flexibility to plan a trip at the last minute based on weather conditions:

1. Go through the advanced permitting system to get a permit to be able to use shelters or campsites, (permits would be for available space, not a specific site in a campground, similar to the present system) following the same permitting process as all backpacking and paddling parties, with permits limited by campsite availability; or

2. If permits for shelters or campsites are no longer available, boaters may obtain a permit for dock space (if space remains) or for anchoring out, without the option of using a campsite or shelter. Based on boat lengths and campground dock lengths, the permitting system will allow
applicants to see ahead of time whether dock space is still available at full campgrounds, and can
adjust their itinerary accordingly. If dock space is still available where all campsites have been
booked at a campground, then a boater will be able to obtain a permit for dock space only. If
dock space and campground space appear to be full when a boater is applying for a permit, that
boater can still obtain an anchoring out permit, or alter his/her itinerary based on available dock
space at a different campground. If the boater decides not to follow his/her itinerary upon arrival
and instead go to the full campground/dock, he/she will be obliged to anchor out or find a
willing party from which to raft off, and may not use a shelter or campsite. A planned itinerary
would still be required for emergency notification purposes, annual reporting, and monitoring.
Permittees who are following an itinerary that was permitted in advance based on available
camping/docking space (Option 1) will have precedence over parties who obtained a permit
under Option 2.

For example, Party A obtains a permit for an itinerary showing campsite and dock space at
Campground A one month prior to their arrival date of July 15. Party B obtains a permit for
anchoring out on July 15 one day prior to their departure for Isle Royale on July 14, but they
arrive at Campground A at 9:00 am on July 15, and dock their boat, since space is available.
Party A arrives at 6:00 pm on July 15, and the dock is full. Since Party A’s permit was issued in
advance for a campsite and dock space, Party A would have priority for dock space to access the
campground.

Permits would no longer be available on the island or through the US Forest Service Visitor
Center in Grand Marais, MN. People would have to get their permit through the Backcountry
Office prior to traveling to the island. Options for getting a permit would include using the
Internet, in person at the Backcountry Office (in Houghton), by fax, or by phone to the
Backcountry Office. The Rock Harbor and Windigo Visitor Centers would not issue permits or
collect fees; they would be more focused on visitor information services (including important
information about trail and campground conditions and resource issues), interpretation, and NHA
sales and support.

Backcountry permits would be required for all parties camping, docking, or anchoring out in the
wilderness or backcountry. This would include researchers, volunteers, educational groups, and
park personnel, as well as general visitors. The goal would be to manage all permitting from one
Backcountry Office with information and permits available via the internet, mail, or in person.
This centralized system would better coordinate permitting and information dissemination as
well as create an efficient means of distributing visitors to best utilize camping facilities while
meeting the goals of recreation management.

B.2.3 Desired Future Conditions for Social Opportunities and Resources.
The goal of this alternative for social conditions is to reduce campground crowding and a need to
double up in campsites, while also preserving a range of visitation levels throughout the visitor
season. The NPS would continue to monitor indicators to identify deteriorating wilderness and
backcountry conditions. Where conditions did not meet standards or monitoring indicates
deteriorating conditions, managers would take action to improve conditions.
Specific goals for social conditions in campgrounds under this alternative would be:

- No more than 5% of camping parties would need to share campsites at any time. This would be averaged park-wide on a weekly, or bi-weekly basis, and based on availability of campsites.
- Current low visitation and visitor use patterns would be maintained in the spring (April 16-June 15)
- Camping parties would more efficiently be distributed to available campsites, thereby minimizing the need to limit total backcountry overnight visitation.

Trail encounters would be monitored to inform management of changes in use on specific trails, and the effects of altering use levels in campgrounds on trail use levels. Were increases in trail encounters to become a substantial concern, standards could be developed and applied in the future.

If social or resource conditions were to deteriorate in the future, managers would have the option of adjusting visitation levels or distribution, or modifying human activities in an area as necessary to slow or reverse deteriorating conditions. Conversely, where goals were being exceeded, visitation may appropriately be allowed to increase. Other mitigative measures, such as relocating campsites or trails, or limiting overbooking at docks, would be additional options for improving conditions.

**B.2.4 Facilities and Services**

To improve trip-planning services a mainland-based Backcountry Office would be established, with advanced permitting for visitors planning on camping, docking, or anchoring out in the park. This Backcountry Office would also provide trip planning information and services, including information on the use levels and campsite availability at specific campgrounds.

The Backcountry Office would also be designed to improve the effectiveness and efficiency of NPS operations. This would be accomplished by centralizing coordination of the permitting system, visitor statistics management, communication between divisions involved in backcountry management, and better coordination of recreation management in the park.

The NPS would implement GMP-approved changes in docks, campgrounds and trails, but otherwise maintain existing wilderness and backcountry infrastructure. Other than this no new campgrounds would be added. One additional campsite would be added at North Desor, which currently has three campsites compared to four at Little Todd, the other campground on the west end of the Minong Trail. Other than this existing campground capacities would not be expanded. The NPS would maintain the flexibility to make adjustments as necessary for resource protection. Such adjustments may include trail reroutes, temporary closures of trails or campgrounds, relocations of campsites, or site hardening.

Existing wilderness and backcountry services would continue, including staffing ranger stations; conducting backcountry and wilderness patrols; maintaining trails, campgrounds and docks; staffing visitor centers; and offering park information via phone, Internet, publications, and personal contacts.
B.2.5 Visitor Distribution Management and Solitude
Higher visitation levels mid-season would allow for greater public access to the park’s wilderness and backcountry, while lower visitation in the Spring and Fall would allow for opportunities for greater solitude, privacy, self-sufficiency and personal challenge. Spring visitation would be managed to not increase over historic levels, with a goal of protecting wildlife and resources when they are most vulnerable to recreation impacts. Fall visitation could increase within the bounds of existing ferry schedules and capacities. The centralized permitting system and Backcountry Office would be designed to manage recreation with these goals in mind.

B.2.6 Appropriate Management Actions
Certain management actions would be appropriate to meet the goals of this alternative. If impacts to resources or social conditions were greater than expected, managers would combine mitigation actions that modify and protect resources with mitigation actions that alter visitor behavior, visitor distribution, or numbers.

Acceptable management actions to accomplish the goals of this alternative would include:
- A mainland-based central permitting office would be established with an advanced permitting system to better distribute campers throughout the visitor season and between campgrounds before they reach the park. This would also offer better information to the public for trip planning.
- The NPS would explore various options for funding the Backcountry Office. Options include applying for NPS special project funding, soliciting funds through the user-fee program with the NPS, increasing the daily user fee at Isle Royale to cover costs (i.e. temporarily increasing the daily fee by $2 or $3), and/or instituting a non-refundable permitting fee.
- Permits may be issued below maximum campground capacities as necessary to achieve visitation goals of maintaining lower visitation in spring, and accepting not more than 5% of parties doubling-up in campgrounds. For example, if permitting to 100% of the park’s camping capacity and retaining flexible itineraries resulted in more than 5% of parties doubling up in campsites, then the NPS would have the option of issuing permits below the park’s full camping capacity. This would mean fewer permits would be issued, limiting access to camping in the park.
- For deteriorating biophysical conditions in campgrounds, actions could include modifying site design, restoring and replanting site borders to shrink the impacted area, temporarily closing sites for restoration, or permanently closing and relocating sites. Where overcrowding contributed to deteriorating conditions, modifying use levels in a campground may also be appropriate for improving biophysical conditions. Campsites meeting the established standard may be reduced in size to meet other resource or visitor experience objectives.
- For increasing impacts to natural and cultural resources the NPS would continue to increase visitor education about how to minimize recreation impacts on these resources. Where necessary and feasible, the NPS may also reroute trails or relocate campsites to better direct recreation away from sensitive areas. If these efforts were inadequate, voluntary and mandatory area closures could be implemented as protective buffers.
Alternatives for Managing Overnight Use

Alternative C for Managing Overnight Use: Accommodate Current or Increasing Use Levels, While Improving Social Conditions

C.1 General Description
The National Park Service would maintain fairly high access to Isle Royale’s wilderness and backcountry, striving to accommodate current and increasing public interest in backcountry and wilderness trips. Establishing a mainland-based Backcountry Office with advanced permitting would improve information and services available to visitors for trip planning and improve visitor distribution to maintain quality opportunities and reduce adverse impacts from recreation. Visitation could further be accommodated and crowding reduced through the creation of a shuttle service in the Rock Harbor Channel, minor expansions of a few campgrounds, and the option to create a limited number of new campgrounds. Options to add new shelters adjacent to the Windigo dock would be explored.

C.2 Management Goals and Actions
The goal of this alternative is to maintain flexibility for visitors’ travel plans, decrease the frequency of campsite sharing in overfull campgrounds to a more moderate level, and better accommodate current and increasing visitation through additional development of campgrounds. This alternative would allow for a slight increase in resource impacts associated with campground development, but significant irreversible or irretrievable impacts to resources would not be acceptable.

C.2.1 Visitor Use Levels
This alternative allows a higher tolerance for campsite sharing during peak season, and a lower tolerance off-peak, to provide a range of opportunities for both access and solitude. The number of permits issued per campground would be managed to not exceed campground capacities and meet goals for social and resource conditions as well as maximizing access to the wilderness and backcountry. The availability of permits may eventually limit access to the wilderness and backcountry for specific campgrounds or on specific dates. Visitor use levels would be controlled to the extent necessary to meet goals for social conditions in campgrounds;

- Spring (April 16-June 15): no more than 5% of parties would have to double up in campsites in full campgrounds. Spring visitation could increase over current levels.
- Summer (June 16- Sept 15): no more than 10% of parties would have to share campsites during the peak two weeks in visitation (between mid-July and mid-August), and no more
than 5% of parties would need to share sites the rest of the time. This would require a reduction in campground crowding during the peak two weeks of the visitor season.

- Fall (September 16-October 31): no more than 5% of parties would have to double up in campsites in full campgrounds. Fall visitation could increase over current levels.

Campsite occupancy rates and/or frequency of parties doubling-up in campsites would be monitored and averaged on a weekly, or bi-weekly basis, with monitoring to include field surveys, analysis of backcountry permit data, and computer modeling.

C.2.2 Backcountry Permits

Camping permits would be managed to increase the efficient use of campsites throughout the park with moderate to high public access while also decreasing over-crowding in campgrounds. A central permitting station would be established, as outlined in Alternative B, section B.2.2., with all permits being issued in advance, before visitors reach the park. Permits would be issued up to, but not exceeding the capacity of a campground. This would not be a site reservation system for small parties of 1-6; these parties would be free to alter their itineraries mid-trip. However, the NPS would no longer permit campgrounds over their capacities. Some visitors may have to modify their travel plans to find available camping permits.

For groups of 7-10 people permits would remain as site reservations with fixed itineraries. Group sites would continue to be reserved to full capacity, and groups would be limited to nightly reservation availability. Throughout much of the season these large groups would have no flexibility for changing their itineraries once they reach the park.

Boating parties would be required to obtain advance permits for docking, anchoring out, and to use campsites or shelters, as in Alternative B. Last-minute permits (within 48 hours of the trip) for docking at full campgrounds would not be available under this alternative, but rafting off would not be restricted among willing boaters with valid backcountry permits.

Backcountry permits would be required for all parties camping, docking, or anchoring out in the wilderness or backcountry, regardless of the purpose of the trip. This would include researchers, volunteers, educational groups, and park personnel, as well as general visitors. The goal would be to manage all permitting from one Backcountry Office with information and permits available via the Internet, mail, or in person. Permits would no longer be issued on the island, aboard the Ranger III, or in Grand Marais. This centralized system would better coordinate permitting and information dissemination as well as create an efficient means of distributing visitors to best utilize camping facilities while meeting the goals of recreation management.

C.2.3 Desired Future Conditions for Social Opportunities and Resources

The NPS would continue to monitor indicators to identify deteriorating wilderness and backcountry conditions. Where conditions do not meet standards or monitoring indicates deteriorating conditions, managers would take action to improve conditions.
Specific goals for social conditions in campgrounds under this alternative would be:

- No more than 5% of camping parties would need to share campsites at any time outside of the two-week peak in visitation. This would be averaged park-wide on a weekly, or bi-weekly basis, and based on availability of campsites.
- No more than 10% of camping parties would need to share campsites during the two-week peak in visitation.
- Camping parties would more efficiently be distributed to available campsites, thereby minimizing the need to limit total backcountry overnight visitation.
- Trip planning and visitor information services would be improved

Trail encounters would be monitored to inform management of changes in use on specific trails, and the effects of altering use levels in campgrounds on trail use levels. Were increases in trail encounters to become a substantial concern, standards could be developed and applied in the future.

A minor level of impacts to wildlife, vegetation, and shoreline habitats would be tolerated as necessary to expand existing campgrounds and create up to three new campgrounds in the park, beyond those proposed in the GMP. Protecting rare species and their habitats would be a priority in identifying suitable sites for these expansions. Wildlife and rare plant populations would continue to be monitored to indicate changing conditions and inform relevant management decisions.

If social or resource conditions were to deteriorate in the future, managers would have the option of adjusting visitation levels or distribution, or modifying human activities in an area as necessary to slow or reverse deteriorating conditions. Conversely, where goals are being exceeded, visitation may appropriately be allowed to increase. Other mitigation measures, such as relocating campsites or trails would be additional options for improving conditions.

### C.2.4 Facilities and Services

A mainland-based Backcountry Office would be established to provide advanced permitting for visitors planning on camping, docking, or anchoring out in the park. This Backcountry Office would also provide trip planning information and services, including information on the use levels and campsite availability at specific campgrounds.

The Backcountry Office would also be designed to improve the effectiveness and efficiency of NPS operations. This would be accomplished by centralizing coordination of the permitting system, visitor statistics management, communication between divisions involved in backcountry management, and better coordination of recreation management in the park.

A new shuttle service would be created to further improve visitor distribution. This shuttle could run between Rock Harbor, Mott Island, and Daisy Farm, with a schedule coordinated with ferry arrivals and departures. This would aid in alleviating congestion along the Rock Harbor Channel, which is exacerbated by hikers and paddlers being funneled through the limited trails and campgrounds as they arrive and depart from Rock Harbor.
Alternatives for Managing Overnight Use

Isle Royale managers would explore options to add a few new shelters adjacent to the Windigo Dock to better accommodate boating parties docked there for the night.

If better management of visitor distribution failed to adequately reduce the frequency of parties needing to share campsites, additional campsites could be added to the most heavily over-used campgrounds. New sites would be located where resources and physical conditions allow for quality campsites, with consideration for resource impacts as well as aesthetics of the site. New sites may be designated as communal “overflow” tenting areas to minimize the number of site additions needed.

Where site additions are not feasible to accommodate use levels a limited number of new small campgrounds may be created. Suitable options for these new campgrounds would consider the best location within higher use areas and the limitations of sensitive resources in the park. Preliminary scouting for feasible sites identified three possibilities: paddler campgrounds on Chickenbone Lake and on the northeast end of West Caribou Island, and hiker sites on the southeast end of Tobin Harbor (Appendix C, Map 4).

Existing wilderness and backcountry services would continue, including staffing ranger stations; conducting backcountry and wilderness patrols; maintaining trails, campgrounds and docks; staffing visitor centers; and offering park information via phone, Internet, publications, and personal contacts.

C.2.5 Visitor Distribution Management and Solitude
The creation of a centralized permitting system would improve visitor distribution throughout the season and across the park to better maintain use levels within campground capacities. This improved distribution would minimize the crowding associated with parties needing to share campsites, and increase the opportunities for solitude, privacy and tranquility in campgrounds. The centralized permitting system and Backcountry Office would be designed to manage recreation with these goals in mind. Adding new campsites within existing campgrounds would be intended to further improve opportunities for solitude and privacy while camping. A shuttle service in the Rock Harbor Channel would be intended to further improve visitor distribution, making the interior of the park more accessible to visitors and easing the bottleneck of campers traveling to and from Rock Harbor as they arrive and depart on ferries.

C.2.6 Appropriate Management Actions
Certain management actions would be appropriate to meet the goals of this alternative. If impacts to resources or social conditions were greater than expected, managers would combine mitigation actions that modify and protect resources with mitigation actions that alter visitor behavior, visitor distribution, or numbers.

Acceptable management actions would include:

- A mainland-based central permitting office would be established with a system of advanced permitting to better distribute campers throughout the season and between campgrounds before they reach the park. This would also offer better information to the public for trip planning.
• The NPS would explore various options for funding the Backcountry Office. Options include applying for NPS special project funding, soliciting funds through the user-fee program with the NPS, increasing the daily user fee at Isle Royale to cover costs (i.e. temporarily increasing the daily fee by $2 or $3), and/or instituting a non-refundable permitting fee.

• Permits may be issued below maximum campground capacities as necessary to achieve goals of no more than 10% of parties sharing during the peak, and no more than 5% the rest of the season. For example, if permitting to 100% of the park’s camping capacity and retaining flexible itineraries resulted in more than 5% of parties doubling up in campsites, then the NPS would have the option of issuing permits below the park’s full camping capacity (i.e., fewer visitor permits would be issued.)

• A shuttle service could be introduced for travel between Rock Harbor, Mott Island, and Daisy Farm.

• 2-3 new shelters could be added adjacent to the Windigo dock.

• For deteriorating social conditions such as campground crowding, management actions could include adding additional communal or individual campsites or adjusting the number of permits issued per campground.

• For deteriorating biophysical conditions in campgrounds, actions could include modifying site design, restoring and replanting site borders to shrink the impacted area, temporarily closing sites for restoration, or permanently closing and relocating sites. Where overcrowding contributed to deteriorating conditions, modifying use levels in a campground may also be appropriate for improving biophysical conditions. Campsites meeting the established standard may be reduced in size to meet other resource or visitor experience objectives.

• For increasing impacts to natural and cultural resources the NPS would continue to increase visitor education about how to minimize recreation impacts to these resources. Where necessary and feasible, the NPS may also reroute trails or relocate campsites to better direct recreation away from sensitive areas. If these efforts were inadequate, voluntary and mandatory area closures could be implemented as protective buffers around sensitive resources. Closures could be temporary, for a limited portion of the season, or permanent, as deemed necessary to protect sensitive resources and abide by legal mandates such as the Endangered Species Act and the National Historic Preservation Act.

• Monitoring of social and resource conditions would continue and could expand as needed to better understand human impacts and the effectiveness of management actions to curtail adverse impacts. Areas of particular importance for monitoring include interactions between humans and sensitive wildlife species (e.g. loons, wolves, eagles and osprey), changing conditions of the park’s cultural resources, and social conditions in campgrounds and along trails.
Alternative D for Managing Overnight Use: Improve Social Conditions Through the Use of Entry Quotas

D.1 General Description
The NPS would establish entry point quotas consistent with the park’s carrying capacity, with a goal of decreasing the frequency of campsite sharing in July and August while accepting an increase in visitation during the rest of the season. Access to the park may be limited or reduced during the peak visitor season, but freedom of flexible travel within the park with low frequency of overcrowding in campgrounds would be a priority. Campsite or shelter reservations would be available at a few campgrounds for people desiring an assurance that they will be able to find camping space at their preferred campground.

D.2 Management Goals and Actions
The goal of this alternative is to provide quality camping experiences in Isle Royale’s wilderness and backcountry by reducing campground crowding, minimizing recreation impacts to resources, and simplifying permitting and trip planning requirements.

D.2.1 Visitor Use Levels
This alternative would aim to reduce crowding in campgrounds during July and August. Visitation would be managed through entry quotas established for the number of camping parties traveling to the park on ferries. These entry quotas could limit access to the wilderness and backcountry on the busiest dates and entry points. Quotas would be established based on achieving goals for social conditions in campgrounds:

- Spring (April 16-June 15): no more than 5% of parties would have to double up in campsites in full campgrounds. Spring visitation could increase over current levels.
- Summer (June 16- Sept 15): no more than 5% of parties would have to share campsites in full campgrounds. This would require a reduction in campground crowding compared to current conditions.
- Fall (September 16-October 31): no more than 5% of parties would have to double up in campsites in full campgrounds. Fall visitation could increase over current levels.

Campsite occupancy rates and/or frequency of parties doubling-up in campsites would be monitored and averaged on a weekly, or bi-weekly basis, with monitoring to include field surveys, analysis of backcountry permit data, and computer modeling.

D.2.2 Backcountry Permits
Visitor distribution around the park and through the season would be improved using the park’s existing visitor service capabilities. Camping permits would continue to be issued to all visitors who reach the park at the start of their trip. However, entry point quotas would be established to better meet the park’s campground capacities. The quotas would set average daily limits to the number of camping parties entering the park, which would be managed through the ferries. Use levels for powerboaters and sailors would be monitored to determine a future need for entry quotas for these groups. With low current use levels for these visitors, boaters and sailors would not initially be included in the quota system. Although there may be a limit or reduction in the number of camping parties traveling on the ferries during part of the season, there would be no quota for day visitors or lodge guests.
The group reservation system would remain for groups of 7-10 people. These permits would be site reservations with fixed itineraries. Group sites would continue to be reserved to full capacity, and groups would be limited to nightly reservation availability. Throughout much of the season these large groups would have no flexibility for changing their itineraries once they reach the park.

Backcountry permits would continue to be required for all parties camping, docking, or anchoring out in the wilderness or backcountry. These would be issued from several visitor centers in the park and on the mainland, and all parties would be required to register for a permit either prior to or upon reaching the park. All visitors who reach the park would receive a camping permit and there would be no limit to the number of permits issued per campground. As in Alternatives A-C, rafting off at full docks by willing boaters with valid backcountry permits would not be restricted. However, efforts to improve communication between the permitting stations would offer better information about daily use levels at each campground, aiding visitors in planning their itineraries.

Campsite reservations (and dock space associated with reserved campsite) would be available on a limited basis for part of the visitor season. The intention would be to offer the option of reservations for people seeking assurances that a campsite (and dock space, where applicable) will be available. Smaller campgrounds would be most appropriate for this option, such as Tookers Island, Merritt Lane, Grace Island, Little Todd, and North Desor. Cultural sites may also be appropriate, such as the new GMP-approved campgrounds at Fishermans Home and Crystal Cove.

**D.2.3 Desired Future Conditions for Social Opportunities and Resources**

The NPS would continue to monitor indicators to identify deteriorating wilderness and backcountry conditions. Where conditions do not meet standards or monitoring indicates deteriorating conditions, managers would take action to improve conditions.

Specific goals for social conditions in campgrounds under this alternative would be:

- No more than 5% of camping parties would need to share campsites at any time. This would be averaged park-wide on a weekly, or bi-weekly basis, and based on availability of campsites.
- The current system of permitting upon arrival to the park would continue, so visitors would not be required to adapt to a new permitting system.

Trail encounters would be monitored to inform management of changes in use on specific trails, and the effects of altering use levels in campgrounds on trail use levels. Were increases in trail encounters to become a substantial concern, standards could be developed and applied in the future.

**D.2.4 Facilities and Services**

One additional tent site would be added at North Desor campground, increasing its capacity to 4 parties for consistency with Little Todd campground.
Existing wilderness and backcountry services would continue, including staffing ranger stations; conducting backcountry and wilderness patrols; maintaining trails, campgrounds and docks; staffing visitor centers; and offering park information via phone, Internet, publications, and personal contacts.

D.2.5 Visitor Distribution Management and Solitude
The establishment of entry quotas would improve visitor distribution and social conditions throughout the season and across the park. This would minimize the crowding associated with parties needing to share campsites, and increase the opportunities for solitude, privacy and tranquility in campgrounds. Reducing overcrowding in campgrounds would also reduce trail encounters during the high use portion of the visitor season, similarly improving social conditions while traveling in the wilderness and backcountry.

D.2.6 Appropriate Management Actions
Certain management actions would be appropriate to meet the goals of this alternative. If impacts to resources or social conditions were greater than expected, managers would combine mitigation actions that modify and protect resources with mitigation actions that alter visitor behavior, visitor distribution, or numbers.

Acceptable management actions would include:
- A limit on the average number of permits issued to camping parties each day consistent with camping capacities in the vicinity of each entry point (i.e. an entry quota).
- Campsite and/or dock reservations could be instituted for a limited number of campgrounds for people desiring an assurance of an available campsite/dock space. Smaller campgrounds such as Grace Island, Tookers Island, Merritt Lane, North Desor and Little Todd would be appropriate choices.
- For deteriorating social conditions such as trail or campground crowding, management actions could include establishing and modifying entry point quotas for camping parties on ferries and the seaplane, and as a future need arose establishing quotas for boaters and sailors who would not be included in ferry-based quotas. Entry quotas would likely result in fewer permits being issued to the busiest entry points during peak periods.
- For deteriorating biophysical conditions in campgrounds, actions could include modifying site design, restoring and replanting site borders to shrink the impacted area, temporarily closing sites for restoration, or permanently closing and relocating sites. Where overcrowding contributed to deteriorating conditions, modifying use levels in a campground may also be appropriate for improving biophysical conditions. Campsites meeting the established standard may be reduced in size to meet other resource or visitor experience objectives.
- For increasing impacts to natural and cultural resources the NPS would continue to increase visitor education about how to minimize recreation impacts on these resources. Where necessary and feasible, the NPS may also reroute trails or relocate campsites to better direct recreation away from sensitive areas. If these efforts were inadequate, voluntary and mandatory area closures could be implemented as protective buffers around sensitive resources. Closures could be temporary, for a limited portion of the season, or permanent, as deemed necessary to protect sensitive resources and abide by
legal mandates such as the Endangered Species Act and the National Historic Preservation Act.

- Monitoring of social and resource conditions would continue and could expand as needed to better understand human impacts and the effectiveness of management actions to curtail adverse impacts. Areas of particular importance for monitoring include interactions between humans and sensitive wildlife species (e.g. loons, wolves, eagles and osprey), changing conditions of the park’s cultural resources, and social conditions in campgrounds and along trails.

**Alternative E for Managing Overnight Use: Maximize Resource Protection and Opportunities for Exemplary Wilderness Experiences**

**E.1 General Description**

Resource protection would be the ultimate priority in managing use levels and distribution throughout the visitor season and in planning and maintaining recreation and administrative facilities. The NPS would improve social conditions and opportunities for solitude in July and August by minimizing trail encounters and the need to share campsites, while also maintaining the freedoms associated with flexible itinerary permits. The creation of a central permitting system would improve the information available to the public about use levels in specific campgrounds on specific dates, aiding in trip planning and better distributing visitors to minimize overcrowding. Issuing permits below campground capacities would aid in maximizing opportunities for solitude throughout the park.

**E.2 Management Goals and Actions**

The goal of this alternative is to prioritize resource protection and greater opportunities for solitude, by reducing crowding and managing visitation levels to be consistent with the park’s campsite capacities, and maintaining a wide range of visitation levels throughout the visitor season.

**E.2.1 Visitor Use Levels**

Historic patterns of low visitation times in the spring and fall would be maintained to protect natural resources during vulnerable times and maintain opportunities for the highest quality wilderness experiences on Isle Royale. The number of permits issued per campground would be managed to not exceed campground capacities and meet goals for social and resource conditions; in the spring and fall permits would be issued well below campground capacities. The availability of permits would likely limit access to the wilderness and backcountry for specific campgrounds on specific dates. Visitor use levels would be controlled to the extent necessary to meet goals for social conditions in campgrounds;

- **Spring (April 16-June 15):** no more than 1% of parties would have to double up in campsites in full campgrounds. Additionally, historic use levels would be maintained by issuing permits up to, but not exceeding, 20% of the park’s camping capacity (see Table 17.) Spring visitation would not increase over current levels.

- **Summer (June 16- Sept 15):** no more than 5% of parties would have to share campsites in overfull campgrounds during the two week peak in visitation (between mid-July and mid-
Alternatives for Managing Overnight Use

August), and no more than 1% of parties would share campsites the rest of the season. This would require a reduction in campground crowding from July through August.

- Fall (September 16-October 31): no more than 1% of parties would have to double up in campsites in full campgrounds. Additionally, historic use levels in the fall would be maintained by issuing permits up to, but not exceeding, 10% of the park’s camping capacity (see Table 17.) Fall visitation would not increase over current levels.

Campsite occupancy rates and/or frequency of parties doubling-up in campsites would be monitored and averaged on a weekly, or bi-weekly basis, with monitoring to include field surveys, analysis of backcountry permit data, and computer modeling.

E.2.2 Backcountry Permits
Backcountry permits would be required to be obtained prior to arriving at the park, for camping, docking, and anchoring out. Camping permits would be managed to minimize over-crowding in campgrounds, thereby maximizing opportunities for solitude and minimizing detrimental recreation impacts in and around campgrounds. A central permitting station would be established with up-to-date information about use levels at each campground, as outlined in greater detail in Alternative B, Section B.2.6. All permits would be issued in advance, before visitors reached the park. As with Alternatives B and C, boaters would be required to log a planned itinerary for emergency and annual park reporting purposes, but they could alter their itinerary, and rafting off at full docks would not be restricted among willing boaters with valid backcountry permits. Permits may be issued below a campground’s capacity as necessary to meet goals for minimizing campsite sharing. As this would not be a site reservation system parties would be free to alter their camping itineraries mid-trip. Some visitors may have to alter their travel plans to find dates with available camping permits.

The group reservation system would remain for groups of 7-10 people. These permits would be site reservations with fixed itineraries. To allow for some level of flexibility for groups once they reach the park, group sites would be reserved below full capacity. Some large groups may have to alter their travel plans to find available reservations.

The goal would be to manage all permitting from one Backcountry Office with information and permits available via the Internet, mail, or in person. This centralized system would better coordinate permitting and information dissemination as well as create an efficient means of distributing visitors to best utilize camping facilities while meeting the goals of recreation management. Backcountry permits would be required for all parties camping, docking, or anchoring out in the wilderness or backcountry.

E.2.3 Desired Future Conditions for Social Opportunities and Resources
The NPS would continue to monitor indicators to identify changing wilderness and backcountry conditions. Where conditions do not meet standards or monitoring indicates deteriorating conditions, managers would take action to improve conditions.

Specific goals for social conditions in campgrounds under this alternative would be:

- No more than 5% of camping parties would need to share campsites during the two-week peak in visitation. This would be averaged park-wide on a weekly, or bi-weekly basis,
Alternatives for Managing Overnight Use

and based on availability of campsites, and require a reduction from the current levels of sharing in July and August.

- No more than 1% of camping parties would need to share campsites all season outside of the two-week peak in visitation.
- Spring and fall would remain as low use times with greater opportunities for solitude, risk, and challenge than during the summer months.
- Camping parties would more efficiently be distributed to available campsites, thereby minimizing the extent that total wilderness and backcountry overnight visitation would be reduced.
- Trip planning and visitor information services would be improved.

Trail encounters would be monitored to inform management of changes in use on specific trails, and the effects of altering use levels in campgrounds on trail use levels. If increases in trail encounters became a substantial concern, standards could be developed and applied in the future.

E.2.4 Facilities and Services

A mainland-based Backcountry Office would be established to provide advanced permitting for visitors planning on camping, docking, or anchoring out in the park. This Backcountry Office would also provide trip planning information and services, including information on the use levels and campsite availability at specific campgrounds.

The Backcountry Office would also be designed to improve the effectiveness and efficiency of NPS operations. This would be accomplished by centralizing coordination of the permitting system, visitor statistics management, communication between divisions involved in backcountry management, and better coordination of recreation management in the park.

To minimize the impacts of development in the wilderness and backcountry no new campsites would be constructed except if designated sites were lost to natural processes or existing designated campsites needed to be relocated. Such replacement campsites would only be approved for designation if they were necessary for protection of resources or the visitors' wilderness experience. There would be no net gain in the number of designated campsites, maintaining a total of not more than 244 sites plus those added with the GMP-approved new campgrounds.

One campsite would be removed from Little Todd campground, reducing its capacity to 3 for consistency with North Desor campground along the primitive portion of the Minong Trail.

Existing wilderness and backcountry services would continue, including staffing ranger stations; conducting backcountry and wilderness patrols; maintaining trails, campgrounds and docks; staffing visitor centers; and offering park information via phone, Internet, publications, and personal contacts.

E.2.5 Visitor Distribution Management and Solitude

Visitor distribution and associated wilderness conditions would be improved throughout the season and across the park. This would be accomplished through the creation of a centralized permitting system combined with issuing permits below the full capacity of campgrounds. This
would allow for continued flexibility in camping itineraries while also minimizing the crowding associated with parties needing to share campsites, and increasing the opportunities for solitude, privacy and tranquility in campgrounds. Reducing overcrowding in campgrounds could also reduce trail encounters during the high use portion of the visitor season, similarly improving social conditions while traveling in the wilderness and backcountry. The centralized permitting system and Backcountry Office would be designed to manage recreation with these goals in mind.

E.2.6 Appropriate Management Actions
Certain management actions would be appropriate to meet the goals of this alternative. If impacts to resources or social conditions were greater than expected, managers would combine management actions that modify and protect resources with mitigation actions that alter visitor behavior, visitor distribution, or numbers.

Acceptable management actions would include:

- A mainland-based central permitting office would be established with a system of advanced permitting to better distribute campers throughout the season and between campgrounds before they reach the park. This would also offer better information to the public for trip planning.
- The NPS would explore various options for funding the Backcountry Office. Options include applying for NPS special project funding, soliciting funds through the user-fee program with the NPS, increasing the daily user fee at Isle Royale to cover costs (i.e. temporarily increasing the daily fee by $2 or $3), and/or instituting a non-refundable permitting fee.
- Permits may be issued below maximum campground capacities as necessary to achieve visitation goals of maintaining lower visitation in spring and fall, and accepting not more than 5% of parties doubling-up in campgrounds in July and August. For example, if permitting to 100% of the park’s camping capacity and retaining flexible itineraries resulted in more than 5% of parties doubling up in campsites, then the NPS would have the option of issuing permits below the park’s full camping capacity.
- For deteriorating social conditions such as trail or campground crowding, management actions would include modifying distribution of visitors around the park and throughout the season. Additionally, the number of permits issued per campground may be modified, as well as the number of campsites in specific campgrounds while maintaining no net increase in the number of campsites park-wide.
- For deteriorating biophysical conditions in campgrounds, actions could include modifying site design, restoring and replanting site borders to shrink the impacted area, temporarily closing sites for restoration, permanently closing and relocating sites. Where overcrowding contributed to deteriorating conditions, modifying use levels in a campground may also be appropriate for improving biophysical conditions. Campsites meeting the established standard may be reduced in size to meet other resource or visitor experience objectives.
- For increasing impacts to natural and cultural resources the NPS would continue to increase visitor education about how to minimize recreation impacts on these resources. Where necessary and feasible, the NPS may also reroute trails or relocate campsites to better direct recreation away from sensitive areas. If these efforts were inadequate,
voluntary and mandatory area closures could be implemented as protective buffers around sensitive resources. Closures could be temporary, for a limited portion of the season, or permanent, as deemed necessary to protect sensitive resources and abide by legal mandates such as the Endangered Species Act and the National Historic Preservation Act.

- Monitoring of social and resource conditions would continue and could expand as needed to better understand human impacts and the effectiveness of management actions to curtail adverse impacts. Areas of particular importance for monitoring include interactions between humans and sensitive wildlife species (e.g. loons, wolves, eagles and osprey), changing conditions of the park’s cultural resources, and social conditions in campgrounds and along trails.

**Alternative Considered but Rejected: Establish a Night-by-Night Reservation System for All Wilderness and Backcountry Visitors**

Establishing a night-by-night camping reservation system with fixed itineraries for backcountry permits could virtually eliminate campground overcrowding and the need for parties to double up in campsites while also accommodating current or increased visitation to the park. However, this would come at the cost of flexibility and spontaneity for visitors once they reach the park. Backcountry visitors in parties smaller than 7 people would no longer have the opportunity to modify their travel plans based on weather, preference for campgrounds, or any other reason once they have begun their backcountry trip. This system would also come with an increased cost of enforcement to ensure that overcrowding was effectively eliminated.

Night-by-night reservations for all parties could be feasible, with a switch to issuing permits and campground reservations in advance of visitors reaching the park. However, visitor surveys and other public input indicate that the costs to visitors would outweigh the benefits, and this alternative would not be adequately acceptable to the public. The results of visitor surveys in 2002 suggest that prescribed, fixed itineraries are particularly unfavorable to Isle Royale visitors, despite the fact that such a system would be designed to eliminate campsite sharing (Lawson and Manning 2003). Additionally, public responses to newsletters indicated a strong opposition to night-by-night reservations, with greater support for alternative management actions. Considering the lack of public support and the requirements for enforcing a night-by-night camping reservation system for all backcountry visitors, the costs of this alternative were determined to outweigh the benefits and it was eliminated from further analysis.
### Table 4: Comparison of Alternatives for Overnight Use in the Wilderness and Backcountry

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<tr>
<td>The NPS would maintain the current management direction, including continuing implementation of the GMP.</td>
<td>Maintain flexibility for visitors’ travel plans, decrease the frequency of campsite sharing in overfull campgrounds, better accommodate current and increasing visitation, and allow for minimal acceptance of increased resource impacts associated with additional campsites.</td>
<td>Provide a range of quality opportunities for wilderness and backcountry experiences while also minimizing limits on public access to the park, reducing adverse impacts to natural and cultural resources, minimizing concerns for human safety, and improving trip planning services.</td>
<td>Provide quality camping experiences by reducing campsite sharing during the peak season, minimizing resource impacts, and simplifying permitting and trip planning requirements. Manage backcountry visitation with an entry quota system.</td>
<td>Prioritize resource protection and greater opportunities for solitude by reducing campground crowding, managing visitation levels to be consistent with campground capacities, and maintaining a range of visitation levels from low to moderate throughout the visitor season.</td>
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#### Management Actions:

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<tr>
<th>Permitting (note: in all cases the group reservation system would apply to parties with 7-10 people. Changes apply only to small parties.)</th>
<th>Alternative A: No Action</th>
<th>Alternative B (Preferred)</th>
<th>Alternative C</th>
<th>Alternative D</th>
<th>Alternative E</th>
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<tr>
<td>• Existing permitting services would continue, with multiple permitting stations, and permits issued upon arrival to the park.</td>
<td>• Create a mainland-based central permitting system</td>
<td>• Create a mainland-based central permitting system</td>
<td>• Maintain current island-based permitting system</td>
<td>• Create a mainland-based central permitting system</td>
<td>• Create a mainland-based central permitting system</td>
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<tr>
<td>• Permits would not be limited by campsite availability</td>
<td>• Issue flexible-itinerary permits to parties before they reach the island.</td>
<td>• Issue flexible-itinerary permits to visitors before they reach the island.</td>
<td>• No limit on number of permits issued to each campground</td>
<td>• Issue flexible-itinerary permits to visitors before they reach the island.</td>
<td>• Issue flexible-itinerary permits to visitors before they reach the island.</td>
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<td></td>
<td>• Issue permits at or below campground capacities as necessary to minimize campground crowding</td>
<td>• Issue permits up to, but not exceeding campground capacities.</td>
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<td>• Offer site reservations at a limited number of campgrounds during part of the visitor season</td>
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<tr>
<td>The NPS would not actively manage visitor use levels, other than maintaining existing ferry capacities and schedules. Visitation could increase throughout the visitor season.</td>
<td>Backcountry overnight visitation may be limited on some dates in some campgrounds by campground capacities, especially in July and August. Visitation in Fall could increase significantly. Visitors may not be able to get a permit for their preferred itinerary on their preferred dates.</td>
<td>Backcountry overnight visitation may be limited on some dates in some campgrounds by campground capacities.</td>
<td>Entry quotas may limit backcountry camping in July and August. Average daily quotas would be based on campground capacities. Visitation in Spring and Fall could increase significantly. Visitors may not be able to get a permit for their preferred itinerary on their preferred dates.</td>
<td>During parts of July and August limited permits may reduce visitation to the park’s backcountry. Visitation in Spring and Fall would be maintained at low levels. Visitors may not be able to get a permit for their preferred itinerary on their preferred dates.</td>
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Backcountry overnight visitation may be limited on some dates in some campgrounds by campground capacities, especially in July and August. Visitation in Fall could increase significantly. Visitors may not be able to get a permit for their preferred itinerary on their preferred dates. |
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<tr>
<td>Social Indicators and Standards</td>
<td>• The NPS would continue to monitor social conditions, focusing on visitor education and facility design to address deteriorating conditions. • Visitation numbers would not be actively managed other than maintaining current ferry and seaplane capacities and schedules.</td>
<td>• No more than 5% of parties sharing campsites 6/16-9/15. • No increase in visitation in the spring (5/1-6/15). • Allow increase in visitation in fall (9/16-10/31), within current ferry schedule.</td>
<td>• No more than 10% of parties sharing campsites in overfull campgrounds during the 2-week peak in visitation, • No more than 5% of parties sharing campsites the rest of the season. • Allow increase in spring &amp; fall</td>
<td>• No more than 5% of parties sharing campsites at any point in the season. • Allow increase in visitation in spring and fall</td>
<td>• No more than 5% of parties sharing campsites during the 2-week peak in visitation, • No more than 1% of parties sharing campsites the rest of the season. • Maintain low use in spring and fall.</td>
</tr>
<tr>
<td>Facilities and Services</td>
<td>• Existing visitor centers, permitting stations, campgrounds and trails would be maintained as the status quo. • Implementation of the GMP would continue, with addition of the GMP-approved new campgrounds.</td>
<td>• Create a mainland-based Backcountry Office to coordinate advanced permitting and trip planning information • Add one additional campsite at North Desor campground, expanding its capacity to 4.</td>
<td>• Create a mainland-based Backcountry Office to coordinate advanced permitting and trip planning information • Allow for the addition of new campgrounds or campgrounds as needed to accommodate backcountry visitation. • Add 2-3 new shelters in the vicinity of the Windigo Dock. • Institute a new shuttle service within the Rock Harbor Channel.</td>
<td>• Add one additional campsite at North Desor campground. • Offer a limited number of campgrounds with campsite or shelter reservations.</td>
<td>• Create a mainland-based Backcountry Office to coordinate advanced permitting and trip planning information • Remove one tent site from Little Todd campground, reducing its capacity to 3.</td>
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<tr>
<td>Visitor Distribution</td>
<td>The NPS would not actively manage visitor distribution between campgrounds. Permitting stations would not have information about campsite availability or be able to distribute campers away from overcrowded campgrounds.</td>
<td>Issuing permits in advance of visitors reaching the park, and not permitting over a campground’s capacity would improve visitor distribution and minimize seasonal crowding and overcrowding in campgrounds.</td>
<td>Issuing permits in advance of visitors reaching the park, and not permitting over a campground’s capacity would improve visitor distribution and minimize seasonal crowding and overcrowding in campgrounds.</td>
<td>Camping quotas established for each of the park’s entry points would improve visitor distribution, thereby minimizing campground crowding.</td>
<td>Issuing permits in advance of visitors reaching the park, and not permitting over a campground’s capacity would improve visitor distribution and minimize seasonal crowding and overcrowding in campgrounds.</td>
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### Alternatives for Managing Overnight Use

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<td>• There would be no limits on future increases in visitation other than the availability of ferry tickets.</td>
<td>• Up to 100% camping capacity, limited based on space availability and route feasibility at time of permitting.</td>
<td>• Up to 100% campsite capacity.</td>
<td>• Estimated that issuing 37 camping permits per day would reduce sharing to not more than 5%.</td>
<td>• Up to 100% camping capacity, limited based on space availability and route feasibility at time of permitting.</td>
<td>• Up to 100% camping capacity, limited based on space availability and route feasibility at time of permitting.</td>
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<td>• Ferry schedules would keep spring and fall as lower use times, but visitation could increase all season.</td>
<td>• Expected to accommodate minor increases in visitation in summer and moderate increases in fall. Visitation could decrease during peak times.</td>
<td>• Current and moderate increased visitation could be accommodated in summer.</td>
<td>• The above could reduce camping visitation by about 5% in July and August, but allow for a substantial increase the rest of the season.</td>
<td>• Maintain backcountry visitation at approximately 20% capacity in spring and 10% capacity in fall.</td>
<td>• The ability to accommodate increased visitation would be most limited, compared to other alternatives.</td>
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<td>• Maintain backcountry visitation in spring at approximately 20% camping capacity.</td>
<td>• Maintain backcountry visitation in spring at approximately 20% camping capacity.</td>
<td>• Moderate to major increases in visitation could be accommodated in spring and fall.</td>
<td>• The ability to accommodate increased visitation would be most limited, compared to other alternatives.</td>
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2.4.2 Alternatives for Managing Day Use in the Wilderness and Backcountry

Day visitors to Isle Royale’s Wilderness and Backcountry consist of people who visit the park for part of a day, or those who are staying in Rock Harbor or Windigo and take day trips along the trails or to destination sites. The range of activities available for these visitors offers valued opportunities for an important segment of Isle Royale visitors.

Actions Common to All Alternatives for Day Use

In order to expand opportunities available in the park for people with disabilities, Isle Royale managers would explore options for modifying select trail sections for wheelchair accessibility. These trails would be appropriate in the developed and frontcountry zones within the vicinity of Rock Harbor and Windigo.

All alternatives also include maintaining the concessions-operated boat tours with the stipulation established in the GMP that there would be no expansion of the tour destinations, schedule, or boat capacity. These tours are currently conducted with the M.V. Sandy, with a 40-person trip capacity. Destinations for these tours include; 1) the Edisen Fishery and Rock Harbor Lighthouse, Raspberry Island and Passage Island, which are in the Frontcountry Zone; 2) Hidden Lake and Lookout Louise, and McCargo Cove and the Minong Mine in the Backcountry Zone; and 3) sunset cruises in the Rock Harbor Channel and the open waters of Lake Superior.

Alternative A for Day Use: Maintain Existing Conditions

A.1 Management Goals and Desired Future Conditions

The goal of this alternative is to maintain the existing conditions for day use, providing maximum access to the backcountry and wilderness for day visitors. Tolerance for the impacts of noise, crowding along trails and at destination sites, and resource impacts would be moderate to high.

A.1.1 Visitor Use Levels

Access to the backcountry and wilderness for day visits would not be limited beyond boat capacities, maximizing visitors’ opportunities for day activities such as hiking and boat tours. Existing group size limits for NPS-guided tours, established with a goal of manageable sizes for quality interpretive tours, would be maintained. Encounters along all trails and destination sites accessible for day trips could be high, with up to 40 passengers on existing concessions organized boat tours and no limit on many hiking tours. In 2002 NPS-guided concessions tours to backcountry trails (the Minong Mine and Hidden Lake tours) averaged 16 people per tour, with a maximum group of 34 people. Opportunities for solitude or uncongested trails and sites would range from low to high.

A.1.2 Guided Trip Opportunities

Park rangers and the Rock Harbor Lodge would continue to offer guided day trips to various destinations within the wilderness and backcountry, as would several private organizations. Popular locations for day trips would remain, including include trails within the vicinity of Rock
Harbor and Windigo and boat tours to Raspberry Island, Hidden Lake and Lookout Louise, Passage Island, Edisen Fishery, Daisy Farm, and McCargoe Cove and the Minong Mine.

Opportunities for guided trips would not be limited beyond capacities of tour boats or facilities. Space availability is and would continue to be the only limitation to guided trip opportunities. As of 2003 the maximum capacity for boat tours run through the Rock Harbor Lodge was 40 people. Group sizes on these tours would be unpredictable, ranging from small to very large groups.

A.1.3 Current Management Practices
The NPS and concessions tours would maintain group size limits based on facility capacities and safety, but there would be no size limits placed on any other day trips, whether they occur in developed areas of the park or in the wilderness and backcountry. With potential high use levels in areas accessible to day visitors, the NPS would minimize adverse impacts with mitigation measures including:

- Maintain trails to accommodate high use levels, concentrating impacts to minimize trail widening, erosion, and the establishment of unofficial “social trails.”
- Inform visitors to easily-accessible day use areas that they may encounter more people along the trails and at destinations than they would in more remote areas of the wilderness and backcountry. Also prepare visitors for encounters between both day and overnight hikers and boaters, altering expectations to avoid conflicts between different types of visitors.
- Work in cooperation with concessions services to schedule day tours at times that would least impact overnight backcountry and wilderness visitors.
- Provide additional day activities within the developed areas of the park rather than actively encouraging increased day use within more remote areas of the park’s wilderness and backcountry.

Alternative B for Day Use: Improve the Quality of Experiences in Day Use Areas by Maintaining Small Group Sizes

B.1 Management Goals and Desired Future Conditions
The goal of this alternative is to provide high quality day trip opportunities while also minimizing adverse impacts to resources and other visitors in day use areas. The priority of this alternative is to improve the experiences of day trip participants and minimize adverse impacts to resources, other visitors in day use areas, and campers seeking remoteness and solitude. Crowding along trails and at destination sites, noise, and resource impacts increase with group size and often detract from the experiences of group participants and other people in the area. However, minimizing group impacts and maximizing higher quality opportunities would come at the expense of maximum access to organized day activities.

B.1.1 Visitor Use Levels
The total number of guided day trips in the park would not be limited beyond facility capacities, but maximum group sizes would be established to maintain opportunities appropriate for each of the park’s different management zones, considering opportunities for participants in organized day trips as well as other visitors in those areas. The total number of people visiting the park or the wilderness and backcountry for day trips would not be limited, but group size restrictions
may reduce opportunities for these visitors to participate in organized day activities in some areas of the park during some times of the season.

B.1.2 Guided Trip Opportunities
This alternative would aim to improve or maintain high quality experiences for guided trip participants by continuing existing options for day trip destinations while also ensuring appropriate group sizes for destinations visited. This may come at the cost of limited group sizes restricting some people’s opportunities to participate in organized trips.

B.2 Appropriate Management Actions
Group size limits would be established to be consistent with the goals of management zones (Appendix C, Map 3) as follows:

**Developed Zone** (Rock Harbor and Windigo)—no group size limits

**Frontcountry Zone** (bordering developed areas and significant attractions such as Edisen Fishery, Scoville Point, Raspberry Island, Passage Island trail, and Suzy’s Cave)—group size limit of 20. *M.V. Sandy* tours to these areas could carry up to 20 passengers.

**Wilderness Portal, Backcountry and Primitive Zone** (the majority of trails and campgrounds, including concession tours to Hidden Lake and Lookout Louise, and McCargoe Cove and the Minong Mine)—group size limit of 10. *M.V. Sandy* tours to these areas could carry up to 10 passengers.

**Pristine Zone** (off-trail)—group size limit of 6

These group size limits would be applied to all guided groups, including concession-led tours, NPS-guided tours, Isle Royale Institute tours, and tours with private organizations. The National Park Service would monitor trail encounters in day use areas to ensure that regulations were effective at meeting goals without being unnecessarily restrictive.

Alternative C: Expand Opportunities for Quality Day Trip Activities  (Preferred Alternative)

C.1 Management Goals and Desired Future Conditions
This alternative seeks to offer more options for high quality day activities in the park, including smaller group opportunities within the park’s wilderness and backcountry areas. The goal would be to accommodate future increases in the number of day visitors, while also providing high quality day activities and minimizing adverse impacts to resources, other visitors in day use areas, and campers seeking remoteness and solitude.

C.1.1 Visitor Use Levels
The total number of guided day trips in the park would not be limited beyond facility capacities, and group sizes within the developed zone would not be limited beyond transportation capacities. Maximum group sizes in other areas of the park would be established to maintain opportunities appropriate for each of the park’s different management zones, considering opportunities for participants in organized day trips as well as consistency with overnight group size limits in the wilderness and backcountry. However, larger groups would still have the option of visiting these
areas as long as they were willing to split into multiple smaller groups. The total number of people visiting the park or the wilderness and backcountry for day trips would not be limited.

C.1.2 Guided Trip Opportunities
This alternative would aim to improve the options available to day visitors within and adjacent to the Developed and Frontcountry zones of the park. Existing options for day trips would continue, though group size limits would apply. The NPS would also explore additional options for day trip destinations.

C.2 Appropriate Management Actions
The following actions would aid in providing more opportunities for day activities within the vicinity of Developed and Frontcountry zones while also improving the overall quality of opportunities for day activities:

- Explore options for adding a new loop trail of 3-5 miles in the Windigo area that would remain as much as possible within the non-wilderness boundary. This would entail converting the corridor where the new trail would be constructed from “Pristine Zone” to “Backcountry Zone,” amending the management zones established in the GMP.
- Redesign interpretive tours in day use areas outside of the Developed Zone to be more appropriate for trail conditions, with less of a focus on large group gatherings around attractions and more of a focus on personal interpretation and independent exploration.
- Establish group size limits for day trips outside of the Developed Zone as follows, with the option of larger groups still visiting these areas as long as they split up with multiple leaders:
  - **Frontcountry Zone** (bordering developed areas and significant attractions such as Edisen Fishery, Scoville Point, Raspberry Island, Passage Island trail, and Suzy’s Cave)—group size limit of 20. Tours aboard the *M.V. Sandy* in excess of 20 people would split into multiple groups in these areas to provide better opportunities for participants and minimize adverse impacts associated with large groups.
  - **Wilderness Portal, Backcountry, and Primitive Zone** (the majority of trails and campgrounds, including concessions tours to McCargoe Cove and the Minong Mine)—group size limit of 10. Hidden Lake and the Lookout Louise Trail would be an exception, with group sizes of up to 15 people accepted. Any tours to Hidden Lake or Lookout Louise of more than 15 people would need to split into multiple smaller groups not to exceed 15.
  - **Pristine Zone** (off-trail)—group size limit of 6
Alternatives for Campfires

2.4.3 Alternatives for Campfires

Many backcountry campers look forward to campfires as part of their experience, yet campfires are also associated with impacts to resources such as increased tree damage and unofficial trails, reduction in woody debris and screening between campsites, and damage to cultural resources. Isle Royale’s campfire policies would attempt to best minimize adverse impacts while also allowing for desired camping experiences.

Actions Common to All Alternatives

The following would be common to all alternatives:

- NPS interpretive programs could include campfires.
- NPS would prohibit the import of any firewood to the island to prevent the introduction and spread of invasive exotic species. (The park would possibly explore options in the future to use local firewood or provide kiln-dried wood from the mainland for any visitor or NPS firewood needs.)

Alternative A for Campfires: The No Action Alternative

The goal of this alternative is to continue offering opportunities for camping with campfires while also concentrating and minimizing adverse resource impacts. To accomplish this with minimal concentrated impacts, campfires would continue to be allowed in a limited number of campgrounds with NPS-provided metal fire rings. Other than for critical resource protection needs, campfires would continue to be permitted in the existing 11 campgrounds with fire rings. Additionally, standing metal grills would be replaced with metal fire rings (except in Developed Zone), which are more compatible with the park’s wilderness and backcountry setting.

A.1 Management Goals and Desired Future Conditions

A.1.1 Visitor Opportunities

Visitors would have the option to plan their trips around where fires are or are not permitted. Some campers value campfires as a means of honing outdoor skills for self-sufficiency, as well as being a part of restorative and relaxing experiences. However, other campers dislike the adverse resource impacts associated with campfires. This alternative would offer opportunities to suit both.

A.1.2 Natural and Cultural Resources

Limiting the number of campfire rings in the park, and intentionally locating those rings in areas lacking vulnerable cultural and natural resources could minimize adverse impacts to these resources. Building and maintaining a campfire inevitably has some impact on resources, though this impact can be minimized with Leave-No-Trace practices. On Isle Royale campfires have been correlated with tree damage, development of unofficial trails, scarring of rocks and soil, and loss of woody debris in the forest. Additionally, the park’s cultural resources are vulnerable to fire through intentional or unintentional burning of the remains of historic structures.
A.2 Current Management Practices

- Current fire regulations would continue to be enforced including the use of only down and dead wood and the requirement that all fires be fully contained within NPS fire rings or grills.
- Maintain fire rings at the 11 campgrounds where fires are currently permitted. Over time replace fire rings with smaller rings with adjustable grates to aid in cooking and encourage appropriately small fires.
- Replace standing grills with fire rings (except at the Rock Harbor marina, where grills would be maintained).
- Increase education about low-impact fires and affected resources, and maintain and enforce regulations to minimize adverse resource impacts.
- As future need dictates, remove fires from areas with vulnerable critical resources, or areas showing unacceptable fire-associated impacts to resources. This could be accomplished through temporary or permanent removal of fire rings.

Alternative B for Campfires: Move Campfire Rings to Different Campgrounds on a Rotational Basis (Preferred Alternative)

Campfires would be allowed only within NPS-provided metal rings. These rings would be located in campgrounds with an adequate supply of down and dead wood for fuel, and without vulnerable natural or cultural resources. The specific location of fire rings could change from year to year as they are removed from campgrounds showing significant impacts and relocated to campgrounds with appropriate resource conditions to accommodate campfires.

B.1 Management Goals and Desired Future Conditions

B.1.1 Visitor Opportunities
Some campers value campfires as a means of honing outdoor skills for self-sufficiency, as well as being a part of restorative and relaxing experiences. However, other campers dislike the adverse resource impacts associated with campfires. This alternative would offer opportunities for both. However, as the specific location of fire rings may change from year to year, campers may have difficulty planning in advance to camp where fires are permitted.

B.1.2 Natural and Cultural Resources
Rotating campfire rings between campgrounds, limiting the number of campfire rings in the park, and intentionally locating those rings in areas lacking vulnerable cultural and natural resources could minimize adverse impacts to resources. Building and maintaining a campfire inevitably has some impact on resources, though this impact can be minimized with Leave-No-Trace practices. On Isle Royale, campfires have been associated with tree damage, development of unofficial trails, scarring of rocks and soil, depletion of screening between campsites, and loss of woody debris in the forest around campgrounds. Additionally, the park’s cultural resources are vulnerable to fire through intentional or unintentional burning of the remains of historic structures. Under this alternative mitigation measures would be taken to minimize these adverse impacts.
Alternatives for Campfires

impacts, including establishing clear protocols for when and where campfires would be appropriate.

These protocols include:

- Prior to implementation an analysis of fuel loading and resource sensitivity would be completed in any campgrounds that would be included in the rotation. This would require an inventory of cultural and natural resources prior to changing fire ring locations.
- Selecting locations for campfires would be based on resource conditions.
- Only shoreline campgrounds with docks would be included in the rotation because of feasibility of access for maintenance, restoration and monitoring.
- There would not be a guarantee of maintaining the current number of campfires, or a guarantee of a minimum number of campground sites. Management would retain flexibility in establishing the appropriate number and location of campground sites each season.
- Costs of maintaining, restoring sites, and monitoring resource conditions would be considerations in determining the number and location of campground sites.
- If the NPS were not able to keep up on monitoring (fuel loading, resource impacts) and maintenance then campfires would not be retained.

B.2 Appropriate Management Actions

- Current fire regulations would continue to be enforced including the use of only down and dead wood and the requirement that all fires be fully contained within NPS fire rings or grills. NPS would temporarily remove fire rings from heavily impacted sites and add rings to other campgrounds with adequate fuel availability and other appropriate resource conditions. Fire rings would then be moved between campgrounds on a rotational basis as resource impacts and fuel availability necessitated.
- Replace existing fire rings with smaller rings with adjustable grates to aid in cooking and encourage appropriately small fires.
- New fire rings may be communal for a campground or located within individual campsites, with a goal of minimizing resource impacts and fuel depletion.
- Remove all standing grills, except in Developed Zone.
- Fire rings would not be added to campgrounds with sensitive cultural resources.
- Increase education about low-impact fires and affected resources.
- The permitting process would include informing visitors of where they can and cannot have fires—permits would continue to state whether fires were allowed in each campground on a party’s itinerary.

Alternative C for Campfires: Remove All Fire Rings and Grills and Do Not Allow any Campfires in the Park.

Protection of natural and cultural resources and pristine conditions surrounding campgrounds would be prioritized. No campfires would be allowed in the park: campers would be prepared to cook on camp stoves or self-contained grills. All existing fire rings and NPS-provided grills would be removed from campgrounds. However, grills would remain at the Rock Harbor Marina, as they are compatible with the level of development in the area.
C.1  Management Goals and Desired Future Conditions

C.1.1  Visitor Opportunities
Visitors would have the opportunity to camp in areas unimpacted by campfires. All camp cooking would be with self-contained stoves or grills.

C.1.2  Natural and Cultural Resources
Preservation of natural and cultural resources would be prioritized by removing the impacts and threats to these resources associated with campfires. Although current natural resource impacts are judged to be generally moderate to minimal, some specific sites show noticeable degradation, including limbed trees and loss of woody vegetation around sites. Eliminating campfires entirely may lead to more pristine conditions surrounding campsites.

C.2  Appropriate Management Actions
- All fire rings and NPS-provided grills would be removed from the park, excluding the Developed Zone.
- Visitors would be educated to be prepared to camp without fires, and understand the reasons for eliminating campfires for resource protection.
- As need dictated, enforcement of the campfire ban may increase.

Alternative Considered but Rejected: Add Fire Rings or Grills at All Campgrounds

Survey data indicate a moderate degree of increased natural resource impacts in campsites where fires are permitted, including tree damage and increased number of unofficial trails, and “survey findings present no compelling evidence for restricting the current policy of allowing campfires at backcountry sites” (Farrell and Marion 1998). However, unlike most natural resources, cultural resources are irreplaceable and irreparable once damaged. Many Isle Royale campgrounds are located within or adjacent to cultural sites with structures that would be vulnerable to damage from fires. The NPS has determined that the risk to these resources outweighs the benefits of allowing campfires in all campgrounds. Thus the option of allowing campfires in all campgrounds was rejected.

2.4.4 Alternatives for Fire Towers

Currently there are three fire towers within Isle Royale’s designated Wilderness: 10-foot tall Ishpeming (built in 1961), 41-foot Feldtmann (built in 1964), and 41-foot Ojibway (built in 1964). None of the towers are listed on the Historic Register and none are critical for fire monitoring at this point. Ojibway is being used for a radio repeater and research and monitoring projects. Trail crew and rangers occasionally use the other two for storage and to stay in overnight while working in the backcountry. The question is whether these facilities are necessary or appropriate for the park. According to NPS policy outlined in the NPS Reference Manual for Wilderness Preservation and Management (NPS 1999b, § 6.3.10):

…authorizations of NPS administrative facilities located in wilderness will be limited to the types and minimum number essential to meet the minimum requirements for the
administration of the wilderness area. A decision to construct, maintain, or remove an administrative facility will be based primarily on whether or not such a facility is required to preserve wilderness character or values, not on considerations of administrative convenience, economy of effect, or convenience to the public or park staff. Maintenance or removal of historic structures will additionally comply with cultural resource protection and preservation policies and directives, and the concept of minimum requirement management techniques for wilderness.

Alternative A for Fire Towers: No Action, Maintain Existing Fire Towers

This alternative would maintain all three fire towers within the park’s wilderness and backcountry.

A.1 Management Goals and Desired Future Conditions

A.1.1 Visitor Experiences
Fire towers would remain in the wilderness for visitors to enjoy as part of the park’s history, as well as for views offered atop the towers. However, Feldtmann and Ishpeming would remain in a state of minimal repair, and the public would not have access to the cabins or the tops of the towers. This alternative would accept the cost to wilderness character of maintaining obvious structures along wilderness trails.

A.1.2 Administrative Uses
Ojibway Tower would continue to be used administratively for research and monitoring equipment, a radio repeater, and future administrative needs that cannot be met outside of wilderness. Feldtmann and Ishpeming towers would continue to be used as temporary shelters and storage for park staff working in the backcountry, and could be used for other administrative needs in the future.

A.2 Current Management Practices
- Necessary actions would be taken to maintain the three fire towers in a state that is not a safety risk to NPS staff or visitors.
- Actions may also be taken to expand the administrative use of these structures, including possible communication technologies where these needs could not be met adequately if based outside of the park’s wilderness.

Alternative B for Fire Towers: Remove Ishpeming and Feldtmann Fire Towers (Preferred Alternative)

With this alternative, Ishpeming and Feldtmann towers would be removed and the sites restored to natural conditions. Ojibway Tower would be maintained for present and future administrative needs associated with management of the park’s wilderness and backcountry.
B.1 Management Goals and Desired Future Conditions

B.1.1 Visitor Experiences
By removing the Ishpeming and Feldtmann towers and restoring the sites to natural conditions, the wilderness character of the Feldtmann Ridge Trail and the middle portion of the Greenstone Trail would be improved for visitors seeking more pristine surroundings. Removing the towers would also eliminate the potential safety hazards of deteriorating structures. Retaining one of the park’s fire towers would also preserve an interesting piece of the history of the park. However, removing the Feldtmann tower would mean the loss of the opportunity to climb the tower for its vista. The treeline now extends above the Ishpeming tower, so there would be no loss of vista with the removal of this tower.

B.1.2 Administrative Uses
Ojibway Tower would continue to be used for administrative purposes that are compatible with management of the wilderness and backcountry. Ishpeming and Feldtmann towers are not meeting administrative needs that cannot be better met with a less obtrusive option.

B.2 Appropriate Management Actions
- Ishpeming and Feldtmann towers would be removed using the minimum tool necessary to safely and effectively complete the job and the necessary environmental compliance requirements would be completed as part of the removal plan.
- Work would be done to restore the sites to their natural conditions.
- Ojibway Tower would continue to be maintained and utilized for administrative purposes. Administrative uses and equipment based at this tower could increase in the future, as long as they satisfied the minimum tool requirements.

Alternative Considered But Rejected: Remove all Fire Towers
Ojibway is still being used for administrative purposes that are compatible with management of the wilderness and backcountry and cannot be adequately accomplished outside of the wilderness. Thus maintenance of the Ojibway Tower is determined to be in compliance with wilderness legislation and the goals of this WBMP, and was not proposed for removal.
2.4.5 Alternatives for Picnic Tables

The goal of these alternatives is to bring Isle Royale into compliance with NPS policies for picnic tables in wilderness.

**Alternative A for Picnic Tables: The No Action Alternative**

Currently Isle Royale managers are failing to achieve management objectives of complying with NPS policies for wilderness management by maintaining picnic tables in some wilderness campgrounds without an appropriate waiver. Providing picnic tables within wilderness is in violation of NPS Management Policies, which clearly states, “picnic tables will not be allowed in wilderness.” (NPS Management Policies 2001 §6.3.10.3). NPS policies further direct that “adherence to policy is mandatory unless specifically waived or modified in writing by the Secretary, the Assistant Secretary, or the Director” (NPS Management Policies 2001, p.6).

A.1 Management Goals and Desired Future Conditions

A.1.1 Visitor Experiences
The NPS would continue to provide picnic tables at shelter and tent sites at all dockside campgrounds for visitor convenience and comfort. Picnic tables would continue to provide an amenity for ease of cooking, and a place to sit and gather. Visitors seeking a more primitive atmosphere for camping would still have the option of staying in campgrounds without picnic tables or shelters, however, there would be fewer of these options along the Lake Superior shoreline; Pickerel Cove, Little Todd Harbor, and Huginnin Cove are all along the Superior shoreline and do not have shelters or picnic tables.

A.1.2 Wilderness Character
Managing for wilderness character would continue to prioritize the benefits of concentrating human impacts and minimizing impacts to natural and cultural resources over minimizing modern intrusions to create a more primitive camping atmosphere. Picnic tables would continue to be maintained as a tool for concentrating adverse impacts in campsites.

A.1.3 Natural and Cultural Resources Protection
Picnic tables would continue to be used as an effective tool for concentrating the adverse impacts of trampling, vegetation loss, and soil compaction in campsites, as well as minimizing the total area of campsites. Concentrating use in campsites would continue to be one goal for minimizing adverse impacts to natural and cultural resources.

A.2 Current Management Practices
Picnic tables are currently provided and maintained in 20 of the park’s 36 campgrounds, 11 of which are within designated or potential wilderness. Picnic tables are provided at shelter sites as well as tent sites, and may also be found dockside. A picnic table is also provided at Hidden Lake, which is a trailhead within wilderness, but not a campground. These picnic tables have a metal base and brown-painted wood seats and tabletops. Continuing the current management direction would also mean failing to comply with NPS policy for wilderness management.
Alternative B for Picnic Tables: Remove Picnic Tables From All Campgrounds Within Designated or Potential Wilderness

In order to adhere to NPS directives picnic tables would be removed from all campgrounds or docks within designated and potential wilderness. The picnic tables in non-wilderness campgrounds with docks would remain and be maintained. Non-wilderness campgrounds include Rock Harbor, Three Mile, Daisy Farm, Moskey Basin, Malone Bay, Siskiwit Bay, Washington Creek (Windigo), McCargoe Cove, and Belle Isle.

B.1 Management Goals and Desired Future Conditions

B.1.1 Visitor Experiences
Removing picnic tables would remove a modern convenience for visitors and create a more primitive atmosphere for camping, as suitable for recreation within a wilderness. By retaining picnic tables in non-wilderness campgrounds, visitors who prefer such conveniences would still have those opportunities within Isle Royale’s backcountry.

B.1.2 Wilderness Character
The goal of this alternative is to be in compliance with NPS management policies for protecting wilderness character by minimizing the intrusion of modern conveniences. Other modern structures within wilderness campgrounds have been justified either through specific allowances in Isle Royale’s wilderness legislation (as in the case of shelters), or for the purpose of administering the area as wilderness (as in the case of outhouses, for management of human waste and the associated resource and human health impacts). Picnic tables do not satisfy an essential need for administration of these areas as wilderness, nor are they mentioned in the park’s wilderness legislation.

B.1.3 Natural and Cultural Resources Protection
Picnic tables have proven to be effective in helping to concentrate human impacts in campsites, focusing activity within the boundaries of a campsite and minimizing increases in campsite sizes. However, there are other means of concentrating use and minimizing sprawl with methods that would be more compatible with wilderness goals and NPS directives. This alternative would prioritize improving the primitive atmosphere of campsites and adherence to NPS policies over utilizing all methods possible to minimize the sizes of campsites and measurable human impacts within campgrounds.

B.2 Appropriate Management Actions
With this alternative all picnic tables would be removed from campgrounds and docks within the park’s designated and potential wilderness. This would include: Grace Island, Beaver Island, Hay Bay, Todd Harbor, Birch Island, Duncan Bay, Duncan Narrows, Merritt Lane, Tookers Island, Caribou Island, Chippewa Harbor, and Hidden Lake. Picnic tables would be maintained at non-wilderness lakeshore campgrounds with docks: Rock Harbor, Three Mile, Daisy Farm, Moskey Basin, Malone Bay, Siskiwit Bay, Washington Creek, McCargoe Cove, and Belle Isle. The new campgrounds proposed in the GMP all fall within designated or potential wilderness and would not have picnic tables. These include Crystal Cove, Johns Island, Fishermans Home,
Wright Island, and a new dock and campground at McCargoe Cove. Upon the GMP-approved removal of docks at McCargoe Cove, Siskiwit Bay, and Three Mile (all of which are non-wilderness) the picnic tables would be removed.

**Alternative C for Picnic Tables: Request a Waiver to Maintain Picnic Tables in Wilderness Campgrounds (Preferred Alternative)**

Isle Royale would seek a waiver from the Secretary of Interior to maintain picnic tables in all shoreline campgrounds that currently have tables, whether those campgrounds are within designated or potential wilderness or not.

C.1  Management Goals and Desired Future Conditions

C.1.1  Visitor Experiences
This alternative would retain picnic tables as an additional modern convenience for visitors in campgrounds where docks and/or shelters are currently maintained. Visitors seeking a more primitive atmosphere for camping would still have the option of staying in campgrounds without picnic tables or shelters, however, there would be fewer of these options along the Lake Superior shoreline; Pickerel Cove, Little Todd Harbor, and Huginnin Cove are all along the Superior shoreline and do not have shelters or picnic tables.

C.1.2  Wilderness Character
Managing for wilderness character with this alternative would prioritize the benefits of concentrating human impacts and minimizing impacts to natural resources over minimizing modern intrusions to create a more primitive camping atmosphere.

C.1.3  Natural and Cultural Resources Protection
As stated above, picnic tables have proven to be effective in helping to concentrate human impacts in campsites, focusing activity within the boundaries of a campsite and minimizing increases in campsite sizes. Although these benefits may not be significant on a park-wide scale of impacts and ecosystem health, they can be significant on a site-specific scale, with noticeable loss of vegetation and increase in areas of exposed soil caused by human impacts spreading beyond the intended boundaries of campsites. Retaining picnic tables in campgrounds would maintain one proven method for minimizing these impacts.

C.2  Appropriate Management Actions
With this alternative Isle Royale managers would take the steps necessary to request a waiver and maintain picnic tables at some of the campgrounds within the park’s designated or potential wilderness. With approval for the waiver from the Secretary of the Interior, picnic tables would be maintained at Grace Island, Beaver Island, Hay Bay, Todd Harbor, Birch Island, Duncan Bay, Duncan Narrows, Merritt Lane, Tookers Island, Caribou Island, Chippewa Harbor, Rock Harbor, Three Mile, Daisy Farm, Moskey Basin, Malone Bay, Siskiwit Bay, Washington Creek, McCargoe Cove, and Belle Isle. Picnic tables would also be added at the new campgrounds proposed in the GMP, all of which would have maintained docks and fall within designated or
potential wilderness. Other than these, picnic tables would not be added at additional campgrounds.

When the docks and shelters at Duncan Bay and Siskiwit Bay campgrounds are removed (per the GMP), picnic tables will also be removed.

If the NPS did not approve this waiver to retain picnic tables within designated or potential wilderness sites, then all picnic tables would be removed from those areas, leaving picnic tables only in campgrounds within nonwilderness.

2.4.6 Summary of the Preferred Alternatives and Proposed Actions in Combination

This draft WBMP proposes several changes in how Isle Royale’s wilderness and backcountry are managed. The preferred alternatives were crafted with an intention of creating one cohesive management program, with management goals for each of several issues being complementary, not contradictory. The planning team’s intention was to respond to public interest and the concerns of subject matter experts, and incorporate the best science available for guiding preservation of Isle Royale’s resources and values. General goals included improving the quality of wilderness and backcountry experiences for visitors while still providing high public access to the park for appropriate types of recreation. Existing facilities could be used more efficiently, while unnecessary facilities would be removed from the wilderness. Table 5 outlines the goals and proposed management actions for all of the preferred alternatives.

The preferred alternatives in combination also strive to minimize adverse resource impacts, in many cases improving resource conditions that are currently showing degradation. Because Isle Royale is already a difficult and expensive park to visit, the preferred alternatives were also crafted with an interest in not further restricting general public access to the park. The preferred alternative for managing overnight camping and boating on Isle Royale focused on more efficiently utilizing existing camping facilities through the creation of a backcountry office and advanced permitting. The intent is to expand visitor services for trip planning and reduce campground crowding to improve social and resource conditions in campgrounds. Because this could result in a decrease in visitor access to the backcountry for camping during the busiest weeks of the season, the preferred alternative for managing day use was crafted with an intention to allow an increase in day use throughout the visitor season. Day tours would be managed to concentrate the majority of day visitors close to developed and frontcountry areas of the park and minimize adverse impacts to wilderness character and other critical resources.

The preferred alternatives in combination also aimed to minimize or reduce the impacts of development in the park’s wilderness. Although the preferred alternative for overnight use would add one additional campsite at North Desor campground and a few rustic cabins in Rock Harbor, and the preferred alternative for day use would add 3-5 miles of new trail, no new campgrounds would be constructed other than those approved in the GMP, 2 fire towers would be removed, and campfire rings would be located only where resource conditions could tolerate the associated impacts. Specific management actions that would be appropriate under each of the preferred alternatives are outlined in Table 5.
### Table 5: Summary of the Preferred Alternatives

<table>
<thead>
<tr>
<th>Actions Common to All</th>
<th>Managing Overnight Use</th>
<th>Managing Day Use</th>
<th>Campfires</th>
<th>Fire Towers</th>
<th>Picnic Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goals</strong></td>
<td>The NPS would forego actions that might have no seeming physical impact but which would detract from wilderness character and the idea of wilderness as a place set apart.</td>
<td>Provide a range of high quality opportunities for wilderness and backcountry experiences and reduce adverse impacts to park resources and values.</td>
<td>Expand opportunities for high quality day activities, while also accommodating future increases in day use and minimizing adverse impacts to park resources and values.</td>
<td>Continue to provide an opportunity for camping with campfires, while also concentrating and minimizing adverse resource impacts.</td>
<td>Improve the park’s wilderness character by removing substantial structures that no longer serve an administrative need.</td>
</tr>
<tr>
<td><strong>Desired Future Conditions</strong></td>
<td>• Provide a range of quality visitor opportunities. • Reduce the adverse impacts of NPS operations.</td>
<td>• Overcrowding would be reduced in campgrounds all season. • Improve camper distribution. • Protect seasonal sensitivities of park resources. • Provide a seasonal range of visitor opportunities, with low use in the spring and fall. • Improve trip planning and information services.</td>
<td>• Create additional opportunities, such as a new loop hiking trail, for day visitors. • Improve social and resource conditions in day use areas by reducing the size of organized day tours. • Allow for an increase in day visitors to the park.</td>
<td>• Visitors would have the option to camp with campfires. • Visitors would have the choice of camping in areas where fires are permitted, or where fires are not permitted. • Fire rings would be located only where there no vulnerable natural or cultural resources.</td>
<td>• Administrative impacts to wilderness character would be reduced by removing 2 of the park’s 3 fire towers. • Ojibway Tower would continue to be used for administrative purposes that are compatible with wilderness, such as communications, research, and monitoring.</td>
</tr>
</tbody>
</table>
### Summary of Preferred Alternatives in Combination

<table>
<thead>
<tr>
<th>Appropriate Management Actions</th>
<th>Actions Common to All</th>
<th>Managing Overnight Use</th>
<th>Managing Day Use</th>
<th>Campfires</th>
<th>Fire Towers</th>
<th>Picnic Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-cost rustic cabins would be added in Rock Harbor.</td>
<td>Establish a mainland-based backcountry office to coordinate information services and permitting.</td>
<td>Explore options for creating a new 3-5 mile day trail near Windigo.</td>
<td>Adhere to clear protocols for when and where campfires would be appropriate, based on resource conditions.</td>
<td>Remove Ishpeming and Feldtmann Towers, using the minimum tool necessary.</td>
<td>Follow the proper steps to seek a waiver to retain picnic tables within some of the park’s wilderness campgrounds.</td>
<td></td>
</tr>
<tr>
<td>Cross-cut saws would be used increasingly to minimize chainsaw use.</td>
<td>Implement an advanced permitting system for all overnight boaters and campers, allowing more flexibility for boaters not using campsites.</td>
<td>Redesign Interpretive tours to focus on smaller group activities.</td>
<td>Remove or add fire rings at different campgrounds as necessary, based on resource conditions.</td>
<td>Restore the impacted sites to their natural conditions.</td>
<td>Upon receipt of the waiver, maintain existing picnic tables in wilderness campgrounds.</td>
<td></td>
</tr>
<tr>
<td>Sustainably-harvested, chemically preserved lumber would be used for trails and campgrounds.</td>
<td>Discontinue the practice of issuing permits over the capacity of a campground.</td>
<td>Establish group size limits for day tours, allowing larger groups to split into multiple small groups. Limits set by management zone: Frontcountry: 20 Wilderness Portal, Backcountry and Primitive: 10</td>
<td>Replace existing fire rings with smaller metal rings with adjustable grates.</td>
<td>Maintain and utilize Ojibway Tower for administrative purposes associated with managing the park’s wilderness.</td>
<td>Remove picnic tables from campgrounds where docks and shelters are removed (i.e. Siskiwit Bay and Duncan Bay upon full implementation of the GMP).</td>
<td></td>
</tr>
<tr>
<td>Cross-country camping and anchoring-out would continue, with monitoring of impacts.</td>
<td>Institute a permitting fee to offset the costs associated with the backcountry office.</td>
<td>Note: Hidden Lake and Lookout Louise would be exceptions, with 15 people allowed.</td>
<td>A single communal ring could replace multiple individual campsite rings in some campgrounds.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Minimum Requirement Decision Tree would apply to all NPS activities in wilderness.</td>
<td>Expand North Desor campground by 1 campsite.</td>
<td>Increase education about low-impact fires and sensitive resources.</td>
<td>Include information about the locations of campfire rings for visitors at the time of permitting.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expand public education to reduce adverse impacts to park resources and values.</td>
<td>Include monitoring social and resource indicators.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continue monitoring social and resource indicators.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Remove Ishpeming and Feldtmann Towers, using the minimum tool necessary.
- Restore the impacted sites to their natural conditions.
- Maintain and utilize Ojibway Tower for administrative purposes associated with managing the park’s wilderness.

- Follow the proper steps to seek a waiver to retain picnic tables within some of the park’s wilderness campgrounds.
- Upon receipt of the waiver, maintain existing picnic tables in wilderness campgrounds.
- Remove picnic tables from campgrounds where docks and shelters are removed (i.e. Siskiwit Bay and Duncan Bay upon full implementation of the GMP).
- If the NPS did not approve the waiver, picnic tables would be removed from all campgrounds within wilderness.
Summary of Preferred Alternatives in Combination
Summary of Preferred Alternatives in Combination
CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes the existing natural and human components of the environment that could be affected by the implementation of any of the alternatives. Under NEPA, “affected environment” means resources expected to experience environmental impacts. Only those areas that could be affected by proposed actions are included.

3.1 Visitor Use and Experiences

The Wilderness Act dictates appropriate activities within Isle Royale’s wilderness, but more flexibility is allowed within the park’s non-wilderness backcountry, such as the use of sailboats and motors. National Park Service management policies direct that wilderness areas must be managed to preserve their wilderness character and resources while providing for “appropriate” uses. Appropriate uses are those that require, yet do not degrade, the wilderness character and values, and include activities such as recreation, scientific inquiry, education, and historical use.

3.1.1 Visitor Experiences and Opportunities

With no roads on Isle Royale, visitors travel through the park by boat or by foot and visit with many shared and different interests. Common recreation activities include hiking, motorboating on Lake Superior, canoeing, kayaking, sailing, observing wildlife, fishing, and photography. Visitors also spend much time learning about and exploring the park’s natural and cultural treasures. Visitors come to Isle Royale seeking restorative experiences such as relaxing, observing the scenic beauty, being in a natural setting, observing and hearing wildlife, personal challenges, and developing outdoor skills (Pierskalla and others 1997). Figure 1 illustrates the breakdown of island visitors by general user groups.

![Figure 1: Types of Visitors to Isle Royale National Park (based on average 1997-2001)](image-url)
The range of opportunities in Isle Royale’s wilderness and backcountry may vary at different times of the season and in different areas of the park. Currently, visitors to the park in July and August will find more fellow campers, boaters and hikers, as well as more amenities with the store, visitor centers, ranger stations, and maintenance activities in full operation. Those choosing to visit in May or October will find more challenging weather conditions, fewer NPS staff available for assistance, greater opportunities for solitude in the campgrounds and on trails, and in general, the need to be more self-sufficient. Camping within Rock Harbor and Windigo offers access to more developed modern conveniences such as formal interpretive programs, restrooms, shower and laundry facilities, a store and restaurant, boat rentals, and proximity to the park’s busiest dock and entry point. On the opposite end of the spectrum, obtaining a cross-country camping permit offers the opportunity to travel and camp off-trail. This requires greater self-sufficiency and skill with few chances of encountering other people, the challenges of orienteering across rugged terrain with abundant swamps and thick forests, and the difficulty of finding a hospitable camping spot. There are also many options of how to visit the park, including guided trips, traveling with family or friends, or traveling solo. This range of opportunities offers options suitable for first-time campers, highly experienced backcountry travelers, and everyone in between.

3.1.2 Visitor Use Patterns and Trends
Isle Royale’s visitors are typical of most National Park visitors in that they tend to travel in family or peer groups of 2-4 people and are usually highly educated. They differ from visitors to many parks in that most have more experience in backcountry settings, place high value on wilderness attributes, and stay longer than visitors to most National Parks. With the difficulty in reaching the island, the vast majority of visitors stay for more than one day.

In 1970, at the time of the park’s wilderness recommendation, approximately 10,000 people visited the island annually. Annual visitation has since increased to approximately 15,000. Total island visitation (including all visitors to the island) peaked in the 1970s and again in the mid 1990s with annual visitation approaching 18,000 island visitors (Figure 2). The distribution of visitors throughout the park’s operating season has been fairly consistent, with the majority of visitors coming in July and August (Figure 3). Visitors come to Isle Royale from all over the US, as well as from other countries. The majority of island visitors who stay in the wilderness or backcountry come from Michigan (41%), Minnesota (20%), Wisconsin (13%), and Illinois (6%).
Figure 2: Annual Island Visitation and Total Annual Visitor Overnights to Isle Royale

Figure 3: Seasonal Distribution of Isle Royale Visitors.
Visitor Use and Experiences

The average length of stay for overnight visitors parkwide is 4.5 nights (including lodge guests). In the backcountry, hikers and paddlers average 5.3 nights, power boaters and sailors 4.5 nights. Figure 4 depicts the trend in annual visitation by backcountry overnights for different user groups over the last 30 years (Number of people x Number of nights they spent in the park’s wilderness and backcountry = Backcountry overnights).

**Figure 4:** Backcountry Overnights by User Group

![Annual Backcountry Overnights Total and By User Group](image)

Visitor use patterns at Isle Royale are influenced in part by ferry schedules and capacities. The *Isle Royale Queen III* has a maximum capacity of 100 passengers but voluntarily carries no more than 80 and infrequently sells out at that point (pers. com., The Isle Royale Line, March 23, 2004). The *Voyageur II* carries up to 39 passengers and ran to maximum capacity 29 times in 2003, and the *Wenonah* carries up to 100 passengers and rarely if ever sells out (pers. com., June Lapp, the Isle Royale Line, March 26, 2004). The *Ranger III* carries up to 126 passengers, including park personnel and their guests, and typically sells out about a half dozen times each year between mid-July and mid-August. Because ferries schedule fewer trips to and from the island in Spring and Fall than in July and August (Table 6), visitation would always be somewhat lower during those times.
Table 6: Ferry Schedules and Capacities (from 2004, with schedules comparable other years)

<table>
<thead>
<tr>
<th></th>
<th>Capacity</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Voyageur II</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wenonah</td>
<td>100</td>
<td>No trips.</td>
<td>Daily</td>
<td>daily</td>
<td>Daily</td>
<td>Daily</td>
<td>No trips.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(6/19-6/30)</td>
<td>daily</td>
<td>(6/19-6/30)</td>
<td>(6/19-6/30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5/14-5/31)</td>
<td></td>
<td>daily</td>
<td>daily</td>
<td>daily</td>
<td>No trips.</td>
</tr>
<tr>
<td>Ranger III</td>
<td>126</td>
<td>No passengers</td>
<td>Tues. &amp; Fri.</td>
<td>Tues. &amp; Fri.</td>
<td>Tues. &amp; Fri.</td>
<td>Tues. &amp; Fri.</td>
<td>(9/1-9/11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overnight Backcountry and Wilderness Use**

The majority of people who visit Isle Royale National Park spend one or more nights in the park’s wilderness and backcountry camping, anchoring out, or docking. Backpackers are the largest user group, followed by powerboaters; other visitors travel by canoe, sailboat, or kayak. Historically, visitation to the island has been limited only by ferry capacities. During the peak visitor season ferries may sell out periodically, limiting access for people who are not traveling to the island by private boat or do not have flexibility in when they can visit. There is no limit on the number of private boats traveling to the park. However, the cost of reaching the park, either for a ferry ticket or the cost of a personal boat and fuel, may make Isle Royale inaccessible for some people, which limits public access to some extent.

The majority of backcountry overnight visitors enter the park through Rock Harbor (55%) or Windigo (35%), with 10% entering at one of several remote entry points. Consistent with this, campsites are more heavily concentrated on the east and west ends of the island, with fewer and smaller campgrounds in the center of the main island. The vast majority of backcountry and wilderness visitors stay in one of the park’s designated campgrounds. Approximately 40% of parties traveling by powerboat or sailboat plan on sleeping onboard their boat at a campground’s dock rather than camping.

The average group size for backcountry parties in 2003, a fairly representative year, was 3; the most common group size was 2 people. Six percent of parties were large groups (7-10 people) falling under the group reservation system, the majority of which are associated with organized trips through camps, outfitters, schools, or scout troops. In general, visitors to the park in May, September, and October travel in smaller groups than those visiting in June, July and August. About 70% travel in parties of 1 or 2 people, compared to less than 60% from June through August. Similarly, very few large groups (7-10 people) visit the park in May, September, and October.

It is difficult and risky to try to predict future trends in visitation at Isle Royale. At certain points in the past it appeared that the trend line in visitation was decreasing, while at others it appeared to be increasing. However, in general, visitation to National Parks and Wilderness Areas has been increasing over recent decades and is predicted to increase as more people have free time with retirement and more have adequate income for such vacations. Some factors that may affect future visitation increases or decreases at Isle Royale include: the price of gas for boaters, the general popularity of wilderness-based recreation such as backpacking and kayaking, and
political and economic factors that determine whether international or local travel is preferable for vacationers.

**Day Use in the Wilderness and Backcountry**

People who visit Isle Royale just for a day comprised 13% of annual visitation to the island from 1997-2003. In 2003 this was 1,912 people. The majority of these people (80-90%) visited Windigo and the west end of the island. The ferry from Minnesota to Windigo is the shortest trip and allows for the longest day visit to the island. Because day visitors are in the park for at most 4 hours, they have little opportunity to travel far into the park’s wilderness and backcountry. People staying overnight at the Rock Harbor Lodge or within developed areas of the park and taking day excursions into the wilderness and backcountry are also considered day visitors for the purposes of wilderness and backcountry management. Day visitors who do not spend a night within the park account for approximately 10% of total island visitors; guests at the Rock Harbor Lodge account for 15-20%.

Day excursions and formal day tours often use the same trails used by backpackers, paddlers and boaters who spend multiple days and nights in the park’s backcountry. Areas of the park frequented by day visitors include the trails and waterways in the vicinity of Windigo and Rock Harbor, as well as the destinations served by Rock Harbor Lodge’s organized tours aboard the *M.V. Sandy*. The NPS has offered ranger-led day hiking trips on several trails including the Windigo Natural Trail, Scoville Point Trail, Rock Harbor Trail, and Tobin Harbor Trail. With the *M.V. Sandy* the Lodge offers tours that may or may not be led by NPS rangers to several destinations in different management zones of the park. Tours within the Frontcountry include the Edisen Fishery, Rock Harbor Lighthouse and Raspberry Island; Backcountry zone tours include the Minong Mine in McCargoe Cove, Passage Island Trail, and the Hidden Lake and Lookout Louise Trail. The *M.V. Sandy* carries a maximum of 40 passengers. The NPS keeps statistics on group sizes for the tours that are led by rangers. A recent 3-year average of the Hidden Lake/Lookout Louise tours showed 17 trips per season, 19 people per trip, and a maximum of 42 people on one tour. A similar look at Passage Island showed 11 trips per season, 21 people per trip, and a maximum of 38 people on one tour (pers. com., Smitty Parratt, NPS Chief of Interpretation).

**3.1.3 Social Conditions**

To date visitation to Isle Royale’s wilderness and backcountry has never been limited by the NPS, though visitation may be limited to some extent when ferries sell out during the peak season. Parties of 7-10 people are required to secure reservations for designated group campsites before traveling to the park. Once they reach the park, parties with fewer than 7 people have received backcountry permits to camp in the campground of their choice, regardless of campsite availability. People are limited in where they can camp outside of designated campsites to protect sensitive wildlife, habitats, and cultural areas. In general, visitor freedom and flexibility has been maximized over management of visitor distribution to efficiently use camping space. Under the existing permitting system, current real-time information is not available on the number of parties permitted for each campground. Technological limitations prevent linking the permitting stations for real-time updates of when and where permits have been issued. Two permitting stations are located on the island, one in Houghton, one in Grand Marais, MN, and one aboard the Ranger III ferry, with none of the permitting computers connected.
Visitor surveys conducted in 1996 and 1997 revealed minor problems and areas where backcountry and wilderness conditions could be improved on Isle Royale, including: motorboat noise, too many other hikers in campgrounds, difficulty in finding dock space or a vacant campsite or shelter, and too many watercraft on Lake Superior (Pierskalla and others, 1997 and 1998). This information led the NPS to further explore conditions related to crowding and noise in the wilderness and backcountry, in an attempt to better understand when, where, and to what extent there were problems, and what actions might effectively improve conditions. This has become one of the primary focuses of the WBMP.

**Campground Crowding**

Isle Royale managers have defined crowding in campgrounds as a campground being overfull, with parties who cannot find an available campsite needing to either share a site with another party or break regulations and camp outside of a designated site. Permit data, visitor surveys, reports from NPS backcountry staff, and more recently, computer simulation modeling have been used to quantify this problem over the course of several years (Pierskalla and others, 1997 and 1998; Mayo Kiely, 2001; Lawson and Manning, 2002 and 2003).

Detailed analysis of backcountry overnight visitor distribution in 2001 has shed some light on these issues. During the 2 week peak in visitation in 2001 an average of 50 camping permits were issued per day, resulting in 203 permitted parties staying in campgrounds each night and on the busiest night, 231 parties were in campgrounds. With 244 campsites in the park, this is an average of campsite use at 83% of capacity and a maximum use at 95% of capacity. Under these conditions an average of 24% of those parties would have needed to double-up campsites in overfull campgrounds on a nightly basis. This estimate is consistent with data collected from visitors and NPS backcountry personnel on the frequency of campsite sharing in 1997 and 2000 (Pierskalla and others, 1998; and Mayo Kiely, 2001). Table 7 summarizes campground crowding conditions at different visitation levels, based on average number of permits issued per day.

**Table 7: Frequency of Parties Sharing Campsites at Different Visitation Levels (based on computer simulation modeling with actual 2001 visitation levels)**

<table>
<thead>
<tr>
<th>Time of Season</th>
<th>Average number of permits issued per day in 2001</th>
<th>Average % of parties sharing campsites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off-season (May, June, September and October)</td>
<td>12</td>
<td>0.4</td>
</tr>
<tr>
<td>July and August</td>
<td>39</td>
<td>8.7</td>
</tr>
<tr>
<td>2 week peak in visitation</td>
<td>50</td>
<td>24.1</td>
</tr>
<tr>
<td>July and August excluding the peak 2 weeks</td>
<td>36</td>
<td>6.4</td>
</tr>
</tbody>
</table>

How does this happen when the total numbers of camping parties is below the park’s total camping capacity? Campers are permitted for campgrounds based on their itinerary preferences, not based on site availability; in fact, under the current permitting system the park does not have accurate information about site availability at the time of permitting. Additionally, permits are issued for flexible itineraries so visitors may change their camping itineraries at any time throughout their trip, without changing their permits. As a result, more parties may end up in a campground than there are campsites, while other campgrounds may have empty campsites. For
example, 8 parties may arrive for the night at a campground with 6 campsites. Two parties cannot find empty campsites and 4 parties end up doubling-up for the night. Meanwhile, at another campground with 5 campsites, only 3 parties arrive for the night. Although there are empty campsites available on even the busiest nights, visitors are not effectively dispersed to campgrounds with available space, and may end up in overfull campgrounds. Continuing on to the next campground may not be an option given time and distances between campgrounds, and there are no assurances that space would be available at the next campground.

Surveys and computer modeling have also helped to identify where in the park crowding is an issue. In general, campgrounds within the Rock Harbor Channel tend to be more heavily used, and more over-crowded than others in the park. However, during the peak 2 weeks in visitation most campgrounds appear to be used up to their capacities (although many may not be overfull, they are full with little or no space to accommodate additional use.) In 2002 NPS personnel used this information to scout for feasible campground expansions or options for creating new campgrounds. This scouting was guided by several goals, including: 1) maintain or improve the quality of existing campsites, considering privacy, view, and shelter from human sounds; 2) avoid impacts to sensitive cultural and natural resources; 3) consider appropriate campground sizes based on management zones; 4) locate new campsites in suitable terrain, considering soils, slope, and screening; and, 5) consider communal campsites as well as individual tent sites, and options for tent platforms. Table 8 illustrates to what extent different campgrounds were permitted over their capacities in 2001, the expansions in campground capacities that would have been required to accommodate demand that year, and feasible options for new campsites that would adhere to the five goals listed above.

Park staff inform visitors of the likelihood of finding overcrowded campgrounds during the busy times, warning visitors of the probability of needing to double-up in campsites if they choose to visit during these busier times. However, this issue remains one of the consistent problems raised by the public. People may choose to socialize with other campers, or to share their campsites, but the concern is when parties are forced to double-up for lack of available campsites.

Aside from the sheer numbers of parties in campgrounds, other factors are also important in how crowded people feel, or what level of privacy and solitude they can find in Isle Royale’s campgrounds. People’s behavior and the design of campsites are important factors. Leave-No-Trace is a focal point of Isle Royale’s educational program, sharing with visitors the importance of being aware of and minimizing their impacts on other people. Some of Isle Royale’s campsites are well spaced, with abundant screening between sites and private water access points. Other sites are within sight and sound of other campers, dramatically reducing privacy and feelings of solitude. Improving the quality of campsites with adequate screening, spacing, and distance from docks is an ongoing goal of campground maintenance.
### Table 8: Frequency and Extent of Campgrounds Permitted Over their Capacities in 2001 and Feasible Campsite Additions (from 2001 permit data, based on individual parties and shelters or tent sites only, not groups or group sites)

<table>
<thead>
<tr>
<th>Campground</th>
<th>Number of Individual tent sites and shelters</th>
<th>Number nights permitted over capacity in 2001</th>
<th>Number campsite additions needed to meet peak demand</th>
<th>Number of known feasible campsite additions (including new GMP campgrounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaver Island</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3 (Washington I., per GMP)</td>
</tr>
<tr>
<td>Belle Isle</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>3 (Crystal Cove, per GMP)</td>
</tr>
<tr>
<td>Birch Island</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>3 (new McCargoe Cove, per GMP)</td>
</tr>
<tr>
<td>Caribou Island</td>
<td>3</td>
<td>26</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Chickenbone East</td>
<td>3</td>
<td>21</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Chickenbone West</td>
<td>6</td>
<td>26</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Daisy Farm</td>
<td>22</td>
<td>4</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Desor North</td>
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Crowding at Docks in the Backcountry

Currently, Isle Royale allows rafting off at docks when dock space is unavailable and docked boaters are willing to have another boater (with a valid backcountry permit) raft off their boat. While on the whole, docks throughout the park are not usually crowded, there are specific campgrounds with docks that are more apt to run out of dock space than others, including Caribou Island, Grace Island, and Hay Bay (see Table 9.) In order to determine visitor concern about crowding at docks, Isle Royale included questions in its 1996 and 1997 visitor surveys, and in one of its WBMP Newsletters.

1996 Visitor Survey
During the 1996 visitor survey at Isle Royale, backcountry visitors, powerboaters, and day visitors were asked to identify and rank the importance of perceived problems at the park. A total of 190 powerboaters, and 798 backcountry visitors were surveyed. 50.8% of the powerboaters surveyed identified “finding an available docking spot at docks” as a moderate to serious problem. In addition, 18.6% believed that “having to allow unknown boats/parties to raft off of my docked boat at night” was a moderate to serious problem. Over 72% of powerboaters who responded to these two questions had boated to Isle Royale more than once. 5.8% of powerboaters surveyed felt that “noisy people at campgrounds with docks” was a moderate to serious problem, and 5% felt the same about “motorboat noise in narrow harbors and bays.” 19.4% of the powerboaters supported “limit(ing) the number of boats so they do not exceed available dock and anchorage space.” 77.7% of the respondents to this management question had been to Isle Royale more than once (Pierskalla et al, 1997.)

Over 96% of the 798 backcountry visitors (non-powerboaters) surveyed felt that finding available dock space, and having to allow rafting off were not problems. However, 20.9% felt that “noisy people at campgrounds with docks” was a moderate to serious problem, versus 5% who felt the same about “noisy people at campgrounds without docks.” In addition, 29.8% felt that motorboat noise in narrow bays and harbors was a moderate to serious problem (Pierskalla et al, 1997.) While it is not surprising that the majority of backcountry visitors would not be concerned with dock space and rafting off per se, it is also fair to say that the indirect impacts of crowding at campground docks (noise levels where boats congregate) may be a moderate to serious concern to 20-30% of them.

1997 Visitor Survey
The 1997 Visitor Survey asked questions and divided respondent groups in a similar manner to the 1996 survey. One difference in the 1997 survey was the division of user groups by zone (Frontcountry, Backcountry, Wilderness Portal, and Primitive). In the Backcountry group, 8% of powerboaters felt that the park should “limit the number of boats so they do not exceed available dock space.” 29.6% felt that the park should “limit the number of dock spaces available.” In both the Backcountry and Wilderness Portal groups, the majority of powerboaters felt that the number of boats at the same dock, number of boats rafting off their own boat, and the amount of noise generated by other boaters docked near them were all within acceptable limits (Pierskalla et al, 1998.)
Non-powerboaters responded to survey questions quite differently. 84.8% felt that to “limit the number of boats so they do not exceed available dock space” ranked as acceptable to very acceptable as a management action. Likewise, 87.7% felt that not allowing boat numbers to exceed available anchorage space was acceptable to very acceptable. 77.9% thought that it would be acceptable to very acceptable to limit the number of dock spaces available. When interviewed about their current experience at the park however, the majority of non-powerboaters across all use zones felt that the number of powerboats docked and anchored out during their campground stay was acceptable, and that the number of encounters with powerboaters docked at campgrounds where non-powerboaters spent the night was no more than expected (Pierskalla et al, 1998.)

Table 9: Overcrowding at campgrounds with only water access, 2001

<table>
<thead>
<tr>
<th>Campground</th>
<th># Nights &gt;Capacity, 2001</th>
<th>Max # of Parties Permitted (# over capacity)</th>
<th>Capacity (Individual Sites)</th>
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<tr>
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<td>3</td>
<td>4 (+1)</td>
<td>3</td>
</tr>
<tr>
<td>Belle Isle</td>
<td>3</td>
<td>10 (+3)</td>
<td>7</td>
</tr>
<tr>
<td>Birch Island</td>
<td>9</td>
<td>5 (+3)</td>
<td>2</td>
</tr>
<tr>
<td>Caribou Island</td>
<td>26</td>
<td>12 (+9)</td>
<td>3</td>
</tr>
<tr>
<td>Duncan Bay</td>
<td>10</td>
<td>5 (+2)</td>
<td>3</td>
</tr>
<tr>
<td>Duncan Narrows</td>
<td>4</td>
<td>8 (+3)</td>
<td>3</td>
</tr>
<tr>
<td>Grace Island</td>
<td>14</td>
<td>9 (+7)</td>
<td>2</td>
</tr>
<tr>
<td>Hay Bay</td>
<td>39</td>
<td>9 (+8)</td>
<td>1</td>
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<tr>
<td>Merritt Lane</td>
<td>14</td>
<td>6 (+4)</td>
<td>2</td>
</tr>
<tr>
<td>Tookers Island</td>
<td>18</td>
<td>6 (+4)</td>
<td>2</td>
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</tbody>
</table>

Table 9 above shows campgrounds that are accessible only from the water. While some campsites would have been occupied by paddlers, it can be safely assumed that dock capacity was exceeded (rafting off occurred) at least a portion of the nights where a campground capacity was exceeded.

Campgrounds with docks that can also be accessed by trail were not included, because campground crowding by hikers versus boaters could not be separated. Visual observation by park staff, however, has verified that docks at these campgrounds also occasionally exceed capacity during busy periods (pers. com., Kangas, 2005.)

In another attempt to assess visitors’ feelings about crowding at docks, WBMP Newsletter #4 requested that respondents give their opinions on rafting off (whether they ever had, and if so, was it a positive or negative experience.) The number of responses was low. Of those who had rafted off and did respond, 15 said that rafting off was a positive experience, 11 said that they
had no opinion either way, and 5 had a negative experience (Isle Royale WBMP Newsletter, 2002.)

**Trail Crowding**
Trail crowding appears to be a less salient public concern than campground crowding, which is consistent with general research in wilderness recreation (Manning 1999). However, crowding along trails, quantified through the number of trail encounters, does remain an important factor in social conditions in the park’s wilderness and backcountry. Table 10 summarizes known trail encounter rates by management zone (Mayo Kiely 2001). Managing over-crowding in campgrounds may also serve to manage crowding along trails, depending on the management action taken. The NPS will continue to monitor trail encounters to test this.

**Table 10:** Rates of Trail Encounters Reported by Hikers and NPS Rangers in 2000 (see Appendix C, Map 6 for Management Zones)

<table>
<thead>
<tr>
<th>Management Zone(s) that trail section passes through</th>
<th>Number of parties encountered per day</th>
<th>Number of people encountered per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backcountry</td>
<td>Average: 2.9</td>
<td>8.1</td>
</tr>
<tr>
<td></td>
<td>Minimum: 0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Maximum: 19.0</td>
<td>58</td>
</tr>
<tr>
<td>Backcountry &amp; Primitive</td>
<td>Average: 3.1</td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>Minimum: 0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Maximum: 9</td>
<td>32</td>
</tr>
<tr>
<td>Backcountry &amp; Frontcountry</td>
<td>Average: 5.0</td>
<td>14.0</td>
</tr>
<tr>
<td></td>
<td>Minimum: 0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Maximum: 20.0</td>
<td>48.0</td>
</tr>
<tr>
<td>Primitive</td>
<td>Average: 1.1</td>
<td>2.5</td>
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<tr>
<td></td>
<td>Minimum: 0</td>
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<tr>
<td></td>
<td>Maximum: 5</td>
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**3.1.4 Visitor Facilities and Services**
Currently the NPS maintains 36 campgrounds at Isle Royale with an additional 5 planned with implementation of the GMP. Each campground has designated campsites and an outhouse, some have a dock, shelters, and picnic tables. The campgrounds range in size from 1 to 25 campsites. Table 11 outlines each campground and facilities available.

Campsites within the campgrounds consist of either a rustic shelter or tent pads and a flattened eating area. Shelters and individual tent sites are designed to hold one party with up to 6 people. Tent sites have (2-3) 12 by 12 foot tent pads clustered within a few feet of each other. Designated large group sites are designed with 4 or 5 closely clustered 14 by 14 foot tent pads for one group with 7-10 people. Although campsites can and do hold more than one party when campgrounds are overfull, typically there is no screening between tent pads and they sit within a
few feet of each other so there would be little to no privacy for multiple parties sharing sites. Similarly, shelters are one open area with 3 wood walls and one screen wall and do not offer any privacy for parties sharing a single shelter.
Table 11: Campgrounds and Associated Facilities (*1 Potential Wilderness, *2 planned for removal per the GMP)

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<td>No</td>
</tr>
<tr>
<td>Todd Harbor</td>
<td>Backcountry</td>
<td>Yes</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Tookers Island</td>
<td>Backcountry</td>
<td>Yes</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Washington Creek</td>
<td>Frontcountry</td>
<td>No</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>4</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Wood Lake</td>
<td>Primitive</td>
<td>Yes</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
The overall size of a campsite is a combination of official tent pads, unofficial tent pads that have become established by repeated use, and other areas trampled by repeated use for things like cooking, sitting, and storing gear. The cumulative area of campsites increased by approximately 10% from 1996 to 2002. The estimated area of exposed soil within these sites increased by approximately 50% in the same period. These changes, outlined in Table 12, are caused primarily by people using areas outside of the intended campsite boundary. However, there are likely several contributing factors, such as maintenance and design of campsites that do not clearly establish the campsite boundaries, more than one party doubling up in a site intended for 1 party, and tent pads that may be unappealing to campers because of being wet, uneven, or some other reason.

Table 12: Area and Exposed Soil of Isle Royale Campsites 1996-2002. Measurements are in square feet.

<table>
<thead>
<tr>
<th>Type of site</th>
<th>Number</th>
<th>Mean Area</th>
<th>Mean Amount Exposed soil</th>
<th>Range of site area</th>
<th>Range of amount exposed soil</th>
<th>Cumulative area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual tent site</td>
<td>113</td>
<td>650</td>
<td>730</td>
<td>250-390</td>
<td>160-1520-140-1680</td>
<td>73,440-82,120</td>
</tr>
<tr>
<td>Group tent site</td>
<td>43</td>
<td>1570</td>
<td>1670</td>
<td>620-940</td>
<td>710-2570-660-2500</td>
<td>67,500-71,740</td>
</tr>
<tr>
<td>Shelter</td>
<td>88</td>
<td>420</td>
<td>480</td>
<td>130-180</td>
<td>130-1270-200-1380</td>
<td>37,030-42,300</td>
</tr>
</tbody>
</table>

In total there are 165 miles of trails and portages on Isle Royale. All but a few miles of trail are within designated wilderness. All trails are maintained within standards that minimize erosion and trail widening, concentrating foot traffic while still providing reasonable access. Trails are designed and maintained with an 18 inch tread, or up to 26 inches on a side slope, and brushed out with a 6 foot wide trail corridor. Water bars, corduroy, stepping stones, turn pike, retaining walls, check dams, boardwalk and bridges are all used to control erosion and minimize trail widening. Portions of the Ishpeming and Minong Trails are maintained to a more primitive standard with narrower trail corridors, more frequent wet trail crossings across beaver dams and wetlands, and sections of trail that may be more challenging to follow across ridge tops.

Two remote ranger stations are maintained in the park’s backcountry, at Malone Bay and Amygdaloid Island. Facilities at these stations include docks, fuel storage, visitor shelters with park information, and ranger residences with associated utilities support (solar power, water treatment, and gas-powered generators for pumping boat fuel). Services offered include medical and emergency assistance and park information. Backcountry permitting and payment of daily use fees are not available at these remote ranger stations.

Three fire towers are within the park’s wilderness; all were built in the 1960s. The NPS no longer relies on these towers for fire monitoring, but they continue to be maintained to varying degrees for research equipment, a radio repeater, and temporary storage of equipment or shelter for backcountry personnel. Two of the towers, Ojibway and Feldtmann, offer expansive island and lake views for visitors interested in climbing the towers, though the tops of the towers are
only open in the presence of NPS personnel. Ishpeming Tower no longer reaches above the treetops, so the view from this tower is limited.

The NPS maintains communications structures within Isle Royale’s wilderness and backcountry. Communication facilities are critical for park operations and providing for human safety in a park such as Isle Royale where communication often depends on radios, cell phones, and satellite phones. Currently the Mount Ojibway fire tower, within designated wilderness, includes a radio repeater and satellite transmitter powered by photovoltaic cells. Communications technology at a remote monitoring station on Mount Ojibway also relays monitoring data.

The NPS maintains contracts with private businesses and organizations to provide many public services to Isle Royale visitors. These are managed through concessions contracts and Incidental Business Permits. Four ferries and one seaplane provide transportation to the island for visitors not traveling by private boat or plane. The Ranger III ferry is operated by the NPS. The Rock Harbor Lodge offers several services in addition to lodging and dining: 1) water taxi service, transporting visitors between Rock Harbor and various docks throughout the park’s backcountry, 2) fishing charters; 3) boat tours to cultural and scenic sites; 4) canoe, kayak and motorboat rentals; and 5) small stores and showers in Windigo and Rock Harbor. Other private businesses offer fishing charters, dive charters, and guided recreational trips in the park. In 2003 the NPS issued 44 Incidental Business Permits for Isle Royale, with the majority of those going to backpacking organizations such as camps and outfitters.

### 3.2 Wilderness Character

The character of wilderness is an unseen presence capable of refocusing our perception of nature and our relationship to it. It is that quality that lifts our connection to a landscape from the utilitarian, commodity orientation that dominates the major part of our relationship with nature to the symbolic realm serving other human needs...Every management decision against an action or technology that might degrade the wilderness condition serves to uphold and strengthen the character it is seen to have. Every decision to forgo actions, technologies, or conveniences that have no seeming physical impact but detract from our commitment to wilderness as a place set apart enhances wilderness and agency character more, because sacrifice for an ideal is the strongest gesture of respect. (Federal Register/ Vol. 66, No. 10/ 2001 p. 3729-3730)

Although difficult to measure, wilderness character consists of multiple components, including a state of naturalness and an “untrammeled” state, as well as conditions for solitude, primitive and unconfined experiences, personal challenge, self sufficiency, and an escape from the reminders of our modern society. As well as a state, wilderness character denotes an intention and a commitment to the spirit of an intangible.

#### 3.2.1 Naturalness

Naturalness in wilderness refers to the area being influenced primarily by the forces of nature, rather than human efforts to manipulate, control or direct in attempts to provide particular benefits. This would consider the systems and functions on an ecosystem scale as well as a
Wilderness Character

CHAPTER 3: AFFECTED ENVIRONMENT

micro scale by habitat. On a species level, naturalness considers the numbers, populations, cycles, and interactions of individual species in a self-willed manner. Relevant human influences on naturalness may be direct or indirect, and may result from actions taken within or outside of the wilderness.

There are several examples of intentional and unintentional human actions that have influenced the natural ecology of Isle Royale. During the park’s mining period, fires were intentionally started to expose bedrock and minerals. More recently, through the mid 1980’s the NPS followed a policy of suppressing wildfires. Both of these policies have had a significant effect on the forest ecology of the island, influencing forest structure, composition, and function throughout the park. The unintentional introduction of canine parvovirus is credited with the crash in the island’s wolf population in the 1980’s, with associated effects seen in the moose population and the island’s forest ecology. The unintentional introduction and spread of invasive exotic species has the potential to have significant ecosystem impacts in the future.

On a smaller scale, the development of trails and campgrounds significantly alters the vegetation, wildlife and soils within the impacted areas. Additionally, research practices within the park that include trapping and radio collaring wolves, capturing and banding loons, handling bats and eaglets, and other invasive research methods detract from the “self-willed manner” and wildness of individual wildlife. This WBMP addresses these issues by identifying means of minimizing such impacts or outlining guidelines for making decisions that may impact wilderness character; research practices would be included in the Minimum Tool Decision Tree (Appendix F).

Naturalness also considers the effects of external human influences. Relevant concerns on Isle Royale include air pollution, influences on the mainland that may limit species recruitment to the island, and impacts to migratory species in their wintering grounds. All of these may have an effect on the interactions between wildlife and their habitats, the natural cycles of populations and succession, and long-term changes in the island’s ecosystem. However significant, these external influences are beyond the scope of the WBMP, though the NPS is committed to fostering research and partnerships that will continue to address these issues into the future.

3.2.2 Wilderness Experiences

Wilderness experiences are largely self-directed and will be individual, based on one’s state of mind. However, wilderness managers have an obligation to provide a setting in which people may find opportunities for solitude, primitive and unconfined experiences, risk, challenge, and self-sufficiency. Important components which can be managed include privacy, isolation, freedom from constraints, and an absence of the reminders of modern society and human distractions such as noise, large groups, and mechanization.

Although the majority of visitors to Isle Royale’s backcountry and wilderness hike on trails and camp in designated campgrounds with bridges, signs, outhouses, established tent pads, and other conveniences, the majority of the park’s land base is within the Pristine Zone where recognizable human influences and reminders are minimal; where it is possible to travel for days without encountering another person. Even within the designated trail system and in designated campgrounds, it is possible to find superlative opportunities for solitude. With unpredictable weather, few ferries, and limited services provided by the NPS or concessions, early Spring and
Wilderness Character

late Fall offer options of traveling for days alone with the added challenges of increased self-sufficiency, less maintained trails and potentially severe weather conditions.

Isle Royale offers a range of wilderness opportunities throughout the visitor season and around the park, with options available for those seeking more social or more solitary experiences, the conveniences of well maintained trails and campgrounds or the challenges of off trail travel, and options for traveling around the park by motorboat, by foot, or by paddle. Additionally, the lodge, day trips on ferries, and 2 campgrounds adjacent to developed areas offer opportunities to experience the park’s wilderness on day trips without the need for wilderness camping skills.

Existing NPS regulations and developments may detract from the wilderness character of recreation opportunities on Isle Royale, to some extent limiting unconfined experiences and self-sufficiency while adding reminders of modern society. Regulations that limit human activities within Isle Royale’s wilderness include fire bans, prohibitions on collecting plants and minerals, area closures, and required permitting. Such regulations were enacted to protect vulnerable natural and cultural resources in the park, as well as to protect appropriate wilderness experiences and wilderness character. Campgrounds with shelters and outhouses, and trails with bridges and signs succeed in making the wilderness more accessible and minimizing the extent of human impacts, but also compromise wilderness character as human developments. Human noises may also detract from the natural sounds of a wilderness. On Isle Royale such noises include the sounds of motorboats, generators, aircraft over-flights, and mechanized maintenance equipment, which can carry a great distance into the park’s wilderness. All of these concerns are within the scope of the WBMP.

3.3 Natural Resources

Isle Royale National Park is a forested archipelago surrounded by the deep, cold waters of the largest of the Great Lakes. It is located in a zone of transition, or ecotone, between two major North American ecosystems or biomes – the boreal forest and northern hardwood forest. Boreal forest vegetation dominates the northeastern part of the island where forest vegetation is strongly influenced by lake effect climate, shallow soils, and windthrow. Northern hardwoods are more dominant on Isle Royale’s southwestern portion, where soils are deeper and inland areas are less affected by Lake Superior influences than the exposed ridges and peninsulas of the northeastern end.

Detailed data of historical weather patterns at Isle Royale are sparse. Generally speaking, the climate of the park, strongly affected by Lake Superior, is characterized by short, cool summers and long, cold winters. Due to the moderating influence of the lake, summers are cooler and winters are warmer than the nearby mainland. Precipitation falls year-round, mostly as rainfall, averaging approximately 30 inches per year. Snow typically accumulates from mid-November through April. Fog is frequent near the lakeshore, especially in the spring.

Isle Royale’s biodiversity (except for birds) is generally lower than that of the mainland because the islands’ isolation has restricted migration of terrestrial organisms from outside populations. For
example, there are approximately 18 species of mammals documented on Isle Royale, far fewer than the number of mammals on the adjacent mainland. In addition, the limited land area of the archipelago likely impedes the long-term survival of viable populations of larger organisms with larger home ranges or territories. Isle Royale is thus a fascinating case study testing theories of island biogeography that attempt to explain lower species numbers (particularly mammals) and genetic change in some taxa (like fish in inland lakes) due to long-term isolation from other populations. Wolf and moose populations, together on the island only since the late 1940's, have become a classic study in predator/prey relationships. Other significant wildlife studies include studies of mercury contamination, the life history and conservation of loons, the life history of boreal chorus frogs, and monitoring of beaver, songbird, frog and toad, and raptor populations. For many people these wildlife populations and their conservation are at the essence of Isle Royale’s wilderness character.

Adversely impacted natural resources are of concern for ecological health and integrity as well as for park visitors’ perceptions. Visitors have varying tolerances for noticeably impacted resources, and at some point degraded conditions will negatively affect their experiences in the park.

3.3.1 Geology and Soils
The rocks seen on the Isle Royale archipelago today bear witness to over a billion years of geologic processes, including successive volcanism, sedimentation, uplift, and erosion. The islands’ bedrock sequence consists of thick layers of lava and sedimentary rocks that have been tilted toward the southeast; linear ridges oriented along a northeast-southwest axis are the eroded edges of individual layers of the sequence. Significant minerals in Isle Royale are copper, greenstones, datolite, and agates. The oldest rocks in the archipelago date back to the Precambrian era.

Igneous rocks, in particular volcanic ones, dominate the geology of Isle Royale, but sedimentary deposits of sandstones and conglomerates are exposed on the southwestern end of the island. Evidence of Pleistocene glaciation is visible throughout the island and includes bedrock abrasions and striations, deposits of glacial till and landscape features like drumlins and moraines. This extensive Pleistocene glaciation has left a legacy of thin soils and numerous lakes, swamps, and bogs. Higher water levels in Lake Superior in the geologic past are evidenced by inland beach ridges.

Fifteen soil series and 14 distinct soil associations have been mapped and described at Isle Royale (Shetron and Stottlemeyer, 1991). By and large, the soils on Isle Royale are derived from deposits and outwash left by retreating glaciers and meltwater. Glacial till deposits vary in thickness across the island and are much deeper toward the southwestern end. Soils in the northeastern portion of the island are thin and highly organic; these shallow soils are a major influence in the dominance of boreal forest vegetation in the northeastern part of Isle Royale. This thin mantle of organic soil, plus erosion and soil-burning fires, have combined to expose large expanses of bedrock, especially along ridges. The absence or paucity of soil is probably a limiting factor for vegetation in rocky areas. In contrast, toward the southwestern end of the park, soils are deeper, better developed and less organic. These conditions favor northern hardwoods.
Natural Resources

Human impacts to soils on a localized scale (on and adjacent to trails and campsites) include abrasion and loss of organic matter, exposure of soil through vegetation loss, compaction of soil, sterilization of soils beneath campfires, and changes in soil chemistry from human waste and organic waste (including food scraps, dishwater, and toothpaste). These impacts would affect soil porosity, biota, and/or nutrient cycling, which in turn impact vegetation, water absorption and runoff, and erosion. Park visitors may also perceive visible erosion or exposed soil as aesthetically undesirable. These impacts have been well researched and documented in recreation areas around the country and can be reasonably inferred to conditions in Isle Royale’s designated and undesignated trails and campgrounds (Leung and Marion 2000, Hendee and Dawson 2002). Although these adverse impacts would affect a very small portion of Isle Royale’s total acreage, the effects would be significant in and adjacent to the 165 miles of trails and 244 campsites in the park. From the perspective of healthy soils, compacted trail tread and campsite pads at a minimum alter drainage patterns and at maximum lead to barren or severely eroded conditions.

3.3.2 Aquatic Resources

Aquatic habitats account for more than three-quarters of Isle Royale National Park’s area, and encompass a wide spectrum of environments, from the cold, deep waters of Lake Superior to inland streams, beaver ponds, lakes, marshes, swamps, wet meadows, and bogs. The park includes 438,008 acres of Lake Superior, in addition to about 200 inland lakes and ponds totaling some 9,050 acres. There are approximately 158 linear miles of perennial streams on Isle Royale.

In spite of the ecological importance of aquatic environments, data documenting their condition in the park have been rather scarce to date, although this is beginning to change. Baseline inventories of some inland lakes’ fish communities and limited native freshwater mussel surveys have been completed, and recommendations for additional data collection and studies will be included in the park’s upcoming Fish Management Plan, and its Water Resources Management Plan, both due to be completed in 2005.

Despite Isle Royale’s remoteness and the lack of industrial or municipal discharges into its inland waters, several air-borne pollutants, capable of being transported long distances in the atmosphere, have been documented in the park’s waters, sediments, flora, and fauna. These include sulfur and zinc, mercury, organochlorines, and herbicides. Mercury, for example, has been found in the park’s Common Loons, although at levels lower than those documented in loons in most other parts of the country. Several of these heavy metals and organic compounds are subject to biomagnification; that is, reaching increasingly greater concentrations in organisms higher on the food chain.

Levels of toxic contaminants in the park’s inland lakes are a major concern. Fish monitored in 1992-94 did not exceed State of Michigan advisory levels for human consumption, but in a 1995-96 fisheries inventory, some of the fish sampled in six of the park’s inland lakes did exceed state advisory levels for mercury in particular (Kallemeyn, 2000.)

The Lake Superior portions of the park, particularly its bays and channels, are used by motorboats. Motors are prohibited on the park’s inland lakes. Accidental oil, fuel and sewage discharges from boats can all damage water quality locally. Improper hygiene and human waste
(i.e. fecal matter) disposal methods on the part of backcountry users can also cause localized bacteriological contamination on inland streams, ponds, and lakes. Of additional concern are contaminants associated with current and past maintenance activities, such as leaching from chemically treated lumber used for boardwalks and bridging, and spills of bar oil and fuel from chainsaws. Vegetable-based products have been used to minimize adverse impacts.

So far, the park seems relatively free of infestation from alien aquatic species, such as the sea lamprey (*Petromyzon marinus*), ruffe (*Gymnocephalus cernuus*), and zebra mussel (*Dreissena polymorpha*). However, the spiny water flea (*Bythotrephes cederstroemi*) has been documented within park waters, in the vicinity of Rock Harbor, and is a concern for spreading and altering the aquatic food chain. The park has identified the introduction and spread of exotic species as an issue of serious concern for the park and deserving of preventative measures.

**Fisheries and Aquatic Life**

Isle Royale’s Lake Superior and inland lakes fisheries may well be the most nationally significant natural resources of the park; 61 species are known to be present. The park’s lake trout (*Salvelinus namaycush namaycush*) population is acknowledged as the best example of a rehabilitated lake trout stock in all of Lake Superior. This population is now regarded as the healthiest as well as the most genetically diverse in the Lake. It is also the object of most fishing efforts in the Lake Superior portion of Isle Royale.

The Isle Royale population of the extremely rare coaster brook trout (*Salvelinus fontinalis*) is the only known reproducing population in U.S. waters. In fact, eggs from this population have been used by the U.S. Fish and Wildlife Service (USFWS) in efforts to re-establish the coaster brook trout elsewhere in the Great Lakes (USFWS, 1998).

Information on the other fish species in the park’s Lake Superior waters, particularly the non-game species, is scanty. Species known to be present include herring, whitefish, suckers, sturgeon, northern pike, walleye and yellow perch. Lake herring (*Coregonus artedii arcturus*) appeared to be making a strong comeback in the early 1990’s, but by 2000 appeared to have dipped again.

The most common sport-fishing fish species in the park’s inland waters are northern pike, yellow perch, walleye, rainbow trout, and brook trout. The most recent assessment of fish communities in the park’s inland lakes occurred in 1995-1997. Recently, surveys and inventories have also been undertaken for zooplankton and native mussels within Isle Royale’s inland waters, initially identifying unusually large populations of native mussels, in what are thought to be a relatively pristine state in comparison to mainland populations.

Human impacts to the park’s fish populations include the direct impact of fishing and removal of individual fish. Fishing is allowed in the park’s Lake Superior waters and inland lakes and streams. Indirect effects on fish and other aquatic life include contaminants from boating, air pollution and human waste (including dish water, soap, and other human waste at campgrounds). Of additional concern are human-transported exotic aquatic species that may become established in park waters with grave consequences for the aquatic food chain and native species. Most of these issues are beyond the scope of the WBMP and are being addressed in the forthcoming
3.3.3 Wetlands and Floodplains

Executive Order 11988 on Floodplain Management requires all Federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. Because many wetlands are located in floodplains, Executive Order 11988 has the secondary effect of protecting wetlands.

Executive Order 11990, Protection of Wetlands, states an overall wetlands policy for all agencies managing Federal lands, sponsoring Federal projects, or providing Federal funds to State or local projects. It requires Federal agencies to first avoid, then minimize adverse wetland impacts, with public input before proposing new construction projects.

A formal determination of floodplains on Isle Royale has never been conducted. In general, the short, low-gradient streams on the islands pose few flooding concerns, and the only facilities and developments near those watercourses are campgrounds and trails. Beaver dam washouts occasionally cause flash flooding in particular stream segments.

According to the National Wetlands Inventory (NWI) of the U.S. Fish and Wildlife Service, conducted in the 1970’s, a number of wetlands are present in the park, with emergent, forested, and scrub-shrub wetlands most common. This nationwide survey of wetlands and aquatic habitats is based on interpretation of high-altitude aerial photographs, not a ground survey, and its criteria differ somewhat from those used in jurisdictional wetlands delineations for permit evaluations by the Army Corps of Engineers under Section 404 of the Clean Water Act (Cowardin, et al., 1970). In addition, natural fluctuations occur that cause changes in the type and boundaries of the park’s wetlands (i.e. beaver damming, or dam blowouts.)

3.3.4 Vegetation

Isle Royale and the adjacent lake country of Minnesota, with their continuous forest mantle, abundant wetlands and lakes, and sense of vastness and isolation, are perhaps closer to the true sub-arctic environment than any other region of the United States outside Alaska. Lake Superior moderates this arctic influence, and arctic-induced coolness provides a zone of tension between the boreal forest and the northern hardwood forest.

Two major biomes occur at Isle Royale: the boreal coniferous forest and the northern hardwoods forest. The former generally occurs in the cooler, damper areas of the park, which tend to be found toward the northeast. Balsam fir (Abies balsamea) and white spruce (Picea glauca), interspersed with pockets of paper birch (Betula papyrifera), comprise the so-called "climax" of the boreal coniferous forest. Seral stages of this forest type, that is, earlier phases, are dominated by quaking aspen (Populus tremuloides) and paper birch; these areas, typified by the 1936 burn site, cover about 20% of the main island. Frequent natural disturbance in the boreal forest from windthrow, insect and fungus attack, preferential feeding by herbivores like moose, fire, drought, etc., make it a highly dynamic community.
The northern hardwoods forest biome is found on warmer, drier sites with adequate soil; these tend to be in the southwestern areas of the park. Sugar maple (*Acer saccharum*) and yellow birch (*Betula alleghaniensis*) are dominant here. This community is more stable and less disturbance-prone, including to fire, than the boreal forest. Xeric (drier) ridges are occupied by small, open stands of northern red oak (*Quercus rubra*), white pine (*Pinus strobus*), jack pine (*P. banksiana*), spruce (*Picea* sp.), red maple (*Acer rubrum*), or occasionally red pine (*P. resinosa*). In swamps and wetland forests of the park, black spruce (*Picea mariana*) and white cedar (*Thuja occidentalis*) are dominant with the occasional occurrence of non-dominant eastern tamarack (*Larix laricina*).

Non-forested areas on the ridges support patchy grasses and shrubs, primarily common juniper (*Juniperus occidentalis*), serviceberry (*Amelanchier spp.*), honeysuckle (*Lonicera spp.*), hazelnut (*Corylus americana*) and blueberry (*Vaccinium sp.*). These areas, prone to lightning because of their exposure, have burned frequently, leaving little organic soil and thwarting forest encroachment.

Bogs and beaver meadows are dominated by dense stands of sedges, rushes, grasses, and shrubs such as alder at the margins. Two kinds of bogs exist at Isle Royale. **Sphagnous bogs** are dominated by the sedge *Carex limosa*, and have little or no drainage. Other common species in sphagnous bogs are sphagnum moss (*Sphagnum sp.*), Labrador tea (*Ledum groenlandicum*), black spruce, and tamarack. **Cyperaceous bogs** are dominated by the sedge *C. lasiocarpa* and often have an active water outlet. They tend to have less Labrador tea and sphagnum moss ground cover, but support larch and white cedar as an overstory.

Overall, approximately 700 species of vascular plants have been recorded at Isle Royale, of which slightly more than 100 species are exotics. At least 30 different vegetation alliances have been identified on the island, within the two broad communities or biomes described above.

Broad characteristics of Isle Royale’s forests appear to have changed relatively little over time. Boundaries of contemporary forest communities generally correspond to those present in the park at the time of the first General Land Office survey by William Ives in 1847. Ninety percent or more of the park is in the same forest type as in 1847, differing only in seral stage, despite extensive Euro-American human use and exploitation. Yet several forest types are now undergoing significant changes. There is widespread paper birch mortality in older stands due to drought-induced stress and insect/disease attack. Balsam fir is rapidly declining on the west end due in part to intensive moose browsing, while substantial growth continues on the east end. Aging white spruce stands are also experiencing insect/disease mortality (Janke et al., 1978).

Moose browsing is creating considerable impact on several tree species, primarily balsam fir, white birch, and aspen; the Canada yew (*Taxus canadensis*), an understory bush favored as moose browse, has almost vanished from the main island. The issue of moose browsing and its effects on vegetation composition and forage quality is complex. This issue is presently the subject of a research project that began in 2000.
Researchers have postulated a "spruce-moose-savanna effect," whereby intense browsing pressure by moose suppresses replacement trees, opening up the forest canopy and possibly the island’s fire patterns by reducing forest flammability. Few balsam fir, the preferred winter browse species of moose, are able to escape the extreme browsing and make it into the canopy over much of the park. In recent years, the overall quality of moose forage has declined, especially on the southwestern end of Isle Royale. Browse activity has changed the composition, not just the density, of the understory of the park's boreal forests as well; the principal understory plant described by the Ives survey in 1848 was the Canada yew (also known as American yew, ground hemlock, or sometimes "moose candy" in reference to its popularity with these large herbivores) a highly flammable "ladder fuel.” Today the yew is rare, limited to pockets of low moose density. Thimbleberry (Rubus parviflorus), the most common understory shrub in the park now, was not even mentioned in the 1848 Ives report. Moose do not eat it, and normally it will not carry fire because of its high moisture content. These factors combine to create what may be a less fire prone forest than what was found prior to the arrival of moose on the island.

Passage Island, approximately 4 miles northeast of the main island in the park, offers a study of Isle Royale’s forests in the absence of moose. Moose have never colonized Passage Island, so Canada yew, which they have over-browsed on the main island, is still quite plentiful. Most of Passage Island’s vegetation is composed of wind-dispersed species and its vegetation is very different from the rest of the park. There is virtually no white spruce on Passage Island; in contrast it includes a large mountain ash component. This island is one of the most unique forest habitats in all of Michigan. Public access to Passage Island is afforded through a public dock and guided tours of the island. No overnight camping is allowed.

In 1936, human-caused fires burned approximately 20% of the forest on Isle Royale’s main island. The burned area furnished abundant forage for moose in the years following the fire, so much so that the moose population could not increase fast enough to avail itself of this surplus food, and a number of trees were thus able to “escape” over-browsing and mature. Aging birch and aspen forests now characterize this area.

Approximately 95% of the park is now designated as a Wildland Fire Use Zone, meaning lightning-caused fires are allowed to burn under most circumstances. In theory, this policy should allow fire to regain its stature as an ecological force on the island; yet very little acreage actually burned in the 1990’s, despite some dry summers. The combination of forest types (hardwoods, birch, and aspen) and moose browse impacts may have tempered the typical heavy build-up of fuels associated with decades of earlier fire suppression. Many fire-dependent species, such as jack pine and white pine, will decline without its return.

Most insect and disease impacts appear to be natural events, with the notable exception of blister rust on the island's white pines; with no method of control for the blister rust, an important resource on the island may eventually disappear from this alien disease. The park experienced widespread outbreaks of native tree pests in the dry years of the 1990’s, including Tortrix (Archips conflictana), which affected aspen and birch, and spruce budworm (Choristoneura fumiferana) which affected balsam fir and white spruce.
Serious concerns exist about alien species of flora at Isle Royale. Spotted knapweed (*Centaurea maculosa*) has been found in several places in the park, and is aggressively treated and mapped wherever it is found. Other invasive species of concern that have been documented within the park include mountain bluetette (*Centaurea montana*), creeping belle flower (*Campanula rapunculoides*) and garlic mustard (*Alliaria petiolata*). The park is in the early stages of inventorying, mapping, monitoring and treating these invasive exotics.

Known human impacts to the park’s vegetation occur on a large and small scale. The predominant large-scale impacts are the result of human caused fires followed by decades of fire suppression, as discussed above. On a smaller scale, the construction of trails and campgrounds, and human trampling have significant localized effects on vegetation. These impacts are most relevant to recreation and the issues being addressed in this WBMP, and more specifically include changes in plant composition, damage to and loss of vegetation, the loss of woody debris for campfires, and the creation of ideal conditions for the establishment of exotics.

Vegetation composition in and adjacent to trails and campsites shifts in response to increased light intensities from clearings, increased trampling, increased moisture from runoff, compacted soils, and the possible introduction of exotic or other disturbance-tolerant species. Most if not all vegetation is eliminated in the construction and use of designated trails and campsites. Generally, broad-leaved herbs, lichens, small shrubs, and tree seedlings have little tolerance for trampling and are quickly eliminated where people stray from designated trails and campsites. Plants in forested shady areas also appear less resilient than those in open sunny sites. A loss of original species may expose soils to increased erosion as well as creating favorable conditions for new, invading species (Hendee and Dawson 2002). The establishment and subsequent spread of invasive exotic species under these conditions is of particular concern.

Vegetation is particularly vulnerable to the impacts associated with trampling in the spring. Soils are heavily saturated following the snow-melt, creating muddy conditions that exacerbate erosion. This is compounded by trail widening due to hikers avoiding wet and muddy patches on trails, and campsite expansions resulting from people pitching their tents outside of wet or muddy tentpads. The damage caused by trampling may be longer lasting when plants are damaged before going to seed.

### 3.3.5 Terrestrial Wildlife

Isle Royale’s terrestrial wildlife is a classic example of island biogeography theory, which predicts that biodiversity on islands is less than on mainland areas, as a result of both distance from the mainland (that limits colonization) and the constrained ability of an island of a given size to support viable and genetically healthy populations. For instance, only 18 species of mammals are known to breed in the park, compared to about three times that number on the north shore of Lake Superior. Many species of mammals cannot swim across Lake Superior and will not cross the ice if the lake freezes. Colonization of the island is by chance dispersal with the constant possibility of natural extinction. Caribou, coyote and lynx have all disappeared from Isle Royale since the arrival of Euro-Americans.

Mammals include the red fox, snowshoe hare, mink, short-tailed weasel, beaver, deer mouse, red squirrel, muskrat, river otter, pine martin, and six species of bats (little brown myotis, northern
long ear, silver haired, red bat, hoary bat, and big brown bat). The two best-known mammals on Isle Royale are the moose and the timber wolf, the subject of the longest-running, predator-prey research and monitoring project in the history of wildlife management. Professor Durward Allen and his graduate students initiated this project in 1958; since the mid-1970’s, Dr. Rolf Peterson of Michigan Technological University has continued the studies. Moose colonized Isle Royale in the early 1900s, either by swimming or crossing the ice from the Canadian mainland. Before wolves arrived in the late 1940’s, the moose population exploded, over-browsed the vegetation, and collapsed twice. The second population boom was aided by the production of vast amounts of new browse after the 1936 fire (Peterson, 1977).

No animal symbolizes the essence of Isle Royale wilderness more than the timber wolf. Its widely fluctuating numbers range annually from 12 to 50 with some dramatic dips and rises in the 1990s. In the winter of 2003-2004 there were 29 wolves and 3 packs in the park. Studying these population dynamics increases our knowledge and awareness of the park ecosystem. In the late 1980s concern over a rapidly dwindling population led to radio collaring and extracting blood samples from a few wolves on Isle Royale for the first time. With this, researchers discovered that canine parvovirus had infected the population and was partially to blame for the decline. Since then a few wolves have been trapped, collared and tested for disease and general health every few years. Although the population has rebounded somewhat with successful reproduction since then, concern for the park’s wolf population continues. The isolated population remains vulnerable to inbreeding and disease.

There is also growing concern with the possibility of wolves losing their fear of humans. Wolves have been well protected on Isle Royale in large part because they have maintained their fear of people, avoiding encounters and maintaining a separation. There would be serious repercussions if wolves were to lose this fear and become habituated to people on the island. Wolves that have lost their fear of people and approach people, frequent campsites, or begin associating people with food pose a very serious safety risk. In Algonquin Provincial Park, Ontario, “tame” wolves in campgrounds have bitten people on multiple occasions and there are a growing number of similar incidents elsewhere in North America; all of these cases have resulted in the death of a wolf (Peterson and Vucetich 2002, McNay 2002). To prevent this at Isle Royale a primary goal is to maintain a separation between wolves and people, and provide plenty of space for wolves to escape human presence. One means of accomplishing this is to maintain the status quo in terms of where campgrounds and trails are located, where and how frequently people travel off trail, and where wolves can consistently avoid people.

The park's moose herd has increased slowly since the summer of 1996, following the population crash during the winter and spring of 1995-96. In 2004 moose numbered approximately 750. Major challenges for Isle Royale moose are winter ticks and the poor winter food supply, especially on the southwest end of the island, where these herbivores often must survive on lichens. Moose on the northeast end do better because of the large balsam fir stands growing there.

Little is known about Isle Royale’s reptiles and amphibians, but their occurrence is doubtless influenced profoundly by island biogeography as well. Three species of reptiles have been documented – the western painted turtle, red-bellied snake, and garter snake – as have seven
amphibians – the blue-spotted salamander, mud puppy, American toad, spring peeper, chorus frog, green frog, mink frog, and wood frog.

Due to migration and their much greater mobility and ability to disperse, birds are less affected by the isolation of Isle Royale than the foregoing taxa. Bird diversity tends to mirror that of nearby mainland areas in Michigan, Minnesota and Ontario. Two notable absences are the ruffed grouse and the spruce grouse, which are non-migratory and unable to make the flight across the open waters of Lake Superior to the park. Historically, the park did have a sharp-tailed grouse population, which gradually disappeared (there have only been two reported sightings in over 20 years.) Bald eagle and osprey populations continue to rebound at Isle Royale; in the 1960’s and 1970’s pesticide poisoning eliminated nesting of these two majestic raptors in the park. Both birds began nesting again at Isle Royale in the 1980’s. By 2000, 14 fledglings were produced from twelve eagle nests and seven fledglings were produced from seven osprey nests (Romanski, 2000). Nesting eagles and ospreys are sensitive to human intrusions and on Isle Royale area closures have proven effective at preventing adverse impacts from human encounters near nests.

Another raptor recovering from pesticides across North America is the peregrine falcon (*Falco peregrinus*). From 1987-91 the park released 50 young peregrine falcons from two locations on the island. Although peregrines are occasionally sighted, it is not believed that any successful nesting has yet occurred.

Isle Royale has the only known Common Loon nesting territories on the shorelines of the Great Lakes, and loons are synonymous with Isle Royale as they may be heard and seen throughout the park by virtually all visitors. The State of Michigan identified the park as one of only two management zones (out of six) maintaining a sizeable loon population, though loons were once common throughout the state and known to breed in all of the state’s counties. Loons play a vital ecological role in the aquatic food chain as a top predator by regulating the structure of aquatic communities. The NPS and research partners have monitored Isle Royale’s loon population and fledging rates since 1990. When fledging rates appeared to be lower than would be expected in an area protected as a National Park and wilderness, additional research was begun to explore loon territories in the park and mechanisms that may be influencing nesting success. As of 2003 there were 104 known territories within the park, including inland lakes as well as protected Lake Superior shorelines. Fledging rates are estimated at 0.34 park-wide. There are a limited number of published monitoring efforts with comparable methodologies and duration that would offer valid comparison for the fledging success of Isle Royale loons. Table 13 lists known comparable studies, which includes study sites that may be expected to have lower levels of protection afforded loons than on Isle Royale (e.g the state of New Hampshire) and areas of greater protection (e.g. Seney Wildlife Refuge where no recreation is allowed on the lakes).
### Table 13: Fledging Rates (per territorial loon pair) at Selected Long-term Monitoring Sites (with permission from Kaplan and others 2003)

<table>
<thead>
<tr>
<th>Site</th>
<th>Years</th>
<th>Fledging Rate</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isle Royale National Park, MI</td>
<td>1990-2002</td>
<td>0.34</td>
<td>Kaplan and others 2001</td>
</tr>
<tr>
<td>New Hampshire (state-wide)</td>
<td>1977-1999</td>
<td>0.51</td>
<td>Taylor and Vogel 2000</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1975-1990</td>
<td>0.51</td>
<td>McIntyre 1994</td>
</tr>
<tr>
<td>Stillwater Reservoir, NY</td>
<td>1977-1990</td>
<td>0.58</td>
<td>McIntyre 1994</td>
</tr>
<tr>
<td>Vermont</td>
<td>1978-1990</td>
<td>0.59</td>
<td>McIntyre 1994</td>
</tr>
<tr>
<td>Seney National Wildlife Refuge, MI</td>
<td>1987-2002</td>
<td>0.69</td>
<td>Unpublished data; Evers and others 2000</td>
</tr>
</tbody>
</table>

Several mechanisms likely influence Isle Royale fledging rates. Of primary relevance to this WBMP is the observed impact of human interactions and intrusions into loon nesting areas. Loons are known to be sensitive to a human presence on the water, especially proximity to nests. On Isle Royale and elsewhere loons have been observed flushing off their nests when paddlers approach in canoes or kayaks. Preliminary research (Kaplan and others 2003) revealed that from 1990 through 2002 as the number of permits issued to canoers on Isle Royale increased the number of chicks fledged per loon pair decreased. This research also revealed that under certain circumstances there appears to be a correlation between the number of paddlers who approach within 20 meters of a loon nest and the probability of a nest failing. More research is needed to better understand the mechanisms influencing the fledging rates of Isle Royale loons as well as the viability of the population in the park. However, this preliminary research reinforces the importance of public education and informing people of how their behavior may affect the park’s wildlife positively or negatively.

Some 58 species of forest songbirds have been documented at Isle Royale from monitoring begun in 1994. The most abundant are the white-throated sparrow, Nashville warbler, ovenbird and red-eyed vireo. Park staff have begun an annual monitoring program for neotropical migratory birds based on accepted protocols. In the 2004 Breeding Bird Survey, a total of 56 species and 1090 individuals were recorded (Egan, 2004). The number of species was slightly below the five-year (1996-2000) average of 59, and the five-year average number of individuals, 1353. The majority of these species are neotropical migrants, which comprise about half of the breeding songbirds on Isle Royale. Neotropical migrants winter in Central or South America. Studies of recreation impacts on birds reveal concern in several areas: 1) trails affect the composition of bird species by creating edge habitats that favor generalist species and are unfavorable for specialist species, 2) nest predation rates are higher along trails, and 3) intentional and unintentional wildlife feeding in campsites leads to attraction behavior and unhealthy food dependencies, a common occurrence with species of jays in particular (Leung and Marion 2000).

There are specific concerns for wildlife species during different seasons of the year. Spring and fall are times of high sensitivity for many species in boreal areas such as Isle Royale with a narrow window for breeding and rearing young. Animals that hibernate or migrate have particularly short periods of time to establish territories, attract mates, establish nesting or denning areas, and reproduce. If disturbances upset their nesting or denning periods, there is less of a chance in these northern climates that they could start again and successfully rear young before the onset of winter. Spring is also a critical period for animals such as moose and wolves.
that have already produced young and are focused on protecting these young. Fall offers other unique challenges, with wildlife storing up food or body fat in preparation for winter. Fall is a particularly critical time for moose, as they enter the rut. Protecting wildlife from human disturbances during these sensitive seasonal periods is one goal of resource management on Isle Royale.

3.3.6 Threatened and Endangered Species
This section, and Appendix G, summarizes information on species of plants and animals at Isle Royale National Park listed by the Federal government (USFWS) or the State of Michigan as Threatened or Endangered. In addition, species of special concern designated by the state are listed in Appendix G.

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544) provides the legal framework by which imperiled species of plants and animals are designated and protected by the Federal government. The Endangered Species Act of the State of Michigan (Part 365, PA 451, 1994 Michigan Natural Resources and Environmental Protection Act) provides the parallel authority for the state. The current state list became effective on March 20, 1999.

A current list exists at the park for Federally-listed flora and fauna, which includes the Threatened grey wolf and bald eagle. No park plant species are on the Federal list. The State of Michigan list of endangered and threatened species and species of special concern includes many animal species found on Isle Royale, including six species of fish and 20 species of birds, in addition to more than 60 plant species (Michigan State University, 1999a and 1999b).

Federal Endangered Species
An “Endangered species” is one that is threatened with extinction throughout all or a significant portion of its range. No Federally-listed Endangered plants or animals are known to be resident at or frequent visitors to Isle Royale. The gray wolf (Canis lupus), which has been found in the park since the late 1940s, was reclassified from Endangered to Threatened by the US Fish and Wildlife Service in April of 2003. The peregrine falcon (Falco peregrinus), which is found in the park but not known to nest, was listed as an Endangered species in 1970, but was de-listed in 1999 as a result of recovery of its populations from successful efforts at captive breeding and reintroductions.

Federal Threatened Species
Threatened species are assumed to be vulnerable to become Endangered, and so are offered protection similar to that for Endangered species. Two Federally-Threatened species occur at Isle Royale:

- **Gray wolf (Canis lupus)** --Originally, the gray wolf resided over most of the eastern United States, but it was widely extirpated as human populations grew, habitats were modified, prey species dwindled, and aggressive predator control programs targeted wolves. The wolf was officially listed as Endangered by the Federal government in 1974, then reclassified as Threatened in 2003. Wolves have been at Isle Royale since the late 1940’s, having arrived naturally by crossing Lake Superior when it was frozen one.
winter. Their population size fluctuates from about a dozen to several dozen and they feed primarily on Isle Royale’s moose herd.

- **Bald Eagle** (*Haliaeetus leucocephalus*) was also down-listed from Endangered to Threatened by the USFWS. The USFWS plans to de-list this bird as a result of its increasing numbers around the country (USFWS, 2001). The reason for historic declines in bald eagle populations in the 1950’s and 1960’s included PCBs, DDT, DDE, mercury, and disturbance and displacement by humans. DDT was the primary cause and the banning of DDT in the early 1970’s has led to a resurgence in numbers throughout the U.S. as well as in the park. Bald eagles began nesting again at Isle Royale in the 1980’s. By 2000, 14 fledglings were produced from twelve eagle nests (Romanski, 2000).

**State-Listed Species**

A number of species listed by the State of Michigan as Endangered, Threatened, or Species of Special Concern are found at Isle Royale. These species and sub-species are not afforded the same formal protection provided by the Endangered Species Act, but NPS policy grants them similar protection through a commitment to “inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species, to the greatest extent possible” (NPS 2000). Isle Royale species listed by the State of Michigan are presented in full in Appendix G.

- **State-Endangered plants**: There are seven species of state-endangered plants at Isle Royale.
- **State-Endangered animals**: There are no state-endangered mammals at Isle Royale. Of state-endangered birds, both the peregrine falcon and the short-eared owl have been at the park, but there is no known nesting by either species within park boundaries.
- **State-Threatened plants**: There are 40 species of state-threatened plants at Isle Royale.
- **State-Threatened animals**: The gray wolf is the only state-threatened mammal known to reside and breed at Isle Royale. There are three species of state-threatened fish at Isle Royale, the lake sturgeon, lake herring, and shortjaw cisco, and nine state-threatened birds; long-eared owl, red-shouldered hawk, yellow rail, merlin, common loon, bald eagle, osprey, Caspian tern, and common tern. Of these, the merlin, common loon, bald eagle, and osprey are known to breed within Isle Royale National Park.
- **Plants of Special Concern**: There are 18 plant species of special concern in the park.
- **Animals of Special Concern**: There are three fish species and/or sub-species of special concern at Isle Royale, the Siskiwit Lake cisco, kiyi, and spoonhead sculpin, and one mammal of special concern, the moose. There are nine bird species of special concern: Cooper’s hawk, northern goshawk, American bittern, black tern, northern harrier, black-crowned night heron, black-backed woodpecker, dickcissel, and yellow-headed blackbird.

In addition to the federally listed species, several state-listed species—the common loon and state-listed plants—are of particular concern to the WBMP, because of the known impacts of human activities and recreation on these species. Management actions are known to influence where people travel through the location of trails and campgrounds. The locations of loon nests and rare plants, as well as federally listed species and their habitats were considered in exploring
and evaluating any changes in the location of trails and campgrounds. These were also considered in exploring changes in public education and park regulations.

3.3.7 Natural Sounds and Sights
The natural sounds of Isle Royale’s wilderness may be compromised by human-generated mechanical noises. The natural sights may be compromised by light pollution from residential areas within the park and Thunder Bay to the north, and the sights of human developments visible from many locations throughout the park’s backcountry, including wilderness.

Measuring Levels of Sound and Noise
NPS policy considers natural sound to be an integral part of visitors’ experiences in backcountry and wilderness areas of National Parks. Many visitors to National Parks place high value on natural sound for its novelty and marked contrast to most people’s everyday experiences as well for its restorative effects. Natural soundscapes can be protected in part by controlling the intrusion of motorized and human-generated noises into protected areas (Gamann 1999.)

A logarithmic unit known as the decibel (dB) is used to represent the intensity of sound. The decibel scale is similar to the Richter scale used to measure earthquakes. On the Richter scale a 7.0 earthquake is ten times stronger than a 6.0 earthquake. On the decibel scale, an increase of 10 dB is equivalent to a 10-fold increase in intensity or power. Therefore, a sound registering 80 dB is ten times louder than a 70 dB sound. To give an example of the range of audible sounds: a whisper has an intensity of 20 dB and can just be heard; 140 dB (a jet aircraft taking off nearby) is the threshold of pain. In wilderness the typical sound level would be 30-40 dB (MPCA, 1999; EPA, 1974), with louder intervals of sound, such as birds singing nearby and geographic variations such as sound from a waterfall.

The perceived intensity of sound is not only a function of volume; certain frequencies of sound appear louder to the human ear than do other frequencies, even at the same volume. Decibel measurements of noise are therefore often "A-weighted" to take into account the fact that some sound wavelengths are perceived as being particularly loud. A soft whisper is 20 dB but on the A-weighted scale the whisper is 30 dBA. Normal speech has a sound level of about 60 dBA. Sound levels above 120 dBA begin to be felt inside the human ear as discomfort and eventually pain at still higher levels (DOD, 1978). Examples of dBA levels from some common sounds can be found in Table 14.
### Table 14: Common Noise Levels and Their Effects on the Human Ear

<table>
<thead>
<tr>
<th>Source</th>
<th>Decibel Level (dBA*)</th>
<th>Exposure Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft Whisper</td>
<td>30</td>
<td>Up to 70 dBA</td>
</tr>
<tr>
<td>Isolated Wilderness</td>
<td>30-40</td>
<td>Normal safe levels</td>
</tr>
<tr>
<td>Quiet Office</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Average Home</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>4-stroke outboard boat motor at idle</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Conversational Speech</td>
<td>66</td>
<td>Up to 90 dBA</td>
</tr>
<tr>
<td>Busy Traffic</td>
<td>75</td>
<td>May affect hearing in some individuals depending on sensitivity, exposure length, etc.</td>
</tr>
<tr>
<td>Noisy Restaurant</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>4-stroke outboard boat motor cruising</td>
<td>88.5</td>
<td></td>
</tr>
<tr>
<td>Average Factory</td>
<td>80 – 90</td>
<td></td>
</tr>
<tr>
<td>Rock Harbor Generator</td>
<td>85-105</td>
<td>Over 90 dBA</td>
</tr>
<tr>
<td>NPS Diesel Boats</td>
<td>90-100</td>
<td>Continued exposure to noise over 90 dB may eventually cause hearing impairment.</td>
</tr>
<tr>
<td>Inboard Motorboat</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Propeller aircraft</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Automobile Horn</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Chainsaw</td>
<td>90-125</td>
<td></td>
</tr>
</tbody>
</table>

*Indicates A-weighted decibel levels

**Soundscapes and Noise**

“In most environments today, soundscape signatures are comprised of two natural components, **biophony** and **geophony**, and a probable human component that includes the third, **anthrophony**. **Biophony** is the combined sound that living organisms produce in a given habitat. **Geophony** is comprised of geophysical sounds in the environment, such as the effect of wind in trees or grasses, thunder, water flow, earth movement, etc. **Anthrophony** is usually comprised of human-generated mechanical sounds, such as signals from aircraft, automobiles, generators, snowmobiles, jet-skis, radios, television sets, boom boxes, or automobile sound systems.” (Krause and Gage, 2003).

Noise is defined as unwanted sound (INCE, 1995). In a National Park setting, much of the human-generated sound (anthrophony) would be considered noise. In other circumstances, such as an orchestra concert or a conversation, human-generated noise can be pleasing. In some recreational settings such as an amusement park or a sports stadium a high-volume of human-generated noise is expected. But National Parks are among those quiet settings more sensitive to noise intrusions. Examples of these “sensitive receptors” include places such as schools, churches, hospitals, retirement homes, campgrounds, and hiking trails. Some living things are also sensitive receptors including Threatened or Endangered species, other wildlife and some people.
Even in “quiet” settings like churches and schools, a certain level of human-generated sound is expected, tolerated and even enjoyed. Sound becomes noise only when it is unwanted. Therefore a school orchestra practicing at 70 dBA would not be considered noise by the students, while a radio playing outside a classroom at just 60dBA would likely be considered noise. Determining which sounds are “noise” has to do with more than just volume. In a wilderness area, such as Isle Royale, complete silence is not required. The sounds of birds, frogs, insects, and mammals combine to form the biophony. Waves against the shore, wind in the trees, flowing water, and thunder are elements of the geophony. These sounds are expected in a wilderness and form the natural soundscape. Even at higher-than-normal decibel levels these sounds may not be considered noise because they are part of the wilderness experience.

By contrast, human-generated noise, even at low decibel levels, can have a negative impact on a visitor’s wilderness experience. While the sounds of birds and waves are expected in a wilderness, the sounds of mechanical devices are not. Lower decibel noises may seem louder in the wilderness because the soundscape is not crowded with the human-generated mechanical noises that fill modern life. An average home might have a background noise level of 50 dBA; this level is much louder than in the wilderness where 35 dBA is more typical. In these quiet conditions, a hiker on the Greenstone Trail might hear a boat motor at cruising speed in the Rock Harbor channel, miles away. This could be more disturbing to the hiker in wilderness than a much louder engine noise would be in a residential area where such noises are more common and the general background noise of the area is much louder.

**Current Noise Conditions at Isle Royale**

Detailed research on noise levels and natural landscapes has not been completed at Isle Royale. However, there are many known sources of noise penetrating the park’s wilderness. These sounds originate from sources both within and outside of designated wilderness and include:

- Human voices can be heard for long distances in the park, especially across the water, from a height, or in the evening when the wind dies. Large group sizes, and alcohol-influenced behavior can contribute to this.
- Motorboats traveling on Lake Superior can be heard for long distances in the park. Four-stroke engines (like those used on many NPS boats) are quieter than two-stroke engines, which can often be heard well into the interior of the island. Motorboats are the primary means of transportation for park personnel working throughout the park. In addition to the NPS fleet, between 1,000 and 2,000 private motorboats travel to and around Isle Royale each year.
- A commercial seaplane flies regularly to the island and along the length of the park’s border between Windigo and Rock Harbor, landing in Tobin Harbor and Washington Harbor up to three times per day. Private planes also fly to and around the park, though rarely. These planes fly directly over wilderness when landing and taking off and can be heard well into the interior of the island.
- Aircraft over-flights for resource monitoring and administrative use fly at low levels during the visitor season. Over-flights are for surveys of park resources (for example raptor counts and fire monitoring) and for administrative purposes and occur about five times per visitor season with about 2 hours directly over the island for each flight.
• During winter study aircraft over-flights are used for monitoring and researching the island wolves and moose. These flights take place when the park is closed to visitors and number about 35 per year.

• Helicopter flights are used for medical emergencies and infrequent administrative projects. People with medical emergencies may be transported by helicopter to mainland hospitals. Flights typically land outside of wilderness on the Mott Island main dock, but can also land in other designated zones. An average of about six emergency flights are needed per year. Administrative uses of helicopters in the past have included flying and hovering over wilderness for projects such as supplying batteries to a radio repeater, hauling materials for trails construction, and transporting opening crews to the island before ice-out in the spring. The frequency of these helicopter operations varies from year to year, with some years having no administrative use of helicopters.

• The Voyageur II ferry travels around the island, particularly into McCargoe Cove and its engines can be heard several miles into the interior of the island (depending on the wind direction). The Voyageur II makes three complete trips around the island each week and operates six days per week. All ferries sound horns to announce their arrival and departures; this can be heard in the wilderness daily within the vicinity of Rock Harbor and Windigo, and periodically at secondary ferry landings at McCargoe Cove, Daisy Farm, Chippewa Harbor, and Malone Bay.

• Generators power operations at Windigo, Rock Harbor and Mott Island. Diesel generators run constantly and can be heard from Tobin Harbor and Rock Harbor with the noise penetrating beyond the shore in both locations. Depending on weather conditions and seasons of the year, generators can also be heard from atop ridges on the northeast and southwest ends of the island.

• Tractors and other heavy equipment operating at Mott Island, Rock Harbor and Windigo can be heard in the interior of the island. Such equipment operates frequently throughout the visitor season depending upon the current projects.

• Power tools, cranes and barges may be used for dock maintenance adjacent to designated wilderness areas; noise levels vary with project and location.

• Power tools are used for maintaining shelters and outhouses in shoreline campgrounds both within and adjacent to wilderness.

• Chainsaws are used in designated wilderness, primarily in May and June to clear trails and campgrounds from winter windfall trees, and in September and October to clear hazard trees. Chainsaws are also used outside of designated wilderness for general maintenance.

• Trail maintenance with hand tools such as pick ax and rock bars. Noise travels well, especially from a height and across water. For example, work on the Greenstone Trail can be heard at Malone Bay under the right conditions.

• Lighthouses at Passage Island and Rock of Ages. These lighthouses constantly produce a “foghorn” type sound twice per minute. This sound can be heard at the far Northeast and Southwest ends of the park.

**Noise Impacts on Wildlife**

Beyond affecting human visitors and NPS employees, higher-volume noise could also negatively impact wildlife in the backcountry and wilderness. Most researchers agree that noise can affect
an animal’s psychology and behavior, and if it becomes a chronic stress, can be detrimental to an animal’s energy budget, reproductive success and long-term survival (Radle, 1998).

The Noise Pollution Clearinghouse has assembled the findings of several important studies on the effects of noise on wildlife. The studies they cite find that “Long-term exposure to noise can cause excessive stimulation to the nervous system and chronic stress that is harmful to the health and reproductive success of wildlife species (Fletcher, 1990).” “Behavioral and physiological responses have the potential to cause injury, energy loss (from movement away from the noise source), decrease in food intake, habitat avoidance and abandonment, and reproductive losses (National Park Service, 1994).” And “Studies have documented hearing loss caused from motorcycle noise in the desert iguana (Bondello, 1976) and the kangaroo rat, an endangered species (Bondello and Brattstrom, 1979).” (Noise Pollution Clearinghouse)

Mechanical noise might even cause certain species to abandon an area. In tests conducted at Sequoia/ King’s Canyon National Park, sponsored by the NPS and conducted by researchers from Wild Sanctuary and Michigan State University, detailed analysis of soundscapes revealed that species developed a system of audio niches so that, in general, different species did not use calls of similar frequencies in the same soundscape. The system of audio niches had also adjusted to the presence of white noise from streams and other geophonic features (Krause and Gage, 2003). This research has implications for human-generated noise, especially constant mechanical noise such as that created by generators used at Isle Royale. If species’ calls were cancelled out by the frequencies of human-generated noise, those species would likely either have to adjust the frequency of their calls, or if that were not possible, relocate to areas beyond the reach of the anthropogenic noise.

The impacts of noise on wildlife needs much more research, especially the long-term effects of medium to low-level noise intrusion, with an emphasis on endangered species. The synergistic effects of noise with other stressors on animals also need investigation (Cornman, 2001).

National Park Service Policy on Noise
The 1970 Clean Air Act authorized, and the 1972 Noise Control Act established an Office of Noise Abatement and Control in the Environmental Protection Agency. The office conducted research, coordinated the work of other agencies, and directly set noise standards for trucks, motorcycles, air compressors, truck-mounted garbage compactors, and railroads. More standards would have followed, but in 1981 Congress ended funding for the effort. In 1997, Representative Nita M. Lowey of New York, sponsored a bill to reauthorize the EPA's Office of Noise Abatement and Control. The bill never emerged from committee and was not debated on the floor of the House of Representatives. Representative Lowey has re-introduced the bill four times, most recently in 2003 and in each case the bill died in committee.

With the EPA no longer working to establish standards for noise control the task of controlling noise has fallen to states and localities. Most cities have noise ordinances and states like Colorado and Minnesota are working to establish standards of maximum acceptable noises for different settings throughout the state (i.e., rural, residential, industrial). For example, the State of Minnesota also found that sound levels in isolated wilderness are typically 30 dBA, while, at
night, in residential areas it is permissible for sound levels to exceed 50 dBA about thirty minutes of each hour (MPCA, 1999).

Without national standards on noise pollution, noise in the National Parks has become a controversial issue in recent decades. Many parks retain their historical appearance, but, due to the widespread proliferation of human-generated mechanical noise, parks no longer sound as they once did. In response, NPS management policies call for the preservation of, “to the greatest extent possible, the natural soundscapes of parks” (NPS, 2001; Section 4.9). Human activities that generate noise are to be monitored, and it is NPS policy to prevent or minimize noise that affects the natural soundscape or exceeds levels appropriate for visitor uses. Section 8.2.3 of the 2001 Management Policies directs the NPS to “strive to preserve or restore the natural quiet and natural sounds associated with the physical and biological resources of parks.” Where use of motorized equipment is necessary and appropriate, the “least impacting” equipment and vehicles should be used, consistent with public and employee safety.

Some conservationists argue that auditory solitude, that is “quietude,” was recognized by the drafters of the 1964 Wilderness Act and is implied by the act’s language (Matzner, 2001). NPS policy on wilderness management explicitly recognizes the incompatibility of man-made noise with wilderness. Since 99% of Isle Royale National Park is Congressionally-designated Wilderness, and managed so as not to impair its wilderness attributes, park management must consider potential impacts of motorized equipment to the character, aesthetics, and traditions of wilderness (NPS 2000, §6.3.4.3), even where the noise originates outside of the designated wilderness. The NPS relies heavily on motorboats, chainsaws and generators for park maintenance and operations, with occasional use of airplanes for research and transporting personnel. Some visitors to the park use motorboats and airplanes both for access and recreation.

Passing outboard motors can reach sound levels in excess of 80 dBA when heard from shore, while chainsaws and propeller aircraft can reach 120 dBA at the source. The noise from these sources, while intermittent (not constant) may occur on a daily basis and penetrate well into the backcountry and wilderness areas of the park. The extent to which the sound penetrates depends upon a variety of factors: weighted decibel level (dBA) of the noise at the source, distance of visitor from the source, number of sources operating at one time, presence of screening provided by hills or trees, and proximity to reflective materials like a wall, hillside, or to some extent, water (MPCA, 1999). Sound travels in waves and anything that absorbs or lessens the waves, such as distance or insulation, will decrease the decibel level, while anything that increases the power of the sound waves, such as additional sources of noise or reflective surfaces, will increase the decibel level. Wind speed and direction can also affect the intensity or even the detection of sound.

Therefore the noise of chainsaws operated in a dense section of forest may not travel as far as when that same equipment is operated on top of a ridge. Sound from motorboats and airplanes can travel particularly far. The noise from airplanes generally cannot be blocked much by screening because the waves are coming from above. Airplanes move very quickly and, as opposed to stationary noise sources, they travel great distances bringing their noise to large sections of a park. Finally, airplanes can fly over the most remote sections of a National Park to places where mechanical noise is a particularly unwelcome reminder of civilization. In
recognition of the ability of airplane noise to affect the entire park, Isle Royale has voluntary flight restrictions to minimize the number of low flights directly over the island.

Like airplanes, powerboats also move, potentially carrying noise to an entire lakeshore. Boat motors generally have lower decibel levels than airplanes, especially 4-stroke engines such as those used in most park boats at Isle Royale. Water is a reflective surface and sound waves bounce off of water carrying more sound to listeners in kayaks, canoes or on land, as well as to wildlife. Even a boat traveling well offshore can sometimes be heard by hikers miles away. Under certain wind conditions motorboat noise at Isle Royale can be heard from ridge tops far into the interior of the island. Conversely, an offshore wind can greatly diminish motorboat noise reaching the island.

As Section 10.1.2 above points out, the park’s designated Wilderness faces significant noise impact problems from aircraft over-flights, motorboat noise, mechanized maintenance equipment, noise from large groups and adjacent visitors in campgrounds, and portable generators at docks. Of additional concern is the noise related to park management, coming from operations at Mott Island, Windigo, and Rock Harbor. Large diesel generators support visitor services and park operations at these locations, and these generators may be heard from the Greenstone Ridge and other wilderness and backcountry areas. Noise impacts may be one of the greatest threats to the integrity of Isle Royale Wilderness.

In addition to intruding on wilderness solitude, another potential impact of human and motorized noise is on wildlife. Some scientists believe that around the world, noise pollution is contributing to the depletion of wildlife populations, although this is very difficult to quantify and has not been documented at Isle Royale in particular. Research into the effects of noise on wildlife has been growing rapidly since the 1970s, yet often presents contradictory results because of the complexity of factors and the difficulty of isolating variables; nevertheless, most researchers agree that noise can affect an animal's physiology and behavior, and if it becomes a chronic stress, can be detrimental to an animal's energy budget, reproductive success and long-term survival (Radle, 1998). The long-term effects from medium to low-level noise intrusion need much more research, with emphasis on Threatened and Endangered species. The synergistic effects of noise with other stressors on animals also need investigation (Cornman, 2001).
Cultural Resources

3.4 Cultural Resources

3.4.1 Historical Overview
Evidence of human use and habitation can be found throughout Isle Royale and in the surrounding waters. As a rich source of fish, wildlife, plants and minerals, Isle Royale has attracted human visitors and residents for millennia. Evidence of human activity is found throughout the island and in the surrounding Lake Superior waters. Cultural resources ranging from lithic scatters of chipped stone to lighthouses trace a rich story of human use spanning from Archaic Times (ca. 3000 BC) to the present. Stone tools, mining pits, shipwrecks, vernacular boats, fishing camps, summer cabins, domestic flowers and medicinal plants are all part of the cultural resources of the island.

Many sites and resources still exist from prehistoric and historic use of the island, including periods of use by Native Americans, voyageurs and fur traders, and from extensive commercial fishing and mining, Lake Superior shipping, vacationing and resort development. These cultural resources are categorized as archeological sites, historic structures, cultural objects, cultural landscapes and ethnographic resources. Many of these cultural resources are located in designated wilderness and potential wilderness additions.

The first evidence of human use of Isle Royale was left by Archaic-period aboriginal copper miners. Shallow pits remain throughout the island as testimony to the special purity of Isle Royale’s copper deposits. Native groups also came to harvest the island’s other natural resources through hunting, fishing and gathering plants and berries. Fur-bearing animals became important as European traders and trappers entered the area in the 1600s and 1700s. Explorers and missionaries of the time wrote the first historic accounts of the island.

Three phases of copper mining punctuated the nineteenth century history of the island. Coming thousands of years after prehistoric miners, historic entrepreneurs often mined the same sites that had attracted native peoples. Three phases of mining occurred in 1843-1855, 1873-1881 and 1889-1893. Success was very limited because of the high cost of operation at Isle Royale. Initial profits ended when pure copper veins pinched out. Eventually all of the copper mining companies went out of business.

Abundant trout and whitefish populations supported a century of commercial fishing. More than 100 fishing families were based on the island at the peak of the industry in the early 1900s. However, fish populations declined severely when the arrival of the decimating lamprey compounded the pressures of commercial fishing. Even though fish populations rebounded in later decades the establishment of Isle Royale National Park meant an end to widespread commercial fishing operations.

Many of Isle Royale’s early visitors were drawn by natural resources but found that the isolation and wilderness of the area limited their ability to access those resources. Around the turn of the twentieth century, tourism began to blossom at Isle Royale. The isolation and rugged nature of the area that draws visitors today appealed to Americans a century ago, as they sought escape from hot, crowded and dirty cities, as well as hay fever. Transportation companies, looking for
additional passengers, fostered the growth of tourism to Isle Royale, as they had successfully done in places like Yellowstone and Yosemite. Lodges and resorts opened at Washington Island, Belle Isle, Tobin Harbor and Rock Harbor; commercial fisherman operated other, smaller sites. The clean air and healthful attributes of the rustic setting as well as opportunities for rugged forms of recreation were advertised themes to Americans learning to cope with the changing reality of modern life. Resort tourism thrived in the first three decades of the twentieth century and helped give rise to the idea of making the island a National Park.

Many who visited Isle Royale found that they wanted a more permanent relationship with the island. The area had been surveyed in the early years of the century and land was available for purchase. Families began to build summer cabins in places like Tobin Harbor, Washington Harbor and Rock Harbor. Other people, who could not afford to or did not choose to purchase land, constructed cabins or fish camps and occupied the areas anyway. Small, protected islands or pieces of lakeshore were popular purchases and soon dozens of cabins were built on the main island and on islands in the surrounding archipelago. When the National Park was established many cabin owners were given a unique opportunity to sell their land and stay on as “life lessees.” Some of their families still live in those cabins today. Those who occupied lands without ownership were paid to relinquish their rights but most were not given the opportunity to stay.

The Civilian Conservation Corps (CCC) played an important role in the construction of trails and facilities on the island. CCC camps were located at Siskiwit Bay, Rock Harbor (Daisy Farm) and Washington Harbor. Between 1935 and 1941 they were an important presence on the island and were instrumental in fighting the 1936 fire.

As an island archipelago in the world’s largest body of fresh water, Isle Royale has a rich maritime history. The story of Isle Royale is the story of fishing boats, passenger liners and commercial shipping. To steer ships through treacherous reefs four lighthouses were established at Isle Royale. The island could be both a safe haven during storms and a deadly obstacle that has claimed numerous vessels over the years. Boat traffic brought occasional tragedy and Isle Royale is well known for its many shipwrecks. Ten major ships and many smaller vessels have sunk in Isle Royale waters and the island is an important destination for experienced divers.

Cultural sites are an important part of Isle Royale National Park. These sites document the diverse human uses of the island over thousands of years. They give perspective to the power of Lake Superior and the isolation of this wilderness island. The visitor can better understand the natural environment when confronted by past human experience at Isle Royale.

### 3.4.2 Archeological Sites

The earliest evidence of human use of the island is found in the 186 designated archeological sites found in the park. These sites include copper mining pits, native/European contact and trade sites, historic settlements and lighthouse sites. Archaic period peoples (approximately 2500 to 1000 BC) are connected to at least twelve identified archeological sites. Initial (1000 BC to 700 AD) and Terminal or Late (600 – 1650 AD) Woodland people are associated with many more sites. In all more than 1000 mining pits scattered throughout the park are attributed to these native groups.
The Minong Mine site is presently listed on the National Register of Historic Places and the majority of the other 186 archeological sites have been recommended for nomination. These sites contain potential information about the island’s earliest uses and may be determined eligible for the National Register.

Archeological sites also contain historic remnants along with prehistoric evidence. Mining pits and settlements and lighthouse-associated sites have all been identified from the historic period. Fur trade and Native/European contact goods have been found in various places. Many historic activities such as commercial fishing and fur trading occurred on or near prehistoric sites.

Many known archeological sites have been identified as a result of NPS trail and campsite construction. The location of campgrounds – primarily along the coast of Lake Superior and the inland lakes – is also the natural location of historic and prehistoric activity. Additionally, much of the park’s interior has not been surveyed and may contain numerous undiscovered sites.

3.4.3 Historic Structures
The park contains approximately 180 structures that are more than 50 years old, most of which are located within the park’s wilderness and backcountry. These structures are from the various historic eras of island use and development. Some of the structures are representative of the island’s maritime heritage, such as lighthouses and fishery sites. Many cabins, hotels and associated buildings are from the resort era and the early development of the park idea at Isle Royale.

Three of the four lighthouses within the boundaries of Isle Royale National Park are listed on the National Register of Historic Places. The 1855 Rock Harbor Lighthouse is the oldest existing structure in the park and under NPS jurisdiction. Control of the three additional lighthouses (Isle Royale Lighthouse at Menagerie Island, Passage Island Lighthouse and Rock of Ages Lighthouse) is in the process of being transferred from the Coast Guard to Isle Royale National Park. Two of these structures, Isle Royale and Rock of Ages, are listed on the National Register, while the Passage Island Lighthouse has been determined eligible but has not been nominated, yet.

Two other locations are also listed on the National Register - the Edisen Fishery in Rock Harbor and Johns Hotel in Washington Harbor. Together these locations have a total of thirteen structures listed on the Register. While these are the only structures currently listed on the Register, the Michigan State Historic Preservation Officer (SHPO) has declared another approximately 145 structures eligible for listing.

The Edisen Fishery is only one of the many sites used as commercial fishing camps. For a century, from the 1830s until the establishment of the National Park, Isle Royale was a base for commercial fishing. Other sites include Wright Island, Crystal Cove, Fisherman’s Home, Barnum Island and Washington Island. At many of these sites buildings (fish houses, net houses and cabins) along with boats and docks remain intact. However, with the exception of the Edisen Fishery, the fishermen are gone and at several of the historic fishing camps the buildings are rapidly deteriorating.
Many of the summer cabins built during the resort era remain, some of them still occupied by the families of the original occupants. Eight life leases are currently in effect, as are five Special use Permits issued to the children of lessees. Most of these leases and permits are for cabins in Tobin Harbor. Some historic buildings (including former lessee cabins and Civilian Conservation Corps facilities) have been converted to park use. Volunteer-in-Park agreements help the park manage the difficult task of maintaining this array of historic structures. Many of these structures are located in potential wilderness additions.

3.4.4 Cultural Objects

Many of the archeological items found at Isle Royale are kept at the Midwest Archeological Center in Lincoln, Nebraska. Isle Royale’s own museum collection is housed in a new storage facility in Houghton. This collection contains a general representation of the island’s cultural and natural resources. Shipwreck artifacts, commercial fishing gear and household goods, summer home items and archeological artifacts are all part of the collection. The majority of archives and artifacts located in the park are found at Mott Island, with a few items kept at the Rock Harbor and Windigo Visitor Centers, the Edisen Fishery and Rock Harbor Lighthouse.

3.4.5 Cultural Landscapes

Cultural landscapes are geographic areas of the park that include natural and cultural resources and that have cultural significance when taken as a whole. This includes areas associated with an historical event, activity or person and areas that exhibit cultural or aesthetic values. The cultural landscape program at Isle Royale is new. Currently, only the Edisen Fishery, Rock Harbor Lighthouse, Barnum/Washington Island, Fisherman’s Home and Crystal Cove have been identified as cultural landscapes, but several other areas around the park need to be evaluated for cultural significance. With control over the remaining lighthouses (Isle Royale, Rock of Ages and Passage Island) being transferred to the NPS these sites should be evaluated as cultural landscapes.

The summer cottages area of Tobin Harbor has the potential to be recognized as a cultural landscape. Many of the original cottages remain, including several that are still occupied by the families who owned the land when Isle Royale became a National Park. Two of the summer cottages in Tobin Harbor are being preserved and used by the NPS, one for the artist-in-residence program and one as a park residence. Tobin Harbor with its protected waters and many small islands was a popular choice for resort-era families looking to build a cottage at Isle Royale. It is the best-preserved example of the summer cottage community at Isle Royale.

Washington Harbor also had summer cabins but was better known for its thriving commercial fishing community. During the 1920s and 1930s over 20 fishing families lived in Washington Harbor. The entire harbor area should be evaluated for possible cultural landscape status. Aside from Edisen Fishery, the best-preserved examples of commercial fishing are Crystal Cove at the Northeast End of Amygdaloid Island and Fisherman’s Home in Siskiwit Bay. These sites retain a high degree of historical integrity and are mentioned in the General Management Plan as high priorities for restoration efforts. Other fishing sites on the north shore of the park should also be considered for cultural significance. These sites should all be evaluated as cultural landscapes.
Historic mining sites, including mine shafts, rock piles, partial structures, dams, stamp sand, wells, roads and tramway remains have the potential for cultural significance. Locations to be evaluated as cultural landscapes include Siskowit Mine, Minong Mine, Island Mine, Wendigo Mine and Todd Harbor’s Haytown Mine.

3.4.6 Ethnographic Resources
Ethnographic resources have significance to native peoples or historic island communities and include prehistoric and historic sites, structures, landscapes, fauna and objects as well as natural resources like rivers, watersheds and plant species. At present few ethnographic resources have been documented at Isle Royale National Park. The only detailed ethnographic study completed so far has been that of the culture of Scandinavian commercial fisherman in the first half of the twentieth century. A study of the vernacular boat-building traditions of the fisherman has documented their cultural traditions and use of island resources.

The NPS has documented hundreds of plant species used historically or currently by the Ojibway/Chippewa Indians. The occurrence and distribution of these plants at Isle Royale is unknown. Known examples of ethnobotanic species significant to native peoples and found at Isle Royale are sugar maple, used for sugar production and pearly everlasting, used in medicines. It is possible that the Ojibway people of the north shore of Lake Superior still use the island’s resources, however the park staff has no knowledge of such use. It is likely that additional ethnographic resources exist in the park.

3.5 Socioeconomic Environment

The affected economic region includes Houghton and Keweenaw Counties in Michigan and Cook County in Minnesota. These areas have harsh and long winters, limited economic opportunities, and a significant economic reliance on tourism and recreation. There are no major metropolitan areas in any of these counties. The largest community is the city of Houghton, MI, with a population of 7,010 (2000). The socioeconomic factors most relevant to this WBMP would be: 1) consideration for the communities of Copper Harbor and Houghton, MI, and Grand Portage, MN, where ferries to Isle Royale are based; 2) communities surrounding these areas that may offer services to Isle Royale visitors; 3) changes in NPS staffing or contracting that may affect local jobs and associated economics, and; 4) changes in NPS policies that may affect Isle Royale-dependent businesses.

3.5.1 Surrounding Communities
Keweenaw and Houghton Counties, MI, and Cook County, MN, share a similar history of a once profitable reliance on resource extraction, followed by years of economic and population decline in the mid to later 1900s, and a transition to the more recent significant economic reliance on tourism and outdoor recreation. All three counties are sparsely populated compared to the rest of their states. Population estimates in 2001 list 35,698 residents in Houghton County, 2,257 in Keweenaw County, and 5,170 in Cook County.
Income, Employment, and Poverty
Table 15 outlines the annual per capita income for each of the surrounding communities, and state and national averages from 1997-2001. All 3 counties consistently fell below the national and state averages. This region also falls below national and state averages for wages per job (Table 16). The major individual employer in the Keweenaw region (Houghton and Keweenaw Counties) is Michigan Technological University, followed by health care providers and local school systems. The major employers in Cook County are government and the service and retail industry. Table 17 outlines the region’s unemployment and poverty rates.


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<tbody>
<tr>
<td>US average</td>
<td>25,412</td>
<td>26,893</td>
<td>27,880</td>
<td>29,760</td>
<td>30,413</td>
</tr>
<tr>
<td>Michigan</td>
<td>25,509</td>
<td>26,860</td>
<td>27,906</td>
<td>29,408</td>
<td>29,629</td>
</tr>
<tr>
<td>Houghton County</td>
<td>17,863</td>
<td>18,326</td>
<td>19,180</td>
<td>20,135</td>
<td>21,141</td>
</tr>
<tr>
<td>Keweenaw County</td>
<td>17,525</td>
<td>17,389</td>
<td>18,360</td>
<td>18,856</td>
<td>18,991</td>
</tr>
<tr>
<td>Minnesota</td>
<td>27,086</td>
<td>29,092</td>
<td>30,194</td>
<td>32,231</td>
<td>33,059</td>
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<tr>
<td>Cook County</td>
<td>23,070</td>
<td>24,423</td>
<td>25,745</td>
<td>27,036</td>
<td>28,257</td>
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Table 16: National, State and County Average Wage per Job 1997-2001

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<tr>
<td>US average</td>
<td>29,805</td>
<td>31,336</td>
<td>32,715</td>
<td>34,647</td>
<td>35,550</td>
</tr>
<tr>
<td>Michigan</td>
<td>32,105</td>
<td>33,766</td>
<td>35,024</td>
<td>36,251</td>
<td>36,661</td>
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<tr>
<td>Houghton County</td>
<td>21,144</td>
<td>21,603</td>
<td>22,335</td>
<td>22,889</td>
<td>25,112</td>
</tr>
<tr>
<td>Keweenaw County</td>
<td>15,602</td>
<td>16,208</td>
<td>17,296</td>
<td>18,351</td>
<td>16,549</td>
</tr>
<tr>
<td>Minnesota</td>
<td>29,599</td>
<td>31,312</td>
<td>32,650</td>
<td>34,582</td>
<td>35,736</td>
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<tr>
<td>Cook County</td>
<td>18,808</td>
<td>19,416</td>
<td>20,046</td>
<td>20,566</td>
<td>20,634</td>
</tr>
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</table>

Source for both tables: Regional Economic Information System, Bureau of Economic Analysis, Economic and Statistics Administration, U.S. Department of Commerce, 2004 (http://www.bea.gov/regional/reis)

Table 17: Unemployment and Poverty Rates (2000 census data)

<table>
<thead>
<tr>
<th></th>
<th>Unemployment</th>
<th>Below Poverty</th>
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</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>5.8</td>
<td>10.5</td>
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<tr>
<td>Houghton County</td>
<td>7.9</td>
<td>16.8</td>
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<tr>
<td>Keweenaw County</td>
<td>11.1</td>
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<tr>
<td>Minnesota</td>
<td>4.1</td>
<td>7.9</td>
</tr>
<tr>
<td>Cook County</td>
<td>6.2</td>
<td>10.1</td>
</tr>
</tbody>
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Source: US Census Bureau http://quickfacts.census.gov

Visitor Services
The Keweenaw Peninsula, MI, and Cook County, MN, are promoted as tourist destinations with a focus on outdoor recreation. Hiking, boating, camping, fishing, and hunting are promoted in
the Spring, Summer and Fall, and snowmobiling and skiing are promoted in the Winter. All three counties include multiple state parks and other recreational lands, in addition to access to Isle Royale National Park. Many visitor services are available in the area to support this tourism industry, for the most part focusing on more rustic accommodations rather than heavily developed destination sites. These services include camping and lodging facilities, restaurants, grocery stores, gift shops, outdoor equipment retail and rental shops, automotive services, emergency and medical services, and visitor and information services. With a larger population center, there are more of these services available in Houghton County than Keweenaw and Cook Counties. Visitors to Isle Royale National Park may use these services before and after trips to the island, especially those visitors requiring accommodations the night before leaving on a morning ferry.

3.5.2 Business/Economic Activities Related to Wilderness and Backcountry
Several private companies operate under concessionaire contracts with the NPS to provide visitor services on Isle Royale. These include the sea plane, 2 ferry companies operating 3 of the 4 ferries, and the Rock Harbor Lodge with 2 stores, laundry and shower facilities, a restaurant, boat rentals, water taxi service, fishing charters, a tour boat, and lodge with motel and housekeeping units. All of these are associated with backcountry and wilderness visitors and services.

There are several smaller business operations associated with Isle Royale that operate under incidental business permits (IBPs). Outfitters, camps, backcountry guide services, fishing and dive charters, and sailing outfits are some of these permittees. To date IBPs have been issued based on the compatibility of services offered with Isle Royale’s mission and management goals and the business’s ability to adhere to park regulations. There has not been an allocation quota or any limit on the number of businesses operating within the park, or the number of trips each business may take. The number of permits issued is, however, limited by demand for the services offered by these businesses. In 2003, 44 businesses or other organizations held permits, with a total of 95 overnight trips in the park, 774 associated visitors, and 4267 backcountry overnights. This represents less than 3% of all the backcountry permits issued in 2003, and less than 10% of total backcountry overnights. The majority of these permit holders (70%) were organizations leading backpacking trips, primarily as large groups of 7-10 people.

3.5.3 Economic Contributions of Isle Royale to the Region
It is estimated that visitors to Isle Royale spend approximately $1.7 million annually in the local communities, with the bulk of this being spent on ferries, motels, and gas. It is further estimated that the direct effects of this spending in the three gateway communities is $695,000 in wages and salaries. Most of the related local jobs are with the ferry companies and motels. The tax effects of direct sales and income total $51,000 in sales tax and $134,000 in income taxes (Strong and Solomon 2004).
3.6 Park Operations

3.6.1 Organization
Isle Royale’s Superintendent is responsible for overall management and operation of the park. Park operations are organized into five divisions: Administration, Maintenance, Ranger Activities, Interpretation and Cultural Resources Management, and Natural Resources Management. The Division of Ranger Activities carries out programs that include emergency services, SCUBA diving, law enforcement, concessions management, public education, and resource protection. Natural Resources Management is responsible for natural and social sciences research, data collection, inventory and monitoring, data analysis, visitor statistics management, and report writing. Interpretation and Cultural Resources Management is responsible for cultural resources research and monitoring, public education and information services, operation of the visitor centers, issuing backcountry and incidental business permits, collecting park fees, Ranger III and group camping reservations and leading guided hikes in the park. The Maintenance Division includes trails and dock crews, and is responsible for planning, design, construction, operation, and maintenance of all facilities and infrastructure within the park’s wilderness and backcountry.

All divisions share the various facets of wilderness and backcountry management. For example, the Division of Interpretation issues backcountry permits, while the Resources Management Division manages the permitting database, visitor statistics, and related monitoring. Further, backcountry permits are issued from 5 locations; Houghton, Rock Harbor, Windigo, the Ranger III, and the US Forest Service Visitor Center in Grand Marais, MN. Due to technological challenges on the island, none of these permitting stations are electronically linked. All of these factors hinder communication and coordination of backcountry services and recreation management in the park.

3.6.2 Staffing and Budget
The park as a whole is allotted approximately 56 FTE’s (Full Time Equivalency positions), which include all permanent staff as well as seasonal and field positions. Only about ¼ of the positions work year-round. Between May and September the majority of Isle Royale employees are stationed on the island, based out of Rock Harbor, Mott, and Windigo. From November through April year-round employees are based out of the Houghton headquarters.

In 2003 Isle Royale’s annual base budget, allocated from Congress, was $3.2 million. The majority of this covered personnel and park operations such as utilities operations on the island, and the operation, upkeep, and fueling of park boats and generators. Additional funding comes from daily use fees, fees from businesses operating within the park, and short-term special project funds. Annual spending breaks down by functional areas as follows: 1) 28% for facility operations; 2) 25% for maintenance; 3) 20% for management and administration; 4) 18% for visitor experience and enjoyment, which includes visitor center operations and visitor safety services; and 5) 9% for resource protection (ISRO Business Plan 2001). Isle Royale has access to additional project funds, which are awarded to parks on a competitive basis for anything from...
construction or maintenance projects to research. Some of the changes proposed in the WBMP may affect Isle Royale’s staffing and budget to some extent.

3.6.3 Existing Facilities
Isle Royale has a visitor center in its administrative headquarters in Houghton, MI, at the point of embarkation on the Ranger III park boat that carries visitors across Lake Superior to Isle Royale. The park’s summer headquarters are on Mott Island, about four miles southwest of Rock Harbor. Mott Island facilities include a boat repair/carpenter shop, warehouse/maintenance building, central office building, generator powerhouse, bulk fuel storage tanks, water treatment facility, and employee housing (duplexes, single-family houses, and dormitories). Most park operations are conducted or supported by employees living and working at Mott Island. NPS facilities are also located at Malone Bay, Amygdaloid Island, Windigo and Rock Harbor. Both Windigo and Rock Harbor have a generator powerhouse, bulk fuel storage tanks, water treatment facility and employee housing.

Rock Harbor, near the northeast end of Isle Royale, contains a number of visitor facilities, including docks, gas pumps, a store, restrooms, showers, laundry facilities, sewage pump-out services, ranger station, contact center, campground, auditorium, and lodging facilities. A concessionaire operates 20 housekeeping cabins, 60 motel units, restaurant, public showers, and other facilities at Rock Harbor. Full service operations run from mid June to early September every year. The concession company employs about 60 workers during peak summer season, most of whom are housed in a large dormitory. Tobin Harbor, adjacent to Rock Harbor, offers boat docks, boat rentals, and a sea plane dock.

The Windigo ranger station and visitor center are located near the southwestern end of Isle Royale. Facilities here include a dock, sea plane landing, campground, restrooms, sewage pump-out services, gas pump, general store and amphitheatre. A concession company operates the general store as well as showers, laundry, gasoline pump, and limited canoe and small boat rentals. There are no overnight concession accommodations available at Windigo.

A limited number of other visitor facilities are available at Daisy Farm, Edisen Fishery, the Malone Bay Ranger Station, and Amygdaloid Ranger Station.

Isle Royale’s network of about 20 hiking trails is approximately 165 miles in total length. The trails include approximately 14,000 maintained erosion control devices (drainage, water bars, etc.), six miles of bridging, and 160 trail and campground signs. There are 36 campgrounds in the park, over half of which are located along the Lake Superior shoreline. These campgrounds include a total of 90 pit toilets, 88 shelters, and 112 individual tent sites. Slightly less than half of the campgrounds contain group campsites, for which reservations are required. Trail and campground maintenance is conducted by a seasonal trail crew along and several volunteer groups. Insufficient maintenance and recreation management in recent years has led to increased erosion and development of informal, unauthorized trails and campsites.

The park has 70 boat docks that vary considerably in size; two-thirds are available for use by visitors. Almost half of them are associated with campgrounds along the Lake Superior shore. Some of the docks are more than 30 years old and need significant repair or replacement. Isle
Royale’s marine operations depend on its fleet of 33 boats, which range from 16 to 33 feet in length, with both diesel and gasoline fueled vessels.

3.6.4 Emergency Response Services
Without any road access to Isle Royale, emergency services rely on boats, helicopters, and seaplanes. Isle Royale’s Law Enforcement Division maintains an island-based staff of well-trained EMTs and an ongoing partnership with Keweenaw and Houghton County hospitals. Helicopter flights for emergency evacuations are available through hospitals in Thunder Bay, Ontario and Duluth, MN, with suitable landing pads located on Passage Island, Mott Island, and Windigo. The US Forest Service Beaver out of Ely, MN has also assisted the NPS in emergencies. Emergency response time is dependent on resource availability and weather, with lake and visibility conditions limiting boat, helicopter, and seaplane response times. Emergencies occurring inland further require travel by foot from the nearest dock or boat-accessible shoreline. Isle Royale’s thick forests, rugged terrain and narrow trails preclude motorized emergency response to most land areas of the park.
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The National Environmental Policy Act (NEPA) requires that an assessment of environmental impacts be completed for proposed federal actions and feasible alternatives to those actions. This includes full disclosure of any adverse environmental effects that cannot be avoided if a proposed action is implemented. Effects on historic properties are also considered in accordance with the National Historic Preservation Act (NHPA). Environmental effects and impacts for these purposes are changes in the condition of a resource or environment due to a proposed action. This analysis is the basis for comparing the beneficial and adverse effects of implementing alternative actions, allowing decision-makers to determine which approach would create the greatest benefits with the fewest adverse effects. This environmental impact statement for the WBMP is on a general, programmatic level where proposed actions are general and conceptual in nature. Specific proposed actions such as new cabins in Rock Harbor, any new campsites or campgrounds, or any new trails, that would come as part of the implementation phase of this plan would require additional more detailed analysis of environmental impacts once the precise location and extent of actions is determined. These analyses may take the form of Categorical Exclusions, Environmental Assessments, or Environmental Impact Statements, depending on the scope and nature of potential impacts and will be tiered off of this document.

Following the NPS guidelines for NEPA (Director’s Order 12), there are several categories of impacts to be considered:

- **Direct effects** are caused by an action and occur at the same time and place as the action.
- **Indirect effects** are caused by an action and occur later in time, or in a different location than the action itself, but are still reasonably foreseeable.
- **Duration of the impact** may be short or long-term. If an impact were short-term within a short period of time (less than five years) a resource would return to its predisturbance condition. A long-term impact would change a resource to such an extent that it would not return to its predisturbance condition and for all practical purposes would be considered a permanent change.
- **Type of impact** may be beneficial or adverse.
- **Intensity of impact** may be negligible (barely detectable with little discernible effect), minor (a slight but noticeable effect with a small scale of impact), moderate (clearly noticeable, widespread appreciable effect), or major (highly noticeable, widespread effect causing substantial change).
- **Cumulative impacts** are incremental impacts of an action when added to other past, present, and reasonable foreseeable future actions, regardless of who takes the other action.
- **Impacts that cause impairment** are not permissible and are defined as those that harm the integrity of the national park resources or values.

A final step in assessing the environmental consequences of each of the alternatives is to identify the environmentally preferred alternative. This is the alternative that will promote the national environmental policy as expressed by NEPA.
Methodology

4.1 Methodology

A variety of methods were used to assess probable impacts of each alternative. Published and unpublished literature discussing the impacts of human activities on each of the resources was reviewed. This included a review of literature and data specific to Isle Royale as well as more general literature from relevant fields. Additionally, similar planning efforts and assessments of environmental consequences from other national parks and wilderness areas were reviewed. Particular attention was given to research from similar ecosystems or areas facing similar management issues.

In addition to literature reviews, relevant subject-matter experts were consulted for their professional opinions of environmental consequences of possible actions and feasible mitigative measures throughout the planning process. Some of this consultation led to additional research. The personal observations of experienced Isle Royale employees, interest groups, individual visitors, and park partners were also incorporated into the assessment process.

4.1.1 Impacts to Visitor Use and Experiences

Analysis of impacts to visitor use and experience considered: 1) annual and seasonal changes in visitation with implications for access to the park and quality of experiences; 2) opportunities for a range of appropriate recreation experiences; and 3) safety of park visitors. Isle Royale’s visitor use statistics from 1978 through 2003, permitting databases from 2001 and 2003, and Isle Royale’s backcountry travel simulation model were used in analyzing past visitor use patterns and projecting possible future scenarios.

Judging whether changes to people’s experiences are positive or negative is subject to personal preferences; what may be viewed as desirable change by some people could be considered undesirable by others. Therefore this analysis focused on quantifying impacts to visitor use levels and experiences caused by the actions proposed in each alternative, rather than subjectively determining whether these impacts would be adverse or beneficial. The 1996 survey of visitors to Isle Royale offered guidance in this area by highlighting the opportunities that were most important to visitors (Pierskalla and others 1997):

- Backcountry hikers and paddlers prioritized restorative opportunities such as observing scenic beauty, being in a natural setting, observing and hearing wildlife, and relaxing. They also sought perceptual orientations to the park (satisfying curiosity, enjoying the smells and sounds of nature, and getting to know the park), personal development (developing skills and abilities and improving physical health), and learning about nature (especially wolves and moose).
- Powerboaters and sailors who visit Isle Royale’s backcountry similarly prioritized restorative opportunities such as relaxing, observing scenic beauty, and being in a natural setting. They also sought perceptual orientations to the park (satisfying curiosity, enjoying the smells and sounds of nature, and getting to know the park), as well as opportunities to powerboat and catch fish.

More general guidance is available through NPS policies and provisions. The 1991 Vail Agenda addressed access and enjoyment as one of six strategic objectives for improving NPS stewardship and management into the 21st century, clarifying NPS goals:
While public access and enjoyment are essential elements of the purpose of the park system, it should not be the goal of the National Park Service to provide visitors with mere entertainment and recreation. Rather, the objective should be to provide the public with enjoyment and enlightenment attendant to those park attributes that constitute each unit’s special meaning and contribution to the national character. This is use and enjoyment on the park’s terms. It is entertainment, education, and recreation with meaning. (NPS 1991 p. 20)

In weighing access and experience, further guidance is offered. “Limitations on access and use are appropriate where they threaten impairment of a unit’s special qualities, and where they significantly threaten the quality of overall visitor experience (through, for example, crowding or mutually disturbing recreational activities).” (NPS 1991 p. 21)

Impacts to visitor use and experiences were determined considering the best available information, including several years of visitor surveys, visitation data and annual reports, and visitor distribution modeling, all of which are specific to Isle Royale. Additionally, literature from wilderness and recreation research was reviewed for applicability and guidance.

The anticipated changes in visitor use levels were quantified wherever possible. However, the expected changes in visitor experiences are conceptual in nature, and therefore these impacts were assessed in general qualitative categories.

Negligible — Visitors would likely be unaware of any effects associated with implementation of the alternative.

Minor — Changes in visitor use and/or experience would be slight but detectable, would affect few visitors, and would not appreciably limit or enhance experiences identified as fundamental to the park’s purpose and significance.

Moderate — Some characteristics of visitor use and/or experience would change, and many visitors would likely be aware of the effects associated with implementation of the alternative; some changes to experiences identified as fundamental to the park’s purpose and significance would be apparent.

Major — Multiple characteristics of visitor experience would change, including experiences identified as fundamental to park purpose and significance; most visitors would be aware of the effects associated with implementation of the alternative.

4.1.2 Impacts to Wilderness Character
Working from the definitions given in the Wilderness Act and clarification under the Wilderness Management section of the WBMP (Chapter 3 §3.1), the following qualities or values of wilderness character and impacts from proposed actions can be compared in each of the alternatives:

Naturalness
• Surroundings that generally appear to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable

Wilderness Experiences
• Opportunities for solitude, privacy and isolation
Methodology

- Opportunities for primitive and unconfined recreation, with personal challenge and self-sufficiency
- Freedom from the reminders of society
- Absence of distractions such as large groups, mechanization, unnatural noise, signs, and other modern artifacts

Additionally, the analysis considers whether any actions in the alternative would have the potential to change the legal wilderness status of all or a portion of Isle Royale.

Analysis of the environmental consequences of each of the alternatives focused on the threats posed by administrative and visitor activities probable in each alternative. The authoritative text *Wilderness Management* (Hendee and Dawson 2002, pp. 355-369) provides an overview of the most significant potential threats to wilderness character. The threats most relevant to the actions proposed in this WBMP were the focus of assessing the consequences of each of the alternatives:

- Administrative access, facilities, and intrusive management: the extent to which managers use motorized and mechanical equipment affects how visitors view these devices and their views of what wilderness should be. The use of motorized equipment dilutes wilderness solitude and natural quiet and can damage resources.
- Increasing public and commercial recreational use and efforts to control them: overuse of wilderness areas has both social and ecological impacts. Concerns with recreational use may include overall increases in visitation, increases in certain areas, increases at certain critical times, as well as changes in travel patterns. The efforts to control recreational use impacts are also a threat, because regulation of activities takes away from the freedom and spontaneity that many visitors associate with a wilderness experience.

Additional serious threats to wilderness are being addressed in other management plans for Isle Royale, and are beyond the scope of the specific actions proposed in this management plan. These include:

- Invasion of exotic and nonnative species—addressed in the Natural Resources Management Plan (1999), with ongoing efforts to better understand specific species, and effective measures for control.
- Aircraft noise and airspace reservations—addressed in Isle Royale’s Aviation Management Plan (1997)
- Lack of political and financial support for wilderness protection and management—addressed in Isle Royale’s Business Management Plan (2002) and Isle Royale Strategic Plan.

Trade-offs between often competing goals are additional considerations in assessing the implications of proposed actions in each of the alternatives. David Cole (2000) outlined conflicts between wilderness attributes of wild, natural, uncrowded and free. Most relevant to the issues being addressed in the alternatives of this WBMP is the potential conflict between managing for uncrowded conditions and managing for freedom of access and spontaneity and freedom from excessive behavioral restrictions. Cole warns that compromises that establish restrictions to limit use may not fully achieve uncrowded conditions, but result in displacing...
people to locations or times that had not been previously crowded. The danger is that this would result in conditions that are more homogeneous and neither very uncrowded nor very free. Projected implications of these types of compromises will be assessed for each alternative.

The severity of impacts was also assessed. Negligible impacts would have no discernible effect on naturalness, wilderness character, or other wilderness values. Minor impacts would be detectable and affect a limited area that meets wilderness criteria. Moderate impacts would be apparent and affect a limited area that meets wilderness criteria. Major impacts would substantially alter the naturalness, wilderness character, and/or other wilderness values, eliminating the characteristics that meet the criteria for wilderness.

4.1.3 Impacts to Natural Resources
The types of impacts to natural resources that could occur as a result of visitor and administrative activities in Isle Royale’s wilderness and backcountry were assessed by first identifying the vulnerable resources within the park, then looking at the types of activities that may have impacts. The planning team assessed impacts to natural resources by reviewing relevant literature and data, consulting with subject matter experts, and applying professional judgment and experience. Isle Royale-specific data that were analyzed and incorporated into this assessment included raptor monitoring, loon monitoring, wolf and moose monitoring, the quantification and monitoring of biophysical impacts in campsites, rare plant surveys and monitoring, and recreation travel patterns related to wildlife impacts in the park.

The following threats are those most relevant to the actions proposed and were the focus of assessing the consequences of each of the alternatives:

- The impacts of recreation, research, management activities and other human actions on Threatened and Endangered species and their habitats.
- Damage to vegetation and soils associated with camping and hiking.
- The impacts of constructing and maintaining facilities on vegetation, soils, wetlands, and wildlife movement.
- Changes in visitor use patterns (both temporal and spatial) caused by management actions, and associated impacts to wildlife and seasonal vulnerabilities in other resources.

Where the condition of or threats to natural resources in Isle Royale National Park have not been studied sufficiently to quantitatively assess impacts, impacts of the alternatives were assessed qualitatively, using the following definitions for categorical severity of impacts. Negligible impacts would be at the lowest levels of detection and would have no appreciable effect on resources, values, or processes. Minor impacts would be perceptible, but slight and localized. If mitigation were needed to offset any adverse effects, it would be relatively simple to implement and would likely be successful. Moderate impacts would be readily apparent and widespread, and would result in a noticeable change to resources, values, or processes. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful. Major impacts would be readily apparent and widespread, and would result in a substantial impact to or loss of resources, values, or processes. Mitigation measures to offset adverse effects would be needed and extensive and their success could not be guaranteed.
The severity of impacts to specific resources of concern in this WBMP are defined as:

1. **Soils:**
   - **Negligible**—the impact on soils would not be measurable. Any effects on productivity or erosion potential would be slight.
   - **Minor**—an action would change a soil’s profile in a relatively small area, but it would not appreciably increase the potential for erosion of additional soil.
   - **Moderate**—an action would result in a change in quality or alteration of the topsoil, overall biological productivity, or the potential for erosion to remove small quantities of additional soil. Changes to localized ecological processes would be of limited extent.
   - **Major**—an action would result in a change in the potential for erosion to remove large quantities of additional soil or in alterations to topsoil and overall biological productivity in a relatively large area. Significant ecological processes would be altered, and landscape-level changes would be expected.

2. **Threatened and Endangered Species**
   - **No effect**—the action would cause no effect on the species status or critical habitat.
   - **Not likely to adversely affect**—the action would be expected to result in discountable effects on a species or critical habitat, or it would be completely beneficial.
   - ** Likely to adversely affect**—the action would result in a direct or indirect adverse effect on a species or critical habitat, and the effect would not be discountable or completely beneficial.

3. **Vegetation**
   - **Negligible**—the impact on vegetation (individuals and/or communities) would not be measurable. The abundance or distribution of individuals would not be affected or would be slightly affected. Ecological processes and biological productivity would not be affected.
   - **Minor**—an action would not necessarily decrease or increase the area’s overall biological productivity. An action would affect the abundance or distribution of individuals in a localized area but would not affect the viability of local or regional populations or communities.
   - **Moderate**—an action would result in a change in overall biological productivity in a small area. An action would affect a local population sufficiently to cause a change in abundance or distribution, but it would not affect the viability of the regional population or communities. Changes to ecological processes would be of limited extent.
   - **Major**—an action would result in a change in overall biological productivity in a relatively large area. An action would affect a regional or local population of a species sufficiently to cause a change in abundance or in distribution to the extent that the communities or population would not be likely to return to its/their former level (adverse), or would return to a sustainable level (beneficial). Significant ecological processes would be altered.

4. **Visual Resources**
   - **Negligible**—an action that would introduce only the perception of some additional movement by boats, vehicles, or people traveling by foot. The change to the viewshed
would be so small or localized that it would have no measurable or perceptible consequence to the visitor experience of the viewshed.

**Minor**—An action that would introduce perceptible modern human additions to the viewshed. These actions would include structures that affect a relatively small portion of the viewshed, either the foreground, middleground, or background, and have barely perceptible visual consequences to the visitor experience of the viewshed.

**Moderate**—An action that would introduce perceptible modern human additions to the viewshed. These actions would include facilities, parking, and other human-made structures that would affect a moderate portion of the viewshed. This might include the foreground and middleground, or the foreground and background. These actions would not completely alter the viewshed, but would be a visual addition to the existing conditions.

**Major**—An action would include major facilities and parking plus other human-made structures that would completely alter the foreground, middleground, and background of the existing viewshed.

5. **Water Resources**

**Negligible**—An action would have no measurable or detectable effect on water quality.

**Minor**—An action would have measurable effects on water quality. Water quality effects could include increased or decreased loads of sediment, debris, chemical or toxic substances, or pathological organisms.

**Moderate**—An action would have clearly detectable effects on water quality and potentially would affect organisms or natural ecological processes. Alternatively, an impact would be visible to visitors.

**Major**—An action would have substantial effects on water quality and potentially would affect organisms or natural ecological processes. Alternatively, an impact would be easily visible to visitors.

6. **Wildlife**

**Negligible**—The impact would not be measurable on individuals, and the local populations would not be affected.

**Minor**—An action would affect the abundance or distribution of individuals in a localized area but would not affect the viability of local or regional populations.

**Moderate**—An action would affect a local population sufficiently to cause a minor change in abundance or distribution but would not affect the viability of the regional population.

**Major**—An action would affect a regional or local population of a species sufficiently to cause a change in abundance or in distribution to the extent that the population would not be likely to return to its former level (adverse), or would return to a sustainable level (beneficial).

4.1.4 **Impacts to Cultural Resources**
The types of impacts to cultural resources that could occur as a result of human activities in Isle Royale’s wilderness and backcountry were assessed by identifying vulnerable resources, areas where the activities occur, and types of probable threats. The planning team assessed impacts to cultural resources by reviewing relevant literature and data, consulting with subject matter experts, and applying professional judgment and experience.
There has not been a lot of research done on the possible impacts of various kinds of visitor use on cultural resources at Isle Royale. Many of the cultural resources themselves are still being identified. As more research is done, the nature of the impacts will become more certain, but for the purposes of this document we have included possible impacts to cultural resources as a way to aid park staff and the public in understanding the effects of the various alternatives on the unique cultural resources of Isle Royale.

Where the condition of or threats to cultural resources in Isle Royale National Park have not been studied sufficiently to quantitatively assess impacts, impacts of the alternatives were assessed qualitatively, using the following definitions for categorical severity of impacts. Negligible impacts are those at the lowest level of detection, barely measurable with no perceptible consequences, either adverse or beneficial and with no adverse effect that would influence eligibility for the National Register of Historic Places. Minor impacts would result in little, if any change in character-defining features or loss of significance or integrity, and would not affect eligibility for the National Historic Register. A beneficial effect would include maintenance and/or preservation of a site or object. A Moderate impact would not alter character-defining features or diminish the integrity of a site or object to the point of jeopardizing eligibility for the National Historic Register. A beneficial effect would include stabilization of a site. A Major impact would diminish the significance and integrity of a site or object, and/or would jeopardize its eligibility for the National Register of Historic Places. A beneficial effect would include active intervention to restore or preserve a site. In the case of ethnographic resources a beneficial effect would encourage traditional access and/or accommodate a group’s practices or beliefs.

4.1.5 Impacts to the Socioeconomic Environment
An economic impact analysis model known as MGM2 (Money Generation Model, Version 2) was used to estimate the economic impacts of visitors to Isle Royale National Park under a base case, maximum utilization of ferryboat capacity, and four other scenarios (Strong and Solomon 2004). MGM2 is a 2003 revised version of a model that was originally developed by the National Park Service, and has been updated at Michigan State University, available in spreadsheet format. In the application to Isle Royale, several assumptions and levels of detail have been modified to determine the most accurate assessment of the overall economic effects of tourism at Isle Royale and on the three gateway communities.

The economic impacts assessed are expressed as direct or primary and secondary sales, income, jobs, and value added. These impact categories are based on up to 12 sub-categories (lodging in motel or campground, food and beverage purchase, transportation, etc.) and sector specific multipliers to capture direct, indirect and induced effects through an input-output model of the regional economy. Direct effects are the positive economic impacts on the businesses or government agencies that initially receive the tourist spending. Indirect effects are changes in sales, income and jobs that occur for those firms that supply goods and services to the businesses and agencies that sell directly to the Park visitors. Finally, induced effects are changes in regional economic activities that occur from household spending of income earned through a direct or indirect effect of the visitor spending. In addition to these economic effects the model also determines the income and sales tax revenues that can be attributed to the tourism spending.
Several steps are followed to trace through the effects of tourism spending to determine the overall regional economic impacts with MGM2. First, seasonal visitation levels must be determined, as well as their origin from the three gateway communities and by specific transportation mode. Next, visitation data are used to determine average group size and party nights, and these trips are attributed to visitation segment (backcountry camping, motel in the Park or local gateway community, etc.) including a small number of day visitors. Spending levels are then customized based on geographic origin and trip type, and allocated to specific categories for the primary, secondary and total economic effects, as well as the fiscal (state and federal tax) effects.

Additionally, impacts to businesses operating within the park were considered. This would include concessions operations running the Rock Harbor Lodge and associated services, transportations concessionaires, and Incidental Business Permit holders.

Where possible, impact levels were quantified. However, in cases where impacts would be more general, they were categorized:

- **Negligible** — Effects on socioeconomic conditions would be below or at the level of detection. There would be no noticeable change in any defined socioeconomic indicators.
- **Minor** — Effects on socioeconomic conditions would be slight but detectable.
- **Moderate** — Effects on socioeconomic conditions would be readily apparent and result in changes to socioeconomic conditions on a local scale.
- **Major** — Effects on socioeconomic conditions would be readily apparent, resulting in demonstrable changes to socioeconomic conditions in the region.

With respect to type of impact for economic and social effects, few standards or clear definitions exist as to what constitute beneficial or positive changes, and those considered adverse or negative. For example, rising unemployment is generally perceived as adverse, while increases in job opportunities and average per capita personal income are regarded as beneficial. In many instances, however, changes viewed as favorable by some members of a community are seen as unfavorable by others. For example, the impact of growth on housing markets and values may be seen as favorable by construction contractors and many homeowners, but adverse by renters and by local government officials and community groups concerned with affordability. Consequently, some of the social and economic impacts of the alternatives may be described in such a manner as to allow the individual reviewer to determine whether they would be beneficial or adverse (impact is indeterminate with respect to “type”).

### 4.1.6 Impacts to Park Operations
Impacts from actions proposed in alternatives were evaluated by assessing changes to Park Service operations that would be required to implement the proposal. Discussions of impacts are for those operations that would be new, undergo major changes, or show susceptibility to increases or decreases in operational activity. Impacts to staffing and Isle Royale’s operational organization, existing facilities, implementation and maintenance costs, and the staff’s ability to provide services to visitors were all considered.
Methodology

The analysis was conducted in terms of how park operations and facilities might vary under the different management alternatives. The analysis is generally qualitative rather than quantitative because of the conceptual nature of the alternatives. Consequently professional judgment was used to reach reasonable conclusions as to the intensity, duration, and type of potential impact.

**Duration of Impact.** Short-term impacts would be less than one year since most construction is generally completed within a year’s timeframe and would last only until all construction-related action items are completed. Long-term impacts would extend beyond one year and have a permanent effect on operations.

**Intensity of Impact.**
- **Negligible** — Park operations would not be affected or the effect would be at or below the lower levels of detection, and would not have an appreciable effect on park operations.
- **Minor** — The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on park operations.
- **Moderate** — The effects would be readily apparent and would result in a substantial change in park operations in a manner noticeable to staff and the public.
- **Major** — The effects would be readily apparent and would result in a substantial change in park operations in a manner noticeable to staff and the public and be markedly different from existing operations.

**Type of Impact.** Beneficial impacts would improve NPS operations and/or facilities. Adverse impacts would negatively affect NPS operations and/or facilities and could hinder the staff’s ability to provide adequate services and facilities to visitors and staff. Some impacts could be beneficial for some operations or facilities and adverse or neutral for others.

Financial costs of implementing proposed actions were analyzed in general terms. Minor costs would be those in the thousands of dollars, moderate costs would be in the tens of thousands of dollars, and major costs would exceed $100,000. One-time implementation costs were considered as well as long-term, on-going costs. Adverse impacts were considered to be changes that would increase operational costs and workloads for the Park Service, while beneficial impacts would decrease operating costs and workloads.
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4.2 Assessment of Impacts (Organized by Alternative)

The assessments of impacts likely to result from proposed actions are organized by alternative, starting with the actions common to all alternatives, followed by the various alternatives outlined in chapters 4 through 9, in the same order. Because the alternatives vary widely in potential area of impact, all of the impact topics are not relevant to all of the alternatives. Removing or retaining picnic tables, for example, would not have the same range of impacts as modifying how overnight use of the park’s wilderness and backcountry is managed. Only those impact topics relevant to any actions proposed in the alternative are discussed.

All of the alternatives presented would achieve the objectives of wilderness and backcountry management for Isle Royale with varying degrees of compromise and prioritization of objectives (see p. 2-3). For example, the range of alternatives present different degrees of emphasis on providing broad public access for recreation and/or managing human use so visitors have opportunities to experience solitude, remoteness, challenge, and self-sufficiency.

4.2.1 Impacts of Actions Common to All Alternatives

Many of the actions outlined in the “Actions Common to all Alternatives” chapter would have no measurable environmental consequences. The actions that could have an effect are:

- The continued limited use of chainsaws for trail maintenance in wilderness and a goal to reduce use by increasing the use of crosscut saws.
- The use of motorized equipment for maintenance and construction projects in the wilderness or backcountry campgrounds, including power tools such as drills, saws and gas-powered punjar (jackhammer)
- The proposed addition of new low-cost rustic cabins in Rock Harbor
- Continuation of cross-country camping and anchoring out policies
- Application of the Minimum Tool Decision Process for maintenance, research and management activities within Isle Royale’s wilderness.

Chainsaws and Crosscut Saws in the Wilderness

The approved use of chainsaws and the goal of increasing the use of crosscut saws within Isle Royale’s wilderness would be expected to affect visitor experiences, wilderness character, natural resources, and park operations. The continued use of chainsaws or an increased use of crosscut saws is not expected to have an effect on the park’s cultural resources. The main concerns with chainsaws concern noise and fuel and oil spills. The main concerns with increasing use of crosscuts involve associated changes in trail standards that may affect the accessibility of trails and trail conditions.

Effects on Visitor Experiences

Decreasing reliance on chainsaws and increasing the use of crosscut saws would be likely to leave some trails in a more primitive condition. This may include fallen trees to step over or walk around and more cut logs remaining in sight of the trail. This may be a beneficial change for people seeking more challenging conditions, or an adverse change for people who felt these
Impacts of Alternatives for Overnight Use

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conditions would make the trails inaccessible. Additionally, these changes may lead to increased trail widening and informal trails developing around fallen trees. These effects could be long-term and wide-spread on the park’s trails and in campgrounds, depending on the extent of increased crosscut use and decreased chainsaw use. These effects would be direct and indirect, short-term, and range from minor to major.

Effects on Wilderness Character
The noise of chainsaws adversely affects wilderness character; the impacts are short-term and localized. Chainsaws produce noise levels from 90-125 decibels. In 1974 the EPA recommended that noise in wilderness areas should not exceed 40 decibels. A change of 10 decibels is 10 times louder, and is considered to be dramatic. Therefore, the noise impacts of chainsaws would be considered to be minor to major, depending on proximity to the worksite. As chainsaw use is primarily limited to the spring and fall, the impact would be felt by a small percentage of wilderness and backcountry visitors, though these visitors may be people who place greater value on wilderness character than those choosing to visit during the park’s busier months. The increased use of crosscut saws and other hand tools would be expected to beneficially affect wilderness character through a demonstration of primitive skills and significantly lower noise levels.

Effects on Natural Resources
The noise and fuel contaminants associated with chainsaw use is likely to adversely affect natural resources on a localized scale, with impacts expected to be minor and short-term. Spills of bar oil and fuel would be expected to some extent with the use and transport of chainsaws, though using vegetable-based oils would reduce adverse impacts to soil and vegetation. Mechanical noise is known to displace wildlife, though this displacement would not be expected to be permanent. Motorized equipment would not be used in Pristine Zones (where there are no trails or campgrounds) or areas closed for sensitive resources, thereby minimizing adverse impacts on the park’s Threatened wildlife species and their habitats. The air pollution associated with chainsaw use would be expected to be minor and short-term.

Crosscut sawyers may carry a small amount of kerosene for cleaning the crosscut blade, but less would be expected to enter the surrounding environment than fuels used continuously to run chainsaws. No air pollution is associated with the use of crosscut saws. On the whole, there are fewer negative effects on natural resources from using crosscut saws than using chainsaws.

Effects on Park Staffing
Significantly more people and more time are required to maintain comparable trail standards with crosscut saws compared to chainsaws. Thus a goal of replacing some chainsaw use with crosscuts in Isle Royale’s wilderness would require either an increase in trail crew staff and time spent clearing trails, or a modification in trail standards to more primitive conditions. In many areas of the park, with abundant hardwood trees, it would be unrealistic to expect that trails could be kept open without some use of chainsaws. An increase in trail crew staff could have a moderate, long-term adverse effect on Isle Royale’s staffing and budget allocation. Both chainsaws and crosscut saws have safety risks associated with them. Because the park currently uses chainsaws for trail clearing, there would be a period of time before novice sawyers became experienced with crosscut saws, and during this learning period, there would be an increased
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possibility of repetitive motion and other injuries (just as with inexperienced chainsaw operators, there is a greater chance for injury.) Novices would require thorough training and supervision by experienced sawyers to minimize the chances of injury.

Conclusion
Overall, increasing the use of crosscut saws and decreasing the use of chainsaws for trail maintenance in Isle Royale’s wilderness would help to preserve wilderness values and protect natural resources, but there could be both adverse and beneficial impacts on visitor experiences and access to trails. Additionally, trail crew staffing and workloads would need to increase to maintain acceptable trail standards, even with an acceptance of more primitive trail conditions.

Neither continuing the limited use of chainsaws, nor reducing their use would cause impairment of any park resources or values.

Power Tools in the Wilderness and Backcountry
Power tools such as drills, saws, and gas-powered jackhammers are used to maintain shelters, docks and outhouses at shoreline campgrounds. Some of these campgrounds are within designated or potential wilderness; those that are non-wilderness are adjacent to designated wilderness. The primary concerns with using power tools in these areas is the impact of noise, and the implications for staffing, workloads, and maintenance standards if these tools were not used.

Effects on Visitor Experiences
The use of power tools by staff on park infrastructure, including maintenance and repair of historic structures, can occur where it is observed or heard by visitors. Short-term minor adverse impacts would be limited to the sight or sound of power tools being used. Visual impacts would be more limited, for example someone kayaking past an historic structure and seeing tools used that were not available historically might be disappointed. These impacts would be to the value of the cultural resource experience more than to the wilderness or backcountry as a whole.

Noise concerns would still be short-term and minor, but impacts could be broader. Power tools make a distinctive noise and with the natural quiet of Isle Royale, that noise can carry for a considerable distance, especially in the right geographic and wind conditions. Someone hiking in the wilderness, who is unable to see the work being performed on an historic property or at a campground would not be impacted visually by the use of power tools but may still hear the tools. When the tools are no longer in use, the associated impact ends quickly. The negative impacts of both the sight and sound of power tool use on are short-term and minor.

Effects on Wilderness Character
Power tools may be used to maintain campgrounds that have docks and shelters. Some of these are within designated or potential wilderness; Beaver Island, Grace Island, Todd Harbor, Birch Island, Duncan Bay, Duncan Narrows, Merritt Lane, Tookers Island, Caribou Island, Chippewa Harbor, and Hay Bay. The use of power tools in these areas with their associated noise and reminders of modern society have direct short-term adverse impacts on wilderness character. The non-wilderness dockside campgrounds where power tools are used are adjacent to wilderness, and the use of power tools here will have indirect adverse effects on wilderness.
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character; mechanized noise that can be heard a distance from the worksite. Power tools other than chainsaws (discussed above) are not used in wilderness campgrounds that do not have docks or shelters. Where the worksite is within wilderness the effects would be direct; where the worksite is in non-wilderness the effects on wilderness character would be indirect. Limiting the use of power tools, substituting quieter, battery-powered tools for generator-driven tools, and reducing the use of power tools during the times of peak visitation could lessen these adverse impacts.

Effects on Cultural Resources
Many historic structures are located in the backcountry at Isle Royale, including structures in wilderness, potential wilderness and non-wilderness. Historic structures in non-wilderness include Edisen Fishery, Barnum Island and all four of the lighthouses. Historic structures in potential wilderness include the life lessee cabins in Tobin Harbor, as well as Crystal Cove, Wright Island and Fisherman's Home. Historic structures in designated wilderness include a cabin at Chippewa Harbor, the Coast Guard cabin at Minong Island, the Bangsund Fishery, the boathouse at Savage Island, the cabin at Horner Island, the remains of the powder house at Senter Point, and the remains of the cabin at Long Point (Franks, 1999).

The positive impacts to cultural resources of power tool use range from short-term minor to long-term major. A short-term minor positive impact would be clearing the weeds around Edisen Fishery with a trimmer. A long-term major positive impact would be using power tools to stabilize an historic structure. If power tools were forbidden, some repairs to these cultural resources located outside of wilderness might be too costly to complete. Historic structures and cultural landscapes might experience beneficial impacts from the Park Service continuing to use power tools in maintenance. Power tools are not generally used in archeology and the use of such tools should not have any effect on cultural objects or ethnographic resources.

Effects on Park Operations
Using power tools is often the most efficient means of completing maintenance work in campgrounds. Relying exclusively on hand tools would increase the time required to complete a project. Therefore, continuing to use power tools in dockside campgrounds would have a long-term minor to moderate beneficial impact on park operations, aiding in meeting maintenance standards with existing staffing levels.

Conclusion
Although using power tools to maintain facilities in the wilderness and backcountry does have short-term adverse effects on wilderness character, natural and cultural resources, and visitor experiences, none of these impacts would constitute impairment of any park resources or values.

Treated Lumber in the Wilderness and Backcountry

The current policy on Isle Royale is to follow NPS policy to not use arsenic-treated lumber, commonly referred to as CCA (chromated copper arsenate) lumber. However, there is no approved policy for either using untreated lumber or using the latest technologies for more benign chemically-treated lumber, such as ACQ (alkaline copper quaternary). Lumber is used in
Isle Royale’s wilderness and backcountry for trail and campground structures such as bridges, boardwalks, and docks.

Changes that could occur under this alternative that may have measurable environmental consequences include:

- Using chemically treated lumber in the construction of trail structures such as boardwalks and bridges.
- Maintenance crews would remove unused or replaced treated lumber from the backcountry as part of project completion.

Using chemically-treated lumber in wilderness trails and campgrounds could have measurable consequences for wilderness character, natural resources, cultural resources, and park operations.

**Effects on Visitor Experience**

Visitors regularly see and use structures made of chemically-treated lumber in Isle Royale’s backcountry, and the effects on visitors can be classified in these two terms. Some visitors may be disappointed to see structures such as boardwalks and bridges in the wilderness and backcountry that are made of mass-produced, machined lumber. They may also prefer the challenge of wilderness experiences such as crossing streams without the convenience of human-made structures. Other visitors may either not notice the structures or they may not find them incongruous to the setting. Some visitors may appreciate the relative convenience of having bridges and boardwalks for travel over or through wet areas. Therefore, the effects of treated lumber on visitors are expected to be minor, short-term, and either positive or negative based on personal preferences.

**Effects on Wilderness Character**

The introduction of chemical preservatives, however benign, will have some effect on the naturalness of Isle Royale. These impacts will be localized, it is unknown if they would be long-term or short-term, and the severity of impacts on the local level are unknown, though thought to be minor to insignificant. Use of treated lumber is expected to have both adverse and beneficial effects on people’s wilderness experiences. Using lumber with a long life span reduces the long-term quantity of lumber needed to maintain bridges and boardwalks in the park, a beneficial effect. However, the knowledge of materials being artificially preserved and uncertainty over localized ecological impacts may be in conflict with some people’s wilderness values-- an adverse effect.

**Effects on Natural Resources**

Isle Royale maintenance crews have made significant efforts to re-route trails to avoid wet areas and minimize the need for bridges and boardwalks. However, the island’s abundant wetlands are impossible to avoid entirely with the existing trail system. Even with the re-routes, trail crews maintain approximately 5.3 miles of bridging and boardwalk on Isle Royale’s trails. These bridges and boardwalks effectively allow hikers to cross wetlands and creeks without trampling fragile vegetation and habitats. Importing lumber rather than relying on local materials for this amount of boardwalk and bridging would have a beneficial effect on the island’s natural resources. These benefits would be localized, long-term, moderate on a park-wide scale, and potentially major on a local scale (where relying on local materials would require removal of a
substantial number of trees and a large percentage of bigger trees). Using chemically treated lumber is expected to double the life-span of the lumber, further aiding natural resource protection by reducing the amount of lumber consumed in the long run.

However, even the most benign chemical treatments are known to leach contaminants into soil and wetlands. Research conducted by USDA Forest Service research laboratories found that copper leached from ACQ-treated wood, with elevated levels of copper detected in rainwater, soil, and sediment collected adjacent to treated wood. In their study ACQ treated wood released the highest levels of copper in the first six months, but the levels released did not appear to have measurable negative effect on populations of aquatic invertebrates. These researchers recommended using treated wood that is produced in accordance with best management practices as a means of minimizing copper release and associated adverse effects (Lebow and others 2000). Beyond this one study there has been very little research on copper leaching and biological impacts of these more recent wood preservatives, though, so the full risk of adverse impacts and their severity is unknown. One area of particular concern that perhaps warrants further research on Isle Royale is the fact that unionids and all mollusks are very sensitive to copper concentrations (Nichols and others 2001). Further research would be needed to determine if levels of copper that could potentially be released from ACQ lumber would be of concern for Isle Royale’s pristine populations of unionids.

**Effects on Cultural Resources**

Treated lumber can have positive impacts on historic structures if it is used for structural support where untreated lumber is susceptible to rotting quickly. Treated lumber would never be used for the exterior of historic buildings, or in any readily observable areas because this is not in keeping with the historic integrity of the structures. Treated lumber used in bridges and docks that are part of a cultural landscape would not look historic and might be detrimental to the landscape.

The use of treated lumber would have no predicted impacts on archeological resources, cultural objects/museum collection or ethnographic resources.

**Effects on Park Operations**

Relative to using untreated lumber or local materials, using treated lumber would have the lowest staff and time requirements over the long-term, and therefore be the least costly to the NPS. Chemically treated lumber and “green” certified, sustainably harvested lumber would be expected to cost more initially, but would be expected to have long-term savings. Removing unused lumber would add time and safety risks to each project; employees risk injury during transport of lumber into and out of the wilderness on fairly primitive trails.

**Conclusion**

Using chemically treated and sustainably-harvested lumber for maintenance projects in the wilderness and backcountry would be expected to have both adverse and beneficial effects on park resources and values. However, nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.
Low-cost Rustic Cabins in Rock Harbor

In all alternatives a few low-cost rustic cabins would be planned for construction in Rock Harbor. The intention is to provide additional options for people wishing to spend multiple nights in Rock Harbor. If this action were approved, additional on-site assessments would be necessary to determine impacts of constructing the cabins once suitable sites were identified. Thus, this assessment focuses on the more general effects of adding cabins in Rock Harbor. The general issues relevant to adding these cabins are the effects on cultural resources and visitation in the Rock Harbor area, socioeconomic effects, and effects on NPS operations. A detailed assessment of impacts to natural and cultural resources will be a critical component of future compliance once suitable sites for the cabins have been selected and prior to any construction, and would be part of a project-specific environmental review tiered off this document.

Because these cabins would not be located within wilderness, nor would they be expected to create a significant change in visitation to the park’s wilderness, they are not expected to have an effect on wilderness character.

Effects on Visitor Use and Experiences
Adding low-cost rustic cabins to Rock Harbor, with the option to rent the cabins for multiple nights would create a new option for park visitors. Currently the Rock Harbor Lodge with modern motel units and housekeeping cabins offer the only option for visitors to spend multiple consecutive nights in Rock Harbor. The Rock Harbor campground, and nearby Three Mile campground are limited to one consecutive night stay. The closest option for campers to stay in one place for more than one night is the Daisy Farm campground. Further, the cost of the Rock Harbor Lodge may preclude it as an option for many people, especially when combined with the cost of traveling to the island. These new cabins would be a long-term beneficial change for people interested in basing their visit to the park from Rock Harbor.

A small number (2-6) of new cabins would be constructed. Thus the impact to total park visitation would be negligible and any increase in the number of people in Rock Harbor and using the trails and waterways in the area would be expected to be a long-term minor adverse impact. However, there would be expected to be a greater number of people within the immediate vicinity of Rock Harbor. There is also a likelihood that these cabins could lead to more people in Rock Harbor during the shoulder season when the lodge is closed. This could have an adverse effect on solitude during these historically quieter periods.

Effects on Natural Resources
Constructing new buildings in Rock Harbor with the associated ground disturbance, trails and human presence would unavoidably have some long-term adverse effects on vegetation, soils, and wildlife. The extent and severity of these impacts would be determined in future assessments once a suitable site was selected.

Effects on Cultural Resources
The new cabins at Rock Harbor would be located adjacent to, though not in the Tobin Harbor Historic District, an important cultural landscape. The area does have known archeological sites, but not in the locations being considered for the cabins (Clark, 1995). Additional project-
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Specific compliance will determine the exact impact of this development on the park’s cultural resources.

**Socioeconomic Effects**
Because the new cabins would be intended for an experience very different from the Rock Harbor Lodge, this change would be expected to have a negligible or minor adverse economic impact on the concessions operation. This service would be very rustic, catering to people who would not be expected to be lodge customers.

**Effects on Park Facilities and Operations**
Adding new rustic cabins in Rock Harbor would have the short-term minor to moderate costs of construction. Over the long-term maintenance and upkeep of the cabins would have a minor adverse impact on the cost and workload of maintenance in Rock Harbor. These cabins would not require additional long-term staff. Additionally, there would be expected to be a modest increase in the use of utilities in Rock Harbor associated with these cabins. This could also increase the workload of maintenance staff in Rock Harbor.

**Conclusion**
Although adding new low-cost rustic cabins in Rock Harbor could result in adverse impacts to natural and cultural resources, this action would not cause impairment of park resources or values.

**Cross-Country Camping and Anchoring-Out**
All alternatives propose maintaining Isle Royale’s current policies for cross-country camping (dispersed camping off-trail) and anchoring out. Camping outside of designated campgrounds and anchoring out within park waters would continue to be permissible with special permits required and certain areas of the island closed to camping. This policy has ongoing implications for wilderness character, natural resources, cultural resources, visitor use and experiences, and park operations. Cross-country camping is intended exclusively for people seeking the unique challenges and opportunities of traveling and camping off-trail; it is not intended as an overflow for people who cannot find space in designated campgrounds. Therefore existing policies for cross-country camping are not known or expected to affect visitation numbers or business operations in the park and there are no expected socioeconomic effects.

**Effects on Visitor Experiences**
In 2003, 139 cross-country permits were issued. While cross-country camping can negatively affect wilderness character and natural resources, at present use levels, it is unlikely to have a measurable effect on visitors in the frontcountry or visitors on trails or at backcountry campgrounds. This assumes that cross-country campers are practicing Leave No Trace principles, and are not camping near established trails or campgrounds, and therefore other park visitors would not be aware of their presence during hikes or while camping. It is also likely that negative effects to natural resources would be the limiting factor if cross-country travel increased, and therefore the number of cross-country permits would be limited before visitors noticed any negative effects of cross-country travel. In frontcountry areas, the presence of cross-country campers would not make a discernible difference to day visitors.
Anchoring out could negatively impact those visitors who preferred unobstructed views of bays and nearshore areas, or if the noise from parties anchored out could be heard at shoreline campgrounds or at cross-country campsites. Conversely, some boaters feel that anchoring out adds an important element to their park experience. The 1997 Visitor Survey asked powerboaters and non-powerboaters how they felt about a management action that would limit the number of boats to not exceed available anchorage space. 87.7% of non-powerboaters felt that this would be an acceptable management action, while only 24.1% of powerboaters felt that it would be acceptable. The majority of hikers and powerboaters surveyed in the Primitive, Backcountry, and Wilderness Portal zones did not feel crowded by the numbers of powerboats anchored out during their overnight stays, and most likewise felt that numbers of boaters anchored out were at or below what they expected to see (Pierskalla and others, 1998.)

Effects on Wilderness Character
Cross-country camping and anchoring out offer the most primitive of the range of opportunities available for recreation at Isle Royale. The greatest degree of skill and self-sufficiency are required, and the greatest degree of solitude, tranquility, and primitive and unconstrained experiences may be attained. Maintaining these opportunities would have a beneficial effect on wilderness opportunities. However, were use in these areas to increase significantly, the effect could become adverse, with increasing signs of human impacts on park resources (an adverse effect on naturalness) and a decrease in opportunities for solitude and tranquility (an adverse effect on wilderness experiences). Area closures could be seen as an adverse impact to some visitors, reducing access to some of the park’s most pristine areas, while other visitors would see this step to protect the park’s wilderness as a beneficial impact. Managing and potentially limiting how many permits are issued for cross-country camping and anchoring out could prevent or minimize these adverse impacts. Ongoing inventories and monitoring of impacts from cross-country camping will alert managers to a need to make changes in area closures, the number of permits issued, special regulations, and/or public education efforts.

Effects on Natural Resources
Regulations are in place to direct cross-country campers to minimize their adverse impacts on natural resources, including a fire ban, a limit of one night camping at each site, and a requirement to camp a minimum of 100 feet away from water. Where these regulations are disregarded adverse impacts are expected.

Cross-country camping is known to have an adverse impact on vegetation and possibly on soils as well, due to trampling, damage to or loss of vegetation, loss of duff, and exposure of mineral soils. Recreation research has demonstrated that physical impacts from recreation occur rapidly and recover slowly. Initial recovery of an impacted site, with restoration efforts, is expected to take 5-10 years, with full recovery requiring up to 30 years (Cole 1997, Cole and Marion 1985). The full extent and severity of impacted sites are not fully known on Isle Royale, though few sites impacted to the point of exposed soil have been recorded. Illegal fires at these sites have also been recorded, with the adverse impact of scarring and sterilization of soils beneath the fire. Until a more thorough inventory of cross-country camping impacts is completed, it is thought that adverse impacts are localized and minor to moderate. Area closures could reverse these impacts and allow for site restoration.
The continuation of cross-country camping and anchoring-out would likely have no adverse effect on Federally Threatened species in the park (bald eagles and gray wolves), since the most sensitive areas for these species are closed to camping, with closures evaluated and updated annually. However, if there were a significant increase in the number of people camping off-trail there could be an adverse effect on wolf travel patterns and their aversion to people. For this reason the frequency and locations of cross-country camping, as well as all wolf-human encounters in the park should be closely monitored. Because State-Endangered and Threatened species are widespread in the park, area closures have not been instituted to protect all known species and their habitats. However, area closures have been and will continue to be implemented to protect known highly sensitive areas, such as all small islands in the park.

Impacts to State-protected species and rare and sensitive features from cross-country camping and anchoring out would likely be localized and not on a population level, though the severity of impacts to individuals within a population is unknown. Disruption of wildlife travel patterns, feeding and breeding would be expected to have an adverse impact on systems, as well. Ongoing inventories and monitoring of impacts from cross-country camping will alert managers to a need to change these policies.

Were cross-country camping or anchoring out to increase, there could be an adverse effect on natural quiet with increased human noise and associated displacement of songbirds and other wildlife that contribute to the natural sounds of an area. Adherence to Leave-No-Trace principles would minimize this impact, and it is expected that the adverse effect would remain minor, localized and short-term.

Effects on Cultural Resources
Isle Royale National Park has many areas that have not yet been surveyed but are expected to contain archeological sites and cultural objects. Cross-country camping could have varied impacts on these cultural resources. Off-trail campers and hikers may discover unknown artifacts and objects, possibly even new archeological sites. If they leave these sites undisturbed and report them to the NPS, cross-country campers could add to Park Service knowledge of the island’s cultural resources; a long-term, minor to moderate beneficial impact. Public education about cultural resources, how to identify them, and why they should be left onsite could increase the potential beneficial effect of cross-country travelers finding previously unknown cultural sites.

However, cross-country campers could also have a long-term minor to moderate adverse impact on archeological sites and cultural objects. They could unknowingly damage sites or objects when hiking or camping. They could also intentionally remove interesting artifacts including those unknown to park staff. Staff can mitigate this potential negative impact by informing the public of the importance of cultural artifacts and archeological sites and explaining how to recognize and respect these resources.

Anchoring out presents a limited possibility of disturbing unknown underwater archeological resources. There are no known submerged sites in areas that are currently used for anchoring out. Continuing the cross-country camping and anchoring out policies is not expected to have any new impacts on historic structures, cultural landscapes or ethnographic resources.
Effects on Park Staffing
Maintaining current policies for cross-country camping and anchoring-out, with area closures and no limit on the number of permits issued for open areas will require a commitment to monitor impacts. Knowledge of changing conditions in cross-country and anchorage areas will be vital to inform managers of the effectiveness of policies and any future need to alter these policies. This commitment will require staff time for field monitoring, data analysis, and interpretation for management applications, though on its own this commitment would not require new staff positions.

Conclusion
Continuing existing policies for anchoring out and cross-country camping on Isle Royale would not be reasonably expected to cause impairment of park resources and values, since the NPS retains the discretion to implement area closures and modify regulations for these types of uses if conditions were to degrade.

Application of the Minimum Requirement Decision Guide
The Minimum Requirement Decision Guide for Isle Royale is outlined in Appendix E. Applying the Minimum Requirement Decision Guide to maintenance, research, and management activities within Isle Royale’s wilderness could have effects on the park’s wilderness character and natural resources. This decision would not be expected to affect cultural resources, visitor use or experiences (other than wilderness experiences), socioeconomics, or park operations.

Effects on Wilderness Character
Applying the Minimum Requirement Decision Guide to maintenance, research, and administration activities is expected to have a major long-term beneficial effect on Isle Royale’s wilderness character; both wilderness experiences and naturalness. This would ensure that impacts to wilderness character are considered in identifying appropriate methods and tools for NPS activities and NPS-sponsored activities. Adverse impacts to wilderness visitors, adverse impacts to naturalness, and adverse impacts to the long-term integrity of the park’s wilderness are given due priority in determining the appropriateness of a project, its location, tools, and methods of completion.

Effects on Natural Resources
Applying the Minimum Requirement Decision Guide to scientific activities in wilderness would be expected to affect scientific research in the park to some extent, specifically the methodology that would be appropriate for approved research proposals. This process would not preclude the use of invasive methodologies that may have an adverse effect on wilderness character, but it may require some projects to alter their methodologies to be less invasive. This process also could determine that some proposals are more appropriate to be conducted outside of wilderness. This process is intended to ensure that impacts to wilderness character as well as long-term benefits to the park’s natural resources and wilderness are considered in determining the appropriateness of research proposals. Invasive methodologies could still be determined to be appropriate, where the knowledge gained would have long-term benefits to wilderness resources and values that outweigh the short-term adverse impacts of the methodologies. Therefore,
applying this process to scientific activities in the park is expected to have long-term beneficial impacts to the park’s natural resources, though there could be some short-term adverse impacts to scientific activities.

4.2.2 Impacts of Alternatives for Managing Overnight Use of the Wilderness and Backcountry

Alternative A for Overnight use: Maintain Current Management Direction

The details of Alternative A for overnight use are outlined in Chapter 2, p.56-58. Changes that could occur by continuing the status quo and may have measurable environmental consequences include:

- Visitation could increase throughout the visitor season, and would be limited only by ferry capacities.
- Over-crowding in campgrounds could increase, with an associated increase in campsite sharing and physical impacts in campsites.
- Under the current permitting system, the NPS would not have the ability to direct campers to campgrounds with available camping space, or give visitors accurate information about campground use levels.

Maintaining the current management direction with no changes in how overnight recreation is managed in Isle Royale’s wilderness and backcountry and no active management of annual visitation could affect visitor use and experiences, wilderness character, natural resources, cultural resources, area socioeconomics, and park operations. The main concerns with likely impacts are primarily related to unmanaged changes in visitation and visitor distribution, and inadequate visitor services for trip planning. It is impossible to accurately predict a future trend in visitation under this alternative. However, since this alternative would allow for a substantial increase in visitation and crowding in campgrounds, it is assumed that this could occur.

Effects on Visitor Use and Experiences

Continuing the current management direction would mean that ferry capacities and schedules would be the only limit on the total number of island visitors and their distribution throughout the season and between entry points. To date Isle Royale managers have taken the approach of accommodating all visitors who could reach the island and were interested in appropriate types of recreation. Rather than managing number of visitors, the NPS has managed impacts by concentrating recreation use on designated trails, and in designated campgrounds. This policy has had both beneficial and adverse effects on visitor use and experiences.

Chapter 3, §3.1 outlines current Isle Royale visitation in detail. In general the majority of backcountry and wilderness visitors come to the park in July and August. Backpackers are the largest visitor group in the backcountry, and the one group of visitors that appear to be on an increasing trend when the length of stay is combined with numbers of people. Since the mid 1990s motorboaters have been decreasing in number. It is unknown if these trends will continue.

Ferries do sell out periodically during late July and August, so there would be the greatest opportunity for increased visitation outside of this peak visitor season. However, it is expected
that factors such as weather, bugs, and school schedules would preclude dramatic increases in visitation in the spring and fall. Ferry tickets are sold on a first come, first served basis, so increases in lodge guests or day visitors could limit the number of campers riding ferries, and visa versa.

Because of all of the complicated variables such as visitors’ willingness to visit the park outside of July and August, changes in the percent of ferry passengers who are lodge guests or day visitors as opposed to campers, and uncertainties in realistic projections for boating trends it is very difficult to predict or quantify the extent to which Isle Royale backcountry visitors could reasonably be expected to increase. However, under this alternative the NPS would take no action that would preclude a significant increase in visitation at any point in the visitor season.

Current policies have the beneficial effect of high public access to the island for people interested in appropriate types of recreation, and who can afford transportation to the island. An additional beneficial effect is freedom of travel within the park. Travel is limited to some extent by regulations such as area closures, encouragement to camp within designated campgrounds, required site reservations for groups of 7-10 people, and a prohibition on motors within designated wilderness. However, flexible camping permits for parties with fewer than 7 people allow for a high degree of freedom and flexibility regarding where the majority of backcountry visitors choose to travel and camp.

These policies have resulted in periods of overcrowding in campgrounds, with parties needing to double up in campsites when all sites are occupied. Visitor surveys indicate the need to share campsites and the sheer number of people in campgrounds as concerns (Pierskalla and others 1997 and 1998). Continuing current or increasing levels of campsite sharing would be an adverse effect of this alternative. Because up to 25% of backcountry visitors are affected during the peak visitor season and because campground crowding would be expected to continue or increase, this would be a moderate, long-term adverse effect to visitor experience.

Currently, boaters in the backcountry may raft off when dock space is not available. Based on the results of the 1996 and 1997 visitor surveys, it appears that there is not a consensus among boaters or among non-boaters about whether rafting off is a concern, and whether the park should limit the number of boats at docks (Pierskalla et al, 1997, and 1998). See Section 3.1.3 for detailed survey results. It is also true that, based on review of past permits, dock usage is not evenly distributed throughout the park (see Table 8.) If boaters’ use of backcountry docks increased under the current management scheme, it is possible that it could have an adverse impact on boaters who do not want to raft off, and on boaters and non-boaters who are seeking a more solitary camping experience. Because dock crowding is a function of boater numbers, it is difficult to predict if the need for rafting off under the current permitting system will increase or decrease. Therefore it may be a minor to moderate adverse effect to visitor experience, based on future visitation levels.

Unmanaged changes in visitation associated with this alternative could result in increased visitation in the spring and fall. This would have the adverse effect of narrowing the range of visitor opportunities available. Currently spring and fall offer exemplary opportunities for wilderness experiences during low use times. Ferry schedules would maintain October visitation
at relatively low numbers, but could allow for a significant increase in late May and June. This would be an adverse effect for visitors seeking greater solitude and lower encounter rates with other people on trails and in campgrounds.

Effects on Wilderness Character
With no change from the current management direction, visitation could increase up to full ferry capacities. There would also be no limit on increases in boaters other than the limiting factors of fuel costs and numbers of visitors with suitable private boats. This would mean high public access to the park (a beneficial effect), but with the potential for adverse impacts to wilderness character. Continuing or increasing visitor use levels in July and August would continue or exacerbate the current problems with campground overcrowding. This would be an adverse impact to wilderness character as overcrowding reduces people’s opportunities for solitude and tranquility. It further compromises wilderness character by making many campers feel a need to rush to a campground to find an available campsite (Isle Royale 2002). Continued or increased overcrowding and the associated impacts to campsite size and soil and vegetation impacts are further expected to adversely affect the naturalness of campsites.

Were visitation to increase significantly in the spring and fall, there could be a reduction in the range of opportunities for wilderness experiences available in the park, with a loss of the lowest use times and their greatest opportunities for exemplary wilderness opportunities.

Effects on Natural Resources
With this alternative it is expected that campground crowding would continue and may increase. Because of this, campsite area and amount of exposed soil is expected to continue increasing, at least to some extent. Maintenance and redesign of some campsites may help to slow the increase.

This increased sprawl of campsites is of concern to natural resources because of associated loss of vegetation, change in vegetation composition, compaction of soil and associated changes in soil microhabitats, erosion, and potential increase in disturbance-tolerant exotic plants (Hendee and Dawson 2002). Degradation of these conditions has negative implications for aquatic resources, soil microorganisms and their role in broader ecosystem health, expansion of edge habitats favoring generalist over specialist species of birds, and the potential establishment of exotic species. These adverse impacts could be reversible with remedial action, but in the mean time would be expected to be moderate to major in the immediate vicinity of campsites, and minor to moderate on a park-wide scale.

Of additional concern to natural resources would be increasing visitation in the spring when many natural resources are more vulnerable than later in the visitor season. High water levels and saturated soils, bird nesting periods and mammals with young all contribute to high resource sensitivity in the spring. Impacts such as disturbance of nesting loons and human encounters with wolves or wolf pups could result in moderate to major adverse impacts, whereas trail widening associated with muddy conditions would be minor to moderate and very localized.
Effects on Cultural Resources

Many known archeological sites are located in and near campgrounds (Clark, 1995). Maintaining the status quo will continue to have an adverse impact on archeological resources. If an overall increase in visitation or an increase during the peak period resulted in expansion of campsites and related adverse impacts to soil and vegetation this could exacerbate adverse impacts to archeological sites. The extent of this impact could range from short-term and minor, to long-term and major depending upon the extent of the impacts and the significance and integrity of the resource affected. Archeological sites are non-renewable resources, therefore any damage to these sites or objects within them are irreversible.

Several of the new campgrounds established by the GMP are located near historic structures and within cultural landscapes. If these campgrounds became overcrowded due to unregulated increases in visitation, historic structures could suffer long-term adverse impacts resulting from visitors camping outside of designated campsites or using historic buildings for shelter. These impacts could range from minor to major, depending on the significance and integrity of the affected resource.

An inventory of ethnographic resources is ongoing. The park service does not presently know of any impacted resources, but there could be an impact to unidentified resources associated with overcrowded campgrounds and expanding campsites. This alternative, which would not limit overcrowding in campgrounds and expanding campsites could also result in long-term adverse impacts to ethnographic resources, though these resources are not yet well understood in the park.

This alternative would also allow for a significant increase in visitation in spring. Soil and vegetation, as well as archeological sites, are most vulnerable in spring. Therefore, adverse impacts to cultural resources associated with use levels in campgrounds could increase. Remedial measures such as educating campers about Leave-No-Trace principles and protection of cultural resources could minimize adverse impacts.

Socioeconomic Effects

Isle Royale visitors are estimated to spend $1.7 million a year in the three local areas surrounding Copper Harbor and Houghton, MI, and Grand Portage, MN. If visitation were to increase under this alternative, there could be a beneficial effect on local economies. It is estimated that backcountry camping and boating parties spend an average of $102 per day in the local communities, day visitors $150-$168 per day, and guests at the Rock Harbor Lodge spend $330 per party per day (including money spent on the island at the Lodge). Therefore, any increase in visitation would be expected to have a beneficial effect on local economies (Strong and Solomon 2004). However, the extent of this economic benefit is unknown with this alternative. Although annual visitation would not be actively managed by the NPS with this alternative, it is unknown to what extent visitation would increase in the future.

Effects on Park Facilities and Operations

No necessary increases in park staffing would be expected if Isle Royale were to continue in its current management direction. However, an increase in the maintenance workload associated with minimizing sprawling campsites would be expected, a long-term minor adverse effect. The
Impacts of Alternatives for Overnight Use

Limitations of the current permitting system would continue with an inability to provide visitors with up-to-date information about space availability at campgrounds. Peak visitation periods result in higher numbers of visitor complaints to rangers and emergency responses by rangers. The rangers’ workload could be expected to rise if visitor numbers increased, especially during already high visitation periods. The challenges of coordinating permitting, database management, public education, and managing visitor statistics would continue with multiple divisions involved in managing backcountry permitting. The technological and logistical problems of managing permitting from 5 unconnected permitting stations would also continue.

Conclusion

This alternative offers the greatest possibility of increases in visitation along with increases in overcrowding in campgrounds. It offers a high degree of public access and a high likelihood of adverse impacts to the park’s natural and cultural resources.

Continuing the current management direction for managing overnight use in Isle Royale’s wilderness and backcountry may be expected to cause adverse impacts, but it would not reasonably be expected to cause impairment of park resources and values.

Alternative B for Overnight Use: Prioritize Providing a Broad Range of Quality Backcountry Opportunities and Protecting Resources (the Preferred Alternative)

The details of this alternative are outlined in Chapter 2, p. 58-63. Changes that could occur under this alternative that may have measurable environmental consequences include:

- A Backcountry Office with advanced permitting would be established on the mainland.
- Some visitors may not be able to get a permit for the campground of choice on their date of choice.
- One new campsite would be added to North Desor. No new campgrounds would be added, beyond those proposed in the GMP.
- Visitation would be managed to maintain low use in the spring, allow minor to moderate increases in visitation in summer, and allow significant increases in visitation in the fall.
- Backcountry camping would be managed to decrease the frequency of campsite sharing to not more than 5% in summer (6/16-9/15).

This alternative divides the visitor season into 3 categories: 1) Spring, defined as the park’s opening on April 16 through June 15; 2) Summer, defined as June 16 through September 15; and 3) Fall, defined as September 16 through October 31. These three time periods have different concerns for visitor experiences, natural and cultural resources, and park operations.

Implementing this alternative would be expected to affect visitor use and experiences, wilderness character, natural resources, cultural resources, area socioeconomics, and park operations. The main concerns with likely changes are primarily related to maximum public access and improving public services for backcountry trip planning.

Effects on Visitor Use and Experiences
In general this alternative would be expected to have a beneficial effect on visitor experiences in the park, but may have an adverse impact on visitor access during the peak visitor season. One goal of this alternative is to improve the distribution of backcountry visitors to more efficiently use the park’s campsites. The intention is to better distribute parties to available campsites, thereby accommodating current levels or increased visitation levels while also reducing crowding and the frequency of campsite sharing. Improving visitor distribution through advanced permitting, as proposed in this alternative, would be expected to result in some visitors not being able to get a permit for their preferred campgrounds on their preferred dates. During the peak visitor season, this may also mean that fewer camping parties would be able to come to the park.

Outside of the busiest 2-week period, the number of parties permitted to stay in campgrounds falls well below the park’s camping capacity, or number of campsites (Table 18). It is thus presumed that better distributing campers to campgrounds with adequate available campsites would alleviate overcrowding in campgrounds while also accommodating current or moderate increases in visitation. This would be accomplished by issuing backcountry permits from one centralized permitting station before visitors reach the island, telling visitors how many parties are already permitted for a campground, and no longer issuing permits over a campground’s capacity.

<table>
<thead>
<tr>
<th>Time of Visitor Season</th>
<th>Daily average number of parties permitted for campgrounds</th>
<th>Park-wide campground occupancy rate (percent of 244 campsites)</th>
<th>Estimated % of parties sharing sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring (opening-6/15)</td>
<td>45</td>
<td>19%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Summer (6/16-9/15)</td>
<td>139</td>
<td>57%</td>
<td>4.5%</td>
</tr>
<tr>
<td>July and August</td>
<td>155</td>
<td>64%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Peak 2 weeks (between mid-July &amp; mid-August)</td>
<td>203</td>
<td>83%</td>
<td>24.1%</td>
</tr>
<tr>
<td>Fall (9/16-10/31)</td>
<td>25</td>
<td>10%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

There are several likely implications for visitors. Permitting would be completed prior to reaching the island, either by phone, through the Internet, or in person at a Backcountry Office at the park’s Houghton headquarters. Therefore, campers would no longer have to wait to receive a permit upon reaching the island. Some people may not be able to get a permit for their preferred campgrounds on their preferred dates. For some people this would require more advanced planning. There would be more information for trip planning than is currently available, namely the number of permits already issued for specific campgrounds. Once in the park, visitors in July and August in particular would have a much greater chance of finding an available campsite, regardless of how late in the day they reached a campground. However, for some people this change from the current permitting system may be confusing or inconvenient and be seen as a short-term adverse effect.
The two permitting types under this alternative for boaters who wish to dock overnight at a campground give them an option for a planned or unplanned trip. By planning and obtaining a backcountry permit early, boaters, like hikers, would be able to arrange an itinerary that optimized on less-crowded campgrounds ahead of time. Like hikers, boaters would not be able to exceed acceptable campsite sharing capacities. They would, however, have the benefit of being able to see how crowded or uncrowded the docking would be before ever arriving at the campground. For last minute trips, boaters would not be able to stay in the campground, but could obtain a docking or anchoring-out permit, and raft off with other willing boaters if no dock space was available. This system is expected to have minor, short-term and long-term positive effects for boaters who do not mind rafting off, and the same minor, short-term and long-term negative effects as Alternative A for boaters who prefer to dock without rafting off.

Impacts of overfull campground dock space on non-powerboaters (hikers and paddlers) would be marginally more beneficial than under the current system (Alternative A.) The benefits would occur because, with advance permitting, there would be less campsite sharing (as with other hikers), and last-minute boat arrivals would not be issued a campsite permit if no open campsites existed. This alternative would not change the current practice of allowing dock capacities to be exceeded, however, and so for those campers who feel indirect adverse effects of overfull docks (increased foot traffic through the campground, increased use of campground outhouses, increased noise), those effects would remain.

Visitors would still have the option of altering their itineraries at any point during their trips (except for groups). However, if this were to result in the frequency of campsite sharing exceeding 5%, then the number of camping permits issued may be reduced, which would reduce camping access to the park.

This alternative also proposes adding one new campsite at North Desor. Increasing this campground to 4 campsites would be consistent with Little Todd, the other campground along the west end of the Minong Trail. Under the current conditions, North Desor is one of the campgrounds most consistently used over its capacity (Table 8, Chapter 3 §3.1.3). Advanced permitting would help to prevent this overcrowding, and adding one site would increase the number of parties who could camp in the Minong Trail’s primitive campgrounds, while also retaining it as a low use area.

Under this alternative, spring visitation would be maintained at levels compatible with backcountry staffing levels, which would aid in minimizing threats to human safety. However, visitation could increase substantially in the fall, which may have an adverse effect on visitor safety. Backcountry staffing is at its lowest levels in late September and October, with few people staffing visitor centers and ranger stations and conducting backcountry patrols. Backcountry visitors during the fall face challenging weather conditions and must be more self reliant, since once they leave Windigo or Rock Harbor they are unlikely to find NPS personnel who could assist in an emergency. People choosing to visit at this time would need to be informed of these risks and the need for a great deal of self-sufficiency.
Overall, this alternative would be expected to have long-term beneficial effects on visitor use and experiences when compared to current conditions, and when compared to Alternatives C, D, and E.

**Effects on Wilderness Character**
Compared to the current management direction, this alternative is expected to better preserve a range of opportunities with variable visitation levels and associated opportunities for solitude. It would establish a threshold of not more than 5% of parties needing to double up in overcrowded campgrounds as well as maintaining low visitation in the spring. This would be expected to have a long-term moderate beneficial effect on the wilderness experiences available on Isle Royale by increasing solitude and privacy for campers, reducing pressures to rush to find a campsite, and reducing noise in campgrounds. Adding one additional campsite at North Desor would be expected to have the beneficial effect of increasing privacy and solitude for some parties camping there. However, making the campground bigger could also be seen as an adverse effect for people who prefer very small campgrounds.

Effects on naturalness would also be expected to be long-term and minor to moderately beneficial. Reducing impacts to vegetation and soils associated with overcrowded campsites would improve the naturalness of areas surrounding campsites. A commitment to not construct any additional campgrounds in the park would also be a beneficial effect, though adding one new campsite to North Desor campground would have a moderate adverse effect on the naturalness of that area.

Overall, this alternative would be expected to have long-term beneficial effects on wilderness character when compared to current conditions, and when compared to Alternatives C and D.

**Effects on Natural Resources**
Compared to current conditions, implementing this alternative would be expected to have a beneficial effect on natural resources by reducing the adverse impacts to soils, vegetation, and increases in total impacted area associated with overcrowding in campsites.

Adding one new site to North Desor, proposed in this alternative, would have the long-term adverse effect of creating a new impacted area with lost vegetation, compacted soils, a disturbed site vulnerable to exotic plants becoming established, and fragmented forest habitat. These impacts would be minor to moderate on site, but negligible to minor on a park-wide scale. Detailed plant and wildlife surveys as a part of site selection would minimize the severity of impacts.

Maintaining low visitation in spring would have a long-term moderate beneficial effect on natural resources in the park, relative to current conditions. Maintaining spring as a low visitation time would be expected to minimize adverse effects to natural resources that are particularly sensitive in spring. High water levels and saturated soils make areas in and around campsites and trails more vulnerable to long-term damage from trampling. Wildlife mating and rearing young in the spring are highly sensitive to human disturbance. For example, low paddler numbers on the inland lakes in the spring appears to be beneficial to nesting loons (Kaplan and others 2004). Maintaining low human impacts such as disturbance of nesting loons and human...
encounters with wolves or wolf pups could result in moderate to major beneficial impacts, whereas minimizing trail widening associated with muddy conditions would be minor to moderate and very localized.

This alternative could allow for a significant increase in fall visitation, which could have adverse effects on some wildlife species. The moose rut takes place in the fall, as does spawning in several fish species. Wildlife in general are preparing for winter; storing up food and body fat at this period is critical for surviving either winter on the island or migration to wintering grounds. Human disturbances at this time and associated stresses could drain critical energy. Unless there were to be a dramatic increase in fall visitation these effects would be expected to be minor to moderate and easy for wildlife to escape.

Overall, this alternative would be expected to have long-term beneficial effects on natural resources when compared to current conditions.

**Effects on Cultural Resources**

An overall reduction in sharing campsites and especially a reduction in sharing at peak times could lessen impacts related to campsite expansion, including adverse impacts to archeological sites. Increasing amounts of vegetation loss and exposed soil in campsites are of particular concern to archeological resources, as this increases the likelihood of exposing cultural objects with a subsequent threat of losing or damaging these objects. The extent that reducing campground crowding would reduce impacts to cultural resources depends on the proximity of sensitive archeological resources to campgrounds. Since many campgrounds are located on or near important archeological sites, any reduction in overcrowding is predicted to decrease the probability of related adverse impacts to archeological resources; a long-term beneficial effect.

This alternative does propose the addition of one new campsite at North Desor. An archeological survey prior to site selection and avoidance of any sensitive cultural areas would minimize the threat of adverse impacts to cultural resources associated with expanding this campground.

Several of the new GMP-approved campgrounds are located near historic structures and within cultural landscapes. If these campgrounds became overcrowded due to unregulated increases in visitation, historic structures could suffer serious long-term impacts resulting from visitors camping outside of campgrounds or using historic buildings for shelter. This alternative would help decrease the extent of overcrowding on the main island and therefore lessen the possible negative impact on historic structures and concurrently the cultural landscapes near the GMP campgrounds.

An inventory of ethnographic resources is ongoing. The park service does not presently know of any impacted resources, but there could be an impact to unidentified resources associated with overcrowded campgrounds and expanding campsites. This alternative, which limits overcrowding, would limit the possibility of negative impacts to currently unknown ethnographic resources.
This alternative features a low threshold for overcrowding combined with lower spring visitation numbers. Soil and vegetation, as well as archeological sites, are most vulnerable in spring, due in part to increased risk of erosion and exposure of buried objects.

**Socioeconomic Effects**

With this alternative, annual visitation could continue at current levels, or may decrease. It is expected that this alternative may not be able to fully accommodate current peak visitation levels in August, so the number of camping parties coming to the park could decrease to some extent if they were not able to come at a different time. If the number of camping parties coming to the park during the peak time were to decrease, there could be more room available on the ferries for day visitors and lodge guests. An increase in day visitors would be expected to have a minor beneficial effect on local communities, as day visitors are estimated to spend more money locally than camping parties. Strong and Solomon (2004) calculated that parties visiting Isle Royale for a day trip spend an average of $150-168 per day, while camping parties spend an average of $102 per day. The bulk of this money is spent on transportation to the island and food and lodging prior to traveling to the island. Any decrease in visitation as a result of this alternative would be expected to be minor at most, so the economic impacts to the local communities would also be expected to be minor.

With advance permitting in place, concession ferry operators would require all overnight visitors to have valid permits in order to purchase ferry tickets (the same requirement that is currently in effect for groups coming out to the park now.) It is unlikely that the ferries will experience adverse effects from this system. Although visitors will be required to obtain their permits through the park’s Backcountry Office first, they will be made aware at that point of all possible ferry options, not just the NPS’s Ranger III. It is also true that each of the private ferry concessions offers unique options to potential passengers including mainland launch location, scheduling, and length of trip, so requiring an advance permit would not be expected to shift passenger numbers to the Ranger III, away from the other ferries. In addition, during peak visitation periods when the number of permits issued could be lower than under current practices, there will also be the chance to increase day-use trips aboard the ferries. Therefore, the adverse effect on concession ferries under this alternative is expected to be negligible to minor, and long term.

If the increased cost of creating a Backcountry Office were to be offset by either a permitting fee or an increase in the daily user fee, the costs to visitors of a trip to Isle Royale would increase, a minor to moderate adverse economic effect on visitors. A permitting fee would limit the costs to backcountry campers and boaters, while an increased daily user fee would increase costs to all island visitors (day visitors and lodge guests as well as campers and boaters). Currently the cost to visitors consists of the transportation fee ($100 round trip per adult for ferries, $230 round-trip per person for the seaplane, and gas money for private boaters), daily user fee ($4 per person per day), and any incidental expenses.

Small businesses and Incidental Business Permit holders would use the same system of permitting as all other backcountry visitors. As the availability of backcountry permits became limited, there could be adverse impacts to these businesses.
**Effects on Park Facilities and Operations**

Implementing this alternative would be expected to have a moderate short-term cost and minor to moderate long term cost to the park. Establishing a Backcountry Office, with necessary office space, permitting computers and other equipment, creation of web-based permitting, and public notices of changes in permitting and planning for a trip to Isle Royale would be a moderate short-term adverse impact on Isle Royale’s budget, workload, and staffing. Running the Backcountry Office and central permitting would have minor to moderate long-term costs of additional staffing. Staffing a Backcountry Office could involve new positions and/or shifting existing visitor center positions to the new office.

The creation of the Backcountry Office would also be expected to have a beneficial effect on NPS operations, by improving coordination of all activities related to managing backcountry recreation. One central office would improve communication between divisions involved in the various facets of backcountry management. Management of the permitting system and its associated database, analysis of visitor statistics and recreation monitoring, and long-term development of effective backcountry education and regulations would be coordinated within this single office. Over the long-term this would be expected to improve the park’s ability to apply backcountry data to management, and improve the efficiency of visitor services and recreation management in the park. This long-term improved efficiency would be expected to outweigh the short-term costs of establishing the Backcountry Office.

This alternative also proposes adding one new campsite to the North Desor campground, which would have a minor adverse effect on park workloads and budget. Creation of one new campsite would add to the workloads of existing staff, and not in itself require any new positions.

As with all alternatives proposing changes from the current conditions, the success of this alternative depends largely on an effective monitoring program with an associated assessment of the effectiveness of management actions for meeting goals. With this alternative it will be critical to determine whether advanced permitting and the permitted campground occupancy rates are effectively meeting the goals for reduced campground overcrowding. Such a monitoring program is expected to have a minor to moderate adverse effect on park operations, particularly the Natural Resources Management Division, which is responsible for monitoring natural resources and social conditions in the park. Collection of monitoring data, data analysis, and interpretation for management implications would require either an increase in the workloads of existing staff or additional staff.

**Conclusion**

This alternative would be expected to have both adverse and beneficial effects on park resources and values. Relative to current conditions, visitor services and backcountry management would improve, and adverse impacts to natural and cultural resources would decrease. Increased visitation could be accommodated during part of the season while also reducing crowding in campgrounds and maintaining historic low use times during part of the visitor season. However, compared to current conditions, some people may have less flexibility in where they camp, and would likely need to plan further in advance for a trip to Isle Royale. This alternative would also have the long-term benefit of improving the efficiency of NPS operations for backcountry recreation management.
Chapter 4: Environmental Consequences

Nothing proposed in this alternative is reasonably expected to lead to the impairment of park resources or values.

**Alternative C for Overnight Use: Accommodate Current or Increasing Use Levels While Improving Social Conditions**

The details of this alternative are outlined in Chapter 2, p. 63-67. Changes that could occur under this alternative that may have measurable environmental consequences:

- A Backcountry Office with advanced permitting would be established on the mainland.
- Visitation could increase all season, especially in Spring.
- A new shuttle service would be created in the Rock Harbor Channel.
- 2-3 new shelters would be constructed adjacent to the Windigo Dock.
- New campgrounds could be constructed, or existing campgrounds could be expanded on the east end of the island to better accommodate camping demands.
- The goal would be to reduce campsite sharing to not more than 10% sharing during the peak in visitation, and not more than 5% the rest of the season.

Implementing this alternative with its associated changes from the current condition would be expected to affect visitor use and experiences, wilderness character, natural resources, cultural resources, area socioeconomics, and park operations. The main issues with proposed changes are primarily related to visitor distribution and use levels, services offered to backcountry and wilderness visitors, and potential infrastructure changes (campground expansions and additions).

**Effects on Visitor Use and Experiences**

Similar to Alternative B, one goal of this alternative is to improve the distribution of backcountry visitors to more efficiently use the park’s campsites. The details of the Backcountry Office and implications for visitors would be the same as those outlined above in Alternative B, with two exceptions. Higher campsite occupancy rates may be permissible during the peak visitor period since up to 10% of parties sharing would be acceptable in this alternative, as opposed to not more than 5% sharing in Alternative B. Higher occupancy rates would also be permissible in Spring under this alternative. This would allow for both higher visitation rates and higher frequencies of campsite sharing than would be likely with Alternative B. This alternative could also result in a narrower range of visitor opportunities for solitude related to varying visitation levels throughout the visitor season, as there would be no certainty that current low use times in Spring and Fall would continue.

Although higher visitation levels for camping could be accommodated under this alternative than Alternative B, there is still a strong possibility that some visitors would not be able to get a permit for their preferred campgrounds on their preferred dates. Because campgrounds would not be permitted over their capacities, compared to current conditions there could be a reduction in visitation to parts of the park during the busiest parts of July and August.

Increased visitation in May and October, possible under this alternative, may not satisfy those people who would prefer to visit in the summer, but were unable to get camping permits. Backcountry staffing is at low levels in May and October, and staffs are typically involved in
training through early June. Consequently there are few people staffing visitor centers and ranger stations, and conducting backcountry patrols. Additionally, trail crews work through June to open up trails and campgrounds, clearing fallen trees from the winter and felling hazard trees. Backcountry visitors during the spring and fall face more challenging conditions and must be more self reliant, and willing to do without many services and amenities. Some people who could not get a permit during the summer may not want to come to the park during the more challenging times of Spring and Fall.

The shuttle service proposed in this alternative would offer more flexibility and options to reach the interior of the park, at a lower cost than the water taxis. New shelters at the Windigo dock would offer a new option for boaters or others who wish to camp near the dock, and could help to alleviate crowding at nearby Washington Creek campground. Expanding existing campgrounds or adding new campgrounds would allow more parties to camp on Isle Royale without increasing overcrowding in campgrounds. However, this also would increase the cumulative footprint of campgrounds and fragment previously undeveloped areas of the backcountry. People who prefer smaller, quieter campgrounds, may see these expansions and an increase in the total number of people in a campground at one time as an adverse change.

Boaters would also obtain advance permits through the Backcountry Office, and effects on boaters are expected to be the same as Alternative B, except that under this alternative, no last-minute backcountry docking-only permits would be available. As under Alternatives A-C, the park would not restrict rafting off by willing, permitted boaters.

Impacts of overfull campground dock space on non-powerboaters (hikers and paddlers) would be marginally more beneficial than under the current system (Alternative A.) The benefits would occur because, with advance permitting, there would be less campsite sharing (as with other hikers), and last-minute boat arrivals would not be issued a campsite permit if no open campsites existed. This alternative would not change the current practice of allowing overbooking at docks, however, and so for those campers who feel indirect adverse effects of overbooked docks (increased foot traffic through the campground, increased use of campground outhouses, increased noise), those effects would remain.

In general, this alternative would affect visitor use levels and visitor experiences by accommodating more people during the busy season with more campgrounds, easier access to the interior of the island, and a tolerance for a higher level of campsite sharing. It would also allow for a greater increase in visitation in Spring than would be allowed with the Preferred Alternative (Alternative B). Compared to current conditions, this alternative would be expected to be able to accommodate existing or greater annual visitation levels, but may not be able to fully accommodate existing peak visitation if visitors were not willing or able to alter their preferred itineraries based on campsite availability.

Effects on Wilderness Character
Overall, this alternative would be expected to have long-term beneficial effects on wilderness character when compared to current conditions. There would also be adverse impacts to wilderness character associated with this alternative. When compared to Alternative B, the Preferred Alternative, this alternative could result in a narrower range of wilderness experiences
related to visitor use levels throughout the visitor season, as well as a greater degradation of naturalness associated with the extent of campground development in the park. Adding a shuttle service in the Rock Harbor Channel to transport campers would give more people access to the interior of the park. This may be a beneficial change for people wishing to visit the interior on short trips to the park, but an adverse change for people who feel greater ease of access compromises the wilderness character of the park’s more remote areas.

**Effects on Natural Resources**
Similar to Alternative B, the Preferred Alternative, this alternative would be expected to have a beneficial effect on natural resources by reducing the adverse impacts associated with overcrowding in campsites. However, this alternative proposes the greatest likelihood of increasing the number of campsites in the park, with the option to expand existing campgrounds and create new campgrounds in previously undeveloped areas. Accordingly, the adverse impacts associated with campsites could increase throughout the park in this alternative. New campgrounds pose the potential for additional adverse impacts such as fragmenting habitats, expanding edge habitats, disturbing previously undeveloped sites, expanding conditions suitable for the introduction and establishment of exotic plant species, and introducing consistent human traffic in areas that previously may have seen infrequent traffic. Areas that were initially identified as possible sites were chosen to avoid adverse effects to Federally Threatened species, but it is unlikely that adverse impacts to both Federally and State-listed species could be avoided entirely. Therefore, this alternative would accept a minor to moderate impact to State-listed populations in the park.

This alternative also would allow for a significant increase in spring visitation. Although high rates of overcrowding and parties doubling up in campgrounds would not be a concern, there are other visitation-related concerns for natural resources in the spring. This alternative would have the same likelihood of minor to moderate adverse impacts to natural resources that are more sensitive to human impacts in the spring as those outlined in alternative A, the current conditions.

Overall, this alternative would be expected to have long-term beneficial effects on natural resources when compared to current conditions. However, as this alternative would allow an increase in the number of campsites and campgrounds in the park and significant increase in visitation in the spring, the likelihood and scope of adverse impacts are greater with this alternative than with the Preferred Alternative, Alternative B.

**Effects on Cultural Resources**
The probable effects to cultural resources with this alternative are similar to those outlined in the Preferred Alternative, Alternative B, but with a greater probability of adverse impacts to cultural resources.

This alternative proposes adding a few shelters in the vicinity of the Windigo Dock, adding new campsites to expand existing campgrounds, and possibly adding a few new small campgrounds. This would likely expand the cumulative footprint and impacted area of campsites in the park. With this expansion would come a possible adverse impact on cultural resources, increasing the likelihood of damage to or loss of previously unknown archeological sites and cultural objects.
However, the likelihood of this adverse impact could be reduced or eliminated with a thorough archeological survey in proposed sites for these new developments. Mitigation actions such as site hardening (e.g. tent platforms or site capping) and removal of significant objects to the park museum could further reduce the severity of adverse impacts.

This alternative would also allow for a significant increase in visitation in Spring. Soil and vegetation, as well as archeological sites, are most vulnerable in Spring. Therefore, adverse impacts to cultural resources associated with use levels in campgrounds could increase. Remedial measures such as educating campers about Leave-No-Trace principles and protection of cultural resources could minimize adverse impacts.

Similar to the Preferred Alternative, this alternative, which limits overcrowding, would limit the possibility of negative impacts to currently unknown ethnographic resources. However, by allowing expansion of current campgrounds and possible new campgrounds this alternative would result in a long-term minor adverse impact to ethnographic resources.

Overall, this alternative would be expected to have long-term beneficial effects on cultural resources when compared to current conditions. However, as this alternative would allow a significant increase in visitation in the spring, the likelihood of adverse impacts are greater with this alternative than with the Preferred Alternative (Alternative B). Because archeological resources and cultural objects are a non-renewable resource, any damage to or loss of archeological resources would be long-term, irreversible, and adverse. Damage to cultural landscapes and historic structures may be reversible, depending on the specific resource affected and the nature of the impact.

**Socioeconomic Effects**

With this alternative some visitation may shift from the peak season to other times of the season, but overall visitation could increase, which could have a beneficial effect on tourism-dependent businesses. Isle Royale visitors are estimated to spend $1.7 million in the 3 local communities and surrounding areas of Copper Harbor and Houghton, MI and Grand Portage, MN (Strong and Solomon 2004). With this alternative this level of spending would be expected to continue, or could increase.

The effects on concession ferries are expected to be the same as under Alternative B.

If the increased cost of creating a Backcountry Office were to be offset by either a permitting fee or an increase in the daily user fee, the costs to visitors of a trip to Isle Royale would increase, a minor to moderate adverse economic effect on visitors. A permitting fee would limit the costs to backcountry campers and boaters, while an increased daily user fee would increase costs to all island visitors (day visitors and lodge guests as well as campers and boaters). Currently the cost to visitors consists of the transportation fee ($100 round trip per adult for ferries, $230 round-trip per person for the seaplane, and gas money for private boaters), daily user fee ($4 per person per day), and any incidental expenses.
Small businesses and Incidental Business Permit holders would use the same system of permitting as all other backcountry visitors. As the availability of backcountry permits became limited, there could be adverse impacts to these businesses.

Effects on Park Facilities and Operations
Implementing this alternative would have the same short and long-term minor to moderate adverse effect on park staffing and budget associated with creating a Backcountry Office as outlined in Alternative B, above. It would also have the long-term beneficial effects of improving the efficiency of NPS operations for backcountry management and services.

There would be additional costs to the park associated with adding new shelters near the Windigo dock (a minor short-term adverse effect), and possibly adding up to three new campgrounds (a moderate short-term adverse effect). Creating a shuttle service between Rock Harbor, Mott Island, and Daisy Farm could be a minor to moderate long-term adverse effect on park budget and staffing, or a negligible effect if the service were run through a concessionaire.

As with all alternatives, the success of this alternative depends largely on an effective monitoring program with an associated assessment of the effectiveness of management actions for meeting goals. With this alternative it will be critical to determine whether advanced permitting and the permitted campground occupancy rates are effectively meeting the goals for reduced campground overcrowding. Such a monitoring program is expected to have a minor to moderate adverse effect on park operations, particularly the Resources Management Division, which is responsible for monitoring natural resources, cultural resources, and social conditions in the park. Collection of monitoring data, data analysis, and interpretation for management implications would require either an increase in the workloads of existing staff or additional staff.

Conclusion
This alternative could have both adverse and beneficial effects on park resources and values. Compared to the Preferred Alternative, a greater number of backcountry campers could be accommodated throughout the visitor season and campers would have more options, but there could also be an increase in development in the backcountry and wilderness, a higher level of campground crowding, and a greater likelihood of adverse impacts to cultural and natural resources. This alternative may not be able to accommodate future increases in visitation as well as the current management practices, but it would be expected to better provide quality visitor experiences, and better protect park resources.

Nothing proposed in this alternative is reasonably expected to lead to the impairment of park resources or values.
Alternative D for Overnight Use: Improve Social Conditions Through the Use of Entry Quotas

The details of this alternative are outlined in Chapter 2, p. 68-71. Changes that could occur under this alternative that may have measurable environmental consequences:

- Entry quotas would be established for hikers and boaters on ferries (private boaters would be included in the future only as increasing boating necessitated)
- Crowding would be decreased in July and August, with a possible increase the rest of the season, by applying a standard of not more than 5% of parties sharing campsites at any point in the season.
- One new campsite would be added at North Desor.
- Campsite or shelter reservations would be offered at a limited number of campgrounds.

Implementing this alternative with its associated changes from the current condition would be expected to affect visitor use and experiences, wilderness character, natural resources, cultural resources, area socioeconomics, and park operations. The main issues with proposed changes are primarily related to visitor distribution and use levels, and services offered to visitors.

Effects on Visitor Use and Experiences
Alternative D proposes establishing a standard of not more than 5% of parties needing to share campsites in overfull campgrounds, accomplished through an entry quota system. This would reduce overcrowding during the peak season and allow for an increase in visitation and concurrent increase in campground crowding outside of July and August. Further, this alternative would not add any new campsites, with the exception of one site at North Desor and the GMP-approved new campgrounds, and there would be no significant change in the current permitting system. Over the short-term this would be beneficial in that people would not have to learn a new system for permitting. People would receive a backcountry permit at the start of their trip, and there would not be reliable information available about future campground use levels. Once they reached the island, people would retain full freedom to camp in or dock at the campgrounds of their choice, and to change their itinerary at any point.

This alternative would also establish campsite and shelter reservations on a limited basis. This would be a beneficial change for people who value an assurance of campsite availability, and for people who would prefer to plan ahead for where they will be camping or docking for the night. Because this would be implemented in a limited number of campgrounds, the majority of campers would retain flexibility in changing their itineraries at any point in their trip and selecting campsites on a first-come, first-served basis.

Establishing a standard of not more than 5% of parties needing to double up in overcrowded campgrounds would require changes in backcountry visitation. For the past several years it is estimated that up to 25% of parties needed to share campsites during the peak 2 weeks of the season. Additionally, in 2001, a peak year for backpacking on the island, in July and August outside of the peak 2 weeks, the frequency of parties needing to share sites averaged 6.4%. The rest of the season the frequency of sharing averaged less than 1%. To lower this number without either controlling visitor distribution and what campgrounds people stay in or significantly expanding campgrounds would require reducing visitation during part of the season. Some of
the July and August visitors would have to come at a different time, or not come to the island at all.

Use levels for powerboaters and sailors would be monitored to determine a future need for entry quotas for these groups. With low current use levels for these visitors, boaters and sailors would not initially be included in the quota system. Boaters would be required to obtain a backcountry permit, either prior to or at arrival time. As with Alternatives A-C, dock space would not be regulated, the exception being that in this alternative, there would be a few campgrounds where reservations would be allowed for part of the season. This alternative would have the same effects as Alternative A, where boaters would not be able to pre-plan an itinerary with information on expected campground/dock capacities by using an advance, centralized permit system. By having a small number of campgrounds with a reservation system, boaters would have the assurance that a campsite and dock space (where applicable) would be available at a specified date and location. This would be a minor to moderate, long term positive effect. Boaters who enjoy the camaraderie of rafting off would still be able to do so for most of the season, at most docks. Non-powerboaters who prefer a more solitary camping experience at campgrounds with docks would also register a minor long term positive effect for a portion of the season at selected campgrounds.

Using the travel simulation model it is estimated that if the park issued an average of 37 backcountry permits per day or 259 per week, 5% or fewer parties would need to share campsites. This includes all backcountry parties, boaters as well as hikers. This also assumes that the additional campsites would be added at the GMP-proposed campgrounds and at North Desor, as proposed in this alternative. It is also assumes that some boaters would be sleeping onboard their boats rather than occupying campsites, where sufficient dock space is available. Figure 5 illustrates the actual number of permits issued by week in 2001 and 2003, as well as projections of visitation patterns with a limit of 37 permits per day and maintaining 2003 ferry capacities and schedules. In 2001, 4 weeks exceeded 259 permits issued, with 283 too many permits being issued in this period. In 2003, 3 weeks exceeded the limit by a total of 244 permits. These excess permits could easily be absorbed during the rest of the season, as long as the excess people seeking permits could be flexible in their travel dates. Overall backcountry visitation could increase above current levels outside of the peak time.
Implementing this alternative could result in some visitors not being able to visit the park on their preferred dates. The number of camping parties entering the park would be limited to not more than an average of 37 per day (i.e. 259 per week). The result would be reduced crowding in campgrounds and on trails during the peak visitor season (between mid-July and mid-August). However, one cost of this is expected to be an increase in visitation during the rest of the season and an overall decrease in the range of opportunities available throughout the season on Isle Royale.

Increased visitation in May and October, possible under this alternative, could have an adverse effect on visitor safety. Backcountry staffing is at low levels in May and October, and staffs are typically involved in training through early June. Consequently there are few people staffing visitor centers and ranger stations, and conducting backcountry patrols. Additionally, trail crews work through June to open up trails and campgrounds, clearing fallen trees from the winter and felling hazard trees. Backcountry visitors during Spring and Fall face more challenging conditions and must be more self reliant, increasing visitation during these times would increase risks to human safety in the backcountry.

Compared to the Preferred Alternative and current conditions, this alternative would be expected to limit access to the park for camping to a greater extent, but with a benefit of maintaining maximum freedom and flexibility once reaching the park’s wilderness and backcountry. Because only the number of backcountry camping parties would be capped on ferries, there
could be additional space on ferries available for day visitors and lodge guests, increasing access to the park for these visitors.

One of the goals of this alternative is to keep the permitting and trip planning logistics as simple as possible, with the thought that establishing entry quotas by limiting the number of camping parties each of the ferries could carry would be the simplest system for visitors. If this alternative were implemented a certain portion of the permits issued per day would be allocated for campers traveling on ferries, with the remaining available for private boaters planning on utilizing campgrounds.

**Effects on Wilderness Character**

This alternative proposes managing visitor use levels by establishing an entry quota, thereby limiting access prior to reaching the park. Compared to Alternatives B, C and E, this may allow people to travel more freely to the campgrounds of their choice, since permits would be issued upon arrival to the island, and would not be limited by campground capacities. This may be better for wilderness experiences than allowing more people to come to the park for wilderness trips but restricting the choices they have in where to travel. Compared to current conditions, this alternative would aim to reduce campground crowding during July and August; a long-term moderate beneficial effect on wilderness character and opportunities for solitude and tranquility. Compared to the Preferred Alternative, there is less likelihood of preserving the low use times in the spring, which could be a moderate adverse impact on spring visitors who are seeking more exemplary wilderness experiences.

Compared to current conditions this alternative would have the beneficial effect of reducing sprawl in campgrounds and biophysical impacts associated with overuse of campsites, similar to the other alternatives. This would be a long-term beneficial effect on wilderness character.

**Effects on Natural Resources**

Similar to the Preferred Alternative, implementing this alternative would be expected to have a beneficial effect on natural resources by reducing the adverse impacts to soils, vegetation, and increases in total impacted area associated with overcrowding in campsites.

Also similar to the Preferred Alternative, this alternative would have the same adverse impacts of adding an additional campsite at North Desor. These impacts would be minor to moderate on site, but negligible to minor on a park-wide scale.

In contrast to the Preferred Alternative, this alternative could allow for increased visitation in the spring, with associated concern for adverse impact to sensitive resources. Impacts such as disturbance of wildlife could result in moderate to major adverse impacts, whereas trail widening associated with muddy conditions would be minor to moderate and very localized.

**Effects on Cultural Resources**

This alternative features entry quotas for backcountry campers, which would reduce campground overcrowding, and would likely reduce the overall number of visitors on the island during the peak visitation period. There would likely be corresponding decreases in adverse impacts associated with overcrowding and high visitation. An overall reduction in sharing campsites and
especially a reduction in sharing at peak times could lessen impacts related to campsite expansion, including negative impacts to archeological sites. The extent of the impact reduction depends on the proximity of sensitive archeological resources to campgrounds. Since many campgrounds are located on or near important archeological sites, any reduction in overcrowding is predicted to decrease the probability of related impacts to archeological resources.

Several of the new GMP campgrounds are located near historic structures. If these campgrounds become overcrowded due to unregulated increases in visitation, historic structures could suffer serious long-term impacts resulting from visitors camping outside of campgrounds or using historic buildings for shelter. This alternative would help decrease the extent of overcrowding on the island and therefore lessen the possible negative impact on historic structures near the GMP campgrounds.

Similar to the Preferred Alternative, this alternative, which limits overcrowding, would limit the possibility of negative impacts to currently unknown ethnographic resources.

Overall, this alternative would be expected to have long-term beneficial effects on cultural resources when compared to current conditions. However, as this alternative would allow a significant increase in visitation in the spring, the likelihood of adverse impacts are greater with this alternative than with the Preferred Alternative, Alternative B.

**Socioeconomic Effects**

Under this alternative, it is estimated that there would be a 5% reduction in camping parties in July and August. If those people chose to visit the park at a different time, it is expected that the socioeconomic effect of this alternative on the local communities would be negligible. If fewer camping parties riding on ferries resulted in more day visitors coming to the park during the peak time, there could be a beneficial effect on the local communities. Currently ferries sell out periodically during the peak visitor season. Entry quotas could result in fewer camping parties and more space available for day visitors. Day visitors are estimated to spend more money per day in local communities than campers. A party of day visitors is thought to spend on average $150-168 per day, while a party of backcountry campers is thought to spend an average of $102 per day. The bulk of direct local spending goes to ferry companies, gas, and motels (for those who would stay in a motel prior to traveling to the island). If total visitation to the island were to decrease, there could be a minor adverse impact to local mainland communities, including ferry services. The *Isle Royale Queen*, from Copper Harbor, and the *Wenonah*, from Grand Portage, are the only ferries that carry day visitors, so any increase in day visitors would affect Copper Harbor and Grand Portage most directly (Strong and Solomon 2004).

Reducing the number of camping parties riding on ferries during the peak visitor season could also allow more room for people staying at the Rock Harbor Lodge. This could have a minor to moderate beneficial affect on the concessionaire operating the lodge. These visitors may be more likely to spend more money in the local communities than campers, as they may stay in motels and eat in restaurants more frequently. Thus increasing the number of lodge guests traveling to the island could also have a minor beneficial effect on local communities.
This alternative proposes implementing a small-scale campsite reservation system, limited to a few of the park’s small campgrounds. This system would be similar to the large group camping system currently in effect. Advanced reservations would be available through the park’s Houghton Headquarters, and a permitting fee required (a non-refundable $25 fee). Thus it is expected that this alternative could increase the cost of a trip for those visitors opting to use the reservation system.

This alternative would be expected to have negligible to minor effects on small businesses operating within the park. Camps, outfitters, and all small businesses would be included in the entry quotas, similar to all camping parties. These organizations could be adversely affected if they were not able to come to the park on their preferred dates. However, for organizations that already work through the large group permitting system, there would be no change from current conditions. Fishing and dive charters would not likely be affected.

**Effects on Park Facilities and Operations**

Implementing this alternative would have a minor short-term adverse effect due to the costs of constructing one new campsite at North Desor. This may also result in a long-term minor increase in maintenance workload associated with the upkeep of campsites. Both of these would likely require an increased workload for existing staff rather than hiring additional staff.

Implementing this alternative would create a new reservation system for a small number of campgrounds in the park, which would increase the workload of Houghton Visitor Center staff. This would be a minor long-term adverse effect on park operations.

As with all alternatives, the success of this alternative depends largely on an effective monitoring program with an associated assessment of the effectiveness of management actions for meeting goals. With this alternative it will be critical to determine whether entry quotas are unduly restrictive or insufficient to reduce the frequency of campsite sharing to 5%. Such a monitoring program is expected to have a minor to moderate adverse effect on park operations, particularly the Natural Resources Management Division, which is responsible for monitoring natural resources and social conditions in the park. Collection of monitoring data, data analysis, and interpretation for management implications would require either an increase in the workloads of existing staff or the need for additional staff.

This alternative would be expected to have a lower short-term implementation cost than Alternatives B, C and E. However, the long-term costs may be comparable, with this alternative requiring increased coordination with the ferry companies to manage the quota system, ongoing management of the limited site reservation system, and ongoing monitoring necessary to determine the appropriateness of quota levels.

**Conclusion**

In general this alternative would be expected to have both beneficial and adverse effects on park resources and values. Relative to other alternatives, this alternative could result in the greatest decrease in peak season visitation, but it would allow for a large increase in visitation in the spring and fall. Campground crowding and the associated adverse impacts to park resources
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would decrease, but adverse impacts to resources that are most sensitive to human impacts in the spring or fall could increase.

Nothing proposed in this alternative is reasonably expected to lead to the impairment of park resources or values.

**Alternative E for Overnight Use: Maximize Resource Protection and Opportunities for Solitude**

The details of this alternative are outlined in Chapter 2, p. 71-75. Changes that could occur under this alternative that may have measurable environmental consequences:

- Establish Backcountry Office—staffing and budget implications, advanced permitting for campers and boaters.
- Decrease crowding to not more than 5% of parties needing to double up during the 2-week peak in visitation, and not more than 1% sharing the rest of the season.
- Maintain historic low visitation in Spring and Fall.
- Remove one campsite from Little Todd.
- No new campgrounds would be added, beyond those approved in the GMP.

Implementing this alternative with its associated changes from the current condition would be expected to affect visitor use and experiences, wilderness character, natural resources, cultural resources, area socioeconomics, and park operations. The main issues with proposed changes are primarily related to visitor distribution and use levels, and services offered to visitors.

**Effects on Visitor Use and Experiences**

This alternative would be expected to result in changes to visitor use levels and opportunities that could be viewed as adverse or beneficial effects, depending on one’s perspective. Similar to Alternative B, the preferred alternative, one goal of this alternative is to improve the distribution of backcountry visitors to more efficiently use the park’s campsites by creating a Backcountry Office with advanced permitting. However, this alternative is expected to allow for the least increase in visitation of all the alternatives. This alternative has a lower tolerance for campground crowding and a need to double up in campsites, and a goal of maintaining existing low backcountry visitation in the spring and fall. More evenly distributing campers between campgrounds and throughout July and August could accommodate current visitation levels, if visitors were to adhere to their permitted camping itineraries. People straying from their camping itineraries would require permitting below campgrounds’ capacities in order to achieve goals for reduced campground crowding, which would reduce the likelihood of accommodating current visitation levels.

There are several likely implications for visitors of instituting advanced permitting. Permitting would be completed prior to reaching the island, either by phone, through the internet, or in person at a Backcountry Office at the park’s Houghton headquarters. Some people may not be able to get a permit for their preferred campgrounds on their preferred dates. For some people this would require more advance planning. There would be more information for trip planning than is currently available, namely the number of permits already issued for specific
Impacts of Alternatives for Overnight Use

campgrounds. Once in the park, visitors in July and August would have a much greater chance of finding an available campsite, regardless of how late in the day they reach a campground.

The effects of this alternative on boaters would be identical to those under Alternative C. Advance permitting would enhance a boater’s ability to avoid crowded docks if he/she chose, but rafting off in the case of overcrowded docks would not be restricted. The effects of this alternative will vary based on boater preference. The adverse effects of overfilled dock space on boaters and non-powerboating campers is expected to be minor to moderate, and short-term to long-term. (See Effects on Visitor Use and Experiences section under Alternative C for more detail.)

This alternative also proposes removing one campsite from Little Todd, making it consistent with the 3 campsites at North Desor, the other campground along the primitive western section of the Minong Trail. Although removing one site would be expected to reduce public access to this section of trail somewhat, it would also provide for one section of hiking trail with very small campgrounds and very low encounter rates along the trail, a long-term beneficial effect for those people who do receive permits for these campgrounds.

Under this alternative, spring and fall visitation would be maintained at levels compatible with backcountry staffing levels, which would aid in minimizing threats to human safety.

Compared to current conditions, this alternative would be expected to improve visitor experiences. Relative to the other alternatives, this alternative would be expected to have the long-term adverse effect of limiting visitor access to the primitive western section of the Minong Trail, and access to the entire backcountry and wilderness for camping in Spring and Fall. Overall this alternative would be expected to have the adverse effect of maintaining lower visitor use levels than may be possible with the other alternatives, but at the same time have the beneficial effect of providing opportunities for higher quality wilderness and backcountry experiences.

Effects on Wilderness Character
In reducing overcrowding in campgrounds and a need to share campsites, as well as preserving low visitation times in Spring and Fall, this alternative would have a long-term beneficial effect on wilderness character compared to current conditions. Compared to all the other alternatives, this alternative would have the greatest likelihood of maintaining a broad range of wilderness opportunities, including exemplary opportunities for solitude and self-sufficiency during low use times in Spring and Fall. Although this may make public access to the park more difficult in Spring and Fall, access for appropriate types of recreation would remain high in the summer months.

A commitment to not increase the number of campsites in the park beyond those approved in the GMP would, in concert with efforts to reduce overcrowding in campgrounds, be expected to have a long-term beneficial effect on the naturalness of the park and areas immediately surrounding campsites.
Overall, this alternative would be expected to have the greatest beneficial effect on wilderness character, when compared to current conditions and the other alternatives.

**Effects on Natural Resources**
The effects on natural resources of actions proposed in this alternative would be the same as those outlined in the Preferred Alternative (Alternative B) with two exceptions. This alternative proposes removing one campsite from Little Todd and would not expand any existing campgrounds. This would be a moderate beneficial effect for the area in the immediate vicinity of Todd Harbor and a minor beneficial effect park-wide. This is the only alternative that proposes any reduction in the number of campsites. Additionally, this alternative is the only alternative that proposes maintaining current low use in the fall. Preserving low visitation in the fall would have a long-term beneficial effect on wildlife species that are sensitive to human disturbance. This could be a minor, long-term beneficial impact on wildlife species that require low stress periods to build up food and fat stores to survive Winter.

Overall, this alternative would be expected to have long-term beneficial effects on natural resources when compared to all other alternatives. The beneficial effects to natural resources would be slightly greater with this alternative compared to Alternative B, the Preferred Alternative, because in this alternative the cumulative footprint of campsites would be expected to decrease with the removal of one campsite at Little Todd, as opposed to adding one new site at North Desor, and low visitation would be preserved in Fall.

**Effects on Cultural Resources**
The probable effects to cultural resources with this alternative are the same as those outlined in the Preferred Alternative, Alternative B, with minor to major long-term beneficial effects associated with reduced crowding in campgrounds and maintaining low visitation times in the spring. Overall this alternative is predicted to decrease possible adverse impacts to archeological resources by the greatest extent.

Similar to the Preferred Alternative, this alternative, which limits overcrowding, would limit the possibility of negative impacts to currently unknown ethnographic resources.

**Socioeconomic Effects**
Relative to all other alternatives, this alternative has the greatest likelihood of resulting in decreasing the number of camping and boating parties visiting the park annually, which could have a minor adverse effect on local tourism-dependent economies. With this alternative, visitation could be reduced during the peak use times and Spring and Fall would be maintained with low use levels. Fewer camping parties traveling on ferries during the peak times may allow greater access for day visitors who otherwise would not have gotten a ticket on sold-out ferries. Any increased day use would offset any adverse economic effects of reduced camping visitation.

As with Alternatives B and C, with advance permitting in place, concession ferry operators would require all overnight visitors to have valid permits in order to purchase ferry tickets (the same requirement that is currently in effect for groups coming out to the park now.) It is unlikely that the ferries will experience adverse effects from this system. Although visitors will be required to obtain their permits through the park’s Backcountry Office first, they will be made
aware at that point of all possible ferry options, not just the NPS’s Ranger III. It is also true that each of the private ferry concessions offers unique options to potential passengers including mainland launch location, scheduling, and length of trip, so requiring an advance permit would not be expected to shift passenger numbers to the Ranger III, away from the other ferries. In addition, during peak visitation periods when the number of permits issued could be lower than under current practices, there will also be the chance to increase day-use trips aboard the ferries. Therefore, the adverse effect on concession ferries under this alternative is expected to be negligible to minor, and long term.

Similar to Alternatives B and C, if the increased cost of creating a Backcountry Office were to be offset by either a permitting fee or an increase in the daily user fee, the costs to visitors of a trip to Isle Royale would increase, a minor to moderate adverse economic effect on visitors. A permitting fee would limit the costs to backcountry campers and boaters, while an increased daily user fee would increase costs to all island visitors (day visitors and lodge guests as well as campers and boaters). Currently the cost to visitors consists of the transportation fee ($100 round trip per adult for ferries, $230 round-trip per person for the seaplane, and gas money for private boaters), daily user fee ($4 per person per day), and any incidental expenses.

Small businesses and Incidental Business Permit holders would use the same system of permitting as all other backcountry visitors. As the availability of backcountry permits became limited, there could be adverse impacts to these businesses.

**Effects on Park Facilities and Operations**
Implementing this alternative with establishment of a Backcountry Office on the mainland would be expected to have the same effects outlined under the Preferred Alternative (Alternative B); a moderate short-term cost and minor to moderate long-term cost to the park. It would also have the long-term beneficial effects of improving the efficiency of NPS operations for backcountry management and services.

Removing one campsite at Little Todd would have a minor short-term adverse effect on staff workloads and spending, and long-term negligible beneficial effect of one less campsite to maintain.

As with all alternatives, the success of this alternative depends largely on an effective monitoring program with an associated assessment of the effectiveness of management actions for meeting goals. With this alternative it will be critical to determine whether advanced permitting and the permitted campground occupancy rates are effectively meeting the goals for reduced campground overcrowding. Such a monitoring program is expected to have a minor to moderate adverse effect on park operations, particularly the Resources Management Division, which is responsible for monitoring natural resources and social conditions in the park. Collection of monitoring data, data analysis, and interpretation for management implications would require either an increase in the workloads of existing staff or the need for additional staff.

**Conclusion**
Relative to the other alternatives, this alternative would offer the least opportunity to accommodate increased public interest in backcountry and wilderness camping, but would offer
the greatest opportunities for solitude and tranquility while camping throughout the visitor season. Actions proposed in this alternative could have long-term minor to moderate beneficial effects on natural and cultural resources. This would be the only alternative to preserve low use times in Spring and Fall, with associated benefits to resources that are more vulnerable during these times of the year.

Nothing proposed in this alternative is reasonably expected to lead to the impairment of park resources or values.
### Table 19: Comparison of Environmental Consequences for Alternatives for Overnight use of the Wilderness and Backcountry

<table>
<thead>
<tr>
<th>Proposed Changes</th>
<th>Alt A: Current</th>
<th>Alt. B: Preferred</th>
<th>Alt C</th>
<th>Alt D</th>
<th>Alt E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitor Use and Experience</td>
<td>Public access would remain high, with significant increases in visitation possible outside of the peak few weeks of the season this is a long-term moderate beneficial impact to visitor use. However, opportunities to visit the park at low use times may diminish this is a long-term, moderate, adverse impact to visitor experience. Information would not be available to avoid overcrowded campgrounds and overcrowding would continue and could increase.</td>
<td>Visitation could increase from mid June through October. Advanced permitting would better distribute people to available campsites and reduce the frequency of overcrowding and give campers a greater assurance of finding an available campsite and opportunities to visit the park during low use times would be preserved these are long-term moderate beneficial impacts to visitor use. Some people may not be able to get a permit for their preferred itinerary and public access may be limited in spring, a long-term, minor adverse impact.</td>
<td>Long-term, minor beneficial impact compared to current conditions due to decreased sharing. Long-term, moderate beneficial impact compared to the preferred alternative because of greater public access, but also long-term, moderate adverse impacts with greater likelihood of sharing, higher levels of campground crowding, larger campgrounds possible, and a potential loss of the very low use times in spring and fall.</td>
<td>Long-term, minor beneficial impact compared to current conditions with reduced campground crowding, but long-term, moderate adverse impact with lower public access to the park. Compared to preferred, this alternative has a lower likelihood of accommodating July and August visitation and greater likelihood of increased visitation in Spring, with decreased opportunities for solitude and isolation.</td>
<td>Long-term, minor beneficial and adverse impacts Same as those outlined in the preferred alternative, with the addition of maintaining low use in the fall as well as spring, limiting the ability to accommodate increased visitation but allowing opportunities for solitude and isolation. This is a long-term, moderate adverse impact to visitor use and a long-term, moderate beneficial impact to visitor experience.</td>
</tr>
</tbody>
</table>

| Visitor Use and Experience | Public access would remain high, with significant increases in visitation possible outside of the peak few weeks of the season this is a long-term moderate beneficial impact to visitor use. However, opportunities to visit the park at low use times may diminish this is a long-term, moderate, adverse impact to visitor experience. Information would not be available to avoid overcrowded campgrounds and overcrowding would continue and could increase. | Visitation could increase from mid June through October. Advanced permitting would better distribute people to available campsites and reduce the frequency of overcrowding and give campers a greater assurance of finding an available campsite and opportunities to visit the park during low use times would be preserved these are long-term moderate beneficial impacts to visitor use. Some people may not be able to get a permit for their preferred itinerary and public access may be limited in spring, a long-term, minor adverse impact. | Long-term, minor beneficial impact compared to current conditions due to decreased sharing. Long-term, moderate beneficial impact compared to the preferred alternative because of greater public access, but also long-term, moderate adverse impacts with greater likelihood of sharing, higher levels of campground crowding, larger campgrounds possible, and a potential loss of the very low use times in spring and fall. | Long-term, minor beneficial impact compared to current conditions with reduced campground crowding, but long-term, moderate adverse impact with lower public access to the park. Compared to preferred, this alternative has a lower likelihood of accommodating July and August visitation and greater likelihood of increased visitation in Spring, with decreased opportunities for solitude and isolation. | Long-term, minor beneficial and adverse impacts Same as those outlined in the preferred alternative, with the addition of maintaining low use in the fall as well as spring, limiting the ability to accommodate increased visitation but allowing opportunities for solitude and isolation. This is a long-term, moderate adverse impact to visitor use and a long-term, moderate beneficial impact to visitor experience. |
**Table 19 (continued):** Comparison of Environmental Consequences for Alternatives for Overnight use of the Wilderness and Backcountry

<table>
<thead>
<tr>
<th>Wilderness</th>
<th>Alt A: Current</th>
<th>Alt. B: Preferred</th>
<th>Alt C</th>
<th>Alt D</th>
<th>Alt E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilderness</td>
<td>The impacts to wilderness character would be expected to be long-term, moderate and adverse. Overcrowding in campgrounds would continue or increase. Access to the wilderness and backcountry would be high, but increased visitation could lead to a reduction in opportunities for solitude and tranquility.</td>
<td>Impacts to wilderness character would be long-term, moderate and beneficial. Overcrowding in campgrounds would be reduced. A wide range of opportunities for wilderness experiences would be protected. Beneficial impacts to wilderness character would be greater than with current conditions or alternative C.</td>
<td>Long-term, minor beneficial impacts compared to No Action, adverse impact of higher use levels and more frequent sharing compared to preferred alternative. Greater access to remote backcountry with shuttle would be a long-term, moderate adverse impact to wilderness character.</td>
<td>Long-term, minor beneficial impact compared to current conditions. Long-term, minor adverse impact compared to preferred alternative due to a greater likelihood of increasing visitation in spring and decrease in opportunities for solitude and isolation.</td>
<td>Same long-term, moderate beneficial impacts as the preferred alternative, with the added beneficial impact of maintaining extremely low visitation in the fall as well as spring for the greatest opportunities for solitude, isolation, and self-sufficiency.</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>Impacts to natural resources would be expected to be long-term, adverse, and moderate to major on a localized scale. Continued campground crowding would mean continued campsite sprawl and associated habitat change. Increasing spring and fall visitation could adversely impact wildlife at sensitive times.</td>
<td>Impacts to natural resources would be long-term, moderate and beneficial compared to current conditions. Reduced overcrowding in campgrounds would reduce adverse biophysical and noise impacts. Maintaining low visitation in spring would minimize adverse impacts to wildlife. However, long-term, minor adverse effects include adding one new campsite at North Desor and allowing a substantial increase in fall visitation.</td>
<td>Long-term, moderate adverse impact from an increase in total footprint of physical impacts from campgrounds (increased number of campsites and campgrounds), Long-term, moderate adverse impact on wildlife from changes in travel patterns, and increased use possible in spring and fall</td>
<td>Long-term moderate beneficial impact compared to No Action Alternative with reduced impacts associated with crowding. Adverse impacts compared to the preferred with potential for increased visitation in spring and fall impacting wildlife.</td>
<td>Same long-term, moderate beneficial impacts as preferred with the added benefits of maintaining low visitation in the fall. This would have a long-term minor beneficial impact on wildlife, and removing one campsite from Little Todd with a long-term minor beneficial impact on vegetation and the immediate habitat.</td>
</tr>
</tbody>
</table>
**Table 19 (continued): Comparison of Environmental Consequences for Alternatives for Overnight use of the Wilderness and Backcountry**

<table>
<thead>
<tr>
<th>Cultural Resources</th>
<th>Alt A: Current</th>
<th>Alt. B: Preferred</th>
<th>Alt C</th>
<th>Alt D</th>
<th>Alt E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse effects to cultural resources associated with campsite sprawl could continue or worsen. Impacts would be short or long-term and minor or major, depending on the significance and integrity of affected resources. Damage to archeological resources would be irreversible.</td>
<td>Reducing campground overcrowding and maintaining low visitation in the spring would have long-term, minor beneficial impacts on cultural resources. Adding one new campsite at North Desor could have adverse effects on unknown cultural resources. These effects would be long-term and their severity would depend on the significance and integrity of the affected resources. Damage to archeological resources would be irreversible.</td>
<td>Long-term, minor to major adverse impact to unknown archeological sites with increased development of campgrounds. However, long-term, minor beneficial impact compared to current with decreased sharing and sprawl.</td>
<td>Long-term, minor beneficial impact compared to current conditions with reduced impacts from overcrowding in campgrounds. Less beneficial impact than the preferred alternative because of likelihood of increased spring visitation.</td>
<td>Same as those outlined in the preferred.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Socioeconomic Effects</th>
<th>Alt A: Current</th>
<th>Alt. B: Preferred</th>
<th>Alt C</th>
<th>Alt D</th>
<th>Alt E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased visitation, possible under this alternative, would have long-term, minor beneficial effects on the economies of local communities.</td>
<td>Peak season backcountry visitation could decrease. If this resulted in an increase in day use, then this would be beneficial for local communities as day visitors spend more money. Cost per visitor could increase if permitting fees were implemented.</td>
<td>Annual visitation could increase, which would be beneficial for local communities. Cost per visitor could increase if permitting fees were implemented.</td>
<td>Peak season backcountry visitation could decrease; the rest of the season could increase. If this resulted in increased day use it would be beneficial to local economies but decreased annual visitation could have an adverse impact.</td>
<td>Greatest likelihood of resulting in decreased annual visitation, which could adversely affect local economies. Cost per visitor would increase if permitting fees were implemented.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Park Operations</th>
<th>Alt A: Current</th>
<th>Alt. B: Preferred</th>
<th>Alt C</th>
<th>Alt D</th>
<th>Alt E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term, minor adverse impact to park operations. No additional staffing or facilities would be necessary. There would likely be an increased maintenance workload associated with rehabilitating and restoring sprawling campsites.</td>
<td>Long-term minor adverse impact to park operations. Additional staffing required to start and run a backcountry office. Short-term costs would be moderate, long-term costs would be minor to moderate. Short-term costs of constructing a new campsite at North Desor would be minor, as would long-term costs for maintenance.</td>
<td>Long-term, minor adverse impact to park operations. Minor to moderate increase in maintenance workload with new campsites or campgrounds. Minor to moderate costs associated with operating a shuttle in the RH Channel (negligible effect if this service were contracted out)</td>
<td>Long-term minor, adverse impact to park operations. Minor increase to workload with constructing and maintaining new campsite, and managing the new site reservations system for a limited number of campsites. Increased workload of coordinating with the ferries to manage the entry quota system.</td>
<td>Long-term, minor adverse impact to park operations. Short-term increased workload of removing and rehabilitating one campsite at Little Todd, long-term increased workload associated with running the backcountry office.</td>
<td></td>
</tr>
</tbody>
</table>
4.2.3 Impacts of Alternatives for Managing Day Use in the Wilderness and Backcountry

**Alternative A for Day Use: No Action, Maintain Current Management Direction**

The details of this alternative are outlined in Chapter 2, p. 79-80. Maintaining the status quo for managing day use in the wilderness and backcountry could result in measurable environmental consequences. Actions that could result in impacts include:

- Visitors would have the option of participating in day tours organized and led by the NPS and the Rock Harbor Lodge, including hikes in and around Windigo and Rock Harbor, and tours with the *M.V. Sandy*. Access to these tours and group sizes would be limited only by tour boat capacities (currently 40 people).

- Private organizations leading groups on day trips (such as educational groups) would not be limited in group sizes or tour destinations.

Maintaining current policies for day use of Isle Royale’s wilderness and backcountry would be expected to have measurable consequences for visitor use and experiences, wilderness character, natural resources, cultural resources, and socioeconomics. Impacts would primarily be related to the numbers of people on organized tours and the locations of these tours. The assessment of impacts is based on current conditions and an assumption that day use would either continue at current levels or increase.

**Effects on Visitor Use and Experiences**

The *M.V. Sandy* carries a maximum of 40 passengers. The NPS keeps statistics on group sizes for the tours that are led by rangers. A recent 3-year average of the Hidden Lake/Lookout Louise tours showed 17 trips per season, 19 people per trip, and a maximum of 42 people on one tour. A similar look at Passage Island showed 11 trips per season, an average of 21 people per trip, and a maximum of 38 people on one tour (Parratt 2003). These numbers would be expected to continue, or possibly increase up to the maximum boat capacity of 40 people per trip in the future under this alternative. Visitor access to formal day tours would be limited only by tour boat capacities. There are no limits to the sizes of day tours organized by other organizations visiting the park. Therefore continuing the current management direction would retain high access to day tours.

This alternative would also be expected to have the beneficial effect of providing educational programs for a large number of visitors on day tours.

**Effects on Wilderness Character**

Currently the concessions-operated *M.V. Sandy* conducts tours to three areas that include designated wilderness—Hidden Lake/Lookout Louise, Passage Island, and the Minong Mine and Pine Mountain. Group sizes may be as large as 40 people on these tours, though tours this large are infrequent, as average groups are closer to 20 people. The NPS and other organizations also lead hikes within wilderness in the vicinity of Rock Harbor. Continuing high access to the park’s wilderness through a variety of organized day tours would have a beneficial effect of maintaining current opportunities for day visitors, lodge guests and other people taking day trips into the wilderness. However, large groups can have an adverse effect on the wilderness experiences of tour participants and others in the area. Noise, physical impacts, and crowding
Impacts of Alternatives for Day Use

associated with large groups can detract from wilderness experiences and naturalness. Noise, crowding, and displacement of wildlife in the area would be minor to moderate short-term adverse effects, while the trampling associated with large groups at destination sites could be a short or long-term minor to moderate impact, depending on the resilience of the impacted site.

The NPS does not collect information on day groups traveling independent of concessions or NPS-led tours. Therefore, it is not known how common it is for day groups to travel off trail. Under current conditions, day tours of any size could travel off trail with no restrictions. Were this to occur, or even become popular, there could be adverse effects on the naturalness of the park’s most pristine wilderness areas, including displacement of wildlife, trampling of sensitive plants and habitats, and reductions in natural sounds.

Effects on Natural Resources
Continuing current practices for day tours would be expected to have adverse impacts on soils, vegetation, wildlife, and natural quiet. Large day tours gathered around an attraction site can lead to expanded areas of impact beyond official trails, with vegetation trampling, loss of ground cover, compacted soils, and increased erosion. As noise and duration of human presence increases with group size, larger groups would also be expected to have a greater adverse effect on wildlife, displacing wildlife that is sensitive to human presence. These impacts would be expected to be localized to the immediate vicinity of the day tours. Impacts to wildlife would be expected to be short-term where tours are infrequent, while impacts to vegetation and soils could be long-term.

Effects on Cultural Resources
Large groups of unregulated size could expand beyond the trails and impact archaeological sites along and near trails. Historic structures at Edisen Fishery, Rock Harbor Lighthouse, and Passage Island Lighthouse (Franks, 1999) would be expected to could possibly be damaged if large groups expand beyond acceptable areas. There is no predicted impact on cultural objects located in the museum collection, but cultural objects located near the trails would be impacted if large groups extend beyond the trails.

Cultural landscapes at Edisen Fishery, the four lighthouses and Washington and Barnum Islands could be negatively impacted if large groups expand beyond the trails. The Park Service does not presently know of impacted ethnographic resources but unidentified resources near trails may be impacted if large groups expand beyond the width of the trails.

Socioeconomic Effects
Continuing or increasing the number of visitors traveling to the park on day trips would be expected to have minor, long-term economic benefits on the local communities. Day visitors spend money in the local communities on ferry passage, and may also spend money on food, lodging, and souvenirs. Maintaining high access to formal day tours could also help to increase the annual number of guests at the Rock Harbor Lodge, an economic benefit for that private business as well as the local communities those visitors travel through to reach the park. Lodge guests are expected to spend money in the local communities on ferry passage, food, lodging, and other incidental expenses. Day visitors are estimated to spend an average of $150-168 per party per day in the local communities, while Lodge guests spend $330 per party per day.
Impacts of Alternatives for Day Use

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(anything including food and lodging at the Rock Harbor Lodge). Any increase in these visitors would be
seen as a benefit to the tourism-dependent local economies.

Effects on Park Operations
If maintaining current conditions for day use were to result in increased trampling and erosion at
attraction sites, it could necessitate site restoration and maintenance work to minimize the spread
of impacted areas. This would be a minor adverse impact on park operations, as it would not be
expected to require additional staffing. No other measurable effects on park operations would be
expected.

Conclusion
Maintaining the status quo for managing day use on Isle Royale would be expected to have the
beneficial effect of providing high access to formal day tours. Adverse effects to wilderness
character, natural resources, and cultural resources associated with crowding and trampling at
destination sites and along trails would also be expected, as would the adverse effects associated
with crowding and large groups of people along wilderness and backcountry trails.

Nothing proposed in this alternative is reasonably expected to result in impairment of any park
resources or values.

Alternative B for Day Use: Maximize High Quality Experiences in Day Use Areas

The details of this alternative are outlined in Chapter 2, p. 80-81. Changes that could occur
under this alternative that may have measurable environmental consequences include:

• The possible destinations of day tours would continue, but group sizes would be limited
  based on location of the tour.
  Developed areas (Rock Harbor and Windigo)—no group size limits
  Frontcountry areas (bordering developed areas and significant attractions such as
  Eden Fishery, Scoville Point, Raspberry Island, Passage Island trail, and Suzy’s
  Cave)—group size limit of 20.
  Wilderness Portal, Backcountry and Primitive areas (the majority of trails and
  campgrounds, including concessions tours to Hidden Lake and Lookout Louise,
  and McCargoe Cove and the Minong Mine)—group size limit of 10.
  Pristine Areas (off-trail)—group size limit of 6

Implementing the changes proposed in this alternative for day use of Isle Royale’s wilderness
and backcountry could have measurable consequences for visitor use and experiences, wild-
erness character, natural resources, cultural resources, socioeconomics, and park operations.
Impacts would primarily be related to the numbers of people on organized tours, the locations of
these tours, and impacts on other visitors in day use areas.

Effects on Visitor Use and Experiences
Implementing this alternative is expected to result in either a reduction in the number of
participants in day use activities or a change in the types of activities offered relative to current
conditions. For example, NPS-led tours with the M.V. Sandy to Passage Island average about 21
participants with tours offered twice a week, and under this alternative not more than 20 people

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Impacts of Alternatives for Day Use

would be permitted per tour. Hidden Lake and Lookout Louise tours average about 19 participants on tours up to twice a week, and under this alternative the maximum size would be 10 people. There is a possibility that it would not be economically feasible to continue tours to some parts of the park with the small group sizes established in this alternative (e.g. McCargoe Cove or Hidden Lake, which would be limited to 10 people per group). If this were the case, there would be fewer organized activities for day trips, and day visitors would lose reasonable access to some areas of the park.

The adverse effect of reduced opportunities for visitors to participate in organized day activities could be offset by expanding the types of activities offered, such as an increase in NPS-led activities out of Rock Harbor. However, visitors may not consider these tours to be comparable to the boat tours in other areas of the park.

The NPS does not keep statistics on privately organized groups, so it is unknown to what extent implementing these day group limits would have an effect. However, this would be a change from current unlimited group sizes for these day tours, with an expected reduction in access to these activities. Thus it is expected that this alternative could have a long-term adverse effect on public access to day tours on Isle Royale.

This alternative would also be expected to have the long-term beneficial effect of improving the experiences of participants on day tours, and other visitors in the area of the tours. The small group sizes proposed in this alternative are compatible with group size limits for camping parties in the area of day tours, and are compatible with the appropriate opportunities within each management zone.

Effects on Wilderness Character
The group size limits proposed for day tours in this alternative would be expected to reduce crowding, noise, and trampling along the trails and destination sites used for day tours within the park’s wilderness. This would be expected to improve the quality of wilderness experiences for tour participants as well as other visitors in the area and reduce impacts to the naturalness of the areas; a long-term beneficial effect. However, these limits would also restrict access to these tours, reducing the number of visitors benefiting from such opportunities: a long-term adverse effect.

Effects on Natural Resources
This alternative would be expected to have the greatest beneficial effect on natural resources. Implementing this alternative would be expected to have the beneficial effect of reducing the number of people gathered at destination areas, with associated reduction in trampling. Compared to current conditions, this would be expected to have a beneficial effect on vegetation and soils. Reducing the group sizes of day tours in the park’s wilderness and backcountry would also be expected to have the beneficial effect of reducing noise in these areas, a benefit to wildlife. However, if this alternative were to result in a decrease in the total number of visitors participating in organized day tours each year, then it could have the adverse effect of reducing the number of people participating in educational programs. Public education is an important aspect of any conservation program. Because the NPS would have other options for public
education, including outreach programs, publications, and programs focused on visitors prior to reaching the park, this would be a minor adverse impact.

**Effects on Cultural Resources**
This alternative limits the possible negative impacts from large groups of unregulated size expanding beyond the trails. Appropriate group size limits could lessen possible impacts to historic structures and to archeological sites located along and near trails. Possible adverse impacts to cultural landscapes at Edisen Fishery, the four lighthouses and Washington and Barnum Islands could also be minimized with group size limits. The park service does not presently know of impacted ethnographic resources but with the size limits proposed in this alternative unidentified resources near trails would be expected to experience less negative impact from large groups expanding beyond the width of the trails.

This alternative would be expected to be effective in lessening impacts to cultural resources because it establishes limits on the number of day users in a single group. It is very large groups, rather than a high total number of visitors, that are liable to expand beyond trails and acceptable areas thereby damaging cultural resources. By limiting the size of single groups this alternative limits the potential negative impacts to sensitive cultural resources, and would be expected to have the greatest beneficial effect on protecting cultural resources. However, limiting day tour sizes and the number of people able to visit cultural sites on guided day tours may limit public education about the park’s cultural resources. Incorporating off-site cultural education into the park’s interpretive programs and public outreach efforts could offset this adverse effect.

**Socioeconomic Effects**
Limiting group sizes may adversely affect how tour groups operate and the financial viability of operating day tours within Isle Royale’s wilderness and backcountry. Additionally, if establishing these group size limits were to result in a reduction in day visitors, Lodge guests, or other visitors who would participate in day trips, then this alternative could have a long-term adverse effect on local communities. Day visitors and lodge guests are estimated to spend more money in the local communities than backcountry visitors.

**Effects on Park Operations**
Implementing group size limits could result in the NPS increasing the types of organized day activities offered in the park to accommodate visitors interested in these activities. If this were the case, the NPS workload could increase, with a possible need to increase Rock Harbor or Windigo interpretive staff during the summer season. This could be a long-term minor adverse impact on park-wide operations, and a moderate impact on interpretive operations.

**Conclusion**
Relative to the other alternatives, this alternative would be expected to have beneficial effects on wilderness character, natural and cultural resources, and the experiences of visitors on day tours or in the vicinity of day tours. However, it would also be expected to have an adverse effect on public access to organized day activities. This alternative could result in the greatest decrease in the number of people participating in organized day activities, and possibly an elimination of some existing tours.
Nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.

**Alternative C for Day Use: Expand Opportunities for Quality Day Use Activities (The Preferred Alternative)**

The details of this alternative are outlined in Chapter 2, p. 81-82. Changes that would be expected under this alternative that may have measurable environmental consequences include:

- The possible destinations of day tours would continue, but large groups would need to split into multiple groups in some areas of the park to not exceed group size limits in those areas:
  - **Developed areas** (Rock Harbor and Windigo)—no group size limits
  - **Frontcountry areas** (bordering developed areas and significant attractions such as Edisen Fishery, Scoville Point, Raspberry Island, Passage Island trail, and Suzy’s Cave)—group size limit of 20.
  - **Wilderness Portal, Backcountry and Primitive areas** (the majority of trails and campgrounds, including concessions tours to McCargoe Cove and the Minong Mine)—group size limit of 10. Hidden Lake and Lookout Louise, in this zone, would be an exception, allowing group with up to 15 people.
  - **Pristine Areas** (off-trail)—group size limit of 6
- A new trail would be constructed in Windigo

Implementing the changes proposed in this alternative for day use of Isle Royale’s wilderness and backcountry could have measurable consequences for visitor use and experiences, wilderness character, natural resources, cultural resources, socioeconomics, and park operations. Impacts would primarily be related to the numbers of people on organized tours, the locations of these tours, and impacts on other visitors in day use areas.

**Effects on Visitor Use and Experiences**

With this alternative, the same opportunities currently available for day tours would continue, as long as the tour organizers were able to provide multiple tour leaders for larger groups. If tour organizers were unable to provide an adequate number of leaders, then access to guided day hikes could be limited, as with Alternative B. It is thought that the quality of experiences for tour participants would improve with smaller sizes, and experiences would be more appropriate for backcountry and wilderness settings. With smaller groups, tour participants would be expected to be able to hear the guide better, have a greater opportunity to interact with the guide, and generally stay together as one cohesive tour better.

Smaller tour sizes could also have a beneficial effect on other visitors in the area of the tours, as noise, and other adverse impacts associated with large groups would decrease. However, splitting large tours into multiple groups on the same trail could increase the duration and frequency of encounters and noise, a potentially adverse effect compared to the current condition of one encounter with a larger group.

Group size limits are expected to primarily affect day activities in the Rock Harbor area. The new trail in Windigo proposed in this alternative would provide an opportunity for a loop hike...
into the backcountry for day visitors traveling on the Wenonah. The majority of visitors who visit the park for part of a day visit Windigo with just a few hours to experience Isle Royale, and the trail would be intended for their benefit. Any new organized tours on this trail would be compatible with a backcountry trail and not exceed 10 people.

Effects on Wilderness Character
Compared to current conditions, this alternative would be expected to have the same beneficial effects on the experiences of tour participants and others in the area associated with smaller groups along the trail and at destination sites as described in Alternative B. However, unlike Alternative B, this alternative would likely result in a greater number of tour groups. This would result in the beneficial effect of greater opportunities for visitors to participate in day tours in the wilderness, but could also have adverse effects for other visitors in the area. An increase in the number of tours groups at a given time on a trail could increase the frequency of encounters and the duration of noise associated with the tour group, though these impacts would be expected to be short-term.

Similar to Alternative A, smaller groups would be expected to have the beneficial effect of reducing trampling off trail and at destination sites associated with large groups, and reducing the threat of adverse impacts in pristine areas associated with large groups. However, splitting into multiple groups could increase the extent and duration of wildlife displacement associated with human presence and noise. These adverse effects are expected to be short-term and reversible.

This alternative also proposes the creation of a new trail in Windigo, specifically designed as a loop trail for day visitors, such as those traveling on the Wenonah or by private boat. This trail would create an opportunity for a loop trail with a more remote, backcountry feel than the Windigo Nature Trail. This would also provide an option other than hiking on the trails used by backpackers. This trail would have the long-term adverse impact of expanding development in the park. It would also have the beneficial effect of providing opportunities for higher quality wilderness and backcountry experiences on day visits to the park. It would also be intended to reduce day use along backpacker routes out of Windigo, a beneficial effect on the wilderness experience of backpackers.

The proposed new trail would be constructed in what is currently zoned Pristine, requiring conversion of the trail corridor to Backcountry Zone. Efforts would be made to keep the trail corridor within non-wilderness, but portions could extend into designated wilderness, development that would be a localized moderate to major adverse impact to naturalness.

Overall, this alternative is expected to have both beneficial and adverse effects on wilderness character compared to current conditions and Alternative B. The beneficial effects would be expected to be long-term and the adverse effects would be expected to be short-term. The severity of these effects are unknown, but are expected to be minor to moderate.

Effects on Natural Resources
Compared to current conditions, this alternative would be expected to have less adverse effects on vegetation and soils associated with trampling at destination areas, because fewer people
Impacts of Alternatives for Day Use

would be gathered at destination sites at one time. This alternative would likely result in a
greater number of groups on a trail, though these groups would be smaller. Compared to current
conditions with all of the tour participants traveling in one concentrated group, this could have an
adverse effect on some wildlife. Adverse effects, though less severe, could be longer lasting or
more widespread, depending on whether the tours split up along the same trail or on different
trails. For example, human noise, which displaces wildlife, would be expected to be longer
lasting if large groups were to split up and hike down the same trail than if they all traveled as
one consolidated group.

Creating a new trail near Windigo for day use could have the adverse effects of fragmenting
habitat, expanding development, and increasing the disturbances associated with human
presence. On a local scale these impacts could be moderate to major, but park-wide would be
minor. Natural resource surveys in the area would help to minimize these adverse impacts by
selecting a route for the trail that would have the least impact possible on sensitive resources.

Effects on Cultural Resources
This alternative limits the possible negative impacts from large groups of unregulated size
expanding beyond the trails. Appropriate group size limits could lessen possible impacts to
historic structures and to archeological sites located along and near trails. Possible impacts to
cultural landscapes at Edisen Fishery, the four lighthouses and Washington and Barnum Islands
could also be minimized with group size limits. The park service does not presently know of
impacted ethnographic resources but unidentified resources near trails may experience less
negative impact from large groups expanding beyond the width of the trails with the size limits
proposed in this alternative.

An archeological survey along the proposed route of the new trail in Windigo would prevent
adverse impacts to cultural resources associated with construction of the trail.

This alternative could be effective in lessening impacts to cultural resources because it
establishes limits on the number of day users in a single group. It is very large groups, rather
than a high total number of visitors, that are liable to expand beyond trails and acceptable areas
thereby damaging cultural resources. By limiting the size of single groups this alternative limits
the potential negative impacts to sensitive cultural resources. Additionally, allowing boat tours
to carry multiple smaller groups this alternative would provide better access to cultural resources
than would Alternative B, while also improving conditions over the current conditions
(Alternative A).

Socioeconomic Effects
Requiring large groups to split up would require multiple group leaders, which could affect how
tour groups operate and the financial viability of operating day tours within Isle Royale’s
Wilderness and backcountry. If this alternative were to result in some organizations no longer
being able to operate in the park, that would be considered a long-term adverse effect. However,
one intention of this alternative is to provide more high-quality activities for day visitors to Isle
Royale’s wilderness and backcountry. Increasing options for trips and improving the quality of
activities could result in increased day visitation to the park. If this were the case it would be a
long-term beneficial effect for local communities and their economies.
Effects on Park Operations
Requiring large tour groups to split into multiple groups for guided hikes could have an adverse impact on NPS operations. Some NPS-led tours would require more staff to accommodate current or increased interest in day tours. For example, groups on Hidden Lake/Lookout Louise tours average 19 people, and under this alternative two rangers would be needed to lead two distinct groups to comply with the 15-person size limit. This could have a long-term moderate adverse impact on the Rock Harbor interpretive program.

Creating a new trail near Windigo would have a minor to moderate short-term adverse effect on park operations, associated with the costs of construction. This would require either hiring additional staff or removing staff from other trail projects. Additionally, there would be an increased workload for the trail crew with additional miles of trail to maintain; a minor long-term adverse effect.

Conclusion
Relative to current conditions (Alternative A) and Alternative B, this alternative would be expected to maintain high access to organized day activities while also improving the quality of experiences for tour participants. Some adverse effects on wilderness character and natural resources would continue, but beneficial effects on cultural resources and public education would increase over current conditions.

Nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.
## Impacts of Alternatives for Day Use

**Table 20: Comparison of Environmental Consequences for Day Use Alternatives**

<table>
<thead>
<tr>
<th>Proposed Changes</th>
<th>Alt A: No Action Alternative</th>
<th>Alt B</th>
<th>Alt C: (Preferred)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visitor Use and Experiences</strong></td>
<td>Long-term, moderate beneficial effect of high level of access to tours and group activities because of no size limits. Some visitors’ experiences may be negatively affected by being part of such a large group.</td>
<td>Long-term, moderate adverse impact to visitor access to tours and group activities because of low size limits. Long-term, moderate, beneficial impact to quality of tours due to smaller group sizes.</td>
<td>Long-term minor adverse impact to visitor access to tours and group activities due to size limitations. Long-term, moderate, beneficial impact to quality of tours due to smaller group sizes.</td>
</tr>
<tr>
<td><strong>Wilderness</strong></td>
<td>Large groups can have a negative impact on the wilderness experience both for those in the group and for others. Minor, short-term adverse impacts include noise, crowding, and displacement of wildlife. Trampling could be a short or long-term minor to moderate impact.</td>
<td>Smaller groups are more compatible with wilderness experiences both for group members and others. Minor, short-term beneficial impacts include less noise, crowding and displacement of wildlife. Less trampling could be a short or long-term minor to moderate impact.</td>
<td>Smaller groups are more compatible with wilderness experiences both for group members and others. Minor, short-term beneficial impacts include less noise, crowding and displacement of wildlife. Less trampling could be a short or long-term minor to moderate impact.</td>
</tr>
<tr>
<td><strong>Natural Resources</strong></td>
<td>Adverse impacts to wildlife would be localized and short-term. Adverse impacts to vegetation and soils would be localized and could be long-term.</td>
<td>Beneficial impacts to wildlife would be localized and short-term. Beneficial impacts to vegetation and soils would be localized and could be long-term.</td>
<td>Beneficial impacts to wildlife would be localized and short-term. Beneficial impacts to vegetation and soils would be localized and could be long-term.</td>
</tr>
<tr>
<td><strong>Cultural Resources</strong></td>
<td>Cultural objects located near the trails could suffer long-term minor to moderate adverse impacts. Cultural landscapes may suffer short-term minor adverse impacts.</td>
<td>Cultural objects located near the trails would gain a minor to moderate beneficial impact from the smaller groups. Cultural landscapes would see a minor, short-term beneficial impact.</td>
<td>Cultural objects located near the trails would gain a minor to moderate beneficial impact from the smaller groups. Cultural landscapes would see a minor, short-term beneficial impact.</td>
</tr>
<tr>
<td><strong>Socio-economic Effects</strong></td>
<td>Possible minor, long-term beneficial impacts if the number of visitors to the park were to increase based on the continued availability of day trips.</td>
<td>Possible minor, long-term adverse impacts if the number of day visitors to the park decreased with decreased access to guided day trips. Possible long-term adverse impact to organizations providing day trips, with fewer participants.</td>
<td>Possible minor, long-term adverse impacts if the number of day visitors to the park decreased based on availability of day trips. Possible long-term adverse impact to organizations providing day trips, as additional leaders may be required.</td>
</tr>
<tr>
<td><strong>Park Operations</strong></td>
<td>Possible minor adverse impact if increased staffing were required to minimize the spread of impact from trampling</td>
<td>Possible long-term, minor adverse impact to park-wide operations and a moderate impact to interpretative operations based on the need for additional staff to lead more, smaller tours</td>
<td>Possible long-term, minor adverse impact to park-wide operations and a moderate impact to interpretative staff based on the need for additional staff to provide multiple leaders for guided tours</td>
</tr>
</tbody>
</table>
4.2.4 Impacts of Alternatives for Campfires in the Wilderness and Backcountry

Alternative A for Campfires: No Action, Maintain the Current Management Direction

The details of this alternative are outlined in Chapter 2, p. 83-84. Continuing the status quo for campfires would be expected to have measurable environmental consequences for the following reasons:

- Impacts to resources associated with campfires would continue or increase in the areas within and surrounding campsites where fires are permitted.
- Opportunities for visitors to camp with fires would continue at some campgrounds.

Maintaining the current policies for campfires in Isle Royale’s wilderness and backcountry would be expected to have measurable consequences for visitor use and experiences, wilderness character, natural resources, cultural resources, and park operations. Impacts would primarily be related to the opportunities available for campers, impacts associated with collecting and burning locally collected firewood, and maintenance associated with campfires. Because campfires are not known or expected to have any effect on park-dependent businesses or economies, there are no known socioeconomic concerns.

Campfires are permitted within NPS-provided metal fire rings or grills only. To minimize the introduction of exotic species to the island no imported firewood is permitted, campers collect firewood locally. Campfires are currently permitted within NPS fire rings and grills at 11 campgrounds: Caribou Island, Chippewa Harbor, Malone Bay, Siskiwit Bay, Island Mine, Little Todd, Todd Harbor, McCargoe Cove, Belle Isle, Duncan Narrows, and Duncan Bay.

Effects on Visitor use and Experiences

Retaining or removing campfire rings would not be expected to have a measurable effect on park visitation, though the locations of permissible campfires could influence where some parties travel. Because some campers value campfires as an important part of a backcountry experience they may seek out those campsites where campfires were allowed. However, overall the policy of allowing campfires at some campgrounds, and not at others is expected to have both beneficial and adverse effects on visitors’ experiences. Public comments reveal that while some people value the opportunity for campfires and think this opportunity should be more widely available at Isle Royale, others report that the impacts to natural resources associated with campfires detract from their experiences (Isle Royale 2002). Locating campfires based on suitable resource conditions and removing fire rings to allow for resource recovery is expected to alleviate some of these adverse consequences.

Effects on Wilderness Character

Continuing to allow campfires at some Isle Royale campgrounds would be expected to continue to have minor adverse effects on the naturalness of the areas surrounding those campgrounds, and possible minor beneficial or adverse effects on wilderness experiences, depending on a visitor’s viewpoint. Current conditions and visitor comments are reported by the park’s Wilderness Rangers. The development of informal trails, loss of woody debris and damage to trees associated with collecting firewood (e.g. limbing, scarring, and pealed bark detracts from the naturalness of areas surrounding campsites where campfires are allowed.) These adverse
Impacts of Alternatives for Campfires

Effects are currently noticeable at sites allowing fires and would be expected to increase the longer fires were permitted at a specific site. The opportunity to build and cook with campfires, a valued wilderness skill, and the social value of gathering around a campfire could have a beneficial effect on people’s wilderness experiences. However, the increased noise commonly associated with groups of people gathered around a campfire at night may have an adverse impact on other campers seeking tranquility and natural quiet. Campers do have the option of choosing campgrounds where campfires are or are not allowed.

All of these effects would be minor to moderate, depending on the extent to which Leave-No-Trace practices were followed, and limited to the vicinity of campgrounds allowing fires. Loss of woody debris, the development of informal trails, and the social impacts associated with campfires are reversible, though damage to trees is irreversible.

Effects on Natural Resources
Allowing campfires at specific campgrounds is known to have both beneficial and adverse impacts on natural resources in and surrounding campsites. Campsite monitoring on Isle Royale suggests that the presence of campfire rings may concentrate visitor activities, with smaller areas of vegetation trampling and soil exposure within a campsite; a beneficial effect. However, campsites with fire rings also have marginally greater tree damage adjacent to campsites and more informal trails, which are attributed to firewood gathering (Farrell and Marion 1998). The loss of firewood from these areas is also an adverse impact, in that this wood is important as woody debris associated with nutrient cycling, ground cover, and habitat for small animals. Some of this damage is temporary, but tree-liming, scarring, and other damage that often goes hand-in-hand with campfires is permanent damage for a tree. These effects would be expected to continue as localized to the campsites with fires, and would be expected to be minor to moderate to the extent that campfire regulations and Leave-No-Trace practices were followed. Temporarily prohibiting campfires would allow for recovery from non-permanent damage at a campsite.

The above effects are evident at some of the campgrounds that currently have fire rings or grills. For example, the lower limbs of many of the coniferous trees in and around Little Todd campsites have been removed, reducing screening between sites and the naturalness of the area. At Island Mine although there is abundant coarse woody debris in the maple forest of the area, much of the coarse woody debris is gone within the immediate vicinity of the campsites. In general, where there are fire rings, some people also tend to attempt to burn their trash instead of packing it out, which results in greater amounts of trash left behind in campsites with fire rings.

Isle Royale does not maintain detailed records on illegal campfires, but wilderness rangers report cleaning up the remains of illegal campfires consistently at some of the campgrounds with fire bans. Illegal fires are generally more common in spring and fall. Illegal fires have an adverse impact on natural resources, including sterilizing soils, damaging tree roots, and scarring rocks. There is also a concern for the more serious adverse effect of human-caused wildfires. Since 1994, there have been at minimum 3 known cases of illegal campfires spreading and requiring NPS suppression action (pers. com., Valencia, March 23, 2004).
Impacts of Alternatives for Campfires

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Effects on Cultural Resources
Campfires are currently allowed at eleven campgrounds. Under this alternative campfires would continue to be allowed at the same campgrounds unless resource conditions merit the removal of fire rings from a particular campground. Campfires and visitors seeking firewood have the potential to negatively impact cultural resources near these campgrounds. People establishing social trails in their search for firewood could impact archeological sites near campgrounds. Campfires in campgrounds near historic structures at Chippewa Harbor and Belle Isle (Franks, 1999) could impact the structures if people used them as a convenient source of fuel or if an uncontrolled campfire burned the structures. Cultural objects located in the park and near campgrounds could be impacted by firewood seekers. Campfires are not allowed in cultural landscapes. Park staff do not know of any ethnographic resources impacted by campfires, but unidentified resources could be impacted by firewood gathering or uncontrolled fires. Ground fires could also limit the ability of archeological researchers to use remote sensing technology to look for archeological sites. These technologies rely on differences in either magnetism or density between archeological resources and the surrounding materials. Fire can change the magnetism and density of ground and thereby make such remote research very difficult in the future.

Effects on Park Operations
Maintaining the current policies for campfires would continue the NPS workloads and time associated with maintaining and cleaning up fire rings, picking up trash burned illegally, educating the public about Leave-No-Trace practices, and enforcing fire regulations. There would not be an expected increase in staffing. The NPS would also continue monitoring resource conditions related to campfires, and retain the discretion to remove fire rings where resource impacts became unacceptable.

Conclusion
Continuing with the status quo for campfires in the park would be expected to have both beneficial and adverse effects on wilderness character and visitor experiences. Minor to moderate long-term adverse effects on natural and cultural resources would be expected within the vicinity of where campfires are permitted.

Nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.

Alternative B for Campfires: Rotate Campfire Rings Between Campgrounds Based on Resource Conditions (the Preferred Alternative)

The details of this alternative are outlined in Chapter 2, p. 84-85. Changes that could occur under this alternative that may have measurable environmental consequences include:

- Campfires would be allowed in a limited number of designated campgrounds, based on appropriate resource conditions, which could change from year to year.
- The NPS would make a commitment to monitor resource conditions associated with campfires to determine if impacts to resources were acceptable.
Implementing this alternative and rotating campfires between a limited number of campgrounds within Isle Royale’s wilderness and backcountry could have measurable consequences for visitor use and experiences, wilderness character, natural resources, cultural resources, and park operations. Impacts would primarily be related to the opportunities available for campers, impacts associated with collecting and burning locally collected firewood, and NPS workloads required to monitor conditions and maintain rotating campfires. Because campfires are not known or expected to have any effect on park-dependent businesses or economies, there would be no socioeconomic concerns.

**Effects on Visitor Use and Experiences**
Retaining or removing campfires would not be expected to have a measurable effect on park visitation, though the locations of permissible campfires could influence where some parties travel. Because some campers value campfires as an important part of a backcountry experience they may seek out those campsites where campfires were allowed. Overall, however, the policy of allowing campfires at some campgrounds, and not at others is expected to have both beneficial and adverse effects on visitors’ experiences, depending on personal preference. Public comments reveal that while some people value the opportunity for campfires and think this opportunity should be more widely available at Isle Royale, others report that the impacts to natural resources associated with campfires detract from their experience. Locating campfires based on suitable resource conditions and removing fire rings to allow for resource recovery is expected to alleviate some of the adverse consequences.

**Effects on Wilderness Character**
Allowing campfires at some Isle Royale campgrounds would be expected to have adverse effects on the naturalness of the areas surrounding those campgrounds, and possible beneficial or adverse effects on wilderness experiences. The development of informal trails, loss of woody debris and damage to trees associated with collecting firewood would detract from the naturalness of areas surrounding campsites with campfires. The opportunity to build and cook with campfires, a valued wilderness skill, and the social value of gathering around a campfire would be a beneficial effect on people’s wilderness experiences. However, the increased noise commonly associated with groups of people gathered around a campfire at night may have an adverse impact on other campers seeking tranquility and natural quiet. Under this alternative campers would have the option of choosing campgrounds where campfires were or were not allowed.

All of these effects would be minor to moderate, depending on the extent to which Leave-No-Trace practices were followed.

**Effects on Natural Resources**
Allowing campfires could have both beneficial and adverse impacts on natural resources in and around campsites. Campsite monitoring on Isle Royale suggests that the presence of campfire rings may concentrate visitor activities, with smaller areas of vegetation trampling and soil exposure within a campsite; a beneficial effect. However, campsites with fire rings also have marginally greater tree damage adjacent to campsites and more informal trails, which are attributed to firewood gathering. The loss of firewood from these areas is also an adverse impact, in that this wood is important as woody debris associated with nutrient cycling, ground
cover, and habitat for small animals (Farrell and Marion 1998). Some of this damage is temporary where woody debris would re-accumulate in the absence of fires. However, tree-liming, scarring, and other damage that often goes hand-in-hand with campfires is permanent damage for a tree. These effects would be localized to the campsites with fires, and would be expected to be moderate to the extent that campfire regulations and Leave-No-Trace practices were followed. Rotating campfires to different campsites would allow for recovery from non-permanent damage, but would also spread the extent of permanent damage.

A further beneficial effect of allowing campfires within NPS-provided fire rings appears to be success in discouraging illegal fires at those sites (Reid and Marion 2002). Allowing fires within NPS-selected areas in metal fire rings is expected to have less adverse impact on natural resources than multiple illegal fire sites that would cumulatively spread scarring, vegetation and duff loss, and soil sterilization.

Effects on Cultural Resources
Under this alternative campfires would be rotated to campgrounds that met certain basic requirements. Campfires and visitors seeking firewood have the potential to negatively impact cultural resources near these campgrounds. People establishing social trails in their search for firewood might impact archeological resources near campgrounds where fires have not been allowed and firewood seekers have not impacted the surrounding area and vegetation. Campfires in campgrounds near historic structures (Chippewa Harbor and Belle Isle) could impact the structures if people used the structures as a convenient source of fuel or if an uncontrolled campfire burned the structures. Other campgrounds near historic structures would not be included in the rotation of fire rings.

Cultural objects located in the park and near campgrounds where fires have not previously been allowed could be impacted by firewood seekers. Campfires are not allowed in cultural landscapes and campgrounds in cultural landscapes would not be included in the rotation of fire rings. Park staff do not know of any ethnographic resources impacted by campfires, but unidentified resources could be impacted by firewood gathering or uncontrolled fires. Ethnographic resources might experience less negative impact under this alternative because fire rings would be rotated away from campgrounds where available fuel has been used. However, unknown ethnographic resources near campgrounds where fires are not currently allowed might be subject to negative impacts from firewood gathering under this alternative.

Ground fires could also limit the ability of archeological researchers to use remote sensing technology to look for archeological sites. These technologies rely on differences in either magnetism or density between archeological resources and the surrounding materials. Fire can change the magnetism and density of ground and thereby make such remote research very difficult in the future. Completing surveys prior to installing fire rings could mitigate this.

Effects on Park Operations
Rotating campfire rings between campgrounds and the associated monitoring necessary to determine when fire rings need to be moved would require a minor to moderate increase in NPS workload and associated spending. The additional maintenance work would be associated with
moving fire rings and restoring the sites where fire rings were removed. Site restoration would involve removing remains of fires and rehabilitating areas damaged by campfires.

Conclusion
Relative to current conditions (Alternative A) and Alternative C, this alternative would be expected to balance a beneficial effect on wilderness and visitor experiences with a minor to moderate adverse effect on natural and cultural resources. Impact monitoring and careful site selection, cornerstones of this alternative, would be designed to minimize these adverse effects.

Nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.

Alternative C for Campfires: Eliminate all Campfires from the Wilderness and Backcountry

The details of this alternative are outlined in Chapter 2, p. 85-86. Changes that could occur under this alternative that may have measurable environmental consequences include:

- All campfires would be banned in the park, and fire rings and grills would be removed from campgrounds.

Implementing this alternative and banning all campfires in Isle Royale’s wilderness and backcountry could have measurable consequences for visitor use and experiences, wilderness character, natural resources, cultural resources, and park operations. Impacts would primarily be related to the opportunities available for campers, impacts associated with collecting and burning locally collected firewood. Because campfires are not known or expected to have any effect on park-dependent businesses or economies, there would be no socioeconomic concerns.

Effects on Visitor Use and Experiences
Banning campfires on Isle Royale would not be expected to substantially affect visitation to the park. However, visitors would no longer have the opportunity to camp with campfires. This may be an adverse effect for people who value campfires as part of their camping experiences. Other visitors may view a campfire ban as a beneficial effect for protecting park resources and the naturalness of areas surrounding campsites.

Effects on Wilderness Character
Removing all campfires from Isle Royale campgrounds would be expected to have beneficial effects on the naturalness of the areas surrounding those campgrounds, and possible beneficial or adverse effects on wilderness experiences. The development of informal trails, loss of woody debris and damage to trees associated with collecting firewood detract from the naturalness of areas surrounding campsites with campfires. Thus eliminating campfires would be expected to be a beneficial effect on naturalness. However, building and cooking with campfires is a valued wilderness skill, and gathering around a campfire a valued social experience, so banning campfires could have an adverse effect on people’s wilderness experiences. Conversely, without campfires the increased noise commonly associated with groups of people gathered around a campfire at night would be gone which would have a beneficial impact on other campers seeking tranquility and natural quiet.
Although this alternative would eliminate the opportunity to camp with campfires on Isle Royale, there are many other recreation and wilderness areas in the Lake Superior Region where campfires are allowed and where people may find this opportunity. Therefore, the adverse effects of banning campfires on Isle Royale would be considered minor.

**Effects on Natural Resources**

Banning campfires could have both beneficial and adverse impacts on natural resources in and surrounding camp sites. Campsite monitoring on Isle Royale suggests that the presence of campfire rings may concentrate visitor activities, with smaller areas of vegetation trampling and soil exposure within a campsite. Removing campfires could result in wider areas of vegetation trampling and loss of duff and the organic soil layer, an adverse effect. Campsites with fire rings do have marginally greater tree damage adjacent to campsites and more informal trails, which are attributed to firewood gathering. Removing fire rings would likely have the long-term beneficial effect of reducing tree damage in the vicinity of campsites (Farrell and Marion 1998). A loss of coarse woody debris is also associated with campfires, so this alternative would be expected to have the positive effect of restoring and preserving woody material that is ecologically valuable for nutrient cycling, ground cover, and habitat for small animals. The build-up of fine and coarse woody debris in the absence of campfires may also result in increased intensity of natural fires or escaped illegal fires.

A possible adverse impact of this alternative is that the frequency of illegal campfires may increase with a greater chance of people building fires in sensitive habitats where fires would be inappropriate. Were campfires allowed on a limited basis it is expected that fewer people would disregard fire regulations, since they would have some opportunity to build fires and the NPS would have the opportunity to focus educational efforts on low-impact fires. A comparison of impacts of fires from protected areas with different campfire policies, showed that restrictive campfire policies such as prohibitions do not appear to prevent campfire impacts (Reid and Marion, 2002.)

**Effects on Cultural Resources**

Under this alternative campfires would not be allowed at Isle Royale. Campfires and visitors seeking firewood have the potential to negatively impact cultural resources located near campgrounds. If fires were no longer allowed at Isle Royale these potential negative impacts might be avoided. However, if an increase in illegal campfires resulted from removing all of the fire rings from the island there could be other negative consequences. Illegal campfires might have a greater chance of becoming uncontrolled and affecting larger areas of natural and cultural resources. Under the other alternatives the Park Service decides which campgrounds will have fire rings and could take into account sensitive natural and cultural resources. Under this alternative, there would be no fire rings at any campground and more visitors might decide to make illegal fires. Possible impacts to archeological resources, historic structures and cultural objects associated with firewood gathering should be less with this alternative. Under all of the alternatives, campfires would not be allowed in cultural landscapes. Unknown ethnographic resources might experience less negative impact from firewood gathering under this alternative because the resources would not be trampled or used for fuel.
Impacts of Alternatives for Campfires

Effects on Park Operations
Removing campfires would initially have the adverse effect of minor to moderate cost increases to remove fire rings and restore old fire sites. Long-term the effect would be beneficial to park workloads and costs, eliminating the maintenance load associated with managing campfires, a minor beneficial effect. However, were this alternative to result in increased illegal campfires, there would be a minor adverse effect of increased workloads and costs to backcountry staff associated with regulation enforcement and cleanup of fire remains.

Conclusion
This alternative would be expected to result in both beneficial and adverse impacts to wilderness character, natural and cultural resources, and visitor experiences. Nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.
### Table 21: Comparison of Environmental Consequences for Campfire Alternatives

<table>
<thead>
<tr>
<th>Proposed Changes</th>
<th>Alt A: Current Conditions</th>
<th>Alt B: Preferred</th>
<th>Alt C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: in all cases standing grills would be replaced with fire rings, except at the Rock Harbor Marina.</td>
<td>Campfires would continue to be allowed at 11 campgrounds were they are currently allowed</td>
<td>Campfires would be rotated to appropriate campgrounds based on the fuel availability and the sensitivity of resources</td>
<td>Campfires would not be allowed at any campgrounds in the park</td>
</tr>
<tr>
<td>Wilderness</td>
<td>Long-term, minor beneficial effect for those who see campfires as part of wilderness. Long-term minor adverse effect for those who do not. Long-term, minor adverse effects to naturalness.</td>
<td>Long-term, minor beneficial effect for those who see campfires as part of wilderness. Long-term minor adverse effect for those who do not. Long-term, minor adverse effects to naturalness.</td>
<td>Long-term, minor adverse effect for those who see campfires as part of wilderness. Long-term minor beneficial effect for those who do not. Long-term, minor beneficial effects to naturalness.</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>Long-term, minor, beneficial impacts to natural resources due to concentration of visitor impacts in campgrounds with fire rings and fewer illegal fires. Long-term, minor adverse impacts because of tree damage, social trails and loss of woody debris.</td>
<td>Long-term, minor, beneficial impacts to natural resources due to concentration of visitor impacts in campgrounds with fire rings and fewer illegal fires. Long-term, minor adverse impacts because of tree damage, social trails and loss of woody debris. Rotation should mitigate some of these adverse impacts.</td>
<td>Long-term, minor beneficial impacts to natural resources due to less tree damage, fewer social trails and more woody debris allowed to decompose. Long-term, minor, adverse impacts due to greater chance of illegal fires in sensitive habitats.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>Long-term, minor adverse impacts from social trails created by firewood seekers and from uncontrolled fires.</td>
<td>Long-term, minor adverse impacts from social trails created by firewood seekers and from uncontrolled fires.</td>
<td>Long-term, minor beneficial impacts from fewer social trails created by firewood seekers. Possible long-term, minor adverse impacts from increased illegal fires</td>
</tr>
<tr>
<td>Park Operations</td>
<td>No expected increases in staffing or maintenance costs.</td>
<td>Long-term, minor, adverse impact to current staff workloads from assessment, monitoring and moving fire rings and restoring the sites.</td>
<td>Short-term minor to moderate adverse impact to work loads from removing fire rings, long-term minor beneficial impact of less work when rings are removed, unless the number of illegal fires increased.</td>
</tr>
</tbody>
</table>
4.2.5 Impacts of Alternatives for Fire Towers in the Wilderness

Alternative A for Fire Towers: No Action, Maintain the Existing Fire Towers

The details of this alternative are outlined in Chapter 2, p. 87. This alternative would maintain the status quo, retaining the park’s three fire towers, all of which are located within designated wilderness. Ishpeming and Feldtmann towers would be minimally maintained for visitor and staff safety, but would not be generally open to the public. Retaining Isle Royale’s three fire towers could have measurable consequences for visitor experiences, wilderness character, natural resources, cultural resources, and park operations. Impacts would primarily be related to the physical presence of towers, and safety related to their disrepair. Retaining the fire towers would not be expected to have any socioeconomic impacts on park-dependent businesses or economies.

Effects on Visitor Experiences
Although all of the fire towers are kept locked at the top, visitors do have the option of climbing the stairs of the towers for a view. On a clear day, climbing the Feldtmann Tower or Ojibway Tower offers an extensive view of the park and distant mainland. Trees currently block the view from the Ishpeming Tower. Retaining all of the fire towers would make this opportunity available to visitors on both ends of the island, a beneficial effect of this alternative.

Effects on Wilderness Character
Isle Royale’s three fire towers are located directly on wilderness trails (see Map 4, Appendix C). They are all metal towers ranging in size from 10 to 65 feet (not including the cabin height). As such they are unavoidably obvious to hikers in those areas as permanent structures and modern artifacts. Originally built for fire monitoring, they no longer serve that purpose, though they do serve to house NPS backcountry personnel intermittently for short periods of time. The Ojibway Tower additionally serves as an atmospheric monitoring station and communications tower. As such these towers may fit under the “administrative uses” exception, which makes some permanent facilities permissible under the Wilderness Act. However, the current use of the Feldtmann and Ishpeming towers are not considered essential for administration of the park’s wilderness and backcountry. Additionally, the visual intrusion of a modern artifact and reminder of modern society could be an adverse impact on both wilderness experiences and naturalness. The impact would be major in the local vicinity of the towers, but minor to moderate on a park-wide scale where the Ojibway and Feldtmann towers are visible from a great distance.

Effects on Natural Resources
There is no known research on the effects of fire towers on natural resources, so the full implications of retaining Isle Royale’s three fire towers are unknown. However, NPS personnel have observed some bird mortality from birds hitting the towers. Therefore, retaining the towers could have some adverse effects on birds. Any effects on natural resources would be expected to be localized and minor.

Retaining Ojibway Tower as a monitoring and research site for the collection of atmospheric and other data is expected to have the long-term beneficial effect of contributing to the state of scientific knowledge and better understanding external human influences on the Isle Royale ecosystem. This monitoring effort is a part of the National Atmospheric Monitoring Program.
Retaining the Feldtmann tower could provide an option to expand atmospheric monitoring to the west end of the island. There could, however, be other options for such monitoring that would be outside of wilderness, so the beneficial effect of retaining Feldtmann tower for these purposes would be negligible.

Effects on Cultural Resources
The fire towers at Isle Royale are not considered historic structures and are not part of any cultural landscape. Retaining one or more of the towers would represent a part of the history of Isle Royale and removing all three towers may have a long-term minor adverse impact to cultural resources. There are no predicted impacts to cultural resources from the maintenance of the Ojibway, Ishpeming and Feldtmann fire towers.

Effects on Park Operations
Retaining all three fire towers in the park would eventually require maintenance to prevent deterioration of the towers to the point of becoming a safety hazard. This would have a long-term minor adverse effect on NPS operations. Were significant repairs needed there could be moderate short-term adverse effects on NPS operations.

Retaining all three towers could have a beneficial effect on park operations if a future need arose that could utilize these structures for administrative needs, such as environmental monitoring stations, or telecommunications equipment.

Conclusion
Retaining all three of Isle Royale’s fire towers would be expected to have both adverse and beneficial effects on the park’s resources and values. However, nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.

Alternative B for Fire Towers: Remove Ishpeming and Feldtmann Towers and Maintain Ojibway Tower

The details of this alternative are outlined in Chapter 2, p. 87-88. Changes that could occur under this alternative that may have measurable environmental consequences include:

- Remove the Ishpeming and Feldtmann fire towers.
- Retain the Ojibway tower as an example of the island’s cultural history, and for communications and research and monitoring equipment.

Removing 2 of Isle Royale’s 3 fire towers, Ishpeming and Feldtmann, could have measurable consequences for visitor experiences, wilderness character, natural resources, cultural resources, socioeconomicies, and park operations. Impacts would primarily be related to the physical presence or absence of the towers, and the logistics and cost of removing two towers. There would be no anticipated effect on visitor use levels.

Effects on Visitor Experiences
This alternative would be expected to have both beneficial and adverse effects on visitor experiences, depending on the visitor’s perspective. Removing the Ishpeming and Feldtmann towers would eliminate the opportunity for visitors to climb those towers. Although both towers
Impacts of Alternatives for Fire Towers

are kept locked at the top, visitors currently have the option of climbing most of the way to the top. On a clear day climbing the Feldtmann tower offers an extensive view of the park and distant mainland. Trees currently block the view from the Ishpeming Tower. The loss of this opportunity may be an adverse effect for some visitors, but people would still have this opportunity with the Ojibway Tower. Other visitors may see this as a positive change, reducing the signs of human impact on the park’s landscape.

Effects on Wilderness Character
Removing Ishpeming and Feldtmann fire towers would have a moderate long-term beneficial effect on the wilderness character of the park. These two fire towers are permanent human improvements that no longer serve an essential administrative purpose that could not be met by more minimal means. The towers are both situated directly on trails, clearly visible to hikers in fairly remote areas of the park. The Feldtmann tower stands well above tree line and is visible from a great distance, adversely impacting the naturalness of the park’s view shed. The Ishpeming tower no longer stands above tree line, so its removal would have a negligible effect on naturalness of the park’s view shed.

Were helicopter support necessary to remove the towers, the noise and visual intrusion would have a short-term moderate adverse effect on wilderness experiences and naturalness. However, the adverse impacts associated with removal would be short-term, while the adverse impacts associated with maintaining all three towers would be long-term.

Effects on Natural Resources
There is not any known research on the effects of fire towers on natural resources, so the full implications of removing Feldtmann and Ishpeming towers are unknown. However, NPS personnel have observed some bird mortality from birds hitting the towers. Therefore, removing two towers could have a beneficial effect on birds. Any long-term effects on natural resources would be expected to be localized and minor.

The process of removing Feldtmann and Ishpeming towers would be expected to have a short-term adverse effect on natural resources. Helicopter support and a substantial demolition ground crew would be required. The trampling, noise, and human presence associated with this effort would be expected to have a localized, short-term minor to moderate adverse effect.

Retaining Ojibway Tower as a monitoring and research site for the collection of atmospheric and other data is expected to have the long-term beneficial effect of contributing to the state of scientific knowledge and better understanding external human influences on the Isle Royale ecosystem. Retaining the Feldtmann tower could provide an option to expand atmospheric monitoring to the west end of the island. There could, however, be other options for such monitoring that would be outside of wilderness, so the adverse effect of removing Feldtmann tower and losing the option to use it for scientific studies in the future would be negligible.

Effects on Cultural Resources
The fire towers at Isle Royale have not been in place long enough to be considered historic structures and are not part of any cultural landscape. However, they do represent an era of NPS management, and are of interest to some visitors. Retaining the Ojibway Tower would maintain
one example from this era within the park. There are no predicted impacts to cultural resources from the maintenance or removal of the Ishpeming and Feldtmann fire towers. The Ojibway fire tower would be maintained and would preserve the history of the important role fire towers played in the fire suppression efforts at Isle Royale.

**Socioeconomic Effects**
If the work required to remove the Ishpeming and Feldtmann Towers were contracted out with local workers or a local business, then this alternative could have a beneficial effect on the socioeconomics of the local communities. The contracted jobs would be expected to pay higher salaries than the typical tourism jobs in the local communities, but these jobs would be short-term. No long-term effects on the local economies would be expected.

**Effects on Park Operations**
Removing two fire towers from Isle Royale’s wilderness would be expected to have a short-term major adverse effect on NPS operations. Removal would require contracting for helicopter assistance as well as significant labor time and the cost is expected to exceed to $100,000. Removal would also have a long-term minor beneficial effect of reducing maintenance workloads. This alternative is not expected to result in a change in park personnel.

**Conclusion**
Removing two of Isle Royale’s three fire towers would be expected to have short-term adverse impacts and long-term beneficial impacts on the park’s wilderness character and natural resources. Similarly, there would be major short-term adverse effects and long-term beneficial effects on park operations. There could be both adverse and beneficial effects on visitor experiences. However, nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.
### Table 22: Comparison of Environmental Consequences for Alternatives for Fire Towers

<table>
<thead>
<tr>
<th>Proposed Changes</th>
<th>Alt A: No Action</th>
<th>Alt. B: Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visitor Use and Experiences</strong></td>
<td>Long-term, minor beneficial impact to visitor experience from the continued availability of views from the Feldtmann Tower.</td>
<td>Long-term, minor adverse impact to visitor experience from the loss of views from the Feldtmann Tower.</td>
</tr>
<tr>
<td><strong>Wilderness</strong></td>
<td>Long-term major adverse impact to wilderness and naturalness in the vicinity of the Feldtmann and Ishpeming Towers. Long-term minor adverse impact in other areas of the park where the Feldtmann Tower is visible.</td>
<td>Long-term major beneficial impact to wilderness and naturalness in the vicinity of the Feldtmann and Ishpeming Towers. Long-term minor beneficial impact to other areas where the Feldtmann Tower is visible</td>
</tr>
<tr>
<td><strong>Natural Resources</strong></td>
<td>Long-term minor, localized, adverse effects on natural resources in the area of the Feldtmann and Ishpeming Towers.</td>
<td>Long-term minor, localized, beneficial effects on natural resources in the area of the Feldtmann and Ishpeming Towers.</td>
</tr>
<tr>
<td><strong>Cultural Resources</strong></td>
<td>Long-term, minor, beneficial impacts from the retention of the Feldtmann and Ishpeming Fire Towers.</td>
<td>Long-term, minor, adverse impacts from the removal of the Feldtmann and Ishpeming Fire Towers. Ojibway Tower would remain as an example of fire towers in island history</td>
</tr>
<tr>
<td><strong>Park Operations</strong></td>
<td>Long-term, minor adverse impacts to park operations due to limited maintenance of Feldtmann and Ishpeming Towers. Possible short-term major adverse impact if significant repairs were necessary.</td>
<td>Short-term, major adverse impact to park operations due to the removal of two fire towers from the Park. Long-term, minor beneficial impact from lower maintenance costs.</td>
</tr>
</tbody>
</table>

### 4.2.6 Consequences of Alternatives for Picnic Tables in Wilderness Campgrounds

**Alternative A for Picnic Tables: No Action**

The details of this alternative are outlined in Chapter 2, p. 89. No changes would be made from the current conditions. Isle Royale managers would be unable to reach their management goals of complying fully with NPS policies for wilderness, continuing to retain and maintain picnic tables within some of the park’s wilderness campgrounds:

- Picnic tables would be retained at all Lake Superior campgrounds with docks; Rock Harbor, Daisy Farm, Moskey Basin, Chippewa Harbor, Malone Bay, Hay Bay, Grace Island, Beaver Island, Washington Creek, Todd Harbor, McCargoe Cove, Birch Island, Belle Isle.

Maintaining picnic tables at wilderness campgrounds could have measurable consequences for wilderness character, natural resources, cultural resources, and park operations. Impacts would
Impacts of the Alternatives for Picnic Tables

primarily be related to the amenity of picnic tables and a means of concentrating impacts in campgrounds. There would be no anticipated effect on visitor numbers or the socioeconomics of park-dependent businesses or economies.

Effects on Visitor Use and Experience

The overall effect of picnic tables in the wilderness on visitors as a whole would be minor, long-term, and positive or negative, based on individual preference. Some visitors appreciate the convenience of having a stable, elevated surface for cooking, eating, and socializing. Some visitors, however, do not want to see human-made structures in the wilderness, and consider these structures an intrusion on their wilderness experience.

Effects on Wilderness Character

The NPS has clearly determined that picnic tables are incompatible in wilderness. This determination is consistent with other wilderness areas, as well. Picnic tables provide a human amenity and are a modern artifact that detracts from the wilderness character of an area. This adverse effect would be moderate and localized to campsites with tables, but it would also be reversible with the removal of the picnic tables.

Effects on Natural Resources

Farrel and Marion (1998) found that campsites on Isle Royale with picnic tables were significantly smaller in area of disturbance than those without tables. The size, area of vegetation loss, and exposed soil for sites with picnic tables were consistently between 100-250 ft² smaller than comparable sites without picnic tables. For example, in 1996 the mean size of individual campsites with picnic tables was 549 ft², compared to 717 ft² for sites without picnic tables. In 2002 the mean size of individual sites with picnic tables was 581 ft², compared to 831 ft² for sites without picnic tables. The presence of picnic tables in campsites appears to concentrate physical impacts such as vegetation loss, soil exposure, and total area of a campsite. This suggests that picnic tables are effective tools for concentrating physical impacts in campsites. As a result, retaining tables in wilderness campsites where they are currently found would have beneficial effects on natural resources. These effects would be long-term and minor to moderate.

Effects on Cultural Resources

Picnic tables help to concentrate use. Retaining the picnic tables might help limit impacts to archeological resources located near campgrounds. Historic structures and cultural landscapes located near GMP campgrounds might have less possibility of minor negative impacts resulting from spreading of use and from the use of historic structures in place of picnic tables. The retention of picnic tables is not predicted to impact cultural objects or the museum collection. The park inventory of ethnographic resources is ongoing, the park staff is not currently aware of any impacted ethnographic resources.

Effects on Park Operations

Continuing the current management direction for picnic tables at Isle Royale would mean failing to achieve the management goal of complying with NPS policy for wilderness management. Maintaining picnic tables would require more NPS staff time over the long-term than removing
Impacts of Alternatives for Picnic Tables

picnic tables. However, this would be a minor effect on staffing and costs to the NPS as no additional staffing would be required.

Conclusion
Retaining picnic tables in some wilderness campgrounds would be expected to have some adverse effects associated with modern conveniences in wilderness, and beneficial effects associated with effectively concentrating human impacts. However, under this alternative, Isle Royale managers would continue to fail to comply with NPS policies for wilderness. Nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.

Alternative B for Picnic Tables: Comply with NPS Policy and Remove all Picnic Tables from Wilderness Campgrounds

The details of this alternative are outlined in Chapter 2, p. 90-91. Changes that could occur under this alternative that may have measurable environmental consequences include:

- All picnic tables would be removed from a total of 33 campsites and shelters in the following campgrounds within designated or potential wilderness: Caribou Island, Chippewa Harbor, Hay Bay, Grace Island, Beaver Island, Todd Harbor, Birch Island, Duncan Bay, Duncan Narrows, Merritt Lane, and Tookers Island. The tables would also be removed from the picnic area at Hidden Lake.
- Picnic tables would be retained at campgrounds in non-wilderness; Rock Harbor, Three Mile, Daisy Farm, Moskey Basin, Malone Bay, Siskiwit Bay (only until the dock is removed), Washington Creek, McCargoe Cove, and Belle Isle.
- Isle Royale would then be in compliance with NPS wilderness policy.

Removing picnic tables from these campgrounds could have measurable consequences for wilderness character, natural resources, cultural resources, visitor experiences, and park operations. Impacts would primarily be related to the physical presence of picnic tables as well as the associated concentration of resource impacts. There would be no anticipated effect on visitor use levels or the socioeconomics of park-dependent businesses or economies.

Effects on Visitor Use and Experience

As with Alternative A, the effects on visitors of removing picnic tables would be long-term, minor, and either positive or negative, depending on personal opinions. Some visitors would view it as a positive action that restores a more natural setting to campgrounds, with fewer reminders of human interference in the wilderness. Some visitors would also believe that since it is against NPS policy to have these structures in the wilderness, that they should not be present. On the other hand, some visitors may miss the convenience of having an elevated surface for eating and socializing. Still others may be disturbed if there is evidence that natural resource damage has increased at a campground where picnic tables have been removed.
Impacts of the Alternatives for Picnic Tables

Effects on Wilderness Character
Removing picnic tables from wilderness campsites would have a long-term beneficial effect on wilderness character in these areas. Picnic tables are modern human structures that serve as an amenity for camping and picnicking convenience, in contrast to a primitive atmosphere that is appropriate for wilderness. NPS policy clearly states that only facilities that are determined to be the minimum necessary for the health and safety of wilderness users, or for the preservation of wilderness resources and values are appropriate. This policy further states, “picnic tables will not be allowed in wilderness” (NPS 2000 §6.3.10.3). This alternative would bring Isle Royale into compliance with NPS policy.

Effects on Natural Resources
As outlined above under Alternative A for picnic tables, the presence of picnic tables in campsites appears to concentrate physical impacts such as vegetation loss, soil exposure, and total area of a campsite. Removing picnic tables from campsites could have an adverse effect on natural resources. Research on Isle Royale suggests that picnic tables are effective tools for concentrating biophysical impacts in campsites. Therefore removing the tables would be expected to have the adverse effect of increasing the area of vegetation loss and exposed soil as well as the total area of campsites where picnic tables would be removed.

Effects on Cultural Resources
Picnic tables help to concentrate use and impacts in campsites (Farrell and Marion 1998). If picnic tables were removed, use might spread and could damage archeological resources near campgrounds. Historic structures are located near GMP-proposed new campgrounds at Crystal Cove, John’s Island, Fisherman’s Home and Wright Island, all within wilderness or potential wilderness. These campgrounds would have their picnic tables removed or they would not be added under this alternative. Without picnic tables, people might sit on the historic structures or use them as tables. Because picnic tables concentrate use, the removal of the tables might have some adverse impact on the cultural landscapes associated with trampling, loss of duff, and exposure of soil, all of which could expose or damage hidden and buried cultural objects. The severity of this impact would depend on the significance and integrity of the damaged resource. The park inventory of ethnographic resources is ongoing, the park staff is not currently aware of any impacted ethnographic resources.

Effects on Park Operations
Removing picnic tables would have a short-term adverse effect, increasing workloads to remove all picnic tables from wilderness campsites. The effect would be minor as it would not be expected to require an increase in staffing, but would add to the workloads of existing staff. Over the long-term removing picnic tables would have the beneficial effect of reducing the work associated with maintaining picnic tables by reducing the number of picnic tables in the park. Picnic tables within non-wilderness campgrounds would still be maintained.

Conclusion
Removing picnic tables from wilderness campgrounds would be expected to have both beneficial and adverse effects on park resources and values. However, nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.
Alternative C for Picnic Tables: Seek a Waiver to Retain Picnic Tables in Some Wilderness Campgrounds (the Preferred Alternative)

The details of this alternative are outlined in Chapter 2, p. 91-92. Changes that could occur under this alternative that may have measurable environmental consequences include:

- Picnic tables would be retained at all Lake Superior campgrounds with docks; Rock Harbor, Daisy Farm, Moskey Basin, Chippewa Harbor, Malone Bay, Hay Bay, Grace Island, Beaver Island, Washington Creek, Todd Harbor, McCargoe Cove, Birch Island, Belle Isle, and could be added to the new GMP-approved campgrounds.

Maintaining picnic tables at wilderness campgrounds could have measurable consequences for wilderness character, natural resources, cultural resources, and park operations. Impacts would primarily be related to the aesthetic of picnic tables and associated means of concentrating impacts in campgrounds. There would be no anticipated effect on visitor numbers or the socioeconomics of park-dependent businesses or economies.

Effects on Visitor Use and Experience

The effects of this alternative on visitors would be the same as under Alternative A, with the possible exception that those visitors knowledgeable about NPS policy may also appreciate that Isle Royale would be technically in compliance with a waiver in place. Overall, the effects would be long-term, minor, and positive or negative, depending on personal preference.

Effects on Wilderness Character

The NPS has clearly determined that picnic tables are incompatible in wilderness. This determination is consistent with other wilderness areas, as well. Picnic tables provide a human amenity and are a modern artifact that detracts from the wilderness character of an area. Although receiving a waiver from the NPS to retain picnic tables within Isle Royale’s wilderness would bring the park into compliance with NPS policy, it would still be considered an adverse effect on wilderness character. This adverse effect would be moderate and localized to campsites with tables, but it would also be reversible with the removal of the picnic tables.

Effects on Natural Resources

As outlined above under Alternative A for picnic tables, the presence of picnic tables in campsites appears to concentrate physical impacts such as vegetation loss, soil exposure, and total area of a campsite. As a result, retaining tables in wilderness campsites where they are currently found would have beneficial effects on natural resources relative to removing tables as proposed in Alternative A. These effects would be long-term and minor to moderate.

Effects on Cultural Resources

Picnic tables help to concentrate use. Retaining the picnic tables might help limit impacts to archeological resources located near campgrounds. Historic structures and cultural landscapes located near GMP campgrounds might have less possibility of minor negative impacts resulting from spreading of use and from the use of historic structures in place of picnic tables. The retention of picnic tables is not predicted to impact cultural objects or the museum collection.
The park inventory of ethnographic resources is ongoing, the park staff is not currently aware of any impacted ethnographic resources.

**Effects on Park Operations**
Maintaining picnic tables would require more NPS staff time over the long-term than removing picnic tables. However, this would be a minor effect on staffing and costs to the NPS as no additional staffing would be required.

**Conclusion**
Retaining picnic tables in some wilderness campgrounds would be expected to have some adverse effects associated with modern conveniences in wilderness, and beneficial effects associated with effectively concentrating human impacts. Nothing proposed in this alternative is reasonably expected to result in impairment of any park resources or values.
### Table 23: Comparison of Environmental Consequences for Picnic Table Alternatives

<table>
<thead>
<tr>
<th>Proposed Changes</th>
<th>Alt A: No Action</th>
<th>Alt B</th>
<th>Alt C: Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visitor Use and Experiences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picnic Tables would remain in wilderness in violation of NPS policy</td>
<td>Picnic Tables would be removed from all campgrounds within designated wilderness</td>
<td>Request a waiver to maintain picnic tables within wilderness campgrounds</td>
<td></td>
</tr>
<tr>
<td>Long-term minor beneficial or adverse impact to visitor experience, based on personal preference, due to the retention of this modern convenience.</td>
<td>Long-term minor beneficial or adverse impact to visitor experience, depending on personal preference, due to the removal of this convenience.</td>
<td>Long-term minor beneficial or adverse impact to visitor experience, depending on personal preference, due to the retention of this modern convenience.</td>
<td></td>
</tr>
<tr>
<td><strong>Wilderness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term moderate adverse impact on wilderness character due to the retention of these modern artifacts. Impact is reversible with the removal of tables.</td>
<td>Long-term minor beneficial impact on wilderness character due to the removal of this modern convenience.</td>
<td>Long-term moderate adverse impact on wilderness character due to the retention of these modern artifacts. Impact is reversible with the removal of tables.</td>
<td></td>
</tr>
<tr>
<td><strong>Natural Resources</strong></td>
<td></td>
<td>Long-term, minor adverse impact to natural resources due to the removal of picnic tables which tend to concentrate impacts.</td>
<td>Long-term, minor to moderate beneficial impact to natural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
</tr>
<tr>
<td>Long-term, minor to moderate beneficial impact to natural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cultural Resources</strong></td>
<td></td>
<td>Long-term, minor adverse impact to cultural resources due to the removal of picnic tables which tend to concentrate impacts.</td>
<td>Long-term, minor beneficial impact to cultural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
</tr>
<tr>
<td>Long-term, minor beneficial impact to cultural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Park Operations</strong></td>
<td></td>
<td>Short-term, adverse impact from the increased workload associated with removing the picnic tables. Long-term, beneficial impact as picnic tables would not be maintained.</td>
<td>Short-term, minor beneficial impact of not having to remove the picnic tables. Long-term, minor adverse impact of maintenance costs associated with tables.</td>
</tr>
<tr>
<td>Short-term, minor beneficial impact of not having to remove the picnic tables. Long-term, minor adverse impact of maintenance costs associated with tables.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 Cumulative and Combined Effects of the Proposed Alternatives

4.3.1 Cumulative Impacts
Cumulative impacts, according to CEQ Regulations §1508.7, “result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions.” These are actions that may be minor on their own, but taken collectively would be significant over a period of time. Analysis determined that there would be no reasonably foreseeable cumulative impacts from any of the actions proposed in this WBMP, for several reasons:

- Isle Royale National Park has no bordering lands, and the Lake Superior resources that do overlap with the jurisdiction of other state or federal agencies are beyond the scope of this plan.
- Nothing proposed in any of the alternatives in this WBMP is reasonably expected to result in the loss of significant regional resources or public services.
- None of the alternatives proposes significant new developments or new infrastructure, when compared to current baseline conditions.
- Changes in tourism in the mainland communities are not reasonably expected to affect visitation to the park, due to the logistics and planning required for visiting Isle Royale. Additionally, none of the alternatives are reasonably expected to affect tourism in the mainland communities or to cumulatively produce any impacts when combined with tourism initiatives at port cities.
- Isle Royale’s resources are geographically isolated; therefore terrestrial management practices on the mainland do not impact terrestrial resources on Isle Royale.
- An overriding focus of managing Isle Royale is protecting wilderness, natural, and cultural resources, and 99% of the park’s land base is designated wilderness. Therefore, any reasonably foreseeable management actions within the park would not reasonably be expected to result in cumulative adverse impacts when combined with the outcome of this plan.

Therefore it was determined that no past, ongoing, or reasonably foreseeable future actions by others would, in combination with the impacts described in this chapter, result in cumulative impacts on wilderness character, natural resources, cultural resources, visitor experiences, socioeconomics, or NPS operations when viewing Isle Royale in a larger regional context. However, the proposed actions taken in combination could result in impacts within the park that are more significant than each action taken individually. The range of possible effects of the proposed actions in combination is discussed in the next section.

4.3.2 Combined Effects
Combining alternatives that propose the highest degree of development or the greatest change in visitation, for example, could result in impacts within the park that would be greater than when the actions are taken individually. Therefore, the combined effects of those alternatives that could result in the greatest increase in development, the greatest decrease in development, and the greatest likely change in visitation were assessed. Similarly, all of the preferred alternatives were assessed for their combined impacts.
Highest Development Combination of Alternatives

If combined, Alternative C for overnight use, Alternative C for day use, Alternative B for campfires, Alternative A for fire towers, and Alternative B for picnic tables would, together, result in actions with the greatest possibility of development in the park’s wilderness and backcountry. The combination would result in the following:

- Some existing campgrounds could be expanded by adding a few communal campsites or additional individual campsites (Table 8, p.105 outlines feasible campground expansions).
- Up to three new campgrounds could be added in the park’s wilderness, including within the Pristine Zone (Appendix C, Map 3).
- A shuttle service would be created in the Rock Harbor Channel with service to Rock Harbor, Mott Island, and Daisy Farm.
- A new Backcountry Office would be established (on the mainland, this would not add to development in the wilderness and backcountry).
- A new trail would be created within the Pristine Zone adjacent to Windigo, intended as a loop hike for day visitors (Appendix C, Map 5).
- New fire rings would be added to campgrounds on a rotational basis.
- Three fire towers would be maintained in the park’s wilderness.
- Existing picnic tables would be maintained in some wilderness campgrounds.

The combination of all of these actions and new developments would be expected to impact park resources and values to a greater extent than each of these actions taken individually and result in a greater increase in development than any other combination of alternatives in this plan.

Increasing trails and campgrounds in the park, combined with the effects of adding a shuttle service, and retaining picnic tables and fire towers would be expected to have a moderate long-term adverse effect on wilderness character. The extent of modern artifacts and conveniences would expand, as would the cumulative footprint of development in the wilderness. Access to some remote areas of the park would be easier, which could adversely affect the feel of solitude and isolation. Additionally, these adverse effects, in combination, would be more widespread throughout the park than the localized impacts of individual actions.

The increased cumulative footprint of development in the park would increase the likelihood of adverse impacts to both natural and cultural resources associated with ground disturbance. There would also be greater impact to species that are sensitive to human presence. Rotating campfire rings may add to these adverse effects. The addition of a new trail and new campgrounds would add to habitat fragmentation in the park, likely result in increased establishment of social trails, and shrink the areas where wildlife may be undisturbed by human presence. All of these impacts would be adverse, minor to moderate, and long-term.

These alternatives, in combination, could allow for a substantial increase in annual visitation throughout the season. However, ferry capacities would continue to limit increases in camping parties as well as day visitors and lodge guests during the busiest times. Options for some visitors would increase, with a new trail for day hikes in the Windigo area, and more campgrounds within easy reach for campers beginning their trips in Rock Harbor. Options for
visitors seeking solitude and isolation may decrease. These impacts would be minor, long-term and beneficial or adverse, depending on a visitor’s priorities for access and solitude.

The combined increase in maintenance workload associated with maintaining campgrounds, trails, and backcountry facilities would be expected to be moderate and long-term. Taken individually, none of these actions would be expected to require an increase in personnel. However, implementing all of these changes in combination would likely require an increase in personnel or contracted services for both short-term implementation and long-term maintenance.

Establishing a Backcountry Office would require an initial start-up investment of funding and staff time. There may also be an associated minor increase in park staffing required. However, over the long-term this Backcountry Office would be expected to improve park operations by improving staff efficiency, communication regarding recreation management in the park, visitor services and information dissemination, management of the permitting system, and monitoring backcountry conditions.

Lowest Development Combination of Alternatives
Implementing the combination of Alternative E for overnight use, Alternative B for day use, Alternative C for campfires, Alternative B for fire towers, and Alternative A for picnic tables would result in the greatest decrease in development in the park. This combination of alternatives would also have the greatest likelihood of resulting in either no increase in visitation, or possibly reduced visitation to the park’s wilderness and backcountry. The actions proposed in these alternatives that would result in the decreased development in the Park’s wilderness and backcountry are:

- No new campgrounds would be added (other than the GMP-approved campgrounds).
- One campsite would be removed (from Little Todd).
- No new trails would be added.
- A new Backcountry Office would be created (on the mainland, this would not add to development in the wilderness and backcountry).
- All fire rings would be removed and campfires would be banned in the wilderness and backcountry.
- Ishpeming and Feldtmann fire towers would be removed.
- Picnic tables would be removed from campgrounds within wilderness and potential wilderness.

The actions proposed in these alternatives that could result in decreased visitation to the wilderness and backcountry are:

- The number of backcountry permits issued would not exceed campsite availability, while the camping capacity of the park would decrease by one campsite.
- Historic low visitation would be maintained in Spring and Fall.
- Day tour sizes would be limited to small groups in much of the wilderness and backcountry.

The combination of all of these actions and changes in park services would be expected to impact park resources and values to a greater extent than each of these actions taken individually. However, this particular combination of alternatives demonstrates the greatest reduction in
development of all possible combinations of alternatives in this plan. It also demonstrates the greatest possible limitation on visitation.

The combination of removing one campsite from Little Todd, banning campfires, removing 2 fire towers, removing picnic tables from wilderness campgrounds, and making a commitment to not add any new campsites, campgrounds (beyond those approved in the GMP), or trails would be expected to have a positive long-term effect on wilderness character. Preventing an increase in development and associated impacts within the park’s wilderness would be beneficial for both naturalness and wilderness experiences park-wide.

Curtailing development in the wilderness and backcountry would similarly have a moderate long-term beneficial effect on natural and cultural resources. Not adding new trails or campgrounds would prevent the adverse impacts associated with ground disturbance and human activities. Reducing overcrowding in campgrounds at the same time as reducing the size of tour groups in day use areas would be expected to result in minor to moderate long-term beneficial impacts on these resources. Trampling associated with crowding in campgrounds and along trails that damages both natural and cultural resources would be reduced, as would noise that may displace wildlife. However, removing picnic tables would be expected to result in an increased area of trampling in campsites, as research has shown that picnic tables effectively concentrate human use and impacts in campsites (Farrell and Marion 1998).

Although these combined actions could have beneficial effects on wilderness character and park resources, they could result in moderate long-term adverse impacts to visitors. Reducing overcrowding in campgrounds could result in lower backcountry visitation with fewer people able to get camping permits during the busy use times. Maintaining historic low use times in spring and fall would limit the options for people who were not able to get a permit in the busy times to come at a different time. Additionally, limiting the size of tour groups below the current average tour sizes would be expected to reduce access to day activities. Limits on backcountry parties under the new permitting system could allow for more space on ferries for lodge guests and day visitors, but limiting access to organized day activities may discourage these visitors. All of these actions in combination could effectively reduce visitation in the park, or at least prevent any future increases in visitation. This could have a moderate long-term adverse effect on public access to the park. Long-term impacts to visitor opportunities within the park’s wilderness and backcountry could be positive or negative, depending on a visitor’s priorities for access or solitude.

Reducing the infrastructure within the park’s wilderness and backcountry would initially have a short-term major adverse impact on park operations, with the substantial cost of removing 2 fire towers combined with removing fire rings, picnic tables, and one campsite. Over the long term, this reduction in facilities would be expected to have a minor beneficial effect on park operations. The substantial cost of removing facilities would be compounded by the moderate cost of creating and staffing a mainland Backcountry Office.
Combination of Preferred Alternatives
Implementing all of the preferred alternatives would mean implementing Alternative B for overnight use, Alternative C for day use, Alternative B for campfires and Alternative B for picnic tables.

The actions in these alternatives that would affect development in the wilderness and backcountry are:
- No new campgrounds would be added (other than the GMP-approved campgrounds).
- One new campsite would be added to North Desor.
- A new Backcountry Office would be established (on the mainland; this would not add to development in the wilderness and backcountry).
- A new trail would be constructed within the Pristine Zone adjacent to Windigo, intended as a loop hike for day visitors (Appendix C, Map 5).
- New fire rings would be added to some campgrounds and removed from others on a rotational basis.
- Ishpeming and Feldtmann fire towers would be removed.
- Picnic tables would be maintained in some wilderness campgrounds.

The actions in these alternatives that could affect visitation in the wilderness and backcountry are:
- The number of backcountry permits issued would not exceed campsite availability. The camping capacity of the park would be expanded by one campsite (at North Desor).
- Historic low visitation would be maintained in the spring, while an increase in Fall visitation would be possible.
- Multiple tour guides would be required for large day tours, because these groups would be required to split into multiple smaller groups. This may affect the availability of tours.

The combination of all of these actions and new developments would be expected to impact park resources and values to a greater extent than each of these actions taken individually. This particular combination of alternatives falls between the range of the greatest increase in development, and the greatest decrease in development.

The combination of these alternatives would result in removing some facilities from the park’s wilderness while adding others. Two of the park’s fire towers would be removed, picnic tables would be retained, fire rings would be retained on a rotational basis, one new trail would be created, one new campsite would be added, and there would be a commitment to not add any new campgrounds (beyond those approved in the GMP). Overall, these changes, in combination with a reduction in campground crowding and the size of day groups, would be expected to have a moderate long-term beneficial effect on wilderness character on a park-wide scale. Preserving low use times in Spring would further aid in protecting opportunities for greater solitude and self-sufficiency than is readily available to visitors during the busier times of the season.

Adding a new trail near Windigo and implementing a rotational system for campfires could have a minor to moderate long-term adverse effect on natural and cultural resources. This could be mitigated by resource surveys to identify locations of sensitive resources to avoid impacts and to find a means of restoring resources. However, limiting campground expansion to one new
Impacts of the Combined Alternatives

campsite at North Desor, not creating additional new campgrounds, reducing overcrowding in campgrounds, reducing the number of people at one time at day use destinations, and maintaining existing picnic tables in wilderness campgrounds would be expected to have a park-wide moderate long-term beneficial effect on these resources.

The intent of this alternative would be to accommodate current visitation levels while also reducing overcrowding in campgrounds, which would be accomplished by issuing advanced permits to better distribute campers to available campsites. However, since permits would not be issued over a campground’s capacity, visitation in specific areas of the park, or park-wide, would be limited to some extent during the busiest months. Additionally, low use would be preserved in Spring, so there would be limited options for visitors to come at different times of the year. This could result in a minor reduction in visitation, or more likely limiting the possibility for backcountry overnight visitation to increase in the future. This combination of alternatives would also allow for large day tours to split into multiple groups in the same area, and would add a new trail for day visitors at Windigo. The intent would be to improve visitors’ experiences in day use areas while also allowing opportunities for day use to increase. If the new permitting system were to limit backcountry overnight visitation, it would be expected that there would be more space on ferries for day visitors and lodge guests. With this combination of alternatives backcountry overnight visitation may be limited during the peak season, but visitors could better be accommodated with organized day trips in the backcountry and wilderness, as long as tour organizations were able to supply additional leaders. These impacts would be long-term, minor, and positive or negative, depending on visitor preferences.

Changes in facilities within the park’s wilderness and backcountry would initially have a major adverse impact on park operations, with the substantial cost of removing 2 fire towers combined with removing and/or relocating fire rings, and creating one new campsite. The major cost of removing facilities would be compounded by the moderate cost of creating and staffing a mainland Backcountry Office. Over the long term, this change in facilities would be expected to have a minor to moderate adverse effect on park operations associated primarily with maintenance of fire rings, monitoring resource impacts associated with campfires, and staffing a Backcountry Office. However, over the long-term establishing a Backcountry Office would be expected to improve park operations by improving staff efficiency, communication regarding recreation management in the park, visitor services and information dissemination, management of the permitting system, and monitoring backcountry conditions.
### Table 24: Combination of Environmental Effects of all of the Preferred Alternatives

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitor Use and Experiences</td>
<td>Visitation could increase from mid June through October. Advanced permitting would better distribute people to available campsites and reduce the frequency of overcrowding and give campers a greater assurance of finding an available campsite and opportunities to visit the park during low use times would be preserved these are long-term moderate beneficial impacts to visitor use. Some people may not be able to get a permit for their preferred itinerary and public access may be limited in spring, a long-term, minor adverse impact.</td>
<td>Long-term minor adverse impact to visitor access to tours and group activities due to size limitations. Long-term, moderate, beneficial impact to quality of tours due to smaller group sizes.</td>
<td>Long-term, minor adverse impact for those who enjoy campfires. Long-term minor adverse effect for those who do not</td>
<td>Long-term, minor adverse impact to visitor experience from the loss of views from the Feldtmann Tower.</td>
<td>• Request a waiver to maintain picnic tables within wilderness campgrounds</td>
</tr>
</tbody>
</table>

### Impacts of the Combined Alternatives

- **Proposed Changes**
  - Implement GMP-proposed new campgrounds
  - New Backcountry Office
  - Advanced Permitting
  - Add 1 campsite at North Desor
  - Not more than 5% sharing in summer
  - Maintain histories low use in spring

- **Visitor Use and Experiences**
  - Visitation could increase from mid June through October. Advanced permitting would better distribute people to available campsites and reduce the frequency of overcrowding and give campers a greater assurance of finding an available campsite and opportunities to visit the park during low use times would be preserved these are long-term moderate beneficial impacts to visitor use. Some people may not be able to get a permit for their preferred itinerary and public access may be limited in spring, a long-term, minor adverse impact.

- **Day Use, Alt C**
  - Group size limits, with large groups allowed to split up.
  - **MV Sandy** would carry up to 40 passengers total – split into multiple groups at destination
  - Explore options for adding a new loop trail in Windigo

- **Campfires, Alt. B**
  - Campfires would be rotated to appropriate campgrounds based on the fuel availability and resource conditions.
  - Resource conditions at campgrounds would be inventoried prior to installing fire rings.
  - Resources would be monitored for impacts.

- **Fire Towers, Alt. B**
  - The Feldtmann and Ishpeming Fire Towers would be removed
  - The Ojibway Tower would be retained for administrative uses

- **Picnic Tables, Alt. C**
  - Request a waiver to maintain picnic tables within wilderness campgrounds

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**CHAPTER 4: ENVIRONMENTAL CONSEQUENCES**

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### Impacts of the Combined Alternatives

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<tr>
<td>Impacts to wilderness character would be long-term, moderate and beneficial. Overcrowding in campgrounds would be reduced. A wide range of opportunities for wilderness experiences would be protected.</td>
<td>Smaller groups are more compatible with wilderness experiences both for group members and others. Minor, short-term beneficial impacts include less noise, crowding and displacement of wildlife. Less trampling could be a long-term minor to moderate impact.</td>
<td>Long-term, minor beneficial effect for those who see campfires as part of wilderness. Long-term minor adverse effect for those who do not. Long-term, minor adverse effects to naturalness.</td>
<td>Long-term major beneficial impact to wilderness and naturalness in the vicinity of the Feldtmann and Ishpeming Towers. Long-term minor beneficial impact to other areas where the Feldtmann Tower is visible.</td>
<td>Long-term moderate adverse impact on wilderness character due to the retention of these modern artifacts. Impact is reversible with the removal of tables.</td>
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<tr>
<td>Natural Resources</td>
<td>Impacts to natural resources would be long-term, moderate and beneficial compared to current conditions. Reduced overcrowding in campgrounds would reduce adverse biophysical and noise impacts. Maintaining low visitation in spring would minimize adverse impacts to wildlife. Long-term, minor adverse effects include adding one new campsite at North Desor and allowing an increase in fall visitation.</td>
<td>Beneficial impacts to wildlife would be localized and short-term. Beneficial impacts to vegetation and soils would be localized and could be long-term.</td>
<td>Long-term, minor, beneficial impacts to natural resources due to concentration of visitor impacts in campgrounds with fire rings and fewer illegal fires. Long-term, minor adverse impacts because of tree damage, social trails and loss of woody debris. Rotation should mitigate some of these adverse impacts.</td>
<td>Long-term minor, localized, beneficial effects on natural resources in the area of the Feldtmann and Ishpeming Towers.</td>
<td>Long-term, minor to moderate beneficial impact to natural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
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<td>Cultural Resources</td>
<td>Reducing campground overcrowding and maintaining low visitation in the spring would have long-term, minor beneficial impacts on cultural resources. Adding one new campsite at North Desor could have adverse effects on unknown cultural resources. These effects would be long-term and their severity would depend on the significance and integrity of the affected resources.</td>
<td>Cultural objects located near the trails would gain a minor to moderate beneficial impact from the smaller groups. Cultural landscapes would see a minor, short-term beneficial impact.</td>
<td>Long-term, minor adverse impacts from social trails created by firewood seekers and from uncontrolled fires.</td>
<td>Long-term, minor, adverse impacts from the removal of the Feldtmann and Ishpeming Fire Towers. Ojibway Tower would remain as an example of fire towers in island history.</td>
<td>Long-term, minor beneficial impact to cultural resources due to the concentration of impacts in campgrounds with picnic tables.</td>
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### Impacts of the Combined Alternatives

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<td>Peak season backcountry visitation could decrease. If this resulted in an increase in day use, then this would be beneficial for local communities as day visitors spend more money. Cost per visitor could increase if permitting fees were implemented.</td>
<td>Possible minor, long-term adverse impacts if the number of day visitors to the park decreased based on availability of day trips. Possible long-term adverse impact to organizations providing day trips, as additional leaders may be required.</td>
<td>No anticipated socioeconomic effects on local communities or visitors.</td>
<td>No anticipated socioeconomic effects on local communities or visitors.</td>
<td>No anticipated socioeconomic effects on local communities or visitors.</td>
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<tr>
<td>Long-term minor adverse impact to park operations. Additional staffing required to start and run a backcountry office. Short-term costs would be moderate, long-term costs would be minor to moderate. Short-term costs of constructing a new campsite at North Desor would be minor, as would long-term costs for maintenance.</td>
<td>Possible long-term, minor adverse impact to park-wide operations and a moderate impact to interpretative staff based on the need for additional staff to provide multiple leaders for guided tours</td>
<td>Long-term, minor, adverse impact to current staff workloads from assessment, monitoring and moving fire rings and restoring the sites.</td>
<td>Short-term, major adverse impact to park operations due to the removal of two fire towers from the Park. Long-term, minor beneficial impact from lower maintenance costs.</td>
<td>Short-term, minor beneficial impact of not having to remove the picnic tables. Long-term, minor adverse impact of maintenance costs associated with tables.</td>
<td></td>
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4.4 The Environmentally Preferred Alternative

The Environmentally Preferred Alternative is one that (DO-12, §2.7.D):

- Fulfills the responsibilities of each generation as trustee of the environment for succeeding generations;
- Ensures for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- Attains the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- Preserves important historic, cultural, and natural aspects of our national heritage and maintains, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieves a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and
- Enhances the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

For Isle Royale’s WBMP, the Environmentally Preferred Alternative is the combination of alternatives that together would best achieve the above criteria. Throughout the planning process only those options that were determined to be environmentally sound were considered for inclusion in alternatives. Management actions that were not thought to be environmentally sound were not considered to be viable options for Isle Royale. However, in identifying preferred alternatives for all of the issues raised in this WBMP, the NPS strived to not only cause the least damage to park resources and values, but actually protect, preserve, and enhance those resources and values, while also enhancing public benefits from the park. The preferred alternatives, in combination, meet the above goals of an Environmentally Preferred Alternative to the greatest extent by protecting and enhancing park resources while also providing a high degree of public access and high quality public opportunities at Isle Royale.
In preparing the Wilderness and Backcountry Management Plan and EIS for Isle Royale, the NPS consulted with internal NPS staff, other agencies, research partners, and the public.

The Backcountry and Wilderness Management Plan Planning Team was the core team responsible for development of the Management Plan. Team members included:

- Phyllis Green, Superintendent
- Betsy Rossini, Assistant Superintendent
- Larry Kangas, Chief Ranger (formerly Isle Royale West District Ranger)
- Jean Battle, Chief, Natural Resources Management Division
- Jim Callahan, Facility Manager
- Liz Valencia, Acting Chief, Interpretation and Cultural Resources Division
- Mark Romanski, Lead Biological Technician
- Jim Callahan, Facility Manager
- Liz Valencia, Acting Chief, Interpretation and Cultural Resources Division
- Mark Romanski, Lead Biological Technician
- Doug Boose, Program Analyst (formerly Isle Royale Trails Foreman)
- Buzz Brown, Trails Foreman
- Marshall Plumer, East District Ranger
- Greg Blust, Houghton District Interpreter/Visitor Center Supervisor
- Ann Mayo Kiely, Wilderness Coordinator and Team Leader since 2001
- David Newland, Environmental Compliance Specialist

Several people who are no longer part of the Isle Royale staff were also integral to the planning effort:

- Jack Oelfke, Chief of Resource Management, North Cascades National Park (formerly Isle Royale Branch Chief of Natural Resources)
- Pete Armington, Chief Ranger, Denali National Park (formerly Isle Royale Chief Ranger)
- Bill Munsey, District Ranger, BLM Taos Field Office (formerly Isle Royale East District Ranger)
- Smitty Parratt, Chief of Interpretation Wrangle-St. Elias National Park (formerly Isle Royale Branch Chief of Interpretation)
- Rick Barrett, Chief of Maintenance Assateague Island National Seashore (formerly Isle Royale Chief of Maintenance)

Isle Royale staff and the public provided invaluable comments and input to develop plan drafts and alternatives. Seasonal staff and research partners were also critical for inventorying and monitoring wilderness conditions.

Marilyn Hof, Senior Planner with the NPS Denver Service Center, provided direction, support, and consultation throughout the planning process.

Mike Hyslop, Michigan Tech University, provided assistance with producing maps.

A preliminary draft of the WBMP was reviewed by the Midwest Regional Office and other wilderness managers within the NPS.
**Adaptive management:** a process for continually improving management policies and practices based on monitoring and ongoing assessments of management effectiveness.

**Affected environment:** resources expected to experience environmental impacts as a result of a proposed action or actions.

**Alternatives:** Options for different management actions that would be expected to achieve the general purpose of a project. For the purposes of this WBMP and EIS, the alternatives propose different means of accomplishing park goals, while at the same time protecting or minimizing impacts to some or all resources.

**Archeological sites:** sites containing physical evidence of historic or prehistoric human use of an area, including mining, trade, residences, travel routes, and other human activities.

**Carrying capacity:** as it applies to National Parks, carrying capacity is the type and level of visitor use that can be accommodated while sustaining the desired resource and social conditions that are consistent with the purpose of a park and its management objectives.

**Cultural landscape:** geographic areas that include natural and cultural resources and that have cultural significance when taken as a whole, including areas associated with a historical event, activity, or person and areas that exhibit cultural or aesthetic values.

**Cultural objects:** Objects of historic or prehistoric cultural significance, including archeological artifacts, shipwreck artifacts, and objects remaining from past human uses of an area.

**Cultural resources:** an aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice.

**Cumulative effects:** additive impacts to a particular resource, including impacts in the past, present and reasonably foreseeable future.

**Designated wilderness:** *See Wilderness*

**EIS:** Environmental Impact Statement, which is an examination of a range of federal actions and their potential effects on the environment.

**Endangered species:** a plant or animal that is in danger of becoming extinct throughout all or part of its range and has been listed under the Endangered Species Act by the federal government or is listed by the State as endangered, and therefore receives special protection.

**Ethnographic resources:** resources related to cultural systems or lifestyles that have significance to native peoples or historic communities; including prehistoric and historic sites, structures, landscapes, fauna and objects as well as natural resources like rivers, watersheds, and plant species.
**General Management Plan (GMP):** the broadest level of planning used by the National Park Service to provide an overall direction for a park’s future management and a framework for managers to use when making decisions about things such as park resources, visitor use, and facilities.

**Historic property:** a district, site, structure, or landscape that is significant in American history, architecture, engineering, archeology, or culture; an umbrella term for all entries in the National Register of Historic Places.

**Impacts:** effects, both beneficial and adverse, of an action on the environment. Direct effects are those occurring at the same time and place as the action. Indirect effects occur later in time or are farther removed in distance from the action, yet are reasonably foreseeable.

**Impairment:** an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the future enjoyment of these resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

**Minimum Tool:** the management actions, administrative practices, proposed special uses, scientific activities, and equipment used in wilderness that would have the minimum impact on wilderness character and resources, with economic efficiency and convenience given significantly less weight. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable.

**Mitigation:** an activity designed to avoid, minimize, rectify, eliminate, or compensate for the impacts of a proposed project. A mitigative measure should be a solution to an identified environmental problem.

**Monitoring:** a systematic means of measuring resource and social conditions repeatedly over time to evaluate whether existing conditions or the nature of changing conditions meet management goals.

**National Environmental Policy Act (NEPA):** This act requires full disclosure of the impacts that would result from a proposed federal action that would have a major effect on the quality of the environment.

**National Register of Historic Places:** The comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state and local significance in American history, architecture, archeology, engineering, and culture. This list is maintained by the National Park Service under authority of the National Historic Preservation Act of 1966.

**Natural resources:** Things that occur in their natural state—wildlife, water, vegetation, soils, etc. Features and values that include plants and animals, water, air, soils, topographic features, geologic features, paleontologic resources, natural quiet, and clear night skies.
Potential wilderness: lands that were identified in wilderness legislation as qualifying for future, but not immediate designation as wilderness due to a temporary, non-conforming or incompatible condition. When the non-conforming use ceases these areas would become designated wilderness upon determination by the Secretary of Interior.

Scoping: an publicly open planning process that solicits people’s opinions about the management of the park, including their opinions and concerns about the value of the park, desired experiences as visitors, desired resource conditions, and appropriate management actions. Scoping aids in identifying important issues, defining objectives, and defining a range of appropriate alternatives.

Soundscape: The natural soundscape is the aggregate of all the natural sounds that occur in parks, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive, and can be transmitted through air, water, or solid materials.

Threatened species: a plant or animal species that is at risk of becoming endangered and has been listed under the Endangered Species Act by the federal government or is listed by the State as threatened, and therefore receives special protection.


Visitor experience: the perceptions, feelings, and reactions a person has while visiting a park, as well as certain conditions that influence the quality of the visitor experience, including the condition of natural and cultural resources and visitor services.

Wilderness: also Designated Wilderness. An area that has been legislatively included within the national wilderness preservation system by acts of the Secretary of Interior, a Presidential recommendation, and congressional approval, and therefore falls under the legal guidelines of The Wilderness Act and policies of the NPS for wilderness management.

Wilderness character: an often intangible entity consisting of multiple components such as a state of naturalness, an untrammeled state, and opportunities for certain human experiences including solitude, primitive and unconfined experiences, personal challenge, self sufficiency, and an escape from the remainders of our modern society. Wilderness character also denotes a human intention with a commitment to the spirit of the intangible wilderness character.
REFERENCES


Gramann, James. 1999. The Effect of Mechanical Noise and Natural Sound on Visitor Experiences in Units of the National Park System. NPS Social Science Research Review. Volume 1, no. 1.


7. Isle Royale National Park

An Act To provide for the establishment of the Isle Royale National Park, in the State of Michigan, and for other purposes, approved March 3, 1931 (46 Stat. 1614)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That when title to all alienated lands within Isle Royale in Lake Superior, Keweenaw County, Michigan, and immediately surrounding islands as shall be designated by the Secretary of the Interior in the exercise of his judgment and discretion as necessary or desirable for national-park purposes, shall have been vested in the United States and exclusive jurisdiction over the same shall have been ceded by the State of Michigan to the United States, said area shall be, and is hereby, established, dedicated, and set apart as a public park for the benefit and enjoyment of the people, and shall be known as the Isle Royale National Park: Provided, That the United States shall not purchase by appropriation of public moneys any lands within the aforesaid area, but such lands shall be secured by the United States only by public or private donation. (U.S.C., 6th supp., title 16, sec. 408.)

SEC. 2. The Secretary of the Interior is hereby authorized, in his discretion and upon submission of evidence of title satisfactory to him, to accept on behalf of the United States title to any lands located on said islands offered to the United States, without cost, as may be deemed by him necessary or desirable for national-park purposes. (U.S.C., 6th supp., title 16, sec. 408a.)

SEC. 3. The administration, protection, and development of the aforesaid park shall be exercised under the direction of the Secretary of the Interior by the National Park Service, subject to the provisions of the Act of August 25, 1916 (39 Stat. 535), entitled "An Act to establish a National Park Service, and for other purposes," as amended: Provided, That the provisions of the Act approved June 10, 1920, known as the Federal Water Power Act, shall not apply to this park. (U.S.C., 6th supp., title 16, sec. 408b.)
11. Isle Royale

An Act to designate certain lands within units of the National Park System as wilderness; to revise the boundaries of certain of those units; and for other purposes. (90 Stat. 2692) (P.L. 94–597)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in accordance with section 3(c) of the Wilderness Act (78 Stat. 890; 16 U.S.C. 1132(c)), the following lands are hereby designated as wilderness, and shall be administered by the Secretary of the Interior in accordance with the applicable provisions of the Wilderness Act.

* * * * * * * * *

(f) Isle Royale National Park, Michigan, wilderness comprising one hundred and thirty-one thousand eight hundred and eighty acres, and potential wilderness additions comprising two hundred and thirty-one acres, depicted on a map entitled "Wilderness Plan, Isle Royale National Park, Michigan", numbered 139–20,004 and dated December 1974, to be known as the Isle Royale Wilderness.

* * * * * * * * *

Sec. 4. The boundaries of the following areas are hereby revised, and those lands depicted on the respective maps as wilderness or as potential wilderness addition are hereby so designated at such time and in such manner as provided for by this Act:

(a) Isle Royale National Park, Michigan:
The Act of March 6, 1942 (56 Stat. 138; 16 U.S.C. 408e–408h), as amended, is further amended as follows:
(1) Insert the letter "(a)" before the second paragraph of the first section, redesignate subparagraphs (a), (b), and (c) of that paragraph as "(1)", "(2)" and "(3)" respectively, and add to that section the following new paragraph:
"(b) Gull Islands, containing approximately six acres, located in section 19, township 68 north, range 31 west, in Keweenaw County, Michigan."

(2) Amend section 3 to read as follows:
"Sec. 3. The boundaries of the Isle Royale National Park are hereby extended to include any submerged lands within the territorial jurisdiction of the United States within four and one-half miles of the shoreline of Isle Royale and the surrounding islands, including Passage Island and the Gull Islands, and the Secretary of the Interior is hereby authorized, in his discretion, to acquire title by donation to any such lands not now owned by the United States, the title to be satisfactory to him."

Sec. 2. A map and description of the boundaries of the areas designated in this Act shall be on file and
available for public inspection in the office of the Director
of the National Park Service, Department of the Interior,
and in the office of the Superintendent of each area des-
ignated in the Act. As soon as practicable after this Act
takes effect, maps of the wilderness areas and descrip-
tions of their boundaries shall be filed with the Interior
and Insular Affairs Committees of the United States
Senate and House of Representatives, and such maps
and descriptions shall have the same force and effect as
if included in this Act: Provided, That correction of cler-
ical and typographical errors in such maps and descrip-
tions may be made.

Sec. 3. All lands which represent potential wilder-
ness additions, upon publication in the Federal Register
of a notice by the Secretary of the Interior that all uses
thereon prohibited by the Wilderness Act have ceased,
shall thereby be designated wilderness.

Sec. 6. The areas designated by this Act as wilderness
shall be administered by the Secretary of the Interior in
accordance with the applicable provisions of the Wild-
erness Act governing areas designated by that Act as
wilderness areas, except that any reference in such pro-
visions to the effective date of the Wilderness Act shall
be deemed to be a reference to the effective date of this
Act, and, where appropriate, any reference to the Sec-
retary of Agriculture shall be deemed to be a reference
to the Secretary of the Interior.

*   *   *   *   *   *   *   *

Approved October 20, 1976.
APPENDIX C: MAPS

Insert:

Map 1: Region
Map 2: Wilderness Designation at Isle Royale National Park
Map 3: Wilderness and Backcountry Facilities
Map 4: Potential New Campgrounds (Alternative C for Overnight Use)
Map 5: Potential New Trail (Alternative C for Day Use)
Map 6: Management Zones
APPENDIX D: ISLE ROYALE NATIONAL PARK BACKCOUNTRY CAMPING REGULATIONS

1. Fires are permitted only in designated metal fire rings or grills. Use only dead and down wood.
2. Carry out all of your trash and litter, including cigarette butts and foil. Burning trash, or discarding trash or litter into pit toilets, is prohibited.
3. In campgrounds, tents must be pitched in designated sites only. Tents are prohibited in shelter sites.
4. Cross-country camping is permitted only if pre-registered with Park Ranger for zone and date on permit. Special rules apply.
6. Keep all soap— even biodegradable soap— out of lakes and streams. Do all washing and bathing at least 100’ away from water's edge; try for 200’ where possible.
7. Where there is no fish cleaning station, cut remains into small pieces and dispose in deep water (>50’ deep) or on shorelines at least 100’ from campgrounds. Leave them on shore above the water line and below the vegetation line.
8. Dogs, cats, and other domestic mammals are prohibited on the land and waters of Isle Royale National Park.
9. Quiet hours are between 10 p.m. and 6 a.m Eastern Time. During this time, generators are prohibited. Special rules are in effect in Quiet/No Wake Zones.
10. Fishing on inland lakes is permitted with artificial bait only. On Lake Superior, a Michigan fishing license is required.
11. Streams and creeks are open for fishing from the last Saturday in April to Labor Day. Special rules apply for Brook Trout. See the Greenstone Newsletter for details.
12. Possession of fish filets is prohibited, unless filets are being prepared for immediate consumption.
13. Groups (7-10 people) must have advanced camping reservations and follow the itinerary specified on the permit.
14. Commercial groups must obtain an Incidental Business Permit issued by Isle Royale National Park. Special deadlines for applications apply.
15. Removing, disturbing, or possessing living or dead wildlife or parts of them (such as antlers), or plants, is prohibited. Disturbance of paleontological specimens, or any cultural or archeological resources, is prohibited. Collecting and removing mineral resources such as agates, datolite, or greenstones, including those in Lake Superior, is prohibited.

MY SIGNATURE BELOW SIGNIFIES THAT I UNDERSTAND AND AGREE THAT MY PARTY WILL ABIDE BY THESE REGULATIONS. TRIP LEADERS AND PARTICIPANTS CAN BE CITED FOR VIOLATING THESE RULES AND REGULATIONS.

Signature of Trip Leader
APPENDIX E: ISLE ROYALE NATIONAL PARK CROSS-COUNTRY CAMPING
REGULATIONS

CROSS COUNTRY CAMPING REGULATIONS
Isle Royale National Park

CROSS COUNTRY CAMPERS ARE REQUIRED TO FOLLOW SPECIAL REGULATIONS
DESIGNED TO PROTECT THE PARK’S WILDERNESS RESOURCES AND VISITOR
EXPERIENCES. ALL TRIP PARTICIPANTS MUST UNDERSTAND AND OBSERVE THE
FOLLOWING CROSS COUNTRY CAMPING REGULATIONS.

1. Practice Leave-No-Trace principles
2. Individual parties of 1-6 only are permitted to camp in cross-country areas.
3. All islands on inland lakes and islands in Lake Superior (excluding the main island of Isle
Royale) are closed to cross-country camping.
4. Camping is permitted only in zones identified on your camping permit and the attached
cross-country zone map.
5. Maximum stay at any one location is one night. Tents and camping gear must be moved
at least ½ mile from the previous night’s stay.
6. Your campsite must be at least ¼ mile away from any trail and at least ½ mile away
from all developed areas, designated campgrounds and fire towers.
7. Your campsite must be at least 100 feet away from all bodies of water, and out of sight
of the water. You must also camp out of sight and sound of other cross-country
campers.
8. No fires are permitted.
9. Carry out all of your trash

Cross-country camping is intended for those seeking a higher level of solitude, adventure, self-
sufficiency, and low impact camping in a wilderness setting. Cross country camping is not
intended for overflow camping, nor to shorten travel between campsites, and is recommended for
experienced backpackers or paddlers who are familiar with Isle Royale. The terrain is rough,
there are many swamps (even in the higher elevations), and the vegetation is thick. Day hiking
off trail may be a preferred alternative for those who haven’t cross-country camped before.

Special fishing regulations:
• Brook Trout and Coasters—Catch and release only in the park’s Lake Superior waters,
and all streams and creeks, and in Hidden Lake.
• All creeks, streams, rivers, and Hidden Lake, are closed to fishing after Labor Day.
• Artificial lures only may be used in interior lakes and streams—no live bait, worms,
leeches, food, etc.

MY SIGNATURE BELOW SIGNIFIES THAT I UNDERSTAND AND AGREE THAT MY
PARTY WILL ABIDE BY THESE REGULATIONS. TRIP LEADERS AND PARTICIPANTS
CAN BE CITED FOR VIOLATING THESE RULES AND REGULATIONS.

Signature of Trip Leader ____________________________________________

APPENDICES
Phase I: Is Administrative Action Necessary?-The Minimum Requirement

What is the problem/issue that may require administrative action:

______________________________________________________________________________

Briefly describe the issue/problem:

______________________________________________________________________________

1) IS THIS AN EMERGENCY?*

   YES  NO

   Act according to established search and rescue procedures.

2) Is this problem/issue subject to valid existing rights?

   YES  NO

   Briefly explain and proceed to Phase II.

3) Can the problem/issue be addressed outside of wilderness?

   YES-Do it there!  NO

*Emergency: a situation that involves inescapable urgency and temporary need for speed beyond that available by primitive means (For example: loss of human life or serious injury, law enforcement efforts involving serious crime or fugitive pursuit, retrieval of the deceased, fire suppression).

NOTES:
"In our culture, when everything new is automatically assumed to be better, it is considered a kind of blasphemy to argue for traditional ways of doing things. But sometimes the old ways are the best ways. Sometimes we need to be gloriously impractical. Sometimes we need to find the soul in things before we can find the soul in ourselves."

Jerry Dennis, Canoe Magazine-1993

PHASE I: IS ADMINISTRATIVE ACTION NEEDED? (continued): The questions below are provided to evaluate whether resolving the issue protects wilderness character and values identified in the Wilderness Act. Answer the questions in terms of need to resolve the issue/problem. If the answer to most of the questions is yes, then the issue/problem probably requires administrative action, and Phase II should be implemented. Please circle Yes or No and briefly explain to the right of the question.

1) If the issue/problem is not resolved, or action is not taken, will the natural processes of wilderness be adversely affected?
   Yes  No

2) If the issue/problem is not resolved, or action is not taken, will the values of solitude or primitive and unconfined types of recreation be threatened?
   Yes  No

3) If the issue/problem goes unresolved or action is not taken, will evidence of human manipulation, permanent improvements, or human habitation be substantially noticeable?
   Yes  No

4) Does addressing the issue/problem or taking action protect the wilderness as a whole as opposed to a single resource?
   Yes  No

Proceed to Phase II.
5) Does addressing the issue/problem or taking action contribute to protection of an enduring resource of wilderness for future generations?

Yes  No

6) Is this an issue for reasons other than convenience or cost of administration?

Yes  No

“You can measure the soil, water, and trees, but intangibles never.” Sigurd F. Olson, Reflections from the North Country

PHASE II: DETERMINING THE MINIMUM TOOL

Identify and describe a range of alternatives including those that utilize traditional tools, and non-motorized and mechanized means as well as others. Fill out the questions and information below for each alternative

ALTERNATIVE #__________  Briefly describe or attach description:

1) Circle (Y)es or (N)o: Does this alternative involve:
   Use of a temporary road/trail Y N
   Use of motor vehicles Y N
   Use of motorized equipment Y N
   Use of motorboats Y N
   Landing of airplanes Y N
   Landing of helicopters Y N
   Use of mechanical transport Y N
   Creating a structure or installation Y N
   Other impacts to wilderness character Y N
1) Does this alternative ensure that wilderness is not occupied or modified by humans?
2) Does this alternative maintain or move wilderness toward minimal human influence, within legal constraints?
3) Does this alternative allow wilderness to retain solitude and elements of surprise and discovery?
4) Did you ensure that this alternative was not primarily based on economy, convenience, comfort, or commercial value?
5) Does this alternative look beyond the short term to ensure that future generations will be able to enjoy the benefits of an enduring resource of wilderness?
6) Does this alternative support the wilderness resource in its entirety rather than maximizing an individual resource within the wilderness?
7) Does this alternative recognize the unique character Isle Royale wilderness?
8) Does this alternative ensure that the effects of the human activities do not dominate natural conditions and processes?

2) Describe the adverse/beneficial effects of this alternative on the following:

- Biophysical Environment
- Visitor Opportunities and Experiences
- Societal and Political Concerns
- Health and Safety Concerns

3) Evaluate this alternative by answering the eight questions to the right. **Affirmative answers protect and preserve the wilderness!**

---

**SELECTION OF THE MINIMUM TOOL ALTERNATIVE**

What is the method or tool that will allow the issue/problem to be resolved or an action to be implemented with minimum impacts to the wilderness?

The Selected Alternative is #_______________________________.

Describe the rationale for selecting this alternative:

---

APPENDICES
Describe the specific operating requirements for the action. Include information on timing, locations, type of actions, etc. (Use this space or attach a separate sheet)

What are the maintenance requirements?

What standards and designs will apply?

Develop and describe any mitigation measures that will apply?

What will be provided for monitoring and feedback to strengthen future effects and preventative actions to taken to help in future efforts?

<table>
<thead>
<tr>
<th>Prepared By</th>
<th>Date</th>
<th>Recommended By Division Chief</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Recommended By Backcountry Management Group (BMG), Chairperson</td>
<td>Date</td>
</tr>
</tbody>
</table>

Approved By Superintendent, Isle Royale National Park  
Date
### Appendix G: Isle Royale National Park State-Listed Flora and Fauna

#### State-Listed Plant Species of Isle Royale National Park

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Rank</th>
<th>2004 Status</th>
<th>Abundance</th>
<th>Habitat(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild chives</td>
<td><em>Allium schoenoprasum</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>uncommon, rock shore</td>
</tr>
<tr>
<td>Round-leaved orchid*</td>
<td><em>Amerorchis rotundifolia</em></td>
<td>G5</td>
<td>S1</td>
<td>E</td>
<td>rare, cedar swamps</td>
</tr>
<tr>
<td>Little leaf pussytoes ***</td>
<td><em>Antennaria microphylla</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosy pussytoes*</td>
<td><em>Antennaria rosea</em></td>
<td>G5</td>
<td>SH</td>
<td>T</td>
<td>rare, rock shore</td>
</tr>
<tr>
<td>Big leaf sandwort</td>
<td><em>Arenaria macrophylla</em></td>
<td>G4</td>
<td>S1</td>
<td>T</td>
<td>rare, mixed woods</td>
</tr>
<tr>
<td>Dragon's mouth, Arethusa**</td>
<td><em>Aretusa bulbosa</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart-leaved Arnica</td>
<td><em>Arnica cordifolia</em></td>
<td>G5</td>
<td>S1</td>
<td>E</td>
<td>rare, rocky, mixed forest</td>
</tr>
<tr>
<td>Great northern aster</td>
<td><em>Aster modestus</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>rare, grassy,</td>
</tr>
<tr>
<td>Slough grass</td>
<td><em>Beckmannia syzigachne</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>rare, gravel shore,</td>
</tr>
<tr>
<td>Low northern rock-cress</td>
<td><em>Braya humilis</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>exposed shoreline</td>
</tr>
<tr>
<td>Northern reedgrass</td>
<td><em>Calamagrostis lacustris</em></td>
<td>G3Q</td>
<td>S1</td>
<td>T</td>
<td>rare, rock opening</td>
</tr>
<tr>
<td>Narrow-leaved reedgrass****</td>
<td><em>Calamagrostis stricta</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>rare, rocky opening</td>
</tr>
<tr>
<td>Autumnal water starwart</td>
<td><em>Callitriche hermaphroditica</em></td>
<td>G5</td>
<td>S2</td>
<td>SC</td>
<td>rare, aquatic</td>
</tr>
<tr>
<td>Calypso orchid</td>
<td><em>Calypso bulbosa</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>uncommon, boreal shoreline</td>
</tr>
<tr>
<td>Sedge</td>
<td><em>Carex atratiformis</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>uncommon, rock shore,</td>
</tr>
<tr>
<td>Sedge*</td>
<td><em>Carex media</em></td>
<td>G5</td>
<td>S2S3</td>
<td>T</td>
<td>frequent, rock shore</td>
</tr>
<tr>
<td>Sedge***</td>
<td><em>Carex norvegica</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richardson sedge</td>
<td><em>Carex richardsonii</em></td>
<td>G4</td>
<td>S3S4</td>
<td>SC</td>
<td>grassland, communities</td>
</tr>
<tr>
<td>Ross's sedge</td>
<td><em>Carex rossii</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>bedrock outcrops</td>
</tr>
<tr>
<td>Eastern paintbrush</td>
<td><em>Castilleja septentrionalis</em></td>
<td>G5</td>
<td>S2S3</td>
<td>T</td>
<td>common, aspen woods, rock openings</td>
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</tbody>
</table>

---

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>RANK¹</th>
<th>2004 STATUS¹</th>
<th>ABUNDANCE</th>
<th>HABITAT(S)</th>
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</thead>
<tbody>
<tr>
<td>Purple clematis</td>
<td>Clematis occidentalis</td>
<td>G5 S3</td>
<td>SC</td>
<td>uncommon</td>
<td>dry woods</td>
</tr>
<tr>
<td>Small blue-eyed mary</td>
<td>Collinsia parviflora</td>
<td>G5 S2</td>
<td>T</td>
<td>rare</td>
<td>rock ridges</td>
</tr>
<tr>
<td>Douglas's hawthorn</td>
<td>Crataegus douglasii</td>
<td>G5 S3S4</td>
<td>SC</td>
<td>rare</td>
<td>rock openings</td>
</tr>
<tr>
<td>Ram's head lady-slipper</td>
<td>Cypripedium arietinum</td>
<td>G3 S3</td>
<td>SC</td>
<td>rare</td>
<td>boreal forest</td>
</tr>
<tr>
<td>American rock brake***</td>
<td>Cryptogramma acrostichoides</td>
<td>G5 S2</td>
<td>E</td>
<td>uncommon</td>
<td>rock shores &amp; ridges</td>
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<tr>
<td>American rock brake***</td>
<td>Cryptogramma crispa</td>
<td>G5 S3S4</td>
<td>SC</td>
<td>rare</td>
<td>rock openings</td>
</tr>
<tr>
<td>Slender rock brake</td>
<td>Cryptogramma stelleri</td>
<td>G5 S3S4</td>
<td>SC</td>
<td>rare</td>
<td>bedrock shoreline</td>
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<tr>
<td>Wild oat grass</td>
<td>Danthonia intermedia</td>
<td>G5 S1S2</td>
<td>SC</td>
<td>bedrock shoreline</td>
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<tr>
<td>Rock whitlow-grass</td>
<td>Draba arabisans</td>
<td>G4 S3</td>
<td>SC</td>
<td>uncommon</td>
<td>rock shore &amp;</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>openings, island</td>
</tr>
<tr>
<td>Smooth whitlow-grass</td>
<td>Draba glabella</td>
<td>G4G5 S1</td>
<td>E</td>
<td>rare</td>
<td>rock shore</td>
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<tr>
<td>Twisted whitlow-grass</td>
<td>Draba incana</td>
<td>G5 S1</td>
<td>T</td>
<td>rare</td>
<td>rock shore</td>
</tr>
<tr>
<td>English sundew</td>
<td>Drosera anglica</td>
<td>G5 S3</td>
<td>SC</td>
<td>rare</td>
<td>bogs, rock shore pools</td>
</tr>
<tr>
<td>Fragrant cliff woodfern****</td>
<td>Dryopteris fragrans</td>
<td>G5 S3</td>
<td>SC</td>
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<tr>
<td>Fleabane</td>
<td>Erigeron acris</td>
<td>G5 SR</td>
<td>SC</td>
<td></td>
<td>rocky areas, clearings</td>
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<tr>
<td>Hyssop-leaved fleabane</td>
<td>Erigeron hyssopifolius</td>
<td>G5 S3</td>
<td>SC</td>
<td></td>
<td>fens, swamps</td>
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<tr>
<td>Blue wild rye</td>
<td>Elymus glaucus</td>
<td>G5 S3</td>
<td>SC</td>
<td></td>
<td>near Lake Superior</td>
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<tr>
<td>Black crowberry</td>
<td>Empetrum nigrum</td>
<td>G5 S2</td>
<td>T</td>
<td>rare</td>
<td>rock shore</td>
</tr>
<tr>
<td>Moor rush****</td>
<td>Juncus stygius</td>
<td>G5 S1S2</td>
<td>T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue lettuce</td>
<td>Lactuca pulchella</td>
<td>G5 SH</td>
<td>T</td>
<td>rare</td>
<td>openings, burns</td>
</tr>
<tr>
<td>Auricled twayblade</td>
<td>Listera auriculata</td>
<td>G3 S2S3</td>
<td>SC</td>
<td>rare</td>
<td>boreal forest</td>
</tr>
<tr>
<td>Involucred haysnuckle</td>
<td>Lonicera involucrata</td>
<td>G4G5 S1</td>
<td>T</td>
<td>rare</td>
<td>trails</td>
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<tr>
<td>Small-flowered wood-rush</td>
<td>Luzula parviflora</td>
<td>G5 S1</td>
<td>T</td>
<td>uncommon</td>
<td>dry bluffs</td>
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<tr>
<td>Plains muhly</td>
<td>Muhlenbergia cuspidala</td>
<td>G4 SX</td>
<td>X</td>
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<tr>
<td>Mat muhly</td>
<td>Muhlenbergia richardsonis</td>
<td>G5 S2</td>
<td>T</td>
<td></td>
<td></td>
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<tr>
<td>Water-milfoil</td>
<td>Myriophyllum alterniflorum</td>
<td>G5 S2S3</td>
<td>SC</td>
<td>uncommon</td>
<td>aquatic (inland lks.)</td>
</tr>
<tr>
<td>Pygmy water-lily</td>
<td>Nymphaea tertagona</td>
<td>G5 S1</td>
<td>E</td>
<td>rare</td>
<td>stream deltas</td>
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<tr>
<td>Devil's club</td>
<td>Oplopanax horridus</td>
<td>G4 S2</td>
<td>T</td>
<td>uncommon</td>
<td>swamps, openings</td>
</tr>
<tr>
<td>Sweet cicely</td>
<td>Osmorhiza depauperata</td>
<td>G5 S2</td>
<td>T</td>
<td>frequent</td>
<td>mixed woods</td>
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</tbody>
</table>

**APPENDICES**
### STATE-LISTED PLANT SPECIES OF ISLE ROYALE NATIONAL PARK (CONT.)

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>RANK</th>
<th>2004 STATUS</th>
<th>GLOBAL STATE</th>
<th>US</th>
<th>MI</th>
<th>ABUNDANCE</th>
<th>HABITAT(S)</th>
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</thead>
<tbody>
<tr>
<td>Marsh grass-of-paringassus</td>
<td><em>Parnassia palustris</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>rare</td>
<td></td>
<td></td>
<td>swamps, lake shores</td>
</tr>
<tr>
<td>Franklin's phacelia</td>
<td><em>Phacelia franklinii</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock openings</td>
</tr>
<tr>
<td>Mountain timothy</td>
<td><em>Phleum alpinum</em></td>
<td>G5</td>
<td>SX</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Butterwort</td>
<td><em>Pinguicula vulgaris</em></td>
<td>G5</td>
<td>S3</td>
<td>SC</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock shore, mossy banks</td>
</tr>
<tr>
<td>Alpine bluegrass</td>
<td><em>Poa alpina</em></td>
<td>G5</td>
<td>S1S2</td>
<td>T</td>
<td>rare</td>
<td></td>
<td></td>
<td>rock shore</td>
</tr>
<tr>
<td>Canby's bluegrass</td>
<td><em>Poa canbyi</em></td>
<td>G4G5</td>
<td>S1</td>
<td>E</td>
<td>rare</td>
<td></td>
<td></td>
<td>rock outcrop</td>
</tr>
<tr>
<td>Alpine buckwheat</td>
<td><em>Polygonum viviparum</em></td>
<td>G5</td>
<td>S1S2</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock shore, beaches</td>
</tr>
<tr>
<td>Prairie cinquefoil</td>
<td><em>Potentilla pensylvanica</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Macoun's buttercup</td>
<td><em>Ranunculus macounii</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>rare</td>
<td></td>
<td></td>
<td>swamp forests</td>
</tr>
<tr>
<td>Prairie buttercup</td>
<td><em>Ranunculus rhomboideus</em></td>
<td>G4</td>
<td>S2</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock ridges</td>
</tr>
<tr>
<td>Gooseberry</td>
<td><em>Ribes oxyacanthaoides</em></td>
<td>G5</td>
<td>S3</td>
<td>SC</td>
<td>frequent</td>
<td></td>
<td></td>
<td>clearings, beaches</td>
</tr>
<tr>
<td>Pearlwort</td>
<td><em>Sagina nodosa</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock crevices</td>
</tr>
<tr>
<td>Satiny willow</td>
<td><em>Salix pellita</em></td>
<td>G5</td>
<td>S2</td>
<td>SC</td>
<td>rare</td>
<td></td>
<td></td>
<td>rock shore</td>
</tr>
<tr>
<td>Tea-leaved willow</td>
<td><em>Salix planifolia</em></td>
<td>G5</td>
<td>SH</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock shore, islands</td>
</tr>
<tr>
<td>Encrusted saxifrage</td>
<td><em>Saxifraga paniculata</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>rare</td>
<td></td>
<td></td>
<td>rock shore</td>
</tr>
<tr>
<td>Prickly saxifrage</td>
<td><em>Saxifraga tricuspidata</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock shore</td>
</tr>
<tr>
<td>Rayless mountain ragwort</td>
<td><em>Senecio indecorus</em></td>
<td>G5</td>
<td>S1</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock openings</td>
</tr>
<tr>
<td>Aowlort</td>
<td><em>Subularia aquatica</em></td>
<td>G5</td>
<td>S1</td>
<td>E</td>
<td>rare</td>
<td></td>
<td></td>
<td>aquatic</td>
</tr>
<tr>
<td>False Asphodel</td>
<td><em>Tofieldia pusilla</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>uncommon</td>
<td></td>
<td></td>
<td>rock shore pools</td>
</tr>
<tr>
<td>Downy oatgrass</td>
<td><em>Trisetum spicatum</em></td>
<td>G5</td>
<td>S2S3</td>
<td>SC</td>
<td>frequent</td>
<td></td>
<td></td>
<td>rock shore</td>
</tr>
<tr>
<td>Dwarf bilberry*</td>
<td><em>Vaccinium cespitosum</em></td>
<td>G5</td>
<td>S1S2</td>
<td>T</td>
<td>absent?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Alpine blueberry</td>
<td><em>Vaccinium uliginosum</em></td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>rare</td>
<td></td>
<td></td>
<td>rock shore</td>
</tr>
<tr>
<td>Mountain-cranberry</td>
<td><em>Vaccinium vitis-idaea</em></td>
<td>G5</td>
<td>S1</td>
<td>E</td>
<td>extirpated</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Squashberry</td>
<td><em>Viburnum edule</em></td>
<td>G5</td>
<td>S2S3</td>
<td>T</td>
<td>common</td>
<td></td>
<td></td>
<td>boreal, mixed forests</td>
</tr>
</tbody>
</table>

* Species on rare plant list and state list but not on Slavick and Janke (1993) list.
** Listed by Slavick and Janke (1993) and rare plants list but not on state list.
*** Species listed by Slavick and Janke (1993) but not on state list or rare plant list.
**** Species listed by Slavick and Janke (1993) and state list. Not on rare plant list.
## STATE-LISTED FISH SPECIES OF ISLE ROYALE NATIONAL PARK

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>RANK(^2)</th>
<th>1999 STATUS(^2)</th>
<th>HABITAT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake sturgeon</td>
<td><em>Acipenser fulvescens</em></td>
<td>G3</td>
<td>S2</td>
<td>Lake Superior</td>
</tr>
<tr>
<td>Cisco or Lake herring*</td>
<td><em>Coregonus artedi</em></td>
<td>G5</td>
<td>S3</td>
<td>Lake Desor</td>
</tr>
<tr>
<td>Siskiwit Lake cisco**</td>
<td><em>Coregonus bartletii</em></td>
<td>G1Q</td>
<td>S1</td>
<td>Siskiwit</td>
</tr>
<tr>
<td>Kiyi</td>
<td><em>Coregonus kiyi</em></td>
<td>G3</td>
<td>S3</td>
<td>Lake Superior</td>
</tr>
<tr>
<td>Shortjaw cisco</td>
<td><em>Coregonus zenithicus</em></td>
<td>G2</td>
<td>S2</td>
<td>Lake Superior</td>
</tr>
<tr>
<td>Spoonhead sculpin</td>
<td><em>Cottus ricei</em></td>
<td>G5</td>
<td>S3</td>
<td>Superior, Inland lakes</td>
</tr>
</tbody>
</table>

* *Subspecies*

**Species

Fish list taken from "Wildlife of Isle Royale" revised by Dr. Peter Jordon 1981.

## STATE-LISTED MAMMAL SPECIES OF ISLE ROYALE NATIONAL PARK

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>RANK</th>
<th>1999 STATUS</th>
<th>HABITAT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moose</td>
<td><em>Alces alces</em></td>
<td>G5</td>
<td>S4</td>
<td>SC</td>
</tr>
<tr>
<td>Gray Wolf</td>
<td><em>Canis lupus</em></td>
<td>G4</td>
<td>S3</td>
<td>LT E</td>
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## STATE-LISTED BIRD SPECIES OF ISLE ROYALE NATIONAL PARK

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>RANK(^2) GLOBAL STATE</th>
<th>1999 STATUS(^2) US MI</th>
<th>ABUNDANCE</th>
<th>HABITAT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper's hawk</td>
<td>Accipiter cooperii</td>
<td>G5</td>
<td>S3S4</td>
<td>SC</td>
<td>O,T</td>
</tr>
<tr>
<td>Northern goshawk</td>
<td>Accipiter gentilis</td>
<td>G5</td>
<td>S3</td>
<td>SC</td>
<td>R</td>
</tr>
<tr>
<td>Short-eared owl</td>
<td>Asio flammeus</td>
<td>G5</td>
<td>S1</td>
<td>E</td>
<td>A,T</td>
</tr>
<tr>
<td>Long-eared owl</td>
<td>Asio otus</td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>A,T</td>
</tr>
<tr>
<td>American bittern</td>
<td>Botaurus lentiginosus</td>
<td>G4</td>
<td>S3S4</td>
<td>SC</td>
<td>R</td>
</tr>
<tr>
<td>Red-shouldered hawk</td>
<td>Buteo lineatus</td>
<td>G5</td>
<td>S3S4</td>
<td>T</td>
<td>A</td>
</tr>
<tr>
<td>Piping plover</td>
<td>Charadrius melodus</td>
<td>G3</td>
<td>S1</td>
<td>LE</td>
<td>E</td>
</tr>
<tr>
<td>Black tern</td>
<td>Chlidonias niger</td>
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<td>S3</td>
<td>SC</td>
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<td>Lark sparrow</td>
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<td>Northern harrier</td>
<td>Circus cyaneus</td>
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<td>S3</td>
<td>SC</td>
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<td>Yellow rail</td>
<td>Coturnicops noveboracensis</td>
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<td>S1S2</td>
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<td>Merlin</td>
<td>Falco columbarius</td>
<td>G5</td>
<td>S1S2</td>
<td>T</td>
<td>R</td>
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<td>Peregrine falcon</td>
<td>Falco peregrinus</td>
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<td>E</td>
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<tr>
<td>Common loon</td>
<td>Gavia immer</td>
<td>G5</td>
<td>S3S4</td>
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<tr>
<td>Bald eagle</td>
<td>Haliaeetus leucocephalus</td>
<td>G4</td>
<td>S4</td>
<td>LT</td>
<td>T</td>
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<tr>
<td>Black-crowned night-heron</td>
<td>Nycticorax nycticorax</td>
<td>G5</td>
<td>S2S3</td>
<td>SC</td>
<td>A</td>
</tr>
<tr>
<td>Osprey</td>
<td>Pandion haliaetus</td>
<td>G5</td>
<td>S4</td>
<td>T</td>
<td>O</td>
</tr>
<tr>
<td>Black-backed woodpecker</td>
<td>Picoides arcticus</td>
<td>G5</td>
<td>S2</td>
<td>SC</td>
<td>R</td>
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<tr>
<td>Dickcissel</td>
<td>Spiza americana</td>
<td>G5</td>
<td>S3</td>
<td>SC</td>
<td>A</td>
</tr>
<tr>
<td>Caspian tern</td>
<td>Sterna caspia</td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>A</td>
</tr>
<tr>
<td>Common tern</td>
<td>Sterna hirundo</td>
<td>G5</td>
<td>S2</td>
<td>T</td>
<td>O</td>
</tr>
<tr>
<td>Yellow-headed blackbird</td>
<td>Xanthocephalus xanthocephalus</td>
<td>G5</td>
<td>S2</td>
<td>SC</td>
<td>A</td>
</tr>
</tbody>
</table>
LEGEND FOR BIRDS LIST:

R = regular occurrence
O = occasional occurrence
A = accidental occurrence
H = hypothetical occurrence
T = breeds on adjacent mainland

Species list and abundance based on "Wildlife of Isle Royale," revised 1981 by Dr. Peter Jordon.

No listed amphibians or reptiles are known to inhabit Isle Royale. In 1977 there was one inconclusive photo taken of what may have been a Black rat snake (Elaphe obsoleta obsoleta) which is listed as Special Concern in Michigan.

No comprehensive inventories of insects, snails, or mussels have ever been done for Isle Royale.

LEGEND FOR ALL LISTS


LE, LT (Listed Endangered, Listed Threatened) = Species has been officially listed as either Endangered (E), or Threatened (T). P (Proposed) = Species has been officially proposed for listing.

( )  Common synonyms of species names accepted by the State Technical Committee.

GLOBAL RANKS

G1  = critically imperiled globally because of extreme rarity (5 or fewer occurrences range-wide or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2  = imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

G3  = either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g. a single western state, a physiographic region in the East) or because of other factor(s) making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.

G4  = apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
Appendix G: Isle Royale National Park State-Listed Flora and Fauna

G5 = demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GH = of historical occurrence throughout its range, i.e. formerly part of the established biota, with the expectation that it may be rediscovered (e.g. Bachman's Warbler).

GU = possibly in peril range-wide, but status uncertain; need more information.

GX = believed to be extinct throughout its range (e.g. Passenger Pigeon) with virtually no likelihood that it will be rediscovered.

STATE RANKS

S1 = critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state.

S2 = imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.

S3 = rare or uncommon in state (on the order of 21 to 100 occurrences).

S4 = apparently secure in state, with many occurrences.

S5 = demonstrably secure in state and essentially ineradicable under present conditions.

SA = accidental in state, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or thousands of miles outside their usual range.

SE = an exotic established in the state; may be native elsewhere in North America (e.g. house finch or catalpa in eastern states).

SH = of historical occurrence in state and suspected to be still extant.

SN = regularly occurring, usually migratory and typically nonbreeding species.

SR = reported from state, but without persuasive documentation which would provide a basis for either accepting or rejecting the report.

SRF = reported falsely (in error) from state but this error persisting in the literature.

SU = possibly in peril in state, but status uncertain; need more information.

SX = apparently extirpated from state.
Map 3: Wilderness and Backcountry Facilities

Key
- Ranger Station
- Fire tower
- Lighthouse
- Dock
- Campsite
  - No group facilities, fires not allowed
  - No group facilities, fires allowed
  - Group facilities, fires not allowed
  - Group facilities, fires allowed
  - GMP-approved new campsite
- Trail

Passage Island

Scale:
- 0 - 2.5 - 5 - 10 - 15 Miles
- 0 - 2.5 - 5 - 10 - 15 Kilometers
Map 4: Potential New Campgrounds (Alternative C for Overnight Use)

- Tobin Harbor
- Threemile Campground
- Tookers Island Campground
- Tallman I
- PROPOSED CAMPGROUND AREA
- East Caribou I
- West Caribou I
- Mott I
- Caribou Island Campground
- West Caribou I
- PROPOSED CAMPGROUND AREA
- Rock Harbor
- Lake Superior
- Lake Lesage
- Rock Harbor
- Chickenbone Lake
- Lake Livermore
- PROPOSED CAMPGROUND AREA
- Chickenbone East Campground
- Chickenbone West Campground
- Tookers Island Campground
- Threemile Campground
Map 5: Potential New Trail (Alternative C for Day Use)

Key
- Proposed Trail
- Ranger Station
- Dock
- Campsite
  - No group facilities, fires not allowed
  - Group facilities, fires not allowed
- Existing Trail
- Developed
- Frontcountry
- Wilderness Portal
- Backcountry
- Primitive
- Pristine
- Lake Superior/Park Boundary

Wilderness zones
- Non-Wilderness
- Wilderness

Proposed Trail
- Washington Creek Campground
- Beaver Island Campground
- Beaver Island
- Feldmann Trail
- Nature Trail
- Greenstone Ridge Trail
- Windigo Visitor’s Center
- Nature Trail
- Windigo Visitor’s Center
- Washington Creek Campground