

# Glacier Bay National Park

## Part II – Environmental Assessment

June 2023



Part II - EA

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# CHAPTER 1: PURPOSE AND NEED

## INTRODUCTION

The revised Backcountry and Wilderness Management Plan (revised plan), once finalized, will set the framework for the National Park Service (NPS) to manage the 2.6 million acres of designated Wilderness lands and waters within Glacier Bay National Park (the park). The draft plan will supplement the 1984 General Management Plan (GMP) by focusing on preserving resources, including designated Wilderness character within the park; providing visitor opportunities and managing visitor use in wilderness; clarifying where commercial opportunities exist; and honoring the rich cultural tapestry of indigenous use and occupation in the wilderness while supporting the enduring connecting between Tlingit and their Homeland.

This environmental assessment (EA) provides (1) programmatic National Environmental Policy Act (NEPA) analysis for broad management direction, zoning, corrective management actions, new communications sites, and potential trail development on Excursion Ridge; and (2) site-specific NEPA analysis for required year-round backcountry permits, applying group sizes year-round, and permitting commercial mountaineering within the park.

This EA discloses potential impacts on the human environment resulting from the implementation of the revised plan once finalized. It fulfills National Environmental Policy Act (NEPA) requirements for an EA.

## PURPOSE AND NEED FOR ACTION

The purpose of the EA is to enhance preservation and protection of the park's fundamental resources and values, address new NPS planning and wilderness management requirements, and support the park in incorporating wilderness character into management decisions. The need for the EA is to provide broad guidance, primarily for 2.6 million acres of terrestrial wilderness areas and a small number of wilderness waters areas, and to establish a framework for responding to current and future changes in visitor use in park wilderness. There is a need for the park to

- preserve wilderness character,
- provide visitor access to tidewater glaciers,
- incorporate Tlingit Homeland values into wilderness management,
- provide guidance for commercial service providers to collaboratively achieve park desired conditions and goals,
- address conflicting use and expectations in popular areas,
- address and define desired conditions for resources and visitor experiences within and on areas adjacent to wilderness waters,

- protect wildlife and sensitive shoreline areas, and
- understand intact complex terrestrial and marine ecosystems.

## PROJECT AREA

The project area for the revised plan and EA includes approximately 2.6 million acres of designated Wilderness. The project area encompasses most of the land in the park above the mean high tide line and around 53,000 acres within marine wilderness waterways. The project area does not include areas designated as a part of the “preserve” or park lands not designated as wilderness (e.g., the frontcountry portion of the park surrounding Bartlett Cove and inholdings) and does not apply to visitor use activities associated with the Alsek River (these are addressed in another plan). However, some actions within the plan apply to wilderness lands only, wilderness waters only, or both; therefore, the project area varies depending on the resource as specified in the EA.



FIGURE 1. BACKCOUNTRY CONTEXT

## SCOPE OF THE ANALYSIS

The EA analyzes programmatic and site-specific actions, consistent with guidance in the December 18, 2014, Memorandum from the Council on Environmental Quality on the Effective Use of Programmatic NEPA Reviews (CEQ 2014). The Council on Environmental Quality notes that agencies may prepare a single NEPA document to support both programmatic and project-specific proposals. Such an approach may be appropriate when an agency plans to make a broad program decision or, as this EA does, implements timely decisions on one or more specific projects under the program. The guidance states that when doing so, agencies “should clearly communicate the purpose and need for the programmatic and subsequent decisions, clearly state the decisions the agency proposes to make based directly on the [programmatic document] and distinguish the analysis of impacts and alternatives of the broad programmatic proposals from project- or site-specific proposals.” Therefore, this EA discloses programmatic decisions that are supported by this NEPA document, including several programmatic actions that may require additional NEPA compliance once the scope and design for these actions are sufficiently developed, and

separately, actions that are site-specific and fully covered by this NEPA review. These actions are addressed generally in table 1 and are described in detail in chapter 2.

**Table 1. NEPA Compliance Status for Programmatic Actions and Site-Specific Actions Covered in This EA**

Type of Action	Specific Action	NEPA Compliance
Alternative B: Proposed Programmatic Actions	Broad backcountry and designated Wilderness management framework, including zoning	Compliance covered in this NEPA review.
	Communication upgrades	Compliance covered in this NEPA review except further cultural resource and wetland site-specific compliance that will be required and will be completed as appropriate. Subject to a future minimum requirements analysis.
	Trail development	Compliance covered in this NEPA review assumes that the final design for the trail falls within the assumptions for this analysis, except for further cultural resource and wetland site-specific compliance that will be required and will be completed as appropriate. If the final design for this trail falls outside the assumptions for this analysis, additional analysis, compliance, and permitting would be completed before construction. Subject to a future minimum requirements analysis.
Alternative B: Proposed Site-Specific Actions	Required backcountry camping permits year-round	Compliance covered in this NEPA review.
	Group size year-round and including day use	Compliance covered in this NEPA review.
	Permitting commercial mountaineering	Compliance covered in this NEPA review.

## IMPACT TOPICS RETAINED FOR DETAILED ANALYSIS

Impact topics identify resources that could be affected, either beneficially or adversely, by implementing any of the proposed alternatives. The National Park Service used an interdisciplinary review process, existing studies and data, and public comments to determine which resources would likely be affected by this project. Issues were retained for detailed analysis in this EA if they met one or more of the following criteria:

- the environmental impacts associated with the issue are central to the proposal or of critical importance;
- a detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives;
- the environmental impacts associated with the issue are a big point of contention among the public or other agencies; or
- there are potentially significant impacts on resources associated with the issue.

The following topics are carried forward for further analysis in this EA:

**Visitor Use and Experience** – Changes to the backcountry camping permit requirements and group size limits could affect how visitors experience the wilderness. Similarly, changes to commercial mountaineering and on-trail hiking opportunities could affect visitor use of the park’s wilderness. Therefore, this impact topic is retained for detailed analysis.

**Wetlands** – Construction of a new trail would result in the removal and/or disturbance of wetland vegetation and the potential filling of wetland areas. Therefore, this impact topic is retained for detailed analysis.

**Vegetation** – Construction of a new trail and installation of communications infrastructure would result in new ground disturbance and removal and/or disturbance of vegetation. Therefore, this impact topic is retained for detailed analysis.

**Solitude or Primitive and Unconfined Recreation Quality of Wilderness Character** – Changes to the backcountry camping permit requirements and group size limits could affect opportunities for unconfined recreation in wilderness. Construction of a new trail could affect opportunities for primitive recreation in wilderness. Installation of communications infrastructure and construction of the trail could affect opportunities for solitude in wilderness through the potential use of helicopters. Therefore, this impact topic is retained for detailed analysis.

**Undeveloped Quality of Wilderness Character** – Construction of a new trail in wilderness and installations of communications infrastructure could affect the undeveloped quality of wilderness character through increasing development in wilderness. Therefore, this impact topic is retained for detailed analysis.

**Fairweather Range Ethnographic Resources/Traditional Cultural Properties** – An increase in human presence in the Fairweather Range would have adverse impacts on the eligible Traditional Cultural Property, Tsalx̄aan/Yéik Yi Aaní, Mount Fairweather sacred to the T’akdeintaan Clan of the Huna Tlingit. Therefore, this impact topic is retained for detailed analysis.

Impact topics that were considered but not carried forward for detailed analysis are listed below. A discussion and rationale are provided in appendix C.

- Economics
- Archeological Resources
- Historic Structures
- Cemeteries
- Soils
- Special Status Species
- Wildlife



## CHAPTER 2: ALTERNATIVES

### INTRODUCTION

NEPA requires federal agencies to explore a range of reasonable alternatives aimed at addressing the purpose of and need for a proposed action. Reasonable alternatives include alternatives that are “technically and economically practical or feasible and meet the purpose and need of the proposed action” (43 CFR section 46.420[b]). The alternatives under consideration must include a no action alternative as prescribed by Council on Environmental Quality regulations for implementing NEPA (40 CFR Part 1501.5). This chapter describes two alternatives, consistent with the purpose of and need for action: Alternative A: No Action and Alternative B: Action Alternative – NPS Preliminary Proposed Action. Alternative B was developed by the National Park Service interdisciplinary team and includes feedback received during the agency and public scoping process. Alternative B meets the overall purpose and need for taking action; is consistent with laws, regulations, policies, and guidance that guide the park; and is technically and economically feasible.

The National Park Service explores and objectively evaluates two action alternatives in this EA:

- Alternative A: No Action
- Alternative B: NPS Preliminary Proposed Action

Each alternative is described in detail in the following sections.

### ALTERNATIVE A: NO ACTION

Under Alternative A, the National Park Service would continue current wilderness management direction provided by the 1984 General Management Plan. Zones, as defined in the 1984 General Management Plan (NPS 1984), would remain the same under Alternative A. No new communications infrastructure sites would be developed. No new trails would be developed beyond what were already described in the decision document for the selected action of the Glacier Bay National Park and Preserve Frontcountry Management Plan (2019). Registration for backcountry camping on land accessed via the Glacier Bay Zone (defined as waters contiguous with Glacier Bay lying north of an imaginary line between Point Gustavus and Point Carolus) would remain voluntary except during the park’s peak season. An overnight group size of 12 or fewer would remain in place between March 1 and October 31. Current practices of concession contracts and commercial use authorizations would continue, including case-by-case approval of commercial mountaineering in the Fairweather Range.

## **ALTERNATIVE B: ACTION ALTERNATIVE – NPS PRELIMINARY PROPOSED ACTION**

Under Alternative B, the National Park Service would adopt the general management direction and strategies described in the revised plan. The proposed management strategies and actions from the revised plan described and analyzed below are those that have the potential to affect the human environment, that are likely to be implemented in the next five years, and are sufficiently developed to allow a meaningful analysis under NEPA.

### **GMP Zone Refinement**

The 1984 General Management Plan states that “any zone may be subdivided to meet management needs or to further delineate future resource areas” (page 61). Under the revised plan, the Wilderness Lands and Wilderness Waters Zones would be further subdivided into five zones: Remote Wilderness Zone, Shoreline Access Zone, Frontcountry Access Zone, Glacier Access Zone, and Wilderness Waters Zone. A portion of the 1984 Wilderness Waters Zone has been zoned as Frontcountry Access Zone to acknowledge and manage for higher levels of use and a different type of wilderness experience in areas near the frontcountry. This action refines and details desired conditions and potential management strategies within the broader zones as a means of improving wilderness character, natural and cultural resources, and visitor experiences. The action does not remove or replace the Wilderness Lands and Wilderness Waters Zones.

The parkwide zoning map is shown below. Additional detail on the zoning maps can be found in the revised Backcountry and Wilderness Management Plan (chapter 2) and the NPS StoryMap at <https://storymaps.arcgis.com/stories/2047e748d233424d8789b54edd78cda1>.

# Parkwide Management Zones

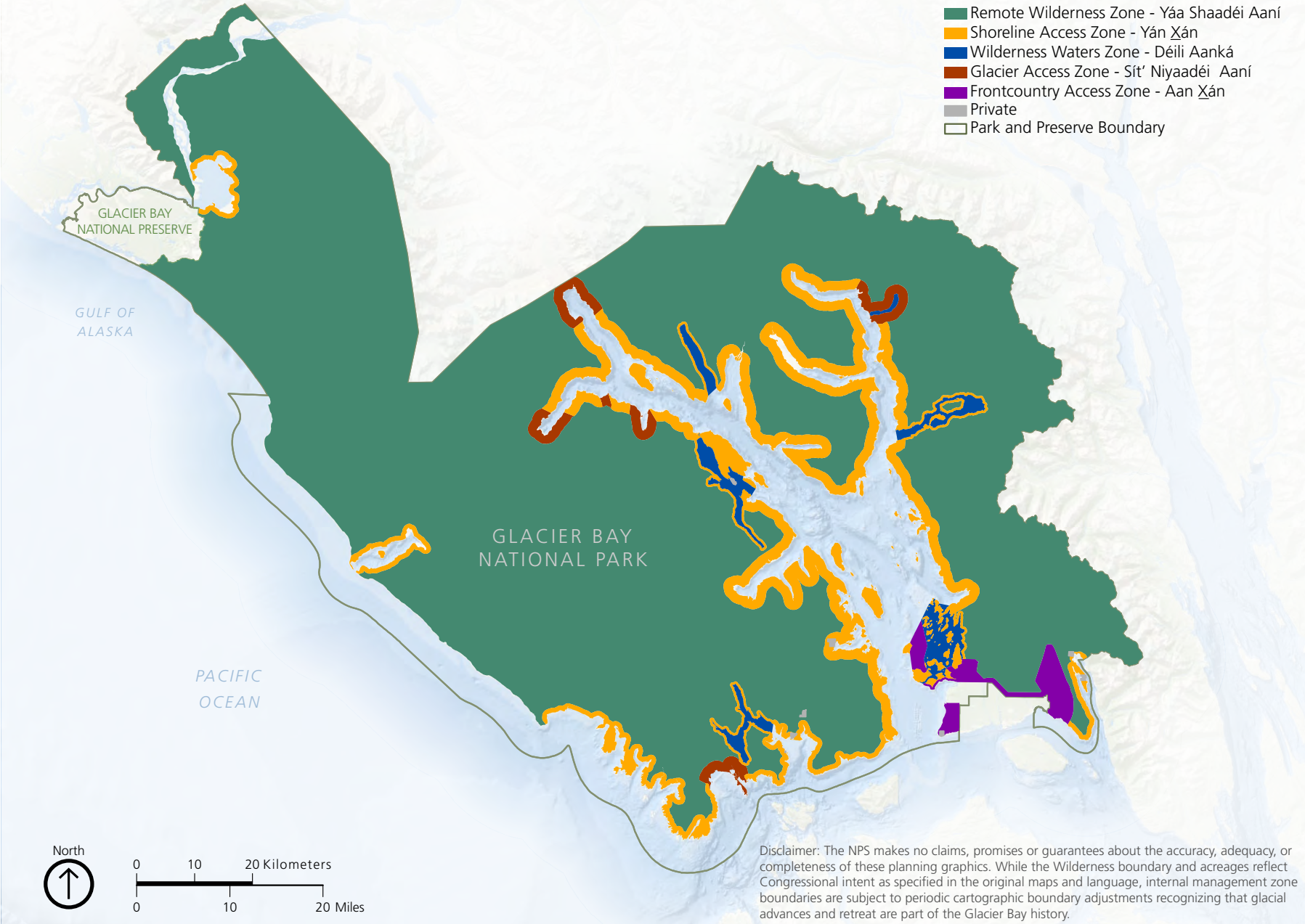


Figure 2. Parkwide Zoning Map of the Glacier Bay Wilderness

## **Communications Upgrades**

Alternative B proposes deploying new communications infrastructure within the next one to three years at new locations in designated Wilderness if co-location with existing infrastructure is not feasible (as described and analyzed in the marine management plan). The communications infrastructure would support the automatic identification system (AIS), an automatic vessel tracking system that uses transceivers on vessels and land-based receiver stations, with the goal of complete coverage of park waters. Automatic identification system information supplements marine radar, which is the primary method of collision avoidance for marine vessels. The AIS infrastructure would also enhance safety and search and rescue capabilities in the park. Currently, only one AIS transponder site is in the park at a US Coast Guard installation that historically has provided aids to navigation on a headland at Cape Spencer.

If some or all AIS stations cannot be co-located at existing locations and new sites are needed at each new location, a mast or tower and antenna with mounted hardware would be installed and would include a weatherproof battery, small equipment shed, and a concrete pad. The total footprint for each installation would be up to 100 square feet, and the tower/antenna combination may be up to 40 feet tall. Shorter towers would be employed if they provided similar coverage. As feasible locations are defined, the park would complete minimum requirement analyses to address wilderness impacts, address the Wilderness Act section 4(c) prohibitions associated with permanent installations, and apply best management practices and mitigations that preserve wilderness character. Potential new installation areas include Glacier Bay (West Arm, East Arm, Beartrack Mountain), Icy Strait (Excursion Inlet), Cross Sound (Dundas, Fern, or Taylor Bays), and the Outer Coast (Cape Spencer to Icy Point and Icy Point to Cape Fairweather). Access to the sites for installation and maintenance would occur by foot, boat, float/ski plane, or kayak. Where areas are too dangerous or remote for access by these means, a helicopter may be used. It is assumed that up to 10 helicopter landings per site may be required for installation and up to two annual landings for maintenance purposes per site. Helicopter use would be subject to minimum requirements analysis and limited to the fewest possible days each summer.

In addition, one new site in the West Arm of Glacier Bay may be needed for greater very high frequency (VHF) radio coverage within the bay. The total footprint for this installation would be up to 100 square feet and the tower/antenna combination may be up to 40 feet tall. Shorter towers would be employed if they provided similar coverage. It is assumed that up to 10 helicopter landings may be required for the new installation and up to two annual landings for maintenance purposes per site. Installations and maintenance for both VHF radio and AIS transponders would be scheduled simultaneously whenever possible. Helicopter use would be subject to minimum requirements analysis and limited to the fewest possible days each summer.

## **Trail Development**

Alternative B proposes developing up to 10 miles of new trail that access the park's designated Wilderness if development of a trail is feasible. Excursion Ridge's west-facing slopes and the Falls Creek area largely comprises unstable sedimentary deposits, which may

not support maintainable trails and regular foot traffic. Further surveying and investigation are needed, but if feasible to construct and maintain, the trail would start on state-owned land by the Falls Creek area near the town of Gustavus and extend approximately 0.5 miles before entering the park and ascending to Excursion Ridge. This trail is referred to as the Excursion Ridge trail in this analysis. The trail would provide access through dense forested slopes to the ridge above tree line. The trail would likely be used for day trips and provide access to untracked wilderness for cross-country, multiday excursions in the alpine tundra. Visitors would experience distinct ecological communities within the park, including wetlands, forests, and alpine, as well as exceptional scenic views once on Excursion Ridge.

Additional trail design would be required before construction. This EA assumes the trail would be a maintained trail, where sections of the trail could be built and maintained to different trail class standards to ensure maintainability and to limit resource damage. Additional information on mitigation measures to protect park resources during and after trail construction can be found in appendix E. Design goals for this trail include the following:

- Use of Trail Class 2 (USFS 2016) design parameters would be prioritized where the terrain can accommodate use levels without resource damage and requiring only minimized annual and cyclic maintenance. As described in “Trail Fundamentals and Trail Management Objectives,” these trails have a tread that is continuous and discernable but narrow and rough and are constructed of typically native materials. Design tread width would be 12–18 inches. Some sections of Trail Class 3 may be needed for trail sections with challenging soil, slope or other environmental conditions that require more substantial design elements to accommodate use. Trail Class 3 has continuous and obvious tread and a tread width of 12–24 inches, except along steep side slopes where the tread width needs to be higher for slope stability. Trail sections through the steepest slopes may require considerable engineering and a wider native ground footprint.
- The trail is designed for the anticipated level and intensity of use.
- The trail would have 10% grade or less (90% of the time) with integrated grade reversals (drainage features incorporated into the trail alignment). Stacking switchbacks would be avoided to protect slope stability.
- Approximately 10 miles of trail may be needed to meet grade goals between the road and the alpine environment. As feasible, the trail would be routed by scenic points of interest that could also function as rest areas and turn-around points.
- Where necessary, boardwalks, small crossing features, or raised tread would be used to protect wetland function.
- The trail would have the lowest-impact bridge possible to safely move humans across Falls Creek.

If the final design for this trail falls outside the assumptions for this analysis, additional analysis, compliance, and permitting would be completed before construction. The National

Park Service would partner with the State of Alaska and Alaska Power and Telephone, and as appropriate, the City of Gustavus and adjacent private property interests, to refine final routes, design, easement, permits, parking, and management responsibilities before development. This may also require an amendment to the Federal Energy Regulatory Commission License (Project No. 11659-002) Article 418, Falls Creek Public Access and Recreation Plan.

For safety reasons, the area encompassing the new trail will be closed to the public during construction and improvement. Details on area closure times and durations will be posted for the public at the trailhead and other town locations and on the park website and social media outlets.

### **Required Backcountry Camping Permits Year-Round**

Under Alternative B, a backcountry camping permit would be required on a year-round basis instead of only between May 1 and September 30 for all commercial and noncommercial camping in the wilderness and backcountry. This permit would apply within all the park's wilderness and backcountry, not just the land accessed via the Glacier Bay Zone as is currently the case. Permits are a means of conveying information about park rules, conditions, and safety information. Over time, the permit system would provide the park with better information on the types, amounts, and locations of backcountry camping use.

Permits would be issued per party rather than to each individual visitor. Permits would be available in-person or online and could be acquired in advance of the trip or the day of departure. Permits would collect information, including group size, an emergency contact, length of stay, type of recreational use, mode of transportation, and a general itinerary (general camp locations and entry/exit points). If a group needed to adjust their itinerary while in the backcountry, the group would report any changes to the park upon return from the backcountry. This permit system would be free of charge and would not involve a lottery or quota, unless otherwise established in commercial operating contracts.

### **Group Size**

Under Alternative B, the group size for the park's wilderness would remain at 12 or fewer people but would apply to both overnight and day visitors. Group size would also apply year-round instead of only between March 1 and October 31.

Groups are considered separate when out of sight and sound of each other. Drop-off and pick-up locations may have more than 12 people if multiple groups arrive or depart simultaneously; however, these groups would then disperse.

Group size exceptions may be granted for educational purposes, research, safety, traditional Tlingit Homeland activities, or administrative purposes. The waiver for groups of more than 12 people must be authorized by the superintendent. Guidelines for minimizing impacts from groups of more than 12 people are listed on the group size waiver.

## **Commercial Mountaineering**

Alternative B proposes allowing commercially guided mountaineering and associated activities in the Fairweather Range. This change would officially codify a recreational use that has been occurring on a temporary basis and allow the park to continue to regulate use to protect resources. The provision of this use aligns with objectives of the 1984 General Management Plan to encourage commercial services for the least-accessible areas of the park. An allocation of six commercial groups per year in the Fairweather Range has been identified to ensure wilderness character is maintained and resources are preserved. For all commercial mountaineering in the park, including outside the Fairweather Range, simultaneous trips within the same area would be prohibited. For more information on the determination concerning commercial mountaineering and applicable regulations, please see the extent necessary determination (appendix B).

## **Actions Considered but Dismissed**

Five actions were considered but dismissed from further consideration. These actions included developing cabins and shelters in wilderness, maintaining stream crossings to facilitate beach hiking, designating beach biking routes, designating water routes, and banning campfires along the shoreline. Detailed explanations of these actions and rationale for dismissal can be found in appendix D.

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# CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

## INTRODUCTION

This section describes the resources that could be affected as well as the potential environmental consequences of implementing either alternative being considered. The topics presented are those related to the key issues that could inform the NPS decision on how to manage the park's wilderness. The descriptions of the resources provided in this chapter serve as an account of the baseline conditions against which the potential effects of the alternatives considered in this plan are compared.

## GENERAL METHODOLOGY

This section is organized by resource topic and provides a comparison of the alternatives based on issues. In accordance with the NPS Council on Environmental Quality regulations, direct, indirect, and cumulative impacts are described, and the impacts are assessed in terms of context, intensity, and duration (40 CFR 1502.16).

## VISITOR USE AND EXPERIENCE

### Affected Environment

The revised plan provides a detailed overview of visitor use characteristics and levels, particularly as they pertain to the park's wilderness. Relevant background information exists under the following sections:

- Parkwide Visitor Demographics and Experiences
- The Backcountry and Wilderness Visitor
- Wilderness Day Use and Access
- Access to Tidewater Glaciers and Hiking Accessible Glaciers
- Eligible Drop-off Locations for Day Tour Boat
- Regulations and Closures
- Commercial Services and Concessions

For more information on the determination concerning commercial mountaineering and applicable regulations, please see appendix B.

The sections below describe the existing condition of the elements of visitor use and experience that may be affected by the alternatives analyzed in this EA:

- Required Backcountry Camping Permits
- Group Size
- Trail Development
- Commercial Mountaineering
- Communications Infrastructure

## Required Backcountry Camping Permits

Under existing regulations, from May 1 to September 30, all backcountry campers must obtain a permit for each trip and attend an annual camping orientation if staying on the shoreline of the Glacier Bay Zone. The park has in-person and online options for fulfilling these requirements. Although requiring visitors to obtain a permit may have adverse impacts on some visitors' desire for a spontaneous, unplanned trip into the wilderness, the orientation offers visitors a chance to ask questions and provides the park with the opportunity to inform campers of special wildlife and safety closures, regulations, safety information, and to assist in trip planning. Information currently collected through the permit includes group size, emergency contact, length of stay, type of recreational use, mode of transportation, and itinerary (general camp locations and entry and exit points). This helps park staff understand visitor use patterns and preferences and could facilitate more efficient search and rescue operations, if needed. This permit is free and available to anyone, with no lottery or quotas.

## Group Size

Group sizes for overnight and commercial use are limited to 12 or fewer between March 1 and October 31 to minimize impacts on resources and other park visitors. The superintendent may approve group size exemptions for educational, research, safety, or administrative purposes or for traditional Tlingit Homeland activities. Limiting group size numbers affects some visitors' ability to experience the wilderness in larger groups; however, most visitors travel in groups of less than five (NPS 2021a), and group size limits enhance visitor opportunities to experience wilderness with limited crowding and congestion.

## Trail Development

Most hiking in the park's wilderness occurs along the shoreline, on visitor-created trails, on game trails, or off-trail. Wilderness shorelines surrounding wilderness waters are, or, for most of the park, along the edge of designated Wilderness (the boundary is mean high tide) and are popular areas for hiking. People generally seek to hike in areas devoid of tall vegetation that allows free movement and clear lines of sight for bears and other wildlife and in areas that provide access up to vantage points, especially around tidewater glacial environments, scenic viewpoints, and wildlife viewing hot spots. Day hiking is popular along the shorelines and upland areas near Gloomy Knob, Lamplugh Glacier, Reid Inlet, McBride Inlet, Fern Harbor forelands, and Dundas Bay. Hiking or backpacking also occurs as a component of overnight trips in the wilderness. Hiking was a more popular activity in the 1980s, as successional advances in vegetation, especially dense alders (*Alnus viridis ssp. Sinuata*), have made formerly accessible terrain challenging to travel through. Few visitors to the park choose to travel or navigate through dense brush over steep or wet terrain due to the arduous physical nature of this type of travel. For those that choose to hike in remote areas, or in areas only accessible by water, they are often aided by a commercial outfitter or concessioner, who provides access via boat or plane.

The park has 7.2 miles of designated trails within wilderness: the Bartlett River Trail, the Bartlett Lake Trail, and the Bartlett Lake/Towers Trail. These trails provide access to coastal and low elevation habitat types within the park. Visitors on these trails are primarily day

hiking and accessing these trails from the park's frontcountry or via nonpark land. These trails provide opportunities to access the wilderness for visitors that may not have the time, financial resources, equipment, skill, or desire to venture into more remote areas of the park or areas only accessible by water. The Bartlett River Trail goes through dense spruce-hemlock rainforest and ends at an estuary near the mouth of the river. The trail connects the Bartlett River (in designated Wilderness) to the Inner Lagoon Dock (with the NPS headquarters area as a multimodal hub with other trail connections). The National Park Service documented between 1,460 and 2,100 hikers using the Bartlett River Trail seasonally (June to September) in 2013, 2014, and 2015 (NPS 2018b). The Bartlett Lake Trail is less developed and offers visitors opportunities to see the dense understory of the temperate rainforest before reaching the shores of Bartlett Lake. This primitive trail is a rugged day-hike, with rewards of solitude and a tranquil lake. The Bartlett Lake/Towers Trail provides access to the wilderness and Bartlett Lake from the edge of the community of Gustavus. It affords both visitors with ground transportation and residents more rugged hiking and access to routes into untracked wilderness.

### **Commercial Mountaineering**

Mountaineering has occurred in the park on an infrequent basis throughout the park's history. The coastal mountains of the park, topped by the 15,300-foot Mt. Fairweather, are among the least-visited mountains in North America, with limited information available on most routes. In addition to the Fairweather Range, mountaineering occurs in other locations throughout the park, including Rendu Glacier, Brady Icefield, and the Chilkat Range. The skills and resources required of visitors, the limited season of access, and rapid changes in the weather make mountaineering a limited pursuit within the park. Many climbs take as long as one month to accomplish.

Commercially guided mountaineering is currently managed differently within the Fairweather Range compared to other areas of the park. The park's 1989 visitor use management plan did not authorize commercially guided mountaineering on the west side of the park (i.e., the Fairweather Range). However, beginning in 2003, two guided mountaineering trips were permitted each year as part of a trial so the park could evaluate potential impacts from guided mountaineering to inform wilderness planning. The trial period also deferred a final decision on concerns expressed by the Huna Tlingit, particularly the T'akdeintaan Clan, about disrespectful uses of the mountain. Since 2012, commercially guided mountaineering has been authorized on a case-by-case basis in the Fairweather Range, and the park has been able to accommodate all requests.

Because private parties are not required to report their climbs, the data on the number and location of mountaineering trips is limited to what is voluntarily reported to the park. Between 2003 and 2015, the Fairweather Range had 11 commercially guided trips that attempted to summit Mt. Fairweather, three of which succeeded. During that same time span, private groups made at least 23 attempts, with 14 of those groups completing the climb. Though encounters with other groups is rare, in May 2010 and May 2011, data indicates that commercially guided and private mountaineering groups were on the summit of Mt. Fairweather at the same time. In other areas of the park outside the Fairweather Range, commercially guided mountaineering trips are currently authorized for three companies. In

these areas as well as in the Fairweather Range, there is no prohibition on groups operating in the same area and at the same time.

### **Communications Infrastructure**

The park currently has two radio transmitter sites at Beartrack Mountains and Idaho Ridge that are available to park staff, not the public, to facilitate radio communication in limited areas of the park. Most of the park's wilderness and backcountry does not have reliable radio coverage for park staff or the public. Full radio coverage of all terrestrial wilderness is not realistic and is not a park goal.

### **Trends**

Reasonably foreseeable future actions in the project area that will impact visitor use and experience include the construction of an additional 4.4 miles of new trail (i.e., the Point Gustavus Route and the Bartlett River Trail) in wilderness adjacent to the frontcountry as part of implementation of the frontcountry management plan (2019). The Point Gustavus Route will go 3.4 miles along the shoreline of Bartlett Cove and include minimalist, fully naturalized modifications (i.e., rock placement) to help users navigate tides, water crossings, and sensitive habitat. The Bartlett River Trail will include 1 mile of new Class 3 trail built on the shoreline and along the tidal cut (some portions in designated Wilderness). The trail will be built to meet Architectural Barriers Act Accessibility Standards (ABAAS) and will be constructed as a rustic boardwalk (up to 36 inches wide) on helical piers or other elevated structures. The trails will provide additional on-trail or on-route hiking opportunities into the park's wilderness from the frontcountry; a full discussion and analysis of this decision can be found in the frontcountry management plan (2019). The addition of 4.4 miles of trail would contribute beneficial impacts on overall trends in visitor use and experience. The park completed a marine management plan and EA in 2023, which includes updated private vessel management conditions and operating requirements. The plan, once implemented would establish new vessel definitions, update vessel operating requirements, and establish indicators, thresholds, and corrective management actions to meet desired conditions. The selected alternative provides long-term benefits to visitor use and experience, primarily for private boaters, by implementing changes to the permitting system that help ensure permits are more fully utilized. The selected alternative includes changes (e.g., length of permit, ways to obtain a permit, conditional transit permit) to the private vessel permitting system affecting about 2,400 annual visitors to the park. The new ways permits are issued allows all private boaters an equal opportunity to obtain a permit and to plan further in advance. This could benefit visitors who are coming to the park from further away or who have had less opportunity to obtain a permit in the past. Other changes, such as operating requirements for cruise ships, tour vessels, private vessels longer than 79 feet, and nonmotorized access in Muir and Wachusett Inlet, are not expected to impact the overall use of the park or the visitor experience for most visitors to Glacier Bay National Park because these changes impact only a small proportion of visitors, only apply during the permit season, and other experiences are available close to these locations. A full analysis of these actions is found in the marine management plan (2023) at <https://parkplanning.nps.gov/gbwaters>.

## **Environmental Consequences**

### **Alternative A: No Action**

Alternative A would be the continuation of current management, as described above in the affected environment section. The current impacts on and trends in visitor use and experience would continue to occur.

### **Alternative B: Action Alternative – NPS Preliminary Proposed Action**

The refined zoning of the 1984 GMP Wilderness Lands Zone and Wilderness Waters Zone is not expected to affect visitor use and experience, and specific actions within the zoning subcategories are analyzed below.

#### **Required Backcountry Camping Permits**

Alternative B would broaden the scope of the current backcountry camping permit requirement. The permit would be required year-round instead of May 1 to September 30. The permit would also be required for any backcountry camping within the entire Glacier Bay Wilderness instead of just the land accessed via the Glacier Bay Zone. Most backcountry campers would not be affected by the change since most visit the park between May 1 and September 30. The impact of this change would be felt by visitors who camp in the backcountry outside the lands accessed via the Glacier Bay Zone or who camp anywhere in the park's backcountry between October 1 and April 30. Because a permit is currently voluntary for this subset of visitors, it is difficult to quantify how many people Alternative B would affect. Private mountaineering groups would also be required to obtain a backcountry camping permit.

For some visitors, the permit requirement could diminish a sense of spontaneity because to provide details about their trip, such as general itinerary and expected trip duration, they would need to have their trip fully planned out ahead of time. However, if a group needed to adjust their itinerary while in the wilderness and backcountry, they would simply report this change to the park at the conclusion of their backcountry camping trip. Visitors would be allowed to register up to the day of their departure and therefore retain much of their pre-trip autonomy. These flexible approaches would minimize the impact on a visitor's experience while ensuring the park is able to obtain valuable wilderness use data. Over time, the registration requirement would provide the park with better information on the types, amounts, and locations of backcountry camping use. Gathering this information would help the park determine if desired conditions are being met for a given area and allow future park managers to make informed decisions accordingly, thus improving visitor experience.

Some people desire and value the ability to access the park without needing to engage with park personnel or systems. Requiring visitors to acquire a permit may limit this ability. To provide maximum flexibility when obtaining the permits (while ensuring sufficient information is collected), the permit would be available online or in person, would be designed to take a short amount of time to obtain, and involve minimal engagement with park staff.

The permit would also help improve visitor safety, as the park would have details about visitor trips and could perform more efficient search and rescue operations. The proposed permit would not limit visitor access to the wilderness and backcountry, as there would be no quotas or lotteries. The permits would also remain free of charge. Ultimately, the slight expansion of the permit requirements would have a minimal adverse effect on visitor spontaneity and independent trip planning because the expansion would occur during six months of the least-visited time of year.

### **Group Size**

Under Alternative B, the wilderness group size limit would not change, though the group size limit would be expanded to apply to day visitors and year-round. The expansion of group size limits to include November through February would occur during a time of year in which the park sees the least visitation, and therefore, this change would lead to a minimal adverse effect on few visitors.

The expansion of group size limits to include day visitors would mean that there would be no way (other than seeking a group size exception) to experience the Glacier Bay Wilderness with a group larger than 12 people. This could have a slight adverse effect on a small portion of day visitors, though 76% of visitors travel in groups of five or fewer (NPS 2021a). It could also have a beneficial impact on other visitors because limiting group size could improve their ability to experience key elements of wilderness with minimal crowding and congestion in both a day and an overnight setting.

Group size exceptions would continue to be reviewed by the superintendent and granted for educational, research, safety, or administrative purposes or traditional Tlingit Homeland activities, as appropriate. Guidelines for minimizing impacts from groups of more than 12 people would be listed on the group size waiver.

### **Trail Development**

The Excursion Ridge trail proposed in Alternative B would have a beneficial impact on visitor use and experience by providing multiday access to the alpine tundra, where expansive, scenic views of the park and easier off-route travel exist.

Visitors do currently have opportunities to hike on trail using the existing wilderness trails proximate to the frontcountry; however, these trails primarily provide day-hiking opportunities in low-elevation and coastal habitat types. The proposed trail would also originate in the frontcountry but would be better suited to overnight trips than current trails. The trail would provide visitors the opportunity to hike into higher elevation areas of the park with more expansive views and experience the alpine tundra along with other ecological communities found within the park (e.g., wetlands, forest, muskeg). The Excursion Ridge trail would provide access through dense vegetation and muskeg, which without a trail are often too challenging for visitors to hike through. Ultimately, visitors would have a wider spectrum of hiking opportunities and park experiences in terms of trail location, length, habitat type, and scenery under Alternative B. Given the proximity to the frontcountry, the proposed trail could also offer additional access to the Glacier Bay Wilderness for visitors who may not have the time, financial resources (i.e., hiring a commercial boat or plane),

equipment, skill, or desire to venture into more remote areas of the park or areas only accessible by water. Importantly, the existence of this trail would not limit the opportunity for visitors to enjoy untrailed wilderness, as millions of acres would continue to be available for this experience.

### **Commercial Mountaineering**

Under Alternative B, commercial mountaineering in the Fairweather Range would be allowed and administered as part of the park's commercial management program instead of on a limited, case-by-case basis. Under this management approach, guide companies would know how many climbing and guiding permits would be available to potential clients each year, and visitors would know with certainty what commercial climbing and guiding services are available to them, which would have a beneficial impact on visitor use and experience.

For all commercial mountaineering in the park, including outside Fairweather Range, simultaneous trips within the same area would be prohibited to preserve opportunities for solitude and a remote experience in wilderness. This requirement would not apply to private trips, which are allowed to mountaineer at the same time and in the same area as other private and commercial groups. Private groups would continue to have the freedom to go where they want, when they want, provided they first obtain a free camping permit, with the trade-off being that there may be other parties in their vicinity.

### **Communications Infrastructure**

The proposed communication systems would improve radio communication between NPS staff throughout the park. This would contribute to greater connectivity during a park-supported search and rescue mission—especially in those areas that are less traveled and currently lack good communication—thereby enhancing visitor safety. Additional communication towers would affect the scenic value of the park, especially for visitors hiking in untracked wilderness within sight of these installations. However, communication towers placed on high ridges several thousand feet up and several miles from boat-based visitors would not be readily visible to most park visitors without binoculars.

### **Cumulative Impacts**

As previously described, there would be no new impacts under Alternative A, and therefore there would be no cumulative impacts.

When the likely effects of Alternative B are combined with other past, present, and reasonably foreseeable future actions, the cumulative impacts on visitor use and experience would continue to be beneficial. There would be an incremental beneficial cumulative impact for hikers whose wilderness and backcountry access would improve and mountaineers whose wilderness and backcountry experience would improve. A minimal adverse effect may occur on a small subset of visitors due to the expansion of permit and group size requirements, and the potential to see park communication towers while in wilderness. The incremental impacts of Alternative B would contribute to, but not substantially change, the impacts that are already occurring.

## Comparative Conclusion of Alternatives

Under Alternative A, visitors would continue to have the same opportunities and access described in the affected environment section.

Mountaineering and hiking opportunities and experiences would improve under Alternative B. Changes to the backcountry camping permit and group size requirements would be minimally disruptive, both in terms of extent and intensity of impact, as most wilderness and backcountry visitors' experiences would not diverge from current conditions under Alternative B.

## VEGETATION

### Affected Environment

Glacier Bay National Park contains a complex and dynamic geological landscape that supports a diversity of vegetation characteristic of the northern Pacific coastal biome (NPS 2004b). Dynamic glacial activity and natural disturbances has resulted in a wide variety of plant successional communities, ranging from sparsely vegetated barrens to mature spruce-hemlock forests and peat bogs (NPS 2004b). The lowlands tend to have nutrient-poor, sandy soils and support sparse forests of shore pine (*Pinus contorta*), cottonwood (*Populus balsamifera*), and Sitka spruce (*Picea sitchensis*). In the lowland areas, fens supporting peatlands are abundant. The hillsides have denser spruce and hemlock forests as well as subalpine habitats. The higher elevations along Excursion Ridge have barrens, scree slopes, and alpine meadows.

Within the Falls Creek watershed, where the Excursion Ridge trail is proposed, the primary habitat types encountered include halophytic sedge and marsh communities, pine woodlands, forb-sedge meadows, and saturated peatlands at low elevations. Above 500 feet in elevation, forb graminoid meadows and open mountain hemlock forests are present (NPS 2004b).

### Sedge and Marsh Communities, Grasslands, and Pine Woodlands

At the beginning of the proposed Excursion Ridge trail location at lower elevations, sedge and marsh communities and open pine woodlands are abundant. This habitat type exists from near sea level to mid-elevations (800 feet). Dominant species include shore pine, sedges (*Carex spp.*), tufted bulrush (*Trichophorum caespitosum*), bog blueberry (*Vaccinium uliginosum*), crowberry (*Empetrum nigrum*), and variegated horsetail (*Equisetum variegatum*).

Portions of the proposed trail route include saturated forb grassland areas. Within these areas, common species include bog bean (*Menyanthes trifoliata*), water hemlock (*Cicuta douglasii*), marsh horsetail (*Equisetum palustre*), and many-flowered sedge (*Carex pluriflora*) (NPS 2004b).



## **Sitka Spruce/Western Hemlock Forests (above 500 feet in elevation)**

Sitka spruce and western hemlock (*Tsuga heterophylla*) forests are widespread in both the proposed trail area and throughout the park, covering over 300,000 acres of the park's vegetated land (NPS 2008). Much of the proposed Excursion Ridge trail area lies in a mature Sitka spruce/western hemlock forest. Two types of spruce/hemlock forest have been identified along Excursion Ridge: rich and poor.

Rich spruce/hemlock forest is found primarily on well-drained soils on steep slopes along the Kahtaheena River. Much of this cover type is old-growth forest with trees greater than 200 years, a canopy closure of more than 60%, and an abundance of snags, stumps, and fallen trees. The overstory forest is dominated by western hemlock and Sitka spruce. Dominant understory shrubs consist of Alaska blueberry (*Vaccinium ovalifolium*), rusty menziesia (*Menziesia ferruginea*), various species of mosses, liverworts and lichens, and occasional devil's club (*Oplopanax horridus*) (NPS 2004b). Common understory herbs and forbs include bunchberry dogwood (*Cornus canadensis*), five leaf bramble (*Rubus pedatus*), twisted stalk (*Streptopus amplexifolius*), and shield fern (*Dryopteris dilatata*).

The poor hemlock/spruce forest is found primarily on the poorly drained soils that are productive enough to support overstory tree growth. These sites are generally found on the hillslope terraces, flat topographic sites, and as a transition between well-drained forest stands and bog and fen plant communities. These less-productive forest sites generally contain a more diverse composition of species than the well-drained forested sites. The overstory forest may be dominated by western hemlock with substantial composition of Sitka spruce, mountain hemlock (*Tsuga mertensiana*), or shore pine, and occasional Alaska yellow-cedar (*Callitropsis nootkatensis*). Understory shrubs may consist of Alaska blueberry (*Vaccinium ovalifolium*), rusty menziesia (*Menziesia ferruginea*), labrador tea (*Ledum groenlandicum*), and crowberry (*Empetrum nigrum*). Common understory herbs and forbs include skunk cabbage (*Lysichiton americanum*), bunchberry dogwood, wintergreen (*Gaultheria procumbens*), and deer cabbage (*Nephrophyllidium crista-galli*).

In addition, young spruce forest areas are within the proposed Excursion Ridge trail area. This cover type occurs in areas that were harvested in the past and have naturally regenerated to produce a young forest dominated by Sitka spruce with a substantial component of western hemlock.

## **Spruce/Pine/Cottonwood Regeneration Forests**

Another plant community within the proposed Excursion Ridge trail area is the spruce/pine/cottonwood complex. This is a rich, open community, typically comprising relatively fast-growing trees and shrubs. This community is dominated by Sitka spruce, shore pine, and cottonwood and is a result of natural colonization on sites that have been subjected to human disturbance.

## **Trends**

Temperatures in the park are expected to increase, with the most dramatic change occurring in the winter. These increased temperatures are likely to lengthen the growing season, impact plant phenology, and influence soil water availability (Nadeau et al. 2017). While

precipitation is projected to increase, evapotranspiration will also likely increase due to warmer temperatures and a longer growing season. This means water will be used by plants or will evaporate back into the atmosphere faster and will not be stored in the soil or on its surface as long. As a result, the area will seem drier, particularly in summer and fall.

Invasive plants are a threat to native vegetation communities because of their potential to displace native species and to alter ecological processes (Nadeau et al. 2017). The park has been largely protected from nonnative plant invasions, with a few exceptions, due to its isolation from typical human-related vectors such as roads, trails, and development. However, the number of nonnative plant species documented within the park has increased over time. By 2013, 49 different nonnative plant taxa had been found, and an additional 13 species were found in Gustavus, which is just outside park boundaries and near the proposed Excursion Ridge trail (Nadeau et al. 2017). The most widely documented invasive species in the park is the common dandelion (*Taraxacum officinale*). Common plantain (*Plantago major*) and several invasive grasses (*Phleum pratense*, *Triticum aestivum*, and *Phalaris arundinacea*) are also frequently observed around the Gustavus area west of the proposed Excursion Ridge trail area (NPS 2013).

Climate also influences the diseases and insect pests that impact many tree species in southeastern Alaska. For example, weather plays a key role in bark beetle (*Dendroctonus rufipennis*, primarily) population dynamics, which favor warm, dry weather, particularly in spring (Nadeau et al. 2017). The life cycle of the spruce beetle is typically two years, but warmer and longer seasons can allow the beetles to complete their life cycles in one year (Nadeau et al. 2017). Many dominant spruce trees have been severely affected or killed by spruce beetle, and there are some standing dead trees within the proposed Excursion Ridge trail area. Sitka alder occupy many openings and recently disturbed areas. Patches of devil's club often grow in wet areas of the forest. Current spruce forests are projected to trend increasingly toward hemlock-dominated hemlock-spruce stands in the coming decades and will ultimately include areas of patchy bogs on poorly drained sites in a few centuries (Nadeau et al. 2017).

Projected increased temperature or other changes that prolong needle wetness during the growing season could also favor pathogens that affect shore pine such as western gall rust (*Endocronartium harknessii*) and Dothistroma needle blight (*Dothistroma pini*). Successive years of severe foliage disease, as have recently been observed within localized areas within the park, can directly kill trees (Nadeau et al. 2017). This stress can also increase a tree's vulnerability to the secondary bark beetle (*Pseudips mexicanus*), which only successfully attacks trees weakened by other factors (Nadeau et al. 2017).

A social route currently connects from the road by the Falls Creek Hydroelectric Project intake to Excursion Ridge. The route goes through several wetland areas and directly up the fall line, with steep gradients and no switchbacks. Depending on the number of users that summer, 10–30% of the route shows a visible, easy to follow, path. While the trail is not heavily used, the trail's intersection with sensitive wetland areas and steep alignment contribute to minimal trampling of vegetation and erosion along the route corridor. Over time, trampling of vegetation increases because each group picks their own slightly different route. Cycles of glacier advance and recession in the area below Excursion Ridge resulted in a

layering of clay and saturated soil types that are known for their productivity for vegetation but also their instability. Landslides that can remove swaths of vegetation are not uncommon along the western slopes of the ridge.

## **Environmental Consequences**

### **Alternative A: No Action**

Alternative A would be the continuation of current management. No new actions would occur, and thus there would be no new effect to vegetation under this alternative.

### **Alternative B: Action Alternative – NPS Preliminary Proposed Action**

Alternative B calls for two actions that would involve vegetation clearing and ground disturbance: constructing a new trail and installation of one very high frequency (VHF) radio and up to 10 automatic information system (AIS) stations. Estimated areas of impact for construction of the Excursion Ridge trail are presented below; these numbers are approximate because the alternative alignment is not yet in the design stage of development and could change. Because of rounding, numbers presented may not add up precisely to the totals provided.

Constructing approximately 10 miles of trail from the Falls Creek area to Excursion Ridge would require clearing 24–60 inches of vegetation along the path (up to 6.1 acres). Negative effects from constructing new trails would include the loss of ground cover and understory species, as well as the removal of some trees. Implementation of best practices for trail development and mitigation measures to reduce impacts on soils and vegetation, such as demarcating the construction area, minimizing new soil disturbance, and returning staging areas to preconstruction conditions, would reduce adverse impacts on vegetation. Furthermore, trail design would seek to minimize the need for tree removal, although some tree removal would likely be unavoidable. Removal of trees greater than 18 inches in diameter would be avoided to the greatest extent possible. Elevation, and therefore habitat, varies within the first few miles from the Falls Creek area, but the initial few miles at lower elevation have the potential to intermittently impact sedge and marsh communities, grasslands, muskeg, and pine woodlands that are known to occur below 800 feet in elevation. The first few miles of trail would also wind through spruce/pine/cottonwood vegetation before entering Sitka spruce/hemlock forest. Trail design would make all efforts to minimize and avoid impacts on wetland vegetation as directed by *NPS Procedural Manual #77-1: Wetland Protection* and reduce the need for tree removal (see the wetlands section). The remaining miles of trail would gain elevation, continuing through mixed spruce/pine/cottonwood forest and moving into Sitka spruce/western hemlock forest (above 500 feet in elevation) before entering the subalpine/alpine areas above tree line.

Once the trail reaches the more gently sloping ridgeline, route-finding and overland travel would be less obstructed from a visual and navigational perspective. While a “route” might be established along the ridgeline, a formal trail would not be delineated unless impacts on vegetation from social trailing warranted. In total, up to 6.1 acres of vegetation would be cleared for the trail, which includes acreage of spruce/pine/cottonwood and Sitka spruce/hemlock at lower elevations, plus impacts on groundcover, shrubs, and trees in the

subalpine/alpine above treeline. However, Sitka spruce and hemlock forests are widespread in the park, covering more than 300,000 acres of the park's vegetated land. Common landcover classes found within the subalpine and alpine habitat, such as mesic herbaceous, wet herbaceous, Ericaceous dwarf shrub, and dwarf shrub-herbaceous, together cover more than 140,000 acres of the park's vegetated lands (Boggs et al. 2007). Alternative B represents an incremental addition to the existing development footprint within these vegetation habitats and therefore is not expected to impact native plant species at a population level through habitat loss because the disturbance would be localized to the trail corridor, and the species affected are common throughout the area.

This ground disturbance, as well as the clearing of up to approximately 6.1 acres of varying forest and understory vegetation (discussed previously), increases the potential for establishment of invasive exotic plants, which could then be transported into sedge and marsh communities, grasslands, and varying forests by people and wind. In addition, newly built trails could serve as pathways for the spread of invasive plants into currently lesser disturbed areas of the park. The implementation of mitigation measures (appendix E) during and after construction activities—such as minimizing soil disturbance, cleaning clothing and equipment whenever moving between locations in the park, and pressure washing equipment off-site—would help reduce the establishment and spread of invasive species, thus reducing adverse impacts on native plant species from Alternative B.

A short portion of the proposed trail would be constructed outside of the park boundary on state lands, while the remainder would be constructed within the park boundary on NPS lands. Upon further design of the trail, all appropriate state and federal compliance and permitting requirements would be completed prior to construction.

Installation of one VHF radio and up to 10 AIS stations would each require site clearing and disturbance of up to 100 square feet and potentially additional site clearing for helicopters landings depending on the location. Some sites being considered are devoid of vegetation. These locations would range from sea level to high altitude locations. Direct impacts on vegetation would result from foot traffic, anchoring of equipment, and maintaining clearances over time. Vegetation impacts would be highly localized, limited to the area immediately surrounding the station. To minimize the possibility of introducing invasive plants, mud and dirt and plant material would be removed from project equipment, footwear, and clothing prior to travelling to any station sites. Stations would be monitored for the presence of invasive species during annual maintenance visits. The potential installation of one VHF radio and up to 10 AIS stations is unlikely to have any impacts on vegetation outside of the immediate 100-square-foot area of each of the sites, up to 1,100 square feet total.

Refining park zoning is not anticipated to affect vegetation.

### **Cumulative Impacts**

Past and present actions that impact vegetation include continued erosion and the spread of invasives from the use of social trails within the proposed trail area.

As previously described, no new impacts would occur under the no action alternative, and therefore no cumulative impacts would occur on vegetation.

The proposed alternative would cause ground disturbance and vegetation clearing of approximately 6.1 acres. When these effects are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impact on vegetation would continue to be adverse. The incremental impacts of the alternatives described in this plan would contribute slightly to, but would not substantially change, the impacts that are already occurring.

### **Comparative Conclusion of Alternatives**

Under Alternative A, vegetation would incur no notable changes.

Under Alternative B, development of up to approximately 10 miles of trail from the Falls Creek area to Excursion Ridge would result in greater levels of ground disturbance and vegetation clearing. This development could subsequently increase the establishment and expansion of invasive plants in the affected vegetative communities along the proposed trail corridor. In addition, development of the trail in this area, known for its unstable soils, could increase the potential for slide events that remove swaths of vegetation. Mitigation measures (appendix E) would be used to limit the encroachment of invasive plant species. Research, trail design and routing would minimize the occurrence of slope failures. Installation of one VHF radio and up to 10 AIS stations is unlikely to have any impacts on vegetation outside of the immediate 100-square-foot area of each of the sites, up to 1,100 square feet total.

## **WETLANDS**

### **Affected Environment**

Detailed wetland mapping of the proposed project area is currently limited. National Wetlands Inventory mapping is available for the entire project area (USFWS 1996). Additionally, the most recent park land cover type classification (NPS 2008), which includes locations of vegetative cover types typical of wetlands in the project area, was used to complete a preliminary assessment of wetland impacts.

Wetlands within the park provide important resting habitat for migratory waterfowl and ground-nesting birds. Wetlands also support various plant species. Two freshwater wetland types are present within the project area in addition to open low shrub peatland, riverine wetland, and freshwater ponds:

- **Freshwater forested/shrub wetland.** These wetlands are characterized by woody vegetation that is 20 feet or taller, including true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. In *Landcover Classes and Plant Associations of Glacier Bay National Park and Preserve* (NPS 2008), this vegetation is commonly mapped as Sitka spruce woodland/wet herbaceous land cover. Plant species that dominate forested/shrub wetland in the park include sedges and forbs such as Sitka sedge (*Carex aquatilis* var. *dives*), Lyngbye's sedge (*Carex lyngbyei*), and water horsetail (*Equisetum fluviatile*). Some portions of these wetlands

are only seasonally saturated and experience unsaturated conditions by the end of the season in most years.

- 2008 *Landcover Classes and Plant Associations of Glacier Bay National Park and Preserve* noted that open low shrub peatland is common on Excursion Ridge and in the area of the proposed trail (NPS 2008). Peatlands are a specific type of wetland ecosystem that forms from the accumulation of decaying organic matter. This low shrub peatland is typically found interspersed with other vegetation types and occurs on outer coast piedmonts, uplifted marine deposits, old outwash plains, mountain benches, and within forest openings. Small ponds and pools are common, and this wetland type can be found up to approximately 1,640 feet in elevation. These wetlands occur in small-to-moderate-size patches and support a diversity of species, including Sitka alder, bluejoint grass (*Calamagrostis canadensis*), Lyngbye's sedge (*Carex lyngbyei*), and small-flowered sedge (*C. pauciflora*). Different moss species can cover up to 70% of this wetland type.
- **Freshwater emergent wetland.** These palustrine wetlands include nontidal wetlands that are dominated by trees, shrubs, and persistent emergent, mosses. Vegetation is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. These wetlands are usually dominated by perennial plants but also include shrubs and young trees that are small or stunted due to environmental conditions. These wetlands are seasonally flooded with water that is present for extended periods. Several types of freshwater emergent wetlands are known to occur within the area of the proposed Excursion Ridge trail including bogs, fens, and willow shrubland:
  - Bogs are peat-forming communities that are influenced solely by water falling or infiltrating directly from above the site (e.g., rain or snowfall and melt) and generally containing a dominant sphagnum moss layer. Bogs in the project area occur in the relatively flat, poorly drained terraces. Bog communities are characterized by the presence of stunted shore pine and mountain hemlock, labrador tea, bog cranberry, dwarf blueberry, and sphagnum mosses (FERC and DOI 2004).
  - Fens rely on nutrient- and mineral-rich surface or subsurface water from outside the boundary of the plant community. The hydrological connection provides these sites with greater nutrients and minerals and results in a more diverse composition of species and greater productivity than found in a bog community. Fens are often found on flat terraces immediately adjacent to well-drained upland sites or alongside estuarine and palustrine streams. Because of the hydrological connection providing mineral-rich water, these sites are sensitive to disturbances that disrupt the subsurface hydrology. Fen communities are characterized by the presence of sedges and grasses; shrubs such as nootka rose (*Rosa nutkana*); and forbs such as deer cabbage, alpine meadowrue (*Thalictrum alpinum*), and twinflower (*Linnaea borealis*) (FERC and DOI 2004).

- Willow shrubland is dominated by Sitka willow (*Salix sitchensis*) or Barclay willow (*Salix barclayi*) and may often include a substantial component of Sitka alder. Other shrubs that are commonly present in this plant community include devil's club and elderberry (*Sambucus nigra*). This plant community often occurs on disturbed sites or in marginal bands along watercourses (FERC and DOI 2004).
- **Riverine wetland.** The riverine system includes all wetlands and deepwater habitats contained within a channel. Within the project area, a channel is an open conduit that periodically or continuously contains moving water or that forms a connecting link between two bodies of standing water. The riverine system has no tidal influence, and some water flows year-round, except during extreme drought. The bottom of the channel consists of rock, cobbles, or gravel with some sand. The gradient in riverine areas is high, and there is little floodplain development.
- **Freshwater ponds.** Freshwater ponds within the proposed trail area are permanently flooded and have unconsolidated bottoms, with 25% cover of particles smaller than stones (less than 2–3 inches), and a vegetative cover of less than 30% (USFWS 1996).

## Trends

Temperatures in Glacier Bay are expected to increase, with the most dramatic change occurring in the winter. These increased temperatures are likely influence soil water availability, including wetlands, and impact plant phenology (Nadeau et al. 2017). While precipitation is projected to increase, evapotranspiration will also likely increase due to warmer temperatures and a longer growing season. This means water will be used by plants or will evaporate back into the atmosphere faster and will not be stored in the soil or on its surface as long. As a result, the area will seem drier, particularly in summer and fall.

Social trails/routes that take a direct, but steep, path up to Excursion Ridge create erosion in certain sections. Where the routes cross wetlands, wetland functions are negligibly reduced. Invasive plant species are an ongoing threat to wetland vegetation within the park as they outcompete native wetland vegetation and reduce species diversity. Visitor use in and around wetland areas increases the potential spread of invasive species. Cycles of glacier advance and recession in the area below Excursion Ridge resulted in a layering of clay and saturated soil types that are known for their productivity for vegetation and wetland characteristics but also their instability. Landslides that remove swaths of vegetation and deposit increased sediment loads into wetlands are not uncommon along the western slopes of the ridge. Disturbance is known to increase the potential for slides and instability.

## Environmental Consequences

### Alternative A: No Action

Alternative A would be the continuation of current management. No new actions would occur, and thus wetlands would have no new effects under this alternative.

## **Alternative B: Action Alternative – NPS Preliminary Proposed Action**

To comply with Executive Order 11990, “Protection of Wetlands,” any facilities or construction would be designed to avoid adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Mitigation measures (appendix E) would be used to minimize both direct and indirect impacts on wetlands, such as maintaining appropriate erosion and siltation controls during construction, removing temporary stockpiles as soon as possible, and properly maintaining structures and fill. A wetland delineation would be performed to identify the types and specific locations of wetlands along the proposed trail route and to quantify the anticipated impacts upon further design development of the trail. The construction of trail would involve vegetation clearing and ground disturbance in some areas. The proposed trail route would likely cross wetlands in numerous locations and have some unavoidable impacts on wetlands from fill, vegetation removal, and/or shading. Long-term adverse impacts on wetland vegetation could result from shading caused by the boardwalks. Where plausible, trail design would consider the use of bridges or elevated boardwalks to span wetland areas. In these locations, elevating the trail over wetlands would minimize direct impacts by allowing for some vegetation, sunlight, and hydrology to extend under the raised trail, and limiting direct impacts on sensitive wetland soils to the footprints of support posts. In addition, some continual adverse impacts on wetland vegetation could result from shading caused by the boardwalks. Given the remote nature of the area, the frequent maintenance needs of an elevated boardwalk, and the steep slopes of the anticipated trail corridor, it is likely boardwalk would not be practicable for all portions of the trail and the trail could not be routed to avoid wetlands. Where wetlands are unavoidable and boardwalk is impractical, the park would consider using fill or other elevated trail methods. The use of fill in some wetland areas would cover wetland vegetation and alter wetland function, resulting in an adverse effect. The use of design elements, such as culverts, to maintain hydrologic connectivity on either side of the trail, would help to minimize impacts on overall wetland function. During design, efforts would be made to minimize concentrated (channelized) hydrologic flow and mimic natural sheetflow conditions where possible. Remaining adjacent wetlands would continue to filter and convey precipitation and provide an important complex of habitats. Upon further design of the trail, a wetland delineation would be needed to further quantify impacts on wetlands. Construction of the trail would result in some unavoidable impacts on wetlands; however, the park contains over 22,000 acres of wetland habitat and therefore, these impacts are not anticipated to alter habitat availability and/or overall wetland function within the park setting.

Removal of trees greater than 18 inches in diameter would be avoided to the extent possible to avoid impacts on natural resources. Following construction of the trail, disturbed areas would be allowed to recover naturally or revegetated with native plant species. Wetlands would continue to filter and convey precipitation and provide an important complex of habitats. Where plausible, the installation of elevated trail and boardwalks would provide visitor access to areas without trampling wetlands and wetland vegetation and would reduce further development of social trails in these areas.



Upon further design of the trail, a wetland delineation would be needed to further quantify impacts on wetlands. It is anticipated that impacts on wetlands would likely exceed 0.1 acres thereby requiring compensation and a wetlands statement of findings in accordance with Executive Order 11990 (NPS 2016).

Refining park zoning is not anticipated to affect wetlands.

### **Cumulative Impacts**

Past and present actions that impact wetlands include the creation and use of social trails, development, and construction and recreational activities that have led to the spread and establishment of invasive species.

As previously described, no new impacts would occur under the no action alternative, and therefore, no cumulative impacts would occur to wetlands.

The proposed alternative would affect wetlands through fill, vegetation removal, and/or shading. When these effects are combined with other past, present, and reasonably foreseeable future impacts, the total cumulative impact on wetlands would continue to be adverse. The incremental impacts of the alternatives described in this plan would contribute slightly to, but would not substantially change, the impacts on wetlands that are already occurring.

### **Comparative Conclusion of Alternatives**

Under Alternative A, no changes would occur to wetlands.

Under Alternative B, development of approximately 10 miles of trail from the Falls Creek area to Excursion Ridge would result in the placement of support posts and/or fill and vegetation clearing in some wetland locations, with a subsequent increase in the potential for establishment and expansion of invasive plants in the affected wetland communities along the proposed trail corridor. Mitigation measures (appendix E) would be used to minimize both direct and indirect impacts on wetlands. Upon further design of the trail, a wetland delineation would allow for further quantification of impacts on wetlands. It is anticipated that impacts would likely exceed 0.1 acres thereby requiring compensation and a wetlands statement of findings prior to trail development (NPS 2016).

## **SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION QUALITY OF WILDERNESS CHARACTER**

### **Affected Environment**

The park has one of the largest wilderness areas in the country, containing 2.6 million acres of marine and terrestrial designated Wilderness environments. The area is managed to protect the natural, untrammled, undeveloped, scientific, and cultural characteristics of wilderness and preserve its specific qualities, as described in the *Glacier Bay Wilderness Character Narrative* (NPS 2015b).

Wilderness character is a holistic concept, and managers have identified five distinct yet interrelated qualities of wilderness character that are derived from the language in the

Wilderness Act. This section focuses on the quality of solitude or a primitive and unconfined type of recreation. Solitude is defined as “the state of being alone or remote from habitation or the sights and sounds of other people; the experience of being in an unfrequented or secluded place” (NPS *Wilderness Stewardship Reference Manual 41*). Primitive and unconfined recreation in eligible wilderness means the area is “relatively free from the encumbrances of modern society [for] the experience of the benefits and inspiration derived from self-reliance, self-discovery, physical and mental challenge, and freedom from societal obligations” (Landres et al. 2015). This wilderness quality is degraded by settings that reduce these opportunities such as encounters with other wilderness visitors, signs of modern civilization in or adjacent to the wilderness area, facilities provided by the agency or created by users that reduce the self-reliance of people, and management restrictions on visitor behavior.

Most visitors to the park (approximately 93%) experience the park from the deck of a cruise ship or vessel. Still, Glacier Bay social science research results indicate that visitor experience of “wildness” does not require setting foot in designated Wilderness (Furr et al. 2021; Swanson and Vande Kamp 2011), and experiencing the park from the water provides a window into the vast terrestrial designated Wilderness. For visitors who disembark from a vessel or aircraft, the vast and remote wilderness provides ample opportunities to find solitude from groups and other visitors. While drop-off and pick-up locations from tour and/or charter vessels to the wilderness and backcountry may result in concentrated use and diminished opportunities for solitude in those areas, visitors are able to hike or paddle to more remote areas. Aside from other people, the sights and sounds of administrative, commercial, and private vessels and aircraft collectively comprise the most perceptible and recurrent impact on a visitor’s opportunity for solitude. However, there are many times when only natural sounds are audible, particularly further away from areas of high motorized watercraft use (NPS 2012). Most of the wilderness cannot be seen from the Glacier Bay waters, and here is where remoteness from the sights and sounds of motorized vessels on the waterways provides tremendous opportunities for solitude.

The primitive aspect of this quality of wilderness character considers any facilities that might decrease self-reliant recreation. The park has 7.2 miles of trails within designated Wilderness: the Bartlett River Trail, the Bartlett Lake Trail, and the Bartlett Lake/Towers Trail. Aside from trails, other recreational facilities in wilderness include wayfinding and navigational markers on land.

The unconfined aspect of this quality of wilderness character considers the impact of any regulations or restrictions on visitors’ ability to freely explore. The park currently requires a free permit for backcountry camping in Glacier Bay during the peak season. The permit system is used for data collection efforts to help park staff better understand trends in backcountry and wilderness use and to inform long-term decision-making. Still, in Glacier Bay Wilderness, there are no requirements to reserve a specific campsite and camp in a certain area. The rough and rugged terrain, paired with changing tides, storms, and wildlife, often dictates where backcountry and wilderness users can find and set up camp. To preserve solitude, group size limits are established at 12 people per group, including commercial guides. Although backcountry and wilderness visitors typically need to reserve

transportation to their destination, once they disembark from an aircraft, step foot on the shoreline, or begin their paddle in a kayak, they can kayak or hike wherever they choose. Some regulations exist, such as campfire location, human waste disposal, closures to human-use to protect resources, and seasonal closures of wilderness waters to motorized vessel use.

## Trends

Past and ongoing actions that impact opportunities for solitude and primitive or unconfined recreation include visitor use management restrictions (e.g., stay limits), use of boats, planes, and helicopters for administrative purposes, and the construction of trails in wilderness areas near the frontcountry. Reasonably foreseeable future actions from the 2019 frontcountry management plan that will impact opportunities for solitude and primitive or unconfined recreation include an additional 4.4 miles of new trail along the Bartlett River and to Point Gustavus that will be built in wilderness (NPS 2019b). The Point Gustavus Route will include minimalist, fully naturalized modifications (i.e., rock placement and spot planking) to help users navigate tides, water crossings, and sensitive habitat (NPS 2019b). Reasonably foreseeable future actions that may affect opportunities for solitude include actions in the marine management plan (2023) that create sound. The marine management plan is anticipated to result in short-term, adverse impacts on the airborne acoustic environment resulting from the installation of floating cabins/seasonally moored vessels, communication upgrades, and oceanographic monitoring stations, lasting only as long as construction occurs over the course of approximately 7–14 days for each site. The installation of these floating cabins, communication upgrades, and monitoring stations will involve the use of motorized vessels and possibly float planes and will affect the airborne acoustic environment through increased noise, although impacts will be temporary, limited in nature, and occurring only during installation or maintenance activities. Given the ambient noise from the ocean environment and the intermittent and spatially localized nature of these actions, impacts on the airborne acoustic environment are unlikely to impact opportunities for solitude in a meaningful way.

Helicopter flights associated with communication upgrades in the marine management plan will introduce noise into remote areas of the park, which could affect opportunities for solitude, although most of the helicopter noise will be of short duration and occur intermittently (up to 10 landings per site for installation and two annual landings per site for maintenance). Helicopter noise will be most audible and disruptive as the helicopter flies over or hovers at low elevation near project sites. Highest-intensity impacts from helicopters would be temporary, ceasing once operations have concluded, likely after an estimated one day for each site with intermittent intensity of sound lasting minutes, followed by similar but infrequent noise impacts from any subsequent flights that may be necessary for maintenance of equipment. Generally, project noise will not dramatically change current conditions, and it will be intermittent and temporary in remote areas of the park, ending once project activities are complete. The marine management plan also extends the nonmotorized waters season for Muir Inlet and Wachusett Inlet to align with designated Wilderness water nonmotorized dates and prohibits tour vessels and cruise ships from entering East Arm, thus preserving opportunities for solitude in this location of the park. These reasonably

foreseeable future actions will contribute both beneficial and adverse impacts on an overall adverse trend in wilderness character.

## **Environmental Consequences**

### **Alternative A: No Action**

Alternative A would be the continuation of current management, as described in the affected environment section. No new actions would occur, and thus opportunities for solitude or primitive and unconfined recreation in wilderness would have no new effects under this alternative.

### **Alternative B: Action Alternative – NPS Preliminary Proposed Action**

The proposed and refined zoning of the 1984 GMP Wilderness Lands Zone and Wilderness Waters Zone is not expected to impact this wilderness quality; however, specific actions within the zones are analyzed in this section.

The development of the proposed Excursion Ridge trail would result in approximately 10 miles of new trail within designated Wilderness. Trails adversely impact the opportunity for unconfined recreation by changing both the required skill level of the visitor and how the visitor interacts with wilderness. Having a formalized trail would have an adverse impact on the visitors who prefer untrailed access to Excursion Ridge. In addition, the proposed Excursion Ridge trail would impact a very small fraction of the greater Glacier Bay Wilderness, and visitors could continue to hike off-trail across the 1.6 million acres of wilderness not covered by glaciers. Therefore, the proposed action would not meaningfully impact the opportunities for primitive recreation found within this wilderness area overall.

Under Alternative B, a backcountry camping permit would be required on a year-round basis instead of only between May 1 and September 30 for all commercial and noncommercial camping. This permit would also apply within all the park's backcountry, not just shorelines accessed by the Glacier Bay Zone as is currently the case. These changes would have adverse impacts on visitors' opportunities for unconfined recreation, as the geographic and temporal scope of the requirement would be expanded. Still, impacts on unconfined recreation would not be significant because a permit is already required to camp in the backcountry accessed from the Glacier Bay Zone during the peak season of use, which encapsulates over 95% of people camping in the backcountry. Additionally, the system would not require visitors to make an advanced reservation to camp in the backcountry but simply require that visitors register their anticipated route and trip duration (for data collection purposes) and attend the visitor orientation. Once a permit is acquired, wilderness campers would still have the freedom to choose their own campsites and allow their trip to unfold as weather, whim, and tides dictate.

Constructing a new trail in wilderness would likely lead to an increase in the number of visitors recreating on Excursion Ridge. This increased use would likely lead to increased visitor encounters along the trail and increased sounds of human activity, reducing opportunities for solitude in this area of wilderness. However, visitors could still find solitude by choosing alternate, off-trail routes to access Excursion Ridge. In addition, visitors could

continue to disperse across the 1.6 million acres of untrailed terrestrial wilderness not covered by glaciers. Most trail work in wilderness would be conducted with hand tools. However, some trail construction in wilderness would likely require use of helicopters for material delivery and may involve some use of motorized equipment such as small hand tools, chainsaws, rock drills, and generators. Use of this equipment would result in adverse impacts on opportunities for solitude and quiet for the duration of the use of those tools. The trail construction would likely take place over the course of two or three summer seasons. However, use of this equipment would be subject to minimum requirements analysis and used in compliance with the park's wilderness requirements.

The installation and maintenance of one VHF radio and up to 10 AIS stations at new sites in designated Wilderness would have adverse impacts on opportunities for solitude due to the presence of human installations and the use of helicopters to deliver materials, as up to 10 helicopter landings per site may be required for installation and up to two annual landings for maintenance purposes per site. However, due to the remote location and inaccessibility of most of the VHF radio or AIS sites, the silent operation of most of the equipment and the limited time during which personnel would be actively working at each site, it is expected that a small percentage of park visitors would be aware of them, as the towers would only be visible to visitors that are within the viewshed and in proximity. Use of helicopters would be subject to minimum requirements analysis and used in compliance with the park's wilderness requirements.

Further data collection through wilderness character monitoring and the year-round backcountry camping permit would inform park management of when opportunities for solitude are being threatened due to congested use at key destinations and inform future implementation of management progressions.

### **Cumulative Impacts**

As previously described, no new impacts would occur under Alternative A, and thus no cumulative impacts on opportunities for solitude or primitive and unconfined recreation would occur.

Past, present, and future actions that impact opportunities for solitude and primitive or unconfined recreation include visitor use management restrictions (e.g., regulations on food storage, stay limits), use of helicopters for administrative purposes, and the construction of trails in wilderness areas near the frontcountry.

Alternative B would cause adverse impacts on opportunities for solitude or primitive and unconfined recreation through the construction of a new trail, installation and maintenance of VHF radio and AIS sites, and the implementation of a year-round permit requirement for all people camping in the park's backcountry. When these effects are combined with other past, present, and reasonably foreseeable future actions, the cumulative impacts on wilderness character would continue to be adverse. The incremental impacts of the action alternative would contribute to, but not substantially change, the impacts that are already occurring.

## **Comparative Conclusion of the Alternatives**

Under Alternative A, no notable changes to the solitude or primitive and unconfined recreation quality of wilderness character would occur.

Under Alternative B, the installation of one VHF radio and up to 10 AIS stations and development of approximately 10 miles of trail from the Falls Creek area to Excursion Ridge would decrease opportunities for solitude or primitive and unconfined recreation in the vicinity of the trail and new communications infrastructure, and requiring backcountry camping permits year-round would decrease opportunities for primitive recreation. Still, wilderness users could disperse in across the other 2.6 million acres of wilderness and would still have the freedom to choose their own campsites and allow their trip to unfold as weather, whim, and tides dictate.

## **UNDEVELOPED QUALITY OF WILDERNESS CHARACTER**

### **Affected Environment**

This section focuses on the undeveloped quality of wilderness character. When the undeveloped quality is preserved, wilderness retains its primeval character and influence and is essentially without permanent improvements or the sights and sounds of modern human occupation (Landres et al. 2015). This wilderness character quality is degraded by temporary roads; use of motor vehicles, motorized equipment, mechanical transport, or motorized vessels; landing of aircraft; and installations or structures. Use of aircraft, snowmachines, and motorboats in Alaskan wilderness areas is allowed under the Alaska National Interest Lands Conservation Act of 1980. Still, these uses affect the undeveloped quality of wilderness character when they occur in wilderness.

Unlike many wilderness areas that are islands of wildness surrounded by development, Glacier Bay Wilderness is a wild place within the context of equally wild and sometimes wilder surroundings. Human developments here are minimal, and views of the vast expanse of ocean or snowcapped mountain ranges are suitably humbling. Some developments do detract from the primeval influence of the wilderness. Communications installations, navigation aids and markers, and research installations, are scattered throughout wilderness. Limited numbers of historic structures created by explorers, homesteaders, prospectors, fox farmers, and hunters are present in designated Wilderness. While these historic structures do represent developments that impact the undeveloped quality, they also contribute to the overall wilderness character.

Administrative use of motor vessels, motorized equipment, mechanical transport, and landing of aircraft in wilderness occurs when those tools are the minimum necessary to administer the area as wilderness. In Glacier Bay, most designated Wilderness waters have seasonal restrictions on motorized boat use.

### **Trends**

Past and ongoing actions that impact the undeveloped quality of wilderness character include the placement of installations and structures in wilderness for research, communications, or

other purposes, as well as the ongoing use of aircraft landings, motor vehicles, motorized equipment, mechanical transport and/or motorized vessels in wilderness for administrative purposes and the use of aircraft and motorboats in wilderness for traditional activities. Reasonably foreseeable future actions from the 2019 frontcountry management plan that will impact the undeveloped quality of wilderness character include an additional 4.4 miles of new trail along the Bartlett River and to Point Gustavus that will be built in wilderness. The Point Gustavus Route will include minimalist, fully naturalized modifications (i.e., rock placement and spot planking) to help users navigate tides, water crossings, and sensitive habitat (NPS 2019b). Reasonably foreseeable future actions from the marine management plan include the co-location of communication infrastructure within wilderness. Installation and maintenance would occur by foot, boat, float plane, or kayak; however, in areas that are too dangerous or remote, a helicopter may be used. Helicopter use would adversely impact the undeveloped quality. These reasonably foreseeable future actions will contribute to an overall adverse trend in wilderness character.

## **Environmental Consequences**

### **Alternative A: No Action**

Alternative A would be the continuation of current management, as described in the affected environment section. No new actions would occur, and thus there would be no new effects to the undeveloped quality of wilderness character under this alternative.

### **Alternative B: Action Alternative – NPS Preliminary Proposed Action**

The proposed and refined zoning of the 1984 GMP Wilderness Lands Zone and Wilderness Waters Zone is not expected to impact the undeveloped quality of wilderness character; however, specific actions within the zones are analyzed below.

This plan includes proposals for approximately 10 miles of new trail construction in designated Wilderness that may include sections of boardwalk or natural planking. The construction of new trail in the 5,000 acres of wilderness where the Excursion Ridge trail is proposed would represent a noticeable change to the undeveloped quality of that area; however, the scale of this change to the undeveloped quality of wilderness is small compared to the context of the 2.6 million-acre Glacier Bay Wilderness. All boardwalks would be designed to be movable or removable, which means these impacts on this quality of wilderness may not be permanent (and could be removed at any time). Most trail work in wilderness would be conducted with hand tools. Trail construction would require the intensive use of helicopters for material delivery over short durations and may involve some use of motorized equipment such as small hand tools, chainsaws, rock drills, and generators. Use of this equipment would result in adverse impacts on the undeveloped quality of wilderness character for the duration of the use of those tools. However, use of this equipment would be subject to minimum requirements analysis and is expected to be infrequent, limited to short durations, and used in compliance with the park's wilderness requirements.

Proposed communication upgrades include the installation and maintenance of one VHF radio repeater and up to 10 AIS stations at new sites in designated Wilderness for AIS receiver

stations and VHF radio infrastructure, which would have adverse impacts on wilderness. Eleven new sites is an upper limit over the life of the backcountry and wilderness management plan; fewer than 5 installations in the next decade is a more likely scenario. At each new location, a mast or tower and antenna with mounted hardware would be installed and would include a weatherproof battery, small equipment shed, and a concrete pad. The total footprint for the installation would be up to 100 square feet at a height of up to 40 feet. The 11 installations proposed under Alternative B would directly impact a small fraction of the greater Glacier Bay Wilderness. Helicopter deliveries to transport equipment to VHF radio and AIS transponder sites for installation and annual maintenance would also have adverse impacts on the undeveloped quality of wilderness as up to 10 helicopter landings per site may be required for installation and up to two annual landings for maintenance purposes per site. Use of helicopters would be subject to a future minimum requirements analysis and is expected to be infrequent, limited to short durations, and used in compliance with the park's wilderness requirements.

Administrative use of installations and landing of helicopter are prohibited under section 4c of the Wilderness Act unless they are determined to meet the minimum requirements for the administration of the area as wilderness or reflect an excepted use under the Alaska National Interest Lands Conservation Act of 1980. The first steps of the minimum requirement analysis conclude that these actions are necessary to meet the requirements of other legislations and to protect some elements of wilderness character. The second stage of the minimum requirements analysis (to identify the minimum activity needed) would be completed when final sites are identified and before the action is implemented.

### **Cumulative Impacts**

As previously described, no new impacts would occur under Alternative A, and thus no cumulative impacts on opportunities for solitude or primitive and unconfined recreation would occur.

Past, present, and future actions that impact the undeveloped quality of wilderness character include the placement of installations and structures in wilderness for research, communications, or other purposes, as well as the ongoing use of aircraft landings, motor vehicles, motorized equipment, mechanical transport and/or motorized vessels in wilderness for administrative purposes and the use of aircraft and motorboats in wilderness for traditional activities.

Alternative B would cause a permanent adverse impact to the undeveloped quality through the construction of a new trail and installation of one VHF radio and up to 10 AIS stations, as well as temporary adverse impacts by using helicopters for material delivery and other motorized equipment for trail construction. When these effects are combined with other past, present, and reasonably foreseeable future actions, the cumulative impacts on wilderness character would continue to be adverse. The incremental impacts of the action alternative would contribute to, but not substantially change, the impacts that are already occurring to the undeveloped quality in the 2.6 million-acre Glacier Bay Wilderness.



## **Comparative Conclusion of the Alternatives**

Under Alternative A, no notable changes to the undeveloped quality of wilderness character would occur. Under Alternative B, the construction of approximately 10 miles of trail from the Falls Creek area to Excursion Ridge and the installation of one VHF radio and up to eight AIS stations would represent a new development in wilderness. In addition, use of helicopters for material delivery and motorized equipment for trail construction and installations and maintenance of VHF radio and AIS stations would result in adverse impacts on undeveloped quality of wilderness character for the duration of the use of those tools. Use of this equipment would be subject to a future minimum requirements analysis and is expected to be infrequent, limited to short durations, and used in compliance with the park's wilderness requirements. Alternative B would have an adverse impact on the undeveloped quality of wilderness character because installations are happening in a wilderness where no installations currently exist. Additionally, Alternative B would have adverse impacts on the undeveloped character of the areas where the trail, VHF radio, and AIS stations are proposed. However, the vast majority of wilderness would remain free from permanent developments.

## **FAIRWEATHER RANGE ETHNOGRAPHIC RESOURCES/TRADITIONAL CULTURAL PROPERTIES/CULTURAL LANDSCAPE**

### **Affected Environment**

Tsalx̄aan, Mt. Fairweather, and Yéik Yi Aaní, the Fairweather Range is eligible for listing as a Traditional Cultural Property. Mt. Fairweather, and the entire Fairweather Range, holds specific cultural significance to the Huna Tlingit, particularly the T'ak̄deintaan Clan, as the place of origin of many events that shaped Huna Tlingit history. The mountain is recognized as a sacred place that sheltered Tlingit ancestors during the Great Flood, guides vessels traversing the rough Outer Coast waters, served as the site of numerous shamanic initiations into the 20th century, is populated with living spiritual beings, and is spiritually visited by living Tlingit through ceremony. Living Huna Tlingit do not travel to or within the mountain range in person. The condition of this ethnographic resource contributes to the "Other Features of Value" quality of wilderness character.

Hoonah Indian Association and Yakutat Tlingit Tribe tribal members have expressed concern about mountaineering within the Fairweather Range. In response to these concerns, the National Park Service deferred a final decision regarding the authorization of commercial mountaineering until further conversations could be held with tribal governments. The National Park Service has not received a formal request from either the Hoonah Indian Association or Yakutat Tlingit Tribe to prohibit mountaineering, either private or commercial, within the Fairweather Range during this planning process, and there is no precedent department-wide in which sacred sites have been closed to mountaineering.

### **Trends**

Ongoing actions that impact the ethnographic resources of the Fairweather Range include the presence of mountaineers and the use of aircraft to support mountaineering. Some Huna

Tlingit would view permitting commercial mountaineering as allowing profane action at a sacred site. The sound intrusions from aircraft have adverse impacts on the feeling and setting of the Fairweather Range and its sacred uses. There are no reasonably foreseeable future actions with the potential to impact the ethnographic resources of the Fairweather Range.

## **Environmental Consequences**

### **Alternative A: No Action**

Alternative A would continue current management, as described in the affected environment section. No new actions would occur, and thus there would be no new effects to the ethnographic resources and traditional cultural properties. Some impacts from permitted mountaineering would continue to affect an eligible Traditional Cultural Property and Cultural Landscape.

### **Alternative B: Action Alternative – NPS Preliminary Proposed Action**

Actions under Alternative B that would impact the ethnographic resources of the Fairweather Range include the change from a case-by-case permitting of commercial mountaineering, to a maximum of six permitted commercial mountaineering trips per season. The increase in human presence in the Fairweather Range would have adverse impacts on the feeling and association of the sacredness of the range to the Tlingit. Tlingit do not access the mountain or the range except during shamanic initiations, the last of which occurred in the 1930s (although the mountain is visited spiritually during ceremony held elsewhere). By increasing the maximum number of permitted commercial mountaineering trips, there would be a corollary cumulative increase of adverse impacts on the ethnographic resources within the Fairweather Range. In addition to commercial mountaineering having adverse impacts on the ethnographic connection between the Fairweather Range and the Tlingit people, there is potential for additional impacts on the ethnographic resource by introducing more visitors to the range who may not be aware of the ethnographic importance of the range. While their presence itself may be considered profane, mountaineers may engage in other actions that could be considered disrespectful.

### **Cumulative Impacts**

As previously described, no new impacts would occur under Alternative A, and thus no cumulative impacts on ethnographic resources within the Fairweather Range would occur.

Past, present, and future actions include the use of aircraft to support mountaineering that cause sound intrusions and have adverse impacts on the feeling and setting of the Fairweather Range and its sacred uses. Alternative B would cause adverse impacts on the feeling and sacredness of the Fairweather Range to the Tlingit through an increase in the number of permitted commercial mountaineering trips per season. When these impacts are combined with other past, present, and reasonably foreseeable future actions, the cumulative impacts on ethnographic resources within the Fairweather Range would continue to be adverse. The incremental impacts of the action alternative would contribute to, but not

substantially change, the impacts that are already occurring to ethnographic resources within the Fairweather Range.

### **Comparative Conclusion of the Alternatives**

Under Alternative A, no notable changes would occur to the ethnographic resources of the Fairweather Range; small impacts on the ethnographic resource would continue. Under Alternative B, the change from a case-by-case permitting of commercial mountaineering to a maximum of six permitted commercial mountaineering trips per season would have adverse impacts on the feeling and sacredness of the Fairweather Range to the Tlingit.

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## **CHAPTER 4: COORDINATION AND CONSULTATION**

The National Park Service consulted with various agencies, tribes, organizations, and interested persons in preparing this document. The process of consultation and coordination is an important component of this plan. This chapter summarizes the consultations related to this plan with federal and state agencies and tribes.

### **STATE HISTORIC PRESERVATION OFFICER**

The park provided the Alaska State Historic Preservation Officer with a copy of the backcountry and wilderness management plan in July 2022 and invited participation in the planning process pursuant to section 106, as well as a broader consultation of the National Historic Preservation Act. The Alaska State Historic Preservation Office was provided with copies of the documents and has been invited to attend public meetings or to meet with park staff regarding the plan. Based on consultation with the Advisory Council on Historic Preservation and the Alaska State Historic Preservation Office per the National Historic Preservation Act, and with recommendations by the state historic preservation officer, this backcountry and wilderness management plan, including the planning vision and environmental, are currently not considered an undertaking under section 106. As specific actions or locations are refined, the National Park Service will conduct section 106 reviews to identify and evaluate the potential effects to historic properties and consult with the State Historic Preservation Officer, tribes, and other interested parties to avoid, minimize, or mitigate adverse effects before authorizing any final decisions. The park will keep the Alaska State Historic Preservation Office informed as the backcountry and wilderness plan progress and will provide copies of the document during a 30-day public review for comment.

### **STATE LANDS OFFICE**

The proposed trail to Excursion Ridge would cross state lands (about 0.5 miles) and include a river crossing. The trail and associated bridge would be funded through federal allocations. Once final designs and crossing locations are identified, the park would apply for an easement for the trail between the road and the park boundary.

### **ASSOCIATED TRIBES**

The planning effort has been informed by ongoing, informal, and formal government-to-government consultation with the Hoonah Indian Association and the Yakutat Tlingit Tribe, representing the original people and stewards of Glacier Bay. The draft plan was scoped with both tribes to ensure that it addressed longstanding tribal priorities and advanced challenging conversation and established a clear pathway for collaboratively resolving challenging issues. Aspects of the process included:

- Regular ongoing conversations with tribes, NPS tribal coordinator, and the park superintendent

- Advance copies of draft newsletters prior to 60-day public input periods in 2020 and 2021, and prior to a 30-day draft plan review in 2022, with an invitation for input.
- Pre-release tribal review of all language related to Homeland and other cultural issues.
- A planned in-person government to government meeting overlapping with a 30-day public review of the revised draft plan and EA (February 2023).
- The plan also features tribal ethnographic and Homeland content and incorporates Tlingit language to encourage readers to consider the concepts presented here through the world view of those who consider Glacier Bay National Park designated Wilderness as Homeland.

## **FUTURE CONSULTATION AND COMPLIANCE**

The National Park Service will continue to consult with agencies, tribes, partners, stakeholders, and the public as actions identified in the backcountry and wilderness management plan advance toward more detailed design development and implementation stages. The park will complete any additional compliance and permitting requirements, including compliance with section 106 of the National Historic Preservation Act for project specific undertakings.

## **PUBLIC COMMENT**

The park initiated public comment in February 2020 and held a public meeting in April 2020. That fall, the park provided a planning update newsletter summarizing the public comments received earlier in the spring. Another period of public comment was opened and lasted from November 2020 until January 2021. Another public comment period on a draft of the backcountry and wilderness management plan was anticipated to begin in January 2022, but this was delayed allowing for more robust tribal involvement. Public review of the draft plan began in July 2022 and ended in August 2022.

## **LIST OF TRIBES AND EXTERNAL CONSULTATION DURING PLAN DEVELOPMENT**

During preparation of this backcountry and wilderness management plan, members of the planning team met and/or consulted with various entities.

### **Tribal Consultation**

Hoonah Indian Association

Yakutat Tlingit Tribe

## **Alaska Native Land Claims Act Corporation Consultation for Actions Substantially Affecting Their Land, Water Areas, Resources, and Programs**

Cook Inlet Region Inc. (Gustavus landowner)

Huna Totem Corporation

Sealaska Corporation

### **Gateway Community Interests**

City of Gustavus

City of Hoonah

Gustavus Visitors Association

Travel Juneau

### **Advocacy Interests**

Alaska Travel Industry Association

Friends of Glacier Bay

National Parks Conservation Association

The Wilderness Society

### **Commercial Partners**

Park contract holders (various)

### **Agencies**

Alaska Department of Fish and Game

Alaska Department of Natural Resources

Alaska National Interest Lands Conservation Act program

Alaska State Historic Preservation Office

National Oceanic and Atmospheric Administration – National Marine Fisheries Service

US Army Corps of Engineers

US Fish and Wildlife Service

## **Elected Officials**

Lisa Murkowski, United States Senator

Dan Sullivan, United States Senator

Mary Peltola, United States Representative

Jesse Kiehl, Alaska State Representative

Sara Hannan, Alaska State Representative

Andi Story, Alaska State Representative